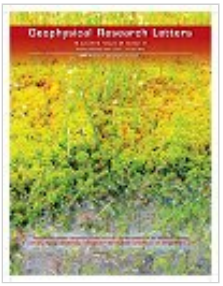


Volume 39, Issue 11

June 2012

Brief Detailed

Atmospheric Science

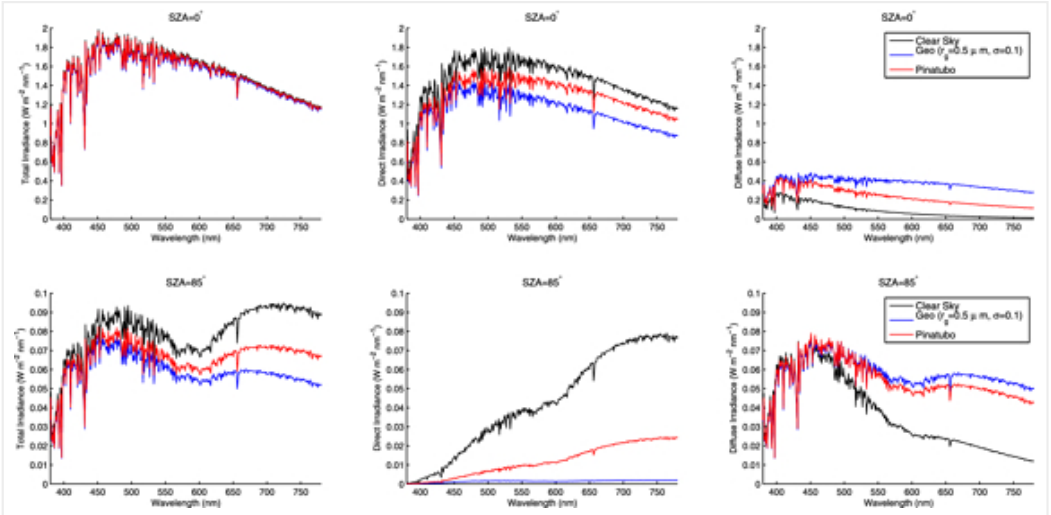
Geoengineering: Whiter skies?

Ben Kravitz, Douglas G. MacMartin, Ken Caldeira

First Published: 1 June 2012 Vol: 39, L11801 | DOI: 10.1029/2012GL051652

KEY POINTS

- Stratospheric sulfate geoengineering will whiten skies
- Stratospheric sulfate geoengineering will brighten skies
- The effects are strongly dependent on aerosol size distribution



1 of 4

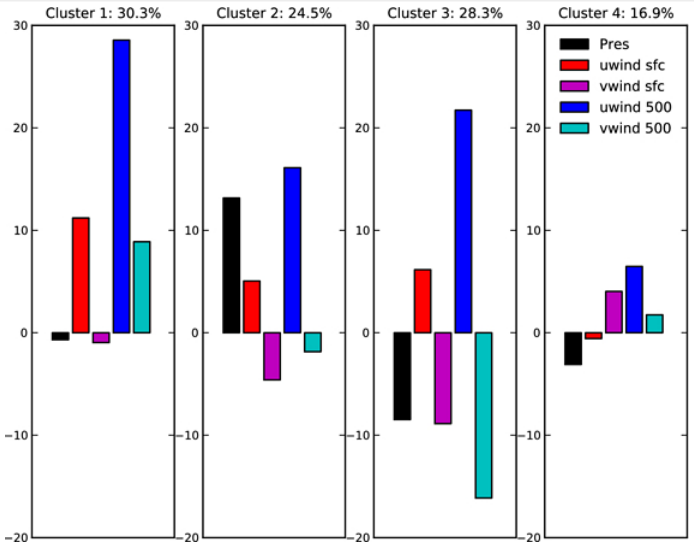
Observed Trends in Wind Speed over the Southern Ocean

L. B. Hande, S. T. Siems, M. J. Manton

First Published: 7 June 2012 Vol: 39, L11802 | DOI: 10.1029/2012GL051734

KEY POINTS

- Surface wind speed has been increasing in recent decades
- There has been a shift to more strong NW winds
- There is a potentially important cloud feedback with increasing winds



1 of 2

Joint horizontal-vertical anisotropic scaling, isobaric and isoheight wind statistics from aircraft data

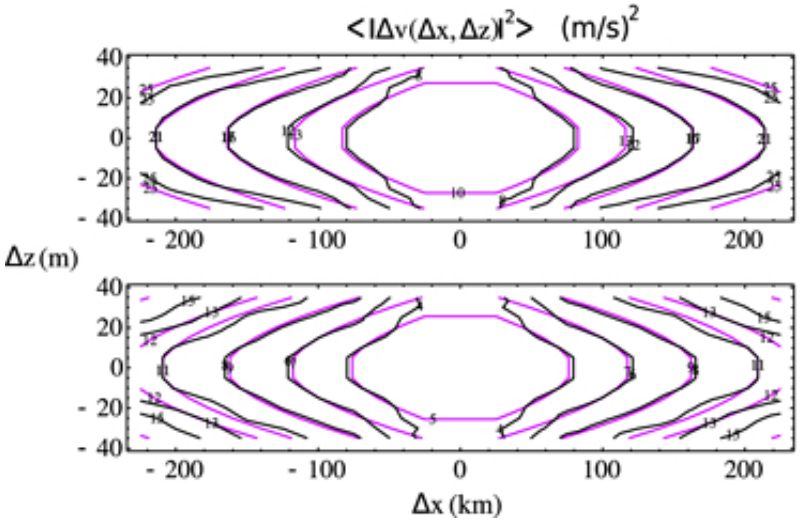
J. Pinel, S. Lovejoy, D. Schertzer, A. F. Tuck

First Published: 8 June 2012 Vol: 39, L11803 | DOI: 10.1029/2012GL051689

KEY POINTS

- TAMDAR data analysis gives strong support to anisotropic scaling
- At large horizontal lags, aircraft on isobars measure vertical fluctuations
- Wind statistics from constant altitude and isobaric levels are not equivalent

Highlight



1 of 3

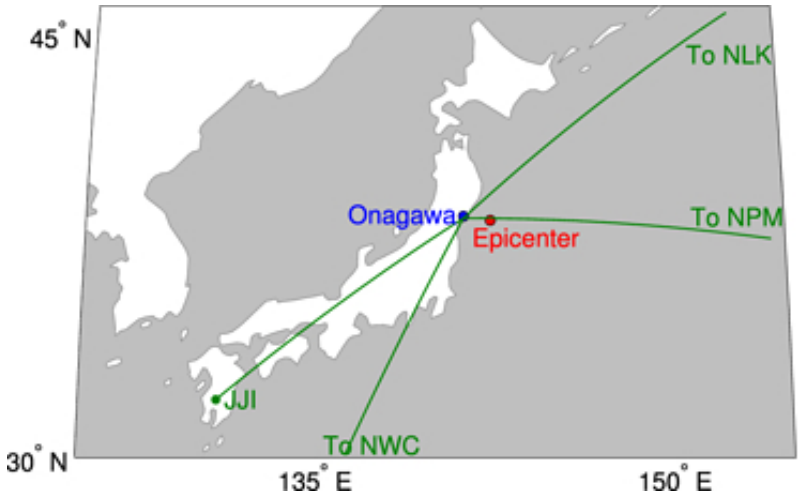
ELF/VLF recordings during the 11 March 2011 Japanese Tohoku earthquake

M. B. Cohen, R. A. Marshall

First Published: 9 June 2012 Vol: 39, L11804 | DOI: 10.1029/2012GL052123

KEY POINTS

- ELF/VLF radio recordings were made very close to 2011 M9.0 Japanese earthquake
- No ELF/VLF precursors were observed in the preceding hours and weeks
- The data show a strong signature of the shaking as the seismic waves passed by



1 of 6

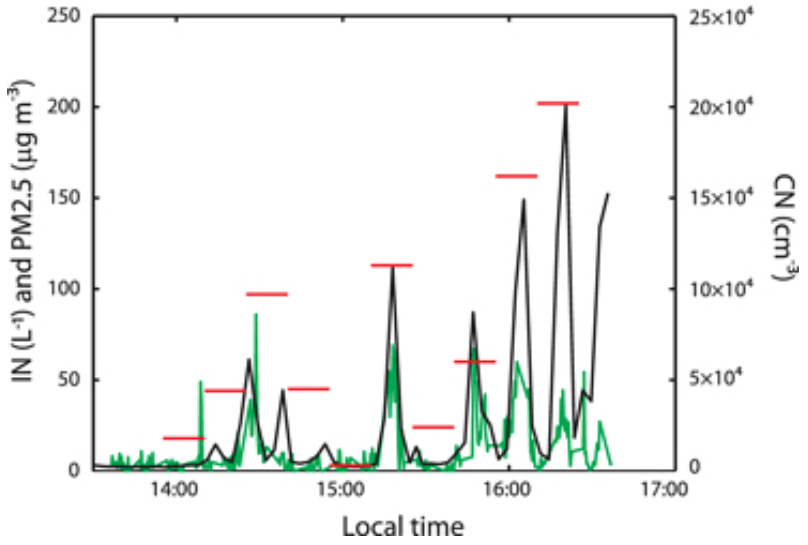
Biomass burning as a potential source for atmospheric ice nuclei: Western wildfires and prescribed burns

Anthony J. Prenni, Paul J. DeMott, Amy P. Sullivan, Ryan C. Sullivan, Sonia M. Kreidenweis, David C. Rogers

First Published: 15 June 2012 Vol: 39, L11805 | DOI: 10.1029/2012GL051915

KEY POINTS

- IN were measured directly in biomass burning plumes
- Biomass burning can serve as a source of atmospheric IN
- Combustion phase is one factor in determining IN production



1 of 3

Climate

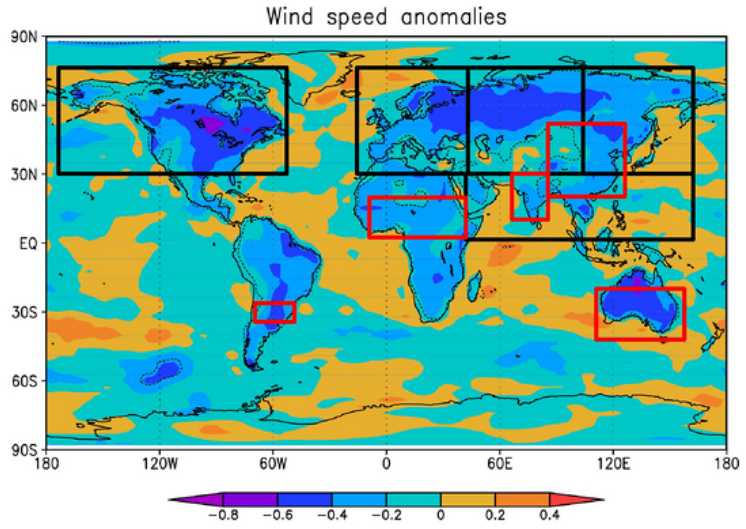
Causes for decadal variations of wind speed over land: Sensitivity studies with a global climate model

A. Bichet, M. Wild, D. Folini, C. Schär

First Published: 2 June 2012 Vol: 39, L11701 | DOI: 10.1029/2012GL051685

KEY POINTS

- Roughness length should increase by a factor of 1.2-4.9 to reproduce observation
- Aside from roughness length, atmospheric forcings decrease wind speed after 1950
- Increasing aerosol emissions decrease the land wind speed by up to 0.3 m/s



1 of 2

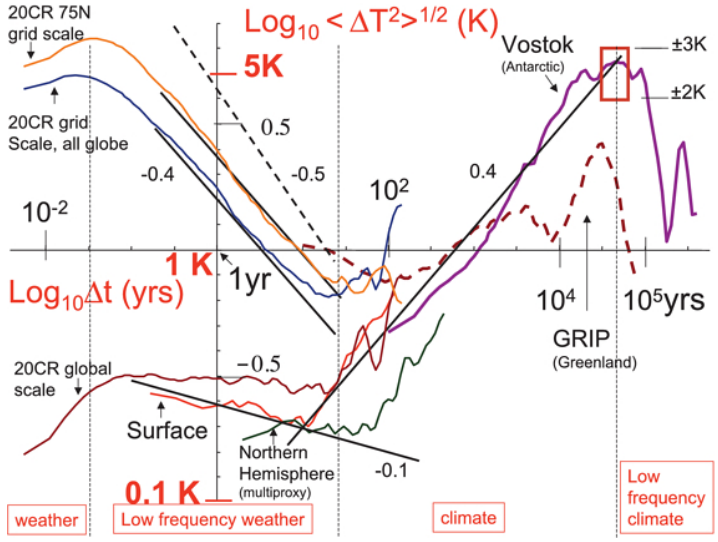
Stochastic and scaling climate sensitivities: Solar, volcanic and orbital forcings

S. Lovejoy, D. Schertzer

First Published: 5 June 2012 Vol: 39, L11702 | DOI: 10.1029/2012GL051871

KEY POINTS

- A stochastic definiton of climate sensitivity is needed for empirical estimates
- Solar and volcanic forcings are shown to generally diminish with scale
- Most existing paleo reconstructions require increasing amplification with scale



1 of 3

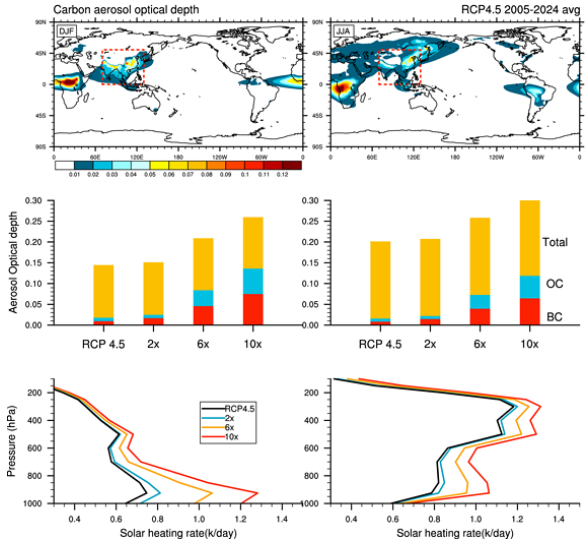
Potential impacts of Asian carbon aerosols on future US warming

Haiyan Teng, Warren M. Washington, Grant Branstator, Gerald A. Meehl, Jean-Francois Lamarque

First Published: 7 June 2012 Vol: 39, L11703 | DOI: 10.1029/2012GL051723

KEY POINTS

- Asian black carbon aerosol can enhance US warming by changing the circulation



1 of 3

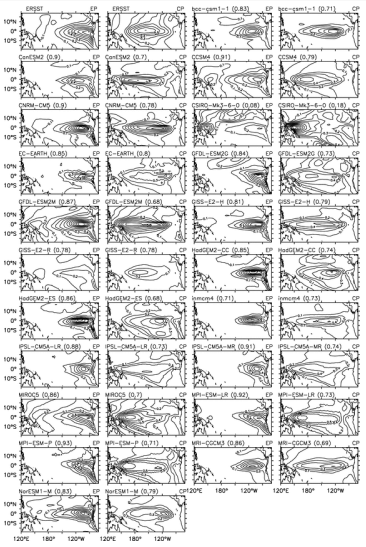
The two types of ENSO in CMIP5 models

Seon Tae Kim, Jin-Yi Yu

First Published: 9 June 2012 Vol: 39, L11704 | DOI: 10.1029/2012GL052006

KEY POINTS

- Smaller inter-model diversity of ENSO intensities in CMIP5 than in CMIP3
- Decrease in the diversity is particularly significant for the simulated EP ENSO
- Different response of EP and CP ENSO to global warming



1 of 4

Stable isotopes in global precipitation: A unified interpretation based on atmospheric moisture residence time

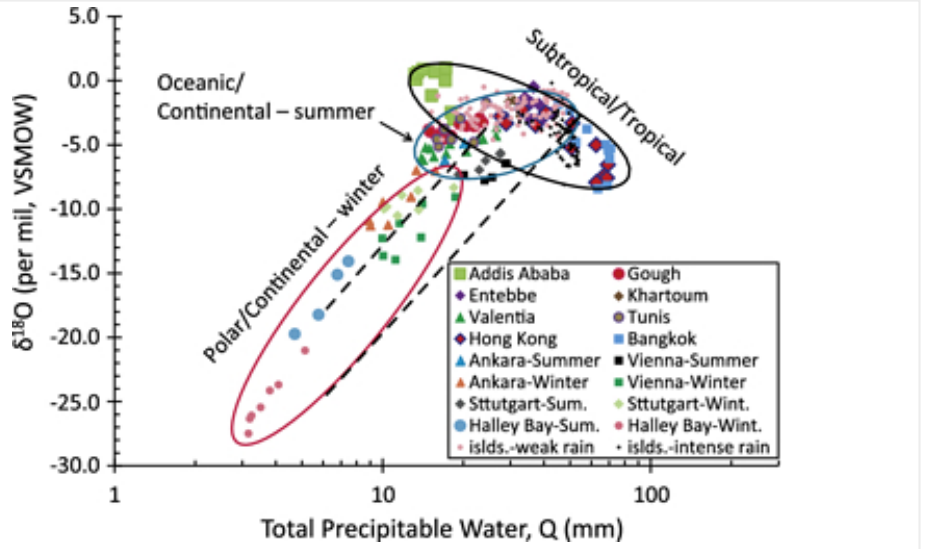
Pradeep K. Aggarwal, Oleg A. Alduchov, Klaus O. Froehlich, Luis J. Araguas-Araguas, Neil C. Sturchio, Naoyuki Kurita

First Published: 13 June 2012 Vol: 39, L11705 | DOI: 10.1029/2012GL051937

KEY POINTS

- Precipitation isotopes have a robust correlation with moisture residence time
- Contrary to conventional view, a single climate parameter describes global data
- Isotopes are a powerful means of monitoring climate impacts on precipitation

Highlight



1 of 4

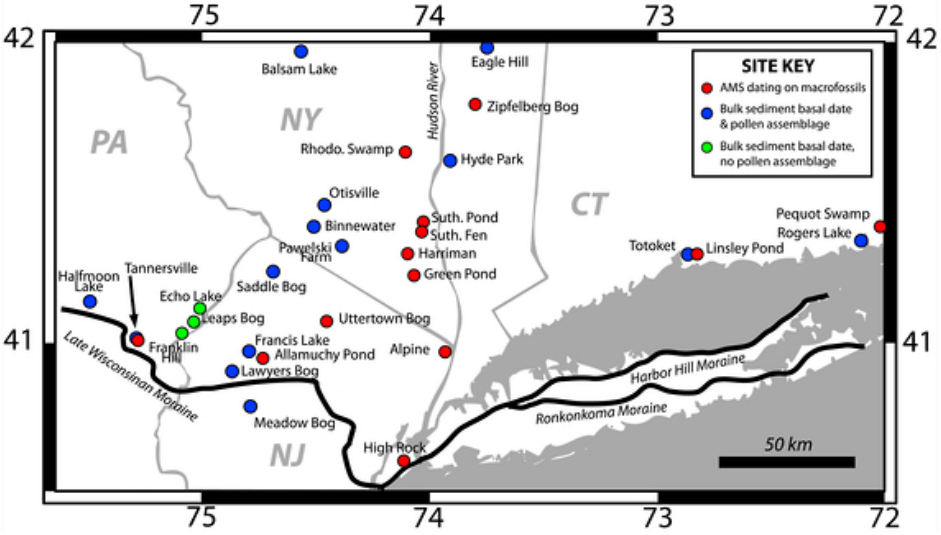
Delayed deglaciation or extreme Arctic conditions 21-16 cal. kyr at southeastern Laurentide Ice Sheet margin?

D. M. Peteet, M. Beh, C. Orr, D. Kurdyla, J. Nichols, T. Guilderson

First Published: 15 June 2012 Vol: 39, L11706 | DOI: 10.1029/2012GL051884

KEY POINTS

- A major discrepancy exists in deglaciation chronologies for eastern ice margin
- New AMS chronology from macrofossils in clays consistent at 15-16 cal kyr
- Delayed deglaciation or extreme conditions at Laurentide margin 25-16 cal kyr



1 of 3

Hydrology and Land Surface Studies

Ecohydrological feedbacks confound peat-based climate reconstructions

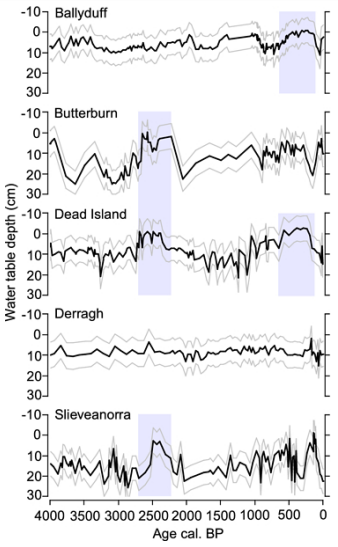
Graeme T. Swindles, Paul J. Morris, Andy J. Baird, Maarten Blaauw, Gill Plunkett

First Published: 5 June 2012 Vol: 39, L11401 | DOI: 10.1029/2012GL051500

KEY POINTS

- Changes in water-table depth can occur independently of climate forcing
- Homeostatic behaviour in water table behaviour is apparent
- Peat-based reconstructions cannot yet be used to test climate models

Highlight



1 of 4

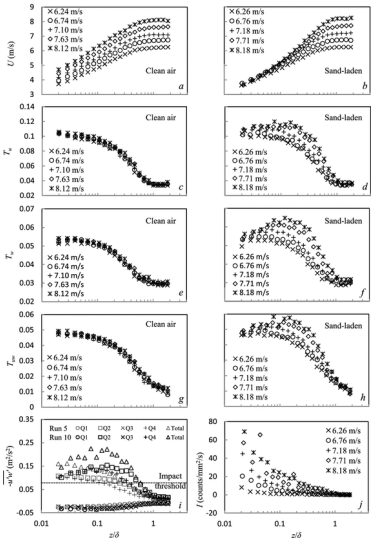
Boundary-layer turbulence characteristics during aeolian saltation

Bailiang Li, Cheryl McKenna Neuman

First Published: 7 June 2012 Vol: 39, L11402 | DOI: 10.1029/2012GL052234

KEY POINTS

- Airflows in a saltation cloud are similar to those for rough surfaces
- Turbulence intensity increases with aeolian transport rate
- Local fluid stress declines toward the mobile bed



1 of 1

Oceans

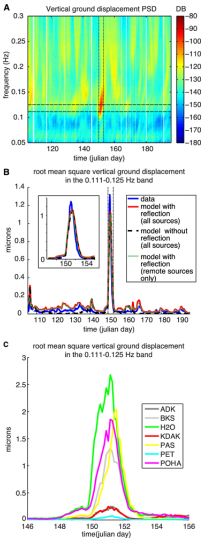
How moderate sea states can generate loud seismic noise in the deep ocean

M. J. Obrebski, F. Ardhuin, E. Stutzmann, M. Schimmel

First Published: 1 June 2012 Vol: 39, L11601 | DOI: 10.1029/2012GL051896

KEY POINTS

- Deep-ocean-generated Rayleigh waves are recorded by land stations
- Moderate sea-states can induced loud seismic noise
- Space-time patterns of seismic noise sources are well predicted by wave models



1 of 3

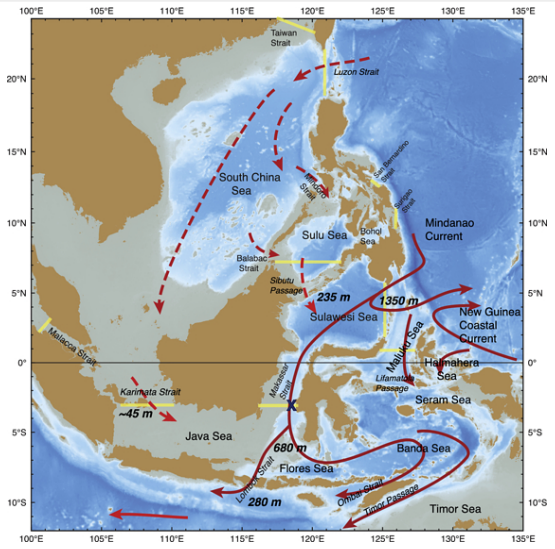
South China Sea throughflow impact on the Indonesian throughflow

Arnold L. Gordon, Bruce A. Huber, E. Joseph Metzger, R. Dwi Susanto, Harley E. Hurlburt, T. Rameyo Adi

First Published: 2 June 2012 Vol: 39, L11602 | DOI: 10.1029/2012GL052021

KEY POINTS

- ITF, warmer thermocline transport in 2008/09
- The ENSO sensitive SCS throughflow controls the ITF surface layer profile
- Pacific ENSO phase is transmitted to the Indian Ocean within the ITF



1 of 4

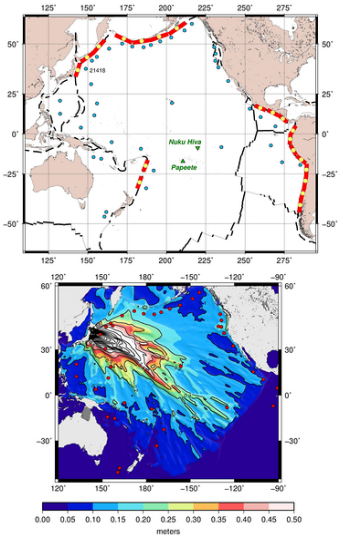
Rapid forecast of tsunami wave heights from a database of pre-computed simulations, and application during the 2011 Tohoku tsunami in French Polynesia

D. Reymond, E. A. Okal, H. Hébert, M. Bourdet

First Published: 5 June 2012 Vol: 39, L11603 | DOI: 10.1029/2012GL051640

KEY POINTS

- Rapid tsunami height forecasts from seismic information
- Creation of a database of pre-computed scenarios
- Search of an adequate transfer function from deep ocean to the shore



1 of 4

Contrasting ocean changes between the subpolar and polar North Atlantic during the past 135 ka

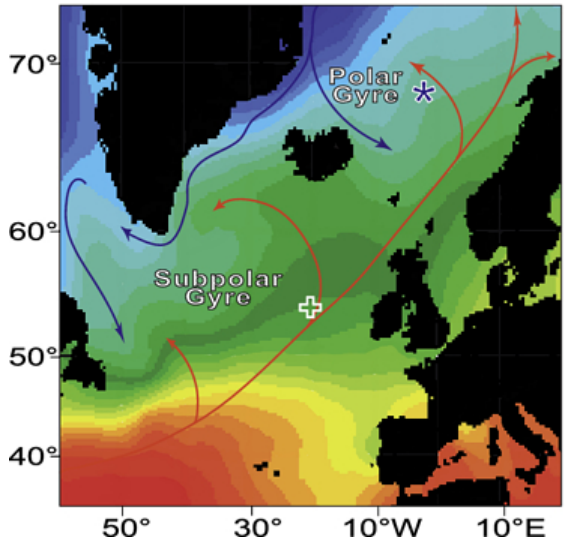
Henning A. Bauch, Evguenia S. Kandiano, Jan P. Helmke

First Published: 5 June 2012 Vol: 39, L11604 | DOI: 10.1029/2012GL051800

KEY POINTS

- Reduced AMOC during the Eemian
- BA/YD-type warming/cooling in Termination 1 and 2
- Comparison of glacial inceptions reveals present climate status

Highlight



1 of 3

On the influence of a β-effect on Lagrangian diffusion

Guglielmo Lacorata, Stefania Espa

First Published: 6 June 2012 Vol: 39, L11605 | DOI: 10.1029/2012GL051841

KEY POINTS

- Experimental flows can generate zonostrophic regimes similar to oceans
- The finite-scale Lyapunov Exponent allows to estimate all the needed parameters
- The experimental results are compatible with recent numerical simulations

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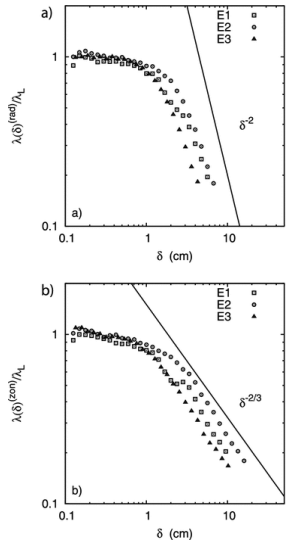


1 of 2

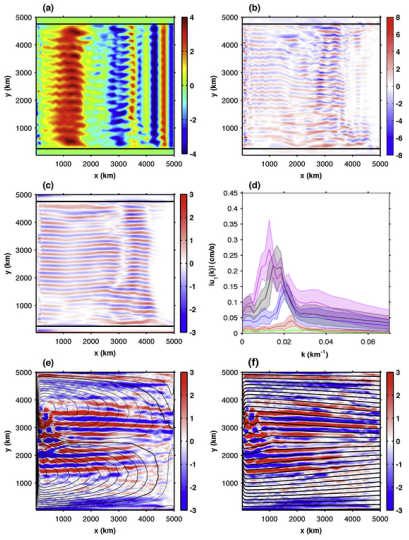
The emergence of zonal ocean jets under large-scale stochastic wind forcing

Christopher H. O'Reilly, Arnaud Czaja, J. H. LaCasce

First Published: 6 June 2012 Vol: 39, L11606 | DOI: 10.1029/2012GL051684

KEY POINTS

- Alternating zonal jets are found to emerge due to large scale stochastic forcing
- The jets appear only in longer time averages consistent with observation
- The jets appear as a robust feature of the response of the ocean to wind forcing



1 of 1

Effect of wave frequency and directional spread on shoreline runup

R. T. Guza, Falk Feddersen

First Published: 7 June 2012 Vol: 39, L11607 | DOI: 10.1029/2012GL051959

KEY POINTS

- Existing wave runup parameterizations have signficant scatter
- The funwaveC model reproduces existing runup parameterizations
- IG runup scatter collapses with variable combining frequency and directional spread

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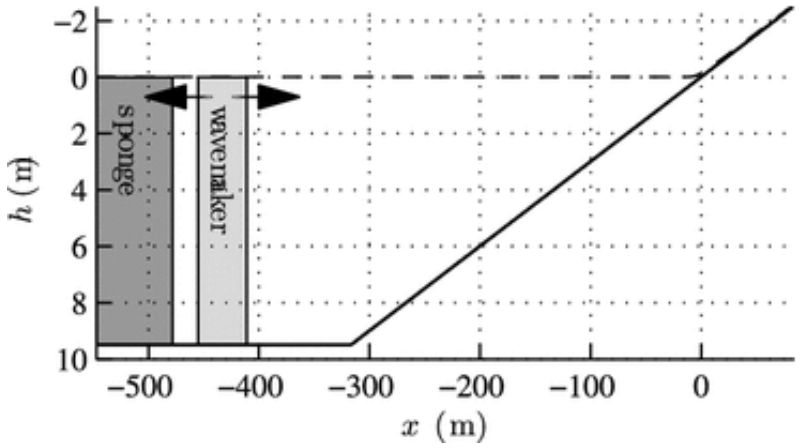


1 of 4

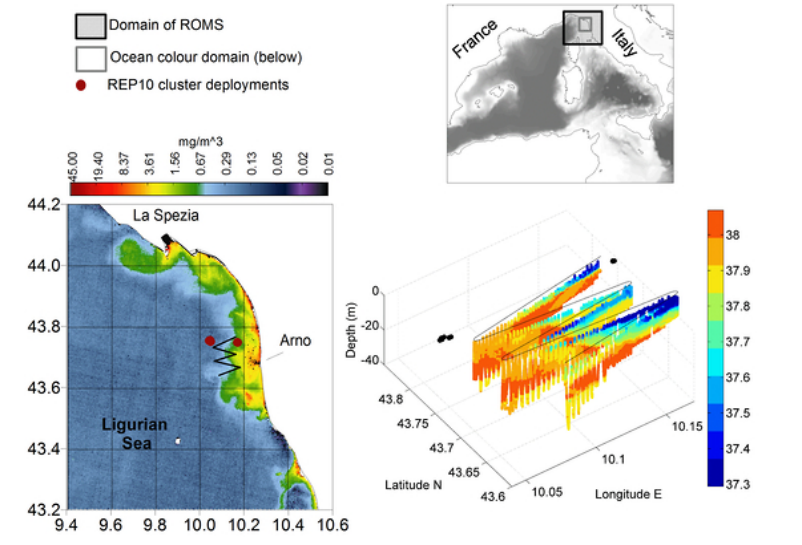
Targeted Lagrangian sampling of submesoscale dispersion at a coastal frontal zone

K. Schroeder, J. Chiggiato, A. C. Haza, A. Griffa, T. M. Özgökmen, P. Zanasca, A. Molcard, M. Borghini, P. M. Poulain, R. Gerin, et al

First Published: 9 June 2012 Vol: 39, L11608 | DOI: 10.1029/2012GL051879

KEY POINTS

- Novel Lagrangian sampling of a persistent submesoscale-rich coastal front
- Identification of local relative dispersion regime
- The need for particle transport parameterizations in coastal models



1 of 4

Planets

Time-history influence of global dust storms on the upper atmosphere at Mars

Michael W. Liemohn, Ava Dupre, Stephen W. Bougher, Matthew Trantham, David L. Mitchell, Michael D. Smith

First Published: 2 June 2012 Vol: 39, L11201 | DOI: 10.1029/2012GL051994

KEY POINTS

- Mars photoelectron fluxes depend on lower atmospheric dust opacity
- This dependence seems to last for many months
- There is no obvious explanation for this long-lived effect

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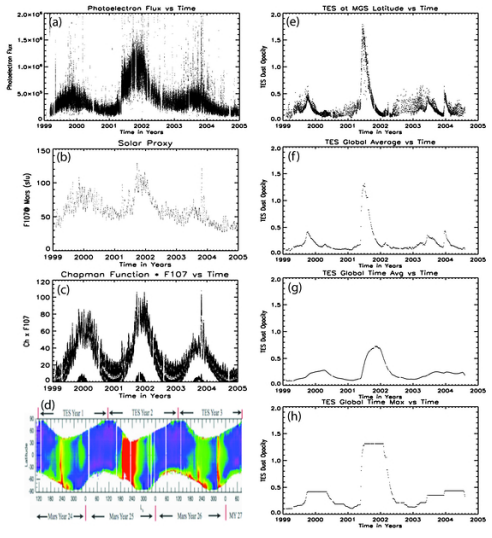


1 of 3

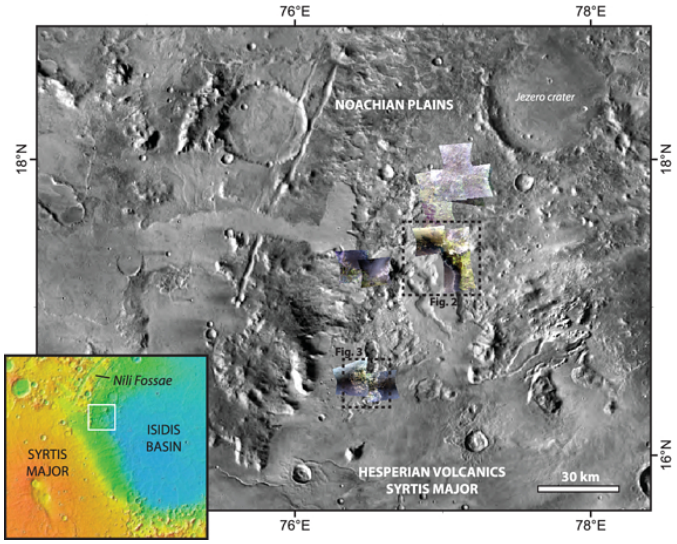
An in-situ record of major environmental transitions on early Mars at Northeast Syrtis Major

Bethany L. Ehlmann, John F. Mustard

First Published: 6 June 2012 Vol: 39, L11202 | DOI: 10.1029/2012GL051594

KEY POINTS

- Most ancient stratigraphic section with units from Early Noachian to Hesperian
- Thick section of layered, acid sulfates found between carbonates and Syrtis lavas
- Volcanic hydrothermal systems and/or basin sediments are preserved



1 of 3

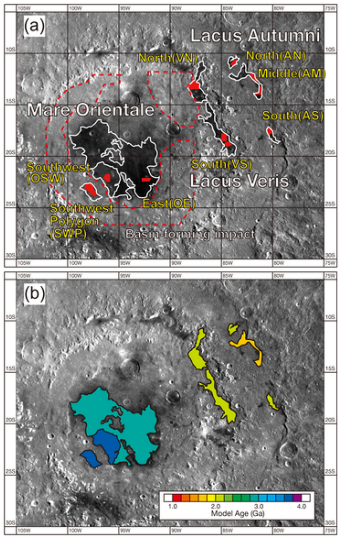
Young mare volcanism in the Orientale region contemporary with the Procellarum KREEP Terrane (PKT) volcanism peak period ~2 billion years ago

Yuichiro Cho, Tomokatsu Morota, Junichi Haruyama, Minami Yasui, Naru Hirata, Seiji Sugita

First Published: 8 June 2012 Vol: 39, L11203 | DOI: 10.1029/2012GL051838

KEY POINTS

- The crater retention ages of maria in Orientale basin are estimated accurately
- Maria along the rings of the Orientale basin are as young as ~2 Ga
- The young mare eruptions are contemporary with the nearside volcanism



1 of 3

Solid Earth

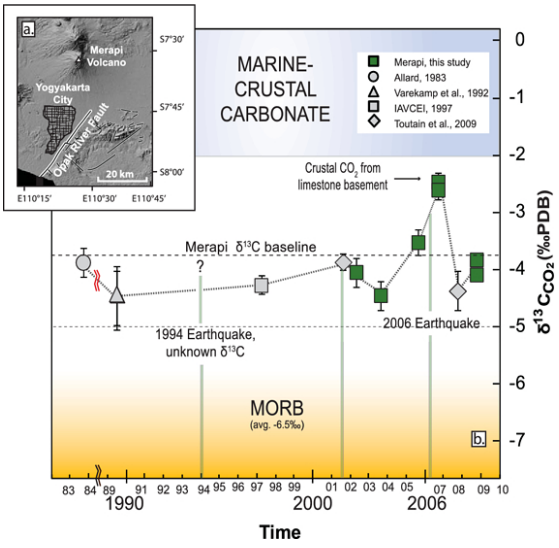
Crustal CO_2 liberation during the 2006 eruption and earthquake events at Merapi volcano, Indonesia

Valentin R. Troll, David R. Hilton, Ester M. Jolis, Jane P. Chadwick, Lara S. Blythe, Frances M. Deegan, Lothar M. Schwarzkopf, Martin Zimmer

First Published: 1 June 2012 Vol: 39, L11302 | DOI: 10.1029/2012GL051307

KEY POINTS

- Carbon isotopes in CO2 at active Merapi show a positive spike from baseline levels
- Crustal CO2 can be liberated by active volcanism
- Crustal CO2 can intensify ongoing eruptions making it a factor in hazard assessment



1 of 3

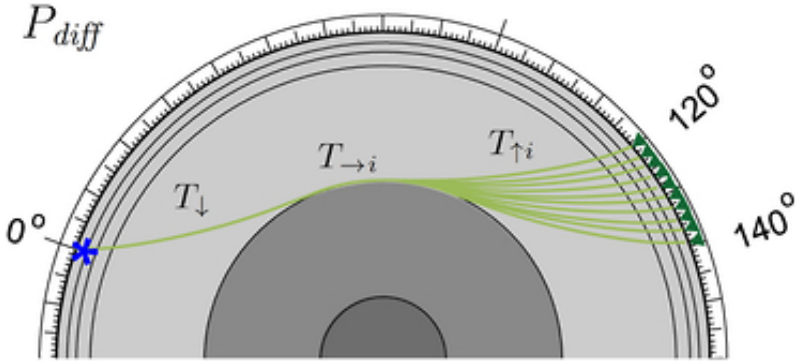
Scanning for velocity anomalies in the crust and mantle with diffractions from the core-mantle boundary

Elmer Ruigrok, T. Dylan Mikesell, Kasper van Wijk

First Published: 1 June 2012 Vol: 39, L11301 | DOI: 10.1029/2012GL051443

KEY POINTS

- Diffraction arrival times are suitable to swiftly scan receiver-side anomalies
- Structure near the source has limited influence on arrival-time differences
- A robust scan is achieved by averaging over sources



1 of 3

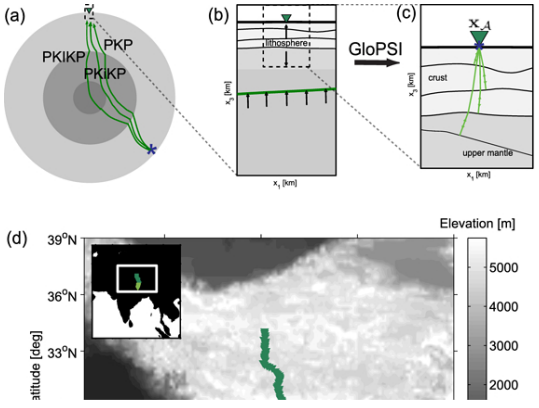
Global-phase seismic interferometry unveils P-wave reflectivity below the Himalayas and Tibet

Elmer Ruigrok, Kees Wapenaar

First Published: 5 June 2012 Vol: 39, L11303 | DOI: 10.1029/2012GL051672

KEY POINTS

- Global phases can be used to find the zero-offset reflection response
- A reflectivity profile can be made for almost any station on the globe
- We obtain a 800 km long reflectivity profile through the Himalayas and Tibet



1 of 3

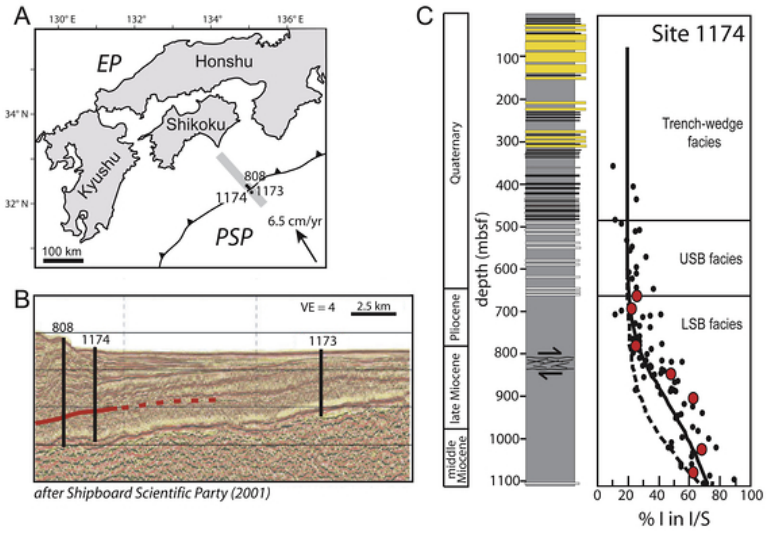
Effects of smectite to illite transformation on the frictional strength and sliding stability of intact marine mudstones

Demian M. Saffer, David A. Lockner, Alex McKiernan

First Published: 6 June 2012 Vol: 39, L11304 | DOI: 10.1029/2012GL051761

KEY POINTS

- In natural mudstones, illitization does not cause a change in friction behavior
- Clay transformation is unlikely to control the updip limit of seismogenesis
- Quartz precipitation and strain localization are viable alternatives



1 of 4

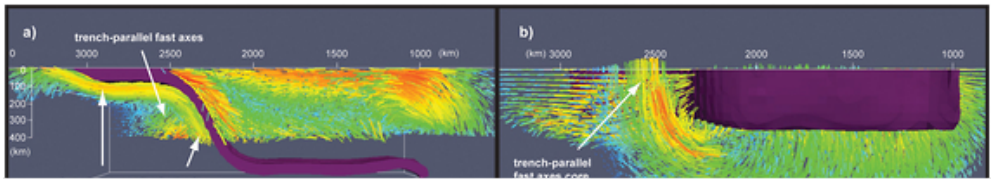
Development of mantle seismic anisotropy during subduction-induced 3-D flow

M. Faccenda, F. A. Capitanio

First Published: 6 June 2012 Vol: 39, L11305 | DOI: 10.1029/2012GL051988

KEY POINTS

- We combine 3-D subduction models with LPO and SKS splitting calculations
- Trench-parallel anisotropy is due to pure shear deformation induced by retreat
- The anisotropy depends on the amount of retreat, not on the trench migration rate



1 of 3

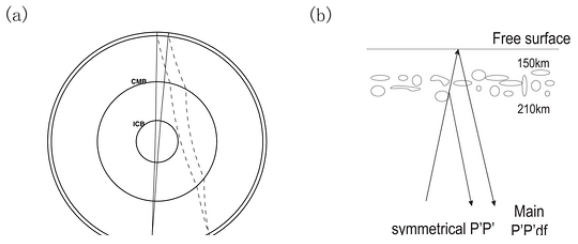
Evidence for P′P′ asymmetrical scattering at near podal distances

Wenbo Wu, Sidao Ni, Xiangfang Zeng

First Published: 7 June 2012 Vol: 39, L11306 | DOI: 10.1029/2012GL052179

KEY POINTS

- P'P' precursors at near podal distance can be observed at global stations
- P'P' precursor at short distance is from the asymmetrical scattering
- The near surface's heterogeneity can be constrained with P'P' precursor



1 of 3

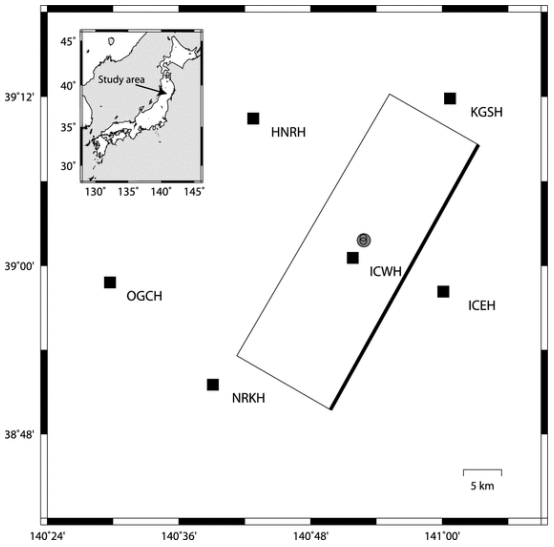
A non-accelerating foreshock sequence followed by a short period of quiescence for a large inland earthquake

Issei Doi, Hironori Kawakata

First Published: 8 June 2012 Vol: 39, L11308 | DOI: 10.1029/2012GL051779

KEY POINTS

- Twenty-two foreshocks with identical waveforms were found in the continuous record
- Detected foreshocks and the mainshock occurred almost at the same place
- Foreshock sequence has a short quiescence, and not accelerating



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Earthquake-volcano interaction imaged by coda wave interferometry

Jean Battaglia, Jean-Philippe Métaxian, Esline Garaebiti

First Published: 8 June 2012 Vol: 39, L11309 | DOI: 10.1029/2012GL052003

KEY POINTS

- Repeating Long Period events allow monitoring medium velocity changes
- A large earthquake induces a medium velocity drop at a volcano
- Earthquake-volcano interaction may be more common than believed

1 of 3

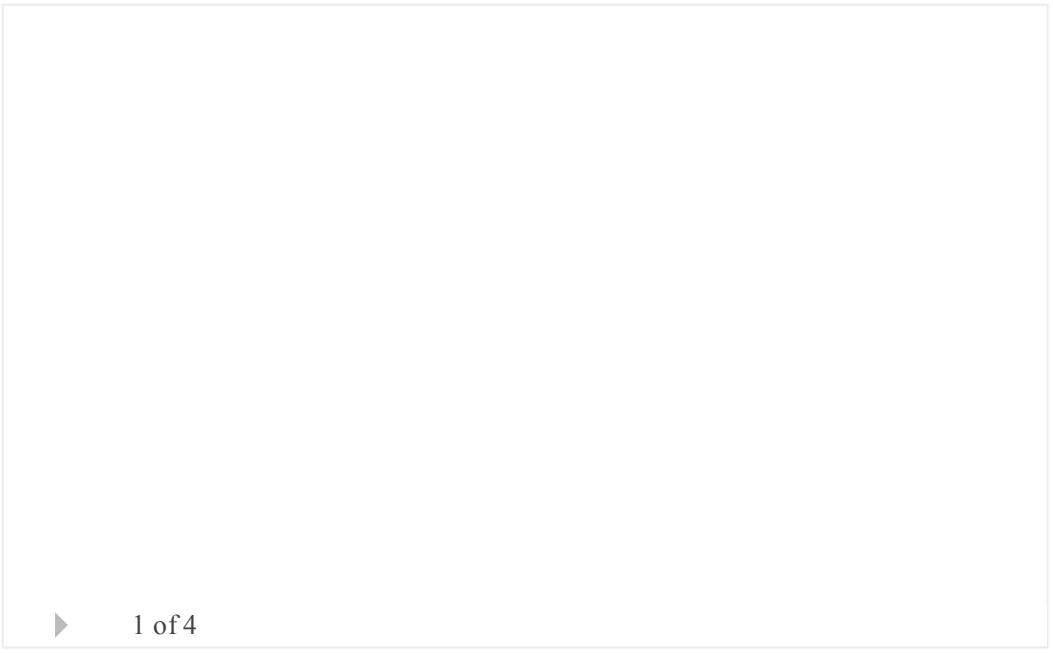
High Vp/Vs ratio: Saturated cracks or anisotropy effects?

X.-Q. Wang, A. Schubnel, J. Fortin, E. C. David, Y. Guéguen, H.-K. Ge

First Published: 8 June 2012 Vol: 39, L11307 | DOI: 10.1029/2012GL051742

KEY POINTS

- Experimentally, Vp/Vs never exceeded 2.15 in three standard rocks
- For isotropic crack distributions, we show that Vp/Vs is limited to 2.3
- In the anisotropic case, both Vp/Sv and Vp/Sh can vary from 1.2 to 3.5



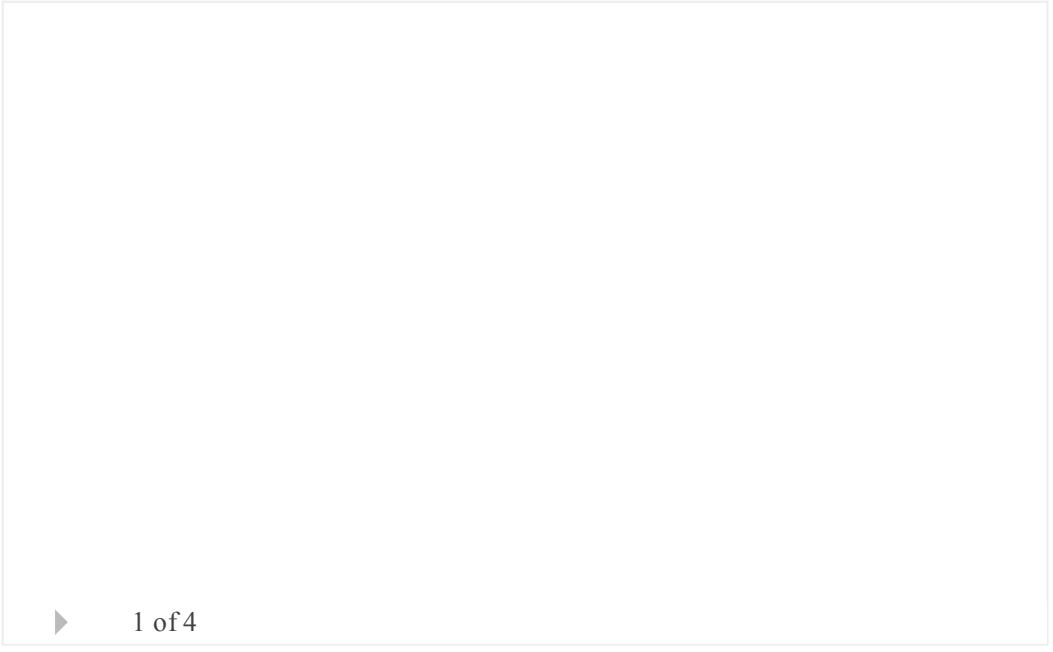
A self-consistent mechanism for slow dynamic deformation and tsunami generation for earthquakes in the shallow subduction zone

Shuo Ma

First Published: 9 June 2012 Vol: 39, L11310 | DOI: 10.1029/2012GL051854

KEY POINTS

- Dynamic pore pressure changes induce widespread yielding in the wedge
- The widespread yielding causes slow rupture velocity and small stress drop
- Large seafloor uplift occurs due to significant inelastic deformation



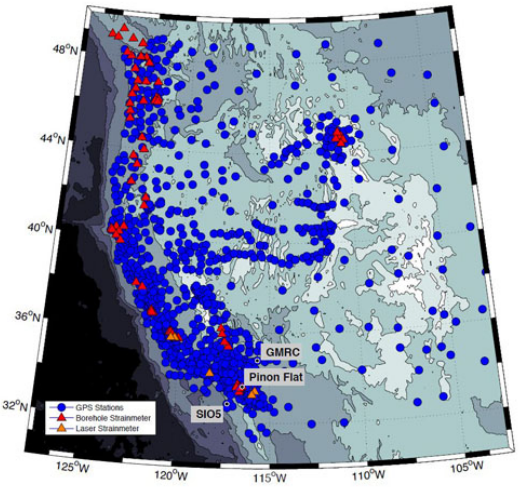
Improving sub-daily strain estimates using GPS measurements

Yuval Reuveni, Sharon Kedar, Susan E. Owen, Angelyn W. Moore, Frank H. Webb

First Published: 12 June 2012 Vol: 39, L11311 | DOI: 10.1029/2012GL051927

KEY POINTS

- A noise reduction GPS analysis strategy that improves sub-daily strain estimates
- New capability for measuring tectonic strain on time scales not usually explored
- New tool for exploring transient displacement with unprecedented spatial coverage



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Time-lapse change in anisotropy in Japan's near surface after the 2011 Tohoku-Oki earthquake

Nori Nakata, Roel Snieder

First Published: 14 June 2012 Vol: 39, L11313 | DOI: 10.1029/2012GL051979

KEY POINTS

- We analyze polarization anisotropy in the near surface throughout Japan
- The Tohoku-Oki earthquake changed anisotropy as well as shear wave velocity
- The changes in the stress direction and anisotropy are weakly correlated

1 of 3

Influence of sediment deposition on deep lithospheric tectonics

R. Gray, R. N. Pysklywec

First Published: 14 June 2012 Vol: 39, L11312 | DOI: 10.1029/2012GL051947

KEY POINTS

- In the absence of sediment deposition lithosphere retreats from collision zone
- With sediment deposition subduction-like consumption of retro-plate is stable
- Sediment deposition causes negative velocity-component in the overriding plate

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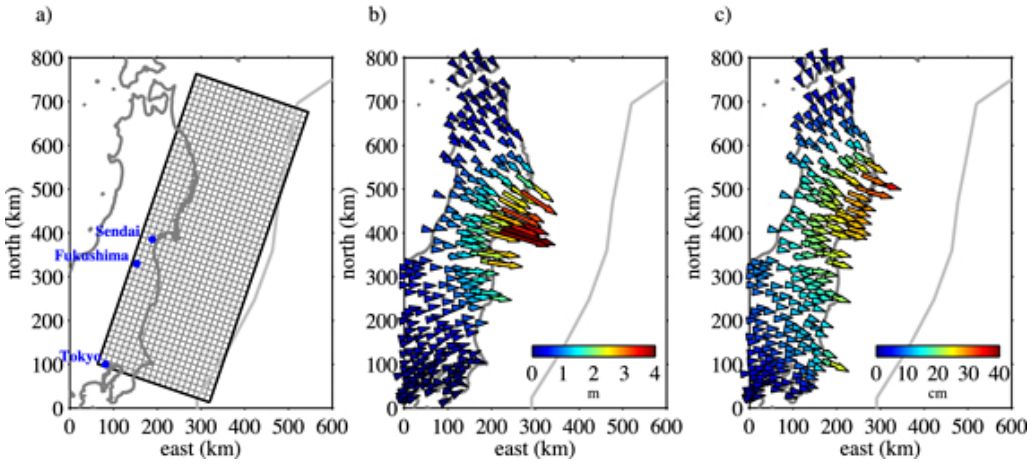
Geodetic imaging of coseismic slip and postseismic afterslip: Sparsity promoting methods applied to the great Tohoku earthquake

Eileen L. Evans, Brendan J. Meade

First Published: 15 June 2012 Vol: 39, L11314 | DOI: 10.1029/2012GL051990

KEY POINTS

- Sparsity promoting regularization can recover sharp boundaries to slip
- Regions of co- and postseismic slip on Japan trench are spatially distinct
- Transition between co- and postseismic slip at 40-50 km depth on Japan trench



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Space Sciences

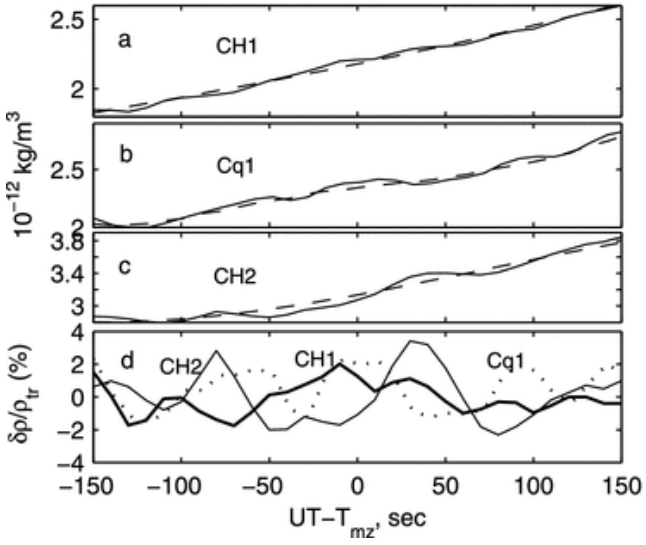
*F*2-region atmospheric gravity waves due to high-power HF heating and subauroral polarization streams

E. Mishin, E. Sutton, G. Milikh, I. Galkin, C. Roth, M. Förster

First Published: 1 June 2012 Vol: 39, L11101 | DOI: 10.1029/2012GL052004

KEY POINTS

- High-power HF heating generates atmospheric waves
- SAPS generates atmospheric waves
- The ionosphere-thermosphere coupling can be studied in a controlled fashion



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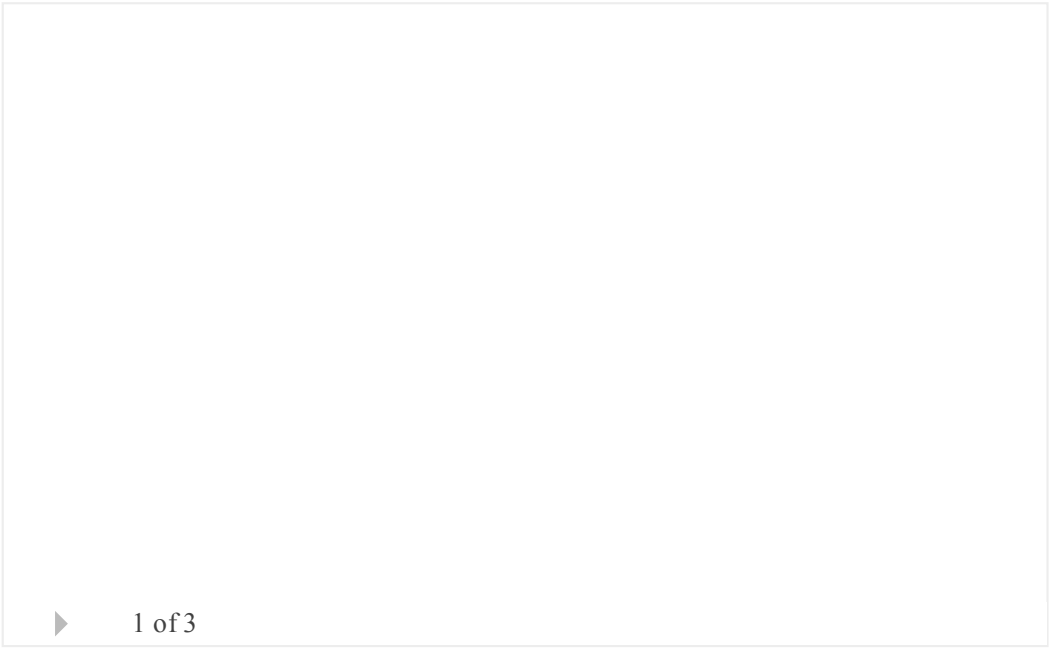
Evidence for the dissipation region in magnetotail reconnection

Seiji Zenitani, Iku Shinohara, Tsugunobu Nagai

First Published: 2 June 2012 Vol: 39, L11102 | DOI: 10.1029/2012GL051938

KEY POINTS

- Energy dissipation is evaluated from Geotail data
- The dissipation region surrounding the X-point is detected
- Work rate by the Lorentz force is another useful measure



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Electron acceleration in the reconnection diffusion region: Cluster observations

S. Y. Huang, A. Vaivads, Y. V. Khotyaintsev, M. Zhou, H. S. Fu, A. Retinò, X. H. Deng, M. André, C. M. Cully, J. S. He, et al

First Published: 5 June 2012 Vol: 39, L11103 | DOI: 10.1029/2012GL051946

KEY POINTS

- Strong core fields, density depletion, intense currents inside magnetic islands
- Energetic electron increase in the thin current sheet, and magnetic island
- Energetic electrons are first accelerated in thin current sheet, then in island

1 of 3

Observations of turbulence within reconnection jet in the presence of guide field

S. Y. Huang, M. Zhou, F. Sahraoui, A. Vaivads, X. H. Deng, M. André, J. S. He, H. S. Fu, H. M. Li, Z. G. Yuan, et al

First Published: 6 June 2012 Vol: 39, L11104 | DOI: 10.1029/2012GL052210

KEY POINTS

- The turbulence is strongly anisotropic, and intermittent
- The measured dispersion relations are consistent with the Alfven-Whistler mode
- The electric field caused by turbulence is close to typical reconnection field

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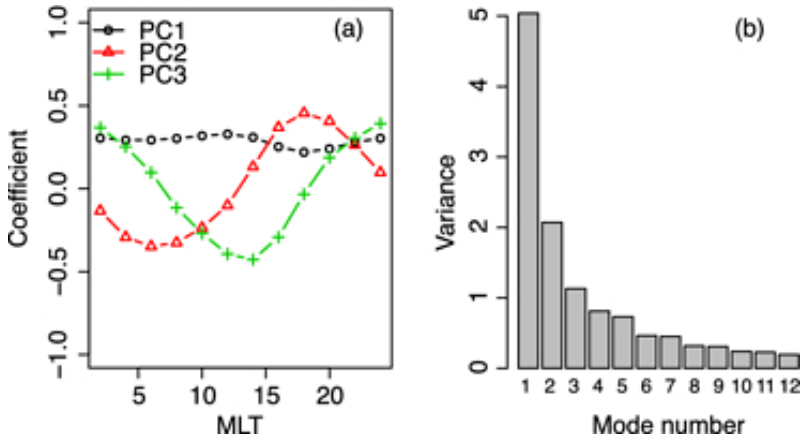
Principal component analysis of polar cap convection

H.-J. Kim, L. R. Lyons, J. M. Ruohoniemi, N. A. Frissell, J. B. Baker

First Published: 9 June 2012 Vol: 39, L11105 | DOI: 10.1029/2012GL052083

KEY POINTS

- Examine underlying modes of polar cap convection
- The modes are intrinsic property of the average polar cap convection
- Illustrate potential applications of the PCA-mode based dimension reduction



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Implications of the equipotential field line approximation for equatorial spread *F* analysis

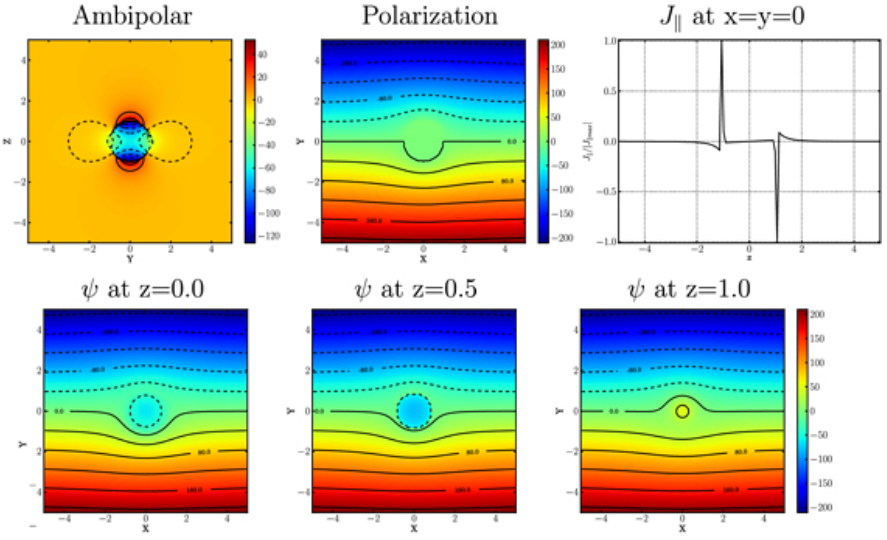
H. C. Aveiro, D. L. Hysell

First Published: 13 June 2012 Vol: 39, L11106 | DOI: 10.1029/2012GL051971

KEY POINTS

- The 3-D solution of the potential captures the current closure in the ionosphere
- Equipotential field line (EFL) approach does not fully describe the currents
- EFL underestimates the growth rate of spread F in numerical simulations

Highlight



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The Cryosphere

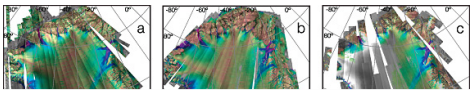
Ice flow in Greenland for the International Polar Year 2008–2009

E. Rignot, J. Mouginot

First Published: 2 June 2012 Vol: 39, L11501 | DOI: 10.1029/2012GL051634

KEY POINTS

- First complete ice velocity of Greenland
- Major flow regimes, tidewater gl. dominance
- Basal sliding dominance, new constraints for models



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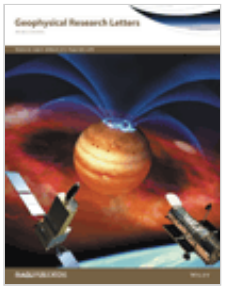
Current Issue



Volume 42
Issue 6
28 March 2015

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