



Fotos tiradas do site da Nasa

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AMBIENTE BRASIL

31 / 07 / 2015 Árvores necessitam de até 4 anos para se recuperar de uma seca, diz estudo

O estudo, publicado nesta quinta-feira pela revista "Science", sugere, portanto, que as florestas, como consequência de sua recuperação lenta após uma seca, são capazes de armazenar menos carbono do que se tinha calculado com os modelos de clima e vegetação e isto traz implicações para a mudança climática, que pode ser também mais rápida do que se pensava.

31 / 07 / 2015 Fogo na floresta mobiliza 1.413 brigadistas

Ibama procura recrutar pessoal das próprias comunidades, por conhecer melhor a região.

31 / 07 / 2015 Astronauta italiano Paolo Nespoli voltará ao espaço aos 60 anos

O astronauta italiano Paolo Nespoli voltará em maio de 2017 ao espaço aos 60 anos e como integrante de uma missão da Agência Espacial Italiana na Estação Espacial Internacional.

31 / 07 / 2015 Descoberto novo sistema de exoplanetas com três "super terras"

Situado na constelação de Cassiopeia, o sistema de exoplanetas (do lado de fora do sistema solar, ndr) é composto por três super terras - os exoplanetas têm uma massa de entre 1 e 10 vezes a da Terra - de um planeta gigante e sua estrela em comum, um pouco mais fria do que o nosso sol.

31 / 07 / 2015 Atletas podem contrair doenças nas 'águas olímpicas' do Rio, diz agência

AP diz que achou bactérias de esgoto em locais de competições olímpicas. Brasileiro do Inea afirma que segue norma de qualidade para uso recreativo.

31 / 07 / 2015 EUA abrem inquérito sobre morte do leão Cecil no Zimbábue

Autoridades pediram que Walter Palmer se apresente para esclarecimentos. Clube de Safári suspendeu licenças de caçador e guia que o acompanhava.

31 / 07 / 2015 Zoológico de Brasília faz acupuntura em animais com doenças crônicas

Arara, tucano, lhama e perdiz passaram por procedimento nesta quinta-feira (30). Bichos não são sedados; sessão dura entre cinco e dez minutos.

31 / 07 / 2015 Cientistas desvendam segredo das formigas para carregar alimentos 'gigantes'

Pesquisa israelense sugere que animais trabalham em grupo mas respondem a formigas 'guias', em um equilíbrio 'perfeito' entre individualidade e conformismo.

31 / 07 / 2015 Philae revela presença de quatro moléculas orgânicas em cometa

Robô coletou dados do núcleo do cometa 67P/Churyumov-Gerasimenko. Observação dessas moléculas é inédita em cometas.

31 / 07 / 2015 Câmera da Nasa fotografa montanha com 'neve' de CO2 em Marte

Neve de Marte, composta de CO2, destaca acidentes geográficos da região. Imagem é da câmera de Veículo Orbital de Reconhecimento de Marte.

31 / 07 / 2015 Pesquisadores identificam 'aurora polar' fora do Sistema Solar pela 1ª vez

Cientistas avistaram show de luzes semelhante à aurora boreal na constelação de Lira.

31 / 07 / 2015 Chá verde pode dificultar a digestão de amido, diz estudo

Amido está presente no pão, arroz e batata, entre outros alimentos. Estudo teve alto consumo; padrão diário não deve prejudicar digestão.

31 / 07 / 2015 Nova planta carnívora é descoberta no Brasil graças a foto em rede social

Planta encontrada em MG usa substância grudenta para pegar insetos. Especialistas brasileiros começaram estudo ao verem foto no Facebook.

30 / 07 / 2015 Sistema Cantareira amplia limite de abastecimento de água em agosto

Com isso, a Sabesp poderá retirar 14,5 mil litros por segundo do manancial, que opera com 10,5% de capacidade negativa, ainda utilizando a primeira cota do volume morto. Atualmente, o limite é de 13,5 mil litros por segundo.

30 / 07 / 2015 Evento muda lógica de produção e consumo

Além do setor público, intenção é levar práticas para os setores industriais e demais áreas da iniciativa privada.

30 / 07 / 2015 Após cheia, nível do Guaíba cai e fica abaixo da cota de alerta no RS

Pico da cheia após chuva, há seis dias, foi de 2,56 metros. Medição da prefeitura aponta que nível agora está em 2,04 metros.

30 / 07 / 2015 Vacina contra síndrome respiratória tem resultados promissores em animais

Atualmente, não há vacina contra o coronavírus, que surgiu pela primeira vez em 2012 e causou vários contágios, inclusive um surto na Coreia do Sul que infectou aproximadamente 180 pessoas e matou 36. A Organização Mundial da Saúde identificou 1.368 casos desde 2012, incluindo 490 mortes, a maioria na Arábia Saudita.

30 / 07 / 2015 Cientistas dizem que não conseguiram fazer novo contato com sonda espacial Philae

O pequeno laboratório de robótica, que pousou em um cometa chamado 67P Churyumov-Gerasimenko em novembro, em um feito histórico, fez contato pela última vez por meio da sonda Rosetta em 9 de julho.

30 / 07 / 2015 Fiscalização apreende carga ilegal de madeira no nordeste do Pará

Apreensão ocorreu durante fiscalização da PRF no município de Dom Eliseu. Carga apresentava irregularidade em documentação ambiental e nota fiscal.

30 / 07 / 2015 Incêndio florestal faz voos serem cancelados em aeroporto de Roma

Partidas foram suspensas em Fiumicino, segundo a Alitalia. O fogo atingia uma floresta de pinheiros perto do aeroporto.

30 / 07 / 2015 [Seca no Nordeste prejudica produtores em áreas irrigadas](#)

Com o baixo nível do Açude Pereira de Miranda, os produtores de coco no perímetro irrigado Curu-Paraipaba, na região metropolitana de Fortaleza, estão mantendo 40% da atividade, registrando queda de 60%.

30 / 07 / 2015 [Pesquisadora mostra mosquito da malária de perto](#)

Cientistas tentam entender biologia do inseto, para prevenir crescimento da doença em regiões africanas.

30 / 07 / 2015 [Inundações e deslizamentos de terra deixam ao menos 17 mortos no Vietnã](#)

Fortes chuvas castigam norte do país. Seis pessoas seguem desaparecidas e 3,5 mil deixaram suas casas.

30 / 07 / 2015 [Inundações e enxurradas provocam calamidade pública em Santa Catarina e Amazonas](#)

O estado de calamidade pública, de acordo com a Defesa Civil, é uma situação anormal, provocada por desastres, causando danos e prejuízos que implicam o comprometimento da capacidade de resposta do Poder Público.

30 / 07 / 2015 [Gosto musical revela como as pessoas pensam, diz estudo](#)

Segundo pesquisadores da Universidade de Cambridge, pessoas 'sistemáticas' preferem punk e heavy metal; trabalho pode ter aplicações na indústria musical.

30 / 07 / 2015 [Rússia lançará foguete Proton em agosto](#)

As autoridades russas lançarão no dia 28 de agosto um foguete Proton, o primeiro desde a perda de um satélite mexicano que se somou a uma série de fracassos para a indústria espacial russa.

30 / 07 / 2015 [Pesquisadores identificam ossadas de primeiros colonizadores britânicos nos EUA](#)

Restos de quatro líderes de comunidade no início do século 17 foram encontrados em igreja onde Pocahontas se casou com inglês; tecnologia de ponta foi usada em identificação.

29 / 07 / 2015 [Ameaçado de extinção, filhote de ariranha morre no Paraná](#)

O filhote de fêmea de ariranha de três meses que seria a esperança de salvar a espécie de extinção no estado do Paraná acabou morrendo no sábado (25). O animal havia viajado 11 horas de Altamira (PA) a Foz do Iguaçu (PR) e chegado à cidade paranaense no último dia 21.

29 / 07 / 2015 [MMA fala de inclusão para comunidades](#)

Festival, que se realiza na Vila de São Jorge, em Alto Paraíso (GO), comemora 15 anos de existência ajudando na formulação de políticas públicas.

29 / 07 / 2015 [Morre em zoo tcheco um dos últimos cinco rinocerontes brancos do mundo](#)

Um cisto rompido causou a morte de Nabire, de 31 anos, na segunda (27). Espécie tem apenas um exemplar nos EUA e três em reserva queniana.

29 / 07 / 2015 [Hawking alerta sobre perigo de corrida por robôs matadores](#)

Em entrevista, cientista disse temer que o uso de inteligência artificial pudesse significar o fim da humanidade.

29 / 07 / 2015 [SE: MMA aprova planos de resíduos sólidos](#)

Governo federal repassa R\$ 1,4 milhão para o governo do Estado identificar onde são produzidos resíduos sólidos, criar estratégias de manejo e mapear soluções já desenvolvidas.

29 / 07 / 2015 [Onça parda é encontrada dentro de residência em Santa Fé do Sul/SP](#)

Animal da espécie sussuarana tem de 3 a 4 anos e pode ter pulado muro. Apesar de arisca, animal não tinha ferimentos; ela será solta em mata.

29 / 07 / 2015 Panda completa 37 anos e se torna o mais velho do mundo em cativeiro

'Jia Jia' ganhou um bolo feito de gelo, verduras, legumes, flores e raízes. Idade do animal equivale ao centenário de um ser humano.

29 / 07 / 2015 Exército suíço 'rouba' água da França para matar sede de vacas

Incidente criou imbróglio diplomático; governo francês alega que não foi consultado.

29 / 07 / 2015 Gavião real nasce em cativeiro pela primeira vez em parque do Pará

Filhote que nasceu em Parauapebas tem plumagem branca. Gaviões montaram ninho a 7 metros de altura.

29 / 07 / 2015 Melbourne se surpreende com milhares de cartas de amor enviadas a suas árvores

Prefeitura mapeou todas as árvores urbanas para que moradores pudessem ajudar a monitorá-las, mas população começou a enviar e-mails 'pessoais' para elas.

29 / 07 / 2015 Dente humano de 560 mil anos é achado no sudeste da França

Jovens arqueólogos voluntários fizeram a descoberta em Tautavel. Ainda não se sabe se dente pertencia a homem ou mulher.

29 / 07 / 2015 Corujas são encontradas em alojamento na obra da Tamoios, em SP

Os animais foram encontrados pelos funcionários no forro da casa. Segundo biólogo, animal é importante para equilíbrio ambiental.

29 / 07 / 2015 Dinossauros como o T-Rex tinham tipo único de dente serrilhado

Estudo detalhe estrutura serrilhada única que permitia mastigar presas. Pesquisa envolveu oito espécies e revelou complexa dentição.

29 / 07 / 2015 Brasileiro tem pouca informação sobre como se contrai hepatite C, diz estudo

Dia Mundial de Luta Contra as Hepatites Virais foi celebrado nesta terça-feira (28). Contágio é principalmente por compartilhamento de objetos pontiagudos.

29 / 07 / 2015 Americano é suspeito de ter matado leão 'ícone' do Zimbábue

Animal foi morto com flechada e tiro, segundo ONG conservacionista. Carcaça do leão Cecil foi encontrada sem a cabeça.

28 / 07 / 2015 Mesmo com política de resíduos, 41,6% do lixo tem destino inadequado

Índice de 2014 ficou praticamente inalterado em relação a 2013. De 2003 a 2014, lixo aumentou 29%; crescimento populacional foi de 6%.

28 / 07 / 2015 Surto de gripe aviária faz Alemanha sacrificar 10 mil galinhas

O Ministério da Agricultura do estado federado alemão da Baixa Saxônia informou nesta segunda-feira que diagnosticou um surto de gripe aviária, correspondente ao vírus H7N7, altamente patogênico, em uma fazenda da ilha de Riems, onde as 10 mil galinhas que tinham a doença foram sacrificadas.

28 / 07 / 2015 Rio: achados vestígios de ocupação humana de até 4 mil anos

Os cerca de 50 artefatos foram encontrados em escavações do metrô e pertenciam a grupo de nômades.

28 / 07 / 2015 Brasil formaliza fim do acordo com a Ucrânia para lançamento de foguetes

Fracasso do programa deixa um prejuízo de R\$ 1 bilhão para os dois governos.

28 / 07 / 2015 MPPB sugere que obra na falésia do Cabo Branco/PB não inicie sem licença

Será recomendado que Sudema e Ibama façam o licenciamento ambiental. Projeto foi debatido nesta

segunda-feira (27) em audiência pública.

28 / 07 / 2015 Vacina contra a dengue mostra mais eficácia em maiores de 9 anos

Como o imunizante foi testado em pessoas de até 60 anos, este é o limite da indicação do produto.

28 / 07 / 2015 Em seis meses, Ibama recolheu 480 animais silvestres no Maranhão

45% dos casos são frutos de apreensões resultado da fiscalização do órgão. Último animal recebido pelo Ibama foi um macaco espécie capijuba.

28 / 07 / 2015 Brasil controlará uso de mercúrio no País

Projeto que levantará informações e capacitará técnicos para gerenciar riscos provenientes das liberações do metal será lançado em Brasília.

28 / 07 / 2015 Chuva e aumento dos oceanos amplificam tempestades nos EUA

As tempestades combinando um aumento dos oceanos com precipitações muito intensas se tornaram mais frequentes nos Estados Unidos, onde criam um alto risco de inundações para as cidades costeiras, diz um estudo publicado nesta segunda-feira na revista Nature Climate Change.

28 / 07 / 2015 Governo lança edital para acelerar cadastro ambiental no semiárido

Prazo para regularizar situação da propriedade rural vai até maio de 2015. Edital prevê que entidades privadas auxiliem famílias a registrar terras.

28 / 07 / 2015 Polícia prende homem que mantinha 15 pássaros silvestres no DF

Suspeito não tinha documentação necessária para cativeiro dos animais. Prisão foi neste domingo, em Samambaia; pena é de até 1 ano de prisão.

28 / 07 / 2015 Apicultor da Bahia cria combustível feito de mel

A descoberta do apicultor Luiz Jordans Ramalho Alves é o desdobramento de uma pesquisa que tinha por finalidade o melhor aproveitamento do mel de descarte para produção de álcool alimentício (ou nobre), usado para fazer cachaça ou aguardente de mel.

28 / 07 / 2015 Tigre-de-bengala some em ritmo alarmante em Bangladesh, diz estudo

Maior floresta de manguezal do mundo tem apenas cerca de 100 exemplares. Animal está entre as espécies ameaçadas classificadas pela UICN.

28 / 07 / 2015 Filhotes trigêmeos de pandas gigantes completam 1 ano na China

Acredita-se que eles sejam os últimos três exemplares iguais da espécie no mundo.

28 / 07 / 2015 Falha geológica ameaça provocar grande terremoto e tsunami nos EUA

Milhões de pessoas estão sujeitas a tremores causados pela falha submarina de Cascadia, que fica no noroeste do país.

27 / 07 / 2015 Obama anuncia medidas para conter comércio de marfim nos EUA

O objetivo é dificultar ainda mais as operações dos caçadores ilegais na África, que comercializam marfim nos mercados americano e asiático.

27 / 07 / 2015 Quintais Produtivos: lições para conviver melhor com a seca do Semiárido nordestino

Iniciativa do MMA vem trazendo mudanças significativas para a vida dos agricultores familiares no Sertão do Araripe, em Pernambuco, e no Piauí.

27 / 07 / 2015 USP estuda a influência da percepção de sabores na obesidade

Teste avalia a reação de voluntários quando submetidos ao sabor amargo. Pesquisadores pretendem encontrar novos tratamentos contra a doença.

27 / 07 / 2015 Pesquisadores testam relação entre alecrim e boa memória

Cientistas britânicos tentam descobrir se erva pode realmente ajudar função do cérebro.

27 / 07 / 2015 Que matou o leão símbolo do Zimbábue?

Um caçador de nacionalidade supostamente espanhola matou o leão Cecil, atração do principal parque do Zimbábue, o Hwange, por mais de dez anos.

27 / 07 / 2015 Esgoto tratado favorece agricultura e poupa água para consumo, mostra estudo

Pesquisadores testaram, durante 15 anos, as vantagens do uso dessa água, que contém minerais e nutrientes como nitrogênio e fósforo, importantes no desenvolvimento das plantas.

27 / 07 / 2015 Santiago decreta pré-emergência ambiental pela 16ª vez em 2015

Altos índices de contaminação do ar afetam mais crianças e idosos. Carros são proibidos de circular e indústrias paralisam atividades.

27 / 07 / 2015 Coleção terá livro com registros da biodiversidade piauiense

PI integra projeto que já registrou unidades no Pernambuco e Venezuela. Obra é conduzida pelos fotógrafos Chico Rasta (PI) e Luiz Netto (PE).

27 / 07 / 2015 Polícia intensifica monitoramento por satélite para evitar queimadas

Com tempo seco, aumenta registros de queimadas na região de Rio Preto. Desde 2010, policiais contam com sistema avançado de monitoramento.

27 / 07 / 2015 Plutão está coberto por uma névoa

A sonda New Horizons captou imagens que mostram uma névoa de 130 quilômetros por cima da superfície de Plutão, com duas capas bem diferenciadas, uma de 80 quilômetros e outra de cerca de 50 quilômetros.

27 / 07 / 2015 Chuvas torrenciais deixam 36 mortos no Paquistão

Condições meteorológicas extremas provocaram estragos no norte e no sul do país, varrendo dezenas de estradas e pontes no distrito de Chitral (norte), enquanto as inundações atingiam povoados ao sul de Punjab.

27 / 07 / 2015 Grupos de pesquisa do país crescem 29% em quatro anos

O número de pesquisadores em atividade e seu nível de formação aumentaram. Dos 180 mil pesquisadores atuantes, 116 mil têm pelo menos nível de doutorado, ou 65% do total. Em 2010, o índice era de 63% e em 2000, de 57%.

27 / 07 / 2015 Buenos Aires se torna capital mundial da inteligência artificial

A Conferência Internacional Conjunta de Inteligência Artificial incluirá palestras com os maiores cérebros nesta área, como os pesquisadores do Google, Evgeniy Gabrilovich e Julien Cornebise, o neurocientista especializado no estudo da consciência, Christof Koch e com a professora de ciências da computação e robótica Manuela M. Veloso.

27 / 07 / 2015 Metade dos reservatórios de água do Agreste estão em estado de colapso

Dos 30, 15 estão com menos de 10% do volume total, segundo a APAC. Dados ainda apontam que sete barragens estão com 0% da capacidade.

20 / 07 / 2015 Pesquisadores veem progresso em tratamento de Alzheimer

Novas drogas experimentais se mostraram promissoras em tratamento. Conferência Internacional de

Alzheimer começa neste sábado nos EUA.

20 / 07 / 2015 Arqueólogos encontram duas obras faraônicas de 4 mil anos no Egito

As peças, encontradas por arqueólogos poloneses, datam do chamado Império Médio (2050-1750 a.C.) e do Segundo Período Intermediário (1650-1550 a.C.), épocas muito anteriores à data de construção do atual templo, que é ptolomaico.

20 / 07 / 2015 Ativistas protestam nus contra plano de desmatamento na Califórnia/EUA

Ato foi registrado na Universidade da Califórnia, em campus de Berkeley. Desmatamento não reduz perigo de incêndios florestais, diz ambientalista.

20 / 07 / 2015 Derretimento de geleira atrai turistas ao Mont Blanc, na França

Turistas vão à região para ver os efeitos do aquecimento global. Gelo diminuiu 2 km desde 1850, segundo pesquisadores.

20 / 07 / 2015 Itália registra 163 incêndios

A Defesa Civil declarou neste domingo (19) "alerta vermelho" para 23 cidades italianas. Esse alerta significa que mesmo as pessoas sem problemas de saúde e jovens correm risco.

20 / 07 / 2015 Chuvas afetam 175 cidades na Região Sul e rio em SC ameaça transbordar

As chuvas diminuíram na região sul do país nos últimos dias, mas a situação continua preocupante. Já são 175 municípios afetados. Em Santa Catarina, o Rio Canoinhas continua subindo, com uma taxa de 1 centímetro por hora. De acordo com a Defesa Civil do estado, o nível do rio está em 5,92 metros, a apenas 4 centímetros do transbordamento.

20 / 07 / 2015 Flash infravermelho revela manchas 'escondidas' de pantera-negra asiática

A olho nu, não é possível ver manchas na pelagem das panteras-negras. Câmera em modo noturno revelou padrão similar ao de outros leopardos.

20 / 07 / 2015 Flores exigem menos 'atenção' no inverno, dizem especialistas em MG

Profissional em Juiz de Fora afirma que plantas consomem menos água. Saiba quais os cuidados necessários com as flores no tempo frio.

20 / 07 / 2015 Tubarão fêmea com filhotes na barriga é capturada e morta no ES

Animal pesava 150 kg e estava com cinco filhotes no ventre. Bicho caiu em uma rede puxada na Barra do Jucu, neste sábado (18).

20 / 07 / 2015 'Mexe com o psicológico', diz servidor que ficou retido em aldeia no Acre

Servidores foram libertados após ficarem três dias reféns em aldeia. ICMBio e Funai mandaram carta abrindo diálogo para negociações.

20 / 07 / 2015 Reunião da SBPC chega ao fim com participação diária de 10 mil pessoas

Evento promovido em São Carlos (SP) atraiu moradores de 649 cidades. Encontro de sete dias demonstrou a importância e a 'mágica' da ciência.

20 / 07 / 2015 Cruz formada por lua, planetas e estrela é vista no céu no Rio

Evento astronômico foi registrado no fim da tarde e na noite deste sábado (18). Conjunção de Júpiter e Vênus possibilitou o 'falso Cruzeiro do Oeste'.

20 / 07 / 2015 Planaveg recebe sugestões até 9 de agosto

Proposta do Plano Nacional de Recuperação da Vegetação Nativa é estratégica, principalmente para a conservação das APPs e reservas legais.

20 / 07 / 2015 AC tem maior taxa de desmate da Amazônia Legal em 2 anos, diz Sema

Área desmatada passou de 221 km² em 2013 para 312 km² em 2014. Entre janeiro e junho de 2015, houve 56 focos de calor no estado acreano.

20 / 07 / 2015 2014 foi o ano mais quente da história, afirma relatório dos EUA

O ano foi o mais quente da história, desde que se começou a medir a temperatura global. Praticamente todos os continentes registraram recordes de temperatura.

21 / 07 / 2015 Cientistas espanhóis revelam detalhes das planícies vulcânicas de Mercúrio

Uma bacia formada por crateras originadas pelo impacto de meteoritos e coberta por materiais vulcânicos muito pouco conhecidos se estende no equador de Mercúrio, no entanto, um grupo de cientistas espanhóis constatou que a mesma foi formada em dois processos muito diferentes, nos quais a crosta do planeta se esfriou de forma progressiva.

21 / 07 / 2015 Falha em pequeno suporte causou explosão de foguete da SpaceX

A recente explosão do Falcon 9 da SpaceX ocorreu porque uma falha em um pequeno suporte fez com que um balão de hélio explodisse dentro do tanque de oxigênio líquido do foguete - informou nesta segunda-feira (20) o presidente da empresa aeroespacial privada, Elon Musk.

21 / 07 / 2015 Jovem com HIV tem vírus sob controle sem remédios há 12 anos, diz médico

Caso inédito foi apresentado na Conferência sobre a Patogênese do HIV. Adolescente de 18 anos foi infectada por sua mãe durante gravidez.

21 / 07 / 2015 Câmera em chifre combate caça ilegal de rinocerontes

Cientistas instalam equipamentos de vigilância em animais para emitir sinal de alerta quando caçadores atuam.

21 / 07 / 2015 MMA promove debate sobre resíduos tóxicos

Participantes conhecerão possibilidades de descontaminação e eliminação dos poluentes, além de experiências internacionais.

21 / 07 / 2015 Mudança climática preocupa mais que Estado Islâmico, aponta pesquisa

46% dos entrevistados em 40 países estão muito preocupados com tema. EI na Síria e Iraque é a maior preocupação para a Europa e os EUA.

21 / 07 / 2015 Clima: França pede concessões imediatas para conseguir acordo em dezembro

A França fez nesta na segunda-feira (20) um chamado para que os atores políticos olhem "desde agora" soluções de compromisso ao receber os representantes de 45 países em uma reunião para acelerar as negociações para um acordo climático global em dezembro.

21 / 07 / 2015 Para evitar doença, pintos de granjas dos EUA são enviados ao Brasil

Foco de gripe aviária foi confirmado em uma fazenda de perus em Iowa. Doença matou mais de 48 milhões de frangos e perus desde dezembro.

21 / 07 / 2015 Quatro regiões do Brasil têm 'saldo negativo' de chuvas, diz Inpe

A constatação foi feita depois de levantarem dados de registros de chuva no país entre 1960 e 1990 e compararem com os números atuais para estimar qual o atual "saldo da conta bancária de água" do país.

21 / 07 / 2015 Como evitar ataques de tubarão - e o que fazer se for atacado

Surfista australiano conseguiu escapar durante torneio na África do Sul; especialista ensina como evitar a proximidade com esses animais.

21 / 07 / 2015 Arquiteto cria torre que coleta água potável a partir do ar

Estrutura foi desenvolvida para beneficiar comunidades carentes na Etiópia. Cerca de um terço da população mundial não tem acesso a água limpa.

21 / 07 / 2015 Stephen Hawking lança projeto para encontrar vida extraterrestre

O cientista se associou com o multimilionário russo Yuri Milner para lançar o programa "Breakthrough Initiatives" ("Iniciativas inovadoras"), que destinará US\$ 100 milhões durante a próxima década para a busca de vida inteligente fora de nosso planeta.

21 / 07 / 2015 Museu dos EUA quer US\$ 500 mil para restaurar traje de Neil Armstrong

Coincidindo com o 46º aniversário da viagem espacial da nave Apollo 11, o museu do Instituto Smithsonian, em Washington, decidiu lançar esse esforço de obtenção de fundos através da plataforma de internet Kickstarter, com a qual em poucas horas conseguiu mais de US\$ 77 mil dos US\$ 500 mil que quer arrecadar em um mês.

21 / 07 / 2015 Defesa anuncia R\$ 80,5 mi e novo radar contra desmate na Amazônia

Sistema vai monitorar via área equivalente aos estados de SP, PR, RS e SC. Dinheiro para o radar vem do BNDES e do Orçamento da União.

21 / 07 / 2015 Cientistas da USP criam filme plástico que elimina bactérias dos alimentos

Isso foi possível porque os pesquisadores do Ipen (Instituto de Pesquisas Energéticas e Nucleares) desenvolveram o produto com nanopartículas de prata que demonstraram serem eficazes na eliminação de bactérias causadoras de infecções em seres humanos, sem serem tóxicas.

25 / 07 / 2015 Clima: texto de negociação diluído é colocado à disposição dos países

Este documento de cerca de 80 páginas, proposto pelos dois co-presidentes do debate, é uma "ferramenta para ajudar os governos em suas negociações", afirmou o secretariado da Convenção-Quadro das Nações Unidas sobre Mudanças Climáticas.

25 / 07 / 2015 Modelo que avalia a segurança de reatores nucleares é premiado nos Estados Unidos

Desenvolvido na Escola Politécnica da USP, o modelo correlaciona a distribuição estatística de microfissuras com a deformação plástica local de componentes estruturais.

25 / 07 / 2015 Nova técnica ajuda a estudar reações de metaloproteínas

Descrita na revista Nature Communications, metodologia permite entender reações de enzimas fundamentais para processos biológicos como fotossíntese e respiração celular.

25 / 07 / 2015 Mudanças de temperatura no Rio exigem cuidados com a saúde, dizem especialistas

A mudança repentina do tempo, característica do inverno carioca, causa impactos na saúde e é preciso que a população tenha alguns cuidados, como alertam especialistas.

25 / 07 / 2015 Mutação de margaridas de Fukushima pode ter acontecido por causas naturais

A causa da má-formação pode ser um fenômeno chamado faciação.

25 / 07 / 2015 Estudo acaba com mito do sufocamento e revela como jiboia mata a presa

Cientistas americanos monitoraram o sistema circulatório de ratos agarrados por jiboias e perceberam que as cobras provocam a parada circulatória dos animais de que se alimenta.

25 / 07 / 2015 Quimioterapia prejudica pacientes com câncer terminal, sugere estudo

Pesquisa analisou grupo de mais de 300 pacientes com câncer metastático. Objetivo era examinar impacto

do tratamento em pacientes terminais.

25 / 07 / 2015 Corujas raras são achadas em troca de poste em Mogi das Cruzes/SP

Uma das aves, que estava ferida, foi encaminhada para tratamento. Eletricista buscou ajuda na internet e localizou veterinário em Mogi.

25 / 07 / 2015 Ibama aplica R\$ 1,4 mi em multas por desmatamentos ilegais no Acre

Multas foram aplicadas durante a operação Cunha Gomes. Ação iniciou no dia 13 de julho e segue até o final de agosto.

25 / 07 / 2015 Sensor com substância presente na jaca detecta leucemia em 40 minutos

Tecnologia foi desenvolvida por pesquisadores da USP em São Carlos. Grupo espera parceria com empresa para disponibilização de aparelho.

25 / 07 / 2015 Europa aprova primeira vacina contra malária

Agência Europeia de Medicamentos aprovou imunização inédita. Vacina não será distribuída até que obtenha autorização da OMS.

25 / 07 / 2015 Polícia descobre garimpo ilegal onde suspeitos teriam desviado curso de rio

Atividade irregular acontecia no entorno do rio Falsino, em Tartarugalzinho. Suspeitos apreendidos com armas estavam sem licença para atuar.

25 / 07 / 2015 Leões que eram animais de estimação em Gaza chegam a santuário

Leões eram criados em casa de campo de refugiados da Faixa de Gaza. ONG internacional promoveu uma jornada com os filhotes até a Jordânia.

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Hundreds of Earthquakes per Day: The 2014 Guthrie, Oklahoma, Earthquake Sequence

Harley M. Benz, Nicole D. McMahon, Richard C. Aster, Daniel E. McNamara, and David B. Harris

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The First Surface-Rupturing Earthquake in 20 Years on a HERP Active Fault is Not Characteristic: The 2014 Mw 6.2 Nagano Event along the Northern Itoigawa-Shizuoka Tectonic Line

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Ground-Motion Prediction Models for Arias Intensity and Cumulative Absolute Velocity for Japanese Earthquakes Considering Single-Station Sigma and Within-Event Spatial Correlation

Roxane Foulser-Piggott and Katsuichiro Goda

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Roxane Foulser-Piggott and Katsuichiro Goda

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EARTH GAUGE

Earth Gauge: Don't Feed the Algae

Link: www.earthgauge.net/2015/dont-feed-the-algae

Tweet this tip: Don't feed the algae. Extra nutrients in our waters can create unintended consequences for aquatic ecosystems. www.earthgauge.net/?p=38845

Graphic: [What is a Dead Zone?](#)

Although some [algal blooms](#) can produce toxins that are dangerous for animals and humans, a bloom doesn't have to generate toxins to wreak havoc on its environment. When an algae population receives an influx of nutrients like nitrogen and phosphorus in warm, slow-moving water, it can multiply out of control. The layer of algae that forms on the surface of the water can partially block sunlight from reaching plants and tiny organisms below, stunting their growth. When the sun-starved plants and organisms die, they undergo decomposition, a natural process that consumes dissolved oxygen from the surrounding waters. When the large population of algae in the bloom at the water's surface dies, decomposition occurs at such a wide scale that the water can become depleted of oxygen, falling far below normal levels. This lack of oxygen can threaten and even kill off populations of fish and other animals living in the water, creating a dead zone. These fish kills are disastrous for the local ecosystem and can be detrimental for fishing industries that rely on the affected waters.

Tip: Don't feed the algae. Excess nutrients that leak into our waterways – sometimes referred to as “nutrient pollution” or “nitrogen and phosphorous pollution” – can create unintended consequences for aquatic ecosystems.

- In your yard: apply fertilizer – a common source of nitrogen – sparingly, and don't plan any applications before windy or rainy days.
- At home: only use the recommended amount of detergent. More is not better, and can contribute to phosphates in the water system.

[Learn about more ways to help protect your waterways!](#)

(Sources: EPA "Harmful Algal Blooms" epa.gov/nutrientpollution/harmful-algal-blooms; EPA "Nutrient Pollution: What You Can Do" epa.gov/nutrientpollution/what-you-can-do; EPA "Nutrient Pollution: What You Can Do: In Your Home" epa.gov/nutrientpollution/what-you-can-do-your-home; EPA "Nutrient Pollution: What You Can Do: In Your Yard" epa.gov/nutrientpollution/what-you-can-do-your-yard; Smith, T. M., & Smith, R. L. (2009). *Coastal and Wetland Ecosystems*. In B. Wilbur (Ed.), *Elements of Ecology* (6th ed., pp. 523). San Francisco, CA: Pearson Benjamin Cummings)

CLIMATE FACTS

A River Ran Through It: How Climate Change is Impacting U.S. River Systems

Link: www.earthgauge.net/2015/a-river-ran-through-it

Tweet this fact: #Climatechange impacts the quality and quantity of water in rivers we depend on for food, water, energy and recreation. www.earthgauge.net/?p=38841

Graphic: [Climate Change Impacts U.S. Waters](#)

Did You Know?

- Heavy downpours are increasing nationwide, especially over the last three to five decades. The largest increases have been in the Midwest and Northeast.
- 1 in 3 Americans depend on seasonal or rain-dependent streams for drinking water.
- 70% of electricity in the Northwest is supplied by hydroelectricity.

Climate change impacts the quality and quantity of water in U.S. rivers. Observed and projected changes in precipitation intensity, groundwater runoff, flooding, fires, sea level rise, droughts and seasonal conditions variably affect regional water resources and impact energy production, infrastructure, human health, agriculture and ecosystems.

Northeast and Midwest: In the Northeast and Midwest, increases in heavy downpours can increase the amount of soil, nutrients, trash, animal waste and other pollutants washed into rivers, making the water unusable, unsafe or in need of treatment.

Coastal and Island Regions: In coastal and island regions, salt water can move into fresh water supplies due to sea level rise. The movement of saltwater upstream not only impacts the river ecosystem and its natural inhabitants, but may also jeopardize drinking water supplies, forcing water managers to find alternate sources of fresh water or to purchase equipment to remove the salt from the water.

Southwest and West: The Southwest and West have seen less rain and an increase in the severity and length of droughts over the past 50 years. With this trend expected to continue and intensify over the next century, the amount of fresh water available for recreation and drinking water will also decrease.

Northwest: The Northwest depends on melting snowpack to feed streams and rivers in the late spring and summer when there is typically little rainfall in the region. Higher temperatures will threaten this natural storage and alter the timing of runoff and the amount of water available in streams and rivers – this water is needed to produce energy through hydroelectric power plants.

With the impacts from climate change threatening river water supplies, it is important to ensure that rivers and wetland areas are healthy enough to trap floodwaters, retain moisture during droughts, recharge groundwater supplies, filter pollution and provide habitat for fish and wildlife.

(Sources: EPA. Why Clean Water Rules. epa.gov/cleanwaterrule/why-clean-water-rules; EPA. Climate Impacts on Water Resources. epa.gov/climatechange/impacts-adaptation/water.html; EPA. Climate Impacts in the Northwest. <http://www.epa.gov/climatechange/impacts-adaptation/northwest.html>; Melillo, Jerry M., Terese (T.C.) Richmond, and Gary W. Yohe, Eds., 2014: Climate Change Impacts in the United States: The Third National Climate Assessment. U.S. Global Change Research Program, 841 pp. doi:10.7930/J0Z31WJ2.)

CALIBRANDO LA TIERRA

Calibrando la Tierra: Las floraciones de las algas nocivas que no son tóxicas

Dirección: www.earthgauge.net/2015/reduzca-su-huella-de-carbono

Comparte este hecho en Twitter: No alimente las algas. El exceso de nutrientes puede tener consecuencias no deseadas para los ecosistemas acuáticos. www.earthgauge.net/?p=38484

Gráfico: ¿Qué es una Zona Muerta?

Aunque algunas floraciones de algas pueden producir toxinas que son peligrosas para los animales y los seres humanos, una floración no tiene que generar toxinas para causar estragos en su medio ambiente. Cuando una población de algas localizada en aguas cálidas de poco movimiento recibe una cantidad elevada de nutrientes como nitrógeno y fósforo, las algas pueden multiplicarse fuera de control. La capa de algas que se forma en la superficie del agua puede bloquear parcialmente la luz solar que llega a las plantas y pequeños organismos que habitan las aguas profundas, atrofiando su crecimiento. Cuando las plantas y los organismos se mueren debido a la falta de sol, se descomponen, y este proceso natural consume el oxígeno disuelto en las aguas circundantes. Cuando una gran población de algas en el proceso de floración en la superficie del agua muere, la descomposición se produce a una escala tan amplia que el agua puede ser agotada de oxígeno, muy por debajo de los niveles normales. Esta falta de oxígeno puede amenazar e incluso matar a las poblaciones de peces y otros animales que viven en el agua, creando una zona muerta. Estas muertes de peces son desastrosas para el ecosistema local y pueden ser perjudiciales para las industrias pesqueras que dependen de las aguas afectadas.

Consejo: No alimente las algas. El exceso de nutrientes que se escapan hacia nuestros cuerpos de agua – a veces conocido como “contaminación de nutrientes” o “contaminación de nitrógeno y fósforo” – puede tener consecuencias no deseadas para los ecosistemas acuáticos.

- En su patio: aplique fertilizante – una fuente común de nitrógeno – con moderación, y no haga planes de aplicar antes de días con viento o lluvia.
- En casa: sólo utilice la cantidad recomendada de detergente. Más no es mejor, y puede contribuir a fosfatos en el sistema acuático.

¡Entérese de más maneras de ayudar a proteger a sus cuerpos de agua!

(Sources: EPA "Harmful Algal Blooms" epa.gov/nutrientpollution/harmful-algal-blooms; EPA "Nutrient Pollution: What You Can Do" epa.gov/nutrientpollution/what-you-can-do; EPA "Nutrient Pollution: What You Can Do: In Your Home" epa.gov/nutrientpollution/what-you-can-do-your-home; EPA "Nutrient Pollution: What You Can Do: In Your Yard" epa.gov/nutrientpollution/what-you-can-do-your-yard; Smith, T. M., & Smith, R. L. (2009). *Coastal and Wetland Ecosystems*. In B. Wilbur (Ed.), *Elements of Ecology* (6th ed., pp. 523). San Francisco, CA: Pearson Benjamin Cummings)

Información del Clima: El cambio climático influye las floraciones de algas

Link: www.earthgauge.net/2015/el-cambio-climatico-influye-las-floraciones-de-algas

Tweet this tip: El cambio climático ha sido vinculado a la expansión mundial de las cianobacterias (algas verdeazules). www.earthgauge.net/?p=38456

Las floraciones de algas impactan la calidad del agua y tienen el potencial de producir toxinas que pueden causar daños a las personas, mascotas y vida silvestre. Las floraciones son causadas por una combinación de factores que promueven altas densidades y la reproducción de las algas: altas concentraciones de nutrientes que alimentan a las algas, incluyendo nutrientes y fósforo, aguas calientes, luz solar y corriente de agua lenta de poca profundidad.

El cambio climático ha sido vinculado a la expansión mundial de las cianobacterias (algas verdeazules) a través de los cambios de temperatura y precipitación.

- Las temperaturas más cálidas aumentan la tasa de crecimiento de las cianobacterias. Las cianobacterias productoras de toxina, como *Microcystis*, crecen más rápido en temperaturas más elevadas comparado a otras algas que no son nocivas. Inviernos más templados y primaveras más cálidas también alargan la temporada de cultivo de algas.
- Las temperaturas más cálidas aumentan la estratificación térmica en el agua. Las diferencias en la temperatura y la densidad crean capas en la columna de agua – agua caliente en la superficie tiene menor densidad que el agua profunda y más fría. El calentamiento de las aguas superficiales acentúa esta estratificación y puede limitar la capacidad del viento para mezclar el agua, lo que reduce el movimiento de oxígeno y nutrientes a través de la columna de agua. Esto favorece el crecimiento de las cianobacterias en la

capa superficial cálida, donde pueden alimentarse de los nutrientes y bloquear la luz del sol de otras algas y vida acuática.

- Los eventos de precipitaciones más grandes y más intensos pueden alimentar la proliferación de algas, aumentando el transporte de nutrientes en las vías fluviales a través del escurrimiento.
- Las sequías severas y más frecuentes en combinación con la evaporación debido a temperaturas ambientales más altas reducen los niveles de agua y aumentan la salinidad. Un nivel alto de salinidad puede causar estrés salino en las cianobacterias, causando una fuga en las células y la liberación de toxinas en el agua. El aumento de la salinidad también puede crear condiciones que permitan que las algas marinas invadan ecosistemas de agua dulce.

Los científicos han descubierto que con temperaturas más cálidas, las cianobacterias pueden producir floraciones de algas nocivas con menores concentraciones de los nutrientes con los que se alimentan. Los científicos también han reportado la expansión de las cianobacterias en lagos que no han tenido un aumento de nutrientes, lo que indica que la temperatura puede promover la expansión geográfica de algunas especies de cianobacterias.

(Fuentes: Paerl, H.W. and V.J. Paul. 2012. *Climate Change: Links to Global Expansion of Harmful Cyanobacteria*. *Water Research* 46:1349-1363; Michalak, A.M. et. al 2013. *Record-Setting Algal Bloom in Lake Erie Caused by Agricultural and Meteorological Trends Consistent With Expected Future Conditions*. *PNAS* 110(16):6448-6452; U.S. Environmental Protection Agency. 2013. *Impacts of Climate Change on the Occurrence of Harmful Algal Blooms*. Accessed online 12 August 2014. epa.gov/sites/production/files/documents/climatehabs.pdf; National Air and Space Administration. *Algae Bloom in Lake Erie*. Accessed online 12 August 2014. earthobservatory.nasa.gov/IOTD/view.php?id=84125)

IAPC

Lithology and Mineral Resources

Vol. 50, No. 4, 2015

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Evolution of Sedimentation on the Continental Slope of the Kronotskii Peninsula (Eastern Kamchatka) over the Last 20 ka

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Vol. 23, No. 4, 2015

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EARTH PAGES

How far has geochemistry led geology?

Posted on [July 16, 2015](#) by [Steve Drury](#) | [3 comments](#)



Thin section of a typical granite: clear white and grey grains are quartz (silica); striped black and white is feldspar; coloured minerals are micas (credit: Wikipedia)

In the Solar System the Earth is unique in having a surface split into two distinct categories according to their relative elevation; one covered by water, the other not. More than 60% of its surface – the ocean basins – falls between 2 to 11 km below sea level with a mean around 4 to 5 km deep. A bit less than 40% – land and the continental shelves – stands higher than 1 km below sea level up to almost 9 km above, with a mean around 1 km high. Between 1 and 2 km below sea level is represented by only around 3 % of the surface area. This combined hypsography and wetness is reckoned to have had a massive bearing on the course of climate and biological evolution, as far as allowing our own emergence. The Earth’s bimodal elevation stems from the near-surface rock beneath each division having different densities: continental crust is less dense than its oceanic counterpart, and there is very little crustal rock with an intermediate density. Gravitational equilibrium ensures that continents rise higher than oceans. That continents were underpinned mainly by rocks of granitic composition and density, roughly speaking, was well known by geologists at the close of the 19th century. What lay beneath the oceans didn’t fully emerge until after the advent of plate tectonics and the notion of simple basaltic magmas pouring out as plates became detached.

In 1915 Canadian geologist Norman Levi Bowen resolved previously acquired knowledge of the field relations, mineralogy and, to a much lesser extent, the chemistry of igneous rocks, predominantly those on the continents in a theory to account for the origin of continents. This involved a process of distillation or fractionation in which the high-temperature crystallisation of mafic (magnesium- and iron-rich) minerals from basaltic magma left a residual melt with lower Mg and Fe, higher amounts of alkalis and alkaline earth elements and especially enriched in SiO₂ (silica). A basalt with ~50% silica could give rise to rocks of roughly granitic composition (~60% SiO₂) – the 'light' rocks that buoy-up the continental surface – through Bowen's hypothetical fractional crystallisation. Later authors in the 1930s, including Bowen's teacher Reginald Aldworth Daly, came up with the idea that granites may form by basalt magma digesting older SiO₂-rich rocks or by partially melting older crustal rocks as suggested by British geologist Herbert Harold Read. But, of course, this merely shifted the formation of silica-rich crust further back in time

A great deal of field, microscope and, more recently, geochemical lab time has been spent since on to-ing and fro-ing between these hypotheses, as well as on the petrology of basaltic magmas since the arrival of plate theory and the discovery of the predominance of basalt beneath ocean floors. By the 1990s one of the main flaws seen in Bowen's hypothesis was removed, seemingly at a stroke. Surely, if a basalt magma split into a dense Fe- Mg-rich cumulate in the lower crust and a less dense, SiO₂-rich residual magma in the upper continental crust the bulk density of that crust ought to remain the same as the original basalt. But if the dense part somehow fell back into the mantle what remained would be more able to float proud. Although a neat idea, outside of proxy indications that such delamination had taken place, it could not be proved. Since the 1960s geochemical analysis has become steadily easier, quicker and cheaper, using predominantly X-ray fluorescence and mass-spectrometric techniques. So geochemical data steadily caught up with traditional analysis of thin sections of rock using petrological microscopes. Beginning in the late 1960s igneous geochemistry became almost a cottage industry and millions of rocks have been analysed. Recently, about 850 thousand multi-element analyses of igneous rocks have been archived with US NSF funding in the EarthChem library. A group from the US universities of Princeton, California – Los Angeles and Wisconsin – Madison extracted 123 thousand plutonic and 172 thousand volcanic igneous rocks of continental affinities from EarthChem to 'sledgehammer' the issue of continent formation into a unified theory (Keller, C.B. et al. 2015. Volcanic-plutonic parity and the differentiation of the continental crust. *Nature*, v. **523**, p. 301-307).

In a nutshell, the authors compared the two divisions in this vast data bank; the superficial volcanic with the deep-crustal plutonic kinds of continental igneous rock. The gist of their approach is a means of comparative igneous geochemistry with an even longer pedigree, which was devised in 1909 by British geologist Alfred Harker. The Harker Diagram plots all other elements against the proportionally most variable major component of igneous rocks, SiO₂. If the dominant process involved mixing of basalt magma with or partial melting of older silica-rich rocks such simple plots should approximate straight lines. It turns out – and this is not news to most igneous geochemists with far smaller data sets – that the plots deviate considerably from straight lines. So it seems that old Bowen was right all along, the differing deviations from linearity stemming from subtleties in the process of initial melting of mantle to form basalt and then its fractionation at crustal depths. Keller and colleagues found an unexpected similarity between the plutonic rocks of subduction-related volcanic arcs and those in zones of continental rifting. Both record the influence of water in the

process, which lowers the crystallisation temperature of granitic magma so that it freezes before the bulk can migrate to the surface and extrude as lava. Previously, rift-related magmas had been thought to be drier than those formed in arcs so that silica-rich magma should tend to be extruded.

But there is a snag, the EarthChem archive hosts only data from igneous rocks formed in the Phanerozoic, most being less than 100 Ma old. It has long been known that continental crust had formed as far back as 4 billion years ago, and many geologists believe that most of the continental crust was in place by the end of the Precambrian about half a billion years ago. Some even reckon that igneous process may have been fundamentally different before 3 billion years ago (see: Dhuime, B., Wuestefeld, A. & Hawkesworth, C. J. 2015. Emergence of modern continental crust about 3 billion years ago. *Nature Geoscience*, v. **8**, p.552–555). So big-science data mining may flatter to deceive and leave some novel questions unanswered.

Related articles

Till, C. 2015. Big geochemistry. *Nature*, v. **523**, p. 293-294.

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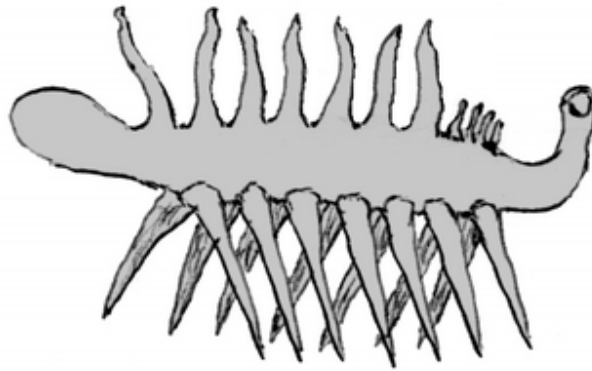
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Hallucigenia gets a head

Posted on [July 7, 2015](#) by [Steve Drury](#) | [Leave a comment](#)

The [Middle Cambrian](#) Burgess Shale of the Canadian Rockies is one of those celebrated sediments that show extraordinary preservation of soft-bodied and easily disarticulated organisms and rich assemblages of fossils. Being one of the earliest known of such lagerstätten, many of the denizens of the ecosystem in which the shale originated were at first regarded as members of hitherto undiscovered and now vanished phyla, the basal branches of the 'tree of life'. Some certainly looked pretty odd, such as *Opabina* with a feeding apparatus looking similar to the extension nozzle of a vacuum cleaner; but that is clearly some kind of arthropod. Others turned out to be astonishingly large, once it was realised that parts of their broken bodies had previously been taken to be different organisms, an example being *Anomalocaris*. But perhaps the oddest, certainly to palaeontologists, was *Hallucigenia*. However, there are plenty of even more weird and wonderful living creatures, such as the [sea pig](#), although modern creatures are more easily pigeonholed, taxonomically speaking.

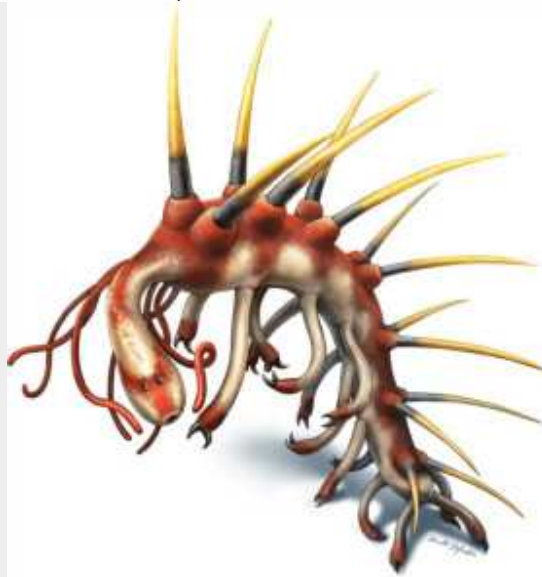


Hallucigenia as originally reconstructed; i.e. upside-down. (credit: Wikipedia)

The trouble with *Hallucigenia* was not so much its complexity – it was a fairly simple-looking beast – but that there were two choices as to which way up it lived; a feature that surprisingly led to a great deal of pondering that ended with the scientist who formally described it in 1977 making the wrong choice. That was eventually resolved fourteen years later, but the creature might also have inspired the Pushmi Pullyu in Hugh Lofting's Dr Doolittle stories for children. Not that it resembled a unicorn-gazelle cross: far from it, for no-one could decide which its front was and which its backside, and even if it may have lain on its side.

But *Hallucigenia* does demonstrate bilateral symmetry beautifully – it must have a front and back, and a top and bottom, even though which was which remained veiled in mystery – and so belongs to the dominant group of animals, imaginatively known as bilaterians.

The Burgess Shale lagerstätte seemingly was heaving with *Hallucigenia* so would-be taxonomists have had no shortage of specimens to ponder over in the 38 years since Simon Conway Morris made his dreadful mistake: of course, that was not of such enormity as Einstein's 'biggest blunder' in the form of his cosmological constant, and Conway Morris quickly accepted his error when the beast was turned right-way-up in 1991. The problem is, exquisite as they are, Burgess Shale fossils are flattened and all that remains of mainly soft-bodied animals are delicate carbonaceous films, which need electron microscopy to unravel.



The latest reconstruction of Hallucigenia, by palaeontological illustrator Danielle Dufault

In 2015, *Hallucigenia*'s front end was definitely found and a great deal more besides by Canadian

palaeontologists Martin Smith and Jean-Bernard Caron of the Royal Ontario Museum and the University of Toronto (Smith, M.R. & Caron J.-B. 2015. *Hallucigenia's* head and the pharyngeal armature of early ecdysozoans. *Nature*, v. **523**, p. 75-78). It has eyes, albeit rudimentary, and a throat, deep within which it has pointy teeth. *Hallucigenia* was a lobopod, whose living relatives lie within that large and diverse group the Ecdysozoa, which all have throat teeth and include the wondrous water bear (tardigrade) and the velvet- and penis worms (onychophores and priapulids, respectively) as well as lobsters, flies and woodlice. It may indeed have been close to the last common ancestor of all animals who moult their carapaces.

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Picture of the month, June 2015

Posted on [July 1, 2015](#) by [Steve Drury](#) | [1 comment](#)



Spheroidally weathered basalt from Turkey. (credit: Francisco Sousa)

Spheroidal weathering of lavas, easily confused with pillows, is also found in other homogeneous igneous rocks. It develops from rectilinear joint sets along which the groundwater responsible for breakdown of silicates initially moves. Hydration reactions begin along the joints but proceed most quickly at corners so that curved surfaces begin to develop. The concentric banding that sometimes culminates in almost spherical relics may involve more than just rotting of anhydrous silicates as the reactions involve volume increases that encourage further rock fracturing. Other factors, such as elastic strain release may also encourage the characteristic concentricity Prolonged, intense chemical weathering leaves isolated, rounded

corestones surrounded by saprolite, that can form boulder fields when the softer weathered material has been eroded away.

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Are coral islands doomed by global warming?

Posted on [June 18, 2015](#) by [Steve Drury](#) | [Leave a comment](#)

Among the most voluble and persistent advocates of CO₂ emissions reduction are representatives of islands in the tropics that are built entirely of reef coral. All the habitable land on them reaches only a few metres above high-tide level, so naturally they have more cause to worry about global warming and sea-level rise than most of us. Towns and villages on some atolls do seem to be more regularly inundated than they once were. So a group of scientists from New Zealand and Australia set out to check if there have been losses of land on one Pacific atoll, Funafuti, during the century since tidal observatories first recorded an average 1.7 mm annual rise in global sea level and a faster rate ($\sim 3 \text{ mm a}^{-1}$) since 1993 (Kench, P.S. *et al.* 2015. Coral islands defy sea-level rise over the past century: Records from a central Pacific atoll. *Geology*, v. **43**, p.515-518).



Funafuti atoll (Tuvalu) from space (credit: Wikipedia)

Funafuti atoll comprises 32 islands that make up its rim, with a range of sizes, elevations, sediment build-ups and human modifications. The atoll was first accurately surveyed at the end of the 19th century, has aerial photographic cover from 1943, 1971 and 1984 and high-resolution satellite image coverage from 2005 and 2014, so this is adequate to check whether or not sea-level rise has affected the available area and shape of the habitable zone. It appears that there has been no increase in erosion over the 20th century and rather than any loss of land there has been a net gain of over 7%. The team concludes that coral reefs and islands derived from their remains and debris are able to adjust their size, shape and position to keep pace with sea level and with the effects of storms.



Beach on Fongafale Islet part of Funafuti Atoll, Tuvalu. (credit: Wikipedia)

This is an observation of just one small community in the vastness of the Pacific Ocean, so is unlikely to reassure islanders elsewhere who live very close to sea level and are anxious. It is a finding that bears out longer-term evidence that atolls remained stable during the major sea-level changes of the post-glacial period until about 7 thousand years ago when land glaciers stabilised. Since coral grows at a surprisingly rapid rate, that growth and the local redistribution of debris released by wave action keep pace with sea-level change; at least that taking place at rates up to 3 mm per year. But the study leaves out another threat from global warming. Corals everywhere are starting to show signs of ill thrift, partly resulting from increasing acidity of seawater as more CO₂ dissolved in it and partly from increases in sea-surface temperature, as well as a host of other implicated factors. This manifests itself in a phenomenon known as coral bleaching that may presage die-off. Should coral productivity decrease in the Pacific island states then the material balance shifts to land loss and sea level will begin an irresistible threat.

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Flourishing life during a Snowball Earth period

Posted on [June 18, 2015](#) by [Steve Drury](#) | [Leave a comment](#)

That glacial conditions were able to spread into tropical latitudes during the late [Neoproterozoic](#), [Cryogenian Period](#) is now well established, as are the time spans of two such events. <http://earth-pages.co.uk/2015/05/21/snowball-earth-events-pinned-down/> But what were the consequences for life that was evolving at the time? That something dramatic was occurring is signalled by a series of perturbations in the carbon-isotope composition of seawater. Its relative proportion of ¹³C to ¹²C ($\delta^{13}\text{C}$) fell sharply during the two main Snowball events and at other times between 850 to 550 Ma. Since ¹²C is taken up preferentially by living organisms, falls in $\delta^{13}\text{C}$ are sometimes attributed to periods when life was unusually suppressed. It is certain that the 'excursions' indicate that some process(es) must have strongly affected the way that carbon was cycled in the natural world.



Artist's impression of a Snowball Earth as it would appear with today's continental configuration adjacent to the East Pacific Ocean. (Photo credit: Wikipedia)

The further sea ice extended beyond landmasses during Snowball events the more it would reduce the amount of sunlight reaching the liquid ocean and so photosynthesis would be severely challenged. Indeed, if ice covered the entire ocean surface – the extreme version of the hypothesis – each event must have come close to extinguishing life. An increasing amount of evidence, from climate- and oceanographic modelling and geological observation, suggests that a completely icebound Earth was unlikely. Nevertheless, such dramatic climate shifts would have distressed living processes to the extent that extinction rates were high and so was adaptive radiation of survivors to occupy whatever ecological niches remained or came into being: evolution was thereby speeded up. The roughly half-billion years of the Neoproterozoic hosted the emergence and development of multicellular organisms (metazoan eukaryotes) whose cells contained a nucleus and other bodies such as mitochondria and the chloroplasts of photosynthesisers. This hugely important stage of evolution burst forth shortly after – in a geological sense – the last Snowball event, during the Ediacaran and the Cambrian Explosion. But recent investigations by palaeontologists in glaciogenic rocks from China unearthed a rich diversity of fossil organisms that thrived during a Snowball event (Ye, Q. *et al.* 2015. The survival of benthic macroscopic phototrophs on a Neoproterozoic snowball Earth. *Geology*, v. **43**, p. 507-510).

The Nantuo Formation in southern China contains glaciogenic sedimentary rocks ascribed to the later Marinoan glaciation (640 to 635 Ma). Unusually, the pebbly Nantuo glaciogenic rocks contain thin layers of siltstones and black shales. The fact that these layers are free of coarse fragments that floating ice may have dropped supports the idea that open water did exist close to glaciated landmasses in what is now southern China. Palaeomagnetic measurements show that the area was at mid-latitudes during the Marinoan event. The really surprising feature is that they contain abundant, easily visible fossils in the form of carbonaceous ribbons, disks, branching masses and some that dramatically resemble complex multi-limbed animals, though they are more likely to be part of an assemblage of algal remains. Whatever their biological affinities, the fossils clearly signify that life happily flourished beneath open water where photosynthesis provided a potential base to a food chain, though no incontrovertible animals occur among them.

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See also: Corsetti, F.A. 2015. Live during Neoproterozoic Snowball Earth. *Geology*, v. **43**, p. 559-560.



Fossils Explain How Life Coped During Snowball Earth

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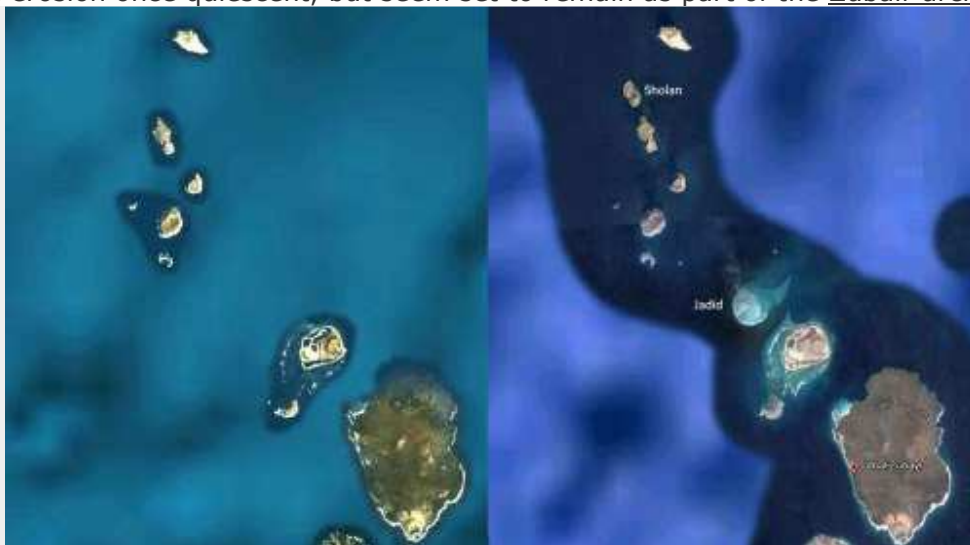
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Two happy events for plate tectonics

Posted on [June 4, 2015](#) by [Steve Drury](#) | [1 comment](#)

In an era where fears of rising sea level and loss of land are growing it is a great pleasure to announce (albeit several years late) the birth of two new islands. They emerged close to the axis of the Red Sea in Yemeni territory as new members of the volcanic Zubair Islands during episodic eruptions that began on 18 December 2011. First to form was dubbed Sholan ('One who is Blessed' in Arabic – a girl's name), which ceased to be active a month later. Further submarine volcanism began on 28 September 2013, with another island, Jadid ('New' in Arabic – a boy's name), breaking surface in October 2013. The double event has been described in great detail by geoscientists based at King Abdullah University of Science and Technology, Saudi Arabia (Xu, W. 2015. Birth of two volcanic islands in the southern Red Sea. *Nature Communications*, DOI: [10.1038/ncomms8104](#). After rapid growth during their initial eruptive phases both islands underwent significant marine erosion once quiescent, but seem set to remain as part of the Zubair archipelago.



'Before and after' images of the Zubair archipelago in the southern Red Sea. (Left from Bing maps, right (February 2014) from Google Earth)

Analysis of small earthquakes that happened during the islands' growth together with Interferometric radar surveys that showed coincident ground movements among the islands suggest that both eruptions took place along an active north-south fracture system, probably part of axial rifting system of the Red Sea. In more detail, magma seems to have moved upwards along N-S fissures similar to those that now show up as dykes cutting lavas on the older islands in the area. The local fracture patterns are oblique to the main Red Sea Rift that trends NNW-SSE, possibly as a result of non-linear stress trajectories in the Arabia-Africa rifting. In almost all respects the volcanism and mechanism of intrusion and effusion closely resemble that reported

recently from a terrestrial setting in the nearby [Afar Depression](#). The slow spreading Red Sea Rift rarely manifests itself by volcanism, so these events reveal a previous unsuspected zone of active melting in the mantle beneath the Zubair archipelago.

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Stone tools go even further back

Posted on [May 25, 2015](#) by [Steve Drury](#) | [Leave a comment](#)

Shortly after it seemed that the maker of the earliest [stone tools](#) (2.6 Ma) may have been [Australopithecus africanus](#), thanks to a novel means of analyzing [hominin hands](#) may have been capable of, some actual tools have turned up from even earlier times (Harmand, S. and 20 others 2015. 3.3-million-year-old stone tools from Lomekwi 3, West Turkana, Kenya. *Nature*, v. **521**, p. 310-315). Their age is comparable with that (3.4 Ma) of animal bones from Dikika, Ethiopia showing cut marks and signs of deliberate breaking, which had previously been controversial as they suggested that local [Australopithecus afarensis](#) of a similar age had made them. What the authors claim to be 'a new beginning to the known archaeological record' almost a million years earlier than the first appearance of Homo fossils in the Lake Turkana area seems to point in that direction. But *A. afarensis* has not been found in that area, although a hominin known as [Kenyanthropus platyops](#) with roughly the same age as the tools has.



Reconstruction of *Australopithecus afarensis* (Photo credit: Wikipedia)

Almost 150 fine-grained basaltic artefacts turned up at the Lomekwi site, which may have been where knappers habitually worked as many of them were fragments or debitage. The cores from which flakes had been struck are large, weighing on average 3.1 kg. It seems that the tool makers may have been forcefully pounding out edged tools for a variety of uses, unlike the single-use hammer stones used by chimpanzees today. Compared with the well known [Oldowan](#) tools, however, these are cruder and made by a different knapping technique that seems not to have focused on exploiting the conchoidal fracturing that produces the

sharpest tools and is a feature of the later Oldowan tools.



Oldowan 'chopper' from Melka Kunture, Ethiopia. (credit: Wikipedia)

Frederick Engels, whose 1876 essay *The Part played by Labour in the Transition from Ape to Man* was among the first works to take Darwin's ideas on human origins forward, would have had a field day with the new evidence. For him the vital step was freeing of the hands by a habitual bipedal gait and their manipulation of objects – together with changes to the hands that would arise by such a habit. What the first tool maker looked like, doesn't really matter: the potential that act conferred was paramount. Nevertheless, there is a big step between early hominins and humans, from relatively small brains to those of *H. erectus* that were on the way to modern human capacity. The Lomekwi tools and the improved Oldwan artefacts spanned 1.7 Ma at least before *H. erectus* revolutionised manufacture to produce the bi-facial Acheulian hand 'axe', and going beyond that took almost a million years of little change in both tools and anatomy until the emergence of archaic modern humans.

Note added 28 May 2015: Within a week palaeoanthropologists' focus shifted to the Afar Depression in Ethiopia where a new species of hominin has emerged from Pliocene sediments dated to between 3.3 and 3.5 Ma (Haile-Selassie, Y *et al.* 2015. New species from Ethiopia expands Middle Pliocene hominin diversity. *Nature*, v. **521**, p. 483-488. doi:1038/nature14448). *Australopithecus deyiremeda* is represented by fragments of two lower- and one upper jaw plus several other lower facial specimens. So the species is differentiated from other hominins by dentition alone, but that is unmistakably distinct from extensive data on *Au. afarensis* which lived within a few kilometres over the same period. Until the last 15 to 20 years it was thought that *Au. afarensis* was the sole hominin around in the Middle Pliocene of East and Central Africa, but now it seems there may have been as many as five, the three mentioned above, plus *Au. bahrelghazali* from Chad and an as yet undesignated fossilised foot from Afar. For possibly three closely related species to coexist in Afar is difficult to understand: possibly they occupied different niches in the local food web or employed different strategies (Spoor, F. 2015. The middle Pliocene gets crowded. *Nature*, v. **521**, p. 432-433). Another question is: did they all make and use tools? For the Lomekwi tools *K. platyops* is a candidate, but for the cut marks on bones at Dikika in Afar there are at least two: *Au. afarensis* and *Au. deyiremeda*. So multiple tool makers living at the same time suggests some earlier originator of the 'tradition'.

Note added 4 June 2015: Add southern Africa into the equation and there is yet more breaking news about

coeval hominin diversity. US, Canadian, South African and French collaborators have finally started to resolve the achingly complex stratigraphy of the fossil-rich Sterkfontein cave deposits in South Africa by using a novel approach to estimating ages of materials' last exposure to cosmic rays (Granger, D.E. *et al.* 2015. New Cosmogenic burial ages for Sterkfontein member 2 *Australopithecus* and Member 5 Oldowan. *Nature*, v. **522**, p. 85-88). Specifically, they managed to date the tumbling into a deep sinkhole of a recently found, almost complete skeleton of an australopithecine. It still resembles no other some 70 years after a less complete specimen was found by Raymond Dart in the mid 1940s. It was first informally dubbed 'Little Foot' and then *Au. prometheus* and up to now has been regarded as an odd contemporary of 2.2 Ma old *Au. africanus*. The new dating gives an age of about 3.7 Ma: so at least 6 hominids occupied Africa in the Middle Pliocene. It is beginning to look like a previously unsuspected time of sudden diversification.

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A certain shyness about research misconduct in the UK

Posted on [May 21, 2015](#) by [Steve Drury](#) | [Leave a comment](#)

Since Earth Pages was launched at the start of the 21st century there have been highly publicised cases of gross misconduct by researchers, including plagiarism, 'massaging' data and even sabotaging the work of others, as well as lesser cases where publications were withdrawn or removed from journals. The most notorious have been from the USA, Japan, the Netherlands and a number of other advanced countries. But sharp practices in science are not well known in the UK; indeed I can't recollect more than one case that reached the same degree of coverage as the most notorious instances. Yet, in 2009, [Daniele Fanelli](#) of the University of Edinburgh reported the results of her analysis of accessible information from the UK about this matter. She found that about 2% of British scientists, who had been interviewed or answered questionnaires, answered 'Yes' when asked if they ever fabricated or falsified research data, or if they altered or modified results to improve the outcome. Up to one third admitted other questionable practices or knew of them having been committed by colleagues. Fanelli doesn't refer to more grievous matters such as sabotage or exploitation of students' work.

The silence from British Universities on [research misconduct](#) has become such an embarrassment that it was a subject of an [Editorial](#) and a [News In Focus Report](#) in the 21 May issue of *Nature*. While there are guidelines

that urge British universities to publish annual reports of their investigations into misconduct, for 2013-14 only 12 such reports have been published : of the 88 universities contacted by the informal [UK Research Integrity Office](#), 30 institutions responded to UKRIO's survey. These reports covered 21 investigations, mostly unspecified, with 5 cases of plagiarism, 2 of falsification, 2 concerning authorship, 1 of fabrication and 1 breach of confidentiality. Three were upheld and 3 are pending.

These figures speak loudly for themselves: misconduct by researchers (and academics in general) is something that the halls of British academe 'dinnae care to speak about'. As the author of UKRIO's survey observed, 'It's just not credible', although many of the universities that she contacted claim that such reports were in progress. A likely story... We all know that the 'filthy snout' (Tom Wolfe *The Bonfire of the Vanities*) does 'come popping to the surface', but is buried in confidentiality by university Research Committees, leaving any victims dangling in a sorry psychological state and allowing journals' peer review system to catch any perpetrators before they reach the press, which it is rarely able to do. It takes a case as severe as that of Andrew Wakefield's fraudulent 1998 paper in the Lancet associating the MMR vaccine with autism to see justice done.

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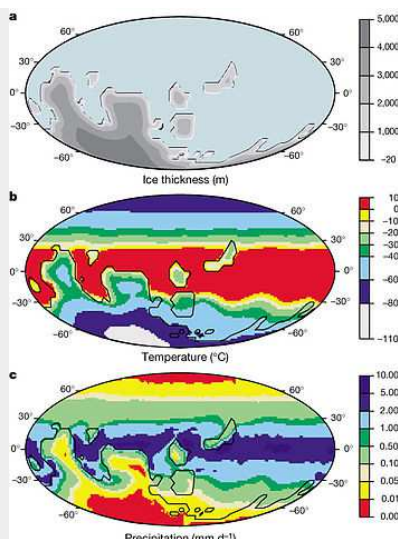
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Snowball Earth events pinned down

Posted on [May 21, 2015](#) by [Steve Drury](#) | [Leave a comment](#)

The Period that lasted from 850 to 635 million years ago, the [Cryogenian](#), takes its name from evidence for two and perhaps three episodes of glaciation at low latitudes. It has been suggested that, in some way, they were instrumental in the decisive stage of biological evolution from which metazoan eukaryotes emerged: the spectacular [Ediacaran fossil assemblages](#) follow on the heels of the last such event Although controversies about the reality of tropical latitudes experiencing ice caps have died away, there remains the issue of synchronicity of such frigid events on all continents, which is the central feature of so-called '[Snowball Earth](#)' events. While each continent does reveal evidence for two low latitude glaciations – the Sturtian (~710 Ma) and the later [Marinoan](#) (~635 Ma) – in the form of diamictites (sediments probably dropped from floating ice and ice caps) it has proved difficult to date their start and duration. That is, the cold episodes may have been diachronous – similar conditions occurring at different localities at different times. Geochronology has, however, moved on since the early disputes over Snowball Earths and more reliable and precise dates for beginnings and ends are possible and have been achieved in several places (Rooney, A.D. *et al.* 2015. A Cryogenian chronology: Two long-lasting synchronous Neoproterozoic glaciations. *Geology*, v. **43**, p. 459-462).



Computer simulation of conditions during a Snowball Earth period. (credit: Macmillan Publishers Ltd: Hyde et al., Nature 405:425-429, 2000)

Rooney and colleagues from Harvard and the University of Houston in the USA used rhenium-osmium radiometric dating in Canada, Zambia and Mongolia. The Re-Os method is especially useful for sulfide minerals as in the pyritic black shales that occur extensively in the Cryogenian, generally preceding and following the glacial diamictites and their distinctive carbonate caps. Combined with a few ages obtained by other workers using the Re-Os method and U-Pb dating of volcanic units that fortuitously occur immediately beneath or within diamictites, Rooney *et al.* establish coincident start and stop dates and thus durations of both the Sturtian and Marinoan glacial events: 717 to 660 Ma and 640 to 635 Ma respectively on all three continents. Their data is also said to refute the global extent and even the very existence of an earlier, Kaigas glacial event (~740 Ma) previously recorded from diamictites in Namibia, the Congo, Canada and central Asia. This assertion is based on the absence of diamictites with that age in the area that they studied in Canada and their own dating of a diamictite in Zambia, which is one that others assigned to the Kaigas event

The dating is convincing evidence for global glaciation on land and continental margins in the Cryogenian, as all the dates are from areas based on older continental crust. But the concept of Snowball Earth, in its extreme form, is that the oceans were ice-capped too as the name suggests, which remains to be convincingly demonstrated. That would only be achieved by suitably dated diamictites located on obducted oceanic crust in an ophiolite complex. Moreover, there are plenty more Cryogenian diamictites on other palaeo-continents and formed at different palaeolatitudes that remain to be dated ([see here](#))

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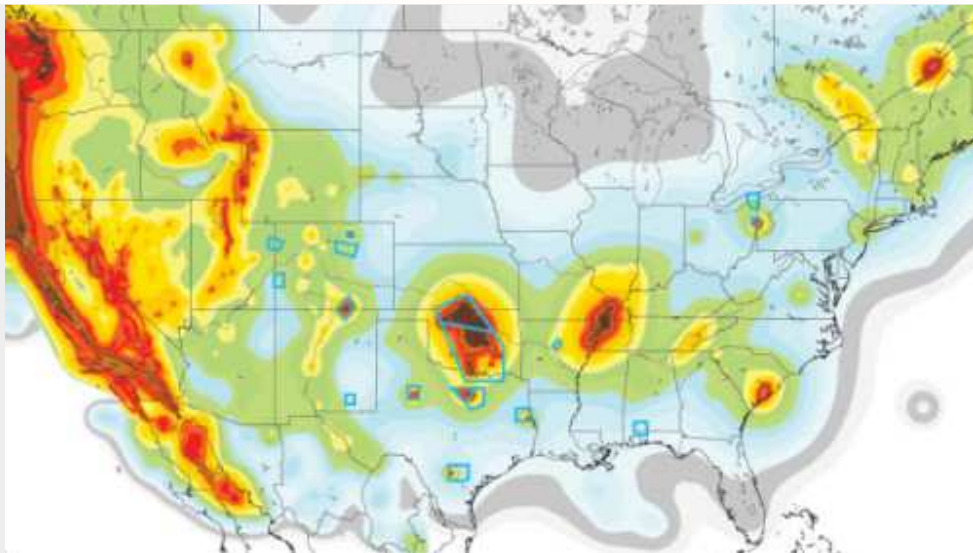
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Earthquake hazard news

Posted on [May 10, 2015](#) by [Steve Drury](#) | [Leave a comment](#)

Assessments of [seismic risk](#) have relied until recently on records of destructive earthquakes going back centuries and their relationship to tectonic features, mainly [active faults](#). They usually predict up to 50 years ahead. The [US Geological Survey](#) has now shifted focus to very recent records mainly of small to medium tremors, some of which have appeared in what are tectonically stable areas as well as the background seismicity in tectonically restless regions. This enables the short-term risk (around one year) to be examined. To the scientists' surprise, the new modelling completely changes regional maps of seismic risk. The probabilities in the short-term of potentially dangerous ground movements in 17 oil- and gas-rich areas rival those in areas threatened by continual, tectonic jostling, such as California. The [new 'hot spots' relate to industrial activity](#), primarily the disposal of wastewater from petroleum operations by pumping it into deep aquifers.



USGS map highlighting short-term earthquake risk zones. Blue boxes indicate areas with induced earthquakes (source: [US Geological Survey](#))

Fluid injection increases hydrostatic pressure in aquifers and also in the spaces associated with once inactive fault and fracture systems. All parts of the crust are stressed to some extent but the presence of fluids and over-pressuring increases the tendency for rock failure. While anti-fracking campaigners have focussed partly on seismic risk – fracking has caused tremors around magnitudes 2 to 3 – the process is a rapid one-off injection involving small fluid volumes compared with petroleum waste-water disposal. All petroleum production carries water as well as oil and gas to wellheads. Coming from great depth it is formation water held in pores since sedimentary deposition, which is environmentally damaging because of its high content of dissolved salts and elevated temperature. Environmental protection demands that disposal must return it to depth.

The main worry is that waste water disposal might trigger movements with magnitudes up to 7.0: in 2011 a magnitude 5.6 earthquake hit a town in oil-producing Oklahoma and damaged many buildings. Currently, US building regulations rely on earthquake risk maps that consider a 50-year timescale, but they take little

account of industrially induced seismicity. So the new data is likely to cause quite a stir. These are changing times, however, as the oil price fluctuates wildly. So production may well shift from field to field seeking sustainable rates of profit, and induced seismicity may well change as a result.

None of these areas are likely to experience the horrors of the 25 April 2015 magnitude 7.8 earthquake in Nepal. However, it also occurred in an area expected to be relatively stable compared with the rest of the Himalayan region. The only previous major tremor there was recorded in the 14th century. This supposedly 'low-risk' area overlies a zone in which small tremors or microearthquakes occur all the time. Such zones – and this one extends along much of the length of the Himalaya – seem to mark where fault depths are large enough for displacements to take place continually by plastic flow, thereby relieving stresses. Most of the large earthquakes have taken place south of the microseismic zone where the shallow parts of the Indian plate are brittle and have become locked. The recent event is raising concerns that it is a precursor of further large earthquakes in Nepal. Its capital Kathmandu is especially susceptible as it is partly founded on lake sediments that easily liquefy.

Note added: 13 May 2015. Nepal suffered another major shock (magnitude 7.3) on 12 May in the vicinity of Mount Everest. It too seems to have occurred in the zone of microearthquakes formerly thought to mark a zone where the crust fails continually by plastic deformation thereby relieving stresses. Kathmandu was this time at the edge of the shake zone