



Volume 39, Issue 22

28 November 2012

Brief Detailed

Atmospheric Science

A new look at Greenland flow distortion and its impact on barrier flow, tip jets and coastal oceanography

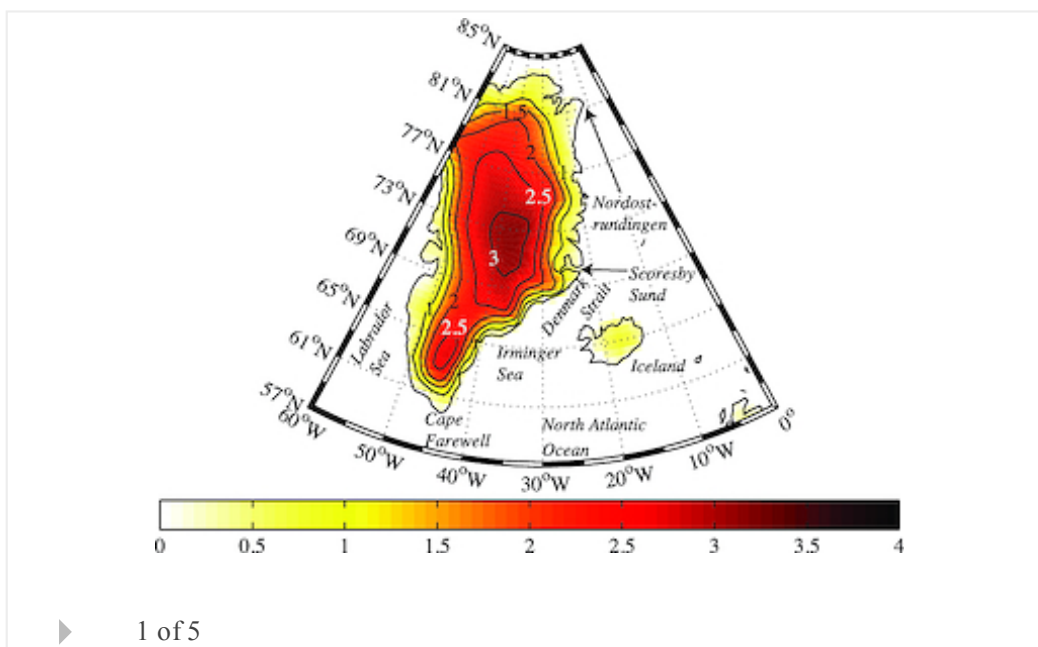
G. W. K. Moore

First Published: 30 November 2012 Vol: 39, L22806 | DOI: 10.1029/2012GL054017

KEY POINTS

- We present an enhanced climatology of Greenland tip jets and barrier flow
- We identify new regions where these phenomenon occur
- We confirm the important role that these events play in coastal oceanography

[Highlight](#)



Changes in the odds of extreme events in the Atlantic basin depending on the position of the extratropical jet

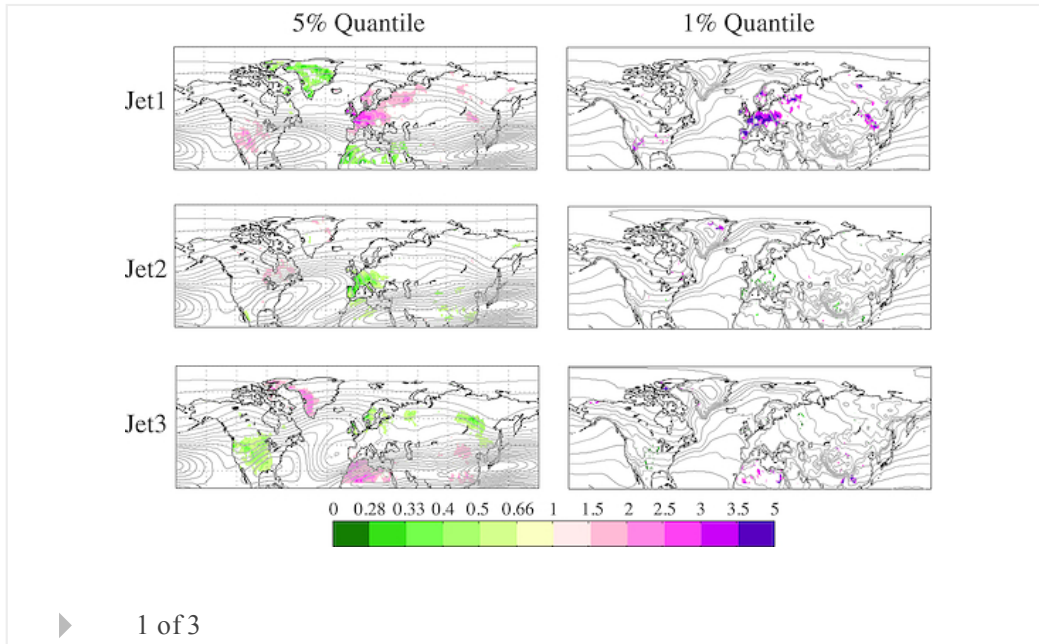
Irina Mahlstein, Olivia Martius, Clément Chevalier, David Ginsbourger

First Published: 29 November 2012 Vol: 39, L22805 | DOI: 10.1029/2012GL053993

KEY POINTS

- Position of jet stream matters for extreme events

- Certain areas are less or more likely to get hit by extremes
- Can be explained with typical flow patterns for the jet position



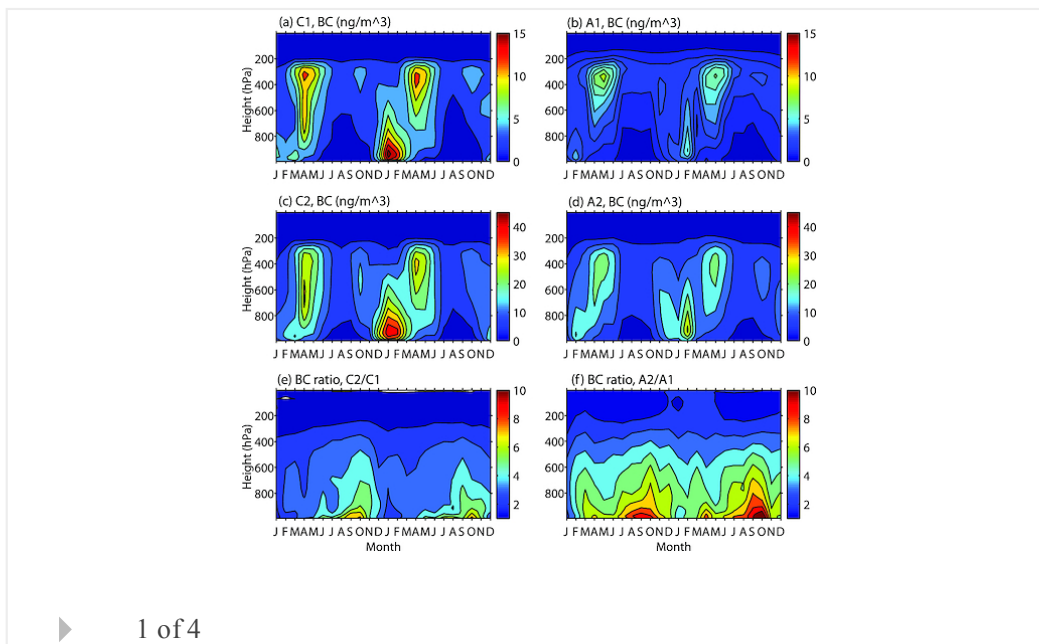
Transport of black carbon to polar regions: Sensitivity and forcing by black carbon

Cheng Zhou, Joyce E. Penner, Mark G. Flanner, Marion M. Bisiaux, Ross Edwards, Joseph R. McConnell

First Published: 28 November 2012 Vol: 39, L22804 | DOI: 10.1029/2012GL053388

KEY POINTS

- BC in polar regions are sensitive to meteorological fields and wet depositions
- Black carbon snow forcing is estimated to be +0.020 -+0.022 W m⁻²
- Discrepancy of BC concentration and deposition may be related to BC lifetime



Correction to “Aerosols in central California: Unexpectedly large contribution of coarse mode to aerosol radiative forcing”

Evgueni Kassianov, Mikhail Pekour, James Barnard

First Published: 27 November 2012 Vol: 39, L22899 | DOI: 10.1029/2012GL054518

Free

Low frequency electromagnetic radiation from sprite streamers

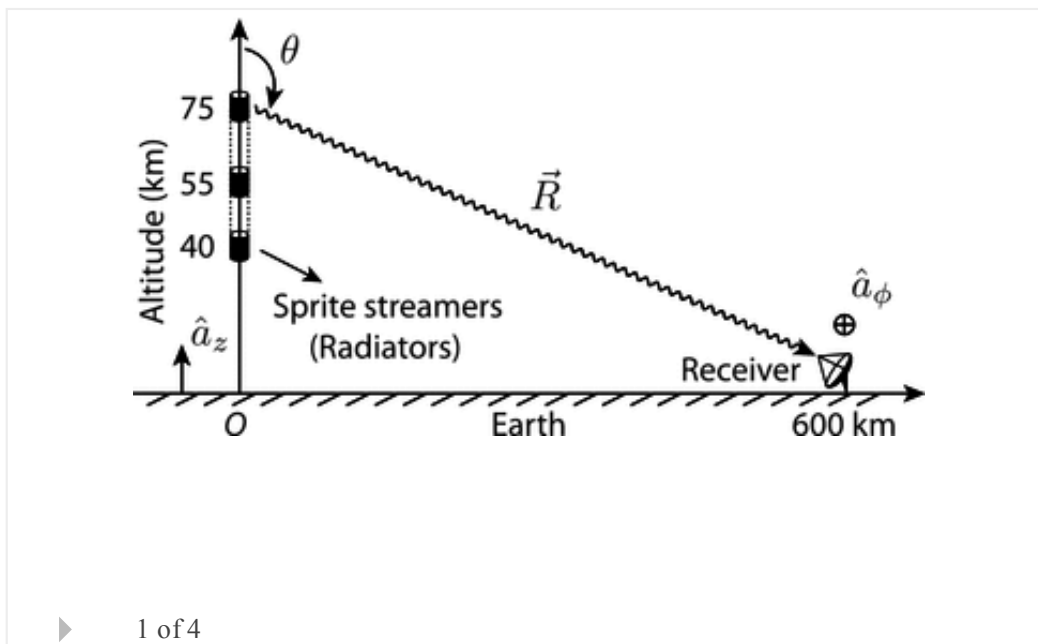
Jianqi Qin, Sebastien Celestin, Victor P. Pasko

First Published: 27 November 2012 Vol: 39, L22803 | DOI: 10.1029/2012GL053991

KEY POINTS

- Spectral content of sprite electromagnetic radiation is calculated
- Sprites produce higher-frequency EM radiation at lower altitudes
- Low frequency radiation can be produced by sprite streamers at ~40 km

Highlight



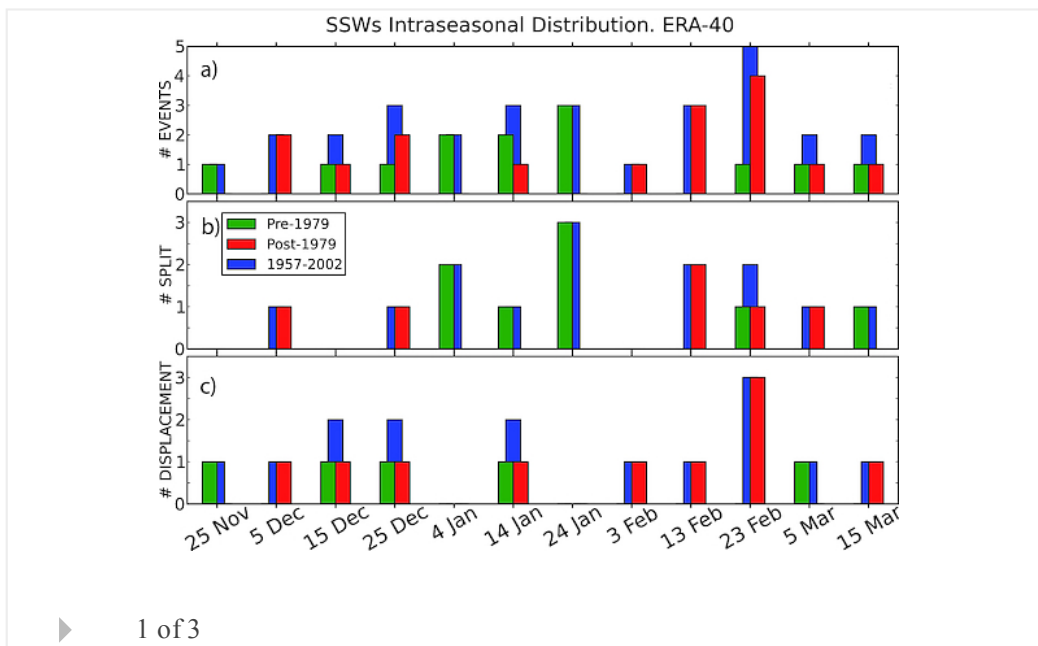
Changes in polar stratospheric temperature climatology in relation to stratospheric sudden warming occurrence

M. Gómez-Escolar, S. Fueglistaler, N. Calvo, D. Barriopedro

First Published: 22 November 2012 Vol: 39, L22802 | DOI: 10.1029/2012GL053632

KEY POINTS

- SSWs have an imprint in climatology according to its intraseasonal distribution
- There is a decadal change in the occurrence of SSWs
- Problems in temperature at the 10 hPa level in ERA40 and NCEP-NCAR reanalyses



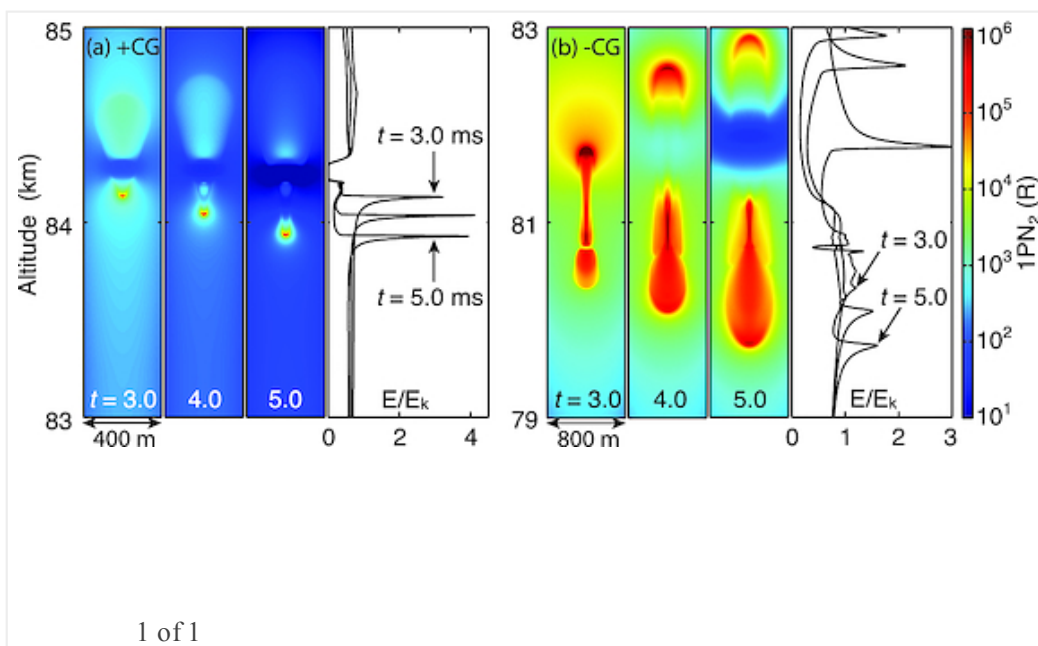
Minimum charge moment change in positive and negative cloud to ground lightning discharges producing sprites

Jianqi Qin, Sebastien Celestin, Victor P. Pasko

First Published: 17 November 2012 Vol: 39, L22801 | DOI: 10.1029/2012GL053951

KEY POINTS

- Numerical modeling of positive sprite initiation with 200 C km is achieved
- Related mesospheric ambient conditions are investigated
- Minimum charge moment of 300 C km producing negative sprites is predicted



Climate

Case studies for initialized decadal hindcasts and predictions for the Pacific region

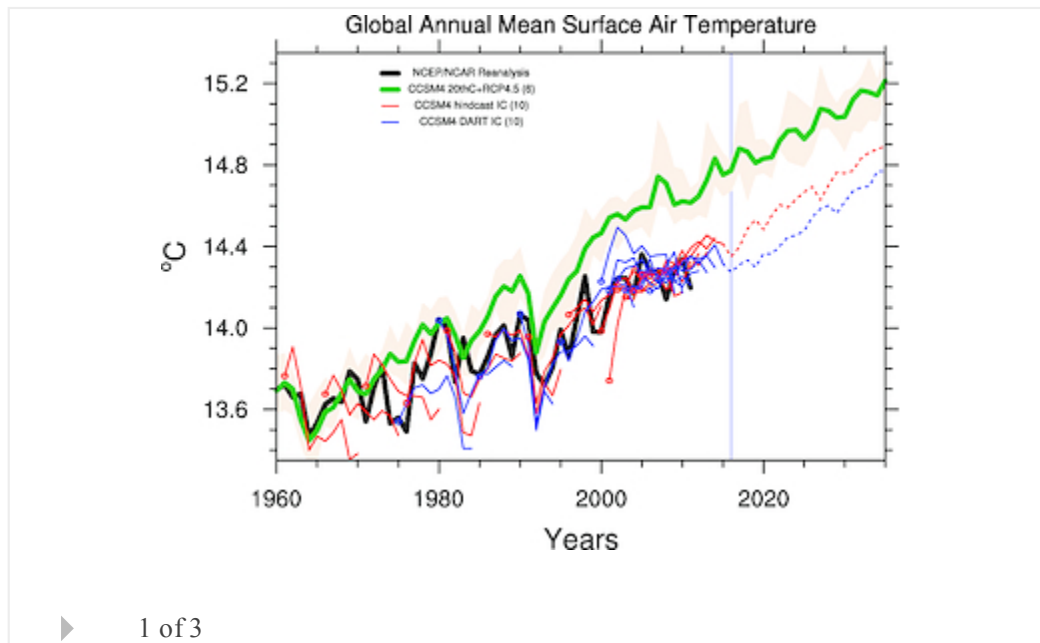
Gerald A. Meehl, Haiyan Teng

First Published: 30 November 2012 Vol: 39, L22705 | DOI: 10.1029/2012GL053423

KEY POINTS

- Initialized hindcasts capture past climate shifts
- A 30 year hindcast outperforms the free-running model
- A 30 year prediction shows less warming than the free-running model

Highlight



▶ 1 of 3

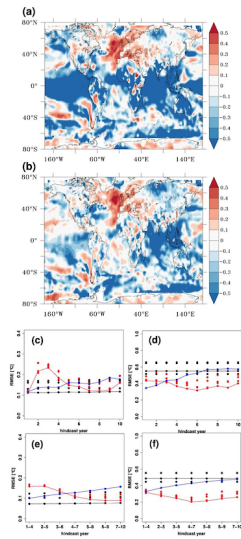
Forecast skill of multi-year seasonal means in the decadal prediction system of the Max Planck Institute for Meteorology

W. A. Müller, J. Baehr, H. Haak, J. H. Jungclaus, J. Kröger, D. Matei, D. Notz, H. Pohlmann, J. S. von Storch, J. Marotzke

First Published: 30 November 2012 Vol: 39, L22707 | DOI: 10.1029/2012GL053326

KEY POINTS

- We provide decadal prediction for IPCC AR5
- For the first time multi-year seasonal means are considered
- Skill for summer in central Europe are associated with North Atlantic SST



▶ 1 of 3

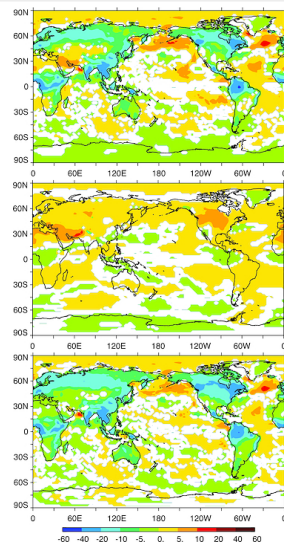
Nonlocal component of radiative flux perturbation

Yi Ming, V. Ramaswamy

First Published: 30 November 2012 Vol: 39, L22706 | DOI: 10.1029/2012GL054050

KEY POINTS

- The oceanic RFP is associated with reduced low cloud amount
- The tropical land shortwave forcing has a strong hydrological impact
- The hydrological cycle is relatively insensitive to an extratropical forcing



▶ 1 of 4

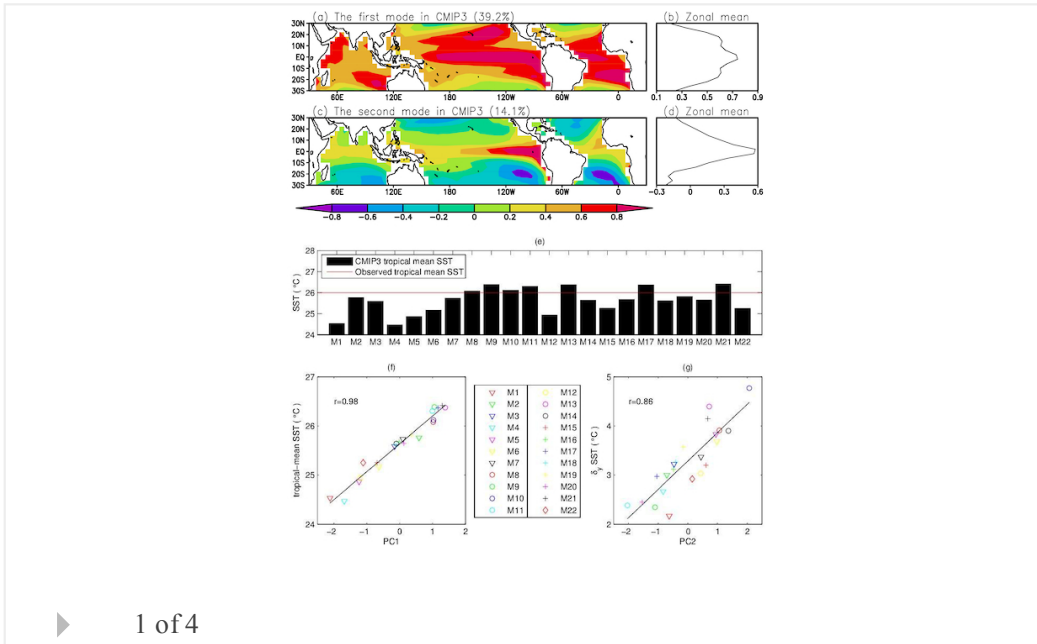
Origins of tropical-wide SST biases in CMIP multi-model ensembles

Gen Li, Shang-Ping Xie

First Published: 29 November 2012 Vol: 39, L22703 | DOI: 10.1029/2012GL053777

KEY POINTS

- Our analysis suggests two types of tropical-wide SST biases in climate models
- The first type originates from biases in atmospheric simulations of cloud cover
- The second type is linked to oceanic representation of the thermocline depth



Attribution of direct ozone radiative forcing to spatially resolved emissions

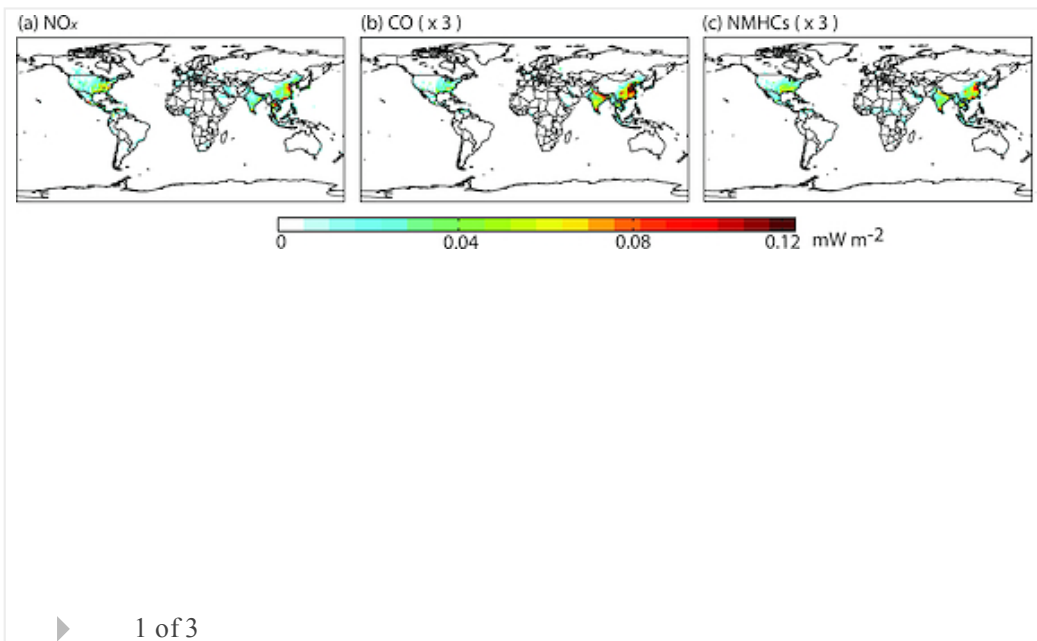
K. Bowman, D. K. Henze

First Published: 29 November 2012 Vol: 39, L22704 | DOI: 10.1029/2012GL053274

KEY POINTS

- Attribution of ozone radiative forcing to high resolution emissions
- 8% of the ozone DRF from global emissions can be attributed to 15 regions
- Emission reductions vary intra-continently by 3-7 and globally by over 10

Highlight



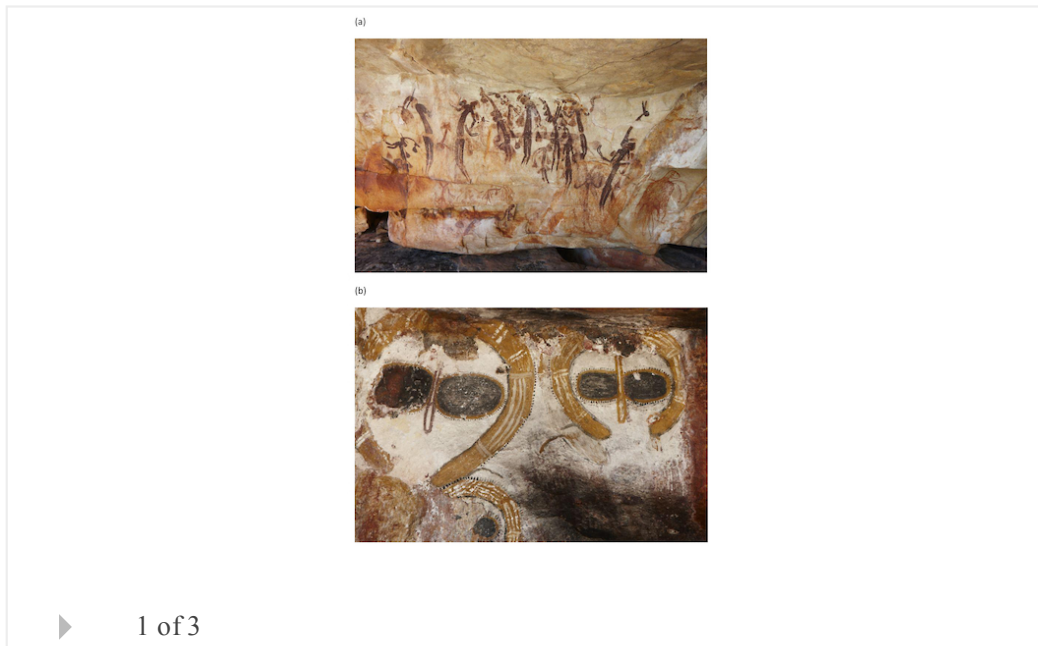
Evidence of ENSO mega-drought triggered collapse of prehistory Aboriginal society in northwest Australia

Hamish McGowan, Samuel Marx, Patrick Moss, Andrew Hammond

First Published: 28 November 2012 Vol: 39, L22702 | DOI: 10.1029/2012GL053916

KEY POINTS

- Millennial scale failure of the Australian monsoon
- ENSO mega-drought
- Climate forced rapid change of Aboriginal cultures



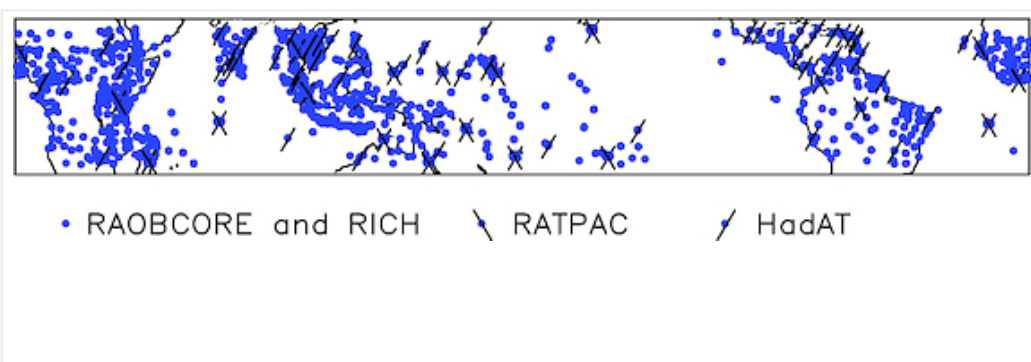
Reexamining the warming in the tropical upper troposphere: Models versus radiosonde observations

Dian J. Seidel, Melissa Free, James S. Wang

First Published: 22 November 2012 Vol: 39, L22701 | DOI: 10.1029/2012GL053850

KEY POINTS

- Warming amplification in models exceeds satellite-observed
- Comparisons of models with radiosonde data only partially support this finding
- Results are sensitive to dataset choice and upper tropospheric level analyzed



▶ 1 of 3

Hydrology and Land Surface Studies

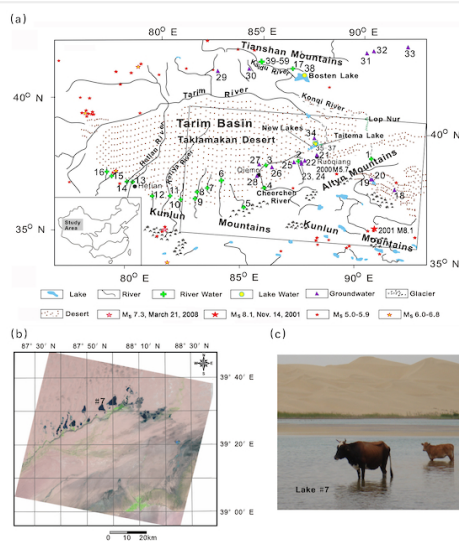
New lakes in the Taklamakan Desert

Jiansheng Chen, Chi-Yuen Wang, Hongbing Tan, Wenbo Rao, Xiaoyan Liu, Xiaoxu Sun

First Published: 29 November 2012 Vol: 39, L22402 | DOI: 10.1029/2012GL053985

KEY POINTS

- New lakes in desert
- Lake water traced to meltwater in mountains
- Increased meltwater increased discharge to lakes



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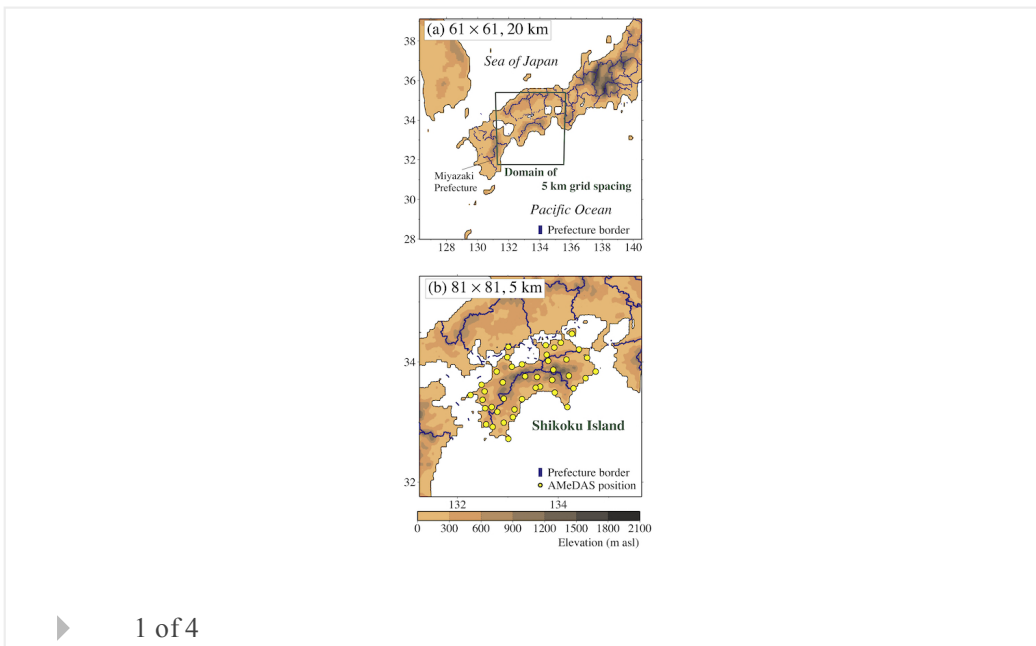
Impacts of land-use changes on surface warming rates and rice yield in Shikoku, western Japan

Ryuhei Yoshida, Toshichika Iizumi, Motoki Nishimori, Masayuki Yokozawa

First Published: 28 November 2012 Vol: 39, L22401 | DOI: 10.1029/2012GL053711

KEY POINTS

- Shikoku in western Japan faces a marked land use change decrease
- Paddy fields converts building lots and roads in recent two decades
- Such changes induce small but important impacts on warming rate and rice yield



Oceans

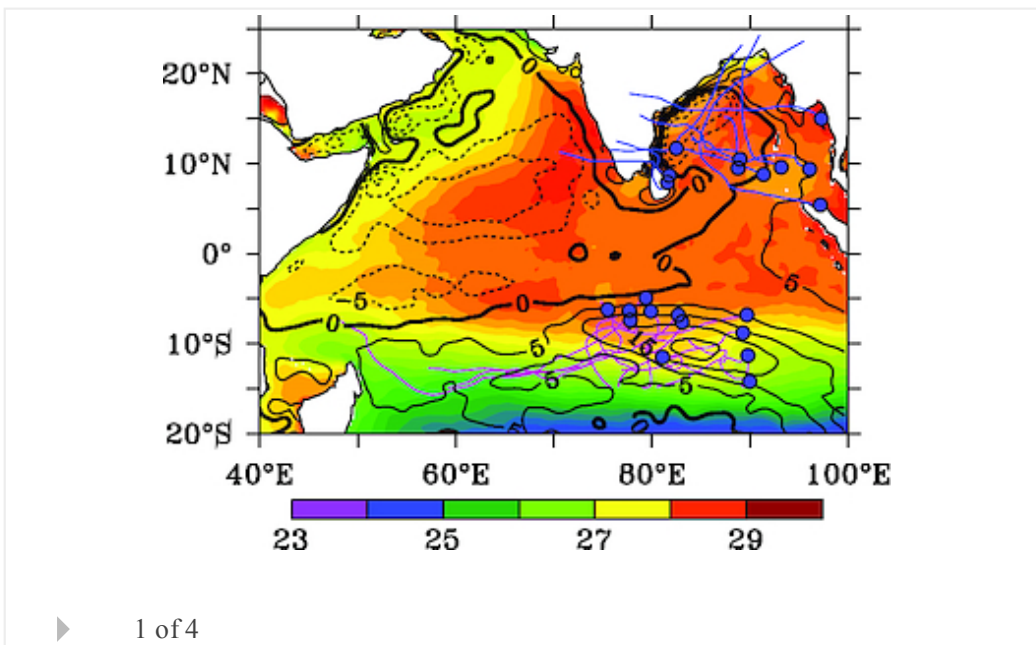
Impact of tropical cyclones on the intensity and phase propagation of fall Wyrтки jets

P. Sreenivas, J. S. Chowdary, C. Gnanaseelan

First Published: 17 November 2012 Vol: 39, L22603 | DOI: 10.1029/2012GL053974

KEY POINTS

- Tropical cyclones intensify Wyrтки jets and redistribute mass and heat transport
- Intensity and phase propagation of Wyrтки jets are driven by the cyclones
- Tropical cyclones affect large scale air-sea interaction through ocean dynamics



Ocean temperature response to idealized Gleissberg and de Vries solar cycles in a

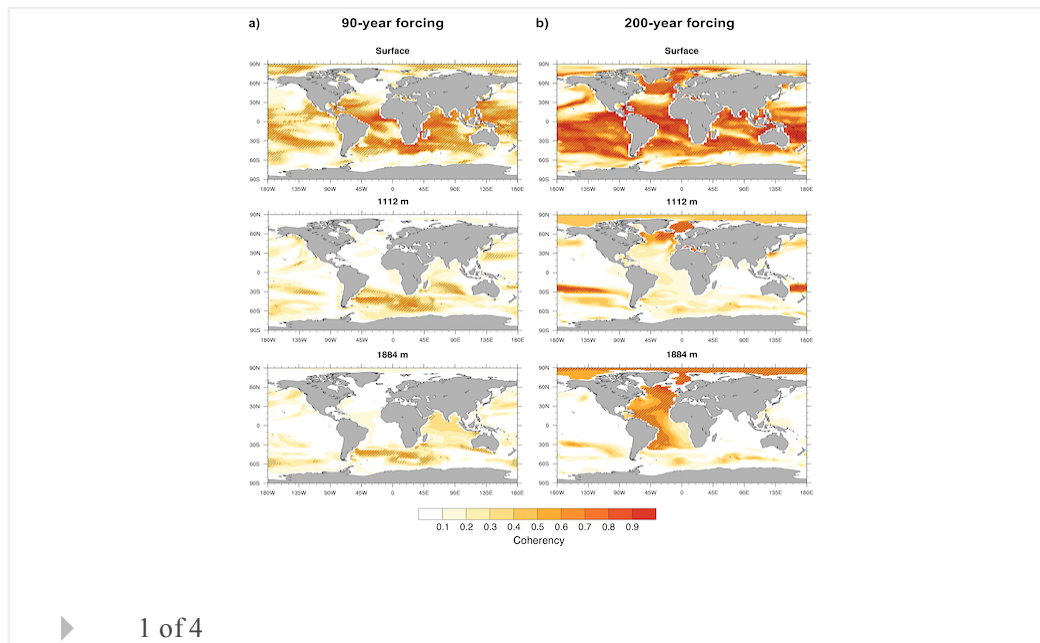
comprehensive climate model

Anne Seidenglanz, Matthias Prange, Vidya Varma, Michael Schulz

First Published: 17 November 2012 Vol: 39, L22602 | DOI: 10.1029/2012GL053624

KEY POINTS

- Idealized solar forcing experiments are performed with a global climate model
- Solar anomalies are shown to penetrate the ocean to deep-water levels
- The mechanisms of solar signal propagation are dependent on the forcing period



Correction to “High-resolution analysis of the gravest seismic normal modes after the 2004 $M_w = 9$ Sumatra earthquake using superconducting gravimeter data”

S. Rosat, T. Sato, Y. Imanishi, J. Hinderer, Y. Tamura, H. McQueen, M. Ohashi

First Published: 16 November 2012 Vol: 39, L22601 | DOI: 10.1029/2012GL054248

Free

Planets

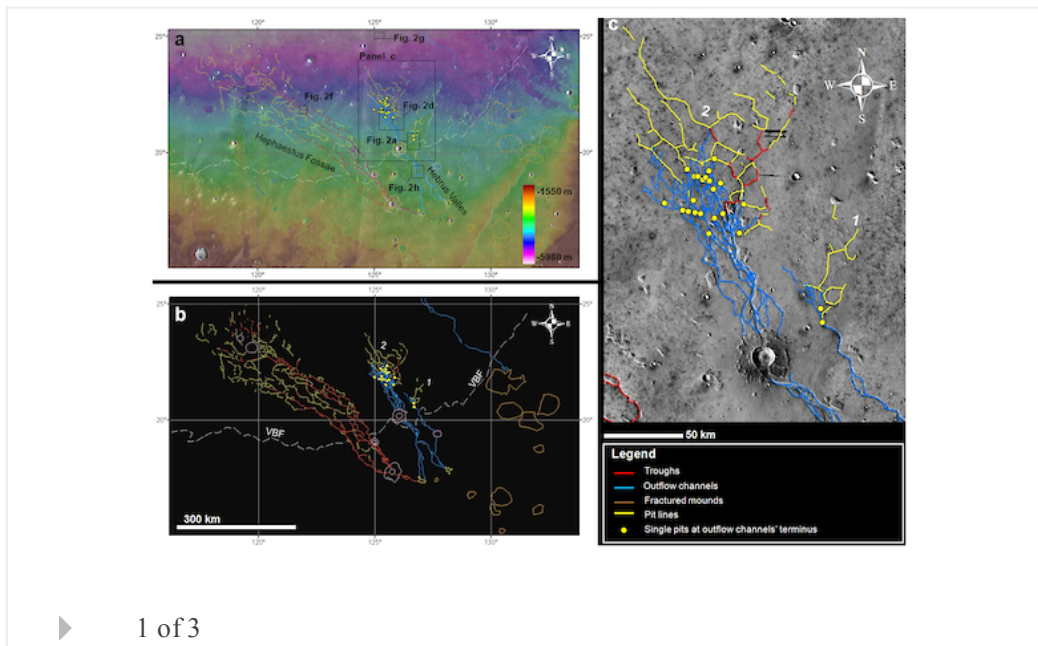
Infiltration of Martian outflow channel floodwaters into lowland cavernous systems

J. Alexis P. Rodriguez, Mary Bourke, Kenneth L. Tanaka, Hideaki Miyamoto, Jeffrey Kargel, Victor Baker, Alberto G. Fairén, Richard J. Davies, Lynne Bridget, Rogelio Linares Santiago, et al

First Published: 29 November 2012 Vol: 39, L22201 | DOI: 10.1029/2012GL053225

KEY POINTS

- Evidence for infiltration of outflow channel floodwaters on Mars
- Evidence for extensive northern plains cavernous systems
- Evidence for Amazonian hydrospheric recharge



Solid Earth

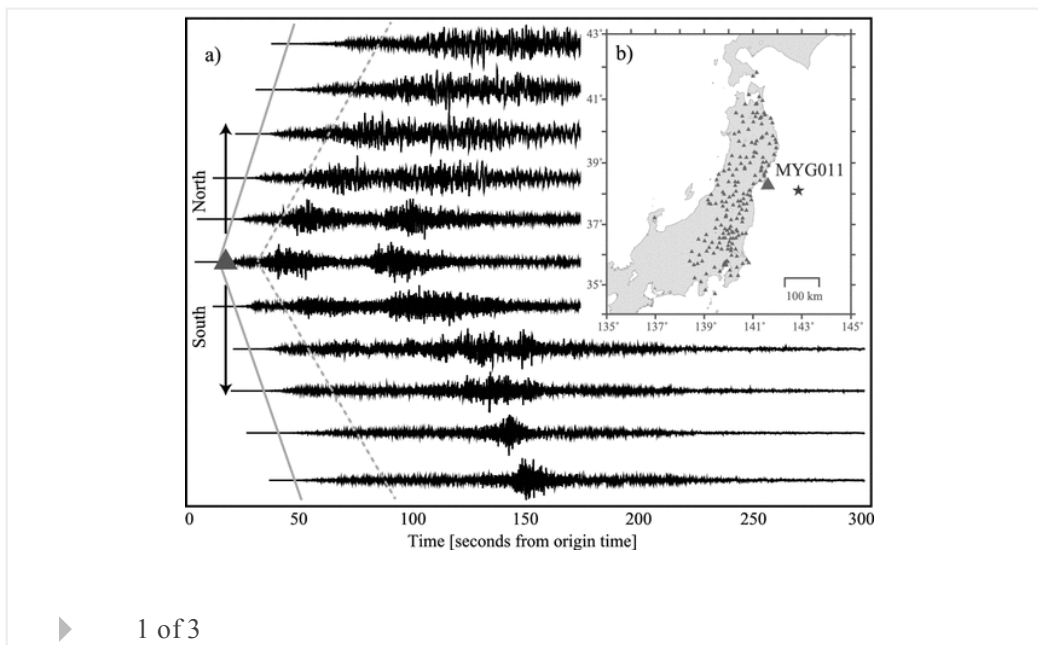
Early magnitude and potential damage zone estimates for the great Mw 9 Tohoku-Oki earthquake

Simona Colombelli, Aldo Zollo, Gaetano Festa, Hiroo Kanamori

First Published: 30 November 2012 Vol: 39, L22306 | DOI: 10.1029/2012GL053923

KEY POINTS

- Evolutionary approach for the rapid magnitude estimation of a large event
- Implementation and application of our methodology for early warning
- Estimated magnitude corresponds to the first rupture moment release



Multi-fault rupture and successive triggering during the 2012 Mw 8.6 Sumatra

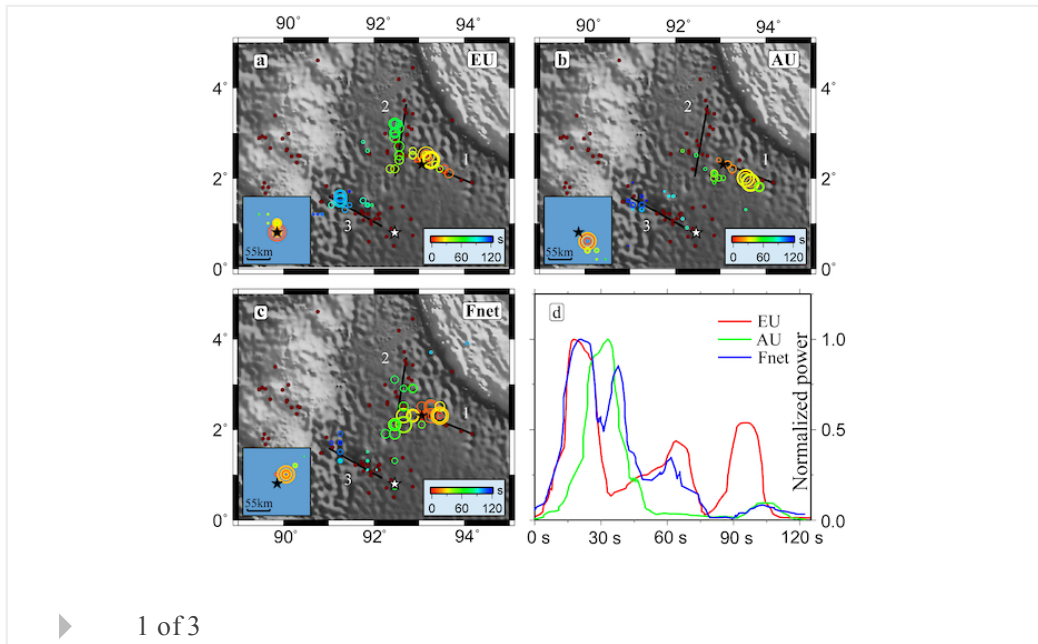
offshore earthquake

Hao Zhang, Jiawei Chen, Zengxi Ge

First Published: 29 November 2012 Vol: 39, L22305 | DOI: 10.1029/2012GL053805

KEY POINTS

- The rupture process were imaged using H-F P waves from three seismic networks
- The earthquake sequentially ruptured three separated and conjugate faults
- The last two causative faults were triggered sequentially

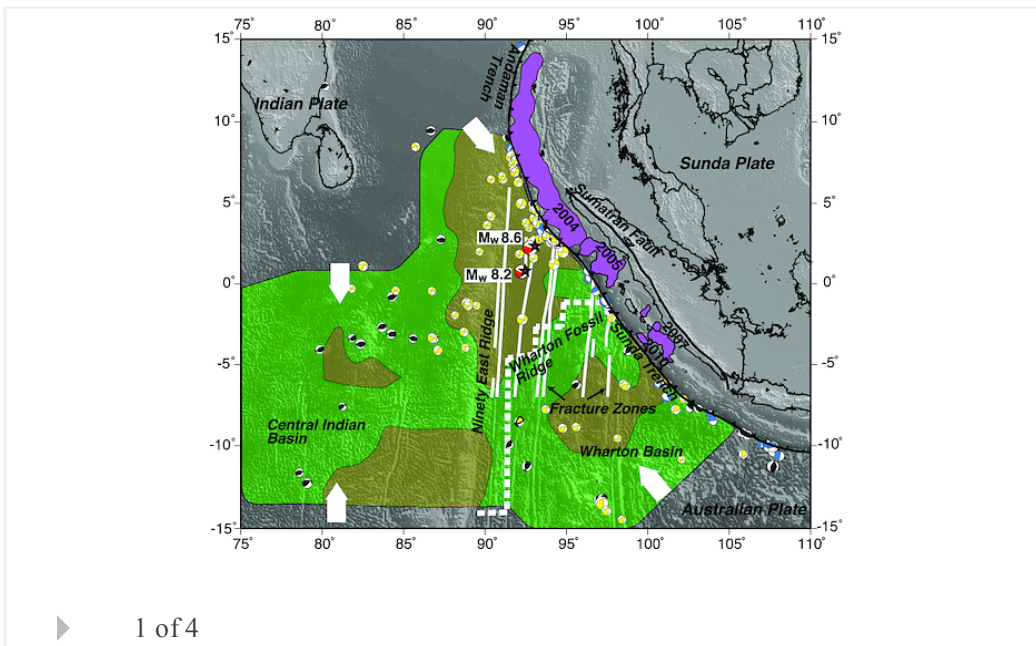
**Stress triggering of the great Indian Ocean strike-slip earthquakes in a diffuse plate boundary zone**

Kelly Wiseman, Roland Bürgmann

First Published: 28 November 2012 Vol: 39, L22304 | DOI: 10.1029/2012GL053954

KEY POINTS

- Seismicity has increased in the Indian Ocean lithosphere since 2004
- Megathrust earthquakes stressed the fractures in the diffuse plate boundary zone
- Postseismic processes further loaded the oceanic fracture zones



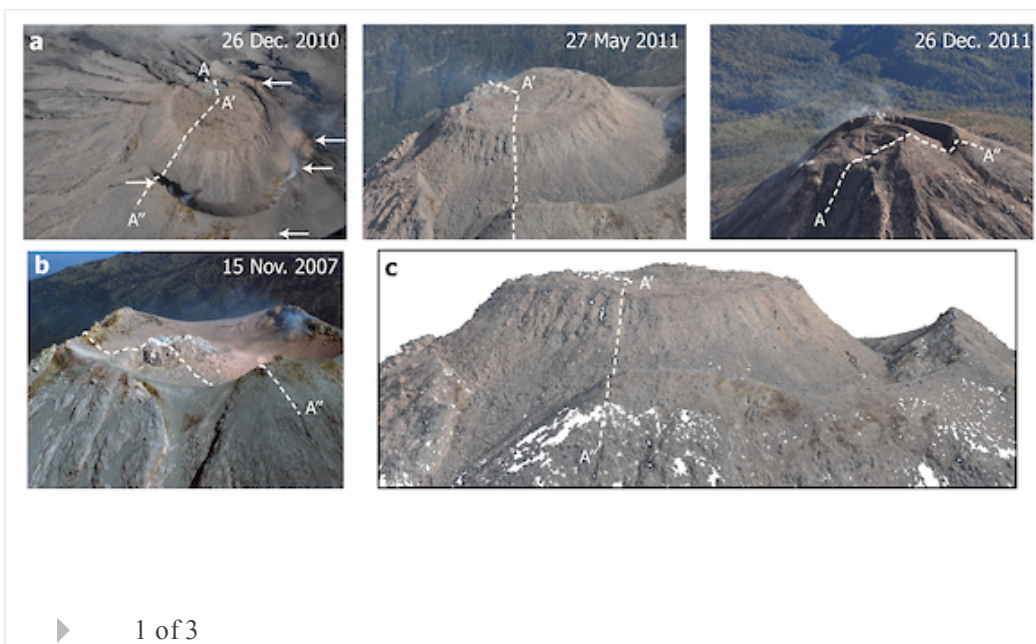
Identification of structural controls in an active lava dome with high resolution DEMs: Volcán de Colima, Mexico

M. R. James, N. Varley

First Published: 21 November 2012 Vol: 39, L22303 | DOI: 10.1029/2012GL054245

KEY POINTS

- High resolution DEMs of active dome from consumer camera photos
- Initial dome morphology reflects generally ductile emplacement regime
- Post-explosion morphology highlights internal structures and heterogeneity



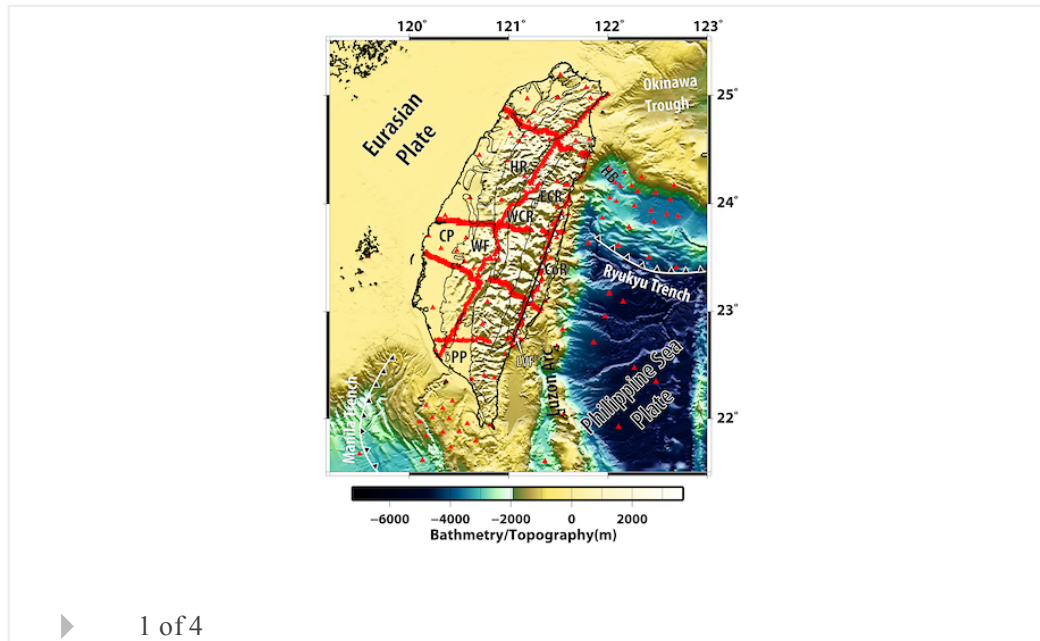
Seismic evidence for the α - β quartz transition beneath Taiwan from Vp/Vs tomography

H. Kuo-Chen, F. T. Wu, D. M. Jenkins, J. Mechie, S. W. Roecker, C.-Y. Wang, B.-S. Huang

First Published: 20 November 2012 Vol: 39, L22302 | DOI: 10.1029/2012GL053649

KEY POINTS

- Seismic signature of a-b quartz transition
- Felsic crust in the mountain belts
- V_p/V_s tomography



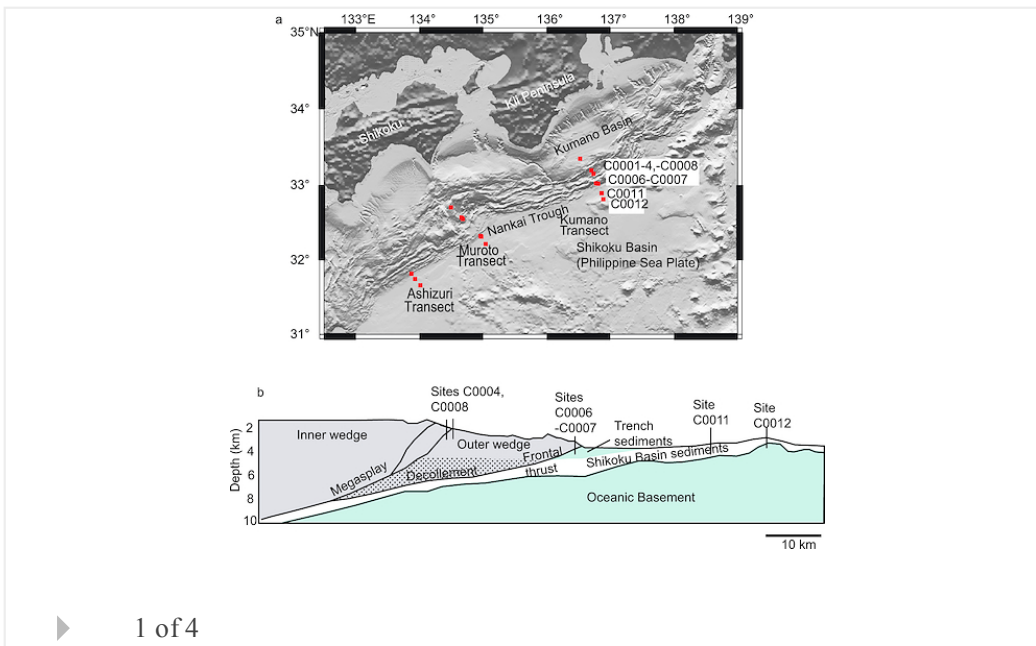
The impact of megasplay faulting and permeability contrasts on Nankai Trough subduction zone pore pressures

Elizabeth J. Sreaton, Shemin Ge

First Published: 20 November 2012 Vol: 39, L22301 | DOI: 10.1029/2012GL053595

KEY POINTS

- Megasplay faulting increases footwall pore pressures
- Permeability contrasts can produce boundaries in excess pore pressures
- Coupled fluid and deformation modeling yields insights on excess pore pressures



▶ 1 of 4

Space Sciences

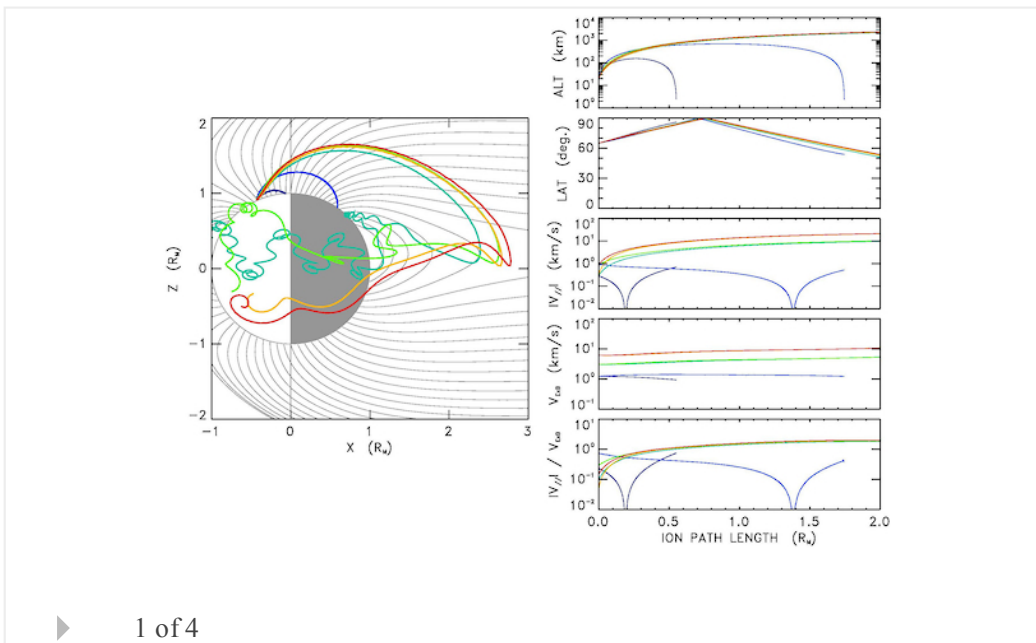
Centrifugally stimulated exospheric ion escape at Mercury

D. C. Delcourt, K. Seki, N. Terada, T. E. Moore

First Published: 30 November 2012 Vol: 39, L22105 | DOI: 10.1029/2012GL054085

KEY POINTS

- Large centrifugal acceleration at Mercury
- Escape of planetary material controlled by centrifugal acceleration
- Enhanced convection yields enhanced structuring of the ion flow



▶ 1 of 4

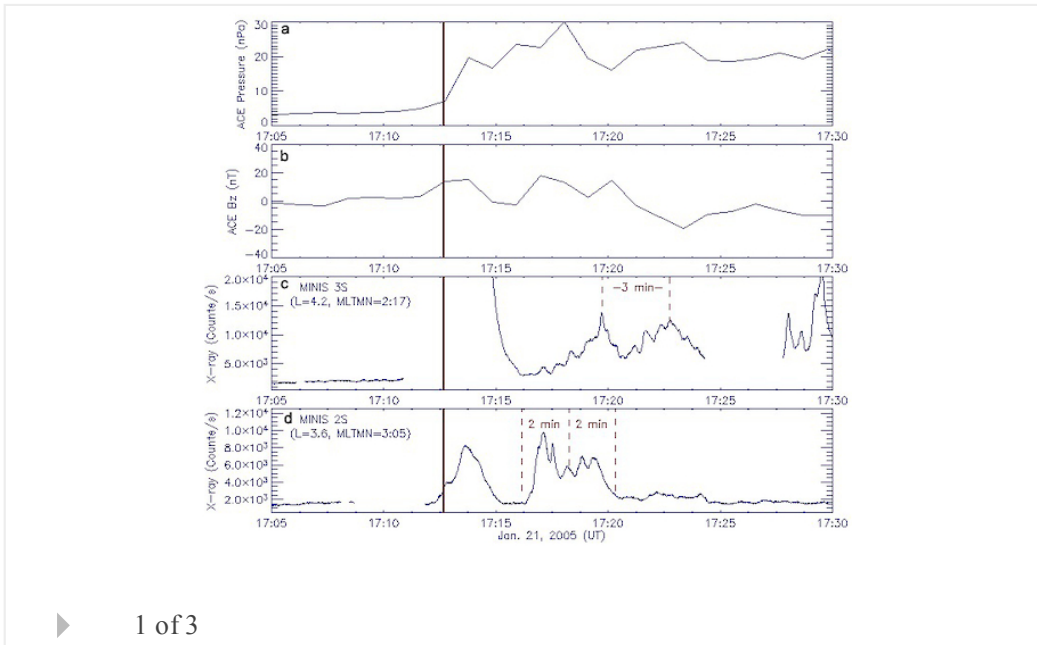
Energetic radiation belt electron precipitation showing ULF modulation

T. Brito, L. Woodger, M. Hudson, R. Millan

First Published: 27 November 2012 Vol: 39, L22104 | DOI: 10.1029/2012GL053790

KEY POINTS

- A new mechanism explains ULF wave modulation of MeV electron precipitation



▶ 1 of 3

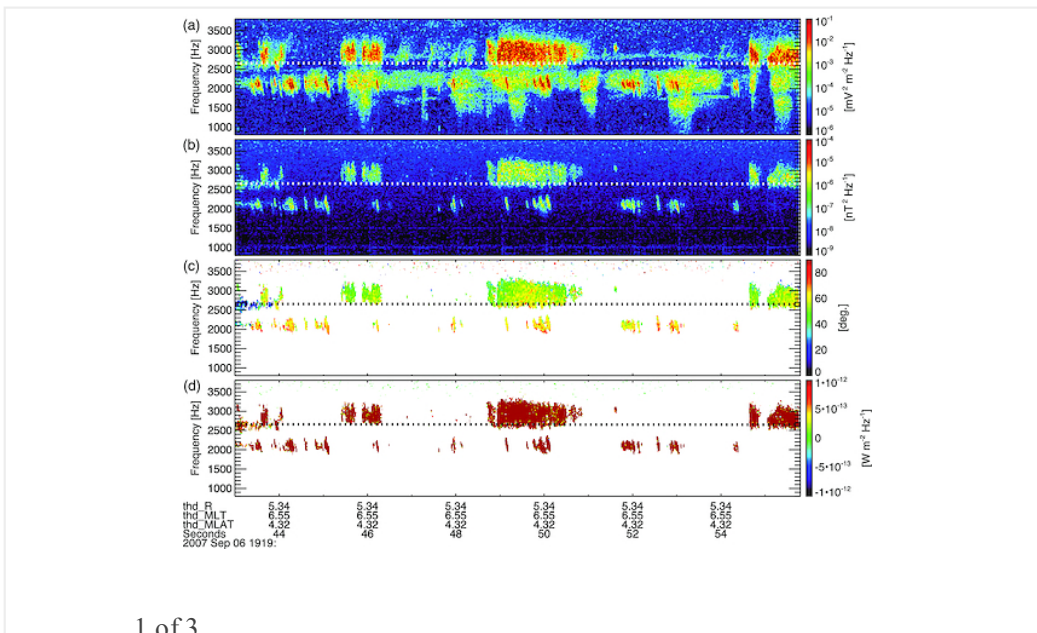
Source location of falling tone chorus

Satoshi Kurita, Hiroaki Misawa, Christopher M. Cully, Olivier Le Contel, Vassilis Angelopoulos

First Published: 21 November 2012 Vol: 39, L22102 | DOI: 10.1029/2012GL053929

KEY POINTS

- Source location of falling tone chorus is statistically investigated
- The magnetic equator is the common source location for rising and falling tones
- Model for falling tone chorus generation should account for oblique propagation



1 of 3

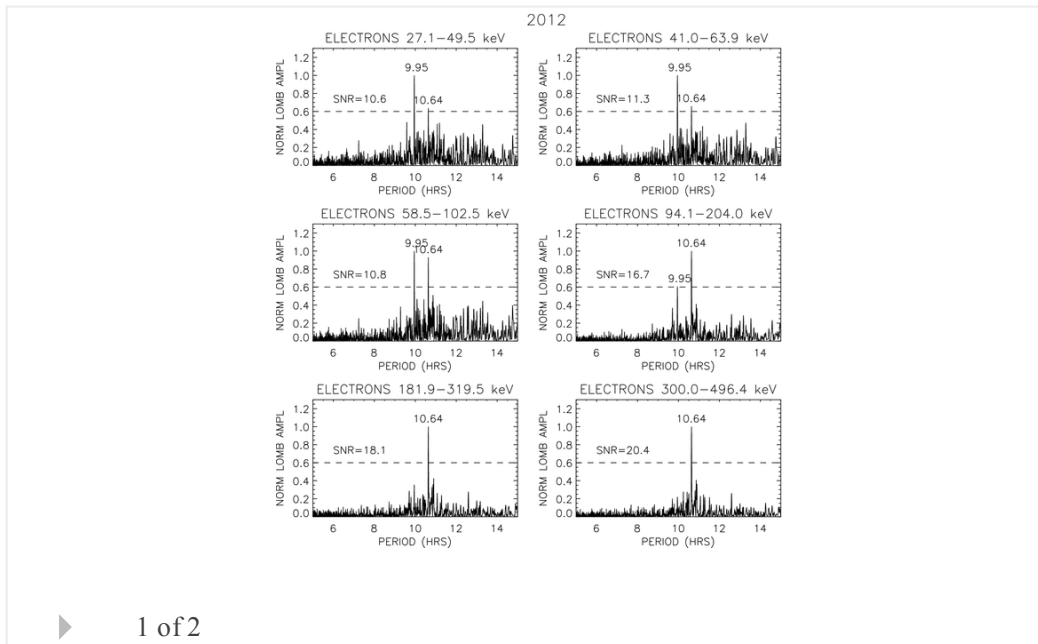
Unusually short period in electrons at Saturn

J. F. Carbary, D. G. Mitchell, S. M. Krimigis, N. Krupp

First Published: 21 November 2012 Vol: 39, L22103 | DOI: 10.1029/2012GL054019

KEY POINTS

- By far the shortest period (9.95 hours) ever measured in Saturn's magnetosphere
- 9.95 and 10.64 hr periods for $E < 100\text{keV}$; 10.64 hours for $E > 200\text{keV}$
- Shift in model paradigm or extreme super-rotation of ionosphere



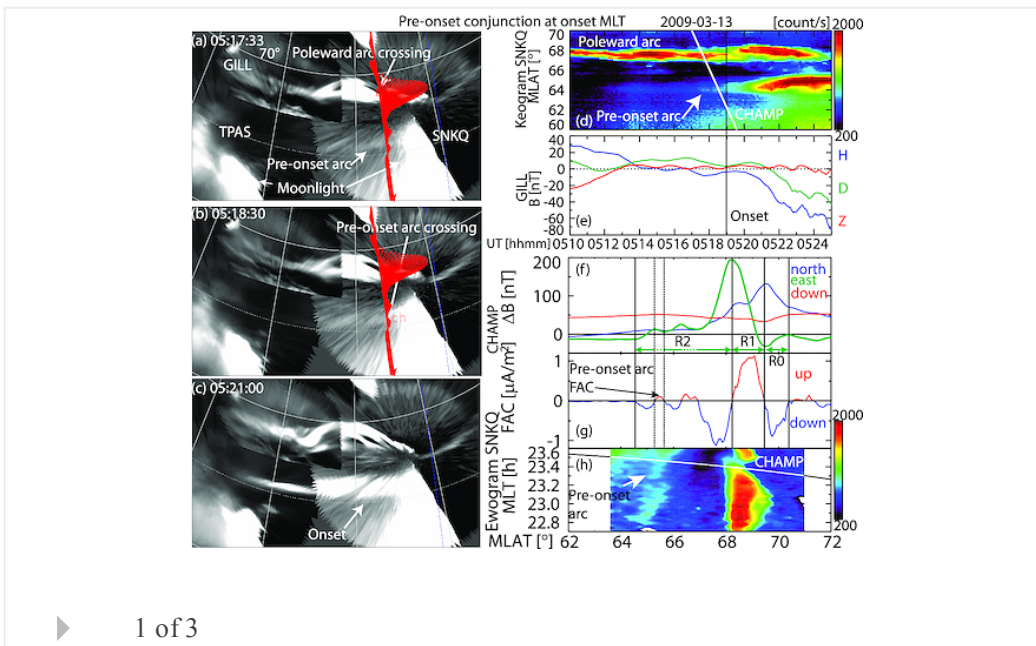
Relation of substorm pre-onset arc to large-scale field-aligned current distribution

Y. Nishimura, L. R. Lyons, T. Kikuchi, V. Angelopoulos, E. F. Donovan, S. B. Mende, H. Lühr

First Published: 20 November 2012 Vol: 39, L22101 | DOI: 10.1029/2012GL053761

KEY POINTS

- Conjunctions between THEMIS ASIs and CHAMP just before onset are presented
- Pre-onset arc near onset MLT is found to be embedded in downward R2 FAC
- The FAC feature at onset MLT is different from those at other MLTs



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