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AMBIENTE BRASIL

SCIENCE

EARTH PAGES

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## ÍNDICE DE NOTÍCIAS

### JORNAL DA CIENCIA

Edição 4573 - Notícias de C&T - Serviço da SBPC

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7. Seminário ressalta importância da gestão da propriedade intelectual
8. INPI apresenta novo sistema para pedidos de patente via Internet
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14. A qualidade dos médicos no Brasil, artigo de José Bonamigo e Florentino Cardoso
15. A importante missão de um divulgador científico
16. Mast promove lançamento do livro Autoria e História Cultural da Ciência
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19. Moscamed realizará 8ª edição Curso Internacional de Capacitação em Moscas-das-Frutas

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2. Brasil corre risco de não participar de Olimpíada de Biologia em Portugal
3. Nova presidência do IPT
4. Investimento deve ser no treinamento do professor
5. Como contornar as dificuldades da reforma do ensino médio? Artigo de Carlos Alberto dos Santos
6. ANPG promove Caravana a Brasília pela Valorização das Bolsas de Pesquisa
7. Três mil empregos de nível superior devem ser criados na área tecnológica com o pré-sal
8. MCTI seleciona laboratórios para integrar sistema de nanotecnologia
9. Apenas dois terços das ICTs possuem núcleos de inovação tecnológica
10. Tecnologia Assistiva tem R\$ 90 milhões em crédito
11. Encerram em setembro as inscrições para o 8º Prêmio Construindo a Igualdade de Gênero
12. Busca na escola, artigo de Marcelo Neri
13. Índios fazem manifestação contra portaria na AGU, em Brasília
14. Procuradoria-Geral é contra retomada de Belo Monte
15. Pesquisadores da USP descobrem nove espécies de briozoários
16. Ipen inicia processo para escolha do próximo Superintendente
17. CDTN: Primeiro centro de pesquisa nuclear do País completa 60 anos
18. Ict/Fiocruz realiza palestra sobre "Prospecção Tecnológica em Patentes"
19. Mestrado e doutorado em Direito da Unisc realiza seleção para turma de 2013

#### **Edição 4570 - Notícias de C&T - Serviço da SBPC**

1. São Paulo discute ciência para o desenvolvimento global a partir de 4ª feira na Fapesp
2. Cerimônia de entrega de medalhas da 7ª Obmep acontece hoje no Rio
3. As matérias do ensino médio devem ser reorganizadas em núcleos?
4. Valor de bolsas de pós-graduação cai 55% em 18 anos
5. Passivo do Código Florestal cai com compensação e pecuária intensiva
6. A perda de alimentos amplia o "Custo Brasil" Artigo de Adalberto Luis Val
7. 27ª FeSBE debate gargalos da ciência e outros temas
8. INT pontua desafios para as EPDIs durante o Congresso Abipti 2012
9. Onde estão nossos engenheiros? Artigo de Luiz Carlos Bresser-Pereira
10. É fundamental diminuir preconceito contra os indígenas, diz presidente da Funai
11. Uma em cada quatro cidades registra área rural maior que território
12. Escolas da América Latina precisam avançar no uso de novas tecnologias
13. Cepal sugere nova visão para desenvolvimento
14. Nova safra de alimentos é desenvolvida para combater doenças
15. Pais congelam tecido do cordão dos filhos
16. Brasil e Alemanha articulam parcerias em áreas de Bioeconomia
17. Morre aos 82 anos Neil Armstrong
18. Colóquio no CBPF põe em discussão a Física Brasileira e o desenvolvimento Nacional
19. PUC-Rio abre processo seletivo para professores do departamento de Engenharia Industrial

#### **Edição 4569 - Notícias de C&T - Serviço da SBPC**

1. Código florestal: águas ameaçadas. Artigo de Antonio Nobre e Ricardo Rodrigues
2. Deputados divergem sobre votação do PNE no Plenário
3. Petição online contra o adiamento do Plano Nacional de Educação
4. Conselho libera MBA em entidades não educacionais
5. ONG cobra rigidez na aplicação de lei que inclui o ensino de cultura negra nas escolas
6. Ceará terá Centro de Oceanografia e base na Funceme para gestão de risco e resposta a desastres naturais
7. Nova plataforma de tratamento do câncer
8. Appetite por energia, artigo de Drausio Atalla e Carlos Henrique Mariz
9. Justiça manda parar obras de usinas no Pantanal
10. Cidades agem para ampliar ações da Rio+20
11. Projetos de Inovação em Tecnologia Assistiva ganham linha de crédito
12. CNPq e Oxford ampliam cooperação no Ciência sem Fronteiras
13. Missão trará dados sobre fenômeno que afeta satélites
14. Medalhistas de ouro da matemática recebem prêmio na segunda-feira
15. Dilma decide por 'acadêmico' e nomeia Marcelo Neri para o Ipea
16. Ciência Hoje On-line: Max contra o glaucoma
17. Tome Ciência: Nanotecnologia: quanto menor, melhor
18. IRD sedia Primeiro Simpósio sobre as Novas Recomendações de Radioproteção da Comissão Internacional de Proteção Radiológica

19. USP promove evento que discute plágio e integridade acadêmica no ensino superior

## **AMBIENTE BRASIL**

**Desastres naturais em pauta nas negociações do clima de Bangcoc**

As negociações, que se estenderão até o dia 5 de setembro, preparam uma reunião ministerial prevista para Doha, em novembro, sob os auspícios da Convenção Marco das Nações Unidas sobre as Mudanças Climáticas.

**Países pobres acusam ricos de ignorar promessas sobre clima**

Denúncia foi feita em retomada de negociações da ONU nesta quinta-feira (30). Discussões buscam pacto global sobre o clima para 2020.

**Dilma cobra ministras sobre resultado do Código Florestal**

"Por que os jornais estão dizendo que houve um acordo ontem no Congresso sobre o Código Florestal? Eu não sei de nada?", questionou Dilma no bilhete enviado à Ideli Salvatti (Relações Institucionais) e Izabella Teixeira (Meio Ambiente).

**Justiça suspende licenciamento ambiental de hidrelétrica no Sul do país**

A Justiça Federal em Santa Catarina determinou a suspensão do processo de licenciamento ambiental da Usina Hidrelétrica Itapiranga.

**Principal uso das células-tronco é para testes, dizem cientistas**

Tecnologia aponta erros antes e acelera desenvolvimento de remédios. Para colunista do G1, 'limite do uso é a criatividade humana'.

**Supervulcão extinto é descoberto em ilha no sudeste de Hong Kong**

Enormes rochas hexagonais compõem a formação nas Ilhas Kwo Chau. Última erupção vulcânica ocorreu há cerca de 140 milhões de anos.

**Decisão sobre Código Florestal é "retrocesso", diz ministra**

Segundo a ministra do Meio Ambiente, Izabella Teixeira, a decisão não foi pactuada com o governo e poderá gerar insegurança jurídica para o setor.

**Ave guará retorna a Santa Catarina após décadas de extinção local**

O último registro oficialmente documentado no Estado é de 1858, no litoral de Palhoça.

**Projeto de agricultura sustentável forma primeira turma nos morros do Chapéu Mangueira e Babilônia**

Os alunos foram capacitados para a construção e manutenção de hortas com produção contínua.

**O MMA e barragens no Pantanal**

Obras previstas para a região são submetidas a análise prévia do Conama, CNRH e ANA.

**Descoberta mutação genética que influencia trotar dos cavalos**

Pesquisadores vão colocar teste genético que detecta mutação que permite que animais corram sem galopar, para ser usado por criadores.

**Energia eólica: país chegará a 2015 com 8 gigawatts de capacidade instalada, diz Tolmasquim**

A estimativa é de que o Brasil, que hoje ocupa a vigésima posição no mundo entre os países que produzem energia a partir dos ventos, com uma capacidade instalada de 2 GW, no próximo ano esteja entre os dez países.

**Robô Curiosity começa sua "longa caminhada" por Marte**

O jipe-robô andou cerca de 16 metros em direção ao leste no seu 22º dia no Planeta Vermelho – que corresponde a última terça-feira (28) da Terra.

**Cientistas sequenciam genoma do denisovan, parente dos neandertais**

As evidências fósseis dos denisovans são escassas, por isso, a existência do grupo só veio à tona em 2010, quando um pedaço de osso de um dedo e dois molares foram escavados na Caverna Denisova, nos Montes Altai, na Sibéria, fornecendo DNA para estudo.

**Rondônia está entre os estados que mais fazem queimadas, afirma Inpe**

Entre os dias 28 e 29 foram registrados mais de 2 mil focos de incêndio. Porto Velho responde por 45% das queimadas do estado.

**MT registra 36,2 mil casos de dengue somente este ano, aponta secretaria**

Entre janeiro a 30 de agosto, estado registrou 36.200 casos da doença. Até o momento, 18 óbitos foram registrados no período.

**Pesquisadores da USP descobrem nove espécies no litoral brasileiro**

**Foguete Atlas V, da Nasa, decola dos EUA com duas sondas espaciais**

Meta é estudar influência do Sol sobre a Terra e a radiação que nos cerca. Lançamento havia sido adiado por problemas técnicos e pelo mau tempo.

**Índios encerram protesto e decidem liberar rodovias de MT após acordo**

Os indígenas cobram a revogação da portaria 303. Bloqueio já dura quatro dias e causa prejuízos aos motoristas.

**Telescópio detecta buracos negros e galáxias que estavam 'escondidos'**  
**Ao captar comprimentos de onda ligados ao calor dos astros, o Wise, da Nasa, conseguiu enxergar pela primeira vez alguns corpos celestes.**

#### [Emissões, pacto e metas](#)

Brasil discute na Tailândia a questão dos gases poluentes. Será uma reunião preparatória para a conferência programada para o final do ano.

#### [No CE, Clinton elogia crescimento econômico e energia limpa do Brasil](#)

Presidente ressaltou também o potencial eólico e energia solar do Brasil. Ex-presidente ministrou palestra em Fortaleza nesta segunda-feira (27).

#### [Degelo no Oceano Ártico cresce e bate recorde de mais de 30 anos](#)

Camada de gelo registrada é a menor desde 1979, segundo a Nasa. Derretimento é preocupante e pico ocorreu antes do tempo, diz agência.

#### [Presidente de comissão e relator da MP do Código Florestal tentam fechar acordos para votação de emendas nesta terça](#)

As votações já foram adiadas uma vez quando o clima de tensão entre ruralistas e ambientalistas aumentou por causa da aprovação de uma emenda que acabava com áreas de preservação permanente às margens dos chamados rios perenes ou intermitentes.

#### [Cientistas descobrem animais mais antigos já preservados em âmbar](#)

Dois ácaros e uma mosca de 230 milhões de anos foram achados na Itália. Detalhes dos bichos podem ajudar a explicar como a Terra evoluiu.

#### [Butantan aguarda autorização para testes em humanos da vacina contra dengue](#)

Após a aprovação, o instituto poderá iniciar o recrutamento de 300 voluntários nos quais a vacina será experimentada.

#### [China é maior esperança de retorno à Lua](#)

O programa espacial chinês é planejado majoritariamente longe dos olhos da mídia, mas sabe-se que há planos para a construção de um superfoguete com capacidade para impulsionar uma espaçonave tripulada na direção da Lua.

#### [Vazante do rio Negro traz praias e pesca para amazonenses](#)

Com a vazante do rio Negro chegando a 3,96 metros, as areias ficam à vista nas áreas próximas a Manaus e atraem população.

#### [Vitamina pode ser a chave para combater superbactérias, diz estudo](#)

A pesquisa, feita com animais de laboratório e com sangue humano, mostra que doses altas de vitamina B3 aumentam em mil vezes a habilidade de células imunológicas de eliminar os estafilococos.

#### [Projeto sobre consumo eficiente de energia será compartilhado com universidades para o seu desenvolvimento](#)

O projeto prevê o desenvolvimento de um novo modelo para o gerenciamento de energia no Brasil, tornando Armação de Búzios referência em consumo de energia para a América do Sul.

#### [Bicicleta de papelão é promessa de transporte ecológico](#)

Além de barata, a bicicleta, que é resistente à umidade e à oxidação, ainda pode suportar até 140 quilos de peso.

#### [Falta de água pode tornar o mundo vegetariano](#)

Segundo novo estudo, mudança radical de hábitos será necessária para garantir a segurança alimentar da população mundial, que deverá chegar a 9 bilhões em 2050.

#### [Protesto de índios bloqueia estradas federais em Mato Grosso](#)

Manifestantes cobram revogação de portaria que estabelece novas regras para exploração de terras indígenas, além da revisão de demarcações.

#### [Panda 'celebridade' dá à luz filhote de 137 gramas em Taiwan](#)

China doou panda Yuan Yuan para marcar boas relações com Taiwan. Filhote do animal é fêmea e nasceu em 23 de agosto, afirma órgão.

#### [Japão reconhece carne suína de Santa Catarina como livre de febre aftosa](#)

A expectativa da associação é que em 2013 o Brasil passe a fornecer cerca de 15% das importações de carne suína do Japão, o maior importador mundial deste tipo de carne.

## Onça-pintada é achada morta em MS e polícia suspeita de atropelamento

O bicho será empalhado e usado em oficinas de educação ambiental. Segundo a PMA, atropelamentos de animais são frequentes na rodovia.

## Ambientalistas bloqueiam navio em protesto contra exploração do Ártico

Greenpeace já havia feito ato parecido há três dias, também na Rússia. Mar próximo ao Polo Norte tem reservas de petróleo e gás natural.

## Arqueólogos encontram novo fóssil de mamífero misterioso

No único fóssil do 'Ernanodon' disponível até hoje, faltavam muitas peças. Animal que viveu na região da Mongólia é parente do pangolim.

ONU retoma negociações sobre o clima nesta quinta (30) na Tailândia  
EUA, Japão e UE serão pressionados para destinar bilhões anualmente. Mais de 190 países vão se reunir durante uma semana em Bangcoc.

Cientistas alertam para consequência de degelo recorde no Ártico  
Região perdeu mais gelo neste ano do que em qualquer outro período desde o início de registros por satélite, em 1979.

Sacolas retornáveis começam a ganhar espaço em Manaus/AM  
Supermercados de Manaus oferecem sacolas ecológicas aos clientes. Projeto de lei de substituição de sacolas plásticas tramita na Aleam.

Teste define se gatos são canhotos ou destros em centro nos EUA  
Felino usa pata dominante quando quer algo, diz centro de cuidado animal. Para estudo, 50% dos gatos são destros, 40% canhotos e 10% ambidestros.

Nasa inaugura novas técnicas para medir derretimento de gelo polar  
Raios laser, radar e voos são usados para medir área congelada do mar. Derretimento no Oceano Ártico bateu recorde de 33 anos, afirma Nasa.

Astrônomos descobrem sistema planetário com duas estrelas  
Existência de dois planetas na órbita de duas estrelas era inédita. Planetas do tipo são comparados a Tatooine, de 'Guerra nas Estrelas'.

Brasileira recebe prêmio de pesquisador que deu nome ao bóson de Higgs  
A estudante de doutorado brasileira Flavia de Almeida Dias, da Unesp, ganhou o prêmio de melhor trabalho em física experimental de altas energias apresentado no 69th Scottish Universities Summer School in Physics, na Escócia.

No PR, chuva fraca não compensa seca de agosto, diz Simepar  
Frente fria deve se afastar, mas deixa mais nebulosidade nos céus de Curitiba e do Litoral nesta quarta-feira.

Cientistas descobrem elo entre 'larva-monstro' e espécie de camarão  
Animais considerados diferentes são da mesma espécie, diz pesquisador. 'Larva-monstro' foi descoberta há 200 anos e intriga cientistas desde então.

O valor da sociobiodiversidade  
Produtos de origem vegetal movimentam a economia local em diferentes regiões do país. Intenção do governo é modernizar a atividade.

Nova aferição do PIB  
Mudança tem o objetivo de estimular o desenvolvimento sustentável e mudar os padrões de produção e consumo.

Espécies invasoras podem trazer riscos ao meio ambiente  
Segundo a União Internacional para a Conservação da Natureza, que se reúne no início de setembro na Coreia do Sul, estes "elementos alienígenas" já ocupam o terceiro lugar nas ameaças às espécies em risco de extinção.

Queimadas no Amazonas alcançam Terras Indígenas e Unidades de Conservação  
Monitoramento do Inpe indica que focos de calor está descontrolado em várias áreas protegidas do Estado.

Liminar do presidente do STF libera obras de Belo Monte  
A suspensão das obras foi resultado de uma ação movida pelo Ministério Público Federal no Pará, que baseia seu argumento no fato de que o Congresso Nacional deveria ter feito consulta prévia às comunidades indígenas antes de aprovar o Decreto Legislativo que liberou a construção da usina.

Curiosity transmite de Marte música inédita do rapper do Black Eyed Peas  
Transmissão aconteceu durante evento educacional no Laboratório de Propulsão a Jato da Nasa, na Califórnia.

Lobos-marinhos são atração em São José do Norte/RS  
Animais apareceram na praia do Mar Grosso nesta terça-feira (28).

Sem acordo, votação de mudanças na MP do Código Florestal fica para quarta  
A comissão já aprovou o texto básico da MP e quatro destaques no dia 8 de agosto, mas a polêmica continua principalmente em torno da recomposição de áreas de preservação permanente de margens de cursos d'água.

Cientistas fazem balanço dos resultados da RIO+20

Conferência produziu forte mobilização da comunidade científica, mas texto final gerou frustração por cortar temas importantes, de acordo com participantes de workshop conjunto BIOTA-BIOEN-Mudanças Climáticas: o futuro que não queremos.

Conceito de "água virtual" deve nortear consumo sustentável

Especialistas sugerem modelo global de sustentabilidade para agricultura, considerando o enorme volume de água "invisível", exportado junto com alimentos.

Tempestade Isaac deixa dois mortos e 12.900 evacuados na República Dominicana

O boletim do organismo, que reduziu no domingo (26) para 19 o número de províncias em alerta máximo e subiu para 13 as demarcações em alerta intermediário, também divulgou que 864 casas foram afetadas pelo fenômeno atmosférico, cujas intensas chuvas deixaram incomunicáveis 90 cidades em várias províncias do país.

Arquiteto cria 'bola de vidro' gigante que capta 35% mais energia solar

Lente esférica permite absorção melhor do que placas solares comuns. Equipamentos estão em fase de testes, segundo arquiteto alemão.

Perto da costa, jubartes correm perigo

Barcos de observação e de pesca na costa dos Estados Unidos trazem risco aos cetáceos, mas novas pesquisas sobre seu comportamento podem melhorar o problema.

Taubaté/SP quer tornar parque unidade de conservação ambiental

Parque do Itaim, criado em 2003, tem um 1,7 milhão de metros quadrados. Com decreto, prefeitura passa a ter direito a receber recursos do Consema.

Fazenda de Pablo Escobar vira 'parque' de hipopótamos na Colômbia

Ruínas da casa do traficante, morto em 1993, também atraem curiosos. Administração do parque tenta diversificar atrações e mudar foco.

Índios do Pará concluem curso para se tornarem professores em aldeias

Ao todo, 36 indígenas concluíram o curso de magistério em Oriximiná. Eles agora podem dar aulas interculturais e bilíngue em suas aldeias.

Bombeiros resgatam tamanduá-bandeira no distrito de Potunduva/SP

Animal estava em cima de uma árvore. Moradores do local acionaram os bombeiros.

Material reciclável pode ser trocado por desconto em conta de luz na BA

Projeto Vale Luz, da Coelba, visita dez bairros de Salvador nesta semana.

Rumo à Índia

Brasil levará à Convenção de Hyderabad proposta em favor de um esforço coletivo entre os 193 países-membros na captação de recursos em defesa da biodiversidade.

Terremoto de magnitude 6,4 diante das Ilhas Molucas, na Indonésia

Não foi emitido um alerta de tsunami depois do tremor. Terremoto ocorreu a 169 km a noroeste da cidade de Ternate.

Morre Neil Armstrong, primeiro homem na Lua

Armstrong passou por uma cirurgia de coração em 7 de agosto. Americano comandou a Apollo 11 e pisou na Lua em 20 de julho de 1969.

Nasa adia novamente o lançamento de duas sondas espaciais

Mau tempo impediu lançamento do foguete Atlas V que colocará em órbita as sondas espaciais. Data prevista é a próxima quinta-feira.

Quase 30 anos depois, biólogo de MT replanta árvores 'atingidas' pelo VLT

Benedito Rondon plantou alguns exemplares na rotatória da UFMT em 1982. Atualmente ele trabalha na retirada e replantio dos mesmos exemplares.

Noruega pede a Brasil e Indonésia para manter proteção florestal

Ministro do Meio Ambiente norueguês promete a ambos os países até dois bilhões de dólares em ajuda em troca de diminuição do desmatamento.

Cresce desmatamento no entorno de UCs na Amazônia Legal

Entre os estados, Pará continua na liderança com 83% das supressões ocorridas em julho.

Ativistas do Greenpeace escalam plataforma de petróleo russa no Ártico

Grupo da ONG quer protestar contra exploração de petróleo e gás na região, que tem um ecossistema frágil.

Brasileiros são eleitos para uma das principais entidades de física do mundo

O professor da universidade americana Dartmouth College, Marcelo Gleiser ocupará o cargo de conselheiro-geral e Márcia Barbosa, da Universidade Federal do Rio Grande do Sul, o de conselheira internacional do American Physical Society.

Canadá anuncia expedição para procurar navios no Ártico

HMS Erebus e HMS Terror estão perdidos desde 1845, quando partiram em expedição para encontrar uma rota marítima entre Atlântico e Pacífico.

Nasa adia lançamento de sondas espaciais por problemas técnicos

Questões técnicas dos foguetes adiaram para sábado o lançamento das sondas que vão estudar a radiação ao redor da Terra e as influências da atividade solar no planeta.

Operação apreende peixe e carne de peixe-boi ilegais em feira de Manaus/AM

Batalhão Ambiental realizou a operação na feira do Coroadó, Zona Leste. Fiscalização ocorre nas feiras de Manaus durante os fins de semana.

Puma é encontrado andando no centro de cidade dos EUA

Animal tentou entrar em edifício e foi capturado por polícia de Reno. Felino vai passar por exames de saúde para depois ser libertado.

Natureza pode servir de inspiração para negócios

Professor de biomimética Fred Gelli destaca que a natureza sabe como ninguém como captar energia solar e acredita que o ser humano vai ter que reinventar a maneira de fazer negócios.

Cientistas descobrem barata da América do Sul que brilha no escuro

Espécie rara gera luz em áreas da cabeça como forma de defesa natural. Bioluminescência serve para imitar besouro que produz toxina, diz estudo.

Girafa 'vela' filhote morto e levanta discussão sobre luto de animais

Comportamento observado em três episódios diferentes surpreende cientistas e gera questionamento sobre relação de animais com a morte.

Incêndio atinge Floresta Nacional de Carajás em Parauapebas, no Pará

Nesta sexta um helicóptero foi designado para ajudar no combate ao fogo. Floresta possui 400 mil hectares e é permitida a exploração mineral na área.

Integrantes do governo divergem sobre proibição do amianto no país

Ministérios da Saúde, Meio Ambiente e Previdência apontaram prejuízos. Para Comércio Exterior e Minas e Energia, amianto ajuda economia.

Ayres Britto quer ouvir Ministério Público antes de se decidir sobre Belo Monte

O presidente do Supremo Tribunal Federal abriu prazo de 24 horas para o procurador-geral da República se manifestar sobre o pedido.

São Carlos/SP fabrica 1ª sonda para manutenção de poços de petróleo

Equipamento 100% brasileiro custou R\$ 4 milhões e pesa 55 toneladas. Ela faz a limpeza e reabilita poços que já estão abandonados.

20 / 08 / 2012 Sistema de biofiltro diminui emissão atmosférica de gás metano gerado em aterros sanitários

O projeto desenvolvido pela Escola Politécnica USP lança uma cobertura de bactérias no aterro que filtra o CH4 produzido pelo lixo, transformando o gás poluente em água e gás carbônico.

20 / 08 / 2012 Formigas mudam de cor depois das refeições

A maioria das formigas estudadas preferiu os pingos mais claros, como verde e amarelo, deixando de lado os tons fortes de vermelho e azul – as poucas que provaram mais de uma cor criaram novas tonalidades.

20 / 08 / 2012 Argentino desenvolve fogão solar e invenções ambientais, no ES

Desidratadores de alimentos, monjolo e roda d'água são outros inventos. Sítio do argentino, em Venda Nova, recebe visitantes de todo o Brasil.

20 / 08 / 2012 Robô Curiosity usa laser em Marte pela primeira vez

Laser bateu 30 vezes, por 10 segundos, em rocha do tamanho de um punho. Além de exercício de alvo, pode indicar composição diferente sob superfície.

20 / 08 / 2012 Atividade do vulcão Tungurahua faz Equador aumentar estado de alerta

Emissões de cinzas, tremores e explosões foram registrados neste domingo. 'Rugidos' causaram a vibração do solo e de janelas de casas próximas.

20 / 08 / 2012 Olhos azuis e canto permitem identificar duas espécies de corujas

'Ninox rumseyi' e 'Ninox leventisi' foram descobertas nas Filipinas. Conhecidos há 15 anos, animais só agora foram definidos como espécie.

20 / 08 / 2012 Pico de mortes por gripe A ocorreu no fim de junho, confirma ministério

De acordo com os dados, houve em todo o país 284 mortes de pacientes que contraíram o vírus Influenza H1N1, desde o início de janeiro até o último dia 12 de agosto.

20 / 08 / 2012 Estátua de rei turco de 3 mil anos demonstra criatividade da Idade do Ferro

Descoberta mostra que apesar de descentralização política, havia arte e capacidade intelectual nos pequenos e independentes reinos da época.

20 / 08 / 2012 Polícia apreende pássaros silvestres na cidade de Santo Estevão, na Bahia

Oitenta e dois pássaros foram apreendidos na feira livre do município. Animais foram soltos na manhã deste domingo em comunidade rural.

20 / 08 / 2012 Até pimentão: cientistas criam cada vez mais frutas sem sementes  
Com uma cor vermelha vibrante e uma casca fina, o minipimentão sem sementes, que está fazendo bastante sucesso nas escolas americanas, mede de 5 a 10 centímetros e pesa entre 10 e 30 g. É uma boa fonte de vitamina C e está disponível o ano todo.

20 / 08 / 2012 Aranha 'pé-grande' é descoberta em cavernas nos Estados Unidos  
Aspecto assustador e grandes patas chamaram a atenção de cientistas. Espécie é pequena, com 4 cm de tamanho, e produz teias rudimentares.

20 / 08 / 2012 Produção de grãos no Semiárido nordestino diminui 80% por causa da seca  
Com os impactos climáticos, a participação do Nordeste na produção nacional de grãos caiu, registrando 7,5%.

20 / 08 / 2012 Queimada atinge 6 hectares de mata próxima a pista de Sobradinho/DF  
Fogo foi controlado por bombeiros após cerca de duas horas de trabalho. Fumaça podia ser vista de longe e dificultou visibilidade de motoristas.

20 / 08 / 2012 Mato Grosso lidera com 26% no recolhimento de embalagens no país  
Estado retirou do campo 6 mil toneladas de frascos em sete meses. Produtor tem papel fundamental na reciclagem dos produtos.

20 / 08 / 2012 Bosón de Higgs esvazia o bolso de cientistas célebres  
Físicos como Stephen Hawking e casas especializadas se preparam para pagar apostas quando a existência da chamada "partícula de Deus" for oficialmente confirmada.

20 / 08 / 2012 Terremoto de 6,2 graus sacode norte de Papua Nova Guiné  
O terremoto desta segunda-feira (20) ocorreu a 115 quilômetros a nordeste de Mount Hagen e a 589 quilômetros ao noroeste de Port Moresby, a capital.

20 / 08 / 2012 Desnutridos, pinguins não resistem à 'maratona'  
Fracos e desnutridos, ao menos 221 pinguins vindos da região da Patagônia, na Argentina, chegaram às praias do litoral norte de São Paulo e sul do Rio de Janeiro nos últimos dois meses.

21 / 08 / 2012 Cientistas espanhóis propõem usar urina para combater poluição  
Amônia criada no xixi é capaz de absorver dióxido de carbono, diz estudo. Para viabilizar uso, cientistas querem misturar urina com água de azeitona.

21 / 08 / 2012 Lago americano registra série incomum de tornados sobre a água  
Frequentadores do Lago Michigan viram uma série de nove tornados no local, com ventos de até 100 quilômetros por hora.

21 / 08 / 2012 Variedade resistente à seca pode garantir níveis de produtividade agrícola em períodos de estiagem  
Um grupo de pesquisadores da Embrapa conseguiu isolar um gene do café resistente à seca. Os testes feitos em plantas de laboratório agora estão sendo estudados em culturas comerciais, como cana-de-açúcar, soja, milho, arroz e trigo.

21 / 08 / 2012 Indígenas ajudam Exército a defender fronteira do Brasil  
Grande parte dos 100 militares que trabalham no pelotão Especial de Fronteira de São Joaquim é de origem indígena. Eles são o exemplo de uma tendência adotada pelo Exército brasileiro: contratar índios para defender e patrulhar a floresta amazônica.

21 / 08 / 2012 Paraná tem 24 novos casos e uma morte pela gripe A (H1N1) em uma semana  
Novos registros do vírus caem pela sexta semana consecutiva no estado.

21 / 08 / 2012 Cosmonautas instalam sistema de defesa contra meteoros na ISS  
Painéis e escudos especiais devem proteger a estação espacial. Gennady Padalka e Yuri Malenchenko realizaram caminhada espacial.

21 / 08 / 2012 Casa flutuante vira estação para reabilitar animais em Guarujá/SP  
Embarcação foi reformada e ficará ancorada na cidade. Visitas podem ser feitas a partir de outubro.

21 / 08 / 2012 Paraíba produz abacaxi com 45% a menos de agrotóxicos e resistente a fungos  
A variedade foi criada pela Embrapa Mandioca, cujas mudas foram multiplicadas na fazenda do produtor Cleanto Castro, em Itapororoca.

21 / 08 / 2012 Garimpos de diamante na Reserva Roosevelt, RO, são desativados  
Ibama, Polícia Federal e Funai participaram da Operação Kimberlito. Dezessete motores utilizados pelos garimpeiros foram destruídos.

21 / 08 / 2012 Hubble detecta galáxia 'solitária' a 9 milhões de anos-luz do Sistema Solar  
Vizinha mais próxima da DDO 190 fica a 3 milhões de anos-luz de distância. Corpo celeste anão é irregular, pequeno e sem estrutura bem definida.

21 / 08 / 2012 Nasa anuncia nova missão para estudar o interior de Marte  
InSight deverá chegar ao planeta vermelho em 2016. Objetivo é conhecer melhor o núcleo e as placas tectônicas do planeta.

21 / 08 / 2012 Pegada de dinossauro é descoberta em 'quintal' da Nasa nos EUA  
Réptil pré-histórico deixou a marca há 112 milhões de anos, diz cientista. Nodossauro era herbívoro, de grande porte e tinha carapaça potente.

21 / 08 / 2012 Governo autoriza construção de duas hidrelétricas no Sul do país  
A Hidrelétrica Baixo Iguazu será construída no Rio Iguazu, entre os municípios de Capanema e Capitão Leônidas Marques, no Paraná. A Hidrelétrica São Roque será no Rio Canoas, entre Vargem e São José do Cerrito, em Santa Catarina.



## SCIENCE

Influence of host rocks on composition of colloid particles in groundwater at the Karachai Lake site

V. I. Malkovsky, Yu. P. Dikov, En. E. Asadulin, V. V. Krupskaya, and John Adams

Clay Minerals. 2012; 47(3): p. 391-400

<http://claymin.geoscienceworld.org/cgi/content/abstract/47/3/391?ct=ct>

Effect of heating vermiculites on extractability of phosphorus and some essential plant micronutrients

E. M. M. Marwa, A. A. Meharg, C. M. Rice, and John Adams

Clay Minerals. 2012; 47(3): p. 365-371

<http://claymin.geoscienceworld.org/cgi/content/abstract/47/3/365?ct=ct>

Introduction to the Petroleum Resources Management System and the implications for the geophysical community

Robert Lorenzen, Satinder Purewal, and John Etherington

The Leading Edge. 2012; 31(9): p. 1028-1032

<http://tle.geoscienceworld.org/cgi/content/abstract/31/9/1028?ct=ct>

Relating seismic interpretation to reserve/resource calculations: Insights from a DHI consortium

Rocky Roden, Mike Forrest, and Roger Holeywell

The Leading Edge. 2012; 31(9): p. 1066-1074

<http://tle.geoscienceworld.org/cgi/content/abstract/31/9/1066?ct=ct>

Stochastic volume estimation and connectivity analysis at the Mallik gas hydrate field, Northwest Territories, Canada

Camille Dubreuil-Boisclair, Erwan Gloaguen, Gilles Bellefleur, and

Denis Marcotte

The Leading Edge. 2012; 31(9): p. 1076-1081

<http://tle.geoscienceworld.org/cgi/content/abstract/31/9/1076?ct=ct>

Halloysite-to-kaolinite transformation by dissolution and recrystallization during weathering of crystalline rocks

A. Inoue, M. Utada, T. Hatta, and Balwant Singh

Clay Minerals. 2012; 47(3): p. 373-390

<http://claymin.geoscienceworld.org/cgi/content/abstract/47/3/373?ct=ct>

Reconsidering the "Tragic" Scott Expedition: Cheerful Masculine Home-making in Antarctica, 1910-1913

Carolyn Strange

Journal of Social History. 2012; 46(1): p. 66-88

<http://jsh.oxfordjournals.org/cgi/content/abstract/46/1/66?ct=ct>

Response to Comments on "Intensifying Weathering and Land Use in Iron Age Central Africa"

Germain Bayon, Bernard Dennielou, Joel Etoubleau, Emmanuel Ponzevera,

Samuel Toucanne, and Sylvain Bermell

Science. 2012; 337(6098): p. 1040-e

<http://www.sciencemag.org/cgi/content/abstract/337/6098/1040-e?ct=ct>

Slide Hazards

Nicholas S. Wigginton

Science. 2012; 337(6098): p. 1021-b

<http://www.sciencemag.org/cgi/content/full/337/6098/1021-b?ct=ct>

A Gain-of-Function Polymorphism Controlling Complex Traits and Fitness in Nature

Kasavajhala V. S. K. Prasad, Bao-Hua Song, Carrie Olson-Manning, Jill

T. Anderson, Cheng-Ruei Lee, M. Eric Schranz, Aaron J. Windsor, Maria

J. Clauss, Antonio J. Manzaneda, Ibtehaj Naqvi, Michael Reichelt,

Jonathan Gershenzon, Sanjeewa G. Rupasinghe, Mary A. Schuler, and

Thomas Mitchell-Olds

Science. 2012; 337(6098): p. 1081-1084

<http://www.sciencemag.org/cgi/content/abstract/337/6098/1081?ct=ct>

AAAS News and Notes

Science. 2012; 337(6098): p. 1058-1061

<http://www.sciencemag.org/cgi/content/summary/337/6098/1058?ct=ct>

EXPOSURE OF POPULATION FROM RESIDENTIAL RADON: A CASE STUDY FOR DISTRICT HATTIAN, AZAD KASHMIR, SUB-HIMALAYAS, PAKISTAN

M. Rafique, S. U. Rahman, and Matiullah  
Radiat Prot Dosimetry. published 31 August 2012, 10.1093/rpd/ncs198  
<http://rpd.oxfordjournals.org/cgi/content/abstract/ncs198v2?ct=ct>

Massive granitoid production without massive continental-crust growth in the Chinese Altay: Insight into the source rock of granitoids using integrated zircon U-Pb age, Hf-Nd-Sr isotopes and geochemistry

W. Liu, X. J. Liu, and W. J. Xiao  
Am J Sci. 2012; 312(6): p. 629-684  
<http://www.ajsonline.org/cgi/content/abstract/312/6/629?ct=ct>

Energy conservation of anaerobic respiration

Qusheng Jin  
Am J Sci. 2012; 312(6): p. 573-628  
<http://www.ajsonline.org/cgi/content/abstract/312/6/573?ct=ct>

Author Biographies

Journal of Environmental & Engineering Geophysics. 2012; 17(3): p. 171-173  
<http://jeeg.geoscienceworld.org/cgi/content/full/17/3/171?ct=ct>

Practical Estimation of Near-surface Bulk Density Variations Across the Border Ranges Fault System, Central Kenai Peninsula, Alaska

Niti Mankhemthong, Diane I Doser, and Mark R Baker  
Journal of Environmental & Engineering Geophysics. 2012; 17(3): p. 151-158  
<http://jeeg.geoscienceworld.org/cgi/content/abstract/17/3/151?ct=ct>

GPR Investigations to Assess the State of Damage of a Concrete Water Tunnel

Diego Arosio, Stefano Munda, Luigi Zanzi, Laura Longoni, and Monica Papini  
Journal of Environmental & Engineering Geophysics. 2012; 17(3): p. 159-169  
<http://jeeg.geoscienceworld.org/cgi/content/abstract/17/3/159?ct=ct>

Multi-channel Analysis of Surface Waves (MASW) in Karst Terrain, Southwest Georgia: Implications for Detecting Anomalous Features and Fracture Zones

E. Horry Parker, Jr and Robert B Hawman  
Journal of Environmental & Engineering Geophysics. 2012; 17(3): p. 129-150  
<http://jeeg.geoscienceworld.org/cgi/content/abstract/17/3/129?ct=ct>

Near-surface Seismic Investigation of Barringer (Meteor) Crater, Arizona

Soumya Roy and Robert R Stewart  
Journal of Environmental & Engineering Geophysics. 2012; 17(3): p. 117-127  
<http://jeeg.geoscienceworld.org/cgi/content/abstract/17/3/117?ct=ct>

Palaeoenvironment and agriculture of ancient Loulan and Milan on the Silk Road

Jianping Zhang, Houyuan Lu, Naiqin Wu, Xiaoguang Qin, and Luo Wang  
The Holocene. published 29 August 2012, 10.1177/0959683612455541  
<http://hol.sagepub.com/cgi/content/abstract/0959683612455541v1?ct=ct>

Late-Holocene evolution of a floodplain impounded by the Smrduta landslide, Carpathian Mountains (Czech Republic)

Tomas Panek, Veronika Smolkova, Jan Hradecky, Jan Sedlacek, Valentina Zernitskaya, Jaroslav Kadlec, Anna Pazdur, and Tomas Rehanek  
The Holocene. published 29 August 2012, 10.1177/0959683612455539  
<http://hol.sagepub.com/cgi/content/abstract/0959683612455539v1?ct=ct>

Evolution of oxygen utilization in multicellular organisms and implications for cell signalling in tissue engineering

Katerina Stamati, Vivek Mudera, and Umber Cheema  
Journal of Tissue Engineering. 2011; 2(1): p. 2041731411432365  
<http://tej.sagepub.com/cgi/content/abstract/2/1/2041731411432365?ct=ct>

Geochronology of the Bolson sand sheet, New Mexico and Texas, and its archaeological significance: Discussion

H. Curtis Monger, Brenda J. Buck, John W. Hawley, and David M. Rachal  
Geological Society of America Bulletin. 2012; 124(9-10): p. 1552-1556  
<http://gsabulletin.gsapubs.org/cgi/content/full/124/9-10/1552?ct=ct>

- Geochronology and stratigraphy of the Bolson sand sheet: Reply  
Stephen A. Hall, Myles R. Miller, and Ronald J. Goble  
Geological Society of America Bulletin. 2012; 124(9-10): p. 1557-1561  
<http://gsabulletin.gsapubs.org/cgi/content/full/124/9-10/1557?ct=ct>
- Evidence for a diachronous Late Permian marine crisis from the Canadian Arctic region  
Thomas Algeo, Charles M. Henderson, Brooks Ellwood, Harry Rowe, Erika Elswick, Steven Bates, Timothy Lyons, James C. Hower, Christina Smith, Barry Maynard, Lindsay E. Hays, Roger E. Summons, James Fulton, and Katherine H. Freeman  
Geological Society of America Bulletin. 2012; 124(9-10): p. 1424-1448  
<http://gsabulletin.gsapubs.org/cgi/content/abstract/124/9-10/1424?ct=ct>
- Coupled U-Pb dating and Hf isotopic analysis of detrital zircon of modern river sand from the Yalu River (Yarlung Tsangpo) drainage system in southern Tibet: Constraints on the transport processes and evolution of Himalayan rivers  
J.Y. Zhang, A. Yin, W.C. Liu, F.Y. Wu, Ding Lin, and M. Grove  
Geological Society of America Bulletin. 2012; 124(9-10): p. 1449-1473  
<http://gsabulletin.gsapubs.org/cgi/content/abstract/124/9-10/1449?ct=ct>
- Paleogeographic reconstruction of a late Paleozoic arc collision zone, southern Mongolia  
Matthew J. Heumann, Cari L. Johnson, Laura E. Webb, Joshua P. Taylor, Undarya Jalbaa, and Chuluun Minjin  
Geological Society of America Bulletin. 2012; 124(9-10): p. 1514-1534  
<http://gsabulletin.gsapubs.org/cgi/content/abstract/124/9-10/1514?ct=ct>
- Growth of fissure ridge travertines from geothermal springs of Denizli Basin, western Turkey  
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Geological Society of America Bulletin. 2012; 124(9-10): p. 1629-1645  
<http://gsabulletin.gsapubs.org/cgi/content/abstract/124/9-10/1629?ct=ct>
- Permian-Carboniferous arc magmatism and basin evolution along the western margin of Pangea: Geochemical and geochronological evidence from the eastern Acatlan Complex, southern Mexico  
Moritz Kirsch, J. Duncan Keppie, J. Brendan Murphy, and Luigi A. Solari  
Geological Society of America Bulletin. 2012; 124(9-10): p. 1607-1628  
<http://gsabulletin.gsapubs.org/cgi/content/abstract/124/9-10/1607?ct=ct>
- New constraints on using paleosols to reconstruct atmospheric pCO<sub>2</sub>  
Jennifer M. Cotton and Nathan D. Sheldon  
Geological Society of America Bulletin. 2012; 124(9-10): p. 1411-1423  
<http://gsabulletin.gsapubs.org/cgi/content/abstract/124/9-10/1411?ct=ct>
- Eocene vegetation and ecosystem fluctuations inferred from a high-resolution phytolith record  
Lauren A. Miller, Selena Y. Smith, Nathan D. Sheldon, and Caroline A.E. Stromberg  
Geological Society of America Bulletin. 2012; 124(9-10): p. 1577-1589  
<http://gsabulletin.gsapubs.org/cgi/content/abstract/124/9-10/1577?ct=ct>
- Contribution of crystallographic preferred orientation to seismic anisotropy across a surface analog of the continental Moho at Cabo Ortegal, Spain  
Sergio Llana-Funez and Dennis Brown  
Geological Society of America Bulletin. 2012; 124(9-10): p. 1495-1513  
<http://gsabulletin.gsapubs.org/cgi/content/abstract/124/9-10/1495?ct=ct>
- Caldera structure, amount of collapse, and erupted volumes: The case of Bolsena caldera, Italy  
V. Acocella, D.M. Palladino, R. Cioni, P. Russo, and S. Simeì  
Geological Society of America Bulletin. 2012; 124(9-10): p. 1562-1576  
<http://gsabulletin.gsapubs.org/cgi/content/abstract/124/9-10/1562?ct=ct>
- The Toarcian oceanic anoxic event in the Western Saharan Atlas, Algeria (North African paleomargin): Role of anoxia and productivity  
Matias Reolid, Francisco J. Rodriguez-Tovar, Abbas Marok, and Abbas Sebane

Geological Society of America Bulletin. 2012; 124(9-10): p. 1646-1664  
<http://gsabulletin.gsapubs.org/cgi/content/abstract/124/9-10/1646?ct=ct>

Anatomy and tectono-sedimentary evolution of a rift-related detachment system: The example of the Err detachment (central Alps, SE Switzerland)

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Geological Society of America Bulletin. 2012; 124(9-10): p. 1535-1551  
<http://gsabulletin.gsapubs.org/cgi/content/abstract/124/9-10/1535?ct=ct>

Chronology of the Eocene continental deposits of Africa:  
Magnetostratigraphy and biostratigraphy of the El Kohol and Glib Zegdou Formations, Algeria

Pauline Coster, Mouloud Benammi, Mohammed Mahboubi, Rodolphe Tabuce, Mohammed Adaci, Laurent Marivaux, Mustapha Bensalah, Salamet Mahboubi, Abdessamed Mahboubi, Fateh Mebrouk, Cheikh Maameri, and Jean-Jacques Jaeger  
Geological Society of America Bulletin. 2012; 124(9-10): p. 1590-1606  
<http://gsabulletin.gsapubs.org/cgi/content/abstract/124/9-10/1590?ct=ct>

An exceptionally long paleoseismic record of a slow-moving fault: The Alhama de Murcia fault (Eastern Betic shear zone, Spain)

Maria. Ortuno, Eulalia. Masana, Eduardo. Garcia-Melendez, Jose. Martinez-Diaz, Petra. Stepancikova, Pedro P. Cunha, Reza. Sohbat, Carolina. Canora, Jan-Pieter. Buylaert, and Andrew S. Murray  
Geological Society of America Bulletin. 2012; 124(9-10): p. 1474-1494  
<http://gsabulletin.gsapubs.org/cgi/content/abstract/124/9-10/1474?ct=ct>

Two-year survey comparing earthquake activity and injection-well locations in the Barnett Shale, Texas

Cliff Frohlich  
PNAS. 2012; 109(35): p. 13934-13938  
<http://www.pnas.org/cgi/content/abstract/109/35/13934?ct=ct>

YWES Index of Authors and Subjects

Years Work Eng Studies. published 28 August 2012, 10.1093/ywes/mas022  
<http://ywes.oxfordjournals.org/cgi/content/full/mas022v1?ct=ct>

Global environmental predictors of benthic marine biogeographic structure

Christina L. Belanger, David Jablonski, Kaustuv Roy, Sarah K. Berke, Andrew Z. Krug, and James W. Valentine  
PNAS. 2012; 109(35): p. 14046-14051  
<http://www.pnas.org/cgi/content/abstract/109/35/14046?ct=ct>

New Scholarship

Environmental History. published 28 August 2012, 10.1093/envhis/ems104  
<http://envhis.oxfordjournals.org/cgi/content/extract/ems104v1?ct=ct>

Classic Period collapse of the Central Maya Lowlands: Insights about human-environment relationships for sustainability

B. L. Turner, II and Jeremy A. Sabloff  
PNAS. 2012; 109(35): p. 13908-13914  
<http://www.pnas.org/cgi/content/abstract/109/35/13908?ct=ct>

Ethical Issues in Infant Feeding After Disasters

Colin W. Binns, Mi Kyung Lee, Li Tang, Chuan Yu, Tomiko Hokama, and Andy Lee  
Asia Pac J Public Health. 2012; 24(4): p. 672-680  
<http://aph.sagepub.com/cgi/content/abstract/24/4/672?ct=ct>

Give 'Em What They Want: A One-Year Study of Unmediated Patron-Driven Acquisition of e-Books

Karen S. Fischer, Michael Wright, Kathleen Clatanoff, Hope Barton, and Edward Shreeves  
Coll. res. libr. 2012; 73(5): p. 469-492  
<http://crl.acrl.org/cgi/content/abstract/73/5/469?ct=ct>

Virtual Landscapes Made Tangible

ITNOW. 2012; 54(3): p. 58-59  
<http://itnow.oxfordjournals.org/cgi/reprint/54/3/58?ct=ct>

Arthropods in amber from the Triassic Period

- Alexander R. Schmidt, Saskia Jancke, Evert E. Lindquist, Eugenio Ragazzi, Guido Roghi, Paul C. Nascimbene, Kerstin Schmidt, Torsten Wappler, and David A. Grimaldi  
PNAS. published 27 August 2012, 10.1073/pnas.1208464109  
<http://www.pnas.org/cgi/content/abstract/1208464109v1?ct=ct>
- MINERAL PREFERRED ORIENTATION AND MICROSTRUCTURE IN THE POSIDONIA SHALE IN RELATION TO DIFFERENT DEGREES OF THERMAL MATURITY  
Waruntorn Kanitpanyacharoen, Frans B. Kets, Hans-Rudolf Wenk, and Richard Wirth  
Clays and Clay Minerals. 2012; 60(3): p. 315-329  
<http://ccm.geoscienceworld.org/cgi/content/abstract/60/3/315?ct=ct>
- YWES Index of Authors and Subjects  
Years Work Eng Studies. published 28 August 2012, 10.1093/ywes/mas022  
<http://ywes.oxfordjournals.org/cgi/content/full/mas022v1?ct=ct>
- Global distribution of microbial abundance and biomass in subseafloor sediment  
Jens Kallmeyer, Robert Pockalny, Rishi Ram Adhikari, David C. Smith, and Steven D'Hondt  
PNAS. published 27 August 2012, 10.1073/pnas.1203849109 Open Access  
<http://www.pnas.org/cgi/content/abstract/1203849109v1?ct=ct>
- EFFECTS OF Mg, Ca, AND Fe(II) DOPING ON THE KAOLINITE (001) SURFACE WITH H<sub>2</sub>O ADSORPTION  
Man-Chao He and Jian Zhao  
Clays and Clay Minerals. 2012; 60(3): p. 330-337  
<http://ccm.geoscienceworld.org/cgi/content/abstract/60/3/330?ct=ct>
- Ethical Issues in Infant Feeding After Disasters  
Colin W. Binns, Mi Kyung Lee, Li Tang, Chuan Yu, Tomiko Hokama, and Andy Lee  
Asia Pac J Public Health. 2012; 24(4): p. 672-680  
<http://aph.sagepub.com/cgi/content/abstract/24/4/672?ct=ct>
- K Cruz-Martinez, A Rosling, Y Zhang, M Song, GL Andersen, and JF Banfield  
Effect of rainfall-induced soil geochemistry dynamics on grassland soil microbial communities.  
Appl Environ Microbiol 17 Aug 2012.  
<http://highwire.stanford.edu/cgi/medline/pmid;22904056>
- Z Xie, L Wu, N Chen, C Liu, Y Zheng, S Xu, F Li, and Y Xu  
Phytoextraction of Pb and Cu contaminated soil with maize and microencapsulated EDTA.  
Int J Phytoremediation 1 Sep 2012 14(8): p. 727.  
<http://highwire.stanford.edu/cgi/medline/pmid;22908640>
- L Wang, F Wu, Y Xiong, and J Fang  
Origin and vertical variation of the bound fatty acids in core sediments of Lake Dianchi in Southwest China.  
Environ Sci Pollut Res Int 19 Aug 2012.  
<http://highwire.stanford.edu/cgi/medline/pmid;22903813>
- VB Chan, C Li, AC Lane, Y Wang, X Lu, K Shih, T Zhang, and V Thiyagarajan  
CO<sub>2</sub>-Driven Ocean Acidification Alters and Weakens Integrity of the Calcareous Tubes Produced by the Serpulid Tubeworm, Hydroides elegans.  
PLoS One 1 Jan 2012 7(8): p. e42718.  
<http://highwire.stanford.edu/cgi/medline/pmid;22912726>
- PM Sander  
Reproduction in early amniotes.  
Science 17 Aug 2012 337(6096): p. 806.  
<http://highwire.stanford.edu/cgi/medline/pmid;22904001>
- V Dyulgerov, RP Nikolova, LT Dimova, and BL Shivachev  
3-Carb-oxy-phenyl-boronic acid-theophylline (1/1).  
Acta Crystallogr Sect E Struct Rep Online 1 Aug 2012 68(Pt 8): p. o2320.  
<http://highwire.stanford.edu/cgi/medline/pmid;22904793>
- CG Jones  
Scanning Electron Microscopy: Preparation and Imaging for SEM.  
Methods Mol Biol 1 Jan 2012 915: p. 1.

<http://highwire.stanford.edu/cgi/medline/pmid;22907399>

AH Wighton, CG Jones, and LS Bell

Plastic embedding and polishing of bone for reflected light and electron microscopy.

Methods Mol Biol 1 Jan 2012 915: p. 21.

<http://highwire.stanford.edu/cgi/medline/pmid;22907400>

H Chen, M Yan, X Yang, Z Chen, G Wang, D Schmidt-Vogt, Y Xu, and J Xu

Spatial distribution and temporal variation of high fluoride contents in groundwater and prevalence of fluorosis in humans in Yuanmou County, Southwest China.

J Hazard Mater 8 Aug 2012.

<http://highwire.stanford.edu/cgi/medline/pmid;22910453>

A Fayolle, B Engelbrecht, V Freycon, F Mortier, M Swaine, M Rejou-Mechain,

JL Doucet, N Fauvet, G Cornu, and S Gourlet-Fleury

Geological substrates shape tree species and trait distributions in african moist forests.

PLoS One 1 Jan 2012 7(8): p. e42381.

<http://highwire.stanford.edu/cgi/medline/pmid;22905127>

BS Rautela, M Yadav, AA Bourai, V Joshi, GS Gusain, and RC Ramola

STUDY OF NATURAL RADIONUCLIDE AND ABSORBED GAMMA DOSE IN UKHIMATH AREA OF GARHWAL HIMALAYA, INDIA.

Radiat Prot Dosimetry 19 Aug 2012.

<http://highwire.stanford.edu/cgi/medline/pmid;22908360>

PM Sander

Reproduction in early amniotes.

Science 17 Aug 2012 337(6096): p. 806.

<http://highwire.stanford.edu/cgi/medline/pmid;22904001>

F Demeter, LL Shackelford, AM Bacon, P Durringer, K Westaway, T

Sayavongkhamdy, J Braga, P Sichanthongtip, P Khamdalavong, JL Ponche, H

Wang, C Lundstrom, E Patole-Edoumba, and AM Karpoff

Anatomically modern human in Southeast Asia (Laos) by 46 ka.

Proc Natl Acad Sci U S A 20 Aug 2012.

<http://highwire.stanford.edu/cgi/medline/pmid;22908291>

E Karro and M Uppin

The occurrence and hydrochemistry of fluoride and boron in carbonate aquifer system, central and western Estonia.

Environ Monit Assess 19 Aug 2012.

<http://highwire.stanford.edu/cgi/medline/pmid;22903335>

RC Ramola, GS Gusain, BS Rautela, DV Sagar, G Prasad, SK Shahoo, T

Ishikawa, Y Omori, M Janik, A Sorimachi, and S Tokonami

LEVELS OF THORON AND PROGENY IN HIGH BACKGROUND RADIATION AREA OF SOUTHEASTERN COAST OF ODISHA, INDIA.

Radiat Prot Dosimetry 19 Aug 2012.

<http://highwire.stanford.edu/cgi/medline/pmid;22908359>

I Wallis, H Prommer, V Post, A Vandenbohede, and CT Simmons

Simulating MODFLOW-Based Reactive Transport Under Radially Symmetric Flow Conditions.

Ground Water 17 Aug 2012.

<http://highwire.stanford.edu/cgi/medline/pmid;22900478>

DA Lott and MT Stewart

A Power Function Method for Estimating Base Flow.

Ground Water 17 Aug 2012.

<http://highwire.stanford.edu/cgi/medline/pmid;22900527>

H Cook and A Inman

The voluntary sector and conservation for England: Achievements, expanding roles and uncertain future.

J Environ Manage 17 Aug 2012 112C: p. 170.

<http://highwire.stanford.edu/cgi/medline/pmid;22906722>

PM Sander

Reproduction in early amniotes.

Science 17 Aug 2012 337(6096): p. 806.

<http://highwire.stanford.edu/cgi/medline/pmid;22904001>

- C Andersen, J Bek-Thomsen, and PC Kjoergaard  
The money trail: a new historiography for networks, patronage, and scientific careers.  
Isis 1 Jun 2012 103(2): p. 310.  
<http://highwire.stanford.edu/cgi/medline/pmid;22908423>
- LS Bell  
Identifying Postmortem Microstructural Change to Skeletal and Dental Tissues using Backscattered Electron Imaging.  
Methods Mol Biol 1 Jan 2012 915: p. 173.  
<http://highwire.stanford.edu/cgi/medline/pmid;22907409>
- CL Belanger, D Jablonski, K Roy, SK Berke, AZ Krug, and JW Valentine  
Global environmental predictors of benthic marine biogeographic structure.  
Proc Natl Acad Sci U S A 16 Aug 2012.  
<http://highwire.stanford.edu/cgi/medline/pmid;22904189>
- J Brajkovic, I Feliciello, B Bruvo-Ma?aric, and D Ugarkovic  
Satellite DNA-Like Elements Associated With Genes Within Euchromatin of the Beetle *Tribolium castaneum*.  
G3 (Bethesda) 1 Aug 2012 2(8): p. 931.  
<http://highwire.stanford.edu/cgi/medline/pmid;22908042>
- P Andrews and Y Fernandez-Jalvo  
How to approach perimortem injury and other modifications.  
Methods Mol Biol 1 Jan 2012 915: p. 191.  
<http://highwire.stanford.edu/cgi/medline/pmid;22907410>
- TR McVicar and C Korner  
On the use of elevation, altitude, and height in the ecological and climatological literature.  
Oecologia 18 Aug 2012.  
<http://highwire.stanford.edu/cgi/medline/pmid;22903540>
- L Wang, B Liu, H Li, W Yang, Y Ding, SV Sinogeikin, Y Meng, Z Liu, XC Zeng, and WL Mao  
Long-range ordered carbon clusters: a crystalline material with amorphous building blocks.  
Science 17 Aug 2012 337(6096): p. 825.  
<http://highwire.stanford.edu/cgi/medline/pmid;22904007>
- CL Belanger, D Jablonski, K Roy, SK Berke, AZ Krug, and JW Valentine  
Global environmental predictors of benthic marine biogeographic structure.  
Proc Natl Acad Sci U S A 16 Aug 2012.  
<http://highwire.stanford.edu/cgi/medline/pmid;22904189>
- MW Schmidt, P Chang, JE Hertzberg, TR Them 2nd, L J, and BL Otto-Bliesner  
Impact of abrupt deglacial climate change on tropical Atlantic subsurface temperatures.  
Proc Natl Acad Sci U S A 20 Aug 2012.  
<http://highwire.stanford.edu/cgi/medline/pmid;22908256>
- DETERMINATION OF RADON LEVEL AND RADON EFFECTIVE DOSE RATE USING SSNTD IN DWELLINGS IN THE BATHINDA DISTRICT OF PUNJAB, INDIA**  
R. Mehra and K. Badhan  
Radiat Prot Dosimetry. published 26 August 2012, 10.1093/rpd/ncs146  
<http://rpd.oxfordjournals.org/cgi/content/abstract/ncs146v1?ct=ct>
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S. Mishra, S. Maity, and G. G. Pandit  
Radiat Prot Dosimetry. published 26 August 2012, 10.1093/rpd/ncs227  
<http://rpd.oxfordjournals.org/cgi/content/abstract/ncs227v1?ct=ct>
- FIELD EXPERIENCE ON INDOOR RADON, THORON AND THEIR PROGENIES WITH SOLID-STATE DETECTORS IN A SURVEY OF KOSOVO AND METOHIJA (BALKAN REGION)**  
L. Gulan, G. Milic, P. Bossew, Y. Omori, T. Ishikawa, R. Mishra, Y. S. Mayya, Z. Stojanovska, D. Nikezic, B. Vuckovic, and Z. S. Zunic  
Radiat Prot Dosimetry. published 26 August 2012, 10.1093/rpd/ncs221  
<http://rpd.oxfordjournals.org/cgi/content/abstract/ncs221v1?ct=ct>

Finding Oil: The Nature of Petroleum Geology, 1859-1920

Paul Lucier

Environmental History. published 24 August 2012, 10.1093/envhis/ems093

<http://envhis.oxfordjournals.org/cgi/content/extract/ems093v1?ct=ct>

MICROBIALITE FABRICS AND DIMINUTIVE SKELETAL BIOCONSTRUCTORS IN LOWER NORIAN SUMMIT POINT REEFS, OREGON, UNITED STATES

ROWAN C. MARTINDALE, FRANK A. CORSETTI, DAVID J. BOTTJER, and BABA SENOWBARI-DARYAN

Palaios. 2012; 27(7): p. 489-508

<http://palaios.sepmonline.org/cgi/content/abstract/27/7/489?ct=ct>

SELECTIVE FEEDING IN AN EARLY DEVONIAN TERRESTRIAL ECOSYSTEM

DIANNE EDWARDS, PAUL A. SELDEN, and LINDSEY AXE

Palaios. 2012; 27(7): p. 509-522

<http://palaios.sepmonline.org/cgi/content/abstract/27/7/509?ct=ct>

Influences of silvicultural manipulations on above- and belowground biomass accumulations and leaf area in young *Pinus radiata* plantations, at three contrasting sites in Chile

Rafael A. Rubilar, Timothy J. Albaugh, H. Lee Allen, Jose Alvarez,

Thomas R. Fox, and Jose L. Stape

Forestry. published 24 August 2012, 10.1093/forestry/cps055

<http://forestry.oxfordjournals.org/cgi/content/abstract/cps055v2?ct=ct>

## EARTH PAGES

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Brittle-ductile deformation in subduction zones

Posted on August 25, 2012 by Steve Drury | [Leave a comment](#)

Eclogite: the red-brown mineral is garnet, omphacite is green and there is some white quartz. (credit: Kevin Walsh via Wikipedia)  
The ultra-dense form of basalt, eclogite made from mainly garnet and a strange high-pressure, low-temperature pyroxene (omphacite) that forms from plagioclase and some of the basalt's ferromagnesian minerals, is possibly the most important rock there is. Without the basalt to eclogite transition that takes place when ocean-floor is subducted the density of the lithosphere would be insufficient to pull more ocean floor to destruction and maintain the planetary circulation otherwise known as plate tectonics. Since the transition involves the formation of anhydrous eclogite from old, cold and wet basalt water is driven upwards into the mantle wedge that lies over subduction zones. The encourages partial melting which creates andesite magmas and island arcs, the ultimate source of the Earth's continental crust.

Despite being cold and rigid, subducted oceanic lithosphere somehow manages to be moved en masse, showing its track by earthquakes down to almost 700 km below the Earth's surface. A major ophiolite in the Western Alps on the Franco-Italian border escaped complete loss to the mantle by rebounding upwards after being subducted and metamorphosed under high-P, Low-T condition when the Alps began to form. So the basaltic crustal unit is eclogite and that preserves a petrographic record of what actually happened as it descended (Angiboust, S. et al. 2012. Eclogite breccia in a subducted ophiolite: A record of intermediate depth earthquakes? *Geology*, v. 40, p. 707-710). The French geologists found breccias consisting of gabbroic eclogite blocks set in a matrix of serpentinite and talc. The blocks themselves are breccias too, with clasts of eclogite mylonite set in fine-grained lawsonite-bearing eclogite. The relationships in the breccias point to possibly earthquake-related processes, grinding and fracturing basalt as it was metamorphosed: an essentially brittle process, yet the shearing that forms mylonites does seem reminiscent of ductile deformation too.

The deformation seems to have been at the middle level of oceanic crust where oceanic basalt lavas formed above cumulate gabbro, their plutonic equivalents. Yet much deformation was also at the gabbro-serpentinite or crust-mantle boundary, where water loss from serpentine may have helped lubricate some of the processes. Clearly the Monviso ophiolite will soon become a place to visit for geophysicists as well as metamorphic petrologists.

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Posted in [Geochemistry](#), [mineralogy](#), [petrology](#) and [volcanology](#)

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[Whence Earth's water?](#)

Posted on August 25, 2012 by Steve Drury | [Leave a comment](#)

Carbonaceous chondrite meteorite. (credit: Mila Zinkova via Wikipedia)

Comet Hyakutake. (credit: E. Kolmhofer & H. Raab via Wikipedia)

Because they can be so big, consist mainly of water ice and there are probably a great many lurking in the outer reaches of the solar system impacting comets have long been thought to have delivered the water that makes the Earth so dynamic and, so far as we know, the only place in near-space that hosts complex life. Remote sensing studies of the isotopic composition of water in one comet (Hartley 2) caused great excitement in 2011 by showing that its ratio of deuterium to hydrogen was very similar to that of Earthly ocean water. Other D:H ratios have recently been published from a suite of meteorites gleaned from the surface of Antarctic ice (Alexander, C.M.O'D. et al. 2012. The provenances of asteroids, and their contributions to the volatile inventories of the terrestrial planets. *Science*, v. 337, p. 721-723). These meteorites are carbonaceous chondrites thought to be the source of much of the solid material in planets of the Inner Solar System. To cut short a long and closely argued argument, it seems that the CI-type chondrites' water is isotopically quite different



from that in analysed comets, knocking another popular hypothesis on the head; that comets and carbonaceous chondrites formed in the same part of the Solar System.

Since hydrocarbons in comets – known from interplanetary dust particles – contain hydrogen with a far richer complement of its heavy isotope deuterium than does cometary water ice, the crashing of entire comets onto planets such as the Earth would not produce the observed terrestrial D:H ratio even though their water ice alone does match it. The US, British and Canadian meteoriticists conclude what seems to be a unifying explanation whereby CI chondritic solids and volatiles alone would have been able to form the Inner Planets and their various complements of water by initial accretion. Comets as a second-stage source, in this account, are relegated to mere curiosities of the Solar System with little role to play other than occasional big impacts that may, or may not, have influenced evolution by the power that they delivered not through their chemistry.

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Earth's water piggybacked on asteroids, not comets (newscientist.com)

2 Solar System puzzles solved (esciencenews.com)

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Posted in Planetary, extraterrestrial geology, and meteoritics

Tagged Carbonaceous chondrite, Comet, Earth's water

Is there misconduct in geoscientific research?

Posted on August 25, 2012 by Steve Drury | Leave a comment

Dreaming Spires (credit: Steve Daniels via Wikipedia)

Brian Deer, the British investigative journalist who exposed Andrew Wakefield's methods that implicated the MMR vaccine as a cause of autism, has broadened his scope to research misconduct throughout science (Deer, B. 2011. Doctoring the evidence: what the scientific establishment doesn't want you to know. The Sunday Times, 12 August 2012, p. 16). His article comes in the wake of several related articles in leading scientific journals (Enserink, M. 2012. Fraud-detection tool could shake up psychology. Science, 6 July 2012, p. 21-22. Macilwain, C. 2012. The time is right to confront misconduct. Nature, 2 August 2012, p. 7. Godlee, F. 2012. Helping institutions tackle research misconduct. The British Medical Journal, 10 August 2012). The focus has shifted in the last decade from a major campaign against plagiarism by students tempted by the information largesse of Wikipedia, Google and other electronic treasure troves to unwholesome behaviour among university academics. In an age when redundancy at universities has become an issue for the first time in nine centuries, many academics – frenzied by looming cuts – are engaged in a Gaderene rush for promotion and funding. The now obligatory stream of 'learned' papers seeks to justify their own puff and, equally as important, the puff of their departments, faculties and institutions trying to blag their corporate way through funding shortages. Misconduct is the child of education-as-commodity.

There are three mortal sins of academic fraudulence: plagiarism, including self-plagiarism (see Self-plagiarism, 6 January 2011); data falsification, including fiddling with those of other people (see Sabotage in Science, 4 November 2010), and fabrication of data, such as starting with a made-up graph and then using it to create plausible values in a table. Venial sins include publishing much the same data and interpretations again and again. The last highlights one of the reasons why miscreants get away with their chicanery and benefit from it; sloppy academic editing and even sloppier peer review.

Deer observes that 'The science establishment's consensus is that there is no need for outside scrutiny because ... science is above that kind of misconduct that has tainted the Roman Catholic church, politics, the press and, of course, the banks.' But, as in these notorious cases, the lid is coming off scientific misconduct, largely through the bravery of 'whistle-blowers' within the system. Yet the offenders who have been unmasked were unfortunate enough to work in institutions that have appropriate investigative mechanisms and the will at high office to use them. That determination to maintain the highest ethical standards is perhaps not as widespread as it once was.

Geoscientists have yet to figure much in the rogues' gallery of malfeasants, except for the odd light-fingered palaeontologist. That may have something to do with the vagueness of much of their scope, epitomised by the trajectory of a lithological boundary on a geological map of poorly exposed ground. Indeed, virtually every aspect of the science is open to many interpretations, and errors of omission are perhaps more common than those of commission – any field worker knows that they will inevitably have missed something. But there are quantitative, laboratory-based aspects of the science, such as radiometric dating, that are more readily scrutinised for malpractice. In the early days of using radioactive isotopes and their daughter products to work out an age for an igneous or metamorphic event a common analytical tool was the isochron plot, as in the Rb-Sr method. A 'good' age was signified by all the data points falling on or very close to the line of best fit from which an age was calculated. Consequently, there may well have been cases where errant data were conveniently 'lost', but there was no way of telling.

That it did happen emerged from the honesty of those isotope geochemists who openly admitted that some mass-spectrometry runs had been omitted because the samples showed some signs of 'contamination' or 'open-system behaviour'. For that they were merely taken to task by those who disagreed with their findings, but excused by those whose ideas the results supported: ethically honest. But how many Rb-Sr runs never made it to a published data table? Things are now a great deal more sophisticated than the days of punched tape and IBM cards in the geochemistry lab, geophysical software and that used for the growing cottage industry of process modelling. So much data and such a wealth of corrections that vast spreadsheets develop in the course of analysis, correction and calculation: few peer reviewers are going to go through data-processing steps with a fine-tooth comb, even if they have been lodged in public data repositories. Such settings provide ample scope for data invention, 'fiddling', 'fudging' and, in labs with a cavalier attitude to security, stealing but little way of pinning down any malpractice: that is, unless a culprit is either carelessly overconfident or a serial offender. A simple test that any peer reviewer might apply, most usefully at random, is to ask for a copy of laboratory notes associated with a manuscript. If one is not forthcoming, then suspicions will arise naturally.

Ivory Towers, Chancery Lane, London. (credit: Colin Smith via Wikipedia)

Time cannot be far off when the laser-beam spot moves across geoscience labs. Are they audited by disinterested peers and in such a small tightly-knit discipline are there such individuals? Do managing academics scrupulously keep records themselves and demand that their research fellows do likewise? Are there victims or witnesses brave enough to blow the whistle on any spite, fraud or slovenly methods, or will our science remain in its habitual state of bliss?

#### Related articles

Scientific Fraud Prevalent Among Science-Based Medicines (sott.net)

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Cracks in the Ivory Tower: Is Academia's Culture Sustainable? (tutoringtoexcellence.blogspot.com)

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Posted in Ethics, and the philosophy and practice of science

Hominin round-up

Posted on August 10, 2012 by Steve Drury | Leave a comment

Neanderthal 'high-carb' diet and self-medication

#### Reconstruction of a Neanderthal man (H. Neumann / Neanderthal Museum)

There is no doubt that the reconstruction of DNA from Neanderthal and Denisovan fossils is the most important forensic breakthrough as regards hominin evolution and relationships, but another approach has is starting to shed light on past lifestyles. Most workers have regarded Neanderthals as being predominantly meat-eaters from the evidence for their big-game hunting feats. In an attempt to get close to their actual diet some researchers have begun to exploit the lack of dental hygiene among fossil hominins: many teeth bear plaque or dental calculus (Hardy, K. and 16 others 2012. Neanderthal medics? Evidence for food, cooking, and medicinal plants entrapped in dental calculus. *Naturwissenschaften*, v. 99, p. 617-626). Karen Hardy of the Universitat Autònoma de Barcelona and British, Spanish and Australian colleagues used gas chromatography and mass spectrometry and analysis of trapped microfossils in Neanderthal teeth to explore their everyday lives.

The results show signs of wood smoke: a good indicator of cooking and perhaps smoke preservation. Bitumen traces help confirm its use in hafting tools. But the most interesting feature is the consistent identification of cooked carbohydrate residues, enzyme activity on which would have produced the sugars strongly implicated in the formation of substantial plaque deposits. The data suggest that nuts, grass seeds, and possibly even green vegetables were a major part of the Neanderthal diet. A fascinating outcome is the discovery of molecules of the compounds that confer bitterness on a number of herbs with known medicinal properties, such as yarrow and chamomile. That does not prove that Neanderthals were accomplished herbalists, for many primates seek out such plants when feeling ill and even domestic cats will be seen eating grass if they have digestive problems or worms. Yet practical knowledge of herbal remedies cannot be ruled out. This novel, hi-tech approach to life-style analysis will surely blossom for most fossilized hominin dentition bears plenty of plaque. We await with interest the first signs of regular use of tooth-cleaning with woody fibres.

#### Neanderthals and Aurignacians survived massive volcanic disaster

About 39 thousand years ago the famous volcanic field of the Campi Flegrei west of Naples underwent a massive explosive eruption that created a huge ash plume whose deposition blanketed most of southeastern and eastern Europe with the Campanian Ignimbrite. The ashfall and the probable disruption of climate and ecosystems over a number of years would have greatly stressed both Neanderthal and modern human (Aurignacian) populations of the area. There are a few sites in the Ukraine and Russia where tools occur below, within and above the ash deposit, but little to suggest the extent to which both populations were affected. However, tangible ash deposits are not the only evidence for volcanic events in human history: fine ash would have permeated everything during the eruption. A host of European geologists and archaeologists have sought microscopic evidence of the Campanian Ignimbrite in sediments within caves that were occupied at this time (Lowe, J. and 41 others 2012. Volcanic ash layers illuminate the resilience of Neanderthals and early modern humans to natural hazards. *Proceedings of the National Academy of Sciences* doi/10.1073/pnas.1204579109): ignimbrite events are signified in cave deposits by ash dominated by minute glassy shards, whose shape is distinctive. The study was able to show that although the effects of the 39 ka eruption must have been devastating for local humans, both groups pulled through. The fact that Neanderthals survived the eruption and attendant prolonged climatic cooling suggests indirectly that their eventual demise was probably not a result of ecological disaster and more likely to have reflected their incapacity to compete successfully with the Aurignacian and later fully-modern human cultures.

Quite a crowd

#### Olduvai gorge Tanzania (credit: Ingvar via Wikipedia) See also:

[http://upload.wikimedia.org/wikipedia/commons/archive/5/51/20080801124518%21Olduvai\\_Gorge.jpg](http://upload.wikimedia.org/wikipedia/commons/archive/5/51/20080801124518%21Olduvai_Gorge.jpg)

Who was the earliest human? Initially this accolade went to *Homo habilis*, first found by Louis Leakey at Olduvai Gorge, Tanzania in 2 Ma old sediments. Similar fossils turned up at Koobi Fora on the shores of Lake Turkana (formerly Lake Rudolf) in Kenya also thanks to the Leakey dynasty. Yet as more remains of that antiquity were found differences among them began to emerge, which some ascribed to different species and others to effects of sexual dimorphism among *H. habilis*. The majority view emerged of two distinct species *H. habilis* and *ergaster* but the possibility of a third cohabiting member of the early East African human family was clung to in the shape of the single-fossil '*H. rudolfensis*'. There the issue stood for more than two decades. Then, in the manner of London Transport, fossils of three individual humans were unearthed at Koobi Fora by the determined Leakey family (Leakey, M.G. et al. 2012. New fossils from Koobi Fora in northern Kenya confirm taxonomic diversity in early *Homo*. *Nature*, v. 488, p. 201-204). They seem to have confirmed three separate cohabiting species of human in Kenya in the period between 1.8 and 2.0 Ma: *habilis*, *rudolfensis* and *erectus/ergaster*. Now, this is quite odd as the threefold morphological distinction ought to reflect three lifestyles sufficiently different to support the species over several hundred thousand years. Hopefully, there are teeth and dental plaque...

#### Related articles

*Homo rudolfensis*: Finally shown to be a separate species? (evoanth.wordpress.com)

Study Reveals Neanderthals Used Medicinal Plants (sci-news.com)

Spanish Cave Neanderthal Eating Habits not as Simple as Thought (ancientfoods.wordpress.com)

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Posted in End of year summaries, general musings

The Martian 'sexy beast'

Posted on July 27, 2012 by Steve Drury | Leave a comment

Artist's concept of NASA's Mars Science Laboratory (Curiosity) near a canyon on Mars. (Credit: NASA-JPL via Wikipedia)  
Why is 'Curiosity' the latest Mars rover aimed to land at Gale Crater? It seems to have been filled with stratified sediments deposited in the crater over perhaps as long as two billion years after it formed by a meteorite impact. The sediments now occur as a relic of later aeolian erosion at the centre of the crater in the form of a large mound that Curiosity is designed to climb and sample. The big attraction is the detection of clays and sulfate minerals in the sediments using multispectral remote sensing. They clearly suggest the influence of water in the formation of the sediments, hence the suggestion that they are lake sediments. On that assumption, Gale Crater is hoped to be a fruitful site for seeking signs of former biological processes: given the technical circumstances of the mission it is deemed the best site there is on Mars for NASA's Mars Science Laboratory.

Sulfates on Mars have excited geologists enormously, along with their companion clays, because they signify the influence of abundant acid water in the breakdown of Martian primary igneous rocks from which the sediments have undoubtedly been derived. Their formation is undoubtedly the geoscientific 'sexy beast' of the last four or five years. Given multi-channel remotely sensed data – and Mars labs are awash with them from several previous missions – sulfates are easy to detect from their distinctive reflectance spectra so there has been abundant pay-back for geologists involved with the Red Planet. But there is water and there is...water. It is hoped to be proved that the depositional medium was standing water or at least abundant subsurface aqueous fluids, which may have lingered for long enough for living organisms to have formed. But there is a possibility that sulfates can form, and so too clays, by superficial weathering processes beneath a humid atmosphere.

An oblique view of Gale crater showing the landing site and the mound of layered rocks that NASA's Curiosity rover will investigate. The landing site is outlined in yellow. (Credit: NASA-JPL via Wikipedia)  
Erwin Dehouck and team of French geochemists set out experimentally to recreate conceivable atmospheric and climatic conditions from Mars's early history to mimic weathering processes (Dehouck, E. et al. 2012. Evaluating the role of sulfide-weathering in the formation of sulfates or carbonates on Mars. *Geochimica et Cosmochimica Acta*, v. 90, p. 47-63). The experiment involved liquid water and hydrogen peroxide (detected in Mars's present atmosphere and probably produced photochemically from water vapour) in contact with a CO<sub>2</sub> atmosphere. Martian surface conditions were simulated by evaporation of H<sub>2</sub>O and H<sub>2</sub>O<sub>2</sub> to mix with dominant CO<sub>2</sub>, which allowed 'dew' to form on the experimental samples. The samples consisted of ground up olivine and pyroxene, important mineral constituents of basalt – feldspar was not used. – mixed with the iron sulfide pyrrhotite, commonly found in terrestrial basalts and meteorites judged to have come from Mars. Samples of each pure mineral and mixtures with the sulfide were left in the apparatus for four years and then analysed in detail.

Even in such a short exposure the silicate-sulfide mixtures reacted to produce sulfate minerals –hexahydrite (MgSO<sub>4</sub>·6H<sub>2</sub>O), gypsum (CaSO<sub>4</sub>·2H<sub>2</sub>O) and jarosite (KFe<sub>3</sub>(OH)<sub>6</sub>(SO<sub>4</sub>)<sub>2</sub>), together with goethite (FeOOH) and hematite (Fe<sub>2</sub>O<sub>3</sub>). Without the presence of sulfides, the silicate minerals barely broke down under the simulated Martian conditions but did produce traces of magnesium carbonate. The sulfate bearing assemblages look very like those reported from many locations on Mars. The acid conditions produced by weathering of sulfides to yield sulfate ions are incompatible with preservation of carbonates, as the experiment indicates. However, there are reports of Martian sediments that do contain abundant carbonate minerals.

The researchers' conclusions are interesting: "These results raise doubts on the need for a global acidic event to produce the sulfate-bearing assemblages, suggest that regional sequestration of sulfate deposits is due to regional differences in sulfide content of the bedrock, and pave the way for reevaluating the likelihood that early sediments preserved biosignatures from the earliest times". Weathering by dew formation seems quite adequate to match existing observations.

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The oldest impact structure

Posted on July 26, 2012 by Steve Drury | Leave a comment

#### Ilulisat Greenland (credit: Wikipedia)

Various lines of evidence, such as sedimentary deposits of glass spherules and shocked minerals or signs of unusual isotopic chemistry (see Ejecta from the Sudbury impact and Evidence builds for major impacts in Early Archaean in EPN April 2005 and August 2002) point to the predicted intensity of meteorite or comet bombardment of the early Earth, and evidence is growing for some events that had global effects. Yet no actual impact sites from the Archaean Eon have been found, until recently. That is not entirely unexpected because erosion during the last few billion years will have removed all trace of the characteristic surface craters. But perhaps there is cryptic evidence in Archaean terrains for the deeper influence of impacts: after all, the depth of penetration of large meteoritic 'missiles' would have been of a similar order to their diameter where shock structures in minerals would slowly anneal and impact-generated melts would crystallise slowly enough to masquerade as plutonic igneous rocks.

Close to the Arctic Circle in SW Greenland Archaean gneisses are associated with a roughly 200 km wide geomagnetic anomaly and regionally curvilinear features that suggest a series of concentric closed structures over a 100 km diameter area (Garde, A.A. et al. 2012. Searching for giant, ancient impact structures on Earth: The Mesoarchaean Maniitsoq structure, West Greenland. *Earth and Planetary Science Letters*, v. 337, p. 197-210). Adam Garde and colleagues from the Greenland Geological Survey, Cardiff University UK and Lund University Sweden focused on the central part of these anomalies where gneisses are extensively brecciated with signs of annealed shock-induced lamellae in quartz, feldspar melting and fluidization of highly comminuted mylonites. They ascribe this assemblage of features on a variety of scales to the effects of a major meteorite impact on 25 km deep continental crust. The metamorphic complex contains the famous Amitsoq Gneisses that once had the status of the world's oldest rocks at around 3.8 Ga, but is dominated by migmatites formed around 3.1 Ga that are akin to the Nuuk Gneisses from further south.

The possible signs of a deeply penetrating impact are cut through by small ultramafic intrusions, zircons from which yield <sup>207</sup>Pb/<sup>206</sup>Pb ages between 3.01 and 2.98 Ma, confirming the structures' Mesoarchaean age. An interesting and unanswered question concerns the origin of these magmas together with marginally younger, voluminous granites. Were the ultramafic magmas generated by high degrees

of partial melting of mantle as a result of the immense energy of impact? Having temperatures well above those of basaltic melts, could the ultramafic intrusions in turn have induced crustal melting within the depths of a large impact basin?

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Burrowers: knowing front from back

Posted on July 10, 2012 by Steve Drury | Leave a comment

In sedimentary rocks below the base of the Cambrian there is not only a dearth of body fossils, but signs of creatures burrowing and stirring up the sediment are most uncommon. A burrower needs several criteria to be fulfilled: a supply of oxygen; sufficient food; a body able to penetrate and an ability to move back and forth, but forth would probably do fine, provided the animal could turn corners. The amount of oxygen in bottom waters would have influenced its availability beneath the seabed. Whatever the conditions, dead organic matter falls and is buried by sediment before it is oxidised away, even nowadays. There is little sign that there was any marked change between the oxygenation of the planet just before and after the start of the Cambrian Period, so the main control over burrowing is that of animal morphology.

Many modern burrowing animals are pretty flaccid but moving sediment aside and upwards demands some muscle power. Most important, the creature needs a means of navigation, albeit of a rudimentary kind, and since what goes in beneath the surface – food – must go out – excreta – there must be a front- and a back end. That 'fore-and-aft' symmetry is the essential feature of bilaterian animals. Only a limited range of animal taxa don't have that built-in. Sponges are the most obvious example, having no discernible symmetry of any kind. Radially symmetrical animals such as jellyfish and coral polyps only have a top and a bottom. An absence of inbuilt horizontal directionality stops non-bilaterians from burrowing in any shape or form. But, so what?

The vast majority of animals have some kind of bilateral symmetry; even echinoderms have it from their 5-fold symmetry that is also the simplest kind of radiality. By the start of the Cambrian, not only had bilaterians split off from the less symmetrical but almost all the phyla living today, and several that became extinct in the last 542 Ma, have representatives in the Cambrian fossil record. The only logical conclusion is that emergence of bilaterians and their fundamental diversification took place in the Precambrian: they are absent from earlier strata only because they had no hard parts. Comparing the DNA of living representatives of the main bilaterian phyla and with that of non-bilaterians can help date the times of genetic and morphological separation, but only crudely. This 'molecular clock' approach points to some time between 900 and 650 Ma ago for the last common ancestor of bilaterians.

Uruguayan fossil burrows from late Neoproterozoic (Credit: Pecoits, E. et al. 2012)

Getting a handle on the minimum time for the split depends either on finding fossils or unequivocal signs of bilaterian activity. The oldest unequivocally bilaterian fossils occur in rocks about 550 Ma old, which doesn't take us much further back than the base of the Cambrian. But there are trace fossils that are significantly more ancient (Pecoits, E. et al. 2012. Bilaterian burrows and grazing behaviour at >585 million years ago. *Science*, v. 336, p. 1693-1696). They are tiny burrows in fine-grained sediments from Uruguay, so tiny that there is a chance that they may be traces of grazing bacterial films on the seabed rather than beneath it. The decider is the mechanics of trace fossil formation. Surface tracks only a millimetre or so across would only penetrate the biofilm, so on lithification they would simply disappear. Burrows on the other hand penetrate the sediment itself to get at food items. Even if this was a biofilm, the track would be in sediment above the film, so compaction would preserve it. The Uruguayan exam-[]les are exquisite horizontal burrows, and they push back the minimum age for the origin of the bilaterians to at least 40 Ma older than the start of the Cambrian. In fact 585 Ma is a minimum age for the sediments as it is the U-Pb age of zircons in a granite that intrudes and metamorphoses them.

An equally significant observation is that the burrows only appear towards the end of a glacial episode – probably the last of the Neoproterozoic 'Snowball Earth' events – as marked by tillites below the burrowed shales and occasional 'dropstones' in them. Could it be that the climatic and other stresses of a global glaciation triggered the fundamental division among the Animalia?

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Eats barks leaves nuts and fruits

Posted on July 10, 2012 by Steve Drury | Leave a comment

The Malapa valley South Africa, where *Australopithecus sediba* was found. (Credit: Lee R. Berger via Wikipedia)

The first stone tools and bones that had been cut by them, found in rocks dated at 2.5-2.6 Ma in the Bouri area of Ethiopia's Afar Depression, have generally been taken as a sign that their invention was connected with more easily accessing meat for food. A corollary of this idea is that it was the introduction of meat into the hominin diet that helped 'fuel' the growth of their brains: meat-tools-brain interrelated in an evolutionary sense. There is a spatial link between such tools and fossils of *Australopithecus*, but direct attribution of the tools to these australopithecines has not been widely accepted. It is more generally accepted that a link to tools can be made with *Homo habilis*, but they lived, at the earliest, 200 to 300 ka later. The wear patterns on their teeth and association with animal bones bearing cut marks has been taken to indicate that at least part of their diet was meat.

Another approach to diet is to analyse the proportions of stable carbon isotopes (<sup>13</sup>C and <sup>12</sup>C) in tooth enamel, which can discriminate between the ultimate plant source in their diet, i.e. between grasses that use the C<sub>4</sub> photosynthetic pathway and the C<sub>3</sub> version used by woody and herbaceous plants. The isotopic 'signature' of plants is also passed on to animals, depending on what vegetation they eat, and so up the food chain to predators and the scavengers that depend on their leavings. South African *Au. africanus* of around 2.5 Ma ago show a definite C<sub>4</sub> preference as do local paranthropoids ('robust' australopithecine-like creatures) from around 1.8 Ma. The early humans *H. habilis* and *H. ergaster* also show the C<sub>4</sub> isotopic proportions, which in both cases may be from a meaty diet or from a

vegetarian component. The main point from these similar results, whatever the plant-meat proportions being consumed, is that these hominins were very different from chimpanzees in their eating habits, and probably as regards their habitats: savannah rather than woodlands respectively.

There are no reports of C-isotope research on *Au. garhi* teeth, but results from 2 Ma old *Au. sediba* found in South Africa have just been published (Henry, A.G and 8 others 2012. The diet of *Australopithecus sediba*, *Nature*, v. 487, p. 90-93) along with plant materials from dental plaque and tooth wear patterns. *Au. sediba* is notable for its very modern-looking hands and other 'advanced' features (<http://earth-pages.co.uk/2011/10/12/another-candidate-for-earliest-direct-human-ancestor/>). Some believe it to have been closer to the direct line of human descent than a number of other hominin species, including the poor quality remains of *H. habilis*. So, did *sediba* eat meat? The forensic evidence suggests something unexpected. The C-isotope data points towards food dominated by C3 plants – less grasses and sedges, and more shrubbery. Tooth wear suggests bark was eaten, while plant remains from plaque indicate fruit leaves and wood. This is a feeding pattern more like that of chimpanzees than *Homo* species, *Au. africanus* and the paranthropoids that are roughly contemporary with *Au. sediba*. Ecological analysis of the sediments which buried the hominin specimens suggest a seasonal climate and savannah biome with abundant C4 plants that supported grazing herds, mixed with possibly some denser woodland along drainages. This is a pattern familiar from living savannah chimpanzee bands.

The hand and forearm of *Australopithecus sediba* (Credit: Peter Schmid, courtesy Lee R. Berger via Wikipedia)

So, despite being an 'advanced' hominin, by carrying clear signs of foods that were not consumed by meaty potential prey animals *Au. sediba* probably was not a meat eater. Yet species with strong C4 'signatures' cannot be assigned to carnivory on C-isotope evidence alone. One has to decide from other data, such as tooth-wear and plaque, whether this or that hominin ate grasses, those that clearly did not becoming candidates for dominantly meat-eating. How to detect a tool-using species with a mixed diet, akin to more modern humans, is a tough nut to crack.

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A mighty sag or a big wrench for Mars

Posted on July 10, 2012 by Steve Drury | Leave a comment

Colour-coded relief map of the Tharsis bulge on Mars, with Valles Marineris at left centre (Credit: Goddard Space Flight Center, NASA, via Wikipedia)

In the Solar System topographic features don't come larger than Valles Marineris on Mars. At between 5 to 10 kilometres deep and extending along a fifth of the planet's circumference, it makes the Grand Canyon and The Gorge of the Nile look puny.

The base and margins of this stupendous valley contains all manner of evidence for erosion, huge landslips and signs of collapse into voids in Mars's crust. Much of the erosion on Mars seems to have stemmed from catastrophic floods several billion years ago, though whether they were all of water or if some were volcanic in origin is being debated (Leverington, D.W. 2011. A volcanic origin for the outflow channels of Mars: Key evidence and major implications. *Geomorphology*, v. 132, p. 51-75 [http://www.webpages.ttu.edu/dleverin/leverington\\_mars\\_outflow\\_channels\\_geomorphology\\_2011.pdf](http://www.webpages.ttu.edu/dleverin/leverington_mars_outflow_channels_geomorphology_2011.pdf) , but see <http://www.universetoday.com/94367/did-water-or-lava-carve-the-outflow-channels-on-mars/>)

It is difficult to imagine anything other than some kind of fault control over the almost straight, roughly east-west trend of Valles Marineris, but the scale suggests, again, an unmatched scale of tectonics. It has long been thought that the massive canyon resulted from extensional rifting that created a major weakness etched out by later erosion and/or collapse into huge subsurface voids in the crust. Yet there is little sign of commensurately large faults, though there are some. But the structure is an integral part of yet another superlative. It is on the eastern flank of the mighty Tharsis bulge on which several humongous volcanoes, including Mons Olympus, developed: perhaps there is a causal link between the two dominating features.

Jeffrey Andrews-Hanna of the Colorado School of Mines in the US has tried to model the bulge-chasm pair, coming to the conclusion that there is little sign of major extension. The finale of his study zeroes-in on the possibility of dominant subsidence producing the structure (Andrews-Hanna, J.C. 2012. The formation of Valles Marineris: 3. Trough formation through super-isostasy, stress, sedimentation, and subsidence. *Journal of Geophysical Research*, v. 117, E06002, doi:10.1029/2012JE004059).

In this model, the Tharsis bulge and its associated volcanic province rose so high that on the scale of the planet it must have created a large positive gravitational anomaly. This remains for the most part, but in the Valles Marineris region the crust is now either in isostatic balance or has large negative gravity anomalies, complicated by the fact that the very carving of the canyon system must have resulted in some uplift through unloading. For a while the whole bulge was supported in this gravitationally unstable state by the strength of the Martian lithosphere, and most of it is still in a state of disequilibrium.

Andrews-Hanna's novel view is that a small amount of extension allowed residual magma to rise in linear zone along the eventual length of Valles Marineris as dykes. The magmas and their heating effect reduced the strength of the lithosphere, locally removing support for the huge load, which subsided. By creating greater slope on the surface of Tharsis the subsidence would have become a focus for both erosion and sedimentation, the increased sedimentary load adding to the subsidence to give the present stupendous depth of the canyons and chasms.

Simulated oblique view of the topography of Valles Marineris looking westwards (Credit: Goddard Space Flight Center, NASA, via Wikipedia)

But this isn't the only model for the canyon system (Yin, A. Structural analysis of the Valles Marineris fault zone: Possible evidence for

large-scale strike-slip faulting on Mars. Lithosphere, v. 4 doi:10.1130/L192.1). An Yin of the University of California used a combination of remote sensing data from Mars Reconnaissance Orbiter and Mars Odyssey to perform detailed lithological and structural mapping along Valles Marineris. What emerged were several fault zones up to 2000 km long. Instead of an expected extensional sense of movement they are strike-slip faults, with displacements of the order of 100 km in a left-lateral sense. Yin's model is that the canyon system began as a zone of transtensional deformation: very different from that of Andrews-Hanna. It also begs the question of the underlying tectonic processes, because strike-slip zones on Earth are usually associated with distributed stress from plate tectonics.

#### Related articles

For an entertaining, if sometimes bizarrely speculative tour of the Martian landscape, check out [http://www.youtube.com/watch?feature=player\\_embedded&v=2wOogk2LSSw#](http://www.youtube.com/watch?feature=player_embedded&v=2wOogk2LSSw#)

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Tagged Mars, Martian tectonics, Mons Olympus, Valles Marineris

The Great Blurring

Posted on June 22, 2012 by Steve Drury | Leave a comment

It is hard to resist curiosity when a phrase includes a superlative. Dickens knew this when he opened *A Tale of Two Cities* with the words, 'It was the best of times, it was the worst of times...'. So impacted into post-Victorian English language are they that the *Daily Mirror* of 13 May 2012 used them to celebrate 'The most scintillating finish in Premier League history': referring of course to the footballing tales of the city of Manchester (UK, that is). So it was with some gaiety that I turned to a paper in the May 2012 issue of *Geology* (Løseth, H. et al. 2012. World's largest extrusive body of sand? *Geology*, v. 40, p. 467-470). Now, that is a title to conjure with, and I would advise any academic author to add a superlative adjective of some kind to their next manuscript title, to ensure more than 5 readers and at least one citation to add to her/his CV. Conversely, I caution against seemingly ultra-high impact, exclamatory single-word titles such as 'Coelocanth!', 'Porphyroblast!', 'Ignimbrite!' or 'Sphenochasm!': they summon untoward visions of geoscientists much given to snorting and pawing the air in salivating lust and groveling need, to plagiarise – yet again – Joseph Heller's *Catch 22* (thus Heller described Hungry Joe's reaction to a pornographic cameo brooch).

The sand body in question lies in the Pleistocene subsurface of the Norwegian sector of the North Sea above the Snorre oilfield, and came to light through a 3-D seismic survey with extraordinarily good resolution that allowed the reconstruction of its base and top structure contours (two-way time) and thus its overall volume and shape. At 10 km<sup>3</sup>, were it to have formed yesterday to cover Manhattan the paper's abstract suggests that it would have reached the 37th floor of the Empire State Building. More parochially, had it engulfed the 'Square Mile' of the City of London (Post Codes EC1, 2, 3 and 4) 30 St Mary Axe ('The Gherkin') and 'The Shard' would be buried in their entirety leaving one of capitalism's iconic heartlands a curiously gnarled sandy plain.

Small mud volcano, Romania (Photo credit: Wikipedia)

That the sand is extrusive rather than being simply a sedimentary stratum is revealed by its extraordinary shape. Its thickest part is in a depression surrounded by mounds of the underlying unit – the former seabed – above which the body is absent. These mounds show marginal signs on the seismic sections of dykes that could have acted as feeders from stratiform sands deeper in the sequence, the dykes coinciding with the base of 'ditches' in the body's upper surface. In turn, the ditches have flanking ridges as if the ditches and the dykes below were feeders for the sand extrusion. Such an extrusive sand body is currently forming at the accidentally triggered Lusi sand volcano in Indonesia where a single vent exudes about 50 thousand m<sup>3</sup> each day; a rate that would take 550 years to produce the Snorre field body. Pleistocene stratigraphy surrounding the vast North Sea 'boil' suggests that it formed during a period of rapid sedimentation from the huge North Sea ice shelf supplied by the Scandinavian ice sheet.

Helge Løseth and colleagues from Statoil and the University of Rennes ran a series of dry sandbox experiments to mimic the process of sand injection. By pumping air through interbedded sand, glass ballotini and silica powder, to represent two types of non cohesive sands and cohesive mudrocks, they found that increasing the overall air pressure in the box eventually fluidized the 'sands' which blurted through the 'clays' to form 'volcanoes' with plumes of sand that enlarged the area of deposition at the surface. Cutting into the sediments after the experiments revealed a remarkably real-looking system of intrusive sand bodies (dykes, sills and laccoliths) as well as the extrusive mass of sand. Chances are that such bodies may form more commonly in marine sequences, given encouraging overpressuring through sudden increases in normal sedimentation. If so, the very open grain structure of the vented sands might provide superb petroleum reservoir characteristics.