

GEOBRASIL

<http://www.geobrasil.net>

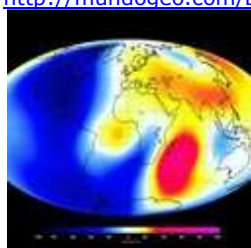


Fotos tiradas do site da Nasa

*****As pessoas interessadas em receber nossa newsletter via mail, podem escrever para revistadegeologia@yahoo.com.br pedindo sua adesão.**

ARTIGO DA SEMANA

<http://mundogeo.com/blog/2014/06/24/novos-satelites-europeus-revelam-mudancas-no-campo-magnetico-da-terra/>



[Comente](#)

[Envie por E-mail](#)

[Compartilhe](#)

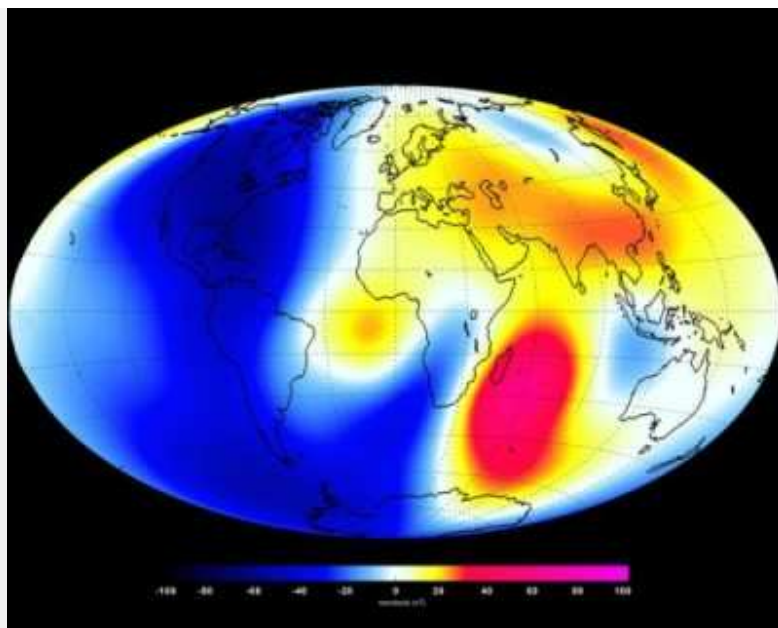
Novas descobertas de mudanças no campo magnético da Terra

Por **Izabela Prates** | 12h51, 24 de Junho de 2014

Os primeiros resultados da **missão Swarm**, composta por um grupo de três satélites lançados em novembro de 2013 pela **Agência Espacial Européia (ESA)**, mostram que o campo magnético terrestre está enfraquecendo.

O Swarm vem fornecendo informações sobre o complexo funcionamento do campo magnético da Terra. Medições feitas ao longo dos últimos seis meses confirmaram uma tendência de enfraquecimento do campo magnético, especialmente no hemisfério ocidental, embora em outras áreas, como o sul do Oceano Índico, esteja acontecendo o fenômeno inverso.

Além do enfraquecimento do campo magnético, as últimas medições também confirmam o movimento do norte magnético para a Sibéria. Estas mudanças são baseadas nos sinais magnéticos provenientes do núcleo da Terra.



Os primeiros resultados da missão Swarm mostram que o campo magnético terrestre está enfraquecendo. Nos próximos meses, os cientistas analisarão os dados para obter uma melhor compreensão sobre a razão do campo magnético terrestre estar enfraquecendo e desvendar as contribuições magnéticas provenientes do manto, crosta, oceanos, ionosfera e da magnetosfera terrestre, o que poderá proporcionar nova visão sobre muitos processos naturais, especialmente daqueles que ocorrem no interior do nosso planeta.

Segundo Rune Floberghagen, diretor da missão Swarm, estes resultados iniciais demonstram o excelente desempenho da missão e, além disso, os dados exibem a capacidade de mapear recursos numa escala precisa do campo magnético.

Os primeiros resultados da missão foram apresentados em uma conferência organizada pela ESA, em Copenhague, na Dinamarca.

Fonte: [ESA](#)

NEWS METEORITICA DA SEMANA

ASTROBOLETIM

SUPER-TERRA VIZINHA À DISTÂNCIA IDEAL MAS COM CONDIÇÕES EXTREMAS



CREDIT: Efraín Morales Rivera, Astronomical Society of the Caribbean, PHL @ UPR Arecibo

Representação artística da super-Terra potencialmente habitável, Gliese 832c, com um pano de fundo que contém uma imagem verdadeira da sua estrela, obtida a 25 de Junho.

Crédito: Efraín Morales Rivera, Astronomical Society of the Caribbean, PHL @ UPR Arecibo (clique na imagem para ver versão maior)

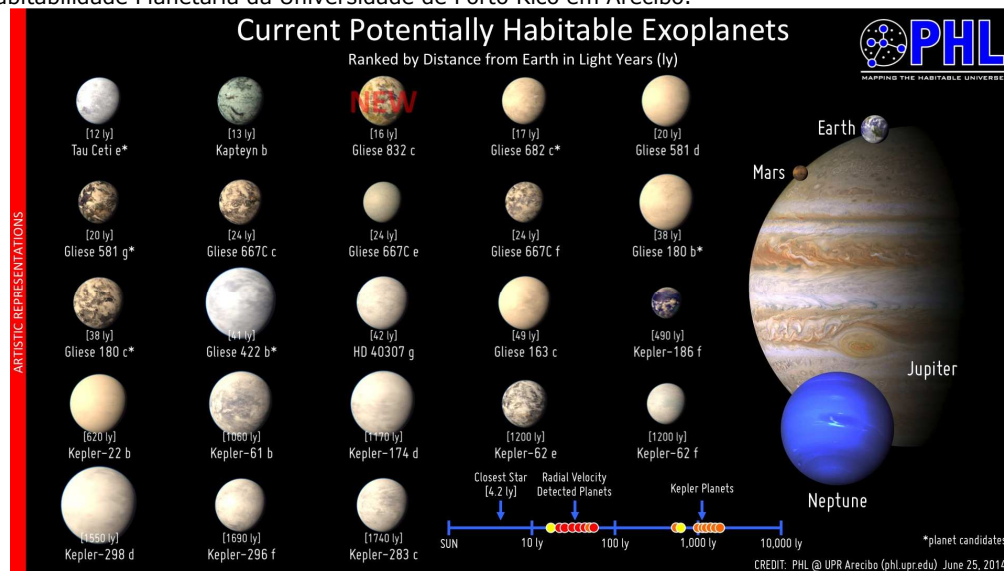
Um mundo recém-descoberto poderá ser capaz de sustentar vida - e está a "poucos passos" da

Terra de um ponto de vista cósmico.

Uma equipa internacional de astrónomos descobriu um exoplaneta na zona habitável da estrela Gliese 832 - a gama de distâncias que podem permitir a existência de água líquida à superfície de um planeta. Conhecido como Gliese 832c, situa-se a 16 anos-luz da Terra (em comparação, a nossa Galáxia mede cerca de 100.000 anos-luz de diâmetro; a estrela mais próxima da Terra [além do Sol], Proxima Centauri, está a 4,2 anos-luz de distância).

Gliese 832c é uma "super-Terra" com pelo menos cinco vezes a massa do nosso planeta, e completa uma órbita em torno da sua estrela-mãe a cada 36 dias. Mas essa estrela é uma anã vermelha, muito mais tênue e fria que o nosso Sol, por isso Gliese 832c recebe aproximadamente a mesma energia estelar que a Terra, apesar de orbitar muito mais perto.

De facto, segundo uma medida normalmente usada, Gliese 832c é um dos três exoplanetas mais semelhantes à Terra já descobertos, comenta Abel Mendez Torres, director do Laboratório de Habitabilidade Planetária da Universidade de Porto Rico em Arecibo.



O Catálogo de Exoplanetas Habitáveis tem agora 23 objectos de interesse, incluindo Gliese 832c, o mais próximo da Terra dos três mais parecidos com a Terra.

Crédito: PHL @ UPR Arecibo

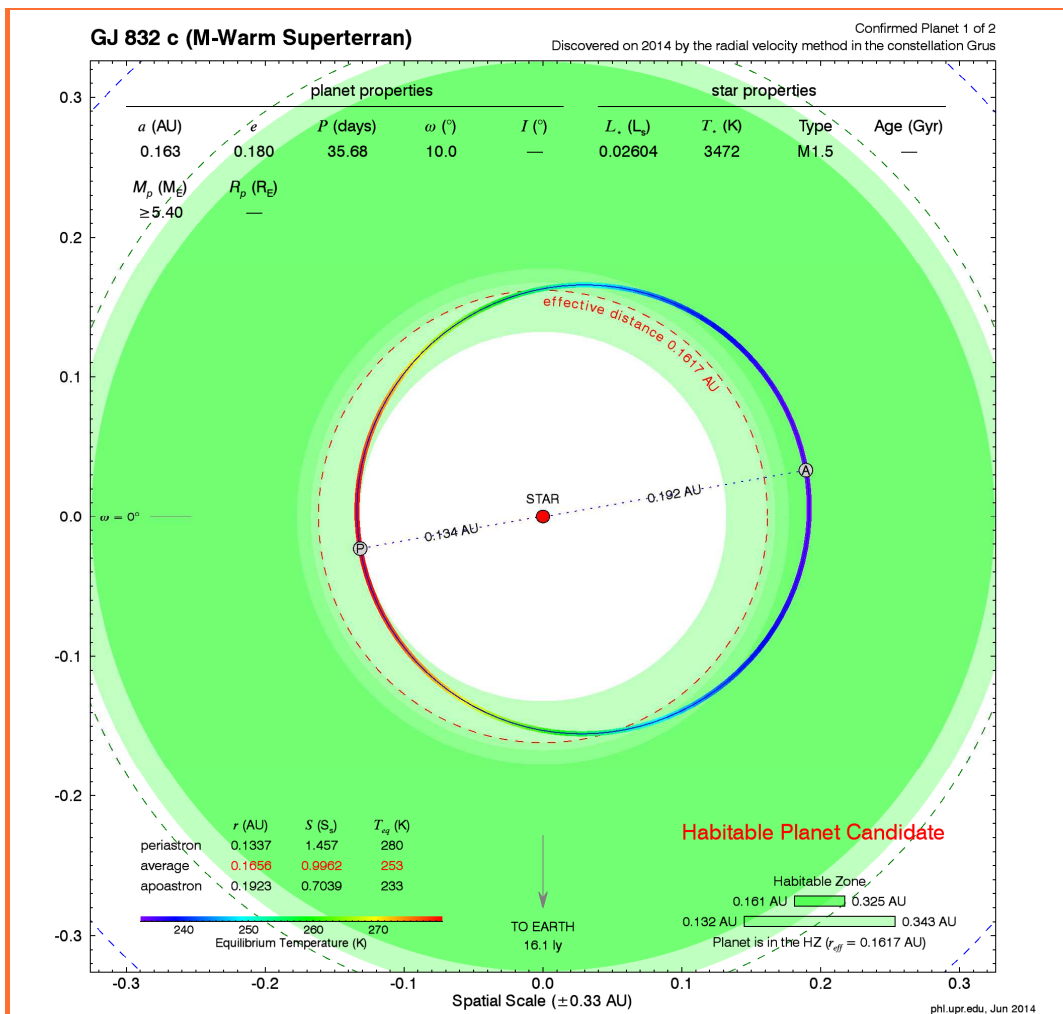
(clique na imagem para ver versão maior)

"O Índice de Similaridade com a Terra (ESI, Earth Similarity Index) de Gliese 832c ($ESI=0,81$) é comparável com Gliese 667Cc ($ESI=0,84$) e Kepler-62e ($ESI=0,83$)," escreveu Mendez num blog. Uma gémea perfeita da Terra teria um ESI de 1.

"Isto torna Gliese 832c um dos três planetas mais parecidos com a Terra, de acordo com o ESI (isto é, com respeito ao fluxo estelar e massa da Terra) e o mais próximo da Terra dos três - um objecto ideal para observações de acompanhamento," acrescenta.

A equipa liderada por Robert Wittenmyer, da Universidade de Nova Gales do Sul, Austrália, descobriu Gliese 832c ao notar pequenas oscilações que a gravidade do planeta provocava no movimento da sua estrela hospedeira.

Observaram estas oscilações em dados recolhidos por três instrumentos diferentes - o Espectrógrafo Echelle da University College London acoplado ao telescópio Anglo-Australiano na Austrália, o PFS (Planet Finder Spectrograph) de Carnegie acoplado ao telescópio Magalhães II no Chile e o espectrógrafo HARPS (High Accuracy Radial Velocity Planet Searcher), que faz parte do telescópio de 3,6 metros do Observatório La Silla do ESO no Chile.



Análise orbital de Gliese 832c, um mundo potencialmente habitável em torno da anã vermelha Gliese 832. Gliese 832c orbita a fronteira interior da zona habitável (estimativa conservadora).
Crédito: PHL @ UPR Arecibo
(clique na imagem para ver versão maior)

Gliese 832c é o segundo planeta a ser descoberto em torno da estrela Gliese 832. O outro, Gliese 832b, foi descoberto em 2009; é um gigante gasoso que orbita muito mais longe da estrela, completando uma órbita em aproximadamente 9 anos.
"Até agora, os dois planetas de Gliese 832 são uma versão reduzida do nosso próprio Sistema Solar, com um planeta potencialmente tipo-Terra mais interior, e um planeta gigante mais exterior, parecido com Júpiter," acrescenta Mendez.
No entanto, de momento não se sabe quão Gliese 832c se assemelha com a Terra. De facto, os seus descobridores pensam que o mundo recém-descoberto pode ser mais parecido com Vénus, com uma espessa atmosfera que levou a um efeito estufa descontrolado.
"Dada a grande massa do planeta, parece provável que tenha uma grande atmosfera, o que pode tornar o planeta inóspito," escreve Wittenmyer e sua equipa no artigo científico, aceite para publicação na revista The Astrophysical Journal. "Na verdade, é mais provável que GJ [Gliese] 832c seja um 'super-Vénus', com um significativo efeito estufa."

ÍNDICE DE NOTÍCIAS JORNAL DA CIÊNCIA

Edição 4978

► [1. SBPC participa do evento ESOF 2014](#)

Helena B. Nader fez apresentação no principal evento de cientistas da Europa

► [2. Plataformas do conhecimento](#)

Governo Federal lança programa para estimular a pesquisa na área de ciência, tecnologia e inovação

► [3. Especialistas discutem sobre educação nas áreas tecnológicas](#)

Debate foi realizado durante a última Reunião Regional da SBPC

▶ [4. Estímulo à integração de pesquisadores e empresas começa a valer em 2015](#)

"A aplicação de recursos no programa vai depender de vontade política do governo", afirma ministro Campolina

▶ [5. Dilma anuncia mais 100 mil bolsas para o Ciência sem Fronteiras](#)

Lançado em 2011, o programa tinha meta a concessão de 101 mil bolsas - 75 mil bancadas pelo setor público e 26 mil pro empresas privadas

▶ [6. Proposta incentiva organização estudantil na educação básica](#)

Projeto está pronto para ser votada pela Comissão de Educação, Cultura e Esporte

▶ [7. Dilma defende política educacional de "pagar bem e exigir qualidade"](#)

Presidente também destacou a necessidade de investimentos em ciência, tecnologia e inovação

▶ [8. Henrique Alves faz balanço do 1º semestre de 2014 e destaca aprovação do PNE](#)

O Plano Nacional de Educação prevê a aplicação de 10% do PIB no setor

▶ [9. Funcionários e alunos da USP fazem manifestação em São Paulo](#)

Eles querem a libertação do estudante preso durante protesto na Avenida Paulista, na segunda-feira

▶ [10. Palestra abordará uso da terra e mudanças sociais na Amazônia](#)

O evento acontece, às 16h, no Auditório do Instituto de Geociências da Universidade Federal do Pará

▶ [11. Instituto Mamirauá abre inscrições para curso sobre tecnologias sociais](#)

O curso será de 11 a 17 de agosto na sede do instituto em Tefé (AM)

▶ [12. Inscrições abertas para doutorado na Rede Pró Centro-Oeste](#)

No total, serão disponibilizadas 60 vagas para o segundo semestre de 2014

▶ [13. Academia Intercontinental reunirá pesquisadores de vários países para estudos interdisciplinares sobre o tempo](#)

Os participantes terão a orientação de cientistas seniores de reconhecimento regional e internacional

▶ [14. Ministro do Meio Ambiente reabre inscrições para Circuito Tela Verde](#)

A quinta edição do Circuito Tela Verde foi lançada durante o Festival Internacional de Cinema e Vídeo Ambiental (Fica 2014)

▶ [15. Organizações da sociedade civil apresentam agenda de desenvolvimento sustentável](#)

Conforme organizadores, essa é a primeira vez que um grupo de organizações constrói uma plataforma unificada com demandas originárias da sociedade civil

▶ [16. Celso Lafer recebe Honoris Causa da Universidade de Haifa](#)

O presidente da FAPESP afirmou que, "para um professor universitário, o reconhecimento acadêmico sempre tem um grande significado"

▶ [17. Pós-doutorado em Matemática e Neurociência com bolsa da FAPESP](#)

Recomenda-se que os interessados se inscrevam o mais breve possível, pois as inscrições serão aceitas até que seja alcançada uma quantidade de candidaturas considerada

▶ [18. Funcap investe R\\$ 99 milhões no fortalecimento da pós-graduação cearense](#)

Por ano, são concedidas 21,4 mil bolsas a estudantes cearenses de graduação e pós-graduação

▶ [19. Governo do MA investirá mais de R\\$ 500 mil em modernização das instalações elétricas da Uema](#)

A ideia é garantir melhorias nas instalações elétricas na Universidade Estadual do Maranhão, potencializando os programas de pós-graduação

▶ [20. Pesquisadores aprimoram desempenho de material funcional estimulando crescimento de prata metálica](#)

Descoberta melhora a propriedade fotoluminescente, fotodegradação e a atividade bactericida do tungstato de prata

▶ [21. Maio de 2014 foi o mais quente desde 1850](#)

A temperatura média na superfície terrestre e dos oceanos atingiu 15,54°C em maio, o que representa 0,74°C a mais do que a média de 14,8°C no século 20

▶ [22. Nasa completa testes com impressora 3D que vai para espaço](#)

Máquina deve reduzir dependência do material enviado da Terra, garantindo mais autonomia aos astronautas na Estação Espacial

Edição 4976

▶ [1. Lula atropela Planalto e adianta anúncio de programa científico](#)

Ex-presidente fala em público sobre projeto de investimento em pesquisa cujo lançamento oficial será feito hoje por Dilma

▶ [2. SBPC abre inscrições para o preenchimento de 500 vagas de alojamento](#)

As inscrições podem ser feitas até o dia 14 de julho

▶ [3. Reitor da Ufac mobiliza vereadores para participar da SBPC](#)

Estão programadas para a reunião diversas atividades científicas e culturais, abrangendo desde palestras a espetáculos de música e de teatro

▶ [4. Marco civil da internet entra em vigor](#)

Lei define direitos e deveres de usuários e provedores de internet

▶ [5. Governo tem até hoje para sancionar PNE](#)

Destinação de 10% do PIB para a educação é considerado o maior desafio

▶ [6. Entidades pedem dois vetos no PNE](#)

Entre os trechos está o que se referem a destinação de parte dos 10% do PIB para programas desenvolvidos em parceria com instituições privadas

▶ [7. 60% dos professores no Brasil são obrigados a trabalhar em mais de uma escola, diz estudo](#)

País é o pior em ranking de exclusividade de docentes, o que prejudicaria qualidade do ensino

▶ [8. OCDE: 94% dos professores brasileiros da educação básica têm diploma](#)

Estudo global traz levantamentos sobre práticas de trabalho de docentes em 34 países

▶ [9. Senado vai analisar restrição ao uso de animais em testes de cosméticos](#)

O projeto, do deputado Ricardo Izar (PSD-SP), foi aprovado pela Câmara no início do mês e aguarda leitura pela Mesa do Senado

▶ [10. Governo lança programa de C&T nesta quarta-feira](#)

O Programa Nacional de Plataformas do Conhecimento visa aumentar a escala da ciência e tecnologia do país com a finalidade de oferecer soluções para temas prioritários do desenvolvimento econômico e social do Brasil

▶ [11. Petrobras terá que repassar R\\$ 15 bi para União](#)

A contratação direta deverá ser fechada ainda este ano

▶ [12. A estratégia da cunha](#)

Em artigo na seção Tendências/Debates da Folha de S.Paulo, Claudio Angelo analisa a PEC 215 que, se aprovada, acabará com direito constitucional indígena à terra

▶ [13. EUA prendem cientista que admitiu fraude em pesquisa](#)

Pesquisador adulterou amostras de sangue de coelhos em estudo sobre vacina contra Aids que teve financiamento de US\$ 19 milhões

▶ [14. SUS poderá incluir exames de probabilidade genética para câncer de mama](#)

As mudanças na lei, que estabelece os protocolos do SUS, estão sendo propostas por meio de Projeto de Lei do Senado, que tramita na Comissão de Assuntos Sociais

▶ [15. INCT desenvolve sistema para verificar qualidade do ar na Paraíba](#)

Os dados podem ser utilizados na construção de planos de ação para mitigar os efeitos nocivos de substâncias como monóxido de carbono

▶ [16. Laboratório Hacker promove reunião interativa sobre dados abertos](#)

O objetivo do projeto Dados Abertos 2.0. O é desenvolver tecnologias e ferramentas para o fornecimento de dados abertos pela Câmara

▶ [17. Projeto susta resolução sobre exploração de petróleo e gás via fraturamento hidráulico](#)

Objetivo é estabelecer parâmetros de segurança operacional que assegurem a proteção à saúde humana e ao meio ambiente

▶ [18. Expositores da SNCT começam a se planejar no Distrito Federal](#)

Os parceiros da SNCT no Distrito Federal ainda devem se encontrar em uma segunda ocasião para definir detalhes operacionais, além de participarem de um seminário, marcado para 5 de agosto, sobre o tema do ano - "Ciência e tecnologia para o desenvolvimento social"

▶ [19. Nova ferramenta do Sibratec é apresentada a instituições](#)

O SibratecShop virá para "simplificar os processos", avaliou o secretário do MCTI, Alvaro Prata

▶ [20. RNP participa de transmissões em ultra-alta definição na Copa do Mundo](#)

O público em geral que estiver interessado em ver de perto imagens em 8K poderá se inscrever para assistir a uma das sessões que serão exibidas diariamente no auditório do CBPF, no Rio de Janeiro

▶ [21. Finep apoia posto ecoeficiente de combustíveis](#)

Com investimento de R\$ 34 milhões da Finep/MCTI, a Ipiranga pretende inaugurar 15 postos ecoeficientes até agosto

▶ [22. Programa seleciona cinco pesquisadores brasileiros nas áreas de Energia Sustentável e Mudanças Climáticas](#)

Iniciativa é fruto de parceria entre a Capes e a Comissão para Intercâmbio Educacional entre os Estados Unidos e o Brasil

▶ [23. GSK e FAPESP criam Centro de Excelência em Pesquisa Básica Orientada](#)

Objetivo é estimular o avanço da pesquisa básica e o potencial desenvolvimento de fármacos que possam responder a necessidades médicas não atendidas

▶ [24. Escola avançada de patologia](#)

A.C. Camargo Cancer Center fará o anúncio formal em evento entre os dias 7 e 9 de agosto

► [25. Presidente do Confap participa de eventos no Palácio do Planalto](#)

No evento, a ser prestigiado pela presidente Dilma Rousseff, haverá o lançamento do Programa Nacional de Plataformas do Conhecimento

► [26. Governo do ES e sociedade debateram inclusão digital no Estado](#)

A ideia é fomentar a ciência e tecnologia no Estado

► [27. Gestão em Sistemas de Tecnologia de Informação em Hospitais](#)

Livro traz pesquisa coordenada pelo professor Antonio Balloni do Centro de Tecnologia da Informação Renato Archer

► [28. Brasileiro usa satélite da Nasa para encontrar gêmeas do Sol](#)

Cientistas trouxeram à tona o satélite Kepler, que havia pifado em 2013 e agora está em uma nova missão

► [29. Nasa lança robô capaz de explorar camadas de gelo no espaço](#)

Máquina também ajudará a Ciência a conhecer melhor nossos próprios oceanos

► [30. Ciência Hoje On-line: Imponderável futebol clube](#)

Empolgado com os jogos da Copa do Mundo no Brasil, Adilson de Oliveira lança mão da física para tratar das circunstâncias indefiníveis que podem interferir no resultado de uma partida

► [31. Revista Ciência Hoje: Por que bocejamos?](#)

Nova hipótese defende que o bocejo ocorre para resfriar o cérebro e que o número de bocejos depende da temperatura do ambiente: é maior quando faz mais calor

Edição 4976

► [1. Prêmio de Incentivo em Ciência e Tecnologia para o SUS - 2014](#)

A iniciativa é dedicada à comunidade científica desde 2002

► [2. Dilma sanciona PNE nesta semana e maior desafio será investimento](#)

O Plano Nacional de Educação tem até quinta-feira (25) para ser sancionado pela presidente Dilma Rousseff

► [3. MEC divulga resultado da segunda chamada do SiSU](#)

Os estudantes devem comparecer à instituição para qual foram selecionados e providenciar a matrícula nos dias 27 e 30 deste mês e 1º e 2 de julho

► [4. Protesto na abertura da Copa rende apoio internacional para causa indígena](#)

As fotos sobre o protesto foram feitas dentro da Arena Corinthians, zona leste paulistana, rodaram o mundo

► [5. Amazônia Legal estará toda mapeada até 2017, diz centro de operações](#)

Cerca de 55 mil quilômetros quadrados de hidrovias navegáveis e 1,2 milhão de Km² terrestres já foram catalogados

► [6. Proposta estende benefícios do Fies às instituições municipais de ensino superior](#)

O autor do projeto defende que o Fies seja estendido a essas instituições, buscando favorecer o acesso dos alunos carentes ao ensino de qualidade

► [7. Projeto de lei define novas regras para acesso ao patrimônio genético](#)

Fomentar a bioindústria nacional, efetivar a repartição de benefícios e combater a biopirataria estão entre as prioridades

► [8. Carvãozinho da cana](#)

Em artigo no O Estado de São Paulo, Xico Graziano faz uma avaliação sobre a implementação do Protocolo Agroambiental em São Paulo

► [9. Darwinismo 2.0](#)

Artigo de José Eli da Veiga publicado no Valor Econômico

► [10. Energia nuclear: o Brasil pode abrir mão?](#)

Artigo de Sergio Malta publicado em O Globo. O Brasil tem a sexta maior reserva de urânio do mundo, detém tecnologia própria de enriquecimento e dispõe de um complexo produtivo consistente

► [11. Conferência Mundial para discutir Governança Global do Espaço](#)

Artigo de José Monserrat Filho para o Jornal da Ciência

► [12. Brasil tem condições de chegar ao desmatamento zero, diz secretário](#)

Carlos Nobre, o secretário de Políticas e Programas de Pesquisa e Desenvolvimento do MCTI, destacou a viabilidade de o país reduzir ainda mais o desmatamento

► [13. Lixo tratado poderia elevar PIB em US\\$ 35 bi](#)

Melhor uso de detritos no país geraria 110 mil empregos em 18 anos, diz Banco Mundial

► [14. Mestre do jornalismo científico no Brasil](#)

Morre Flávio de Carvalho Serpa (1948-2014)

▶ [15. Mudanças climáticas de longo prazo provocam mais migrações do que os desastres naturais](#)

Aumento da temperatura é a principal razão de deslocamentos

▶ [16. CsF prorroga chamadas para atração de pesquisadores](#)

As inscrições seguem até sexta-feira (27)

▶ [17. Centro de Diagnóstico por Imagem do Rio registra 600 mil exames](#)

O centro é referência para os 92 municípios do estado, oferecendo exames como ressonância magnética, mamografia, radiografia e ultrassonografia, chegando a fazer 25 mil procedimentos por mês, número equivalente ao de toda a rede estadual em 2006

▶ [18. Projeto permite que particular estimule poder público a firmar parceria público-privada](#)

Após o parecer da CAE, o projeto seguirá para decisão terminativa na Comissão de Constituição, Justiça e Cidadania (CCJ)

▶ [19. Projeto regulamenta profissão de arqueólogo](#)

Proposta torna o exercício da profissão de arqueólogo privativo dos diplomados em bacharelado em arqueologia e dos pós-graduados em área de concentração em arqueologia

▶ [20. INB testa produção de peróxido de urânio em planta piloto](#)

Este será o novo produto final da unidade após a duplicação da planta química

▶ [21. Pesquisa monitora fronteira do extremo Norte do Brasil](#)

O sistema água-solo-floresta é um dos temas abordados no projeto

▶ [22. Cursos do Pronatec já atendem a indígenas de Tocantínia \(TO\)](#)

Os cursos do Pronatec são administrados pela Sedecti - Secretaria do Desenvolvimento Econômico, Ciência, Tecnologia e Inovação

▶ [23. Presidente do Confap faz análise sobre possíveis medidas para a ciência em 2015](#)

Um dos fatores apontados para serem criados já em 2015 seria um fundo específico de financiamento do setor

▶ [24. Fapeal firma convênio para atrair doutores a Alagoas](#)

Com recursos de R\$ 5,5 milhões, o Programa de Desenvolvimento Científico Regional (DCR) visa o financiamento de estudos voltados para diversas áreas do conhecimento

▶ [25. Maio de 2014 foi o mais quente do mundo desde 1880](#)

A temperatura média na superfície terrestre e dos oceanos atingiu 15,54 graus Celsius em maio, isto é, 0,74°C a mais que a média de 14,8°C no século XX

▶ [26. ONU faz no Quênia sua primeira Assembleia Ambiental](#)

Tópicos importantes discutidos incluem a questão da contaminação dos oceanos por plásticos, o turismo e a pesca em larga escala

▶ [27. Florestas podem reduzir pobreza e promover desenvolvimento rural, diz FAO](#)

Órgão sugere que países apostem em políticas destinadas a manter e a potencializar as contribuições das florestas para os meios de subsistência, a alimentação, saúde e energia

▶ [28. Regiões tropicais precisam rever estratégia de vacinação contra a gripe, diz CDC](#)

O alerta foi feito por Nancy Cox, diretora da Divisão de Influenza do Centro de Controle de Doenças (CDC)

▶ [29. Pesticidas muito usados no mundo ameaçam a biodiversidade](#)

Autores de estudo que examinou 800 pesquisas sobre o assunto pedem regulamentação mais rígida

▶ [30. Jovem holandês criou projeto para limpar os oceanos](#)

Proposta para recolher lixo plástico passa por financiamento coletivo para levantar US\$ 2 milhões

AMBIENTE BRASIL

[Obama critica republicanos que negam mudança climática](#)

O presidente Barack Obama ironizou o Congresso, único lugar onde as afirmações dos cientistas são negadas.

[Encontrados em Lima antigos sistemas de escrita e contas incas](#)

O conjunto de 'quipus' encontrados "estão formados por uma corda principal de algodão, de onde pendem 12 cordas secundárias, além de cordas subsidiárias e conjuntos de nós, com fios de algodão e de lã".

[Qual o impacto das bandeirinhas nos carros para o meio ambiente?](#)

Durante a Copa do Mundo de 2006, o Dr. Antonio Filippone, da Universidade de Manchester, calculou que as bandeirinhas provocaram a queima extra de 1,22 milhão de litros de combustível. Também geraram três milhões de quilos extras de emissões de carbono, somente na Inglaterra.

Astrônomos descobrem 3 gigantescos buracos negros a 4 bilhões de anos luz

Os pesquisadores se concentraram na distante galáxia SDSS J1502+1115, onde descobriram que dois dos três buracos negros supermaciços estavam separados apenas por uma distância de 456 anos luz, e que orbitavam entre si.

Repetição do fenômeno El Niño em 2014 tem probabilidade de 80%

Dados são da Organização Meteorológica Mundial (OMM). Fenômeno pode ser registrado entre junho e dezembro.

Mobilidade urbana no Brasil é tema de seminário, em SP

Nesta sexta-feira (27), ciclistas, pesquisadores e gestores públicos participarão das mesas de debate para falar do direito à mobilidade democrática e eficiente, além das formas de garantir o direito dos cidadãos à cidade.

ONU chama atenção sobre deterioração dos oceanos e cobra ações

O diretor do PNUMA, Achim Steiner, pediu perseverança na "batalha quixotesca" de reverter "o drama" no qual se encontram o alto-mar e o fundo marítimo.

Ameaçado de extinção, guepardo asiático teve apoio do Irã nesta Copa

Cerca de 300 animais ainda vivem na natureza. Fotografia flagra caçada de guepardo a um coelho em parque iraniano.

OMS pede medidas drásticas contra epidemia de ebola e convoca reunião

Organização denunciou número de mortes e casos na África ocidental. Reunião com 11 países será realizada na próxima semana em Gana.

Método torna produção de energia solar mais barata e menos tóxica

Cloreto de magnésio substitui substância cancerígena. Nova 'receita' para produzir célula solar recorre a ingrediente usado em tofu.

Mudança de hábitos e perda de peso podem prevenir o diabetes

Dados da Federação Internacional de Diabetes apontam que 13,4 milhões de brasileiros convivem com a doença.

Chip cerebral faz com que tetraplégico volte a mexer mão

Ian Burkhart sofreu uma lesão de medula quatro anos atrás e foi o primeiro paciente a utilizar o Neurobridge ("Ponte Neural", em tradução livre), um sistema que permite que as informações sejam transmitidas diretamente do cérebro para os músculos.

Flamingos de Miami voltam a pôr ovos após cinco anos sem filhotes

Os flamingos do parque Hialeah, um dos cartões postais de Miami, voltaram a pôr ovos, após cinco anos sem se reproduzirem, um feito que o cuidador dos animais admitiu ter ocorrido graças a um truque: o uso de ovos de gesso.

Invasão de lagarto exótico deixa alerta cientistas dos Estados Unidos

Lagarto teiú ameaça espécies da Flórida por comer ovos. Animal pode medir mais de um metro e rouba ovos de tartarugas e jacarés.

Fezes de 50 mil anos revelam que neandertais também comiam plantas

Esta é a primeira evidência de que dieta de espécie primitiva era onívora. Pesquisadores encontraram mais antiga evidência de matéria fecal humana.

Cientistas desenvolvem Aids em macacos para testar vacina

O feito é importante porque pode permitir a realização de testes de novos medicamentos e vacinas para a doença com esses animais, de forma que os resultados obtidos sejam o mais próximo possível dos humanos.

Inundações no Paraguai deixam mais de 200 mil deslocados

Os níveis dos rios Iguazu e Paraná se mantêm abaixo do limite de alerta, segundo o último comunicado da represa de Yacyreta, entidade compartilhada entre Paraguai e Argentina, que advertiu sobre as previsões de chuvas abundantes para o fim de semana.

Aquário belga batiza bebê golfinho com nome de atacante da Bélgica

Origem nasceu um dia após a vitória belga sobre a Rússia na Copa do Mundo. Nome é homenagem ao jogador que fez o gol decisivo.

Pediatras americanos recomendam ler para bebês desde seu nascimento

Leitura estimula aquisição da linguagem e capacidade de comunicação. Associação recomenda que pais leiam pelo menos até filho fazer 3 anos.

Incêndio nos arredores de Jerusalém faz autoridades evacuarem bairros

A antiga aldeia atingida é um dos locais mais visitados de Jerusalém, pois se acredita que lá nasceu São João Batista. O local já foi totalmente esvaziado.

Pesquisadores descobrem duas espécies de bagre no litoral de São PauloCOMENTE

O bagre da espécie *Rineloricaria* sp., encontrado em Cubatão, se diferencia dos outros por não ter placas ósseas no abdome. Já o *Pimelodella* sp., descoberto em Santos, é arroxeado e com um filamento na boca, conhecido como barbilha, mais curto – os demais bagres dessa espécie são marrom-claros.

Passaporte Verde lança aplicativo com roteiros sustentáveis

Turistas e moradores terão mais de 60 opções de passeios nas 12 cidades-sede da Copa 2014.

MMA reabre inscrições para Circuito Tela Verde

Até 04 de julho, instituições podem se cadastrar como espaços exibidores da 5ª Mostra de Produção Audiovisual Independente.

Governo reconhece calamidade pública e emergência em municípios catarinenses

Entre as ações emergenciais, estão a compra de cestas básicas, água e o aluguel de máquinas para limpeza, reparo e liberação de estradas.

Governo cria programa de incentivo a pesquisa científica em 23 áreas

Haverá apoio a projetos em agricultura, saúde, energia, aeronáutica e outras. Programa começa em 2015 e terá metas para os próximos 10 anos.

Organizações da sociedade civil apresentam agenda de desenvolvimento sustentável

Vinte e cinco ONGs apresentaram na quarta-feira (25), em São Paulo, sete temas estratégicos que serão propostos aos candidatos nas eleições deste ano como parte de uma agenda nacional para o desenvolvimento sustentável.

Unesco inclui mais 26 sítios na lista de patrimônios mundiais

Na relação, destacam-se o Delta de Okavango, em Botswana, as Falésias de Stevns Klint, na Dinamarca, o Grande Parque Nacional dos Himalaias, na Índia, e o Monte Hamiguitan, nas Filipinas.

NOAA aponta que 2014 teve o mês de maio mais quente desde 1880

Estimativa mundial foi divulgada esta semana pela agência dos EUA. Temperatura média na superfície terrestre e dos oceanos atingiu 15,54°C.

Cai ritmo de desmatamento na Amazônia

Número de alertas entre agosto e maio deste ano foi 24% menor.

Tribunal determina que França suspenda decisão sobre eutanásia

Pedido era em favor de homem tetraplégico que está em coma há 6 anos. Justiça francesa havia determinado que médicos desligassem aparelhos.

Mamografia 3D é mais eficaz para detectar câncer de mama, diz estudo

Técnica aumenta em 41% a taxa de detecção de tumores invasivos. Mamografia tridimensional também diminui casos de diagnósticos errados.

Política climática elevaria PIB global a US\$ 2,6 tri/ano, afirma Banco Mundial

Investir em eficiência energética e transporte público ajudará economia. Ao mesmo tempo, será possível reduzir emissões de carbono.

Borboletas-monarca usam bússola própria em sua migração de longa distância

Batendo suas delicadas asas alaranjadas e pretas, o inseto viaja por milhares de quilômetros todos os anos dos Estados Unidos e do sul do Canadá até as montanhas Michoacán, no centro do México, onde passam o inverno.

Cientistas detectam estrela que pode ser diamante do tamanho da Terra

Estrela pode ser a anã branca mais fria e com brilho mais fraco já detectada. Temperatura faz com que carbono se cristalize, como em um diamante.

Comunidades tradicionais litorâneas correm risco de desaparecer

Para chamar a atenção sobre esses grupos, o Fórum das Comunidades Tradicionais de Angra, Paraty e Ubatuba lança sábado (28) a

campanha "Preservar é resistir - Em defesa dos territórios tradicionais".

Regiões tropicais precisam rever estratégia de vacinação contra a gripe, diz CDC

Recomendação atual da OMS baseada no hemisfério em que o país está localizado não é adequada para as regiões próximas aos trópicos, onde a dinâmica de circulação do vírus é diferente, indicam estudos.

Ministra Izabella Teixeira participa no Quênia de assembleia da ONU

Encontro vai definir medidas de proteção aos recursos naturais, em prosseguimento aos Objetivos de Desenvolvimento Sustentável.

Pesticidas muito usados ameaçam a biodiversidade, dizem cientistas

Avaliação científica internacional foi divulgada nesta terça-feira. Pesquisa pede supressão progressiva global dos neonicotinoides e o fipronil.

Estudo calcula em 5 anos o tempo necessário para salvar os oceanos

A Comissão Oceano Mundial, criada em fevereiro de 2013, informou que a redução do uso de objetos de plástico e da pesca em alto-mar e a implantação de regulamentações estritas para a exploração de petróleo e gás são a chave para este plano de resgate.

Gato viaja 80 km preso em mola de suspensão na Rússia

Motorista, que fazia uma viagem de negócios, só percebeu que o animal estava lá quando parou para abastecer o carro em um posto de combustíveis.

Estudo mostra evidências de impacto da mudança climática na Amazônia peruana

Intitulado "Mudança Climática e fauna silvestre na Amazônia peruana", o estudo revela o impacto que esse fenômeno tem na biodiversidade e nos povoados locais da Reserva Nacional Pacaya Samiria, na região da selva de Loreto.

Copa do Mundo já gerou mais de 43 toneladas de resíduos no DF

A Associação Brasileira de Empresas de Limpeza Pública e Resíduos Especiais informou que o Brasil deverá gerar um volume adicional de cerca de 15 mil toneladas de resíduos sólidos urbanos durante a Copa.

Crimes ambientais financiam grupos terroristas, dizem ONU e Interpol

Levantamento foi divulgado na Assembleia Ambiental da ONU, no Quênia. Ilegalidades relacionadas ao meio ambiente movimentam US\$ 213 bi/ano.

Má qualidade do ar no ambiente de trabalho pode levar a síndrome

'Síndrome do edifício doente' pode ser provocada por germes e poeira. Nariz entupido, lacrimejamento e dor de cabeça são alguns dos sintomas.

Mudar prática agrícola pode baixar temperatura na Europa, diz estudo

Cientistas sugerem evitar a aragem da terra após a colheita. Terra não arada permite que a umidade evapore mais lentamente.

Sanear águas residuais é grande desafio da América Latina, diz especialista

Segundo Vanessa Rubio, vice-secretária mexicana para a América Latina, 94% da população na região têm acesso à água potável, embora esta não seja a realidade de 110 milhões de pessoas.

Maior de 2014 foi o mais quente do mundo desde 1880

A temperatura média na superfície terrestre e dos oceanos atingiu 15,54 graus Celsius em maio, isto é, 0,74°C a mais que a média de 14,8°C no século XX.

ONU faz no Quênia sua primeira Assembleia Ambiental

Evento foi proposto durante a conferência Rio+20. Reunião de países discutirá os mais diversos temas ambientais.

Suprema Corte dos EUA reduz poderes de Obama na política climática

Em seu veredito, a Suprema Corte considerou que a Agência Federal para a proteção Ambiental não pode obrigar as usinas termelétricas a carvão, as refinarias ou as indústrias químicas a aplicar controles de suas emissões quando quiserem fazer reformas ou ampliações, em nome da separação de poderes.

Esferas pré-colombianas da Costa Rica tornam-se patrimônio da Unesco

Sítio é considerado 'testemunha da história' e por isso foi tombado. Área tem túmulos e esferas de pedra com 0,7 m a 2,57 m de diâmetro.

Apple, Google e Samsung trabalham em apps para medir açúcar no sangue

Iniciativa visa popularizar tecnologia de dispositivos vestíveis, dizem fontes. Mercado de medição de glicose valerá mais de US\$ 12 bi, diz empresa.

Fêmea de elefante é adotada por família de búfalos no Zimbábue

Pais foram mortos por caçadores nos anos 70. Criadores tentaram reintroduzi-la a outros elefantes, sem sucesso.

Kit portátil promete bebê de proveta a R\$ 600

Sistema simples de fertilização usa produtos básicos disponíveis no armário da cozinha e cabe em uma caixa de sapatos.

Florestas podem reduzir pobreza e promover desenvolvimento rural, diz FAO

Em relatório apresentado na segunda-feira em Roma, por ocasião da 22ª Sessão do Comitê da FAO para as Florestas, a organização internacional defendeu que os países devem apostar em políticas destinadas a manter e a potencializar as contribuições das florestas para os meios de subsistência, a alimentação, a saúde e a energia.

OMS divulga ter encontrado no Brasil vírus causador da poliomielite

Vírus estava em esgoto colhido no Aeroporto de Viracopos, em Campinas. Não há casos de contaminação humana, afirma a agência da ONU.

Mistério de 'ilha mágica' em lua de Saturno intriga astrônomos

Cientistas tentam entender fenômeno em Titã, satélite que teria características parecidas com a Terra; região pode ter tido gelo.

Animais selvagens invadem região central de Berlim

Capital alemã tem cerca de 20 mil espécies de animais e plantas selvagens; com frequência, é possível ver raposas atravessando as movimentadas ruas do centro.

Micróbios devoram plástico e ajudam a reduzir lixo marinho, diz estudo

Criaturas microscópicas estariam biodegradando toneladas de rejeitos. Principal alvo são os microplásticos, partículas com menos de 5 mm.

Tremor de 7,2 na escala Richter atinge ilha no norte da Nova Zelândia

O terremoto não provocou alerta de tsunami com capacidade de causar danos, segundo o Centro de Alerta de Tsunamis do Pacífico.

Epidemia de ebola em parte da África está fora de controle, diz organização

Médicos Sem Fronteiras divulgaram comunicado nesta segunda-feira. OMS já registrou 337 mortes; é o maior surto desde 1976.

Estudo americano aponta relação entre autismo e pesticidas

Pesquisadores compararam dados sobre uso de pesticida na Califórnia. Chance de autismo aumenta 66% se grávida viver próxima ao uso do tóxico.

Terremoto atinge Alasca e governo emite alerta para tsunami

O abalo sísmico ocorreu a 24 quilômetros da Ilha Little Stikin e a uma profundidade de 114,4 quilômetros.

Fórum da ONU busca endurecer leis ambientais nesta semana

Assembleia Ambiental se reunirá em Nairóbi de 23 a 27 de junho. 'Frequentemente legislação ambiental não é eficaz', diz Achim Steiner.

Amazônia Legal estará toda mapeada até 2017, informa órgão

Cerca de 55 mil km² de hidrovias navegáveis e 1,2 milhão de km² terrestres já foram cartografados. O Projeto Cartografia da Amazônia foi lançado em 2008 e visa a atualizar e concluir as cartografias terrestre, geológica e náutica dos 35% da Região da Amazônia sem informações na escala de 1:100.000.

Terremoto de 5,5 graus sacode Lima e costa central do Peru

Não há informação de feridos ou de danos; não houve alerta de tsunami. Tremor durou 40 segundos e assustou população.

Em Fukushima, sistema de descontaminação da água é religado

Tepco reiniciou remoção de radionuclídeos antes da descarga no mar. Água contaminada encheu central nuclear acidentada de Fukushima Daiichi.

Pesquisa aproxima cientistas do nascimento do cosmos

O universo é ainda um grande mistério. Mas cientistas europeus, que comprovaram a existência da "partícula de Deus", trabalham para descobrir a composição de 25% do cosmos no Grande Colisor de Hádrons do centro Cern.

Cientistas descobrem como estresse pode levar a ataque cardíaco e AVC

Estresse leva à superprodução de células de defesa, os glóbulos brancos. Excesso delas se acumula na parede das artérias e dificulta circulação.

Milhares de pessoas se reúnem em Stonehenge para celebrar o solstício

Cerca de 4 mil pessoas foram ao monumento megalítico. Reunião celebra solstício de verão, dia mais longo do ano.

Governo envia ao Congresso projeto de lei para estimular bioindústria no País

Para a ministra do Meio Ambiente, medida é uma forma de trazer mais reconhecimento ao patrimônio genético nacional.

Cidadela de Erbil, no Iraque, declarada Patrimônio Mundial pela Unesco

A inscrição da cidade "é um presente que vocês dão a meu povo e a todas as comunidades do Iraque, a todas as cores de meu país, que tanto precisa neste momento de uma nota de otimismo", afirmou o representante iraquianos.

Infestação de dengue volta a aumentar e preocupa em Volta Redonda, RJ

LIRAA atingiu em junho 2,2 %, contra 1,6 % em março, diz prefeitura. Cidade registrou 307 notificações da doença, sendo 99 casos confirmados.

Quase mil aves marinhas são encontradas mortas no Peru

Possível aquecimento do mar pode ser causa dos óbitos. Temperatura maior é devido ao fenômeno El Niño.

Filhote da menor espécie de macaco do mundo nasce em São Carlos, SP

Adulto tem 15 centímetros e filhote é do tamanho de uma tampa de caneta. Parque Ecológico da cidade possui a maior colônia em cativeiro do Brasil.

Gestor ambiental aposta em forno solar como alternativa energética

Equipamento é capaz de assar e cozinhar todo os tipos de alimentos. Com a ajuda da energia do sol, aquecimento chega a 200 graus celsius.

Governo publica portaria que valida plano para conservar onça-pintada

ICMBio vai implementar ações até 2017 para conter redução da população. Em quase 30 anos, houve um declínio de 30% na população de onças.

Desmatamento da Amazônia cai 24% de agosto de 2013 a maio, diz Inpe

Devastação foi de 1.771,86 km²; no período anterior, foram 2.337,81 km². Nos dez meses, floresta perdeu área maior que o tamanho da cidade de SP.

Inpe começa a receber sinais do satélite brasileiro NanosatC-BR1

Equipamento é o primeiro satélite do tipo CubeSat desenvolvido no país. Nanosatélite vai estudar distúrbios na magnetosfera.

Guitar Hero ecológico ensina a identificar canto das aves

Cientistas do Laboratório de Ornitologia da Universidade de Cornell criaram um Guitar Hero ecológico. O novo jogo, chamado Bird Song Hero, tem como objetivo ensinar os observadores de aves a identificar os cantos.

Em SP, número de casos de dengue já é o dobro do pior ano da história

Em 2014, 11.392 pessoas já foram infectadas. Número é quase duas vezes maior que em 2010, que teve 5.866 casos.

Céline Cousteau produz documentário sobre desafios dos índios da Amazônia

O Vale do Javali é terra de diversas comunidades indígenas, algumas ainda desconhecidas, e considerado um dos lugares mais isolados do planeta.

Robô Pepper é convidado de honra em evento no Japão

Máquina será vendida a partir de 2015 por cerca de R\$ 4,2 mil. Robô consegue ler emoções humanas e pode 'aprender'.

Aberta inscrição para encontros de povos tradicionais do Sul e Centro-Oeste

Os encontros têm o objetivo de avaliar e aprimorar a implementação da Política Nacional de Desenvolvimento Sustentável dos Povos e Comunidades Tradicionais.

Protestos afetam vendas em festival de carne canina na China

O festival, previsto para este sábado em Yulin, na região de Guangxi, costuma exibir cães confinados em jaulas lotadas antes de serem mortos e cozidos, mas tem sido alvo da oposição crescente dos ativistas, destacando o pequeno, porém crescente, movimento de defesa dos direitos dos animais na China.

Jovem que testou exoesqueleto sonha em ir a Paralimpíada

O atleta Juliano Alves Pinto testou o projeto "Andar de Novo", liderado pelo neurocientista brasileiro Miguel Nicolelis.

Reino Unido lança maior estudo mundial sobre demência senil

Pesquisa analisará hábitos de vida de dois milhões de voluntários. Demência senil é vilã da humanidade, diz premiê David Cameron.

Governo envia proposta de lei ao Congresso sobre patrimônio genético

Patrimônio genético inclui micro-organismos, espécies vegetais e animais. Se lei for aprovada, empresas não precisarão de autorização para pesquisa.

Parques são opção para turistas no período da Copa

Brasil dispõe de 69 parques nacionais com natureza totalmente preservada, cachoeiras, trilhas, mirantes, e fauna e flora exuberantes.

Brasil proíbe pesca da piracatinga na Amazônia até 2020

Muito apreciada na Colômbia, a piracatinga é um peixe desvalorizado no Brasil por se alimentar de animais em decomposição. Para capturá-lo, pescadores utilizam golfinhos amazônicos - em especial o boto-vermelho, também conhecido como boto-cor-de-rosa - e jacarés como isca.

Telhados industriais sem uso viram fazendas urbanas na Suíça

Em Basel, na Suíça, o arquiteto Antonio Scarponi decidiu criar uma oportunidade concreta para as atividades agrárias tirarem proveito dos espaços não utilizados.

16 / 06 / 2014 25 de 96 distritos têm incidência de dengue considerada média ou alta

Número de infectados chegou a 10.124 mil em 2014. Alto de Pinheiros e Limão estão entre os 25 distritos mais afetados.

16 / 06 / 2014 Após mais de 50 horas, chuvas dão tréquia em Natal/RN

Emparn registrou 285 mm de chuvas em 48 horas. Chuvas começaram nas primeiras horas da manhã de sexta-feira (13).

16 / 06 / 2014 Defeso da sardinha vai até 31 de julho

O defeso atual, durante o inverno, é feito para possibilitar o crescimento do pescado até o tamanho ideal para captura.

16 / 06 / 2014 Nível do Rio Iguaçu volta a subir em União da Vitória/PR e atinge 8,07 metros

Previsão é de que continue chovendo na região, afirma o Simepar. Nível normal do trecho do rio que passa pelo município é de 2,5 metros.

16 / 06 / 2014 Borboletas são tema de estudos na Serra do Japi em Jundiá/SP

No local há pelo menos 650 espécies, apontam biólogos. Segundo especialista, insetos são responsáveis por mudanças na floresta.

16 / 06 / 2014 Reserva do Taim une preservação ambiental e produção de arroz

Estação ecológica fica no RS, quase na fronteira com o Uruguai. No local se produz 6% de todo o arroz cultivado no Brasil, 732 mil toneladas por ano.

16 / 06 / 2014 China pede que G77 culpe países ricos por mudança climática

O vice-presidente da Assembleia Nacional Popular da China, Chen Zhu, pediu neste domingo (15) à Cúpula do G77 na Bolívia que lembre às nações ricas o princípio de responsabilidade comum e diferenciada sobre a mudança climática e que devem cooperar com as nações em desenvolvimento para enfrentá-lo.

16 / 06 / 2014 MS é o 8º do país em recolhimento de embalagens de agrotóxicos

Entre janeiro e maio foram recolhidas no estado 1.204 t de embalagens. Em relação ao mesmo período de 2013, volume de 2014 é 3,7% maior.

16 / 06 / 2014 ONG trabalha preservação do peixe mero no litoral do Piauí

Espécie está criticamente ameaçado de extinção a nível nacional e mundial. Trabalho de conservação do peixe ocorre na Pedra do Sal em Ilha Grande.

16 / 06 / 2014 Projeto Tamar realiza soltura de tartarugas em comemoração a marca

Marca atingiu 2 milhões de tartarugas soltas no mar nesta temporada. Soltura também comemora dia internacional da tartaruga.

16 / 06 / 2014 Ciclistas tiram a roupa no em 20 países por transporte limpo

Cerca de 800 ciclistas parcial ou totalmente despidos desfilaram neste sábado pelas principais avenidas da Cidade do México como parte da manifestação "World Naked Bike Ride", convocada em nível global para promover o uso da bicicleta e de outros meios de transporte menos poluentes.

16 / 06 / 2014 Vendaval atinge 11 cidades em Santa Catarina

O vendaval na madrugada de sábado (14) atingiu os municípios de Entre Rios, São Domingos, Ipuagu, Xanxerê, Bom Jesus, Ponte Serrada, Ouro Verde e Faxinal dos Guedes. No Estado, 400 mil pessoas foram afetadas pela chuva forte que caiu na última semana.

16 / 06 / 2014 Dinossauros tinham 'sangue morno', dizem cientistas

Nem sangue frio e nem sangue quente; esses animais possuíam uma característica que hoje só pode ser encontrada em animais raros e no atum.

16 / 06 / 2014 'Falha grave' causou prejuízo de R\$ 11 milhões ao Greenpeace, diz ONG

Funcionário teria feito aplicação que causou a perda do dinheiro. Orçamento anual da ONG ambiental é de quase R\$ 1 bilhão.

16 / 06 / 2014 Negociação climática da ONU para acordo sobre emissões tem avanço

Encontro na Alemanha alinhou discussão para plano global sobre o tema. Sinais da China e EUA sobre emissões aumentaram esperanças.

16 / 06 / 2014 Obama pede combate contra mudança climática e anuncia fundo milionário

O presidente americano anunciou um fundo de US\$ 1 bilhão para as comunidades que forem afetadas pelos desastres naturais, com o qual pretende reconstruir e preparar a população perante o impacto dos fenômenos meteorológicos extremos.

17 / 06 / 2014 Sementes crioulas trazem esperança ao plantio de agricultores em Caruaru/PE

Grãos são mais resistentes à pragas, doenças e mais tolerante à seca. IPA faz projeto de conscientização para os cultivadores usarem as sementes.

17 / 06 / 2014 Corte seletivo e fogo fazem Floresta Amazônica perder 54 milhões de toneladas de carbono por ano

Perda equivale a 40% da produzida pelo desmatamento total. Pesquisa cruzou dados de satélites e de pesquisas de campo em 225 áreas.

17 / 06 / 2014 Ministra defende modernização da convenção da ONU sobre desertificação

"Nós temos uma necessidade de rever o federalismo cooperativo. É muito complexo e muito caro esse modelo, em que todo mundo pega dinheiro e trabalha na relação formal com o governo federal, quando muitas das soluções se dão no trabalho com os municípios e com os estados", disse a ministra Izabella Teixeira.

17 / 06 / 2014 Cientistas testam Bob, o robô 'vigia noturno'

Autômato percorre salas de escritório e alerta para anormalidades ou coisas fora do lugar.

17 / 06 / 2014 Estudo encontra grande quantidade de homens com voz aguda no Chile

O estudo, feito com uma amostra de 126 homens entre 16 e 45 anos, detectou a existência de 13,4% de pessoas com puberfonia, uma condição em que a laringe não está bem situada, o que dificulta as cordas vocais produzirem sons graves.

17 / 06 / 2014 Chinesa transforma casa em fazenda para 100 mil baratas

Iuane decidiu se dedicar à criação no último ano, quando viu uma reportagem sobre o uso de insetos em remédios e, inclusive, em algumas áreas da gastronomia. A partir daí, a cidadã chinesa fez um investimento inicial de 10 mil iuanes (cerca de US\$ 1,6 mil) para comprar 20 quilos de barata.

17 / 06 / 2014 'Pâncreas biônico' feito com iPhone combate diabetes com eficácia

Dispositivo injeta automaticamente insulina e glucagon na quantidade certa. Bombas de insulina disponíveis hoje exigem intervenção do paciente.

17 / 06 / 2014 Agência britânica pede para que não se lave o frango antes de cozinhá-lo

Prática pode espalhar bactéria perigosa, segundo a FSA. Mais de 280 mil pessoas se intoxicam no Reino Unido por ano.

17 / 06 / 2014 Ministério da Saúde envia remédios e insumos para vítimas das chuvas em Natal/RN

A prefeitura de Natal decretou na segunda-feira (16) estado de calamidade. Segundo o decreto, todas as lagoas de captação de águas das chuvas transbordaram, o que provocou alagamento em vários pontos da cidade.

17 / 06 / 2014 Defesa Civil diz que mais de 700 mil foram atingidos pela chuva no Paraná

Último boletim foi divulgado nesta segunda-feira (17); 11 pessoas morreram. Em União da Vitória, no sul do estado, nível do Rio Iguaçu voltou a subir.

17 / 06 / 2014 Estudantes desenvolvem telhado que despolui ar

Solução criada por alunos da Universidade da Califórnia reduz em até 97% certos tipos poluentes atmosféricos - e não custa caro.

17 / 06 / 2014 Reconstrução em 7 cidades do Norte de SC pode custar cerca de R\$ 100 mi

Prefeituras aguardam recursos para reconstruir cidades atingidas por chuva. Jaraguá do Sul e Guaramirim estimam juntas prejuízos de R\$ 70 milhões.

17 / 06 / 2014 Radares da Nasa revelam imagens de asteroide gigantesco

Imagens captadas pelos radares da Nasa mostram detalhes do asteroide 2014 HQ124, que ganhou o apelido de "A Fera".

17 / 06 / 2014 Equador acusa cientistas dos EUA de tirar sangue de índios ilegalmente

Houve cerca de "3.500 procedimentos" de extração de sangue, disse René Ramírez, titular da secretaria (ministério) de Educação Superior e Ciência do Equador.

SCIENCE

A cool temperate climate on the Antarctic Peninsula through the latest Cretaceous to early Paleogene

David B. Kemp, Stuart A. Robinson, J. Alistair Crame, Jane E. Francis, Jon Ineson, Rowan J. Whittle, Vanessa Bowman, and Charlotte O'Brien

Geology. 2014; 42(7): p. 583-586

<http://geology.gsapubs.org/cgi/content/abstract/42/7/583?source=gsw>

Where have all the craters gone? Earth's bombardment history and the expected terrestrial cratering record

B.C. Johnson and T.J. Bowling

Geology. 2014; 42(7): p. 587-590

<http://geology.gsapubs.org/cgi/content/abstract/42/7/587?source=gsw>

Tibetan garnet records early Eocene initiation of thickening in the Himalaya

Matthijs A. Smit, Bradley R. Hacker, and Jeffrey Lee

Geology. 2014; 42(7): p. 591-594

<http://geology.gsapubs.org/cgi/content/abstract/42/7/591?source=gsw>

Volcanic ash provenance from zircon dust with an application to Maya pottery

Kevin T. Coffey, Axel K. Schmitt, Anabel Ford, Frank J. Spera, Constance Christensen, and Jennifer Garrison

Geology. 2014; 42(7): p. 595-598

<http://geology.gsapubs.org/cgi/content/abstract/42/7/595?source=gsw>

Mobilizing salt: Magma-salt interactions

Nick Schofield, Ian Alsop, John Warren, John R. Underhill, Rouwen Lehne, Wolfgang Beer, and Volker Lukas

Geology. 2014; 42(7): p. 599-602

<http://geology.gsapubs.org/cgi/content/abstract/42/7/599?source=gsw>

Paleomagnetism reveals the emplacement age of tsunamigenic coral boulders on Ishigaki Island, Japan

T. Sato, N. Nakamura, K. Goto, Y. Kumagai, H. Nagahama, and K. Minoura

Geology. 2014; 42(7): p. 603-606

<http://geology.gsapubs.org/cgi/content/abstract/42/7/603?source=gsw>

Mid-Cretaceous to Paleocene North American drainage reorganization from detrital zircons

M. Blum and M. Pecha

Geology. 2014; 42(7): p. 607-610

<http://geology.gsapubs.org/cgi/content/abstract/42/7/607?source=gs>

A nanolite record of eruption style transition

Mayumi Mujin and Michihiko Nakamura

Geology. 2014; 42(7): p. 611-614

<http://geology.gsapubs.org/cgi/content/abstract/42/7/611?source=gs>

Could microorganisms be preserved in Mars gypsum? Insights from terrestrial examples

Kathleen Counter Benison and Francis J. Karmanocky, III

Geology. 2014; 42(7): p. 615-618

<http://geology.gsapubs.org/cgi/content/abstract/42/7/615?source=gs>

An iodine record of Paleoproterozoic surface ocean oxygenation

Dalton S. Hardisty, Zunli Lu, Noah J. Planavsky, Andrey Bekker, Pascal

Philippot, Xiaoli Zhou, and Timothy W. Lyons

Geology. 2014; 42(7): p. 619-622

<http://geology.gsapubs.org/cgi/content/abstract/42/7/619?source=gs>

Could microorganisms be preserved in Mars gypsum? Insights from terrestrial examples

Kathleen Counter Benison and Francis J. Karmanocky, III

Geology. 2014; 42(7): p. 615-618

<http://geology.gsapubs.org/cgi/content/abstract/42/7/615?ct=ct>

Small grains, big rivers, continental concepts

Timothy F. Lawton

Geology. 2014; 42(7): p. 639-640 Open Access

<http://geology.gsapubs.org/cgi/content/full/42/7/639?ct=ct>

Hot faults: Iridescent slip surfaces with metallic luster document

high-temperature ancient seismicity in the Wasatch fault zone, Utah, USA

James P. Evans, Mitchell R. Prante, Susanne U. Janecke, Alexis K. Ault, and Dennis L. Newell

Geology. 2014; 42(7): p. 623-626

<http://geology.gsapubs.org/cgi/content/abstract/42/7/623?ct=ct>

Anatomy of a diffuse cryptic suture zone: An example from the Bohemian Massif, European Variscides: COMMENT

Uwe Kroner and Rolf L. Romer

Geology. 2014; 42(7): p. e340 Open Access

<http://geology.gsapubs.org/cgi/reprint/42/7/e340?ct=ct>

Mid-Cretaceous to Paleocene North American drainage reorganization from detrital zircons

M. Blum and M. Pecha

Geology. 2014; 42(7): p. 607-610

<http://geology.gsapubs.org/cgi/content/abstract/42/7/607?ct=ct>

Mobilizing salt: Magma-salt interactions

Nick Schofield, Ian Alsop, John Warren, John R. Underhill, Rouwen

Lehne, Wolfgang Beer, and Volker Lukas

Geology. 2014; 42(7): p. 599-602

<http://geology.gsapubs.org/cgi/content/abstract/42/7/599?ct=ct>

An iodine record of Paleoproterozoic surface ocean oxygenation

Dalton S. Hardisty, Zunli Lu, Noah J. Planavsky, Andrey Bekker, Pascal

Philippot, Xiaoli Zhou, and Timothy W. Lyons

Geology. 2014; 42(7): p. 619-622

<http://geology.gsapubs.org/cgi/content/abstract/42/7/619?ct=ct>

Polygonal faults in chalk: Insights from extensive exposures of the Khoman Formation, Western Desert, Egypt: COMMENT

Abotalib Zaki, Mohamed Sultan, and Racha Elkadiri

Geology. 2014; 42(7): p. e342 Open Access

<http://geology.gsapubs.org/cgi/reprint/42/7/e342?ct=ct>

Tibetan garnet records early Eocene initiation of thickening in the Himalaya

Matthijs A. Smit, Bradley R. Hacker, and Jeffrey Lee

- Geology. 2014; 42(7): p. 591-594
<http://geology.gsapubs.org/cgi/content/abstract/42/7/591?ct=ct>
- Paleomagnetism reveals the emplacement age of tsunamigenic coral boulders on Ishigaki Island, Japan
 T. Sato, N. Nakamura, K. Goto, Y. Kumagai, H. Nagahama, and K. Minoura
 Geology. 2014; 42(7): p. 603-606 Open Access
<http://geology.gsapubs.org/cgi/content/abstract/42/7/603?ct=ct>
- Paleoarchean ocean crust and mantle excavated by meteor impact: Insight into early crustal processes and tectonics
 Alexandra E. Krull-Davatzes, Gary R. Byerly, and Donald R. Lowe
 Geology. 2014; 42(7): p. 635-638
<http://geology.gsapubs.org/cgi/content/abstract/42/7/635?ct=ct>
- Decoupling of the carbon cycle during Ocean Anoxic Event 2
 James S. Eldrett, Daniel Minisini, and Steven C. Bergman
 Geology. 2014; 42(7): p. 567-570
<http://geology.gsapubs.org/cgi/content/abstract/42/7/567?ct=ct>
- A cool temperate climate on the Antarctic Peninsula through the latest Cretaceous to early Paleogene
 David B. Kemp, Stuart A. Robinson, J. Alistair Crame, Jane E. Francis, Jon Ineson, Rowan J. Whittle, Vanessa Bowman, and Charlotte O'Brien
 Geology. 2014; 42(7): p. 583-586 Open Access
<http://geology.gsapubs.org/cgi/content/abstract/42/7/583?ct=ct>
- Black Sea desiccation during the Messinian Salinity Crisis: Fact or fiction?
 Arjen Grothe, Francesca Sangiorgi, Yannick R. Mulders, Iuliana Vasiliev, Gert-Jan Reichert, Henk Brinkhuis, Marius Stoica, and Wout Krijgsman
 Geology. 2014; 42(7): p. 563-566
<http://geology.gsapubs.org/cgi/content/abstract/42/7/563?ct=ct>
- Towards accurate numerical calibration of the Late Triassic: High-precision U-Pb geochronology constraints on the duration of the Rhaetian
 Jorn-Frederik Wotzlaw, Jean Guex, Annachiara Bartolini, Yves Gallet, Leopold Krystyn, Christopher A. McRoberts, David Taylor, Blair Schoene, and Urs Schaltegger
 Geology. 2014; 42(7): p. 571-574
<http://geology.gsapubs.org/cgi/content/abstract/42/7/571?ct=ct>
- Trilobites in early Cambrian tidal flats and the landward expansion of the Cambrian explosion: COMMENT
 John R. Paterson
 Geology. 2014; 42(7): p. e341 Open Access
<http://geology.gsapubs.org/cgi/reprint/42/7/e341?ct=ct>
- Internal structure, kinematics, and growth of a salt wall: Insights from 3-D seismic data
 Christopher A-L. Jackson, Martin P.A. Jackson, Michael R. Hudec, and Clara Rodriguez
 Geology. 2014; 42(7): p. 618
<http://geology.gsapubs.org/cgi/content/full/42/7/618?ct=ct>
- Where have all the craters gone? Earth's bombardment history and the expected terrestrial cratering record
 B.C. Johnson and T.J. Bowling
 Geology. 2014; 42(7): p. 587-590
<http://geology.gsapubs.org/cgi/content/abstract/42/7/587?ct=ct>
- Cycles of explosive and effusive eruptions at Kīlauea Volcano, Hawai'i
 Donald A. Swanson, Timothy R. Rose, Adonara E. Mucek, Michael O. Garcia, Richard S. Fiske, and Larry G. Mastin
 Geology. 2014; 42(7): p. 631-634
<http://geology.gsapubs.org/cgi/content/abstract/42/7/631?ct=ct>
- Disentangling abrupt deglacial hydrological changes in northern South America: Insolation versus oceanic forcing
 J. Hoffmann, A. Bahr, S. Voigt, J. Schonfeld, D. Nurnberg, and J. Rethemeyer
 Geology. 2014; 42(7): p. 579-582

<http://geology.gsapubs.org/cgi/content/abstract/42/7/579?ct=ct>

Volcanic ash provenance from zircon dust with an application to Maya pottery

Kevin T. Coffey, Axel K. Schmitt, Anabel Ford, Frank J. Spera, Constance Christensen, and Jennifer Garrison
Geology. 2014; 42(7): p. 595-598

<http://geology.gsapubs.org/cgi/content/abstract/42/7/595?ct=ct>

Thresholds for Paleozoic ice sheet initiation

D.P. Lowry, C.J. Poulsen, D.E. Horton, T.H. Torsvik, and D. Pollard
Geology. 2014; 42(7): p. 627-630

<http://geology.gsapubs.org/cgi/content/abstract/42/7/627?ct=ct>

Coin collectors and museum donors: contextualizing Delfino Trucchi and Antonino Salinas in early post-Unification Sicily (1868-73)

Antonino Crisa
J Hist Collections. 2014; 26(2): p. 277-286

<http://jhc.oxfordjournals.org/cgi/content/abstract/26/2/277?ct=ct>

A nanolite record of eruption style transition

Mayumi Mujin and Michihiko Nakamura

Geology. 2014; 42(7): p. 611-614

<http://geology.gsapubs.org/cgi/content/abstract/42/7/611?ct=ct>

Stevensite in the modern thrombolites of Lake Clifton, Western Australia: A missing link in microbialite mineralization?

Robert V. Burne, Linda S. Moore, Andrew G. Christy, Ulrike Troitzsch, Penelope L. King, Anna M. Carnerup, and P. Joseph Hamilton

Geology. 2014; 42(7): p. 575-578

<http://geology.gsapubs.org/cgi/content/abstract/42/7/575?ct=ct>

Altitudinal gradients, plant hybrid zones and evolutionary novelty

Richard J. Abbott and Adrian C. Brennan

Phil Trans R Soc B. 2014; 369(1648): p. 20130346

<http://rspb.royalsocietypublishing.org/cgi/content/abstract/369/1648/20130346?ct=ct>

Influence of thermal equilibrium and microstructure of dense zircon-doped dolomite refractories on rate of hydration and slag attack

Abdel Monem Soltan and Mohamed Serry

European Journal of Mineralogy. published 22 June 2014,
10.1127/0935-1221/2014/0026-2402

<http://eurjmin.geoscienceworld.org/cgi/content/abstract/0026-2402v1?ct=ct>

Race, Age, and Identity Transformations in the Transition from High School to College for Black and First-generation White Men

Amy C. Wilkins

Sociology of Education. 2014; 87(3): p. 171-187

<http://soe.sagepub.com/cgi/content/abstract/87/3/171?ct=ct>

SEDIMENT EFFECTS ON THE PRESERVATION OF BURGESS SHALE-TYPE COMPRESSION FOSSILS

LUCY A. WILSON and NICHOLAS J. BUTTERFIELD

Palaios. 2014; 29(4): p. 145-154

<http://palaios.sepmonline.org/cgi/content/abstract/29/4/145?ct=ct>

Extreme adaptations for aquatic ectoparasitism in a Jurassic fly larva

Jun Chen, Bo Wang, Michael S Engel, Torsten Wappler, Edmund A Jarzembowski, Haichun Zhang, Xiaoli Wang, Xiaoting Zheng, and Jes Rust
eLife Sci. 2014; 3(0): p. e02844 Open Access

<http://elifesciences.org/cgi/content/abstract/3/0/e02844?ct=ct>

STOWING AWAY ON SHIPS THAT PASS IN THE NIGHT: SCLEROBIONT ASSEMBLAGES ON INDIVIDUALLY DATED BIVALVE AND BRACHIOPOD SHELLS FROM A SUBTROPICAL SHELF

DAVID L. RODLAND, MARCELLO G. SIMOES, RICHARD A. KRAUSE, Jr., and MICHAEL J. KOWALEWSKI

Palaios. 2014; 29(4): p. 170-183

<http://palaios.sepmonline.org/cgi/content/abstract/29/4/170?ct=ct>

A PALEOECOLOGIC COMPARISON OF TWO EDRIOASTEROID (ECHINODERMATA) ENCRUSTED PAVEMENTS FROM THE UPPER ORDOVICIAN CORRYVILLE FORMATION OF FLORENCE, KENTUCKY AND THE MIAMITOWN SHALE OF SHARONVILLE, OHIO, U.S.A

RENE A. SHROAT-LEWIS, COLIN D. SUMRALL, MICHAEL L. MCKINNEY, and DAVID L. MEYER

Palaos. 2014; 29(4): p. 154-169
<http://palaos.sepmonline.org/cgi/content/abstract/29/4/154?ct=ct>

Diverse rupture modes for surface-deforming upper plate earthquakes in the southern Puget Lowland of Washington State

Alan R. Nelson, Stephen F. Personius, Brian L. Sherrod, Harvey M. Kelsey, Samuel Y. Johnson, Lee-Ann Bradley, and Ray E. Wells
Geosphere. published 24 June 2014, 10.1130/GES00967.1
<http://geosphere.gsapubs.org/cgi/content/abstract/GES00967.1v1?ct=ct>

Proterozoic oxygen rise linked to shifting balance between seafloor and terrestrial weathering

Benjamin Mills, Timothy M. Lenton, and Andrew J. Watson
PNAS. 2014; 111(25): p. 9073-9078 Open Access
<http://www.pnas.org/cgi/content/abstract/111/25/9073?ct=ct>

EARLY CRETACEOUS TURTLE TRACKS AND SKELETONS FROM THE JUNGGAR BASIN, XINJIANG, CHINA

LIDA XING, MARCO AVANZINI, MARTIN G. LOCKLEY, TETSUTO MIYASHITA, HENDRIK KLEIN, JIANPING ZHANG, QING HE, LIQI QI, JULIEN D. DIVAY, and CHENGKAI JIA
Palaos. 2014; 29(4): p. 137-144
<http://palaos.sepmonline.org/cgi/content/abstract/29/4/137?ct=ct>

RADIOLOGICAL EXPOSURE ASSESSMENT FROM SOIL, UNDERGROUND AND SURFACE WATER IN COMMUNITIES ALONG THE COAST OF A SHALLOW WATER OFFSHORE OILFIELD IN GHANA

D. O. Kpeglo, J. Mantero, E. O. Darko, G. Emi-Reynolds, E. H. K Akaho, A. Faanu, and R. Garcia-Tenorio
Radiat Prot Dosimetry. published 25 June 2014, 10.1093/rpd/ncu197
<http://rpd.oxfordjournals.org/cgi/content/abstract/ncu197v1?ct=ct>

Packing density of rigid aggregates is independent of scale

Christopher D. Zangmeister, James G. Radney, Lance T. Dockery, Jessica T. Young, Xiaofei Ma, Rian You, and Michael R. Zachariah
PNAS. 2014; 111(25): p. 9037-9041
<http://www.pnas.org/cgi/content/abstract/111/25/9037?ct=ct>

The National Academy of Sciences at 150

Steve Olson
PNAS. 2014; 111(Supplement_2): p. 9327-9364
http://www.pnas.org/cgi/content/full/111/Supplement_2/9327?ct=ct

Experimental study of tribological properties of surface texture on rock bit sliding bearings

GR Wang, L Zhong, X He, QM Yang, CH Yang, and L Jiang
Proceedings of the Institution of Mechanical Engineers, Part J: Journal of Engineering Tribology. published 24 June 2014, 10.1177/1350650114539937
<http://pij.sagepub.com/cgi/content/abstract/1350650114539937v1?ct=ct>

Assembly of a large earthquake from a complex fault system: Surface rupture kinematics of the 4 April 2010 El Mayor-Cucapah (Mexico) Mw 7.2 earthquake

John M. Fletcher, Orlando J. Teran, Thomas K. Rockwell, Michael E. Oskin, Kenneth W. Hudnut, Karl J. Mueller, Ronald M. Spelz, Sinan O. Akciz, Eulalia Masana, Geoff Faneros, Eric J. Fielding, Sebastien Leprince, Alexander E. Morelan, Joann Stock, David K. Lynch, Austin J. Elliott, Peter Gold, Jing Liu-Zeng, Alejandro Gonzalez-Ortega, Alejandro Hinojosa-Corona, and Javier Gonzalez-Garcia
Geosphere. published 24 June 2014, 10.1130/GES00933.1
<http://geosphere.gsapubs.org/cgi/content/abstract/GES00933.1v1?ct=ct>

GSW JOURNAL

Geoheritage and sport climbing activities: using the Montestrutto cliff (Austroalpine domain, Western Alps) as an example of scientific and educational representativeness

Irene Bollati, Michele Zucali, Cristina Giovenco, and Manuela Pelfini
Italian Journal of Geoscience. 2014; 133(2): p. 187-199
<http://ItalianJGeo.geoscienceworld.org/cgi/content/abstract/133/2/187?ct=ct>

LiDAR-based digital outcrops for sedimentological analysis: workflows and techniques

- F. Rarity, X. M. T. van Lanen, D. Hodgetts, R. L. Gawthorpe, P. Wilson, I. Fabuel-Perez, and J. Redfern
Geological Society, London, Special Publications. 2014; 387(1): p. 153-183
<http://sp.lyellcollection.org/cgi/content/abstract/387/1/153?ct=ct>
- Integrated charge and seal assessment in the Monagas fold and thrust belt of Venezuela
Martin Neumaier, Ralf Littke, Thomas Hantschel, Laurent Maerten, Jean-Pierre Joonnekindt, and Peter Kukla
AAPG Bulletin. 2014; 98(7): p. 1325-1350
<http://aapgbull.geoscienceworld.org/cgi/content/abstract/98/7/1325?ct=ct>
- Neogene-Quaternary postrift tectonic reactivation of the Bohai Bay Basin, eastern China
Lei Huang, Chiyang Liu, Yingbin Wang, Junfeng Zhao, and Nigel P. Mountney
AAPG Bulletin. 2014; 98(7): p. 1377-1400
<http://aapgbull.geoscienceworld.org/cgi/content/abstract/98/7/1377?ct=ct>
- A hierarchical approach for evaluating fluvial systems: Architectural analysis and sequential evolution of the high net-sand content, middle Wasatch Formation, Uinta Basin, Utah
Grace L. Ford and David R. Pyles
AAPG Bulletin. 2014; 98(7): p. 1273-1304
<http://aapgbull.geoscienceworld.org/cgi/content/abstract/98/7/1273?ct=ct>
- Calibrating discrete fracture-network models with a carbonate three-dimensional outcrop fracture network: Implications for naturally fractured reservoir modeling
K. Bisdom, B. D. M. Gauthier, G. Bertotti, and N. J. Hardebol
AAPG Bulletin. 2014; 98(7): p. 1351-1376
<http://aapgbull.geoscienceworld.org/cgi/content/abstract/98/7/1351?ct=ct>
- Distribution of discontinuous mudstone beds within wave-dominated shallow-marine deposits: Star Point Sandstone and Blackhawk Formation, Eastern Utah
Christian Haug Eide, John Howell, and Simon Buckley
AAPG Bulletin. 2014; 98(7): p. 1401-1429
<http://aapgbull.geoscienceworld.org/cgi/content/abstract/98/7/1401?ct=ct>
- Creation and utility of a large fit-for-purpose earth model in a giant mature field: Kern River field, California
Dale Beeson, Katrina Hoffman, Dave Larue, Jerry McNaboe, and Janae Singer
AAPG Bulletin. 2014; 98(7): p. 1305-1324
<http://aapgbull.geoscienceworld.org/cgi/content/abstract/98/7/1305?ct=ct>
- Paleoseismology of the Southern Section of the Black Mountains and Southern Death Valley Fault Zones, Death Valley, United States
MARSHA F. SOHN, JEFFREY R. KNOTT, and SHANNON A. MAHAN
Environmental and Engineering Geoscience. 2014; 20(2): p. 177-198
<http://eeg.geoscienceworld.org/cgi/content/abstract/20/2/177?ct=ct>
- Characterizing Sagging and Collapse Sinkholes in a Mantled Karst by Means of Ground Penetrating Radar (GPR)
V. RODRIGUEZ, F. GUTIERREZ, A. G. GREEN, D. CARBONEL, H. HORSTMAYER, and C. SCHMELZBACH
Environmental and Engineering Geoscience. 2014; 20(2): p. 109-132
<http://eeg.geoscienceworld.org/cgi/content/abstract/20/2/109?ct=ct>
- RADIOLOGICAL EXPOSURE ASSESSMENT FROM SOIL, UNDERGROUND AND SURFACE WATER IN COMMUNITIES ALONG THE COAST OF A SHALLOW WATER OFFSHORE OILFIELD IN GHANA
D. O. Kpeglo, J. Mantero, E. O. Darko, G. Emi-Reynolds, E. H. K Akaho, A. Faanu, and R. Garcia-Tenorio
Radiat Prot Dosimetry. published 25 June 2014, 10.1093/rpd/ncu197
<http://rpd.oxfordjournals.org/cgi/content/abstract/ncu197v1?ct=ct>
- Glycocalyx albus sp. nov., a moderately halophilic dimorphic prosthecate bacterium isolated from petroleum contaminated saline soil
Lv Xiang-Lin, Xie Bai-Sheng, Cai Man, Geng Shuang, Tang Yue-Qin, Wang Ya-Nan, Cui Heng-Lin, Liu Xue-Ying, Ye Si-Yuan, and Xiao-Lei Wu
Int J Syst Evol Microbiol. published 25 June 2014,

10.1099/ijgs.0.063537-0
<http://ijgs.sgmjournals.org/cgi/content/abstract/ijgs.0.063537-0v1?ct=ct>

The application of outcrop analogues in geological modelling: a review, present status and future outlook

John A. Howell, Allard W. Martinus, and Timothy R. Good
Geological Society, London, Special Publications. 2014; 387(1): p. 1-25
<http://sp.lyellcollection.org/cgi/content/abstract/387/1/1?ct=ct>

Connectivity estimation between turbiditic channels and overbank deposits from the modelling of an outcrop analogue (Pab Formation, Maastrichtian, Pakistan)

R. Eschard, R. Deschamps, B. Doligez, O. Lerat, V. Langlais, and T. Euzen
Geological Society, London, Special Publications. 2014; 387(1): p. 203-231
<http://sp.lyellcollection.org/cgi/content/abstract/387/1/203?ct=ct>

Forward modelling as a method for predicting the distribution of deep-marine sands: an example from the Peira Cava Sub-basin

Tor Even Aas, Riccardo Basani, John Howell, and Ernst Hansen
Geological Society, London, Special Publications. 2014; 387(1): p. 247-269
<http://sp.lyellcollection.org/cgi/content/abstract/387/1/247?ct=ct>

Helicopter-based laser scanning: a method for quantitative analysis of large-scale sedimentary architecture

Andreas Rittersbacher, Simon J. Buckley, John A. Howell, Gary J. Hampson, and Julien Vallet
Geological Society, London, Special Publications. 2014; 387(1): p. 185-202
<http://sp.lyellcollection.org/cgi/content/abstract/387/1/185?ct=ct>

Surface-based reservoir modelling for flow simulation

M. D. Jackson, G. J. Hampson, J. H. Saunders, A. El-Sheikh, G. H. Graham, and B. Y. G. Massart
Geological Society, London, Special Publications. 2014; 387(1): p. 271-292
<http://sp.lyellcollection.org/cgi/content/abstract/387/1/271?ct=ct>

Data capture for multiscale modelling of the Lourinha Formation, Lusitanian Basin, Portugal: an outcrop analogue for the Statfjord Group, Norwegian North Sea

Kevin J. Keogh, Simon Leary, Allard W. Martinus, Anthony S. J. Scott, Sarah Riordan, Ingunn Viste, Stuart Gowland, Andrew M. Taylor, and John Howell
Geological Society, London, Special Publications. 2014; 387(1): p. 27-56
<http://sp.lyellcollection.org/cgi/content/abstract/387/1/27?ct=ct>

An analytical model for the geotherm in the Basilicata oil fields area (southern Italy)

Antonella Megna, Stefania Candela, Stefano Mazzoli, and Stefano Santini
Italian Journal of Geoscience. 2014; 133(2): p. 204-213
<http://ItalianJGeo.geoscienceworld.org/cgi/content/abstract/133/2/204?ct=ct>

Architecture of the western margin of the North Adriatic foreland: the Schio-Vicenza fault system

Marco Pola, Angelo Ricciato, Roberto Fantoni, Paolo Fabbri, and Dario Zampieri
Italian Journal of Geoscience. 2014; 133(2): p. 223-234
<http://ItalianJGeo.geoscienceworld.org/cgi/content/abstract/133/2/223?ct=ct>

Uranium-Series Ages of Faulted Alluvial Fan Deposits, Mesquite Regional Landfill, Southeastern California

ROBERT H. WRIGHT, N. TIMOTHY HALL, KATHRYN L. HANSON, WARREN D. SHARP, JOSHUA J. P. KLEIN, HOLLY J. NICHOLS, TIM I. MOTE, TIMOTHY C. KEUSCHER, and KRISTEN M. RUFFELL
Environmental and Engineering Geoscience. 2014; 20(2): p. 199-224
<http://eeg.geoscienceworld.org/cgi/content/abstract/20/2/199?ct=ct>

Using Tephrochronology and palynology to date the MIS 13 lacustrine sediments of the Mercure basin (Southern Apennines - Italy)

- Paola Petrosino, Elda Russo Ermolli, Paola Donato, Brian Jicha, Gaetano Robustelli, and Raffaele Sardella
 Italian Journal of Geoscience. 2014; 133(2): p. 169-186
<http://ItalianJGeo.geoscienceworld.org/cgi/content/abstract/133/2/169?ct=ct>
- Morphological and palaeoenvironmental evolution of the Lagoon of Papas, southwestern Greece, during the Holocene
 Leonidas Stamatopoulos, Giuseppe Aiello, Diana Barra, Tommaso De Pippo, Carlo Donadio, and Alessio Valente
 Italian Journal of Geoscience. 2014; 133(2): p. 282-293
<http://ItalianJGeo.geoscienceworld.org/cgi/content/abstract/133/2/282?ct=ct>
- Fluvial architecture and connectivity of the Williams Fork Formation: use of outcrop analogues for stratigraphic characterization and reservoir modelling
 Matthew J. Pranter, Alicia C. Hewlett, Rex D. Cole, Huabing Wang, and James Gilman
 Geological Society, London, Special Publications. 2014; 387(1): p. 57-83
<http://sp.lyellcollection.org/cgi/content/abstract/387/1/57?ct=ct>
- The amount of pure shear and thinning in the Hercynian continental lower crust exposed in the Serre Massif (Calabria, southern Italy): an application of the vorticity analysis to quartz c-axis fabrics
 Vincenzo Festa
 Italian Journal of Geoscience. 2014; 133(2): p. 214-222
<http://ItalianJGeo.geoscienceworld.org/cgi/content/abstract/133/2/214?ct=ct>
- A hierarchical approach for evaluating fluvial systems: Architectural analysis and sequential evolution of the high net-sand content, middle Wasatch Formation, Uinta Basin, Utah
 Grace L. Ford and David R. Pyles
 AAPG Bulletin. 2014; 98(7): p. 1273-1304
<http://aapgbull.geoscienceworld.org/cgi/content/abstract/98/7/1273?source=gsw>
- Creation and utility of a large fit-for-purpose earth model in a giant mature field: Kern River field, California
 Dale Beeson, Katrina Hoffman, Dave Larue, Jerry McNaboe, and Janae Singer
 AAPG Bulletin. 2014; 98(7): p. 1305-1324
<http://aapgbull.geoscienceworld.org/cgi/content/abstract/98/7/1305?source=gsw>
- Integrated charge and seal assessment in the Monagas fold and thrust belt of Venezuela
 Martin Neumaier, Ralf Littke, Thomas Hantschel, Laurent Maerten, Jean-Pierre Joonnekindt, and Peter Kukla
 AAPG Bulletin. 2014; 98(7): p. 1325-1350
<http://aapgbull.geoscienceworld.org/cgi/content/abstract/98/7/1325?source=gsw>
- Calibrating discrete fracture-network models with a carbonate three-dimensional outcrop fracture network: Implications for naturally fractured reservoir modeling
 K. Bisdorn, B. D. M. Gauthier, G. Bertotti, and N. J. Hardebol
 AAPG Bulletin. 2014; 98(7): p. 1351-1376
<http://aapgbull.geoscienceworld.org/cgi/content/abstract/98/7/1351?source=gsw>
- Neogene-Quaternary postrift tectonic reactivation of the Bohai Bay Basin, eastern China
 Lei Huang, Chiyang Liu, Yingbin Wang, Junfeng Zhao, and Nigel P. Mountney
 AAPG Bulletin. 2014; 98(7): p. 1377-1400
<http://aapgbull.geoscienceworld.org/cgi/content/abstract/98/7/1377?source=gsw>
- Distribution of discontinuous mudstone beds within wave-dominated shallow-marine deposits: Star Point Sandstone and Blackhawk Formation, Eastern Utah
 Christian Haug Eide, John Howell, and Simon Buckley
 AAPG Bulletin. 2014; 98(7): p. 1401-1429
<http://aapgbull.geoscienceworld.org/cgi/content/abstract/98/7/1401?source=gsw>
- The practice of graphical fluid-gradient interpretations of formation tester pressure data
 Andrew Chen
 AAPG Bulletin. 2014; 98(7): p. 1431-1448
<http://aapgbull.geoscienceworld.org/cgi/content/abstract/98/7/1431?source=gsw>

Ground-Truth Locations for the Mangyshlak Peaceful Nuclear Explosion Sequence, Western Kazakhstan
Kevin G. Mackey and Eric Bergman
Bulletin of the Seismological Society of America published 24 June 2014,
10.1785/0120130330
<http://www.bssaonline.org/cgi/content/abstract/0120130330v1?source=gsw>

How Complete is the ISC-GEM Global Earthquake Catalog?
Andrew J. Michael
Bulletin of the Seismological Society of America published 24 June 2014,
10.1785/0120130227
<http://www.bssaonline.org/cgi/content/abstract/0120130227v1?source=gsw>

Earthquake History of the Sumatran Fault, Indonesia, since 1892, Derived from Relocation of Large Earthquakes
Nobuo Hukukawa, Biana Rahayu Wulandari, and Minoru Kasahara
Bulletin of the Seismological Society of America published 24 June 2014,
10.1785/0120130201
<http://www.bssaonline.org/cgi/content/abstract/0120130201v1?source=gsw>

Environmental Engineering Geoscience
May 2014; 20 (2)
<http://eeq.geoscienceworld.org/content/20/2?etoc>

Articles

Characterizing Sagging and Collapse Sinkholes in a Mantled Karst by Means of Ground Penetrating Radar (GPR)
V. RODRIGUEZ, F. GUTIÉRREZ, A. G. GREEN, D. CARBONEL, H. HORSTMAYER, and C. SCHMELZBACH
Environmental & Engineering Geoscience, May 2014, v. 20, p. 109-132,
doi:10.2113/gseegeosci.20.2.109

<http://eeq.geoscienceworld.org/content/20/2/109.abstract.html?etoc>

The Probabilistic Distance Classifier for Land-Use Mapping
CEYHUN ÖZÇELİK
Environmental & Engineering Geoscience, May 2014, v. 20, p. 133-152,
doi:10.2113/gseegeosci.20.2.133

<http://eeq.geoscienceworld.org/content/20/2/133.abstract.html?etoc>

Retreat of a Coastal Bluff in Pacifica, California
MOLLIE M. PETTIT, MATTHEW A. THOMAS, and KEITH LOAGUE
Environmental & Engineering Geoscience, May 2014, v. 20, p. 153-162,
doi:10.2113/gseegeosci.20.2.153

<http://eeq.geoscienceworld.org/content/20/2/153.abstract.html?etoc>

A Rainwater Redistribution Model to Evaluate Two-Layered Slope Stability after a Rainfall Event
TONG-CHUN HAN, HONG-QIANG DOU, XIAO-NAN GONG, JIE ZHANG, and SHI-GUO MA
Environmental & Engineering Geoscience, May 2014, v. 20, p. 163-176,
doi:10.2113/gseegeosci.20.2.163

<http://eeq.geoscienceworld.org/content/20/2/163.abstract.html?etoc>

Paleoseismology of the Southern Section of the Black Mountains and Southern Death Valley Fault Zones, Death Valley, United States
MARSHA F. SOHN, JEFFREY R. KNOTT, and SHANNON A. MAHAN
Environmental & Engineering Geoscience, May 2014, v. 20, p. 177-198,
doi:10.2113/gseegeosci.20.2.177

<http://eeq.geoscienceworld.org/content/20/2/177.abstract.html?etoc>

Uranium-Series Ages of Faulted Alluvial Fan Deposits, Mesquite Regional Landfill, Southeastern California
ROBERT H. WRIGHT, N. TIMOTHY HALL, KATHRYN L. HANSON, WARREN D. SHARP, JOSHUA J. P. KLEIN, HOLLY J. NICHOLS, TIM I. MOTE, TIMOTHY C. KEUSCHER, and KRISTEN M. RUFFELL
Environmental & Engineering Geoscience, May 2014, v. 20, p. 199-224,
doi:10.2113/gseegeosci.20.2.199

<http://eeg.geoscienceworld.org/content/20/2/199.abstract.html?etoc>

Italian Journal of Geosciences

June 2014; 133 (2)

<http://italianjgeo.geoscienceworld.org/content/133/2?etoc>

Article

Assessment of the risk of pollution from Arsenic on human health as a function of its speciation in intestinal fluids

Michele Amadori and Patrizia Macera

Ital J Geosci, June 2014, v. 133, p. 161-168, doi:10.3301/IJG.2013.21

<http://italianjgeo.geoscienceworld.org/content/133/2/161.abstract.html?etoc>

Using Tephrochronology and palynology to date the MIS 13 lacustrine sediments of the Mercure basin (Southern Apennines – Italy)

Paola Petrosino, Elda Russo Ermolli, Paola Donato, Brian Jicha, Gaetano Robustelli, and Raffaele Sardella

Ital J Geosci, June 2014, v. 133, p. 169-186, doi:10.3301/IJG.2013.22

<http://italianjgeo.geoscienceworld.org/content/133/2/169.abstract.html?etoc>

Geoheritage and sport climbing activities: using the Montestrutto cliff (Austroalpine domain, Western Alps) as an example of scientific and educational representativeness

Irene Bollati, Michele Zucali, Cristina Giovenco, and Manuela Pelfini

Ital J Geosci, June 2014, v. 133, p. 187-199, doi:10.3301/IJG.2013.24

<http://italianjgeo.geoscienceworld.org/content/133/2/187.abstract.html?etoc>

First report of *Lutra simplicidens* (Carnivora, Mustelidae, Lutrinae) in the Early Pleistocene of the Upper Valdarno (Italy) and the origin of European otters

Marco Cherin and Lorenzo Rook

Ital J Geosci, June 2014, v. 133, p. 200-203, doi:10.3301/IJG.2013.25

<http://italianjgeo.geoscienceworld.org/content/133/2/200.abstract.html?etoc>

An analytical model for the geotherm in the Basilicata oil fields area (southern Italy)

Antonella Megna, Stefania Candela, Stefano Mazzoli, and Stefano Santini

Ital J Geosci, June 2014, v. 133, p. 204-213, doi:10.3301/IJG.2014.02

<http://italianjgeo.geoscienceworld.org/content/133/2/204.abstract.html?etoc>

The amount of pure shear and thinning in the Hercynian continental lower crust exposed in the Serre Massif (Calabria, southern Italy): an application of the vorticity analysis to quartz c-axis fabrics

Vincenzo Festa

Ital J Geosci, June 2014, v. 133, p. 214-222, doi:10.3301/IJG.2014.03

<http://italianjgeo.geoscienceworld.org/content/133/2/214.abstract.html?etoc>

Architecture of the western margin of the North Adriatic foreland: the Schio-Vicenza fault system

Marco Pola, Angelo Ricciato, Roberto Fantoni, Paolo Fabbri, and Dario Zampieri

Ital J Geosci, June 2014, v. 133, p. 223-234, doi:10.3301/IJG.2014.04

<http://italianjgeo.geoscienceworld.org/content/133/2/223.abstract.html?etoc>

Land mollusc palaeocommunity dynamics related to palaeoclimatic changes in the Upper Pleistocene alluvial deposits of Marche Apennines (central

Italy)
Carmine D'Amico, Daniela Esu, and Mauro Magnatti
Ital J Geosci, June 2014, v. 133, p. 235-248, doi:10.3301/IJG.2014.05

<http://italianjgeo.geoscienceworld.org/content/133/2/235.abstract.html?etoc>

The significance of Longobucco Unit (Calabria-Peloritani Arc) in the evolution of the Ionian and Alpine Oceans
Leonsevero Passeri, Gloria Ciarapica, Letizia Reggiani, and David C. Rutledge
Ital J Geosci, June 2014, v. 133, p. 249-270, doi:10.3301/IJG.2014.07

<http://italianjgeo.geoscienceworld.org/content/133/2/249.abstract.html?etoc>

The role of sediment grain-size, mineralogy, and beach morphology on plant communities of two Mediterranean coastal dune systems
Duccio Bertoni, Cristian Biagioni, Giovanni Sarti, Daniela Ciccarelli, and Matteo Ruocco
Ital J Geosci, June 2014, v. 133, p. 271-281, doi:10.3301/IJG.2014.09

<http://italianjgeo.geoscienceworld.org/content/133/2/271.abstract.html?etoc>

Morphological and palaeoenvironmental evolution of the Lagoon of Papas, southwestern Greece, during the Holocene
Leonidas Stamatopoulos, Giuseppe Aiello, Diana Barra, Tommaso De Pippo, Carlo Donadio, and Alessio Valente
Ital J Geosci, June 2014, v. 133, p. 282-293, doi:10.3301/IJG.2014.10

<http://italianjgeo.geoscienceworld.org/content/133/2/282.abstract.html?etoc>

Applied stratigraphy and carbonate petrography of the Arabescato Orobico dimension stone from the Bergamasco Alps (Calcare Rosso, Italy)
Gabriele Vola and Flavio Jadoul
Ital J Geosci, June 2014, v. 133, p. 294-314, doi:10.3301/IJG.2014.11

<http://italianjgeo.geoscienceworld.org/content/133/2/294.abstract.html?etoc>

Technical Note

SCG: A Computer Application for Single Clinopyroxene Geothermobarometry
Mohammad Sayari and Mortaza Sharifi
Ital J Geosci, June 2014, v. 133, p. 315-322, doi:10.3301/IJG.2014.01

<http://italianjgeo.geoscienceworld.org/content/133/2/315.abstract.html?etoc>

Earthquake History of the Sumatran Fault, Indonesia, since 1892, Derived from Relocation of Large Earthquakes
Nobuo Hurukawa, Biana Rahayu Wulandari, and Minoru Kasahara
Bulletin of the Seismological Society of America published 24 June 2014, 10.1785/0120130201
<http://www.bssaonline.org/cgi/content/abstract/0120130201v1?source=gsw>

How Complete is the ISC-GEM Global Earthquake Catalog?
Andrew J. Michael
Bulletin of the Seismological Society of America published 24 June 2014, 10.1785/0120130227
<http://www.bssaonline.org/cgi/content/abstract/0120130227v1?source=gsw>

Ground-Truth Locations for the Mangyshlak Peaceful Nuclear Explosion Sequence, Western Kazakhstan
Kevin G. Mackey and Eric Bergman
Bulletin of the Seismological Society of America published 24 June 2014, 10.1785/0120130330
<http://www.bssaonline.org/cgi/content/abstract/0120130330v1?source=gsw>

Assembly of a large earthquake from a complex fault system: Surface rupture kinematics of the 4 April 2010 El Mayor-Cucapah (Mexico) Mw 7.2 earthquake

John M. Fletcher, Orlando J. Teran, Thomas K. Rockwell, Michael E. Oskin, Kenneth W. Hudnut, Karl J. Mueller, Ronald M. Spelz, Sinan O. Akciz, Eulalia Masana, Geoff Faneros, Eric J. Fielding, Sebastien Leprince, Alexander E. Morelan, Joann Stock, David K. Lynch, Austin J. Elliott, Peter Gold, Jing Liu-Zeng, Alejandro Gonzalez-Ortega, Alejandro Hinojosa-Corona, and Javier Gonzalez-Garcia

Geosphere published 24 June 2014, 10.1130/GES00933.1

<http://geosphere.gsapubs.org/cgi/content/abstract/GES00933.1v1?source=gsw>

Paleogene Grand Canyon incompatible with Tertiary paleogeography and stratigraphy

Richard A. Young and Ryan Crow

Geosphere published 24 June 2014, 10.1130/GES00973.1

<http://geosphere.gsapubs.org/cgi/content/abstract/GES00973.1v1?source=gsw>

Tsunami-generated sediment wave channels at Lake Tahoe, California-Nevada, USA

James G. Moore, Richard A. Schweickert, and Christopher A. Kitts

Geosphere published 24 June 2014, 10.1130/GES01025.1

<http://geosphere.gsapubs.org/cgi/content/abstract/GES01025.1v1?source=gsw>

Structural overprinting of Mesozoic thrust systems in eastern California and its importance to reconstruction of Neogene extension in the southern Basin and Range

Terry L. Pavlis, James Rutkofske, Francisco Guerrero, and Laura F. Serpa

Geosphere published 24 June 2014, 10.1130/GES00993.1

<http://geosphere.gsapubs.org/cgi/content/abstract/GES00993.1v1?source=gsw>

Diverse rupture modes for surface-deforming upper plate earthquakes in the southern Puget Lowland of Washington State

Alan R. Nelson, Stephen F. Personius, Brian L. Sherrod, Harvey M. Kelsey,

Samuel Y. Johnson, Lee-Ann Bradley, and Ray E. Wells

Geosphere published 24 June 2014, 10.1130/GES00967.1

<http://geosphere.gsapubs.org/cgi/content/abstract/GES00967.1v1?source=gsw>

Karst piracy: A mechanism for integrating the Colorado River across the Kaibab uplift, Grand Canyon, Arizona, USA

Carol A. Hill and Victor J. Polyak

Geosphere published 24 June 2014, 10.1130/GES00940.1

<http://geosphere.gsapubs.org/cgi/content/abstract/GES00940.1v1?source=gsw>

Optimizing the value of reservoir simulation through quality-assured initialization

Paul F. Worthington and Shane K. F. Hattingh

Petroleum Geoscience published 24 June 2014, 10.1144/petgeo2013-012

<http://pg.lyellcollection.org/cgi/content/abstract/petgeo2013-012v1?source=gsw>

Coastal geology and recent origins for Sand Point, Lake Superior

Timothy G. Fisher, David E. Krantz, Mario R. Castaneda, Walter L.

Loope, Harry M. Jol, Ronald Goble, Melinda C. Higley, Samantha DeWald, and Paul R. Hanson

Geological Society of America Special Papers. published 23 June 2014, 10.1130/2014.2508(06)

http://specialpapers.gsapubs.org/cgi/content/abstract/2014.2508_06v1?ct=ct

Early Permian 90{degrees} clockwise rotation of the Maures-EstereI-Corsica-Sardinia block confirmed by new palaeomagnetic data and followed by a Triassic 60{degrees} clockwise rotation

J.-B. Edel, L. Casini, G. Oggiano, P. Rossi, and K. Schulmann

Geological Society, London, Special Publications. 2014; 405(1): p. 333-361

<http://sp.lyellcollection.org/cgi/content/abstract/405/1/333?ct=ct>

About this title - The Variscan Orogeny: Extent, Timescale and the Formation of the European Crust

Geological Society, London, Special Publications. 2014; 405(1): p. NP

<http://sp.lyellcollection.org/cgi/content/abstract/405/1/NP?ct=ct>

Race, Age, and Identity Transformations in the Transition from High School to College for Black and First-generation White Men

Amy C. Wilkins

Sociology of Education. 2014; 87(3): p. 171-187

<http://soe.sagepub.com/cgi/content/abstract/87/3/171?ct=ct>

<http://anm.sagepub.com/cgi/content/abstract/9/2/228?ct=ct>

<http://www.pnas.org/cgi/content/abstract/1400273111v1?ct=ct>

10.1130/2014.2508(12)
http://specialpapers.qsapubs.org/cgi/content/abstract/2014.2508_12v1?ct=ct

<http://sp.lyellcollection.org/cgi/content/abstract/405/1/7?ct=ct>

<http://sp.lyellcollection.org/cgi/content/abstract/405/1/169?ct=ct>

<http://rstb.royalsocietypublishing.org/cgi/content/abstract/369/1648/20130346?ct=ct>

<http://gsabulletin.gsapubs.org/cgi/content/abstract/B31054.1v1?ct=ct>

http://specialpapers.gsapubs.org/cgi/content/abstract/2014.2508_10v1?ct=ct

http://specialpapers.gsapubs.org/cgi/content/abstract/2014.2508_11v1?ct=ct

Geological Society of America Special Papers, published 23 June 2014,

10.1130/2014.2508(07)

http://specialpapers.gsapubs.org/cgi/content/abstract/2014.2508_07v1?ct=ct

Dune formation on late Holocene sandy bay barriers along Lake Michigan's Door Peninsula: The importance of increased sediment supply following the Nipissing and Algoma high lake-level phases

J. Elmo Rawling, III and Paul R. Hanson

Geological Society of America Special Papers. published 23 June 2014,

10.1130/2014.2508(05)

http://specialpapers.gsapubs.org/cgi/content/abstract/2014.2508_05v1?ct=ct

Framing the tectonic regime of the NE Iberian Variscan segment

Jordi Carreras and Elena Druguet

Geological Society, London, Special Publications. 2014; 405(1): p.

249-264

<http://sp.lyellcollection.org/cgi/content/abstract/405/1/249?ct=ct>

Correlation of the nappe stack in the Ibero-Armorican arc across the Bay of Biscay: a joint French-Spanish project

Michel Ballevre, Jose R. Martinez Catalan, Alicia Lopez-Carmona, Pavel

Pitra, Jacobo Abati, Ruben Diez Fernandez, Celine Ducassou, Ricardo

Arenas, Valerie Bosse, Pedro Castineiras, Javier Fernandez-Suarez, Juan

Gomez Barreiro, Jean-Louis Paquette, Jean-Jacques Peucat, Marc Poujol,

Gilles Ruffet, and Sonia Sanchez Martinez

Geological Society, London, Special Publications. 2014; 405(1): p.

77-113

<http://sp.lyellcollection.org/cgi/content/abstract/405/1/77?ct=ct>

The transition from Variscan collision to continental break-up in the Alps: insights from the comparison between natural data and numerical model predictions

Maria Iole Spalla, Davide Zanon, Anna Maria Marotta, Gisella Rebay,

Manuel Roda, Michele Zucali, and Guido Gosso

Geological Society, London, Special Publications. 2014; 405(1): p.

363-400

<http://sp.lyellcollection.org/cgi/content/abstract/405/1/363?ct=ct>

The late Variscan HT/LP metamorphic event in NW and Central Iberia: relationships to crustal thickening, extension, oroclinal development and crustal evolution

Jose R. Martinez Catalan, Francisco J. Rubio Pascual, Alejandro Diez

Montes, Ruben Diez Fernandez, Juan Gomez Barreiro, Icaro Dias Da Silva,

Emilio Gonzalez Clavijo, Puy Ayarza, and James E. Alcock

Geological Society, London, Special Publications. 2014; 405(1): p.

225-247

<http://sp.lyellcollection.org/cgi/content/abstract/405/1/225?ct=ct>

Timing of granite emplacement, crustal flow and gneiss dome formation in the Variscan segment of the Pyrenees

Yoann Denele, Bernard Laumonier, Jean-Louis Paquette, Philippe Olivier,

Gerard Gleizes, and Pierre Barbey

Geological Society, London, Special Publications. 2014; 405(1): p.

265-287

<http://sp.lyellcollection.org/cgi/content/abstract/405/1/265?ct=ct>

Palaeozoic evolution of the Variscan Vosges Mountains

Etienne Skrzypek, Karel Schulmann, Anne-Sophie Tabaud, and Jean-Bernard

Edel

Geological Society, London, Special Publications. 2014; 405(1): p.

45-75

<http://sp.lyellcollection.org/cgi/content/abstract/405/1/45?ct=ct>

Thermal and mechanical evolution of an orogenic wedge during Variscan collision: an example in the Maures-Tanneron Massif (SE France)

Julie Schneider, Michel Corsini, Alexandre Reverso-Peila, and Jean-Marc

Lardeaux

Geological Society, London, Special Publications. 2014; 405(1): p.

313-331

<http://sp.lyellcollection.org/cgi/content/abstract/405/1/313?ct=ct>

Devonian-Permian magmatic pulses in the northern Vosges Mountains (NE France): result of continuous subduction of the Rheohercynian Ocean and Avalonian passive margin

Anne-Sophie Tabaud, Hubert Whitechurch, Philippe Rossi, Karel

- Schulmann, Catherine Guerrot, and Alain Cocherie
Geological Society, London, Special Publications. 2014; 405(1): p.
197-223
<http://sp.lyellcollection.org/cgi/content/abstract/405/1/197?ct=ct>
- Structural and stratigraphical significance of U-Pb ages from the Mora and Saldanha volcanic complexes (NE Portugal, Iberian Variscides)
Icaro Dias Da Silva, Pablo Valverde-Vaquero, Emilio Gonzalez-Clavijo, Alejandro Diez-Montes, and Jose R. Martinez Catalan
Geological Society, London, Special Publications. 2014; 405(1): p.
115-135
<http://sp.lyellcollection.org/cgi/content/abstract/405/1/115?ct=ct>
- Middle Carboniferous intracontinental subduction in the Outer Zone of the Variscan Belt (Montagne Noire Axial Zone, French Massif Central): multimethod geochronological approach of polyphase metamorphism
Michel Faure, Alain Cocherie, Julien Gache, Chloe Esnault, Catherine Guerrot, Philippe Rossi, Lin Wei, and Li Qiuli
Geological Society, London, Special Publications. 2014; 405(1): p.
289-311
<http://sp.lyellcollection.org/cgi/content/abstract/405/1/289?ct=ct>
- Late Paleozoic assembly of the Alexander-Wrangellia-Peninsular composite terrane, Canadian and Alaskan Cordillera
Luke P. Beranek, Cees R. van Staal, William C. McClelland, Nancy Joyce, and Steve Israel
Geological Society of America Bulletin published 23 June 2014,
10.1130/31066.1
<http://gsabulletin.gsapubs.org/cgi/content/abstract/31066.1v1?source=gsw>
- Stratigraphy and structure of the Canas Dulces caldera (Costa Rica)
F. Molina, J. Marti, G. Aguirre, E. Vega, and L. Chavarria
Geological Society of America Bulletin published 23 June 2014,
10.1130/B31012.1
<http://gsabulletin.gsapubs.org/cgi/content/abstract/B31012.1v1?source=gsw>
- Middle Jurassic to earliest Cretaceous mid-crustal tectono-metamorphism in the northern Canadian Cordillera: Recording foreland-directed migration of an orogenic front
R.D. Staples, D.C. Murphy, H.D. Gibson, M. Colpron, R.G. Berman, and J.J. Ryan
Geological Society of America Bulletin published 23 June 2014,
10.1130/B31037.1
<http://gsabulletin.gsapubs.org/cgi/content/abstract/B31037.1v1?source=gsw>
- Can flexural-slip faults related to evaporite dissolution generate hazardous earthquakes? The case of the Grand Hogback monocline of west-central Colorado
Francisco Gutierrez, Domingo Carbonel, Robert M. Kirkham, Jesus Guerrero, Pedro Lucha, and Vincent Matthews
Geological Society of America Bulletin published 23 June 2014,
10.1130/B31054.1
<http://gsabulletin.gsapubs.org/cgi/content/abstract/B31054.1v1?source=gsw>
- Rise and fall of late Pleistocene pluvial lakes in response to reduced evaporation and precipitation: Evidence from Lake Surprise, California
Daniel E. Ibarra, Anne E. Egger, Karrie L. Weaver, Caroline R. Harris, and Kate Maher
Geological Society of America Bulletin published 23 June 2014,
10.1130/B31014.1
<http://gsabulletin.gsapubs.org/cgi/content/abstract/B31014.1v2?source=gsw>
- Influence of thermal equilibrium and microstructure of dense zircon-doped dolomite refractories on rate of hydration and slag attack
Abdel Monem Soltan and Mohamed Serry
European Journal of Mineralogy published 22 June 2014,
10.1127/0935-1221/2014/0026-2402
<http://eurjmin.geoscienceworld.org/cgi/content/abstract/0026-2402v1?source=gsw>
- The arrojadite enigma III. The incorporation of volatiles: a polarised FTIR spectroscopy study
Giancarlo Della Ventura, Fabio Bellatreccia, Francesco Radica, Christian Chopin, and Roberta Oberti
European Journal of Mineralogy published 22 June 2014,

10.1127/0935-1221/2014/0026-2397

<http://eurjmin.geoscienceworld.org/cgi/content/abstract/0026-2397v1?source=gsw>

High-precision U-Pb zircon CA-ID-TIMS dates from western European late Viséan bentonites

Michael A. Pointon, David M. Chew, Maria Ovtcharova, George D. Sevastopulo, and Bernard Delcambre

Journal of the Geological Society published 19 June 2014,

10.1144/jgs2013-106

<http://jgs.lyellcollection.org/cgi/content/abstract/jgs2013-106v1?source=gsw>

Reworking of old continental lithosphere: an important crustal evolution mechanism in orogenic belts, as evidenced by Triassic I-type granitoids in the East Kunlun orogen, Northern Tibetan Plateau

Fuhao Xiong, Changqian Ma, Jinyang Zhang, Bin Liu, and Hong'an Jiang

Journal of the Geological Society published 19 June 2014,

10.1144/jgs2013-038

<http://jgs.lyellcollection.org/cgi/content/abstract/jgs2013-038v1?source=gsw>

Relationships between basin architecture, basin closure, and occurrence of sulphide-bearing schists: an example from Tampere Schist Belt, Finland

H. Kalliomäki, T. Torvela, J. Moreau, and Y. Kahkonen

Journal of the Geological Society published 19 June 2014,

10.1144/jgs2013-122

<http://jgs.lyellcollection.org/cgi/content/abstract/jgs2013-122v1?source=gsw>

Gambling on Ore: The Nature of Metal Mining in the United States, 1860-1910

Bode J. Morin

Environmental History. 2014; 19(3): p. 602-604

<http://envhis.oxfordjournals.org/cgi/content/extract/19/3/602?ct=ct>

Inversion of airborne tensor VLF data using integral equations

Jochen Kamm and Laust B. Pedersen

Geophys. J. Int. 2014; 198(2): p. 775-794

<http://gji.oxfordjournals.org/cgi/content/abstract/198/2/775?ct=ct>

Relieving Mongols of Their Pastoral Identity: Disaster Management on the Eighteenth-Century Qing China Steppe

David A. Bello

Environmental History. 2014; 19(3): p. 480-504

<http://envhis.oxfordjournals.org/cgi/content/abstract/19/3/480?ct=ct>

Historical Agriculture and Soil Erosion in the Upper Mississippi Valley Hill Country

Ellen Wohl

Environmental History. 2014; 19(3): p. 570-571

<http://envhis.oxfordjournals.org/cgi/content/extract/19/3/570?ct=ct>

New Scholarship

Environmental History. 2014; 19(3): p. 611-632

<http://envhis.oxfordjournals.org/cgi/content/extract/19/3/611?ct=ct>

News Briefs

Gifted Child Today. 2014; 37(3): p. 135-139

<http://gct.sagepub.com/cgi/reprint/37/3/135?ct=ct>

Rayleigh wave tomography of the British Isles from ambient seismic noise

Heather Nicolson, Andrew Curtis, and Brian Baptie

Geophys. J. Int. 2014; 198(2): p. 637-655

<http://gji.oxfordjournals.org/cgi/content/abstract/198/2/637?ct=ct>

Implications for the lithospheric geometry of the Iapetus suture beneath Ireland based on electrical resistivity models from deep-probing magnetotellurics

C. K. Rao, Alan G. Jones, Max Moorkamp, and Ute Weckmann

Geophys. J. Int. 2014; 198(2): p. 737-759

<http://gji.oxfordjournals.org/cgi/content/abstract/198/2/737?ct=ct>

3-D crustal structure of the western United States: application of Rayleigh-wave ellipticity extracted from noise cross-correlations

Fan-Chi Lin, Victor C. Tsai, and Brandon Schmandt

Geophys. J. Int. 2014; 198(2): p. 656-670

<http://gji.oxfordjournals.org/cgi/content/abstract/198/2/656?ct=ct>

Strain partitioning at the eastern Pamir-Alai revealed through SAR data analysis of the 2008 Nura earthquake

Kanayim Teshebaeva, Henriette Sudhaus, Helmut Echtler, Bernd Schurr, and Sigrid Roessner

Geophys. J. Int. 2014; 198(2): p. 760-774

<http://gji.oxfordjournals.org/cgi/content/abstract/198/2/760?ct=ct>

Joint earthquake source inversions using seismo-geodesy and 3-D earth models

J. Weston, A.M.G. Ferreira, and G. J. Funning

Geophys. J. Int. 2014; 198(2): p. 671-696

<http://gji.oxfordjournals.org/cgi/content/abstract/198/2/671?ct=ct>

Magnetic parameters and their palaeoclimatic implications--the sediment record of the last 15 500 cal. BP from Laguna Potrok Aike (Argentina)

M.A. Irurzun, M.J. Orgeira, C.S.G. Gogorza, A.M. Sinito, R.

Compagnucci, and B. Zolitschka

Geophys. J. Int. 2014; 198(2): p. 710-726

<http://gji.oxfordjournals.org/cgi/content/abstract/198/2/710?ct=ct>

Relative importance of climatic and autogenic controls on Holocene carbon accumulation in a temperate bog in southern Ontario, Canada

Jennifer A Shiller, Sarah A Finkelstein, and Sharon A Cowling

The Holocene. published 20 June 2014, 10.1177/0959683614538070

<http://hol.sagepub.com/cgi/content/abstract/0959683614538070v1?ct=ct>

Working with and learning from Country: decentring human author-ity

Bawaka Country, Sarah Wright, Sandie Suchet-Pearson, Kate Lloyd, Laklak

Burarrwanga, Ritjilili Ganambarr, Merrkiyawuy Ganambarr-Stubbs,

Banbapuy Ganambarr, and Djawundil Maymuru

Cultural Geographies. published 20 June 2014, 10.1177/1474474014539248

<http://cqi.sagepub.com/cgi/content/abstract/1474474014539248v1?ct=ct>

NEWS

- Meandering air flows cause extreme weather (22 Jun 2014)
- <http://planetearth.nerc.ac.uk/tools/mlink.aspx?m=140623&c=1&id=1710>
- High-CO2 world threatens seabed life (20 Jun 2014)
- <http://planetearth.nerc.ac.uk/tools/mlink.aspx?m=140623&c=1&id=1709>
- Corals could be cured using probiotic like Yakult (18 Jun 2014)
- <http://planetearth.nerc.ac.uk/tools/mlink.aspx?m=140623&c=1&id=1707>
- New water bear found in Antarctica (17 Jun 2014)
- <http://planetearth.nerc.ac.uk/tools/mlink.aspx?m=140623&c=1&id=1704>

BLOGS ENTRIES

- Talking about the future of the sea (11 Jun 2014)
- <http://planetearth.nerc.ac.uk/tools/mlink.aspx?m=140623&c=4&id=1037&pid=453>
- A drop in the Southern Ocean (9 Jun 2014)
- <http://planetearth.nerc.ac.uk/tools/mlink.aspx?m=140623&c=4&id=1037&pid=452>
- New dragonfly atlas uses data from volunteers (28 May 2014)
- <http://planetearth.nerc.ac.uk/tools/mlink.aspx?m=140623&c=4&id=1037&pid=451>
- Protein test for fossil identity extended by 950,000 years (23 May 2014)
- <http://planetearth.nerc.ac.uk/tools/mlink.aspx?m=140623&c=4&id=1037&pid=450>
- Biodiversity and mental health (16 May 2014)
- <http://planetearth.nerc.ac.uk/tools/mlink.aspx?m=140623&c=4&id=1037&pid=449>

Planet Earth Online is the companion website to the award-winning magazine Planet Earth published and funded by the Natural Environment Research Council (NERC). The magazine is available in e-magazine format at <http://www.nerc.ac.uk/latest/publications/planetearth/>

You are receiving this email because you provided us with your email address and requested we contact you each week with the latest news, features, podcasts, video clips and blogs from our site.

If you no longer wish to receive this email, unsubscribe by following this link -

<http://planetearth.nerc.ac.uk/tools/unsubscribe.aspx?e=revistadegeologia@yahoo.com.br>

Planet Earth Online - environmental research news

<http://planetearth.nerc.ac.uk/>

Articles are now published in an issue of Mineralogical Magazine as they are in final form. Each eTOC Alert will show the most current version of the issue's Table of Contents, i.e., all articles published to date.

Mineralogical Magazine

June 2014; 78 (3)

<http://minmag.geoscienceworld.org/content/78/3?etoc>

Articles

Kihlmanite-(Ce), $\text{Ce}_2\text{TiO}_2[\text{SiO}_4](\text{HCO}_3)_2(\text{H}_2\text{O})$, a new rare-earth mineral from the pegmatites of the Khibiny alkaline massif, Kola Peninsula, Russia
V. N. Yakovenchuk, S. V. Krivovichev, G. Y. Ivanyuk, Ya. A. Pakhomovsky, E. A. Selivanova, E. A. Zhitova, G. O. Kalashnikova, A. A. Zolotarev, J. A. Mikhailova, and G. I. Kadyrova
Mineral Mag, June 2014, v. 78, p. 483-496,
doi:10.1180/minmag.2014.078.3.01

<http://minmag.geoscienceworld.org/content/78/3/483.abstract.html?etoc>

Nestolaite, $\text{CaSeO}_3 \cdot \text{H}_2\text{O}$, a new mineral from the Little Eva mine, Grand County, Utah, USA
A. V. Kasatkin, J. Plášil, J. Marty, A. A. Agakhanov, D. I. Belakovskiy, and I. S. Lykova
Mineral Mag, June 2014, v. 78, p. 497-505,
doi:10.1180/minmag.2014.078.3.02

<http://minmag.geoscienceworld.org/content/78/3/497.abstract.html?etoc>

Alpine oxidation of lithium micas in Permian S-type granites (Gemic unit, Western Carpathians, Slovakia)
I. Petrik, Š. Čík, M. Miglierini, T. Vaculovič, I. Dianiška, and D. Ozdín
Mineral Mag, June 2014, v. 78, p. 507-533,
doi:10.1180/minmag.2014.078.3.03

<http://minmag.geoscienceworld.org/content/78/3/507.abstract.html?etoc>

Hydroniumjarosite, $(\text{H}_3\text{O})^+ \text{Fe}_3(\text{SO}_4)_2(\text{OH})_6$, from Cerros Pintados, Chile: Single-crystal X-ray diffraction and vibrational spectroscopic study
J. Plášil, R. Škoda, K. Fejfarová, J. Čejka, A. V. Kasatkin, M. Dušek, D. Talla, L. Lapčák, V. Machovič, and M. Dini
Mineral Mag, June 2014, v. 78, p. 535-547,
doi:10.1180/minmag.2014.078.3.04

<http://minmag.geoscienceworld.org/content/78/3/535.abstract.html?etoc>

Geology

July 2014; 42 (7)

<http://geology.geoscienceworld.org/content/42/7?etoc>

Articles

Black Sea desiccation during the Messinian Salinity Crisis: Fact or fiction?
Arjen Grothe, Francesca Sangiorgi, Yannick R. Mulders, Iuliana Vasiliev, Gert-Jan Reichart, Henk Brinkhuis, Marius Stoica, and Wout Krijgsman
Geology, July 2014, v. 42, p. 563-566, First published on May 16, 2014,
doi:10.1130/G35503.1

<http://geology.geoscienceworld.org/content/42/7/563.abstract.html?etoc>

Decoupling of the carbon cycle during Ocean Anoxic Event 2
James S. Eldrett, Daniel Minisini, and Steven C. Bergman
Geology, July 2014, v. 42, p. 567-570, First published on May 16, 2014,

doi:10.1130/G35520.1

<http://geology.geoscienceworld.org/content/42/7/567.abstract.html?etoc>

Towards accurate numerical calibration of the Late Triassic:
High-precision U-Pb geochronology constraints on the duration of the
Rhaetian
Jörn-Frederik Wotzlaw, Jean Guex, Annachiara Bartolini, Yves Gallet,
Leopold Krystyn, Christopher A. McRoberts, David Taylor, Blair Schoene,
and Urs Schaltegger
Geology, July 2014, v. 42, p. 571-574, First published on May 16, 2014,
doi:10.1130/G35612.1

<http://geology.geoscienceworld.org/content/42/7/571.abstract.html?etoc>

Stevensite in the modern thrombolites of Lake Clifton, Western Australia:
A missing link in microbialite mineralization?
Robert V. Burne, Linda S. Moore, Andrew G. Christy, Ulrike Troitzsch,
Penelope L. King, Anna M. Carnerup, and P. Joseph Hamilton
Geology, July 2014, v. 42, p. 575-578, First published on May 16, 2014,
doi:10.1130/G35484.1

<http://geology.geoscienceworld.org/content/42/7/575.abstract.html?etoc>

Disentangling abrupt deglacial hydrological changes in northern South
America: Insolation versus oceanic forcing
J. Hoffmann, A. Bahr, S. Voigt, J. Schönfeld, D. Nürnberg, and J.
Rethemeyer
Geology, July 2014, v. 42, p. 579-582, First published on May 16, 2014,
doi:10.1130/G35562.1

<http://geology.geoscienceworld.org/content/42/7/579.abstract.html?etoc>

A cool temperate climate on the Antarctic Peninsula through the latest
Cretaceous to early Paleogene
David B. Kemp, Stuart A. Robinson, J. Alistair Crame, Jane E. Francis,
Jon Ineson, Rowan J. Whittle, Vanessa Bowman, and Charlotte O'Brien
Geology, July 2014, v. 42, p. 583-586, First published on May 22, 2014,
doi:10.1130/G35512.1 OPEN ACCESS ARTICLE

<http://geology.geoscienceworld.org/content/42/7/583.abstract.html?etoc>

Where have all the craters gone? Earth's bombardment history and the
expected terrestrial cratering record
B.C. Johnson and T.J. Bowling
Geology, July 2014, v. 42, p. 587-590, First published on May 22, 2014,
doi:10.1130/G35754.1

<http://geology.geoscienceworld.org/content/42/7/587.abstract.html?etoc>

Tibetan garnet records early Eocene initiation of thickening in the
Himalaya
Matthijs A. Smit, Bradley R. Hacker, and Jeffrey Lee
Geology, July 2014, v. 42, p. 591-594, First published on May 22, 2014,
doi:10.1130/G35524.1

<http://geology.geoscienceworld.org/content/42/7/591.abstract.html?etoc>

Volcanic ash provenance from zircon dust with an application to Maya
pottery
Kevin T. Coffey, Axel K. Schmitt, Anabel Ford, Frank J. Spera, Constance
Christensen, and Jennifer Garrison
Geology, July 2014, v. 42, p. 595-598, First published on May 22, 2014,
doi:10.1130/G35376.1

<http://geology.geoscienceworld.org/content/42/7/595.abstract.html?etoc>

Mobilizing salt: Magma-salt interactions
Nick Schofield, Ian Alsop, John Warren, John R. Underhill, Rouwen Lehné,
Wolfgang Beer, and Volker Lukas
Geology, July 2014, v. 42, p. 599-602, First published on May 22, 2014,
doi:10.1130/G35406.1

<http://geology.geoscienceworld.org/content/42/7/599.abstract.html?etoc>

Paleomagnetism reveals the emplacement age of tsunamigenic coral boulders on Ishigaki Island, Japan
T. Sato, N. Nakamura, K. Goto, Y. Kumagai, H. Nagahama, and K. Minoura
Geology, July 2014, v. 42, p. 603-606, First published on May 22, 2014,
doi:10.1130/G35366.1 OPEN ACCESS ARTICLE

<http://geology.geoscienceworld.org/content/42/7/603.abstract.html?etoc>

Mid-Cretaceous to Paleocene North American drainage reorganization from detrital zircons
M. Blum and M. Pecha
Geology, July 2014, v. 42, p. 607-610, First published on May 22, 2014,
doi:10.1130/G35513.1

<http://geology.geoscienceworld.org/content/42/7/607.abstract.html?etoc>

A nanolite record of eruption style transition
Mayumi Mujin and Michihiko Nakamura
Geology, July 2014, v. 42, p. 611-614, First published on May 22, 2014,
doi:10.1130/G35553.1

<http://geology.geoscienceworld.org/content/42/7/611.abstract.html?etoc>

Could microorganisms be preserved in Mars gypsum? Insights from terrestrial examples
Kathleen Counter Benison and Francis J. Karmanocky III
Geology, July 2014, v. 42, p. 615-618, First published on May 22, 2014,
doi:10.1130/G35542.1

<http://geology.geoscienceworld.org/content/42/7/615.abstract.html?etoc>

Erratum

Internal structure, kinematics, and growth of a salt wall: Insights from 3-D seismic data
Christopher A-L. Jackson, Martin P.A. Jackson, Michael R. Hudec, and Clara Rodriguez
Geology, July 2014, v. 42, p. 618

<http://geology.geoscienceworld.org/content/42/7/618?etoc>

Articles

An iodine record of Paleoproterozoic surface ocean oxygenation
Dalton S. Hardisty, Zunli Lu, Noah J. Planavsky, Andrey Bekker, Pascal Philippot, Xiaoli Zhou, and Timothy W. Lyons
Geology, July 2014, v. 42, p. 619-622, First published on May 22, 2014,
doi:10.1130/G35439.1

<http://geology.geoscienceworld.org/content/42/7/619.abstract.html?etoc>

Hot faults: Iridescent slip surfaces with metallic luster document high-temperature ancient seismicity in the Wasatch fault zone, Utah, USA
James P. Evans, Mitchell R. Prante, Susanne U. Janecke, Alexis K. Ault, and Dennis L. Newell
Geology, July 2014, v. 42, p. 623-626, First published on May 22, 2014,
doi:10.1130/G35617.1

<http://geology.geoscienceworld.org/content/42/7/623.abstract.html?etoc>

Thresholds for Paleozoic ice sheet initiation
D.P. Lowry, C.J. Poulsen, D.E. Horton, T.H. Torsvik, and D. Pollard
Geology, July 2014, v. 42, p. 627-630, First published on May 22, 2014,
doi:10.1130/G35615.1

<http://geology.geoscienceworld.org/content/42/7/627.abstract.html?etoc>

Cycles of explosive and effusive eruptions at Kīlauea Volcano, Hawai'i
Donald A. Swanson, Timothy R. Rose, Adonara E. Mucek, Michael O. Garcia,

Richard S. Fiske, and Larry G. Mastin
Geology, July 2014, v. 42, p. 631-634, First published on May 22, 2014,
doi:10.1130/G35701.1

<http://geology.geoscienceworld.org/content/42/7/631.abstract.html?etoc>

Paleoarchean ocean crust and mantle excavated by meteor impact: Insight into early crustal processes and tectonics

Alexandra E. Krull-Davatzes, Gary R. Byerly, and Donald R. Lowe
Geology, July 2014, v. 42, p. 635-638, First published on May 22, 2014,
doi:10.1130/G35614.1

<http://geology.geoscienceworld.org/content/42/7/635.abstract.html?etoc>

Research Focus

Small grains, big rivers, continental concepts

Timothy F. Lawton
Geology, July 2014, v. 42, p. 639-640, doi:10.1130/focus072014.1 OPEN ACCESS ARTICLE

<http://geology.geoscienceworld.org/content/42/7/639?etoc>

Forum

Anatomy of a diffuse cryptic suture zone: An example from the Bohemian Massif, European Variscides: COMMENT

Uwe Kroner and Rolf L. Romer
Geology, July 2014, v. 42, p. e340, doi:10.1130/G35782C.1 OPEN ACCESS ARTICLE

<http://geology.geoscienceworld.org/content/42/7/e340?etoc>

Trilobites in early Cambrian tidal flats and the landward expansion of the Cambrian explosion: COMMENT

John R. Paterson
Geology, July 2014, v. 42, p. e341, doi:10.1130/G35817C.1 OPEN ACCESS ARTICLE

<http://geology.geoscienceworld.org/content/42/7/e341?etoc>

Polygonal faults in chalk: Insights from extensive exposures of the Khoman Formation, Western Desert, Egypt: COMMENT

Abotalib Zaki, Mohamed Sultan, and Racha Elkadiri
Geology, July 2014, v. 42, p. e342, doi:10.1130/G35934C.1 OPEN ACCESS ARTICLE

<http://geology.geoscienceworld.org/content/42/7/e342?etoc>

GSA Bulletin

July 2014; 126 (7-8)

<http://bulletin.geoscienceworld.org/content/126/7-8?etoc>

VOLCANOLOGY

Pyroclastic edifices record vigorous lava fountains during the emplacement of a flood basalt flow field, Roza Member, Columbia River Basalt Province, USA

Richard J. Brown, S. Blake, T. Thordarson, and S. Self
Geological Society of America Bulletin, July 2014, v. 126, p. 875-891,
First published on March 6, 2014, doi:10.1130/B30857.1

<http://bulletin.geoscienceworld.org/content/126/7-8/875.abstract.html?etoc>

TECTONICS

Switch from thrusting to normal shearing in the Zaskar shear zone, NW Himalaya: Implications for channel flow
Melanie Finch, Pavlína Hasalová, Roberto F. Weinberg, and C. Mark Fanning
Geological Society of America Bulletin, July 2014, v. 126, p. 892-924,
First published on March 6, 2014, doi:10.1130/B30817.1

<http://bulletin.geoscienceworld.org/content/126/7-8/892.abstract.html?etoc>

Early to Middle Ordovician back-arc basin in the southern Appalachian Blue Ridge: Characteristics, extent, and tectonic significance
James Tull, Christopher S. Holm-Denoma, and Clinton I. Barineau
Geological Society of America Bulletin, July 2014, v. 126, p. 990-1015,
First published on March 20, 2014, doi:10.1130/B30967.1

<http://bulletin.geoscienceworld.org/content/126/7-8/990.abstract.html?etoc>

Mid-Miocene rhyolite volcanism in northeastern Nevada: The Jarbidge Rhyolite and its relationship to the Cenozoic evolution of the northern Great Basin (USA)
Matthew E. Brueseke, Jeffrey S. Callicot, Willis Hames, and Peter B. Larson
Geological Society of America Bulletin, July 2014, v. 126, p. 1047-1067,
First published on April 1, 2014, doi:10.1130/B30736.1

<http://bulletin.geoscienceworld.org/content/126/7-8/1047.abstract.html?etoc>

GEOMORPHOLOGY

Knickpoint formation, rapid propagation, and landscape response following coastal cliff retreat at the last interglacial sea-level highstand: Kaua'i, Hawai'i
Benjamin H. Mackey, Joel S. Scheingross, Michael P. Lamb, and Kenneth A. Farley
Geological Society of America Bulletin, July 2014, v. 126, p. 925-942,
First published on March 6, 2014, doi:10.1130/B30930.1

<http://bulletin.geoscienceworld.org/content/126/7-8/925.abstract.html?etoc>

STRUCTURAL GEOLOGY

Analogue modeling of positive inversion tectonics along differently oriented pre-thrusting normal faults: An application to the Central-Northern Apennines of Italy
Alessandra Di Domenica, Lorenzo Bonini, Fernando Calamita, Giovanni Toscani, Carla Galuppo, and Silvio Seno
Geological Society of America Bulletin, July 2014, v. 126, p. 943-955,
First published on March 20, 2014, doi:10.1130/B31001.1

<http://bulletin.geoscienceworld.org/content/126/7-8/943.abstract.html?etoc>

GEOCHRONOLOGY

Integrating $^{40}\text{Ar}/^{39}\text{Ar}$, U-Pb, and astronomical clocks in the Cretaceous Niobrara Formation, Western Interior Basin, USA
Bradley B. Sageman, Brad S. Singer, Stephen R. Meyers, Sarah E. Siewert, Ireneusz Walaszczyk, Daniel J. Condon, Brian R. Jicha, John D. Obradovich, and David A. Sawyer
Geological Society of America Bulletin, July 2014, v. 126, p. 956-973,
First published on March 20, 2014, doi:10.1130/B30929.1

<http://bulletin.geoscienceworld.org/content/126/7-8/956.abstract.html?etoc>

Testing the astronomical time scale for oceanic anoxic event 2, and its extension into Cenomanian strata of the Western Interior Basin (USA)
Chao Ma, Stephen R. Meyers, Brad B. Sageman, Brad S. Singer, and Brian R. Jicha
Geological Society of America Bulletin, July 2014, v. 126, p. 974-989,
First published on March 20, 2014, doi:10.1130/B30922.1

<http://bulletin.geoscienceworld.org/content/126/7-8/974.abstract.html?etoc>

PALEOCLIMATOLOGY

Landscape modification in response to repeated onset of hyperarid paleoclimate states since 14 Ma, Atacama Desert, Chile
Teresa E. Jordan, Naomi E. Kirk-Lawlor, Nicolás P. Blanco, Jason A. Rech, and Nicolás J. Cosentino
Geological Society of America Bulletin, July 2014, v. 126, p. 1016-1046,
First published on April 1, 2014, doi:10.1130/B30978.1

<http://bulletin.geoscienceworld.org/content/126/7-8/1016.abstract.html?etoc>

Multiproxy approach reveals evidence of highly variable paleoprecipitation in the Upper Jurassic Morrison Formation (western United States)
Timothy S. Myers, Neil J. Tabor, and Nicholas A. Rosenau
Geological Society of America Bulletin, July 2014, v. 126, p. 1105-1116,
First published on March 20, 2014, doi:10.1130/B30941.1

<http://bulletin.geoscienceworld.org/content/126/7-8/1105.abstract.html?etoc>

STRATIGRAPHY

Magnetic polarity stratigraphy and palynostratigraphy of the Mississippian-Pennsylvanian boundary interval in eastern North America and the age of the beginning of the Kiaman
N.D. Opdyke, P.S. Giles, and J. Utting
Geological Society of America Bulletin, July 2014, v. 126, p. 1068-1083,
First published on May 2, 2014, doi:10.1130/B30953.1

<http://bulletin.geoscienceworld.org/content/126/7-8/1068.abstract.html?etoc>

GEOPHYSICS

Heat-flow data in the Four Corners area suggest Neogene crustal warming resulting from partial lithosphere replacement in the Colorado Plateau interior, southwest USA
Marshall Reiter
Geological Society of America Bulletin, July 2014, v. 126, p. 1084-1092,
First published on May 2, 2014, doi:10.1130/B30951.1

<http://bulletin.geoscienceworld.org/content/126/7-8/1084.abstract.html?etoc>

QUATERNARY GEOLOGY/GEOMORPHOLOGY

Catastrophic rock avalanches in a glaciated valley of the High Atlas, Morocco: ^{10}Be exposure ages reveal a 4.5 ka seismic event
Philip D. Hughes, David Fink, William J. Fletcher, and George Hannah
Geological Society of America Bulletin, July 2014, v. 126, p. 1093-1104,
First published on March 20, 2014, doi:10.1130/B30894.1

<http://bulletin.geoscienceworld.org/content/126/7-8/1093.abstract.html?etoc>

TECTONICS: EROSION AND DEPOSITION

Detrital zircon geochronology of the Grenville/Llano foreland and basal Sauk Sequence in west Texas, USA
Christopher J. Spencer, Anthony R. Prave, Peter A. Cawood, and Nick M.W. Roberts
Geological Society of America Bulletin, July 2014, v. 126, p. 1117-1128,
First published on April 18, 2014, doi:10.1130/B30884.1

<http://bulletin.geoscienceworld.org/content/126/7-8/1117.abstract.html?etoc>

European Journal of Mineralogy
June 2014; 26 (3)

<http://eurjmin.geoscienceworld.org/content/26/3?etoc>

Articles

On the structural relaxation around Cr³⁺ along binary solid solutions
Matteo Ardit, Michele Dondi, and Giuseppe Cruciani
Eur J Mineral, June 2014, v. 26, p. 359-370, First published on February 27, 2014, doi:10.1127/0935-1221/2014/0026-2375

<http://eurjmin.geoscienceworld.org/content/26/3/359.abstract.html?etoc>

Dehydration of the zeolite merlinoite from the Khibiny massif, Russia: an in situ temperature-dependent single-crystal X-ray study
Anna S. Pakhomova, Thomas Armbruster, Sergey V. Krivovichev, and Victor N. Yakovenchuk
Eur J Mineral, June 2014, v. 26, p. 371-380, First published on March 27, 2014, doi:10.1127/0935-1221/2014/0026-2380

<http://eurjmin.geoscienceworld.org/content/26/3/371.abstract.html?etoc>

Anatectic amphibole and restitic garnet in Variscan migmatite from NE Sardinia, Italy: insights into partial melting from mineral trace elements
Gabriele Cruciani, Marcello franceschelli, Stephen F. Foley, and Dorrit E. Jacob
Eur J Mineral, June 2014, v. 26, p. 381-395, First published on February 27, 2014, doi:10.1127/0935-1221/2014/0026-2376

<http://eurjmin.geoscienceworld.org/content/26/3/381.abstract.html?etoc>

Apatites from the Kaiserstuhl Volcanic Complex, Germany: new constraints on the relationship between carbonatite and associated silicate rocks
Lian-Xun Wang, Michael A.W. Marks, Thomas Wenzel, Anette Von Der Handt, Jörg Keller, Holger Teiber, and Gregor Markl
Eur J Mineral, June 2014, v. 26, p. 397-414, First published on February 27, 2014, doi:10.1127/0935-1221/2014/0026-2377

<http://eurjmin.geoscienceworld.org/content/26/3/397.abstract.html?etoc>

Formation of chemical gardens on granitic rock: a new type of alteration for alkaline systems
Hisao Satoh, Katsuo Tsukamoto, and Juan Manuel Garcia-ruiz
Eur J Mineral, June 2014, v. 26, p. 415-426, First published on March 20, 2014, doi:10.1127/0935-1221/2014/0026-2378

<http://eurjmin.geoscienceworld.org/content/26/3/415.abstract.html?etoc>

Mapiquiroite, (Sr,Pb)(U,Y)Fe₂(Ti,Fe³⁺)₁₈O₃₈, a new member of the crichtonite group from the Apuan Alps, Tuscany, Italy
Cristian Biagioni, Paolo Orlandi, Marco Pasero, Fabrizio Nestola, and Luca Bindi
Eur J Mineral, June 2014, v. 26, p. 427-437, First published on March 20, 2014, doi:10.1127/0935-1221/2014/0026-2382

<http://eurjmin.geoscienceworld.org/content/26/3/427.abstract.html?etoc>

Nicksobolevite, Cu₇(SeO₃)₂O₂Cl₆, a new complex copper oxoselenite chloride from Tolbachik fumaroles, Kamchatka peninsula, Russia
Lidiya P. Vergasova, Tatiana F. Semenova, Sergey V. Krivovichev, Stanislav K. Filatov, Andrey A. Zolotarev, Jr, and Vladimir V. Ananiev
Eur J Mineral, June 2014, v. 26, p. 439-449, First published on March 27, 2014, doi:10.1127/0935-1221/2014/0026-2383

<http://eurjmin.geoscienceworld.org/content/26/3/439.abstract.html?etoc>

IAPC

Geochemistry International

Vol. 52, No. 6, 2014

A simultaneous English language translation of this journal is available from Pleiades Publishing, Ltd.
Distributed worldwide by Springer. *Geochemistry International* ISSN 0016-7029.

Physicochemical Formation Parameters of Hydrothermal Mineral Deposits:

Evidence from Fluid Inclusions. II. Gold, Silver, Lead, and Zink Deposits

V. B. Naumov, V. A. Dorofeeva, and O. F. Mironova **p. 433** [abstract](#)

Estimation of the Thermodynamic Characteristics of the Earth's Core Using the Embedded Atom Model

D. K. Belashchenko **p. 456** [abstract](#)

Mesozoic–Cenozoic Sedimentation in the Circum-Arctic Belt. 1. Triassic–Jurassic

M. A. Levitan, T. A. Antonova, and T. N. Gelvi **p. 467** [abstract](#)

Thermal History of the Murzuq Basin, Libya, and Generation of Hydrocarbons in Its Source Rocks

Yu. I. Galushkin and S. Eloghbi **p. 486** [abstract](#)

Iodine and Selenium Speciation in Natural Waters and Their Concentrating at Landscape–Geochemical Barriers

E. M. Korobova, B. N. Ryzhenko, E. V. Cherkasova, E. M. Sedykh, N. V. Korsakova,

V. N. Danilova, S. D. Khushvakhtova, and V. Yu. Berezkin **p. 500** [abstract](#)

SHORT COMMUNICATIONS

Donnayite-(Y) from the Albyn Gold Deposit, Russian Far East

S. V. Sokolov, N. I. Chistyakova, and N. I. Orlova **p.515** [abstract](#)

Geotectonics

Vol. 48, No. 3, 2014

A simultaneous English language translation of this journal is available from Pleiades Publishing, Inc.
Distributed worldwide by Springer. *Geotectonics* ISSN 0016-8521.

Deep Structure of the Southeastern Part of the East European Platform

V. A. Trofimov **p. 163** [abstract](#)

Recent Tectonics in the Northern Part of the Knipovich Ridge, Atlantic Ocean

S. Yu. Sokolov, A. S. Abramova, Yu. A. Zaraiskaya,

A. O. Mazarovich, and K. O. Dobrolyubova **p. 175** [abstract](#)

Volcanic–Sedimentary Complex of Otrozhnaya Sheet

in the Ust-Belaya Terrane, Western Koryakia

A. V. Moiseev, S. D. Sokolov, and Ya. Hayasaka **p. 188** [abstract](#)

Granitic Protrusions in the Structure of Intraplate Reactivation, Southern Mongolia

E. S. Przhiyalskiy, M. G. Leonov, and E. V. Lavrushina **p. 207** [abstract](#)

Seismicity of the Northern Barents Sea in Area of the Franz Victoria and Orla Troughs

A. N. Morozov, N. V. Vaganova, and Ya. V. Konechnaya **p. 232** [abstract](#)

Tectonic Significance of Neoproterozoic Magmatism of Nakora Area, Malani Igneous Suite, Western Rajasthan, India

Naresh Kumar and G. Vallinayagam **p.239** [abstract](#)

EARTH PAGES

Nickel, life and the end-Permian extinction

Posted on [June 23, 2014](#) by [Steve Drury](#) | [Leave a comment](#)

The greatest mass extinction of the Phanerozoic closed the Palaeozoic Era at the end of the Permian, with the loss of perhaps as much as

90% of eukaryote diversity on land and at sea. It was also over very quickly by geological standards, taking a mere 20 thousand years from about 252.18 Ma ago. There is no plausible evidence for an extraterrestrial cause, unlike that for the mass extinction that closed the Mesozoic Era and the age of dinosaurs. Almost all researchers blame one of the largest-ever magmatic events that spilled out the Siberian Traps either through direct means, such as climate change related to CO₂, sulfur oxides or atmospheric ash clouds produced by the flood volcanism or indirectly through combustion of coal in strata beneath the thick basalt pile. So far, no proposal has received universal acclaim. The latest proposal relies on two vital and apparently related geochemical observations in rocks around the age of the extinctions (Rothman, D.H. *et al.* 2014. Methanogenic burst in the end-Permian carbon cycle. *Proceedings of the National Academy of the United States*, v. **111**, p. 5462-5467).



Siberian flood-basalt flows in Putorana, Taymyr Peninsula. (Credit: Paul Wignall; Nature http://www.nature.com/nature/journal/v477/n7364/fiq_tab/477285a_F1.html)

In the run-up to the extinction carbon isotopes in marine Permian sediments from Meishan, China suggest a runaway growth in the amount of inorganic carbon (in carbonate) in the oceans. The C-isotope record from Meishan shows episodes of sudden major change (over ~20 ka) in both the inorganic and organic carbon parts of the oceanic carbon cycle. The timing of both 'excursions' from the long-term trend immediately follows a 'spike' in the concentration of the element nickel in the Meishan sediments. The Ni almost certainly was contributed by the massive outflow of basalt lavas in Siberia. So, what is the connection?

Some modern members of the prokaryote Archaea that decompose organic matter to produce methane have a metabolism that depends on Ni, one genus being *Methanosarcina* that converts acetate to methane by a process known as acetoclastic methanogenesis. *Methanosarcina* acquired this highly efficient metabolic pathway probably through a sideways gene transfer from Bacteria of the class *Clostridia*; a process now acknowledged as playing a major role in the evolution of many aspects of prokaryote biology, including resistance to drugs among pathogens. Molecular-clock studies of the *Methanosarcina* genome are consistent with this Archaea appearing at about the time of the Late Permian. A burst of nickel 'fertilisation' of the oceans may have resulted in huge production of atmospheric methane. Being a greenhouse gas much more powerful than CO₂, methane in such volumes would very rapidly have led to global warming. Before the Siberian Traps began to be erupted nickel would only have been sufficiently abundant to support this kind of methanogen around ocean-floor hydrothermal springs. Spread globally by eruption plumes, nickel throughout the oceans would have allowed *Methanosarcina* or its like to thrive everywhere with disastrous consequences. Other geochemical processes,

such as the oxidation of methane in seawater, would have spread the influence of the biosphere-lithosphere 'conspiracy'. Methane oxidation would have removed oxygen from the oceans to create anoxia that, in turn, would have encouraged other microorganisms that reduce sulfate ions to sulfide and thereby produce toxic hydrogen sulfide. That gas once in the atmosphere would have parlayed an oceanic 'kill mechanism' into one fatal for land animals.

There is one aspect that puzzles me: the Siberian Traps probably involved many huge lava outpourings every 10 to 100 ka while the magma lasted, as did all other flood basalt events. Why then is the nickel from only such eruption preserved in the Meishan sediments, and if others are known from marine sediments is there evidence for other such methanogen 'blooms' in the oceans?

Leave a comment

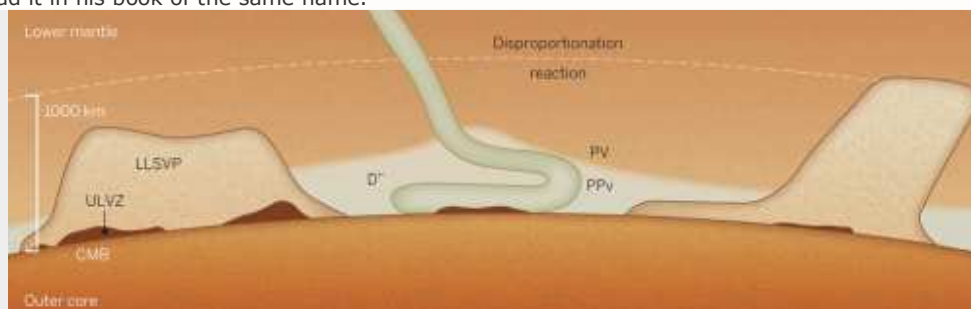
Posted in [Geobiology, palaeontology, and evolution](#), [Geochemistry, mineralogy, petrology and volcanology](#)

Tagged [Acetoclastic methanogenesis](#), [flood basalts](#), [mass extinction](#), [Methane release](#), [Methanogen](#), [Permian](#)

What's happening at the core-mantle boundary?

Posted on [June 16, 2014](#) by [Steve Drury](#) | [2 comments](#)

The lithosphere that falls into the mantle at subduction zones must end up somewhere in the deep Earth; the question is, where and what happens to it. There are hints from seismic tomography of the mantle that such slabs penetrate as deep as the boundary between the lowermost mantle and the molten outer core. The lithosphere's two components, depleted mantle and oceanic crust, are compositionally quite different, being peridotitic and basaltic, so each is likely to be involved different petrological processes. As regards the physics, since seismic activity ceases below a depth of about 700 km neither entity behaves in a brittle fashion in the lower mantle. Such ductile materials might even pile up in the manner of intestines on the lithological equivalent of the abattoir floor; *Bowels of the Earth* as John Elder had it in his book of the same name.



Sketch of the lower 1000 km of the Earth's mantle (credit: Williams, Q. 2014. Deep mantle matters. *Science*, v. 344, p. 800-801)

Pressure would make these recycled components mineralogically different, as indeed a relative light squeeze does in the upper mantle, where cold wet basalts become dry and denser eclogites thereby pulling more lithosphere down Wadati and Benioff's eponymous zones to drive plate tectonics. Decades old experiments at lower-mantle pressures suggest that mantle minerals recombine from olivine with a dash of pyroxene to a mixture of more pressure-resistant iron-magnesium oxide and perovskite ((Mg,Fe)SiO₃). Experiments in the early 21st century, under conditions at depths below 2600 km, revealed that perovskite transforms at the very bottom of the mantle (the D'' zone) into layers of magnesium plus iron, silicon and oxygen. This is provisionally known as 'post-perovskite'. The experiments showed that the transition releases heat. So, should oceanic lithosphere descend to the D'' zone, it would receive an energy 'kick' and its temperature would increase. Conversely, if D''-zone materials rose to the depth of the perovskite to post-perovskite transition they would become less dense: a possible driver for deep-mantle plumes.

Now a new iron-rich phase stable in the bottom 1000 km of the mantle has emerged from experiments, seeming to result from perovskite undergoing a disproportionation reaction (Zhang, L. And 11 others 2014. Disproportionation of (Mg,Fe)SiO₃ perovskite in Earth's deep mantle. *Science*, v. **344**, p. 877-882). In the same issue of *Science* other workers using laser-heated diamond anvils have revealed that, despite the huge pressures, basaltic rock may melt at temperatures considerably below the solid mantle's ambient

temperature (Andrault, D. *et al.* 2014. Melting of subducted basalt at the core-mantle boundary. *Science*, v. **344**, p. 892-895). Both studies help better understand the peculiarities of the deepest mantle that emerge from seismic tomography (Williams, Q. 2014. Deep mantle matters. *Science*, v. **344**, p. 800-801).

Huge blocks with reduced S-wave velocities that rise above the D'' zone sit beneath Africa and the Pacific Ocean. There are also smaller zones at the core-mantle boundary (CMB) with shear-wave velocities up to 45% lower than expected. These ultralow-velocity zones (ULVZs) probably coincide with melting of subducted oceanic basalts, but the magma cannot escape by rising as it would soon revert to perovskite. Yet, since ultramafic compositions cannot melt under such high pressures the ULVZs indirectly show that subduction does descend to the CMB. Seismically defined horizontal layering in the D'' zone thus may result from basaltic slabs whose ductility has enabled them to fold like sheets of lasagne as they reach the base of the mantle. Development of variants of the laser-heated diamond anvil set-up seem likely to offer insights into our own world's 'digestive' system at a far lower cost and with vastly more relevance than the growing fad for speculating on Earth-like planets that the current 'laws' of physics show can never be visited and on 'exobiology' that cannot proceed further than the extremes of the Earth's near-surface environment and the DNA double helix.

2 Comments

Posted in [Planetary, extraterrestrial geology, and meteoritics](#), [Tectonics](#)

Tagged [D" zone](#), [Deep mantle processes](#), [Post-perovskite](#)

[IMAGE](#)

Year Zero: the giant-impact hypothesis

On close examination, the light-coloured Highlands of the Moon look remarkably like an old sign by a North American road through hunting country: they are pocked by impact craters of every size. More than that, a lengthy period of bombardment is signified by signs that the craters themselves are cratered to form a chaotic landscape dominated by interlocking and overlapping circular features. In contrast the dark basaltic plains, called *maria* (seas), are pretty smooth albeit with some craters. They are clearly much younger than the Highlands. The discovery by Apollo astronauts that the older lunar Highlands are made almost exclusively of calcic plagioclase feldspar was a major surprise, requiring an astonishing event to explain them. Such anorthosites may form by flotation of low-density feldspar from a cooling and crystallising basaltic magma. Yet to form the bulk of the Moon's early crust from such materials requires not simply a deep magma chamber, but literally an ocean of molten material at least 200 km deep. The anorthosites also turned out to be far older than the oldest rocks on Earth, close to 4.5 billion years. The most likely explanation seemed to be that the melting resulted from a gargantuan collision between two protoplanets, the Earth's forebear and another now vanished. This would have melted and partially vaporised both bodies. After this discovery the Moon was widely believed to have formed from liquid and vaporised rock flung into orbit around what became the Earth.



Artist's depiction of a collision between two planetary bodies likely to have formed the Moon (Credit: Wikipedia)

Such a catastrophic model for joint formation of the Earth and Moon shortly after planets of the Solar System had formed is hard to escape, but it carries two major puzzles. First, Earth and Moon seem to have very similar, indeed almost the same chemistry: So what happened to the colliding planet? If it had been identical in composition to the proto Earth there is no problem, but a different composition would surely have left some detectable trace in a Moon-Earth geochemical comparison. Initial models of the collision suggested that the other planet (dubbed Theia) was about the size of Mars and should have contributed 70 to 90% of the lunar mass: the Moon-Earth geochemical difference should have been substantial. The second issue raised in the early days of the hypothesis was that since the Moon seemed to be almost totally dry (at least, the first rock analyses suggested that), then how come the Earth had retained so much water?

For decades, after an initial flurry of analyses, the Apollo samples remained in storage. Only in the last 10 years or so, when the need to gee-up space exploration required some prospect of astronauts one more to be sent beyond Earth orbit, have the samples been re-examined. With better analytical tools, the first puzzle was resolved: lunar rocks do contain measurable amounts of water, so the impact had not entirely driven off volatiles from the Moon. The bulk geochemical similarity was especially puzzling for the isotopes of oxygen. Meteorites of different types are significantly ear-marked by their relative proportions of different oxygen isotopes, signifying to planetary scientists that each type formed in different parts of the early Solar System; a suggestion confirmed by the difference between those in meteorites supposedly flung from Mars and terrestrial oxygen isotope proportions. A clear target for more precise re-examination of the lunar samples, plus meteorites reckoned to have come from the Moon, is therefore using vastly improved mass spectrometry to seek significant isotopic differences (Harwartz, D. *et al.* 2014. Identification of the giant impactor Theia in lunar rocks. *Science*, v. **344**, p. 1146-1150). It turns out that there is a 12 ppm difference in the proportion of ^{17}O in lunar oxygen, sufficient to liken Theia's geochemistry to that of enstatite chondrites. However, that difference may have arisen by the Earth, once the Moon had formed, having attracted a greater proportion of carbonaceous-chondrite material during the later stages of planetary accretion by virtue of its much greater gravitational attraction. That would also account for the much higher volatile content of the Earth. The new data do help to support the giant-impact hypothesis, but still leave a great deal of slack in the big questions: Did Theia form in a similar orbit around the Sun to that of Earth; was the impact head-on or glancing; how fast was the closure speed; how big was Theia and more besides? If Theia had roughly the same mass as the proto-Earth then modelling suggests that about half the mass of both Moon and Earth would be made of Theia stuff, giving the Moon and post-impact Earth much the same chemistry, irrespective of where Theia came from. Were William of Ockham's ideas still major arbiters in science, then his Razor would suggest that we stop fretting about such details. But continuing the intellectual quest would constitute powerful support for a return to the Moon and more samples...

1 Comment

Posted on [June 16, 2014](#) by [Steve Drury](#) in [Planetary, extraterrestrial geology, and meteoritics](#)

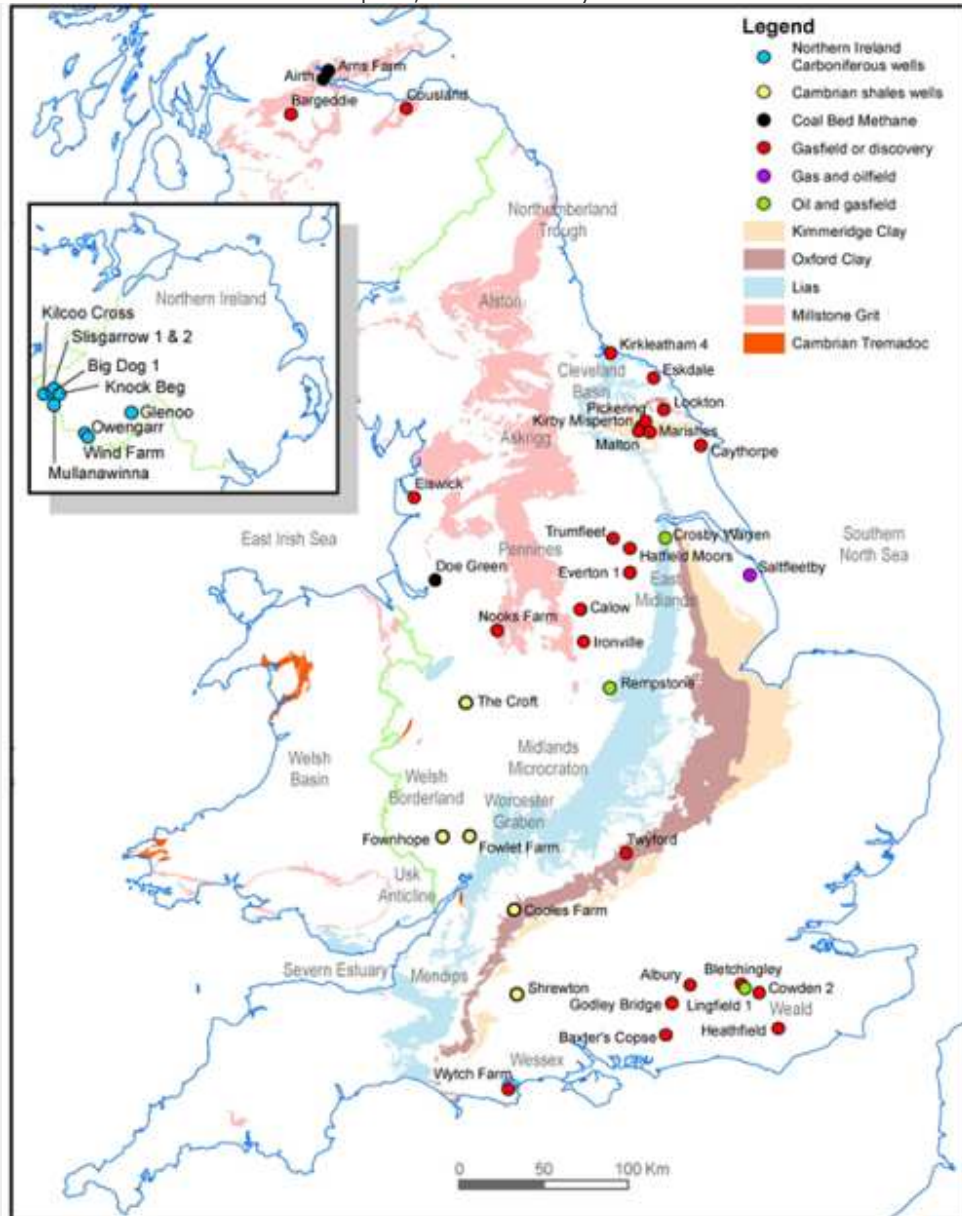
Tagged [Giant impact hypothesis](#), [Moon formation](#), [Theia](#)

Fracking in the UK: will it happen?

Posted on [June 3, 2014](#) by [Steve Drury](#) | [Leave a comment](#)

Whether or not one has read the *Tractatus Logico-Philosophicus* of Ludwig Wittgenstein, there can be little doubt that one of his most famous quotations can be applied to much of the furore over hydraulic fracturing (fracking) of hydrocarbon-rich shale in south-eastern Britain: 'Whereof one cannot speak, one must remain silent' (more pithily expressed by Mark Twain as 'Better to remain silent and be thought a fool than to speak and remove all doubt'). A [press release](#) by the [British Geological Survey](#) in late May 2014 caused egg to

appear on the shirts of both erstwhile 'frackmeister' David Cameron (British Prime Minister) and anti-fracking protestors in Sussex. While there are oil shales beneath the Weald, these Jurassic rocks have never reached temperatures sufficient to generate any significant gas reserves (see: Upfront, *New Scientist*, 31 May 2014 issue, p. 6). Yet BGS estimate the oil shales to contain a total of 4.4 billion barrels of oil. That might sound a lot, but the experience of shale fracking companies in the US is that, at best, only about 5% can be recovered and, in cases that are geologically similar to the Weald, as little as 1% might be expected. Between 44 and 220 million barrels is between two and six months' worth of British oil consumption; and that is only if the entire Wealden shales are fracked.



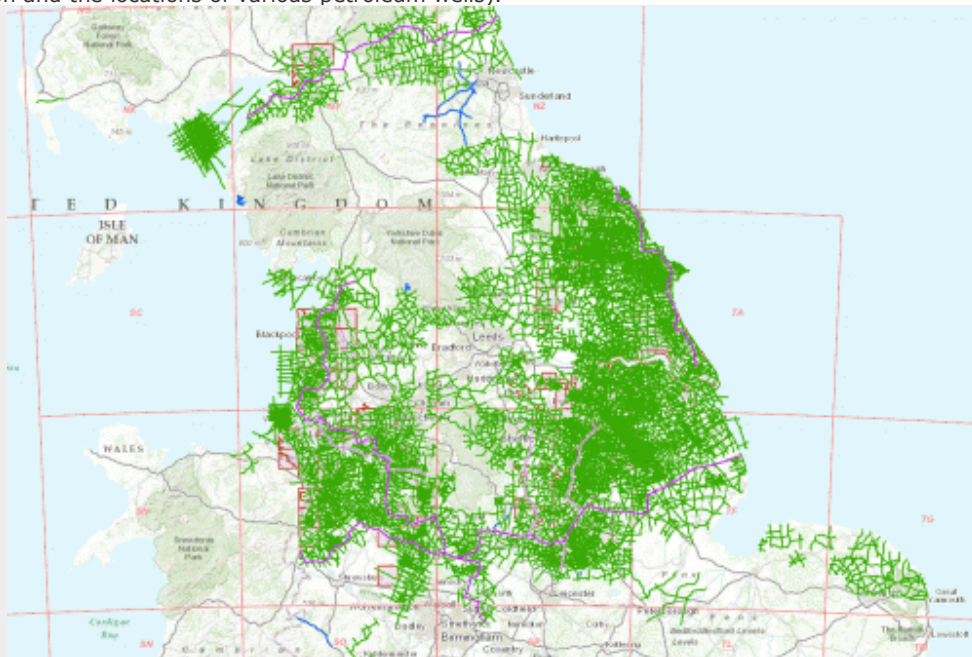
Areas where petroleum-rich shales occur at the surface in Britain. (credit: British Geological Survey)

Why would any commercial exploration company, such as Cuadrilla, go to the trouble of drilling wells, even of an 'exploratory nature', for such meager potential returns? Well, when there is sufficient hype, and the British Government has gushed in this context for a few years, bigger fish tend to bite and cash flows improve. For instance, Centrica the owner of British Gas forked out \$160 million to Cuadrilla in June 2013 for a quarter share in the well-publicised licence area near Blackpool in Lancashire; the grub stake to allow Cuadrilla to continue exploration in exchange for 25% of any profit should commercial quantities of shale-gas be produced.

Sedimentary rock sequences further north in Britain whose geological evolution buried oil shales more deeply are potential gas producers

through fracking; an example is the Carboniferous Bowland Shale beneath the Elswick gasfield in west Lancashire, targeted by Cuadrilla. Far greater potential may be present in a large tract of the Pennine hills and lowlands that flank them where the Bowland Shale occurs at depth.

Few people realize just how much detail is known about what lies beneath their homes apart from maps of surface geology. That is partly thanks to BGS being the world's oldest geological survey (founded in 1835) and partly the sheer number of non-survey geologists who have prowled over Britain for 200 years or more and published their findings. Legally, any excavation, be it an underground mine, a borehole or even the footings for a building, must be reported to BGS along with whatever geological information came to light as a result. The sheer rarity of outcropping rock in Britain is obvious to everyone: a legacy of repeated glaciation that left a veneer of jumbled debris over much of the land below 500m that lies north of the northern outskirts of the London megalopolis. Only highland areas where glacial erosion shifted mullock to lower terrains have more than about 5% of the surface occupied by bare rock. Of all the data lodged with BGS by far the most important for rock type and structure at depth are surveys that used seismic waves generated by vibrating plates deployed on specialized trucks. These and the cables that connected hundreds of detectors were seen along major and minor roads in many parts of Britain during the 1980s during several rounds of licenced onshore exploration for conventional petroleum resources. That the strange vehicles carried signs saying Highway Maintenance lulled most people apart from professional geologists as regards their actual purpose. Over 75 thousand kilometers of seismic sections that penetrated thousands of metres into the Earth now reside in the UK Onshore Geophysical Library (an [Interactive Map](#) at UKOGL allows you to see details of these surveys, current areas licenced for exploration and the locations of various petroleum wells).



Seismic survey lines in northern England (green lines) from the interactive map at the UK Onshore Geophysical Library

Such is the detail of geological knowledge that estimates of any oil and gas, conventional or otherwise, residing beneath many areas of Britain are a lot more reliable than in other parts of the world which do not already have or once had a vibrant petroleum industry. So you can take it that when the BGS says there is such and such a potential for oil or gas beneath this or that stretch of rural Britain they are pretty close to the truth. Yet it is their raw estimates that are most often publicized; that is, the total possible volumes. Any caveats are often ignored in the publicity and hype that follows such an announcement. BGS recently announced that as much as 38 trillion cubic metres of gas may reside in British shales, much in the north of England. There followed a frenzy of optimism from Government sources that this 40 years' worth of shale gas would remove at a stroke Britain's exposure to the world market of natural gas, currently dominated by Russia, and herald a rosy economic future to follow the present austerity similar to the successes of shale-gas in North

America. Equally, there has been fear of all kinds of catastrophe from fracking on our 'tight little island' especially amongst those lucky enough not to live in urban wastelands. What was ignored by both tendencies was reality. In the US, fracking experience shows that only 10% at most of the gas in a fractured shale can be got out; even the mighty Marcellus Shale of the NE US underlying an area as big as Britain can only supply 6 years of total US gas demand. Britain's entire shale-gas endowment would serve only 4 years of British gas demand.

To tap just the gas in the upper part of the Bowland basin would require 33 thousand fracking wells in northern Britain. Between 1902 and 2013 only 19 onshore petroleum wells were drilled here in an average year. To make any significant contribution to British energy markets would require 100 per annum at a minimum. Yet, in the US, the flow rate from fracked wells drops to a mere zephyr within 3 years. Fracking on a large scale may well never happen in Britain, such are the largely unstated caveats. But the current hype is fruitful for speculation that it will, and that can make a lot of cash sucked in by the prospect – without any production whatsoever.

Related articles

- [Carbon Briefing: UK shale gas resource](#) (carbonbrief.org)
- [Carbon Briefing: the what, where, and how much of UK shale oil](#)(carbonbrief.org)
- [The cost of fracking Britain](#) (bbc.co.uk)
-
- [Fracking company wants UK drilling laws relaxed](#) (itv.com)

Zemanta

Leave a comment

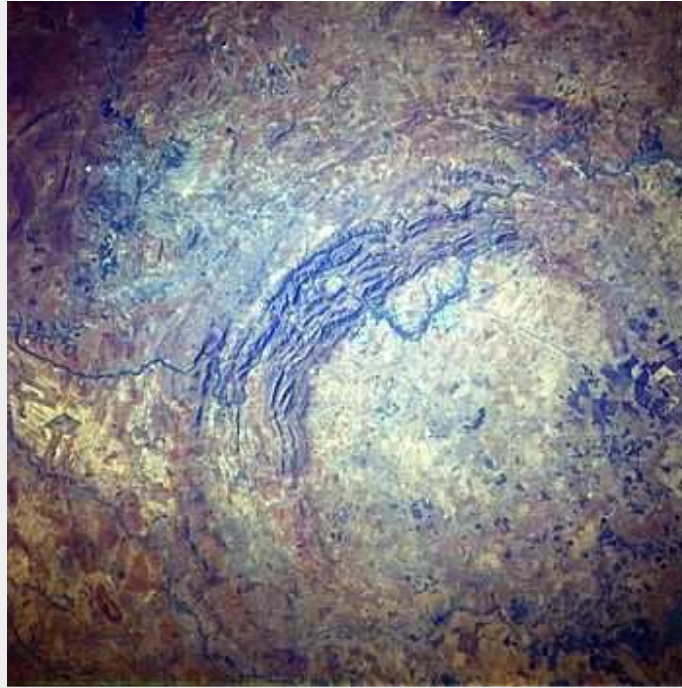
Posted in [Economic and applied geology](#)

Tagged [Britain](#), [Fracking](#), [Hydraulic fracturing](#), [Shale gas](#)

Impact melts and their destination

Posted on [May 28, 2014](#) by [Steve Drury](#) | [Leave a comment](#)

The work done by an asteroid or a comet that hits the Earth is most obviously demonstrated by the size of the crater that it creates on impact, should it have survived erosion and/or burial by sediments. Since some is done in flinging material away from the impact, the furthest point at which ejecta land is also a rough measure of the power of the hit. All this and much more derived from the kinetic energy of the object, which from Newton's laws of motion amounts to half the product of the body's mass and the square of its speed ($mv^2/2$). It's the speed that confers most energy; doubling the speed quadruples the energy. At a minimum, the speed of an object from far-off in space is that due to acceleration by the Earth's gravitational field; the same as Earth's escape velocity (about 11.2 km s^{-1}). In March 1989 Earth had a close encounter with Newton's laws writ large; an asteroid about 500 m across passed us with just half a million kilometres to spare. Moving at 20 km s^{-1} it carried kinetic energy of around $4 \times 10^{19} \text{ J}$. Had it hit, all of this immense amount would have been delivered in about a second giving a power of $4 \times 10^{19} \text{ W}$. That is more than two hundred times greater than the power of solar heating of the day-side of the Earth. A small part of that power would melt quite a lot of rock.



Vredefort Dome impact structure (credit: Wikipedia)

As well as the glass spherules that are one of the hallmarks of impact ejecta on Earth and more so on the Moon's surface, some of the larger known impact craters are associated with various kinds of glassy rock produced by instantaneous melting. Some of this melt-rock occurs in thin dykes, but sometimes there is an entire layer of once molten 'country' rock at the impact site. The most spectacular is in the Manicougan crater in Quebec, Canada. In fact a 1 km thick impact-melt sheet dominates most of the 90 km wide structure and it is reputed to be the most homogeneous large rock mass known, being a chemical average of every rock type involved in the Triassic asteroid strike. Not all craters are so well endowed with an actual sheet of melt-rock. This has puzzled some geologists, especially those who studied the much larger (160 km) Vredefort Dome in South Africa, which formed around 2 billion years ago. As the name suggests this is now a positive circular topographic anomaly, probably due to rebound and erosional unloading, the structure extending down 20 km into the ancient continental lithosphere of the Kaapvaal craton. Vredefort has some cracking dykes of pseudotachylite but apparently no impact melt sheet. It has vanished, probably through erosion, but a relic has been found (Cupelli, C.L. *et al.* 2014. Discovery of mafic impact melt in the centre of the Vredefort dome: Archetype for continental residua of early Earth cratering? *Geology*, v. **42**, p. 403-406). One reason for it having gone undiscovered until now is that it is mafic in composition, and resembles an igneous gabbro intrusion. Isotope geochemistry refutes that mundane origin. It is far younger than the rocks that were zapped, and may well have formed as huge energy penetrated to the lower crust and even the upper mantle to melt a sizeable percentage of 2.7 to 3.0 Ga old mafic and ultramafic rock.

Oddly, the same issue of *Geology* contains an article that also bears on the Vredefort Dome structure (Huber, M.S. *et al.* 2014. Impact spherules from Karelia, Russia: Possible ejecta from the 2.02 Ga Vredefort impact event. *Geology*, v. **42**, p. 375-378). Drill core from a Palaeoproterozoic limestone revealed millimetre-sized glass droplets containing excess iridium – an element at high concentration in a variety of meteorites. The link to Vredefort is the age of the sediments, which are between 1.98 and 2.05 Ga, neatly bracketing the timing of the large South African impact. Using reasonably well-constrained palaeogeographic positions at that time for Karelia and the Kaapvaal craton suggests that the glassy ejecta, if indeed they are from Vredefort, must have been flung over 2500 km.

Related articles

■  [Earth's Oldest and Biggest Crater Yields New Secrets](#)

■  [Where Have All of Earth's Impact Craters Gone?](#)

Zemanta

[Leave a comment](#)

Posted in [Planetary, extraterrestrial geology, and meteoritics](#)

Tagged [Impact crater](#), [Impact ejecta](#), [Impact energy](#), [Impact event](#), [South Africa](#), [Vredfort Dome](#)

[How the first metazoan mass extinction happened](#)

Posted on [May 12, 2014](#) by [Steve Drury](#) | [Leave a comment](#)

The end-Ordovician mass extinction was the first of five during the Phanerozoic, and the first that involved multicelled organisms. It happened in two distinct phases that roughly coincided with an intense but short-lived glaciation at the South Pole, then situated within what is now the African continent. Unlike the other four, this biotic catastrophe seems unlinked to either a major impact structure or to an episode of flood volcanism.



Artist's impression of an Ordovician shallow-sea community (credit: drtel)

In [2009 Earth Pages reported](#) the curious occurrence in 470 Ma ([Darriwilian Stage](#)) Swedish limestones of a large number of altered chondritic meteorites, possible evidence that there may have been an extraterrestrial influence on extinction rates around that time. In support is evidence that the [meteorite swarm](#) coincided with megabreccias or olistostromes at what were then Southern Hemisphere continental margins: possible signs of a series of huge tsunamis. But in fact this odd coincidence occurred at a time when metazoan diversity was truly booming: the only known case of impacts possibly favouring life.

Number One of the Big Five mass extinctions occurred during the late-Ordovician [Hirnantian](#) stage (443-445 Ma) and has received much less attention than the later ones. So it is good to see the balance being redressed by a review of evidence for it and for possible mechanisms (Harper, D.A.T *et al.* 2014. End Ordovician extinctions: A coincidence of causes. *Gondwana Research*, v. **25**, p. 1294-1307). The first event of a double-whammy mainly affected free-swimming and planktonic organisms and those of shallow seas; near-surface dwellers such as graptolites and trilobites. The second, about a million years later, hit animals living at all depths in the sea. Between them, the two events removed about 85% of marine species – there were few if any terrestrial animals so this is close to the extinction

level that closed the Palaeozoic at around 250 Ma.

No single process can be regarded as the 'culprit'. However the two events are bracketed by an 80-100 m fall in sea level due to the southern hemisphere glaciation. That may have given rise to changes in ocean oxygen content and in the reduction of sulfur to hydrogen sulfide. Also climate-related may have been changes in the vertical, thermohaline circulation of the oceans, falling temperatures encouraging sinking of surface water to abyssal depths providing more oxygen to support life deep in the water column. Sea-level fall would have reduced the extent of shallow seas too. Those consequences would explain the early demise of shallow water, free swimming animals. Reversal of these trends as glaciation waned may have returned stagnancy and anoxia to deep water, thereby affecting life at all depths. The authors suggest generalized 'tipping points' towards which several global processes contributed.

Related articles

■ [What Triggers a Mass Extinction?](#)



Zemania

Leave a comment

Posted in [Geobiology, palaeontology, and evolution](#)

Tagged [Extinction event](#), [Glaciation](#), [Ordovician](#), [Sea-level change](#)

Age calibration of Mesozoic sedimentary sequences: can it be improved?

Posted on [May 12, 2014](#) by [Steve Drury](#) | [Leave a comment](#)

Relative age sequences in sequences of fossiliferous sediments are frequently intricate, thanks to animal groups that evolved quickly to leave easily identifiable fossil species. Yet converting that one-after-the-other dating to absolute values of past time has been difficult and generally debateable. Up to now it has relied on fossil-based correlation with localities where parts of the sequence of interest interleave with volcanic ashes or lavas that can be dated radiometrically. Igneous rocks can provide reference points in time, so that age estimates of intervening sedimentary layers emerge by assuming constant rates of sedimentation and of faunal speciation. However, neither rate can safely be assumed constant, and those of evolutionary processes are of great biological interest.



Sunset at St Hilda's Abbey, Whitby NE England; fabled haunt of Count Dracula (credit: epicnom)

If only we could date the fossils a wealth of information would be accessible. In the case of organisms that apparently evolved quickly, such as the ammonites of the Mesozoic, time resolution might be extremely fine. Isotopic analysis methods have become sufficiently precise to exploit the radioactive decay of uranium isotopes, for instance, at the very low concentrations found in sedimentary minerals

such as calcium carbonate. So this prospect of direct calibration might seem imminent. Geochemists and palaeontologists at Royal Holloway University of London, Leicester University and the British Geological Survey have used the U-Pb method to date Jurassic ammonites (Li, Q. *et al.* 2014. U-Pb dating of cements in Mesozoic ammonites. *Chemical Geology*, v.**376**, p. 76-83). The species they chose are members of the genus *Hildoceras*, familiar to junior collectors on the foreshore below the ruined Abbey of St Hilda at the small port of Whitby, in NE England. The abundance and coiled shape of *Hildoceras* was once cited as evidence for the eponymous founder of the Abbey ridding this choice locality of a plague of venomous serpents using the simple expedient of divine lithification.



Hildoceras from the Toarcian shales of Whitby (credit: Wikipedia)

The target uranium-containing mineral is the calcite formed on the walls of the ammonites' flotation chambers either while they were alive or shortly after death. This early cement is found in all well-preserved ammonites. The *Hildoceras* genus is found in one of the many faunal Zones of the Toarcian Age of the Lower Jurassic; the *bifrons* Zone (after *Hildoceras bifrons*). After careful selection of *bifrons* Zone specimens, the earliest calcite cement to have formed in the chambers was found to yield dates of around 165 Ma with precisions as low as ± 3.3 Ma. Another species from the Middle Jurassic Bajocian Age came out at 158.8 ± 4.3 Ma. Unfortunately, these precise ages were between 10-20 Ma younger than the accepted ranges of 174-183 and 168-170 Ma for the Toarcian and Bajocian. The authors ascribe this disappointing discrepancy to the breakdown of the calcium carbonate (aragonite) forming the animals' shells from which uranium migrated to contaminate the after-death calcite cement.

Zemanta

Leave a comment

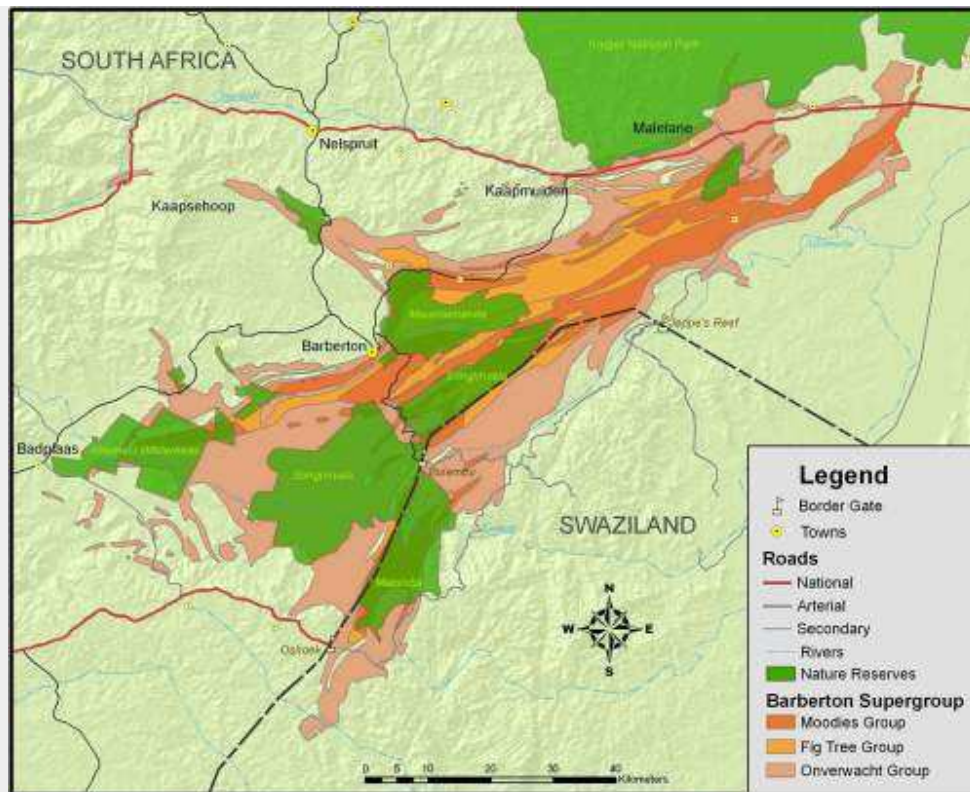
Posted in [Sedimentology and stratigraphy](#)

Tagged [Ammonite](#), [dating](#), [Hildoceras](#), [Jurassic](#)

Impacts in the early Archaean

Posted on [April 28, 2014](#) by [Steve Drury](#) | [Leave a comment](#)

From the days when advocates of impacts by extraterrestrial objects as explanations of geological features were widely regarded as 'whizz-bang artistes' a great many hats have probably been eaten, albeit in closely guarded privacy. In 1986, when beds of glassy spherules similar to those found in lunar soil and in the K-T boundary sequence were reported from early Archaean greenstone belts in Australia and South Africa, and deduced to have formed by an impact, the authors, Donald Lowe of Stanford University, USA and colleagues, were pounced on by those who thought they could plausibly explain the very odd rocks by unremarkable, Earthly processes. Subsequent work on their geochemistry overwhelmingly supported their formation by an impact of a large carbonaceous chondrite asteroid. And at one site, the Barberton Mountain Land greenstone belt in northeastern South Africa, there was evidence for at least three such impacts formed in a 20 Ma period. In hindsight, given the lunar bombardment history that peaked between 4 and 3.8 Ga, early Archaean rocks were a great deal more likely to contain materials formed by giant impacts than less antiquated ones.



Barberton greenstone belt, South Africa (credit: Barberton World Heritage Site)

Lowe has been steadily working on his original idea since then, his enthusiasm drawing in others. The latest focus is on evidence for other likely consequences in the Archaean record of the vast power unleashed by incoming asteroids travelling at speeds around 15 km s^{-1} (Sleep, N.H. & Lowe, D.R. 2014. Physics of crustal fracturing and chertdyke formation triggered by asteroid impact, $\sim 3.26 \text{ Ga}$, Barbertongreenstone belt, South Africa. *Geochemistry, Geophysics, Geosystems*, v. **15**, doi:10.1002/2014GC005229). The damage at Barberton not only produced spherule beds but opened fractures on the shallow sea bed into which liquefied sediments, including some spherules, were injected. These swarms of up to 10 m wide cherty dykes extend up to 100 m below what was then the sea floor strewn with impact spherules, and contain evidence of successive pulses of sediment injection.

Sleep and Lowe explain these dyke swarms as fractures caused by seismicity associated with a major impact. Their complexity suggests extreme shaking for upwards of 100 seconds; far longer than that from large, tectonic earthquakes. The fact that cracks opened to accommodate the sedimentary dykes indicates extension of the affected crust, which the authors suggest resulted from gravitational sliding of the shocked surface sediments down a gentle slope. Possibly the sediments, including the direct products of impact, the spherules, were swept into the cracks by currents associated with tsunamis induced by the impact.

Interestingly, the spherules and dykes formed upon crust largely formed of mafic to ultramafic lavas, yet volcanism following close on the heels of the impact event was of felsic composition. Did the impact trigger a shift locally from oceanic magmatism to that characteristic of island arcs; that is, did it start a new subduction zone?

Related articles

■ [New Stanford Study Examines Geologic Impact of a Massive Asteroid Collision on Ancient Earth](#)



Massive asteroid may have kickstarted the movement of continents



Zemanta

[Leave a comment](#)

Posted in [Planetary, extraterrestrial geology, and meteoritics](#)

Tagged [Archean](#), [Barberton](#), [Clastic dykes](#), [Impact event](#)

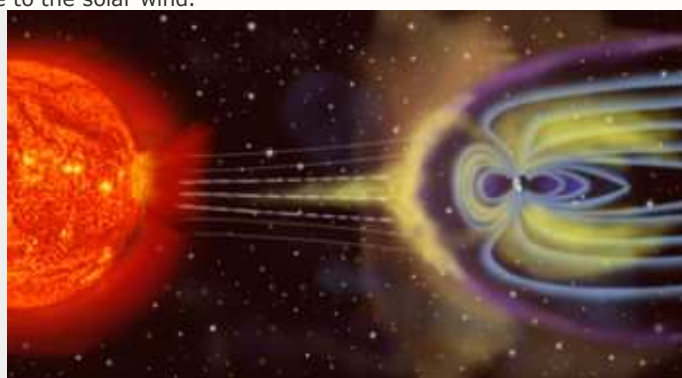
[Oxygen, magnetic reversals and mass extinctions](#)

Posted on [April 17, 2014](#) by [Steve Drury](#) | [Leave a comment](#)

In April 2005 *EPN* reported evidence for a [late Permian fall in atmospheric oxygen concentration](#) to about 16% from its all-time high of 30% in the Carboniferous and earlier Permian.. This would have reduced the highest elevation on land where animals could live to about 2.7 km above sea level, compared with 4 to 5 today. Such an event would have placed a great deal of stress on terrestrial animal families. Moreover, it implies anoxic conditions in the oceans that would stress marine animals too. At the time, it seemed unlikely that declining oxygen was the main trigger for the [end-Permian mass extinction](#) as the decline would probably have been gradual; for instance by oxygen being locked into iron-3 compounds that give Permian and Triassic terrestrial sediments their unrelenting red coloration. By most accounts the greatest mass extinction of the Phanerozoic was extremely swift.

The possibility of extinctions being brought on by loss of oxygen from the air and ocean water has reappeared, though with suggestion of a very different means of achieving it (Wei, Y. and 10 others 2014. Oxygen escape from the Earth during geomagnetic reversals:

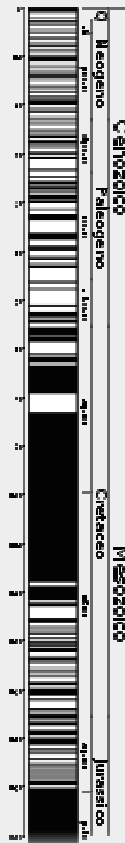
Implications to mass extinction. *Earth and Planetary Science Letters*, v. **394**, p. 94-98). The nub of the issue proposed by the Chinese-German authors is the dissociation and ionization by solar radiation of O₂ molecules into O⁺ ions. If exposed to the [solar wind](#), such ions could literally be 'blown away' into interplanetary space; an explanation for the lack of much in the way of any atmosphere on Mars today. Mars is prone to such ionic ablation because it now has a very weak magnetic field and may have been in that state for 3 billion years or more. Earth's much larger magnetic field diverts the solar wind by acting as an electromagnetic buffer against much loss of gases, except free hydrogen and to a certain extent helium. But the [geomagnetic field](#) undergoes reversals, and while they are in progress, the field drops to very low levels exposing Earth to loss of oxygen as well as to dangerous levels of ionising radiation through unprotected exposure of the surface to the solar wind.



Artist's rendition of Earth's magnetosphere deflecting the solar wind. (credit: Wikipedia)

Field reversals and, presumably, short periods of very low geomagnetic field associated with them, varied in their frequency through time. For the past 80 Ma the reversal rate has been between 1 and 5 per million years. For much of the Cretaceous Period there were hardly any during a magnetic quiet episode or superchron. Earlier Mesozoic times were magnetically hectic, when reversals rose to rates as high as 7 per million years in the early Jurassic. This was preceded by another superchron that spanned the Permian and Late Carboniferous. Earlier geomagnetic data are haphazardly distributed through the stratigraphic column, so little can be said in the context

of reversal-oxygen-extinction connections.



Geomagnetic polarity over the past 169 Ma (credit: Wikipedia)

Wei *et al.* focus on the end-Triassic mass extinction which does indeed coincide, albeit roughly, with low geochemically modelled atmospheric oxygen levels (~15%). This anoxic episode extended almost to the end of the Jurassic, although that was a period of rapid faunal diversification following [the extinction event](#). Yet it does fall in the longest period of rapid reversals of the Mesozoic. However, this is the only clear reversal-oxygen-extinction correlation, the Cenozoic bucking the prediction. In order to present a seemingly persuasive case for their idea, the authors assign mass extinctions not to very rapid events – of the order of hundreds of thousand years at most – which is well supported by both fossils and stratigraphy, but to 'blocks' of time of the order of tens of million years.

My own view is that quite possibly [magnetic reversals](#) can have adverse consequences for life, but as a once widely considered causal mechanism for mass extinction they have faded from the scene; unlikely to be resurrected by this study. There are plenty of more plausible and better supported mechanisms, such as impacts and flood-basalt outpourings. Yet several large igneous provinces do coincide with the end of geomagnetic superchrons, although that correlation may well be due to the associated mantle plumes marking drastic changes around the core-mantle boundary. According to Wei *et al.*, the supposed 6th mass extinction of the Neogene has a link to the general speeding up of geomagnetic reversals through the Cenozoic: not much has happened to either oxygen levels or biodiversity during the Neogene, and the predicted 6th mass extinction has more to do with human activity than the solar wind.

Related articles

■ [A possible cause of the end-Permian mass extinction: Lemon juice?](#)



[The Top 5 Extinctions](#)



[Study Reveals New Suspect in the 'Great Dying' Mass Extinction Murder Mystery](#)



Zemanta

[Leave a comment](#)

Posted in [Geobiology, palaeontology, and evolution](#), [Planetary, extraterrestrial geology, and meteoritics](#)

Tagged [extinction](#), [Magnetic field reversal](#), [Oxygen levels](#), [Solar wind](#)

[Remote sensing for fossils](#)

Posted on [April 15, 2014](#) by [Steve Drury](#) | [2 comments](#)

With the growing diversity of data from those parts of the electromagnetic spectrum that pass freely through Earth's atmosphere, mainly acquired from orbit, an increasing number of attributes of the surface can be mapped remotely. The initial impetus to launch [remote sensing satellites](#) in the 1960's and early 70's had two strands: to monitor weather conditions and assess vegetation cover with the early metsats, such as TIROS-1, and the first [Landsat](#) platform that exploited green plants' propensity for absorbing visible and largely reflecting near-infrared (NIR) radiation. With the incorporation in the Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER) instruments of wavelength regions in which minerals show spectral diversity, in the reflected short-wave infrared (SWIR) and emitted thermal infrared (TIR), remote sensing became a viable and useful tool for geologists. It figures strongly in lithological mapping and also in the detection of minerals related to various kinds of alteration associated with metal mineralisation and the migration of hydrocarbon-related fluids. The more wavebands with narrower coverage of radiation wavelengths, the more likely are the subtle differences in mineral spectra able to be detected and mapped. Yet, apart from one experimental system (Hyperion aboard NASA's EO-1 orbital platform) our home planet is not as well served by such hyperspectral systems as is Mars, blessed by two which have fuelled the on-going search for past habitable zones on the Red Planet.

The May 2014 issue of *Scientific American* includes an article on remote sensing that follows what to many might seem an odd direction: how to increase the chance of finding rich fossil deposits (Anemone, R.L. & Emerson, C.W. 2014. Fossil GPS. *Scientific American*, v. **310(5)**, p. 34-39). Apart from targeting a particular stratigraphic unit on a geological map, palaeontological collection has generally been a hit-or-miss affair depending on persistence and a keen eye, with quite a lot of luck. Once a productive locality turns up, such as the Cambrian Burgess shale, the dinosaur-rich Cretaceous sandstone of the Red Deer River badlands of southern Alberta in Canada and the hominin sites of Ethiopia's Afar Depression, palaeontologists often look no further until its potential is exhausted. Robert Anemone and Charles Emerson felt, as may palaeobiologists do, that one fossil 'hotspot' is simply not enough, yet balked at the physical effort, time and frustration needed to find more by trekking through their area of interest, the vast Tertiary sedimentary basins of Wyoming, USA. They decided to try an easier tack: using the few known fossil localities as digital 'training areas' for a software interrogation of Landsat Enhanced Thematic Mapper data in the hope that fossiliferous spots might be subtly different in their optical properties from those that were barren.



Satellite image of the Wyoming Basin, USA. credit: Wikipedia)

The teeth and bones of early Eocene mammals that had drawn them to Wyoming turn up in sandstone beds of the basins. They are pretty distinctive elements of landscape, forming ridges of outcrop because of their relative resistance to erosion, yet for that very reason present a huge selection of possibilities. Being simple mineralogically they also presented a seemingly daunting uniformity. Anemone and Emerson decided on a purely statistical approach using the six visible, NIR and SWIR bands sensed by Landsat ETM, rather than a spectrally oriented strategy using more sophisticated ASTER data with 14 spectral bands. Their chosen algorithm was that based on an artificial neural network that the fossil rich sandstones would train to recognise patterns present in ETM data recorded over them. This purely empirical approach seems to have worked. Of 31 sites suggested by the algorithm 25 yielded abundant vertebrate fossils. Applied to another of Wyoming's Tertiary basins it also 'found' the three most productive known mammal sites there. So, what is it about the fossil-rich sandstones that sets them apart from those that are more likely to be barren? The authors do not offer an explanation. Perhaps it has something to do with reducing conditions that would help preserve organic material better than would sandstones deposited in an oxidising environment. Iron minerals and thereby colour might be a key factor, oxidised sandstones are generally stained red to orange by Fe-3 oxides and hydroxides, whereas reduced sandstone facies may be grey because of iron in the form of sulfides