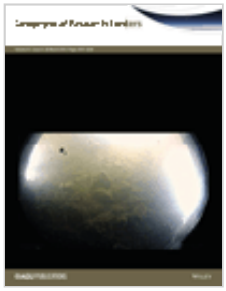


Volume 39, Issue 23

16 December 2012

Brief Detailed

Atmospheric Science

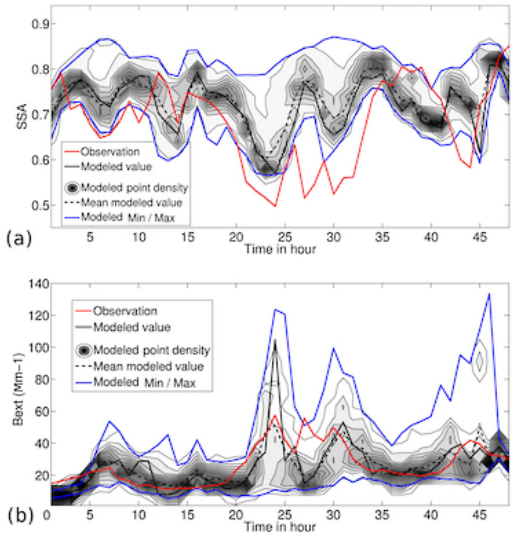
3D direct impacts of urban aerosols on dynamics during the CAPITOUL field experiment

B. Aouizerats, P. Tulet, L. Gomes

First Published: 14 December 2012 Vol: 39, L23807 | DOI: 10.1029/2012GL053781

KEY POINTS

- How do urban aerosols impact the dynamics
- Does the radiative impact of aerosols imply a local or a regional effect



1 of 3

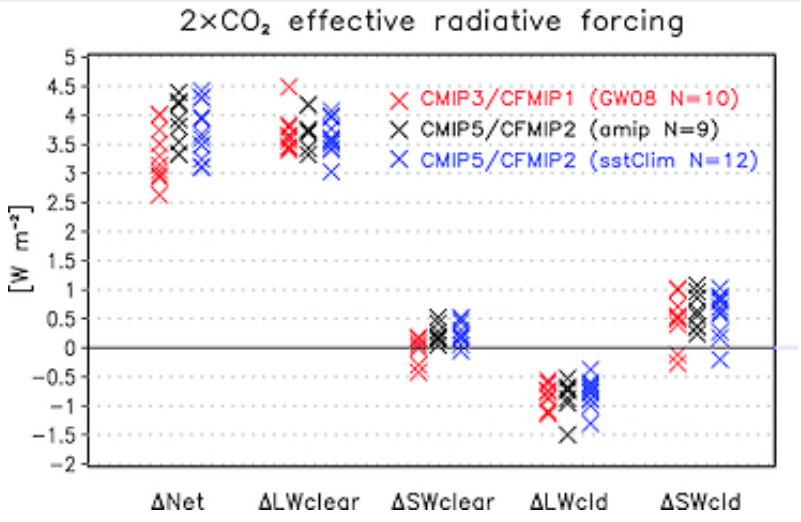
On the robustness of tropospheric adjustment in CMIP5 models

Youichi Kamae, Masahiro Watanabe

First Published: 14 December 2012 Vol: 39, L23808 | DOI: 10.1029/2012GL054275

KEY POINTS

- Several features of TA are found robust among the models
- Reduced cloud and shortwave cloud radiative effect over the oceans
- Change in specific humidity contributes to the inter-model spread



1 of 4

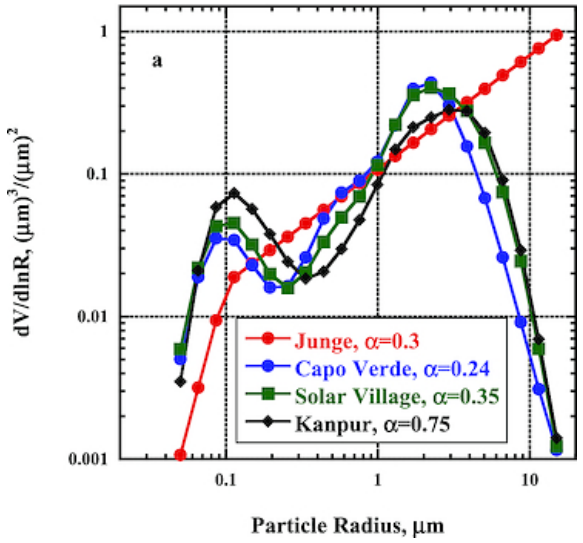
Assessment of error in aerosol optical depth measured by AERONET due to aerosol forward scattering

Alexander Sinyuk, Brent N. Holben, Alexander Smirnov, Thomas F. Eck, Ilya Slutsker, Joel S. Schafer, David M. Giles, Mikhail Sorokin

First Published: 13 December 2012 Vol: 39, L23806 | DOI: 10.1029/2012GL053894

KEY POINTS

- Assessment of AERONET AOD errors due to aerosol forward scattering



1 of 4

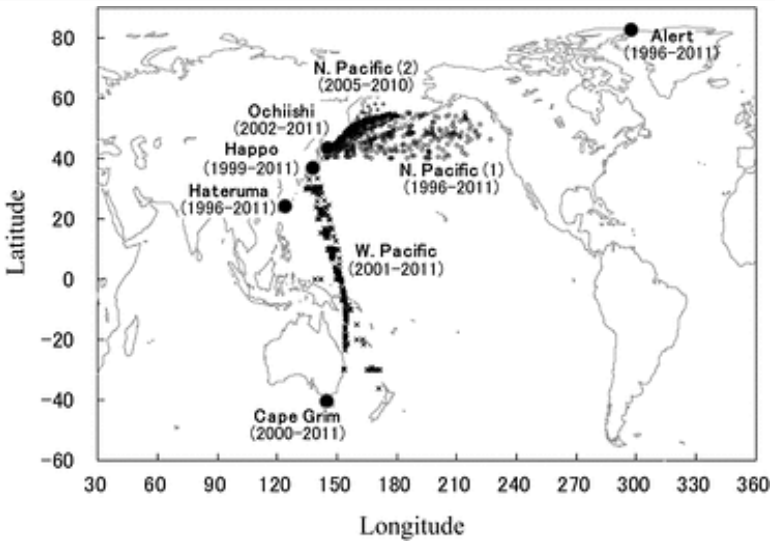
Long-term variation of atmospheric methyl iodide and its link to global environmental change

Yoko Yokouchi, Yukihiro Nojiri, Desiree Toom-Sauntry, Paul Fraser, Yoko Inuzuka,

Hiroshi Tanimoto, Hideki Nara, Ryuichi Murakami, Hitoshi Mukai
First Published: 7 December 2012 Vol: 39, L23805 | DOI: 10.1029/2012GL053695

KEY POINTS

- First observation of long-term trend of marine-derived VOC on a global scale
- Strong inter-annual change of CH3I, linked to the Pacific Decadal Oscillation
- Suggestion for high sensitivity of the marine gas emissions to climate change



1 of 4

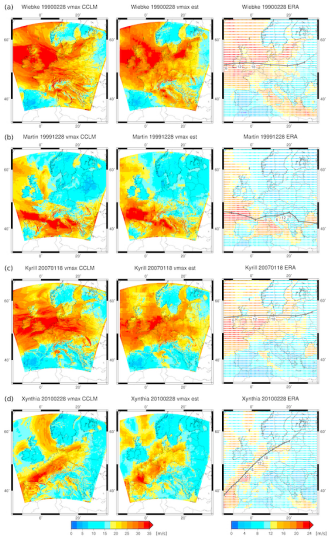
A combined statistical and dynamical approach for downscaling large-scale footprints of European windstorms

R. Haas, J. G. Pinto
First Published: 5 December 2012 Vol: 39, L23804 | DOI: 10.1029/2012GL054014

KEY POINTS

- We introduce a new statistical downscaling tool for high-resolution wind gusts
- The statistical tool is able to reproduce dynamically downscaled wind signatures
- Statistical and dynamical downscaling have comparable skills

Highlight



1 of 3

Effects of stratospheric sulfate aerosol geo-engineering on cirrus clouds

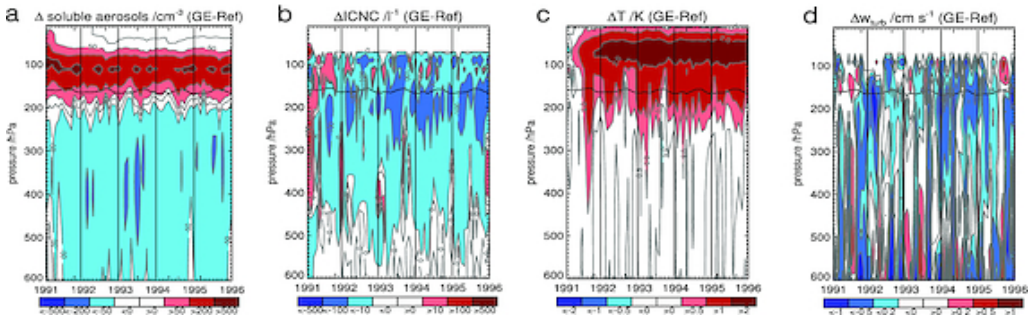
Miriam Kuebbeler, Ulrike Lohmann, Johann Feichter

First Published: 4 December 2012 Vol: 39, L23803 | DOI: 10.1029/2012GL053797

KEY POINTS

- Global climate simulation of geo-engineering and its interactions with cirrus
- Stratospheric geo-engineering can affect cirrus clouds globally
- Optically thinner cirrus clouds can affect effectiveness of geo-engineering

Open Access



1 of 3

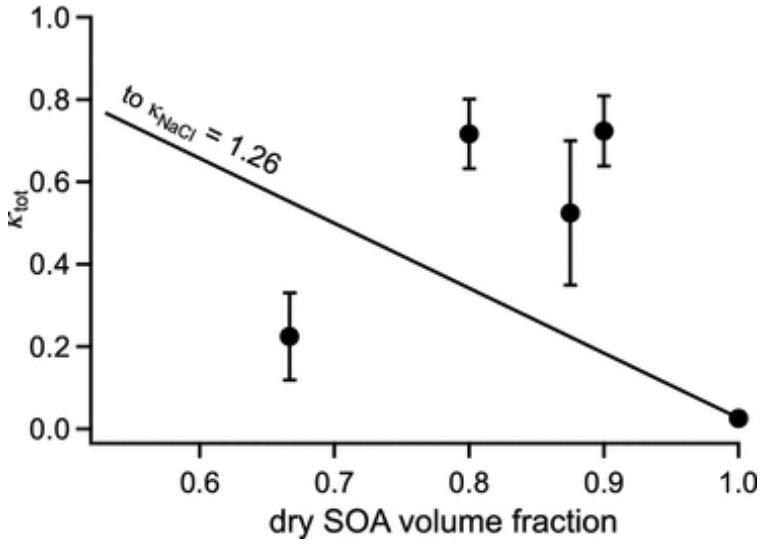
Strong evidence of surface tension reduction in microscopic aqueous droplets

C. R. Ruehl, P. Y. Chuang, A. Nenes, C. D. Cappa, K. R. Kolesar, A. H. Goldstein

First Published: 1 December 2012 Vol: 39, L23801 | DOI: 10.1029/2012GL053706

KEY POINTS

- The surface tension of microscopic droplets can be reduced by 50-75%
- This requires an SOA film at least 0.8 nm thick to cover the droplet surface
- Particles composed of >80% surfactant could have increased CCN activity



1 of 2

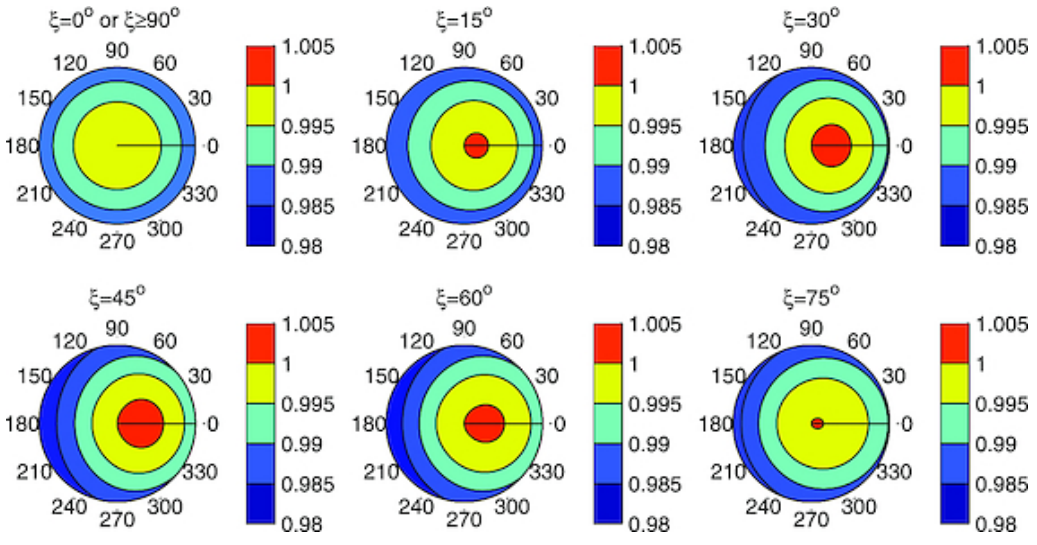
Angular anisotropy of satellite observations of land surface temperature

Konstantin Y. Vinnikov, Yunyue Yu, Mitchell D. Goldberg, Dan Tarpley, Peter Romanov, Istvan Laszlo, Ming Chen

First Published: 1 December 2012 Vol: 39, L23802 | DOI: 10.1029/2012GL054059

KEY POINTS

- Introduced and assessed statistical model of directional anisotropy of LST
- Proposed technique for angular adjustment of satellite observed LST
- Proposed technique for temporal adjustment of satellite observed LST



1 of 2

Climate

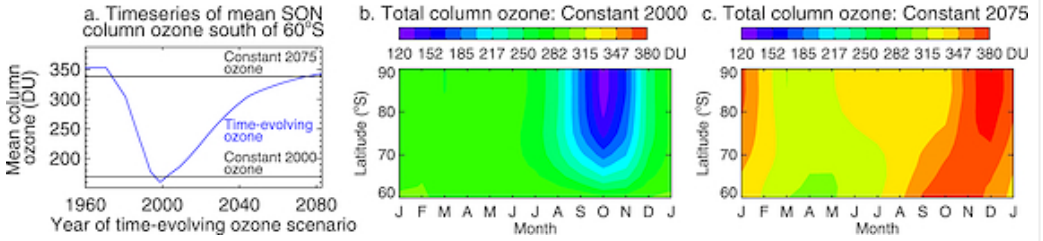
Quantifying uncertainty in future Southern Hemisphere circulation trends

Peter A. G. Watson, David J. Karoly, Myles R. Allen, Nicholas Faull, David S. Lee

First Published: 15 December 2012 Vol: 39, L23708 | DOI: 10.1029/2012GL054158

KEY POINTS

- SH climate change projections are sensitive to the physics parameterization
- Uncertainty in the DJF tropospheric response to ozone recovery alone is ~25%
- The SAM trend and response to ozone is correlated with modelled global warming



1 of 3

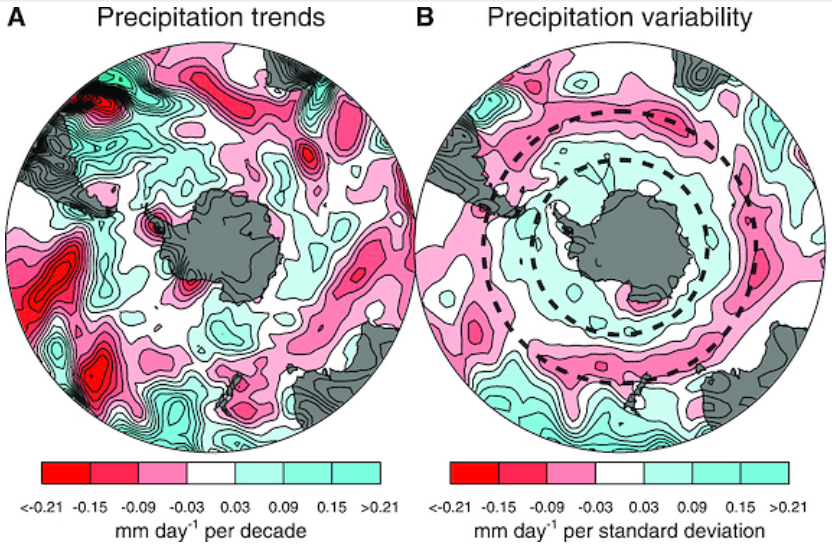
Human influence on extratropical Southern Hemisphere summer precipitation

J. C. Fyfe, N. P. Gillett, G. J. Marshall

First Published: 15 December 2012 Vol: 39, L23711 | DOI: 10.1029/2012GL054199

KEY POINTS

- Observed precipitation trends inconsistent with simulated internal variability
- Observed precipitation trends mainly due to anthropogenic and natural forcings
- Specifically from GHG and ozone changes, with opposing influence from aerosols



1 of 4

Faint young Sun problem more severe due to ice-albedo feedback and higher rotation rate of the early Earth

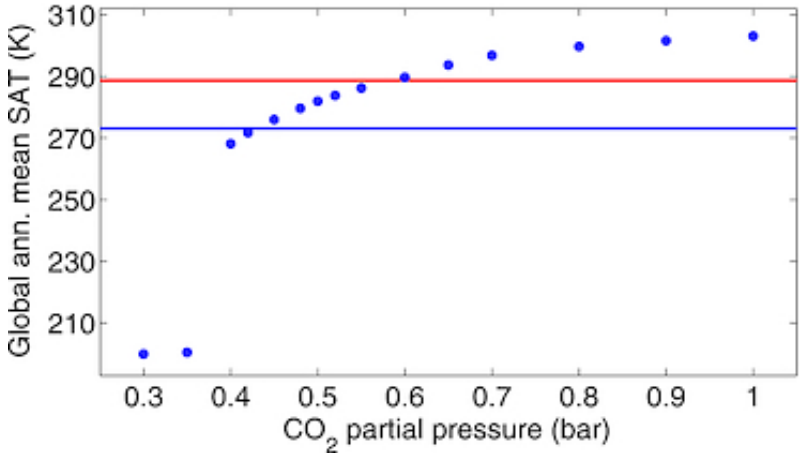
Hendrik Kienert, Georg Feulner, Vladimir Petoukhov

First Published: 15 December 2012 Vol: 39, L23710 | DOI: 10.1029/2012GL054381

KEY POINTS

- Climate of the Archean Earth simulated with 3-D model
- More CO2 required to prevent early Earth from freezing than previously thought
- CO2/CH4 greenhouse could be in conflict with middle and late Archean constraints

Highlight



1 of 4

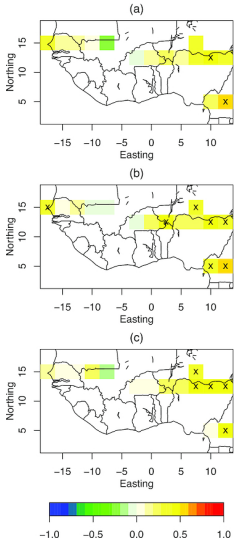
Skill of ENSEMBLES seasonal re-forecasts for malaria prediction in West Africa

A. E. Jones, A. P. Morse

First Published: 15 December 2012 Vol: 39, L23707 | DOI: 10.1029/2012GL054040

KEY POINTS

- Seasonal re-forecasts of epidemic malaria in West Africa are tier-2 skilful
- Skill is found in the highlands of Cameroon, associated with temperature
- Skill is also found in Nigeria/southern Niger, associated with rainfall



1 of 2

The great Arctic cyclone of August 2012

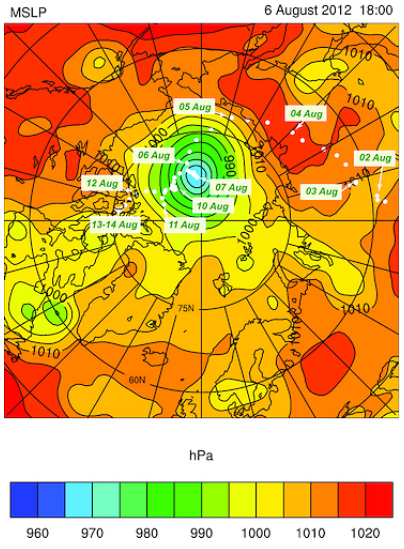
Ian Simmonds, Irina Rudeva

First Published: 15 December 2012 Vol: 39, L23709 | DOI: 10.1029/2012GL054259

KEY POINTS

- Analysis and diagnosis is performed on the dramatic Arctic storm of August 2012
- Storm's evolution and longevity tied to baroclinicity and a tropopause vortex
- Storm is the most intense Arctic August system in the record (since 1979)

Highlight



1 of 4

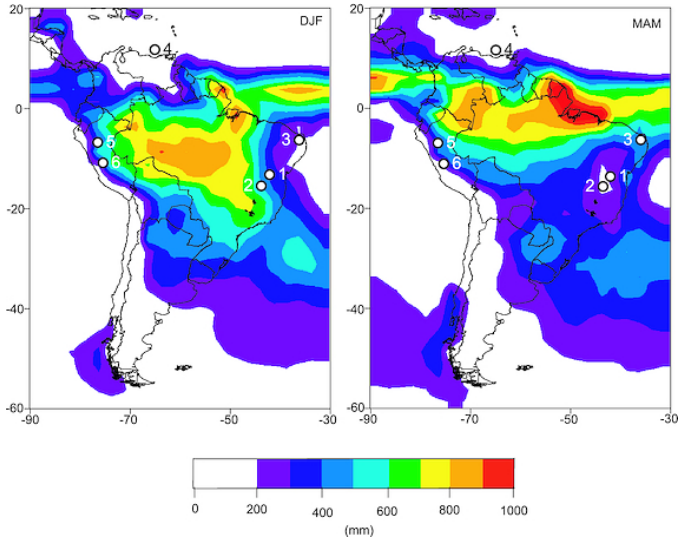
Multidecadal climate variability in Brazil's Nordeste during the last 3000 years based on speleothem isotope records

Valdir F. Novello, Francisco W. Cruz, Ivo Karmann, Stephen J. Burns, Nicolás M. Stríkis, Mathias Vuille, Hai Cheng, R. Lawrence Edwards, Roberto V. Santos, Everton Frigo, et al

First Published: 12 December 2012 Vol: 39, L23706 | DOI: 10.1029/2012GL053936

KEY POINTS

- The SAMSs activity on multidecadal timescale
- Climate during LIA, MCA and CWP and their possible forcings
- Abrupt events of precipitation in NE Brazil during last 3k



1 of 3

On the statistical significance of surface air temperature trends in the Eurasian Arctic region

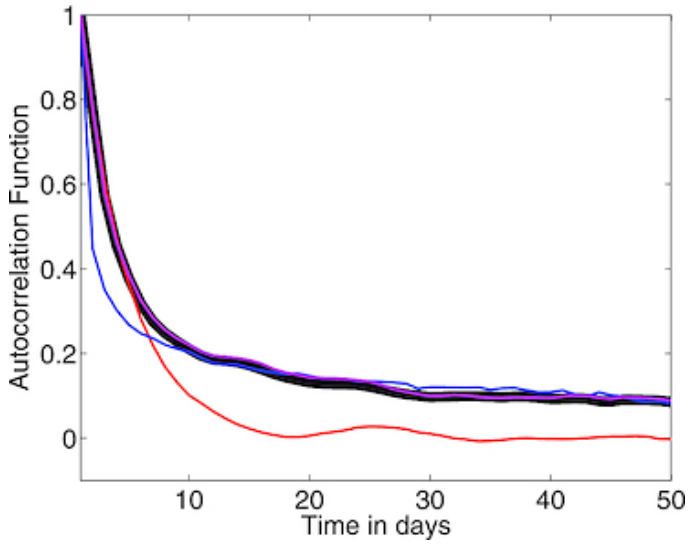
C. Franzke

First Published: 11 December 2012 Vol: 39, L23705 | DOI: 10.1029/2012GL054244

KEY POINTS

- I am using a novel method to test the significance of temperature trends
- In the Eurasian Arctic region only 17 stations show a significant trend
- I find that in Siberia the trend signal has not yet emerged

Open Access



1 of 4

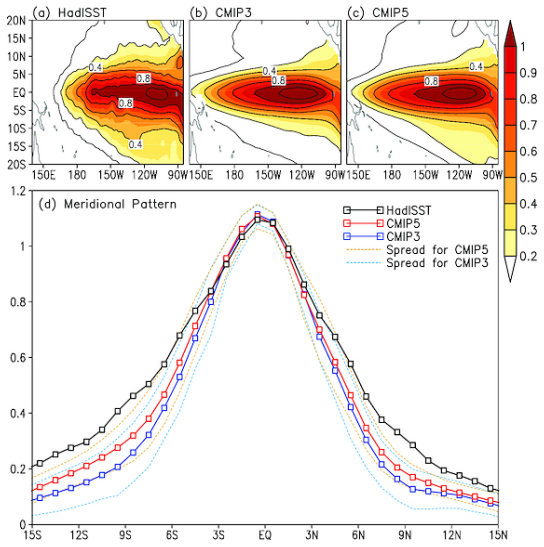
Improvements in the CMIP5 simulations of ENSO-SSTA meridional width

Wenjun Zhang, Fei-Fei Jin

First Published: 6 December 2012 Vol: 39, L23704 | DOI: 10.1029/2012GL053588

KEY POINTS

- The CMIP5 models show an improvement in ENSO width compared to the CMIP3 models
- The improvement is attributed to better simulation in trade wind and ENSO period
- Models with wider ENSO favors better simulation in ENSO-precipitation response



1 of 4

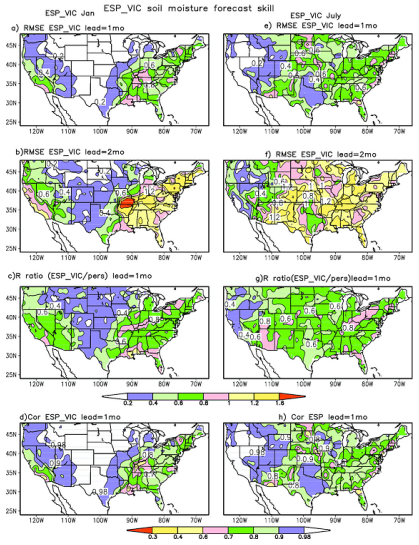
Do Climate Forecast System (CFSv2) forecasts improve seasonal soil moisture prediction?

Kingtse C. Mo, Shraddhanand Shukla, Dennis P. Lettenmaier, Li-Chuan Chen

First Published: 4 December 2012 Vol: 39, L23703 | DOI: 10.1029/2012GL053598

KEY POINTS

- ESP as the benchmark for evaluation of soil moisture forecast
- Over the western region, ESP is a good forecast tool
- Climate forcing will add skill if precipitation forecasts are skillful



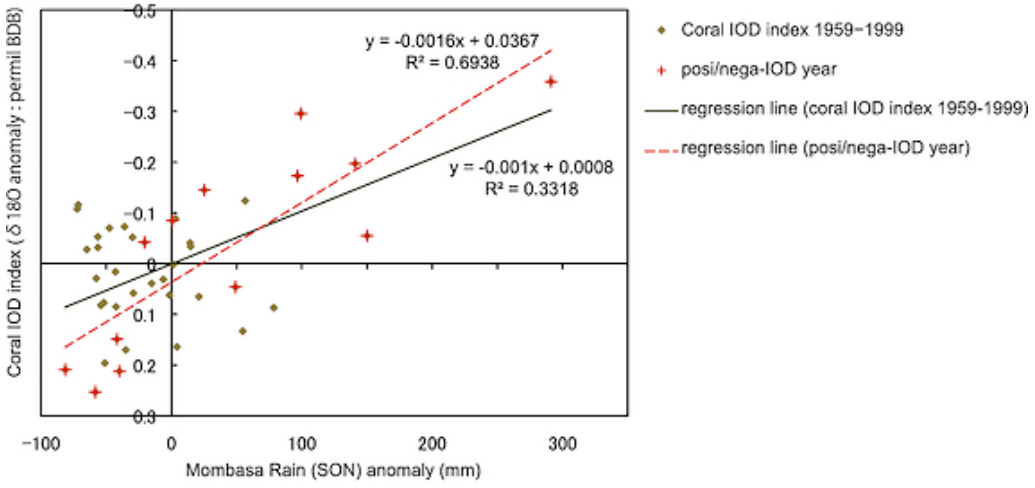
1 of 3

Correction to “Mode shift in the Indian Ocean climate under global warming stress”

Nobuko Nakamura, Hajime Kayanne, Hiroko Iijima, Timothy R. McClanahan, Swadhin K. Behera, Toshio Yamagata

First Published: 1 December 2012 Vol: 39, L23701 | DOI: 10.1029/2012GL054261

Free



1 of 2

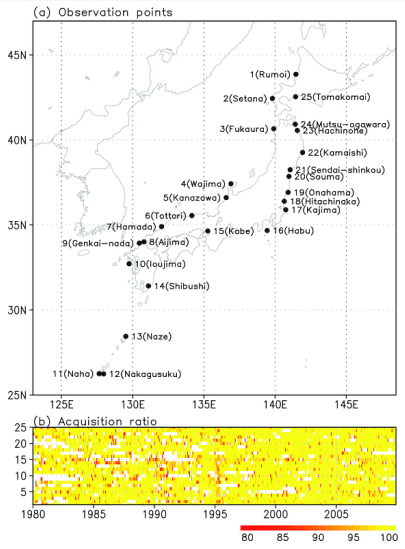
Changes in wave energy resources around Japan

Wataru Sasaki

First Published: 1 December 2012 Vol: 39, L23702 | DOI: 10.1029/2012GL053845

KEY POINTS

- The climatology and long-term trend of wave energy around Japan are estimated
- There is a marked increasing trend in wave energy along the east coast of Japan
- The increasing trend is due to the increased occurrence of swells



1 of 4

Hydrology and Land Surface Studies

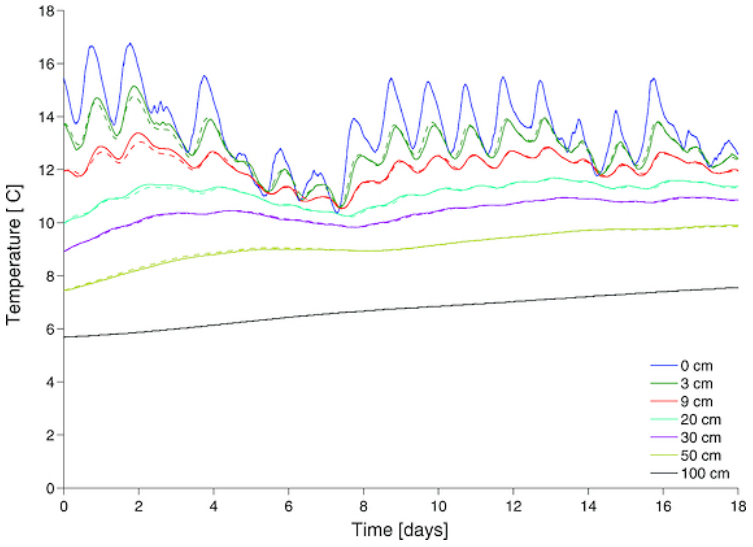
Spectral scaling of heat fluxes in streambed sediments

A. Wörman, J. Riml, N. Schmadel, B. T. Neilson, A. Bottacin-Busolin, J. E. Heavilir

First Published: 7 December 2012 Vol: 39, L23402 | DOI: 10.1029/2012GL053922

KEY POINTS

- Temperature spectra in streams and stream sediments can be exactly related
- Spectral solution provides key insight into scaling of heat fluxes in streams
- The significance of the diurnal heat signal decays rapidly with sediment depth



1 of 3

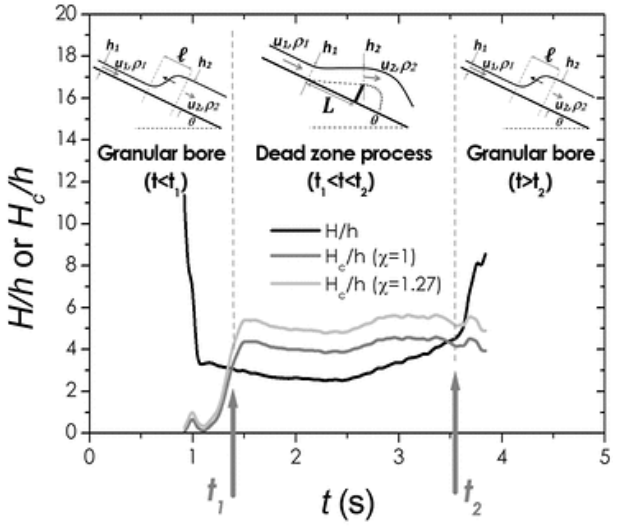
A scaling law for impact force of a granular avalanche flowing past a wall

T. Faug, P. Caccamo, B. Chanut

First Published: 4 December 2012 Vol: 39, L23401 | DOI: 10.1029/2012GL054112

KEY POINTS

- Scaling law describing the force from finite-sized granular avalanches on walls
- Model validation on small-scale laboratory and numerical data on granular flows
- Model applicability for full-scale data on snow avalanches



1 of 4

Oceans

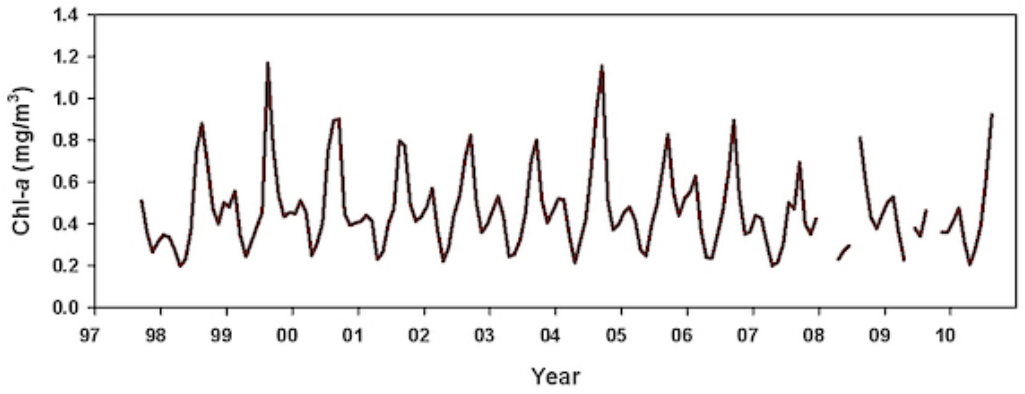
Is the trend in chlorophyll-*a* in the Arabian Sea decreasing?

Prince Prakash, Satya Prakash, Hasibur Rahaman, M. Ravichandran, Shailesh Nayak

First Published: 14 December 2012 Vol: 39, L23605 | DOI: 10.1029/2012GL054187

KEY POINTS

- A change of trend in Arabian Sea
- Sea level anomaly plays important role
- Arabian Sea productivity has changed during past decade



1 of 5

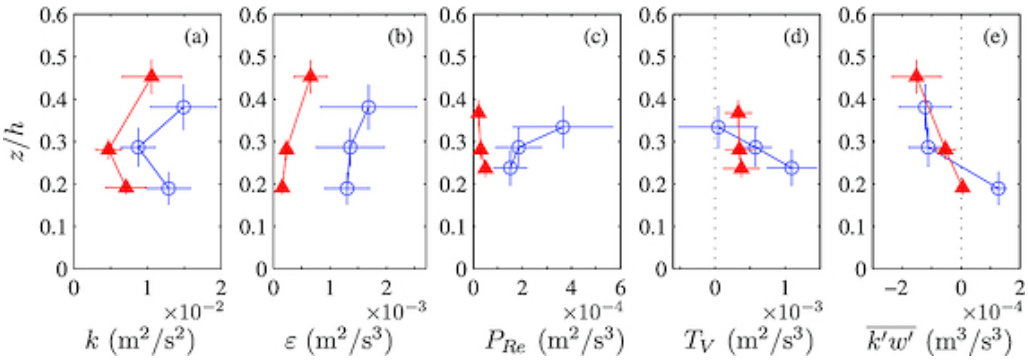
Turbulent viscosity in natural surf zones

F. Grasso, B. G. Ruessink

First Published: 4 December 2012 Vol: 39, L23603 | DOI: 10.1029/2012GL054135

KEY POINTS

- A new formulation for turbulence production is derived from field observations
- Observed Reynolds-stress based production is reproduced very accurately
- The new formulation can be embedded in one-equation turbulent-viscosity models



1 of 3

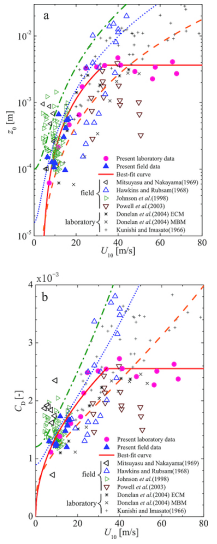
Strong correlation between the drag coefficient and the shape of the wind sea spectrum over a broad range of wind speeds

Naohisa Takagaki, Satoru Komori, Naoya Suzuki, Koji Iwano, Takenori Kuramoto, Satoshi Shimada, Ryoichi Kurose, Keiko Takahashi

First Published: 4 December 2012 Vol: 39, L23604 | DOI: 10.1029/2012GL053988

KEY POINTS

- New model of the drag coefficient at extremely high wind speeds is proposed
- Drag coefficient is uniquely determined at all wind speeds by wind wave's shape
- Drag coefficient is saturated at extremely high wind speeds higher than 35 m/s



1 of 4

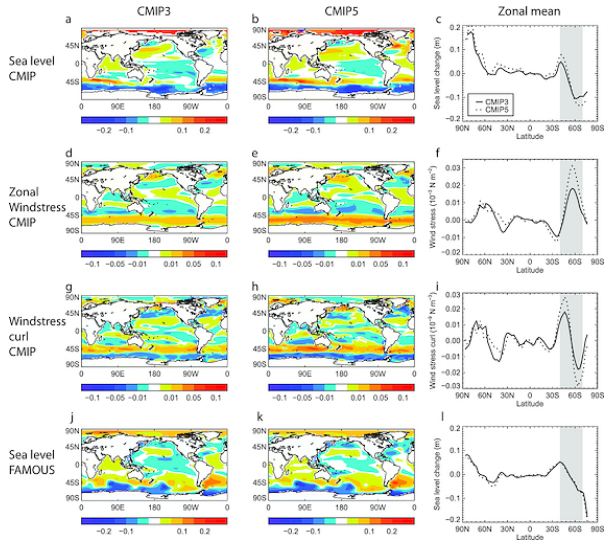
The effect of windstress change on future sea level change in the Southern Ocean

N. Bouttes, J. M. Gregory, T. Kuhlbrodt, T. Suzuki

First Published: 1 December 2012 Vol: 39, L23602 | DOI: 10.1029/2012GL054207

KEY POINTS

- The model mean pattern of sea level change is very similar in CMIP3 and CMIP5
- The sea level spread in the Southern Ocean is mainly due to windstress change
- Windstress change is influential in some other regions but not the only factor



1 of 3

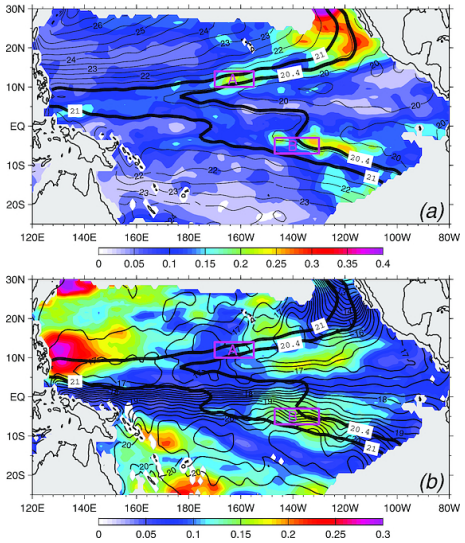
Low-frequency spiciness variations in the tropical Pacific Ocean observed during 2003–2012

Yuanlong Li, Fan Wang, Yan Sun

First Published: 1 December 2012 Vol: 39, L23601 | DOI: 10.1029/2012GL053971

KEY POINTS

- Observed subtropical variations are more powerful in the North Pacific
- Off-equatorial tropical anomalies approach the equatorial ocean
- Anomaly arrivals lead to thermal variations in the central Pacific



1 of 4

Planets

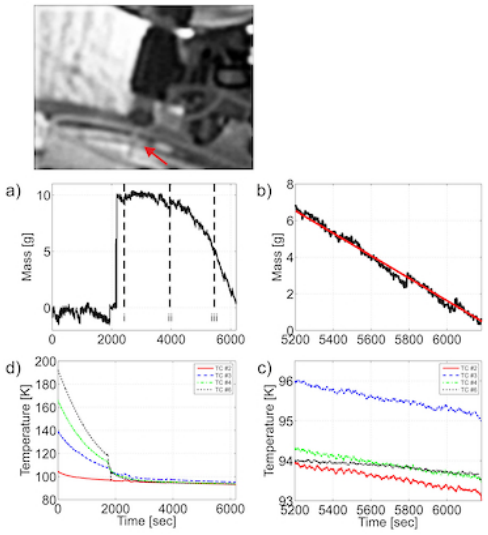
Experimental simulations of CH_4 evaporation on Titan

A. Luspay-Kuti, V. F. Chevrier, F. C. Wasiak, L. A. Roe, W. D. D. P. Welivitiya, T. Cornet, S. Singh, E. G. Rivera-Valentin

First Published: 14 December 2012 Vol: 39, L23203 | DOI: 10.1029/2012GL054003

KEY POINTS

- First simulation of liquid hydrocarbons under Titan conditions
- The evaporation rate of liquid methane has been experimentally determined
- Methane can form transient ponds during equatorial storms



1 of 1

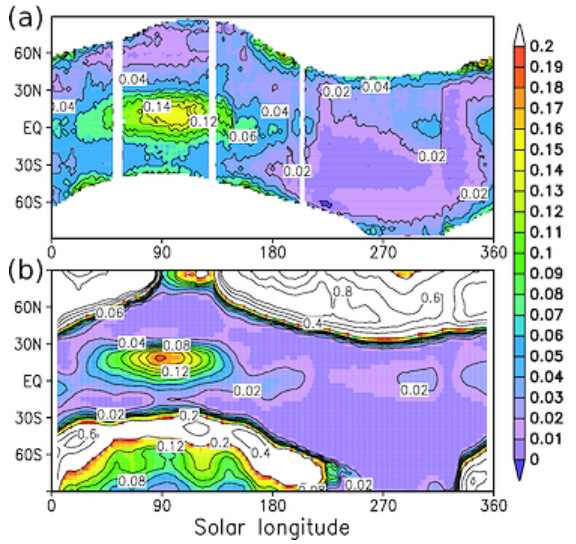
The influence of radiatively active water ice clouds on the Martian climate

J.-B. Madeleine, F. Forget, E. Millour, T. Navarro, A. Spiga

First Published: 12 December 2012 Vol: 39, L23202 | DOI: 10.1029/2012GL053564

KEY POINTS

- Radiatively active clouds (RAC) are implemented in the LMD global climate model
- Whatever the season, including RAC is required to fit the observed temperatures
- Renewed attention on the polar regions, where cold biases remain, is needed



1 of 4

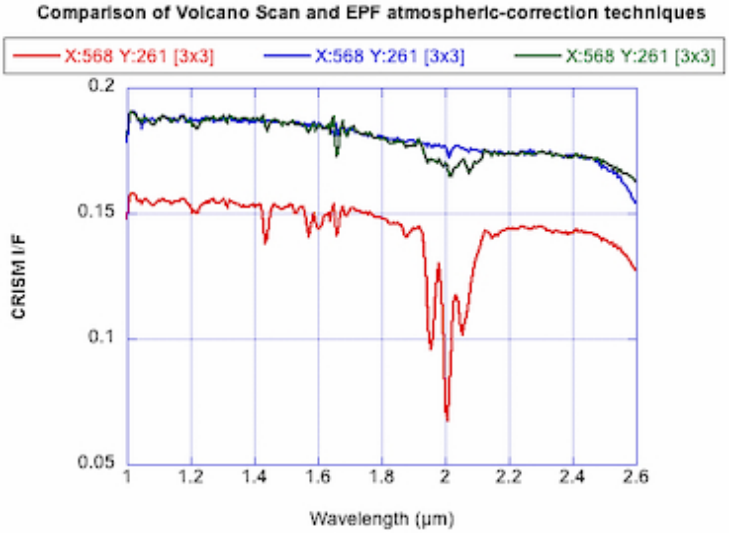
Hydrated minerals on Endeavour Crater's rim and interior, and surrounding plains: New insights from CRISM data

E. Z. Noe Dobrea, J. J. Wray, F. J. Calef III, T. J. Parker, S. L. Murchie

First Published: 8 December 2012 Vol: 39, L23201 | DOI: 10.1029/2012GL053180

KEY POINTS

- Mineralogical diversity at Endeavour Crater is greater than previously realized
- A Ca-sulfate component is identified near the rim of the crater
- Phyllosilicates are identified on the rim, interior and surrounding plains



1 of 4

Solid Earth

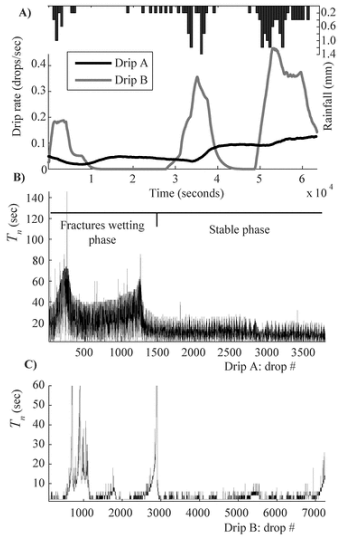
Chaos and irregularity in karst percolation

Gregoire Mariethoz, Andy Baker, Bellie Sivakumar, Adam Hartland, Peter Graham

First Published: 14 December 2012 Vol: 39, L23305 | DOI: 10.1029/2012GL054270

KEY POINTS

- Observation of chaotic behavior on drips
- Identification of processes that explain chaos
- Potential implications for paleoclimate studies and understanding fracture flow



1 of 4

Correction to "Mechanoradical H_2generation during simulated faulting: Implications for an earthquake-driven subsurface biosphere"

Takehiro Hirose, Shinsuke Kawagucci, Katsuhiko Suzuki

First Published: 11 December 2012 Vol: 39, L23304 | DOI: 10.1029/2012GL054539

Free

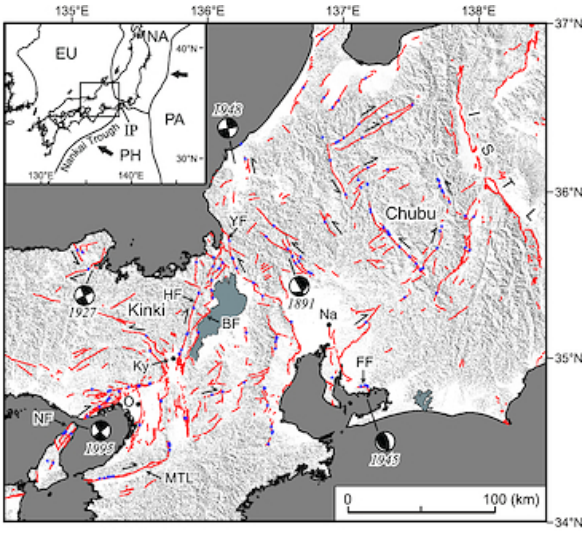
Stability of the regional stress field in central Japan during the late Quaternary inferred from the stress inversion of the active fault data

Hiroyuki Tsutsumi, Katsushi Sato, Atsushi Yamaji

First Published: 5 December 2012 Vol: 39, L23303 | DOI: 10.1029/2012GL054094

KEY POINTS

- We inverted regional stress field in central Japan based on active fault data
- The optimal single state of stress accounts for almost all the active faults
- The stress state has been uniform and stable for the past ~10^5 years



1 of 5

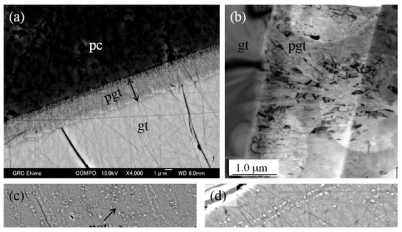
Intracrystalline nucleation during the post-garnet transformation under large overpressure conditions in deep subducting slabs

Masayuki Nishi, Tetsuo Irifune, Hiroaki Ohfuji, Yoshinori Tange

First Published: 5 December 2012 Vol: 39, L23302 | DOI: 10.1029/2012GL053915

KEY POINTS

- Intracrystalline post-garnet transformation occurs under large overpressure
- Transformation rate would be enhanced by the intracrystalline nucleation



1 of 3

Elevated pore pressure and anomalously low stress in regions of low frequency earthquakes along the Nankai Trough subduction megathrust

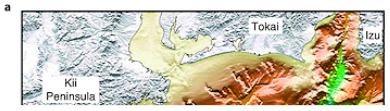
Hiroko Kitajima, Demian M. Saffer

First Published: 1 December 2012 Vol: 39, L23301 | DOI: 10.1029/2012GL053793

KEY POINTS

- High pore fluid pressure and low effective stress develop in low velocity zones
- Low effective stresses lead to a mechanically weak and aseismic plate boundary
- The location of VLFEs coincides with the region of lowest effective stress

Highlight



1 of 4

Space Sciences

Giant flux ropes observed in the magnetized ionosphere at Venus

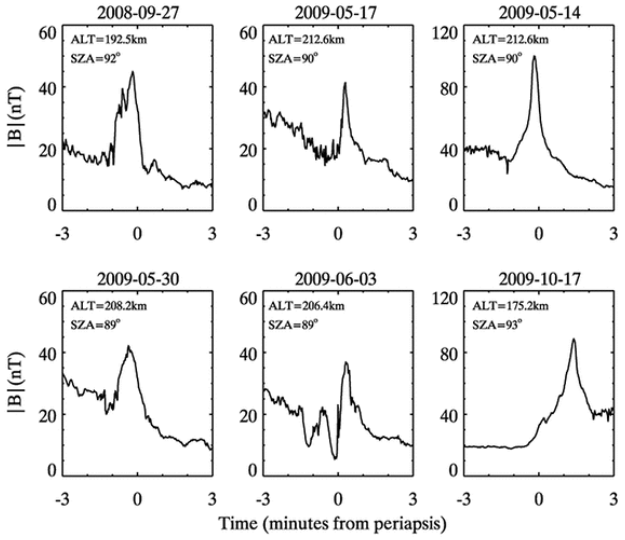
T. L. Zhang, W. Baumjohann, W. L. Teh, R. Nakamura, C. T. Russell, J. G. Luhmann, K. H. Glassmeier, E. Dubinin, H. Y. Wei, A. M. Du, et al

First Published: 14 December 2012 Vol: 39, L23103 | DOI: 10.1029/2012GL054236

KEY POINTS

- First observation of giant flux ropes at Venus
- A new Venus ionosphere magnetic state
- Magnetic shear or velocity shear are required to produce flux ropes

Highlight



1 of 4

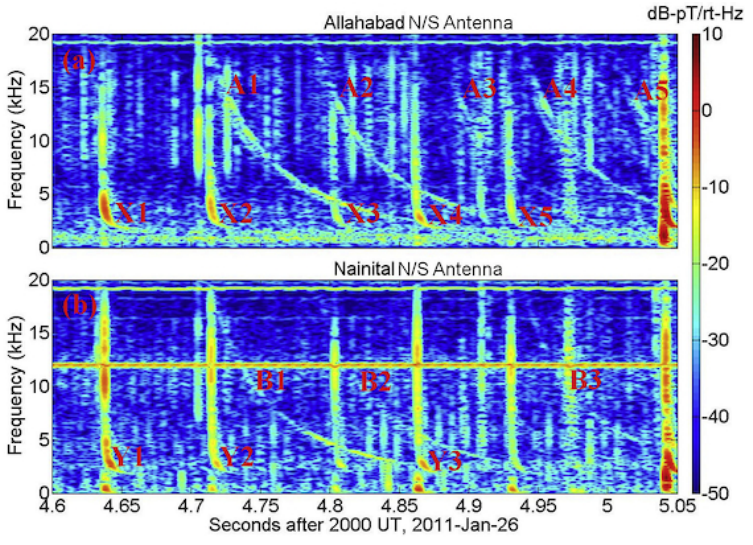
Very low latitude (L = 1.08) whistlers

Rajesh Singh, Morris B Cohen, Ajeet K. Maurya, B. Veenadhari, Sushil Kumar, P. Pant, Ryan K. Said, Umran S. Inan

First Published: 8 December 2012 Vol: 39, L23102 | DOI: 10.1029/2012GL054122

KEY POINTS

- One-to-one correlation of low latitude whistlers with its lightning location
- Results show, path of propagation is ducted and through low latitude ionosphere
- Results establishes whistlers can be used for low latitude ionosphere studies



1 of 4

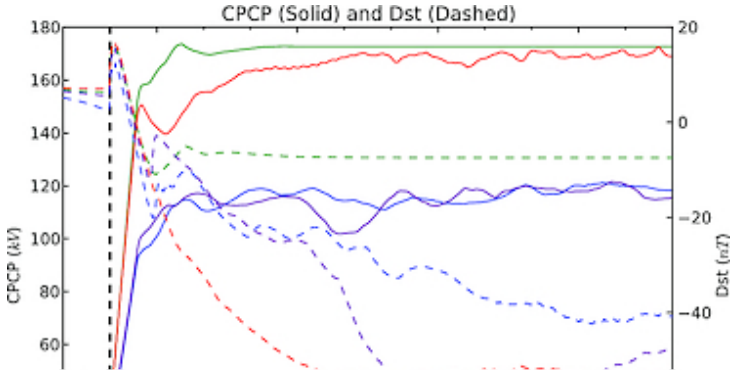
Ionospheric outflow and cross polar cap potential: What is the role of magnetospheric inflation?

D. T. Welling, S. G. Zaharia

First Published: 5 December 2012 Vol: 39, L23101 | DOI: 10.1029/2012GL054228

KEY POINTS

- Magnetospheric shape is not the cause of outflow-related CPCP reductions
- Outflow related CPCP reductions differ from ring current related drops
- Research into outflow related CPCP drops must look away from magnetopause shape



1 of 2

The Cryosphere

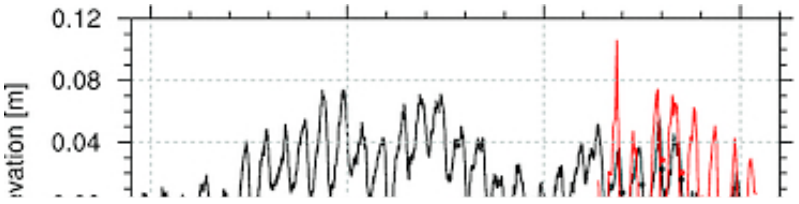
Quantifying the seasonal "breathing" of the Antarctic ice sheet

S. R. M. Ligtenberg, M. Horwath, M. R. van den Broeke, B. Legrésy

First Published: 13 December 2012 Vol: 39, L23501 | DOI: 10.1029/2012GL053628

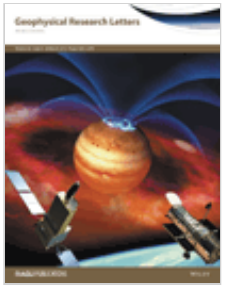
KEY POINTS

- Seasonal surface elevation changes on the Antarctic ice sheet are quantified
- The modeled amplitude explains 31% of the satellite observed seasonal variations



1 of 4

Current Issue



Volume 42
Issue 6
28 March 2015

All Issues
Browse a free sample issue

Find an article

and

or

Stay Connected to Eos

Access Eos Archive Issues

Issues from 1997-2014 are freely available to the public.

Older issues are available through AGU membership or through an institutional subscription.

Journal Resources

Call for Papers

Special Section Proposal Form

Personal Choice

Terms of Use

Cover Gallery

Institutional Subscription Rates

Get RSS Feed

Featured Special Collection

The Early Results from the Van Allen Probes

NASA's Van Allen Probes mission is designed to acquire data to solve key questions about the energetics and dynamics of the Earth's Van Allen Radiation belts that have arisen from active research in the domain in the past decades.

Editors' Highlights

- **What Causes Sunspot Pairs?**
- **Water Beneath the Surface of Mars, Bound up in Sulfates**
- **When Predicting Drought Risk, Do Not Overlook Temperature**
- **Changing Patterns in U.S. Air Quality**

See all »

Download the app

Download the Geophysical Research Letters app on your iPad

Upcoming AGU Meetings

Triennial Earth-Sun Summit

26 Apr - 1 May 2015
Indianapolis, Indiana, USA

2015 Joint Assembly

3-7 May 2015
Montreal, Canada

Chapman Conference on Evolution of the Asian Monsoon and its Impact on Landscape, Environment and Society: Using the Past as the Key to the Future

14-19 June 2015
Hong Kong SAR, China

See all »