



# Volume 39, Issue 19

16 October 2012

Brief  Detailed

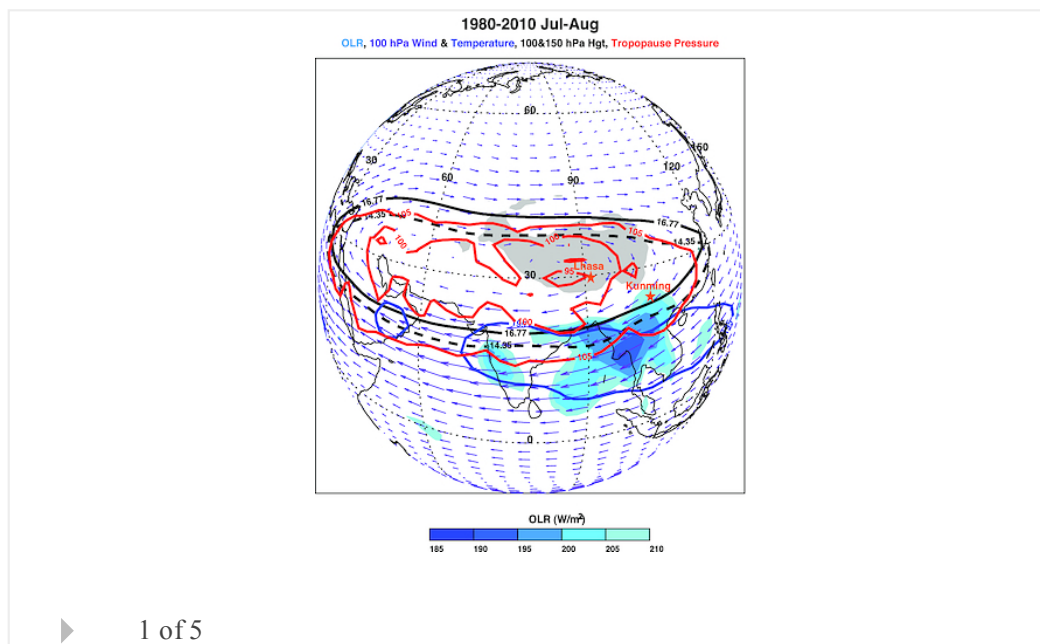
## Atmospheric Science

### In situ water vapor and ozone measurements in Lhasa and Kunming during the Asian summer monsoon

Jianchun Bian, Laura L. Pan, Laura Paulik, Holger Vömel, Hongbin Chen, Daren Lu  
 First Published: 12 October 2012 Vol: 39, L19808 | DOI: 10.1029/2012GL052996

#### KEY POINTS

- First in situ measurements of water vapor and ozone within the ASM anticyclone
- ASM anticyclone has higher water vapor and lower ozone in the UTLS
- ASM region has a higher cold point tropopause level



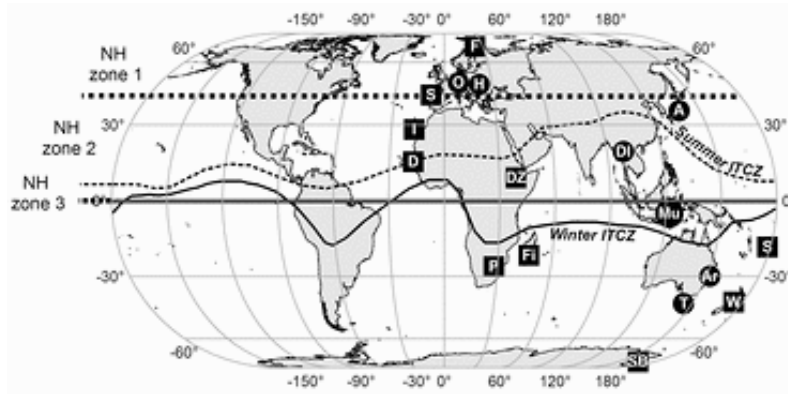
### Monsoonal influence on Southern Hemisphere $^{14}\text{CO}_2$

Quan Hua, Mike Barbetti, Vladimir A. Levchenko, Rosanne D. D'Arrigo, Brendan M. Buckley, Andrew M. Smith

First Published: 11 October 2012 Vol: 39, L19806 | DOI: 10.1029/2012GL052971

#### KEY POINTS

- Monsoonal circulation strongly influences tropical  $^{14}\text{CO}_2$  levels
- The (current) zonal distribution of bomb  $^{14}\text{C}$  used for  $^{14}\text{C}$  dating is refined



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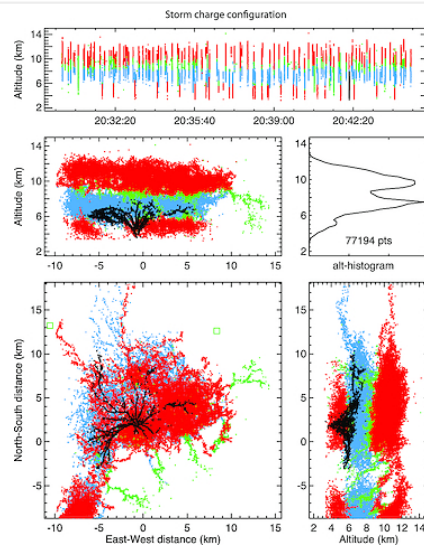
## VHF lightning mapping observations of a triggered lightning flash

H. E. Edens, K. B. Eack, E. M. Eastvedt, J. J. Trueblood, W. P. Winn, P. R. Krehbiel, G. D. Aulich, S. J. Hunyady, W. C. Murray, W. Rison, et al

First Published: 11 October 2012 Vol: 39, L19807 | DOI: 10.1029/2012GL053666

### KEY POINTS

- Positive breakdown can produce weak, impulsive VHF emissions
- Positive leaders can be mapped using VHF time-of-arrival techniques



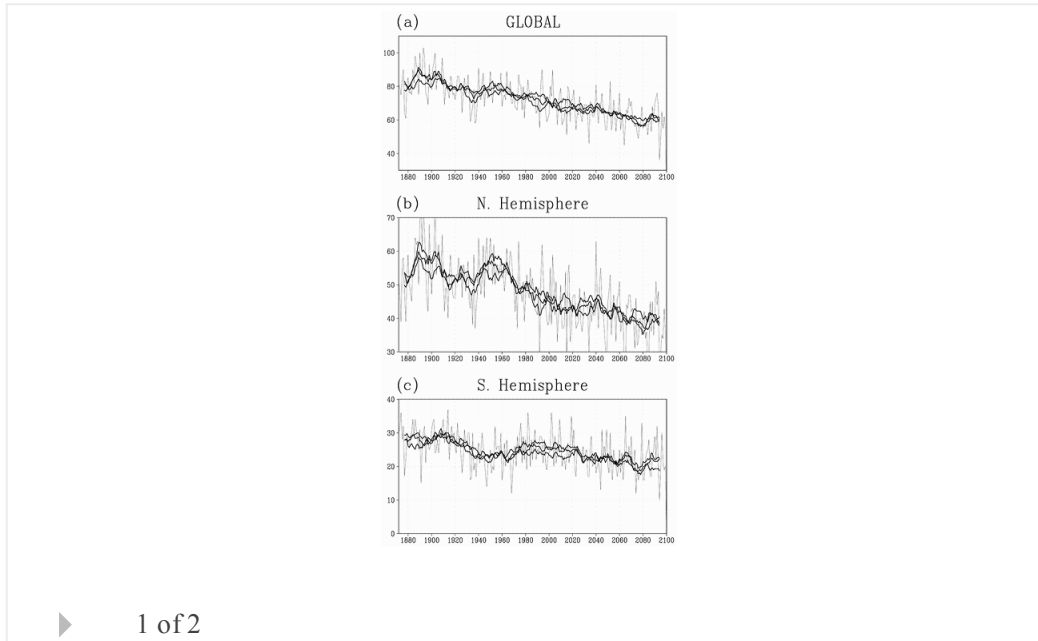
▶ 1 of 4

## Decreasing trend of tropical cyclone frequency in 228-year high-resolution AGCM simulations

Masato Sugi, Jun Yoshimura

**KEY POINTS**

- Model simulations indicate a clear decreasing trend of TC frequency
- The same model projects a decrease of TC frequency in the future
- The decreasing trend of TC is closely related to that of upward mass flux

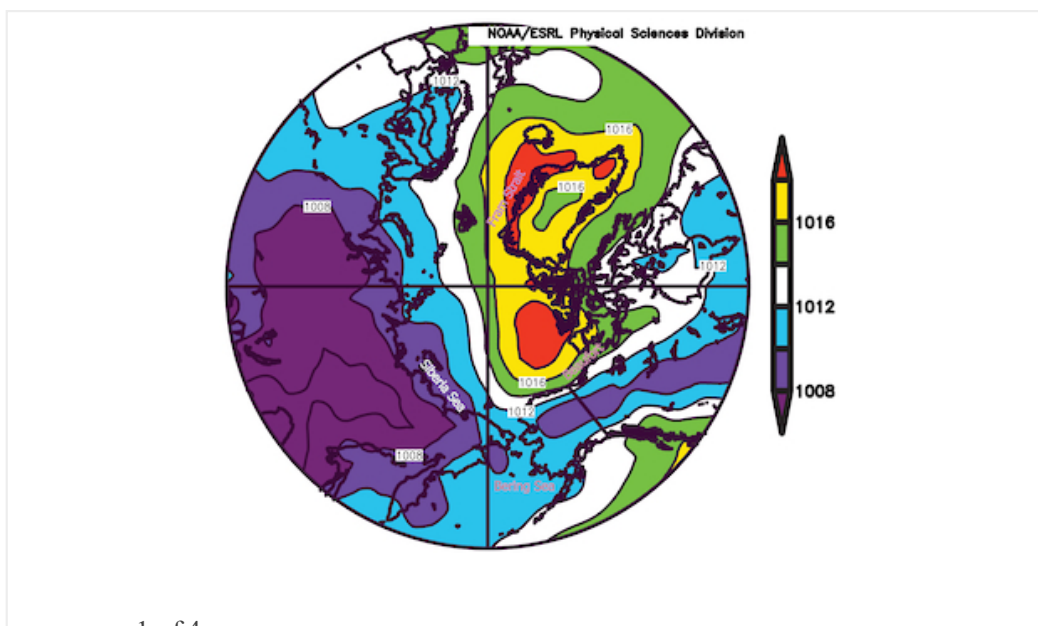
**Highlight****The recent shift in early summer Arctic atmospheric circulation**

James E. Overland, Jennifer A. Francis, Edward Hanna, Muyin Wang

First Published: 10 October 2012 Vol: 39, L19804 | DOI: 10.1029/2012GL053268

**KEY POINTS**

- There is an apparent sustained shift in early summer Arctic winds since 2007
- Such Arctic changes are linked to increased North American atmospheric blocking
- Highlights potential connectivity of Arctic climate and mid-latitude weather



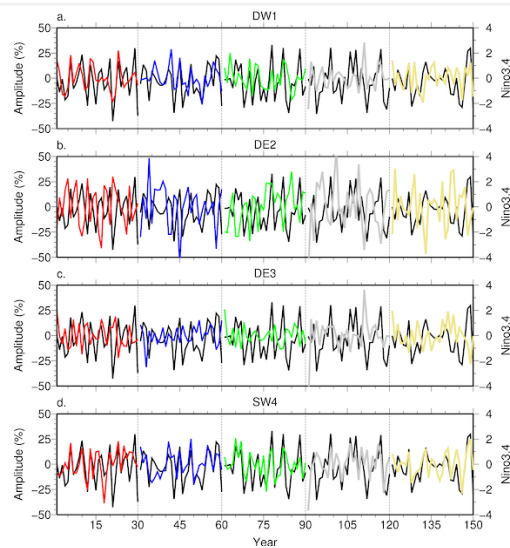
## Tidal variability in the mesosphere and lower thermosphere due to the El Niño–Southern Oscillation

N. M. Pedatella, H.-L. Liu

First Published: 9 October 2012 Vol: 39, L19802 | DOI: 10.1029/2012GL053383

### KEY POINTS

- The ENSO is a source of interannual variability for tides in the MLT
- Significant changes occur in the DW1, DE2, DE3, and SW4
- During El Niño the DW1 and SW4 are increased and DE2 and DE3 are decreased



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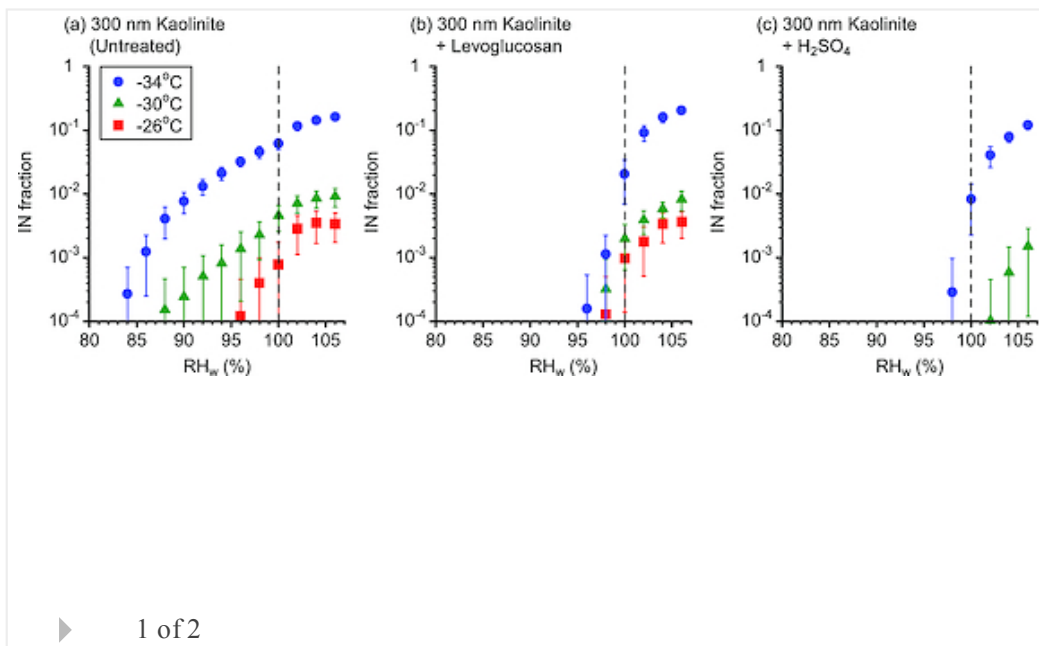
## Impacts of chemical reactivity on ice nucleation of kaolinite particles: A case study of levoglucosan and sulfuric acid

Yutaka Tobo, Paul J. DeMott, Michael Raddatz, Dennis Niedermeier, Susan Hartmann, Sonia M. Kreidenweis, Frank Stratmann, Heike Wex

First Published: 9 October 2012 Vol: 39, L19803 | DOI: 10.1029/2012GL053007

### KEY POINTS

- Surface chemistry is a key factor in discussing ice nucleation of kaolinite



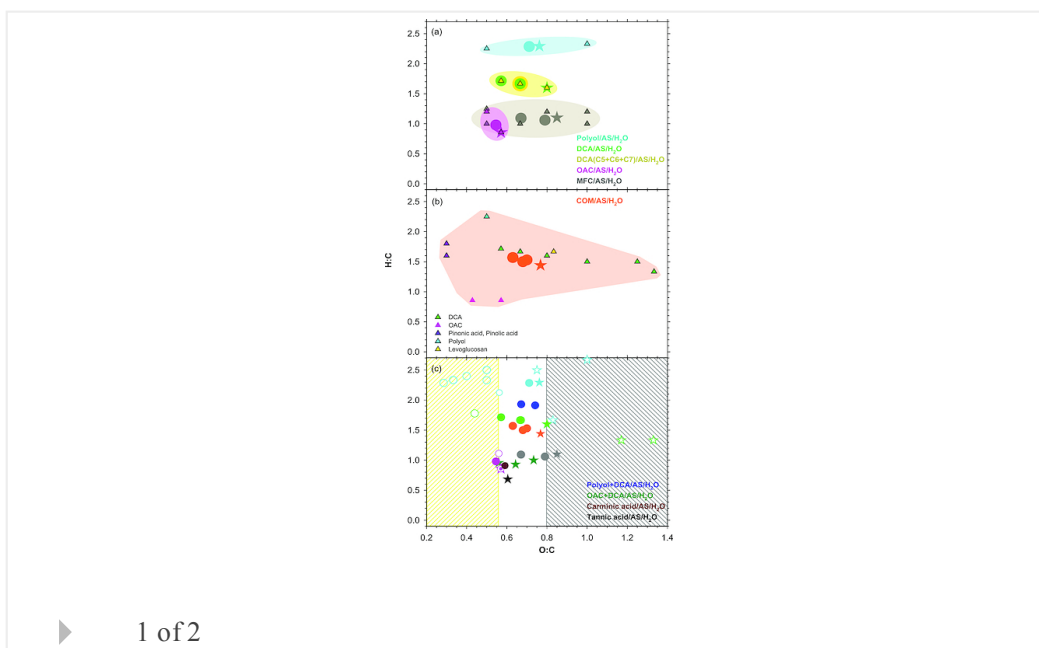
### Liquid-liquid phase separation in aerosol particles: Dependence on O:C, organic functionalities, and compositional complexity

M. Song, C. Marcolli, U. K. Krieger, A. Zuend, T. Peter

First Published: 5 October 2012 Vol: 39, L19801 | DOI: 10.1029/2012GL052807

**KEY POINTS**

- Liquid-liquid phase separation is expected to be a common feature
- The occurrence is depending on organic functional groups and the O:C ratios
- Minor importance of compositional complexity



## Climate

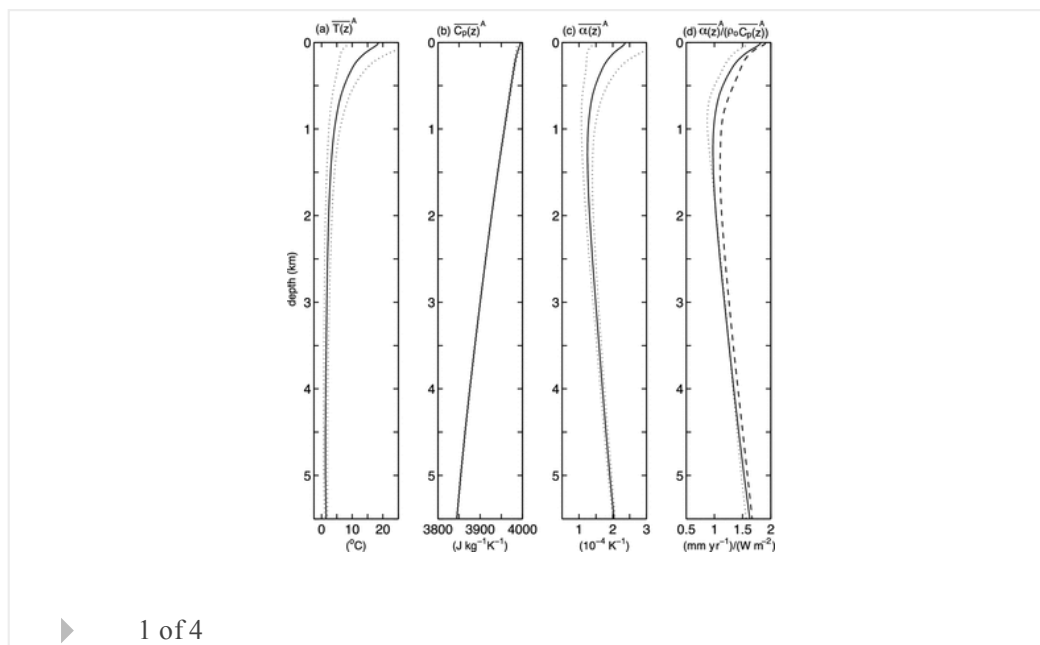
### How warming and steric sea level rise relate to cumulative carbon emissions

Richard G. Williams, Philip Goodwin, Andy Ridgwell, Philip L. Woodworth

First Published: 13 October 2012 Vol: 39, L19715 | DOI: 10.1029/2012GL052771

**KEY POINTS**

- Warming linearly increases with total carbon emissions after emissions cease
- Warming and emissions are related by a climate sensitivity and a carbon inventory
- Steric sea level rise and emissions are related by an ocean climate sensitivity

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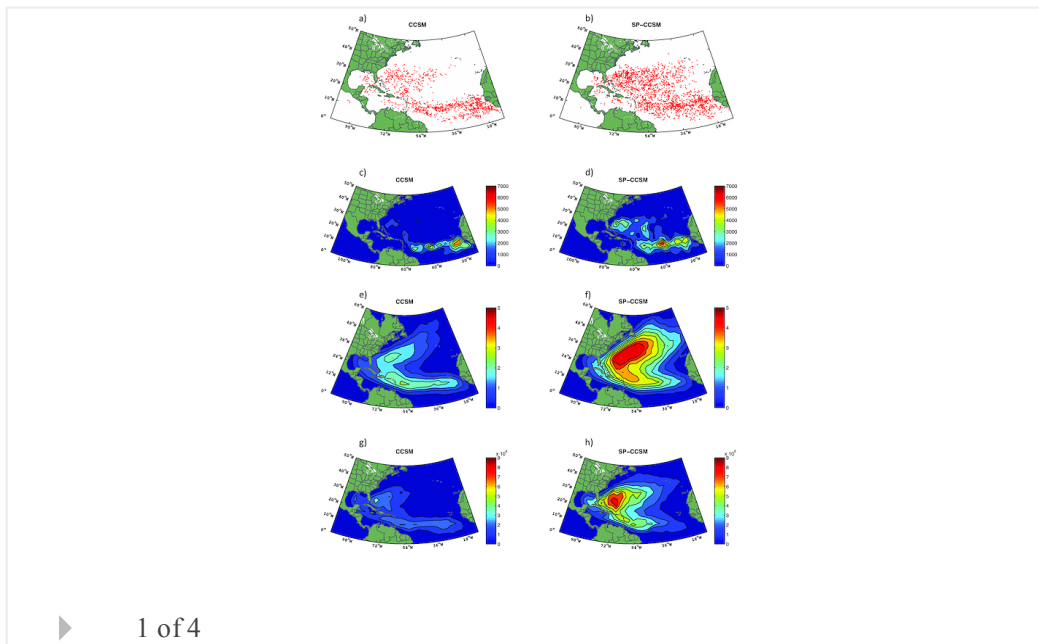
## Is cumulus convection the *concertmaster* of tropical cyclone activity in the Atlantic?

Cristiana Stan

First Published: 13 October 2012 Vol: 39, L19716 | DOI: 10.1029/2012GL053449

**KEY POINTS**

- Cloud representation is important for TC simulations
- Weather-resolving climate simulation is required for TC simulation
- Cloud-processes affect the ocean-atmosphere interaction



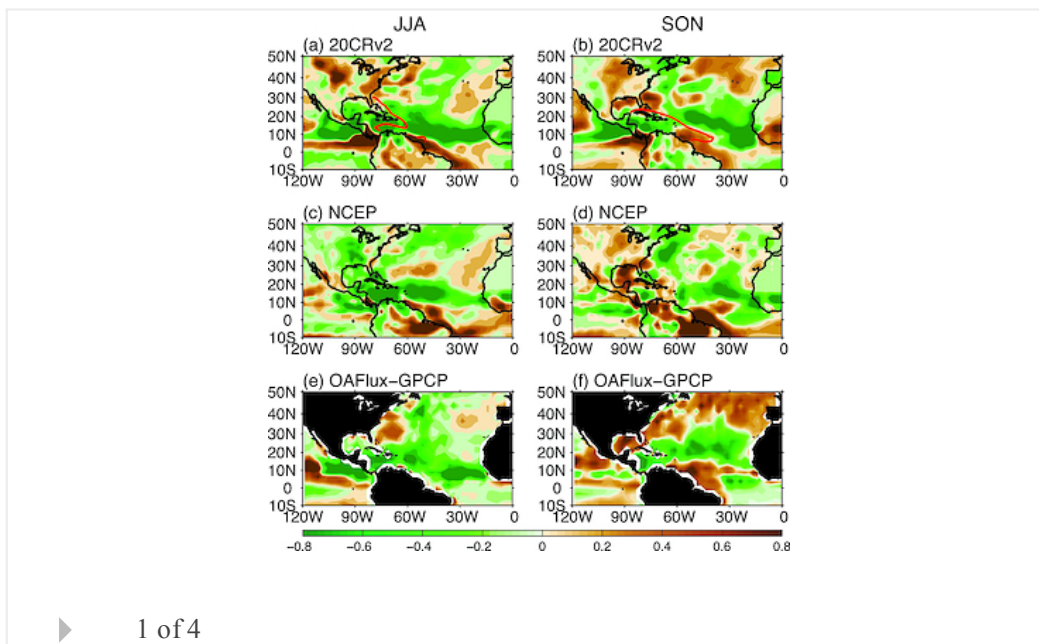
### Remote influences on freshwater flux variability in the Atlantic warm pool region

Liping Zhang, Chunzai Wang

First Published: 11 October 2012 Vol: 39, L19714 | DOI: 10.1029/2012GL053530

#### KEY POINTS

- Freshwater flux and salinity in the (AWP) region can be remotely influenced
- Remote effect can overwhelm local effect, resulting in an opposite response
- An El Nino or a positive AMM does not necessarily follow a large AWP in summer

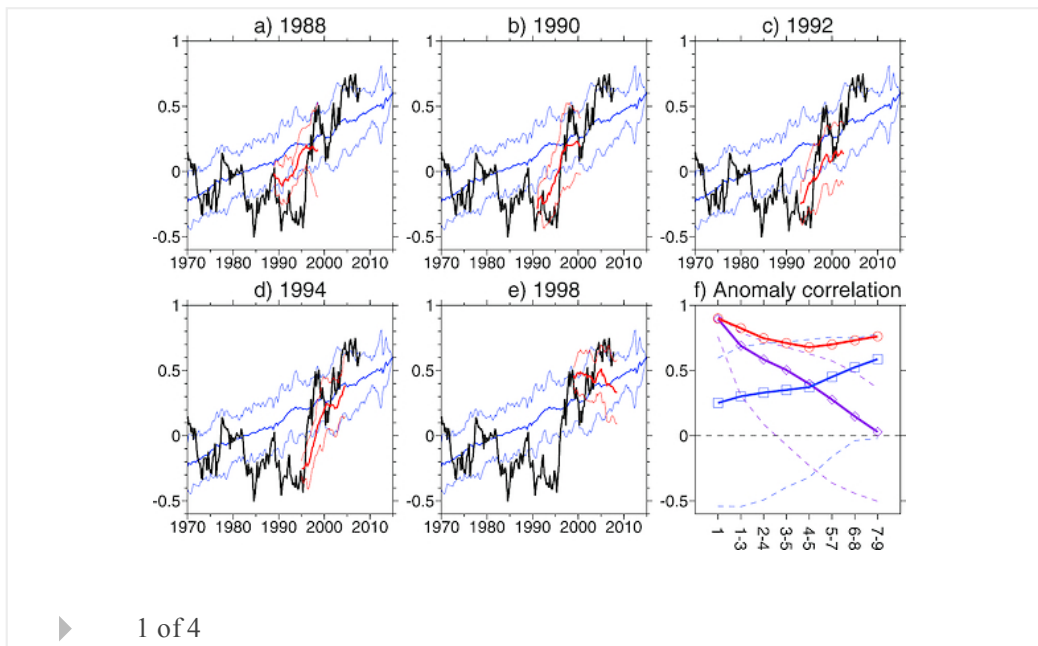


### Initialized decadal predictions of the rapid warming of the North Atlantic Ocean in the mid 1990s

J. I. Robson, R. T. Sutton, D. M. Smith

**KEY POINTS**

- Successful predictions of the 1990s warming of the North Atlantic
- Initialised prediction system captures the key mechanisms
- Successful predictions also capture observed changes in surface climate



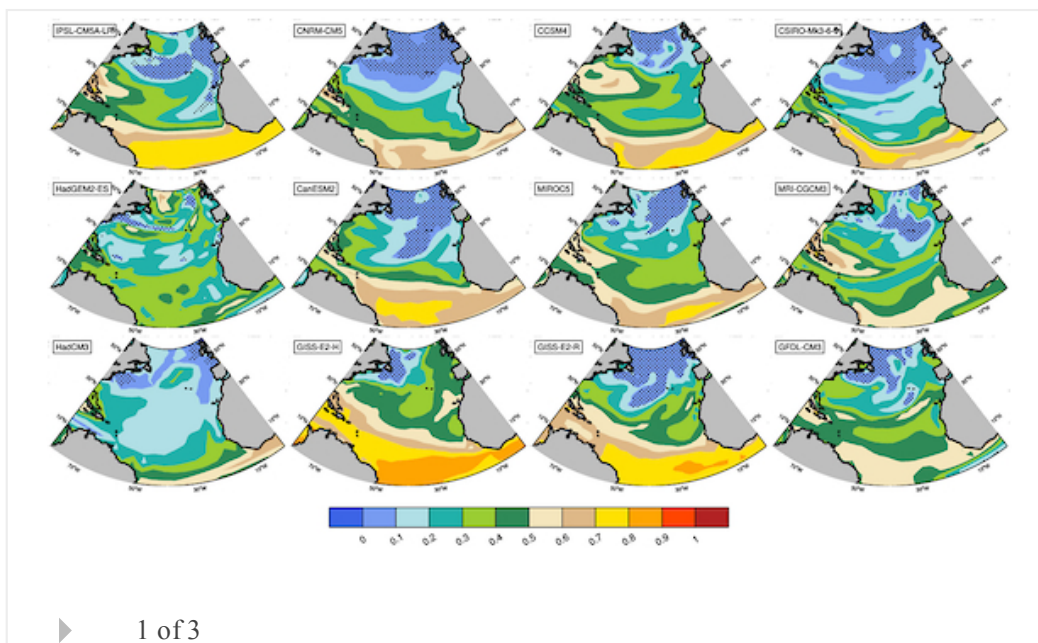
**Evidence for multiple drivers of North Atlantic multi-decadal climate variability**

Laurent Terray

First Published: 6 October 2012 Vol: 39, L19712 | DOI: 10.1029/2012GL053046

**KEY POINTS**

- Anthropogenic forcing drives late 20th century Atlantic (sub)tropical SST change
- Subpolar Atlantic slow and abrupt changes are driven by internal variability
- Observations and models provide a metric to constrain external forcing response





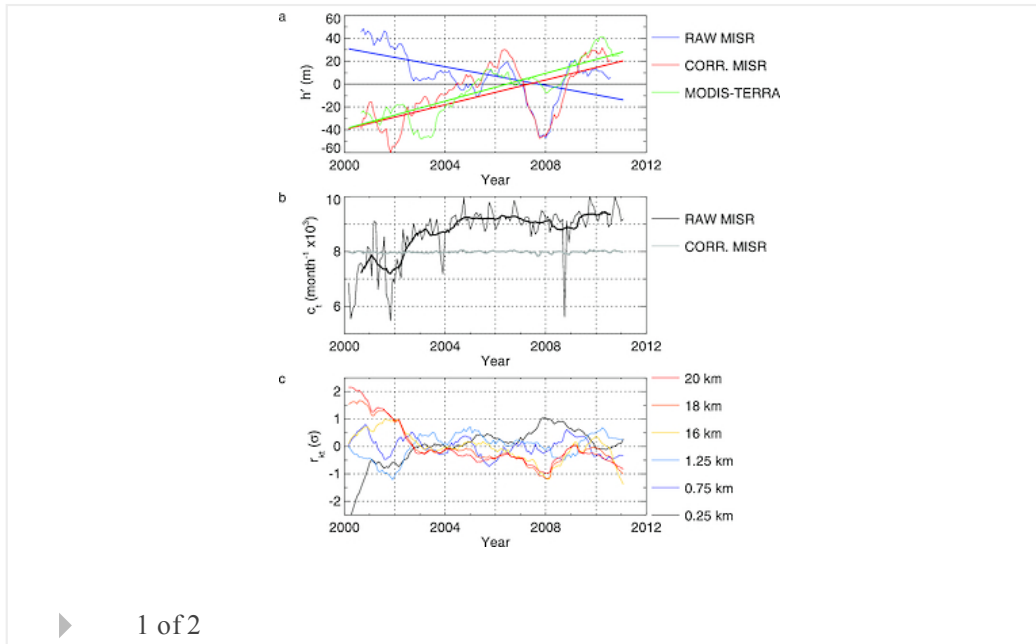
## On global changes in effective cloud height

Amato T. Evan, Joel R. Norris

First Published: 6 October 2012 Vol: 39, L19710 | DOI: 10.1029/2012GL053171

### KEY POINTS

- Noted downward trends in MISR cloud heights result from biases in the data
- A corrected MISR climatology exhibits an upward trend in cloud heights
- The MISR record is currently not suitable to quantify cloud feedback



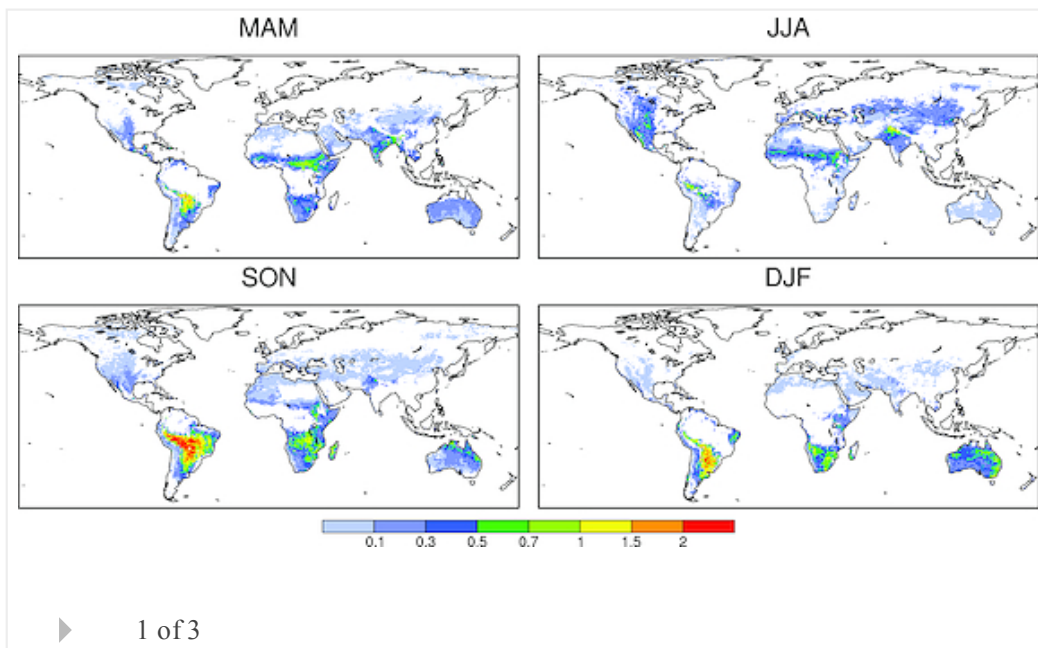
## Dissecting soil moisture-precipitation coupling

Jiangfeng Wei, Paul A. Dirmeyer

First Published: 6 October 2012 Vol: 39, L19711 | DOI: 10.1029/2012GL053038

### KEY POINTS

- The impact of soil moisture on precipitation is dissected into two segments
- Land segment dominates over atmospheric segment in the impact
- Local impact dominates over nonlocal impacts over a majority of impact areas



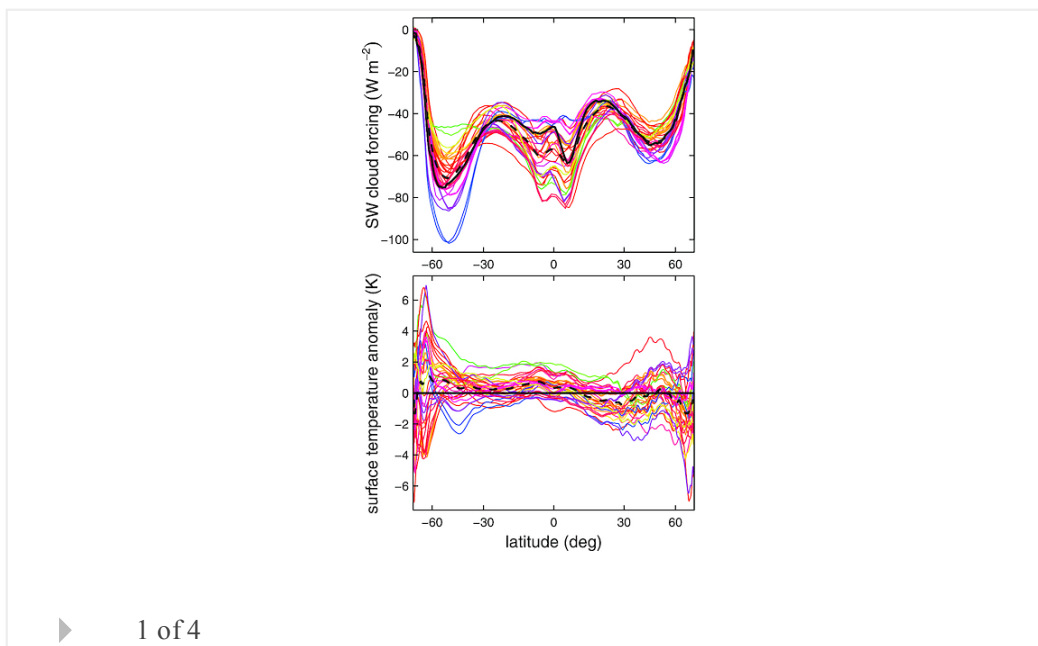
## Southern Hemisphere jet latitude biases in CMIP5 models linked to shortwave cloud forcing

Paulo Ceppi, Yen-Ting Hwang, Dargan M. W. Frierson, Dennis L. Hartmann

First Published: 5 October 2012 Vol: 39, L19708 | DOI: 10.1029/2012GL053115

### KEY POINTS

- CMIP5 models exhibit large biases in midlatitude cloud shortwave forcing
- Biases in cloud shortwave forcing are linked to biases in mean jet latitude
- Jet latitude biases are caused by changes in midlatitude baroclinicity



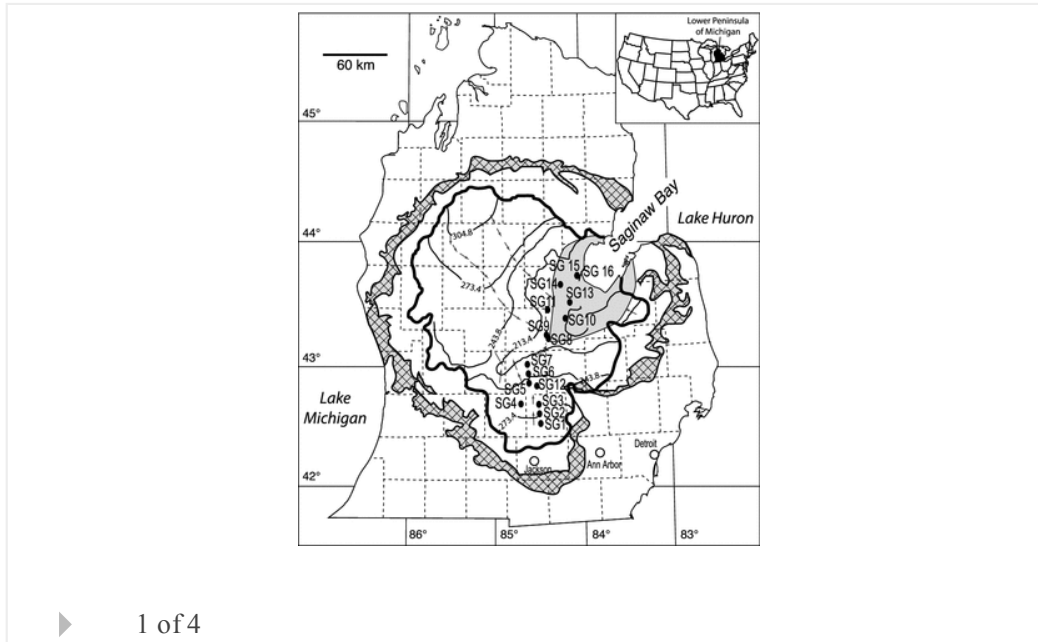
## A late Pleistocene–Mid-Holocene noble gas and stable isotope climate and subglacial record in southern Michigan

Maria Clara Castro, Rohit B. Warrier, Chris M. Hall, Kyger C. Lohmann

First Published: 4 October 2012 Vol: 39, L19709 | DOI: 10.1029/2012GL053098

### KEY POINTS

- NGTs and EA identify late Pleistocene and mid-Holocene abrupt climate shifts
- The  $\delta^{18}O$  and  $d$ -excess variations mimic those of NGTs and EA
- Subglacial meltwater contributions are distinct prior and following the LGM



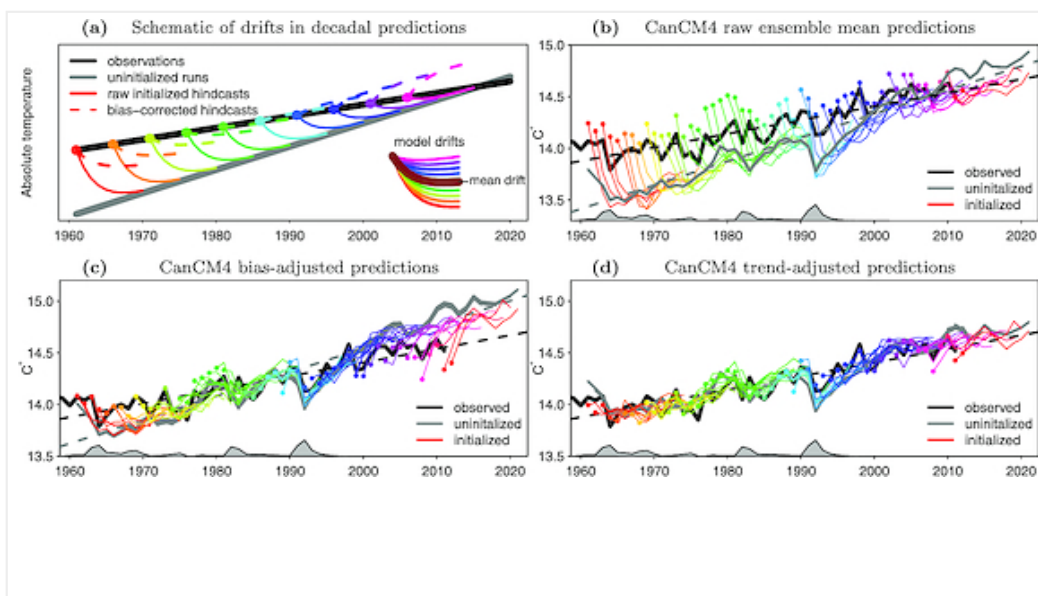
### Statistical adjustment of decadal predictions in a changing climate

V. V. Kharin, G. J. Boer, W. J. Merryfield, J. F. Scinocca, W.-S. Lee

First Published: 3 October 2012 Vol: 39, L19705 | DOI: 10.1029/2012GL052647

### KEY POINTS

- A trend-adjusting correction of decadal predictions is proposed
- The method reduces residual drifts remaining after standard bias correction
- Initialization enhances skill in decadal predictions in the first 1-2 years



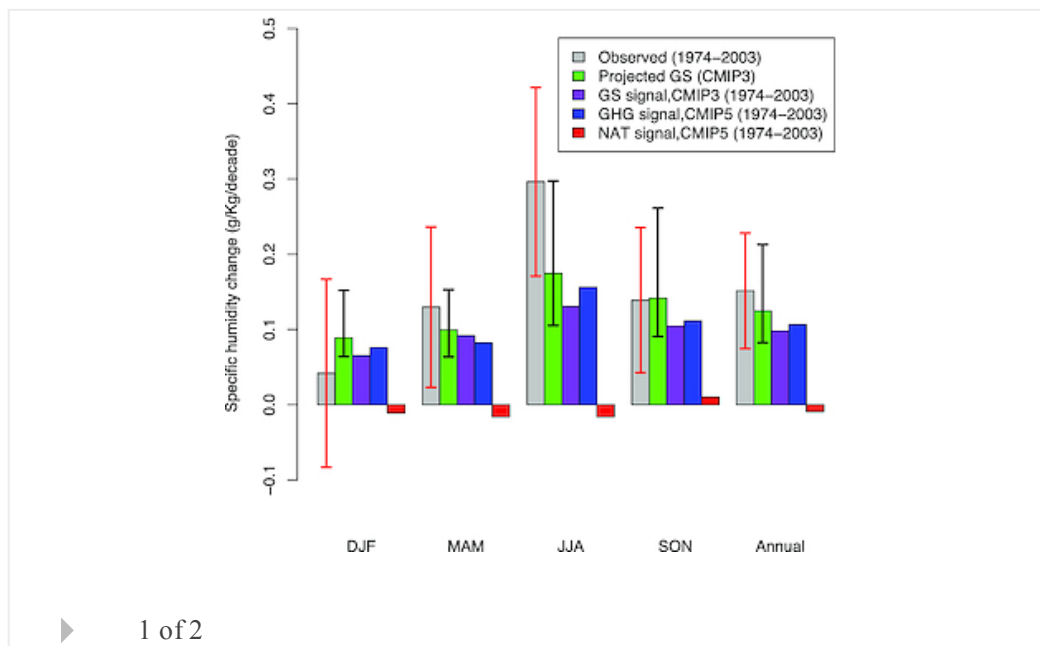
## Anthropogenic forcing is a plausible explanation for the observed surface specific humidity trends over the Mediterranean area

A. Barkhordarian, H. von Storch, E. Zorita

First Published: 3 October 2012 Vol: 39, L19706 | DOI: 10.1029/2012GL053026

### KEY POINTS

- Externally forced changes are detectable in the observed humidity trends
- Anthropogenic forcing has a detectable influence in the observations
- Observed changes can be used as an illustration of plausible future change



## Direct measurement of riverine particulate organic carbon age structure

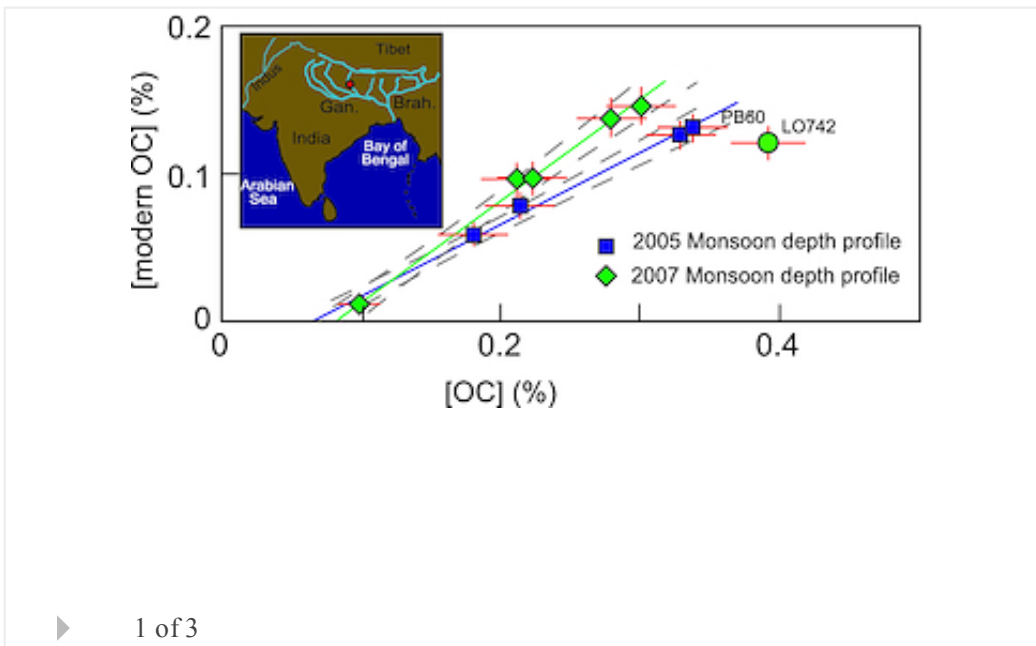
Brad E. Rosenheim, Valier Galy

First Published: 3 October 2012 Vol: 39, L19703 | DOI: 10.1029/2012GL052883

### KEY POINTS

- Small steep river systems carry abundant refractory carbon toward oceans
- We isolate and quantify refractory OC thermochemically
- We show that SRMs are different from major rivers in terms of POC age spectra

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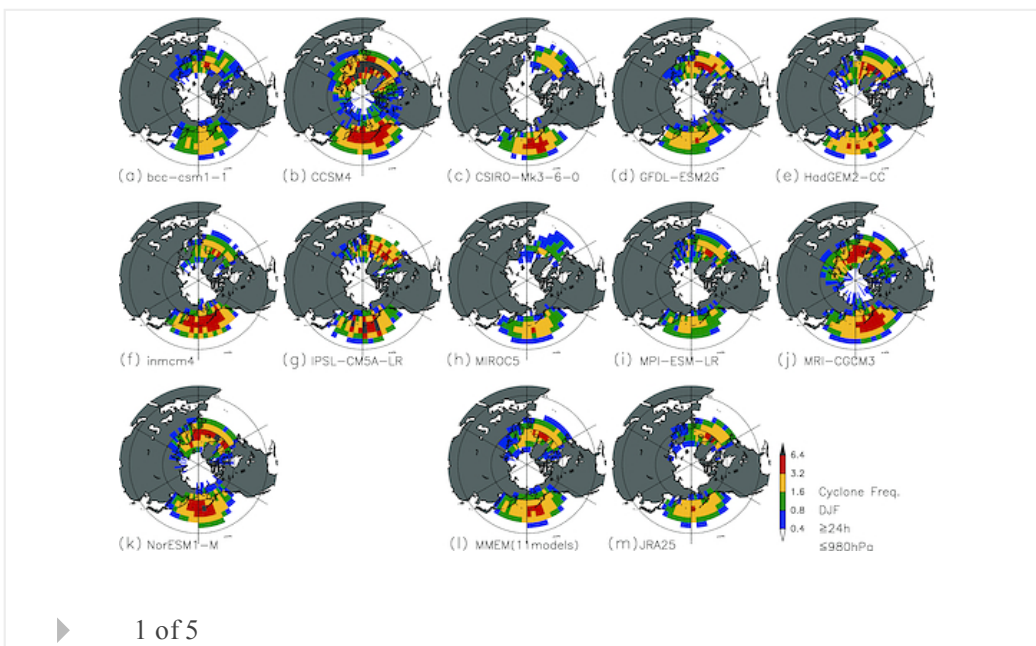
### Intensification of extratropical cyclones associated with the polar jet change in the CMIP5 global warming projections

Ryo Mizuta

First Published: 3 October 2012 Vol: 39, L19707 | DOI: 10.1029/2012GL053032

**KEY POINTS**

- Increasing number of intense cyclones in specific regions in a warmer climate
- Mean growth rate change associated with the polar jet change
- Agreements on the change between the climate models



### Reduction of tropical land region precipitation variability via transpiration

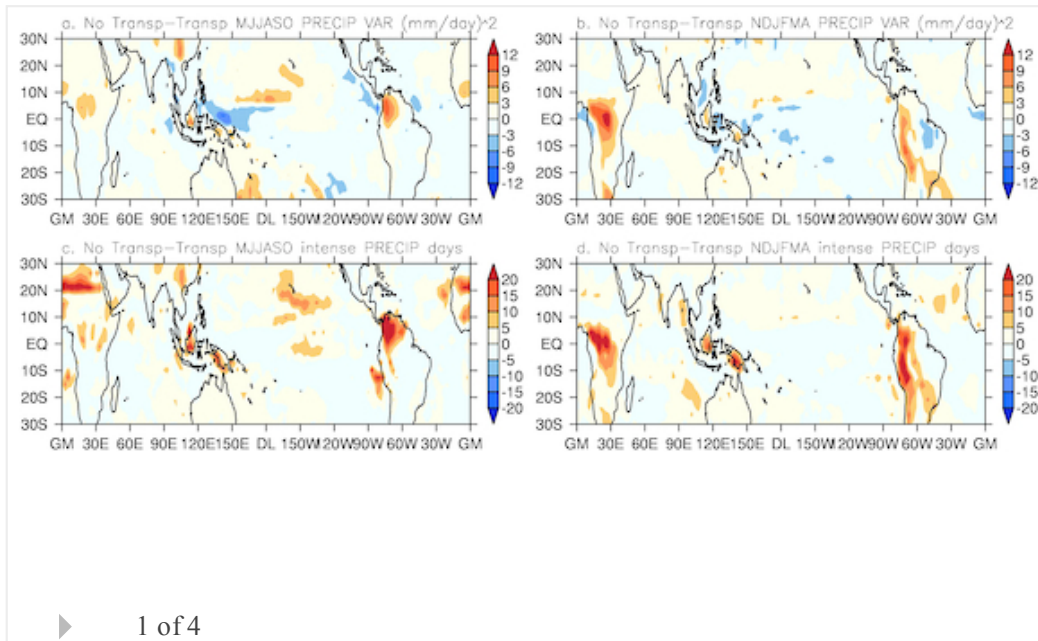
Jung-Eun Lee, Benjamin R. Lintner, J. David Neelin, Xianan Jiang, Pierre Gentine,

C. Kevin Boyce, Joshua B. Fisher, J. Taylor Perron, Terence L. Kubar, Jeonghoon Lee, et al

First Published: 3 October 2012 Vol: 39, L19704 | DOI: 10.1029/2012GL053417

#### KEY POINTS

- Transpiration decreases precipitation and temperature variability
- High transpiration may decrease the influence of MJOs over land
- Incoming solar energy is more important than wind speed for land latent flux



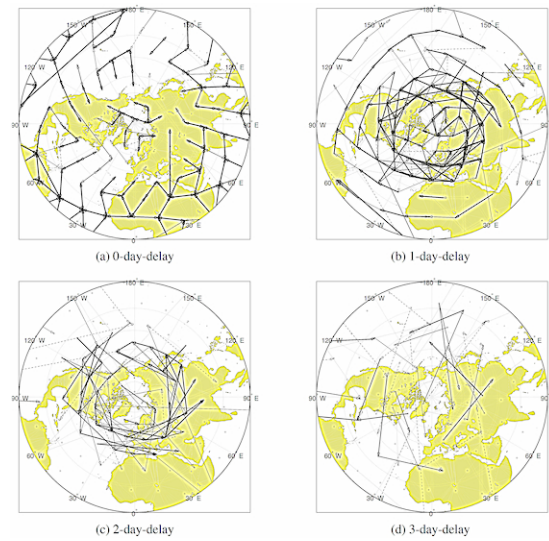
#### A new type of climate network based on probabilistic graphical models: Results of boreal winter versus summer

Imme Ebert-Uphoff, Yi Deng

First Published: 2 October 2012 Vol: 39, L19701 | DOI: 10.1029/2012GL053269

#### KEY POINTS

- A new type of climate work based on temporal graphical models is constructed
- The new network emphasizes information flow in the climate system
- The network is more robust in boreal summer than in boreal winter



▶ 1 of 4

## Changes in European summer temperature variability revisited

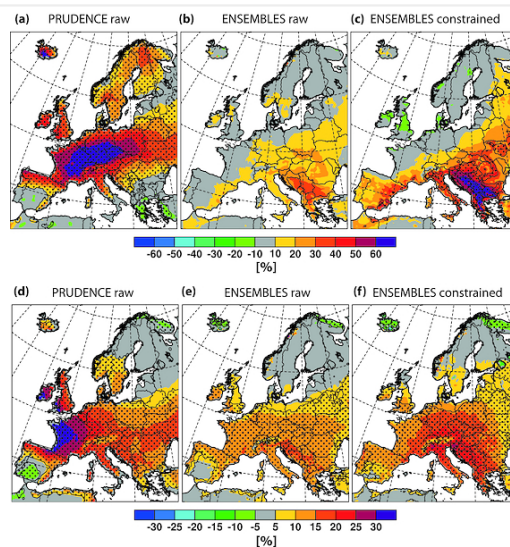
E. M. Fischer, J. Rajczak, C. Schär

First Published: 2 October 2012 Vol: 39, L19702 | DOI: 10.1029/2012GL052730

### KEY POINTS

- Changes in variability can be constrained based on present-day model performance
- RCMs that perform well project enhanced interannual summer variability in Europe
- All RCMs consistently project increasing daily summer temperature variability

Highlight



▶ 1 of 4

## Hydrology and Land Surface Studies

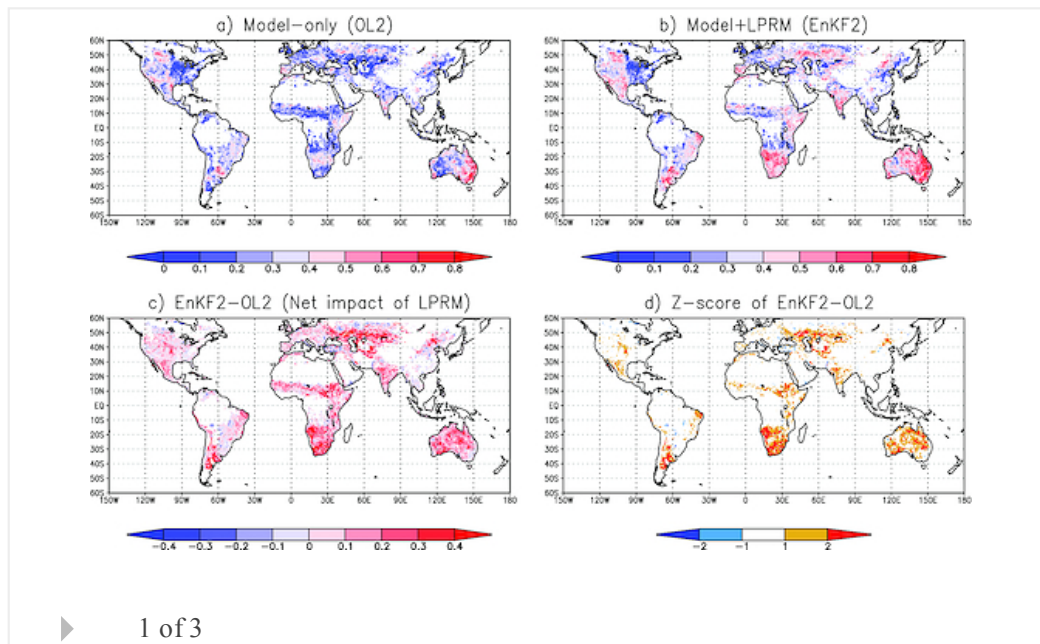
## Improved prediction of quasi-global vegetation conditions using remotely-sensed surface soil moisture

J. D. Bolten, W. T. Crow

First Published: 11 October 2012 Vol: 39, L19406 | DOI: 10.1029/2012GL053470

### KEY POINTS

- AMSR-E soil moisture improves agricultural drought monitoring ability
- Improvement is most notable over data-poor regions of the world
- Value is added even during the middle portion of the growing season



## Correlations among leaf traits provide a significant constraint on the estimate of global gross primary production

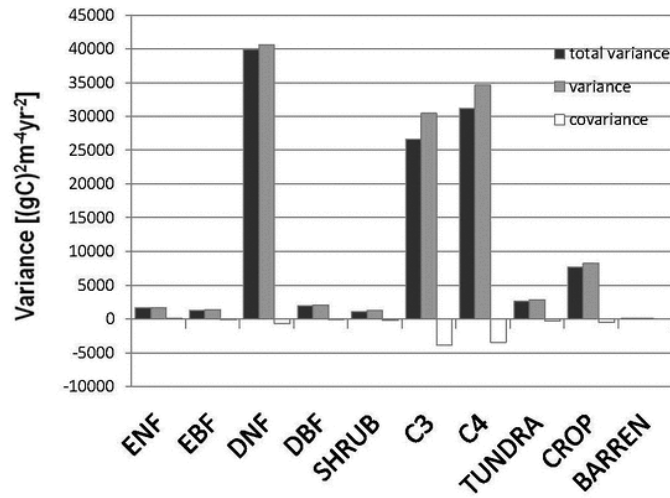
Y. P. Wang, X. J. Lu, I. J. Wright, Y. J. Dai, P. J. Rayner, P. B. Reich

First Published: 10 October 2012 Vol: 39, L19405 | DOI: 10.1029/2012GL053461

### KEY POINTS

- Current estimates of land GPP range from 100 to 175 Gt C year<sup>-1</sup>
- Correlations among three leaf traits reduce the variance of modeled GPP by 28%
- Correlations among parameters need to be considered in global land modeling





▶ 1 of 4

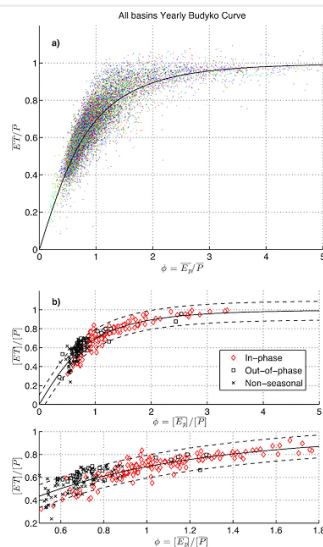
## Interdependence of climate, soil, and vegetation as constrained by the Budyko curve

Pierre Gentine, Paolo D'Odorico, Benjamin R. Lintner, Gajan Sivandran, Guido Salvucci

First Published: 9 October 2012 Vol: 39, L19404 | DOI: 10.1029/2012GL053492

### KEY POINTS

- The Budyko curve imposes interdependence of soil, vegetation and climate
- Above-ground and below-ground vegetation is related to coupled to climate
- In land-surface models, vegetation and hydrologic parameters are dependent



▶ 1 of 3

## A-posteriori analysis of surface energy budget closure to determine missed energy

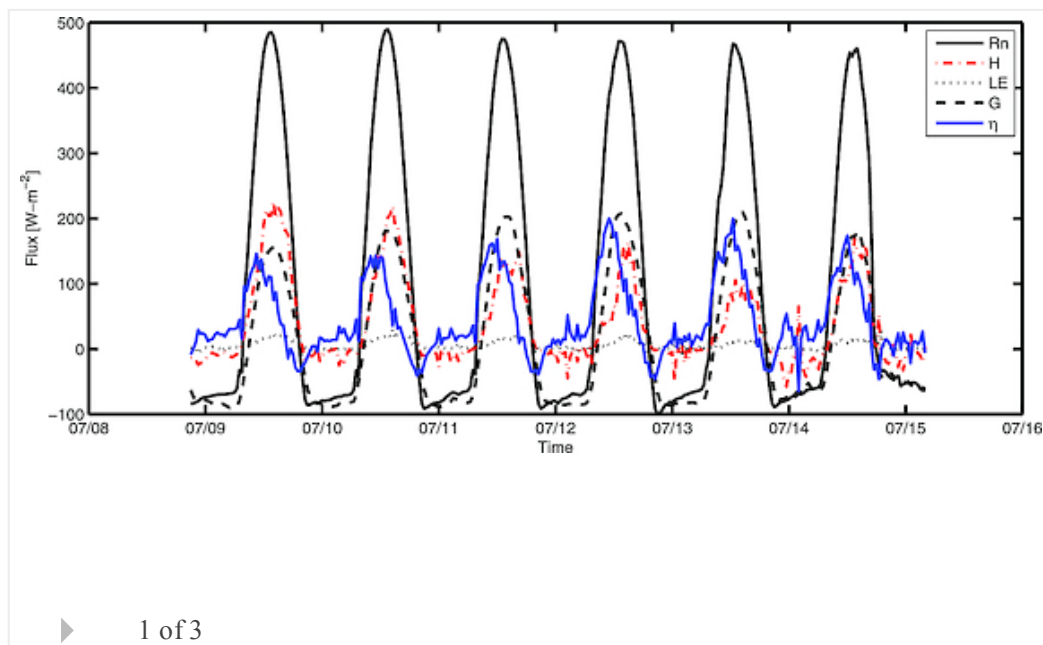
## pathways

Chad W. Higgins

First Published: 6 October 2012 Vol: 39, L19403 | DOI: 10.1029/2012GL052918

### KEY POINTS

- The surface energy budget residual is a linear combination of physical processes
- This residual is decomposed into underlying transport pathways
- In a bare soil example, energy storage and soil heat flux were most important



## Changes in the variability of global land precipitation

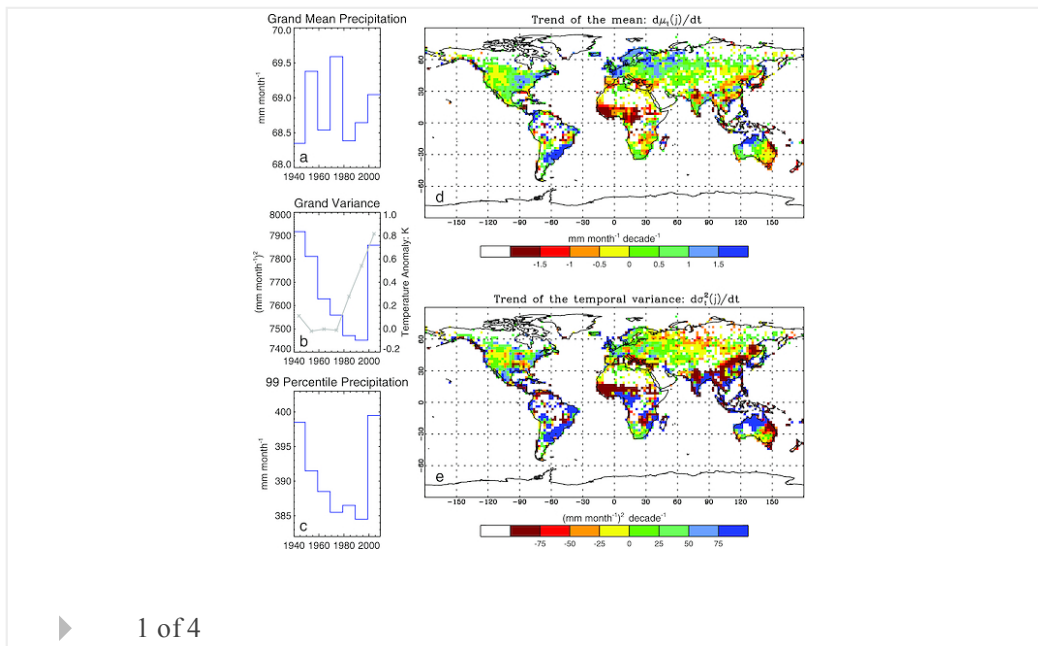
Fubao Sun, Michael L. Roderick, Graham D. Farquhar

First Published: 2 October 2012 Vol: 39, L19402 | DOI: 10.1029/2012GL053369

### KEY POINTS

- We report a reduction in P variability and explain how that arose
- The reason of the reduction of P variability is dry got wetter and wet got drier
- A new detection method is proposed to confirm the conclusion

[Highlight](#)



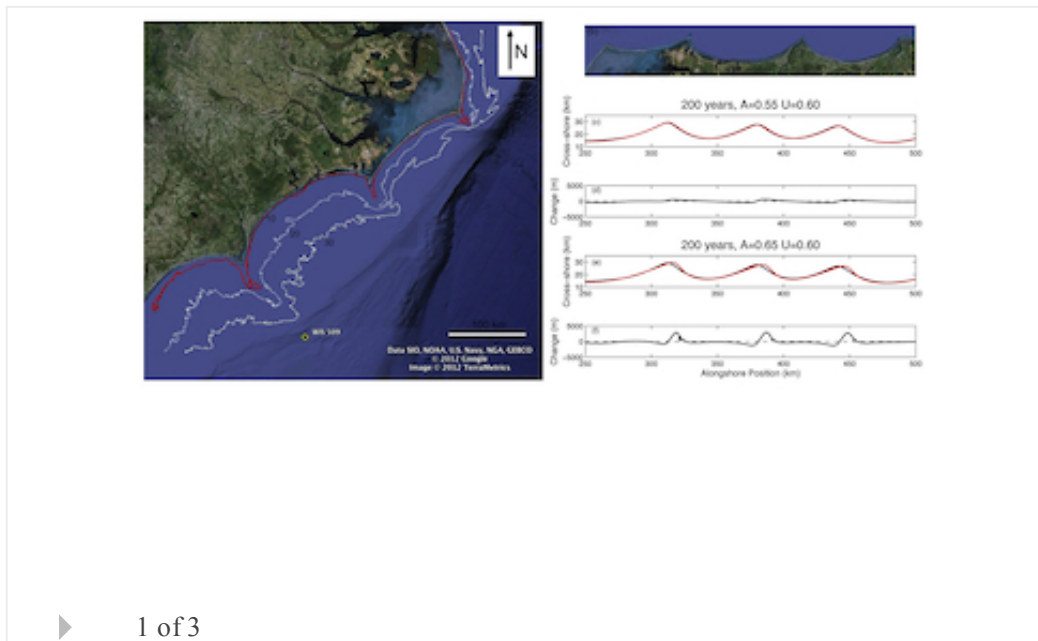
## Long-term, non-local coastline responses to local shoreline stabilization

Kenneth Ells, A. Brad Murray

First Published: 2 October 2012 Vol: 39, L19401 | DOI: 10.1029/2012GL052627

### KEY POINTS

- Human actions have become part of the large-scale coastline-evolution system
- Local shoreline stabilization alters coastline response to storm climate change
- Affects on coastline morphodynamics depend on the type of stabilization used



## Oceans

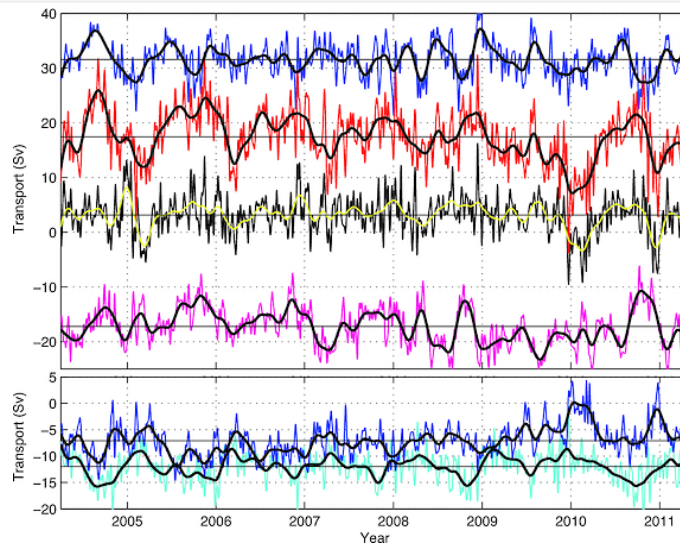
### Observed interannual variability of the Atlantic meridional overturning circulation at 26.5°N

G. McCarthy, E. Frajka-Williams, W. E. Johns, M. O. Baringer, C. S. Meinen, H. L. Bryden, D. Rayner, A. Ducez, C. Roberts, S. A. Cunningham

First Published: 12 October 2012 Vol: 39, L19609 | DOI: 10.1029/2012GL052933

#### KEY POINTS

- New observations of the interannual variability of the Atlantic MOC in 2009-10
- The 30% weakening of the MOC driven by extreme winds and increased upper ocean flow
- This variability has a large impact on the heat transported in the Atlantic



▶ 1 of 4

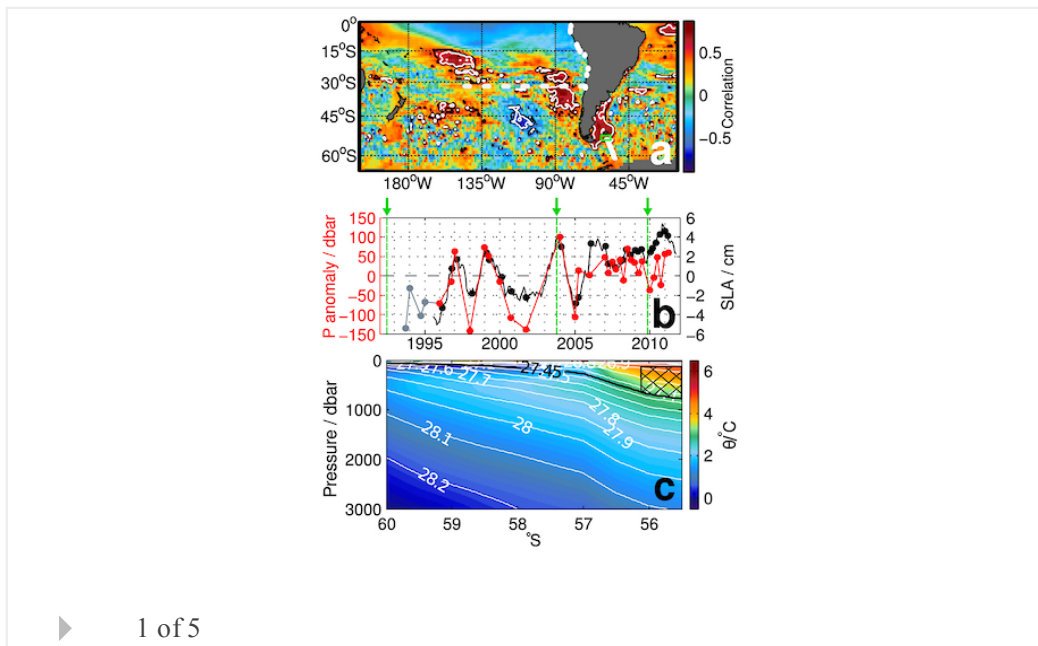
#### Baroclinic adjustment in Drake Passage driven by tropical Pacific forcing

Sally E. Close, Alberto C. Naveira Garabato

First Published: 12 October 2012 Vol: 39, L19610 | DOI: 10.1029/2012GL053402

#### KEY POINTS

- Stratification in Drake Passage shows substantial change over the past decades
- This change is forced in the tropical Pacific, predominantly by ENSO
- Wide-scale coherent change is detected, implying adjustment of the South Pacific



▶ 1 of 5

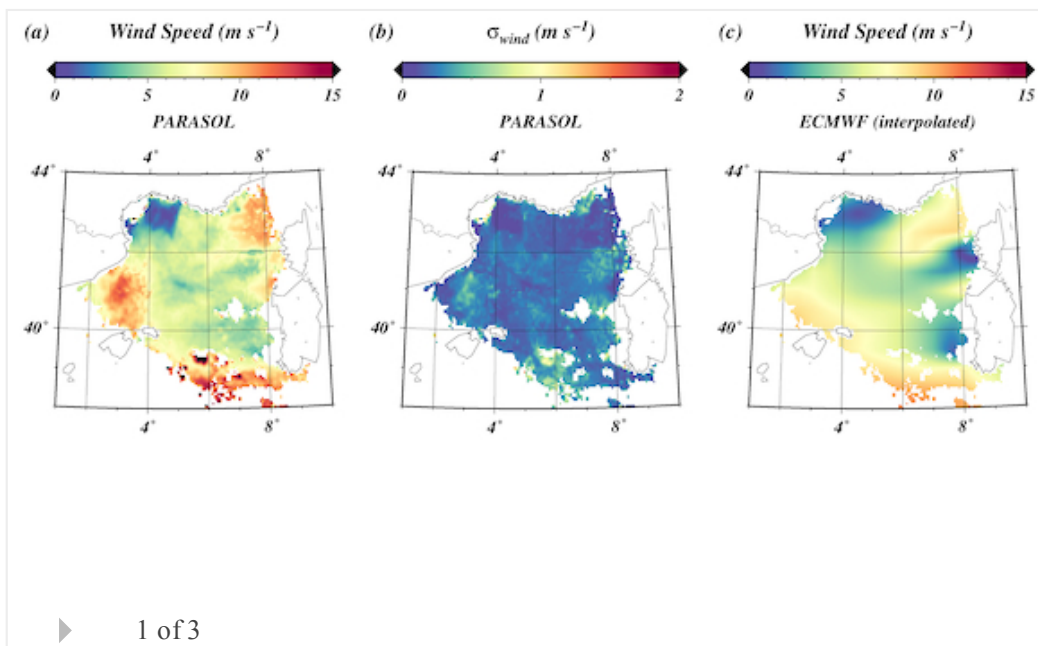
## Determination of sea surface wind speed using the polarimetric and multidirectional properties of satellite measurements in visible bands

Tristan Harmel, Malik Chami

First Published: 12 October 2012 Vol: 39, L19611 | DOI: 10.1029/2012GL053508

### KEY POINTS

- Determination of sea wind speed and its uncertainty from polarized data
- Spatial resolution of wind product 4 times higher than microwave techniques
- Ability to derive wind speed for almost 80% of a cloud-free scene



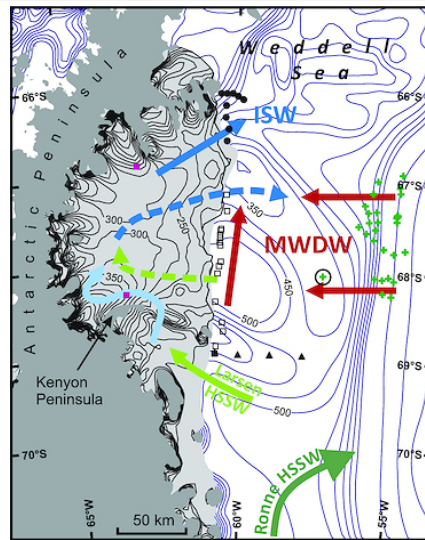
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## Ocean circulation beneath Larsen C Ice Shelf, Antarctica from *in situ* observations

Keith W. Nicholls, Keith Makinson, Emily J. Venables

**KEY POINTS**

- We present the first oceanographic data from beneath Larsen C Ice Shelf
- The waters flushing the cavity are no warmer than the surface freezing point
- The ice shelf's basal melt rate is unlikely to be increasing



▶ 1 of 3

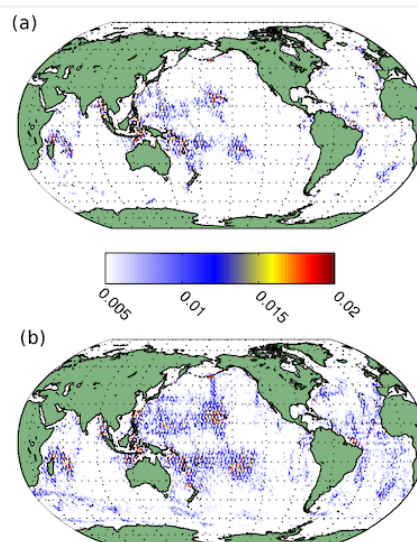
## Global $M_2$ internal tide and its seasonal variability from high resolution ocean circulation and tide modeling

M. Müller, J. Y. Cherniawsky, M. G. G. Foreman, J.-S. von Storch

First Published: 10 October 2012 Vol: 39, L19607 | DOI: 10.1029/2012GL053320

**KEY POINTS**

- Global maps of low mode internal tide field
- Analysis of the seasonal variability of internal tides
- Variations in stratification change surface tides



1 of 4

## Consistent near-surface ocean warming since 1900 in two largely independent observing networks

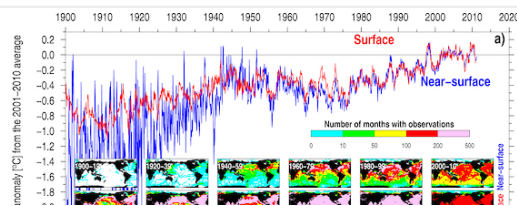
Viktor Gouretski, John Kennedy, Tim Boyer, Armin Köhl

First Published: 5 October 2012 Vol: 39, L19606 | DOI: 10.1029/2012GL052975

### KEY POINTS

- Global near surface ocean has warmed since 1900
- Sea-surface and sub-surface temperature time series are in a good agreement
- Surface and sub-surface temperatures around Antarctica cooled since 1900

Highlight



▶ 1 of 3

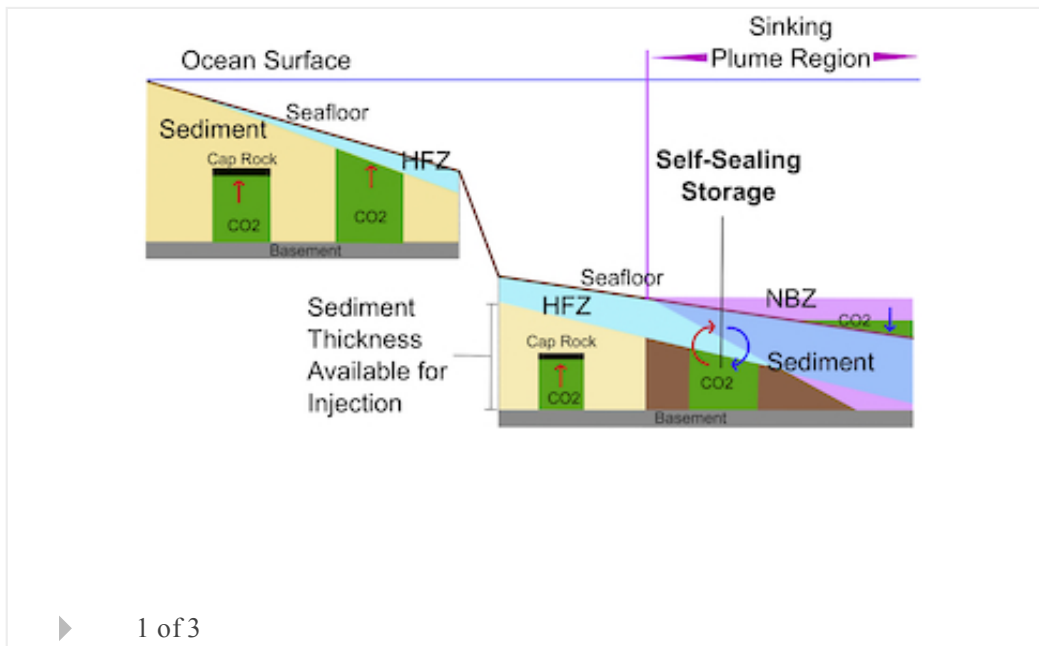
## Global CO<sub>2</sub> storage potential of self-sealing marine sedimentary strata

Jordan K. Eccles, Lincoln Pratson

First Published: 4 October 2012 Vol: 39, L19604 | DOI: 10.1029/2012GL053758

### KEY POINTS

- Ocean storage in self-sealing sediments has vast potential
- Targeting undersea sand bodies will avoid issues raised in literature
- Different emitters have different access to this storage potential



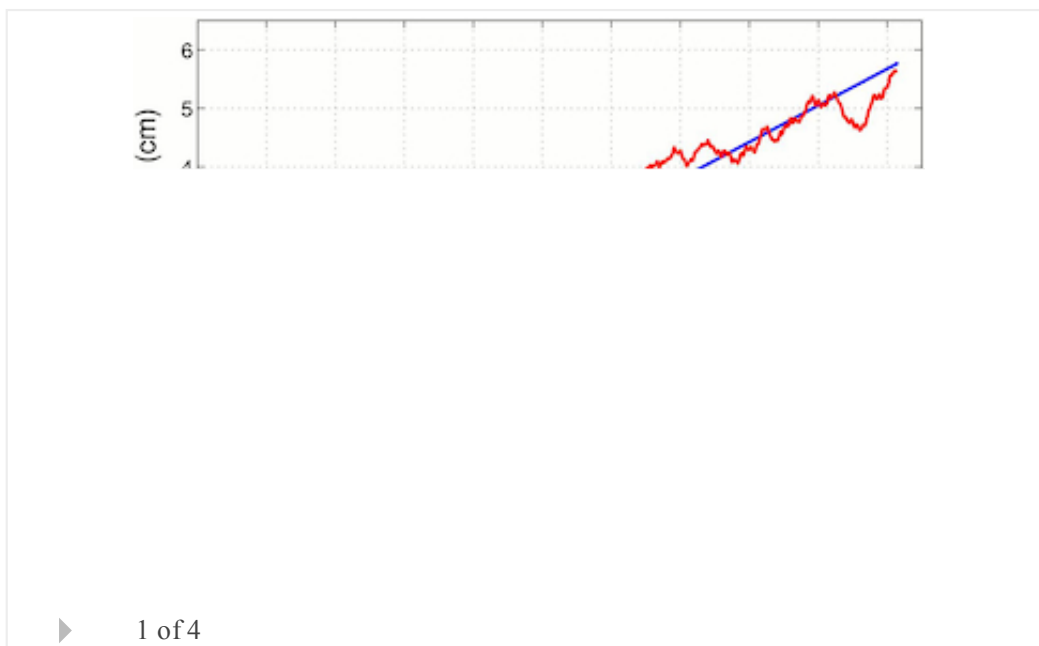
**The 2011 La Niña: So strong, the oceans fell**

Carmen Boening, Josh K. Willis, Felix W. Landerer, R. Steven Nerem, John Fasullo  
 First Published: 4 October 2012 Vol: 39, L19602 | DOI: 10.1029/2012GL053055

**KEY POINTS**

- Sea level drop in 2011 mainly caused by water exchange between ocean and land
- Exchange related to 2010/11 La Nina driving regional changes in precipitation
- Sea level decline is temporary as water will return to the ocean through runoff

Highlight



**Is sea level rise accelerating in the Chesapeake Bay? A demonstration of a novel new approach for analyzing sea level data**

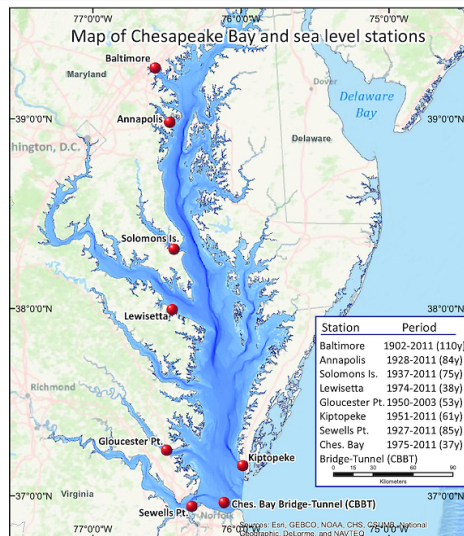


Tal Ezer, William Bryce Corlett

First Published: 4 October 2012 Vol: 39, L19605 | DOI: 10.1029/2012GL053435

#### KEY POINTS

- Sea level rise in Chesapeake Bay is accelerating
- New sea level analysis method tested
- Ocean dynamics contribute to sea level rise



▶ 1 of 5

### Real-time forecasting of the April 11, 2012 Sumatra tsunami

Dailin Wang, Nathan C. Becker, David Walsh, Gerard J. Fryer, Stuart A. Weinstein, Charles S. McCreery, Victor Sardiña, Vindell Hsu, Barry F. Hirshorn, Gavin P. Hayes, et al

First Published: 2 October 2012 Vol: 39, L19601 | DOI: 10.1029/2012GL053081

#### KEY POINTS

- Tsunami forecast in real time
- Using recent advances in seismology for source determination
- Improve the accuracy of tsunami forecasting and warning

▶ 1 of 2

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## Planets

### Small-scale methane dispersion modelling for possible plume sources on the surface of Mars

K. S. Olsen, E. Cloutis, K. Strong

First Published: 11 October 2012 Vol: 39, L19201 | DOI: 10.1029/2012GL052922

#### KEY POINTS

- CH<sub>4</sub> concentrations due to emission are highly dependent on plume trajectory
- In-situ detection of a methane plume source is challenged by rapid transport
- Dispersion coefficient of CH<sub>4</sub> on Mars is 13.03 cm<sup>2</sup>/s

▶ 1 of 2

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## Solid Earth

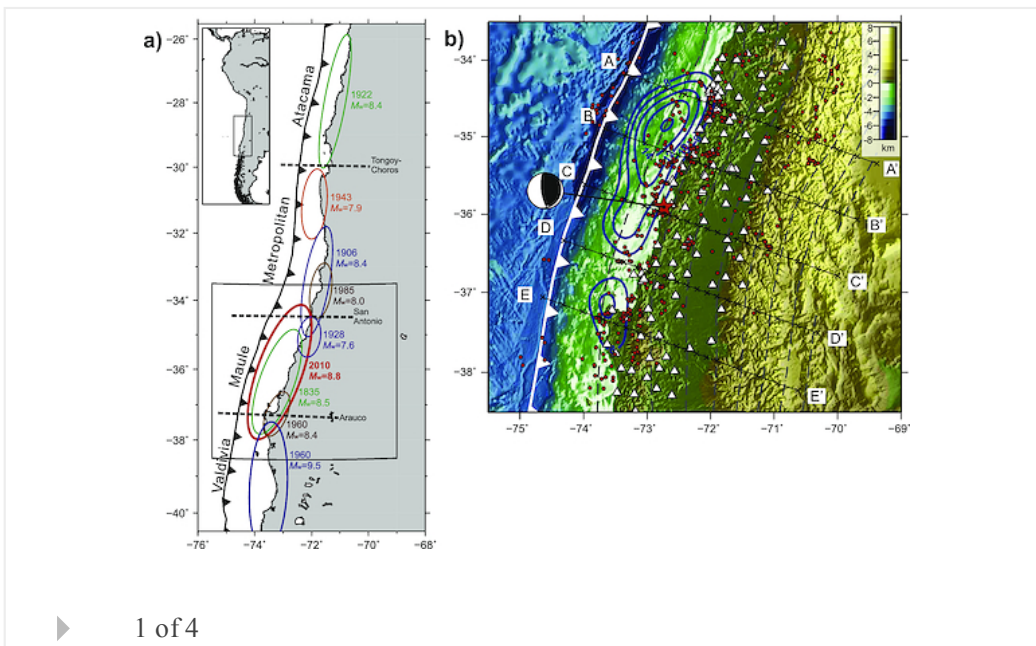
### The 2010 *M<sub>w</sub>* 8.8 Maule, Chile earthquake: Nucleation and rupture propagation controlled by a subducted topographic high

Stephen P. Hicks, Andreas Rietbrock, Christian A. Haberland, Isabelle M. A. Ryder, Mark Simons, Andrés Tassara

First Published: 13 October 2012 Vol: 39, L19308 | DOI: 10.1029/2012GL053184

#### KEY POINTS

- We describe a 3D velocity model for the 2010 Maule earthquake rupture zone
- We explain a velocity anomaly in the Darwin gap as a subducted oceanic high
- This structure influenced the rupture's nucleation and co-seismic slip pattern



▶ 1 of 4

## Magma mobilization by downward-propagating decompression of the Eyjafjallajökull volcanic plumbing system

Jon Tarasewicz, Robert S. White, Andrew W. Woods, Bryndís Brandsdóttir, Magnús T. Gudmundsson

First Published: 13 October 2012 Vol: 39, L19309 | DOI: 10.1029/2012GL053518

### KEY POINTS

- Seismicity propagates downwards during eruption; swarms precede eruptive surges
- Melt from depth is mobilized by depressurization of the shallow plumbing system
- Modeling of elastic sills supports our proposed mechanism

Highlight

▶ 1 of 4

## **Energetics, equation of state, and elasticity of NAL phase: Potential host for alkali and aluminum in the lower mantle**

Mainak Mookherjee, Bijay B. Karki, Lars Stixrude, Carolina Lithgow-Bertelloni

First Published: 12 October 2012 Vol: 39, L19306 | DOI: 10.1029/2012GL053682

### **KEY POINTS**

- First report of energetics, and elasticity of NAL phase with varying chemistry
- Potential host of alkali and aluminum
- Thermodynamics of NAL and CF phase at high pressure

▶ 1 of 3

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## **Acoustic velocities of pure and iron-bearing magnesium silicate perovskite measured to 25 GPa and 1200 K**

Julien Chantel, Daniel J. Frost, Catherine A. McCammon, Zhicheng Jing, Yanbin Wang

First Published: 12 October 2012 Vol: 39, L19307 | DOI: 10.1029/2012GL053075

### **KEY POINTS**

- Density, P and S waves velocities of perovskite up to 25 GPa and 1200 K
- MgSiO<sub>3</sub> agrees with previous studies; the iron bearing identical G but Ks lower
- Fe bearing perovskite is not inconsistent with a lower mantle of BSE composition

▶ 1 of 3

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## **Dike-fault interaction during the 2004 Dallol intrusion at the northern edge of the Erta Ale Ridge (Afar, Ethiopia)**

Adriano Nobile, Carolina Pagli, Derek Keir, Tim J. Wright, Atalay Ayele, Joel Ruch, Valerio Acocella

First Published: 12 October 2012 Vol: 39, L19305 | DOI: 10.1029/2012GL053152

### **KEY POINTS**

- Dike-fault interaction in the Erta Ale rift segment
- Temporal changes during magma intrusion
- Protovolcanic system during incipient seafloor spreading

▶ 1 of 3

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## **Mechanical behavior and localized failure modes in a porous basalt from the Azores**

S. Loaiza, J. Fortin, A. Schubnel, Y. Gueguen, S. Vinciguerra, M. Moreira

First Published: 11 October 2012 Vol: 39, L19304 | DOI: 10.1029/2012GL053218

### **KEY POINTS**

- Under hydrostatic pressure, pore collapse leads to an increase in permeability
- Under deviatoric stress, compaction bands can be observed in porous basalt
- Our data map out an elliptical yield cap envelope

▶ 1 of 4

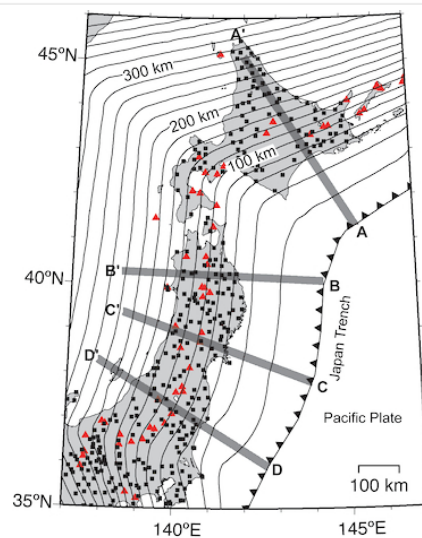
## Seismic scatterers within subducting slab revealed from ambient noise autocorrelation

Yoshihiro Ito, Katsuhiko Shiomi

First Published: 10 October 2012 Vol: 39, L19303 | DOI: 10.1029/2012GL053321

### KEY POINTS

- New migrated images from autocorrelation functions of ambient noise
- Seismic scatterers within the subducting slab at the depth range of 50-150 km
- Distribution of seismic scatterers comparable to the double seismic zone



▶ 1 of 3

## Shear-wave velocity as an indicator for rheological changes in clay materials: Lessons from laboratory experiments

G. Mainsant, D. Jongmans, G. Chambon, E. Larose, L. Baillet

**KEY POINTS**

- Liquid limit and Bifurcation in viscosity were related to Vs variations
- S-wave velocity could be used as an indicator of rheological changes in clay
- S-wave velocity measurements could be used in systems monitoring clay landslides

▶ 1 of 4

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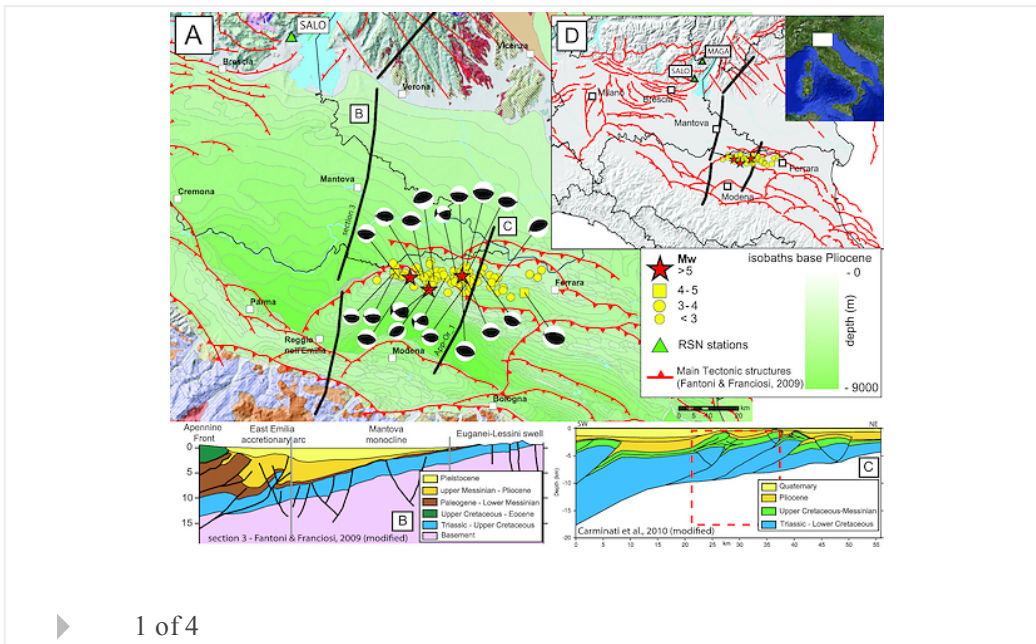
**The 2012 Ferrara seismic sequence: Regional crustal structure, earthquake sources, and seismic hazard**

Luca Malagnini, Robert B. Herrmann, Irene Munafò, Mauro Buttinelli, Mario Anselmi, Aybige Akinci, E. Boschi

First Published: 6 October 2012 Vol: 39, L19302 | DOI: 10.1029/2012GL053214

**KEY POINTS**

- Severe and widespread damage produced by relatively small earthquakes
- Long durations affect the ground motion in the Pianura Padana
- Only regional GMPEs correctly contribute to seismic hazard in Pianura Padana



▶ 1 of 4

## Space Sciences

### The comparative importance of *DE3*, *SE2*, and *SPW4* on the generation of wavenumber-4 longitude structures in the low-latitude ionosphere during September equinox

N. M. Pedatella, M. E. Hagan, A. Maute

First Published: 13 October 2012 Vol: 39, L19108 | DOI: 10.1029/2012GL053643

#### KEY POINTS

- *SPW4* can generate significant wave-4 longitude structure in ionosphere
- Real longitude variation due primarily to combination of *DE3* and *SPW4*
- *SPW4* is generated by nonlinear interaction of *DE3* and migrating diurnal tide

▶ 1 of 2



## Can solar wind viscous drag account for coronal mass ejection deceleration?

Prasad Subramanian, Alejandro Lara, Andrea Borgazzi

First Published: 13 October 2012 Vol: 39, L19107 | DOI: 10.1029/2012GL053625

### KEY POINTS

- Understanding the origin of CME drag is essential for arrival time predictions
- This is the first physical characterization of CME aerodynamic drag
- Our results elucidate the essential physics involved in CME deceleration

▶ 1 of 2

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## First observations of $5f_{ce}$ auroral roars

J. LaBelle

First Published: 13 October 2012 Vol: 39, L19106 | DOI: 10.1029/2012GL053551

### KEY POINTS

- The aurora emits 5th cyclotron harmonic roar, higher than ever observed
- Observations at multiple sites allow an estimate of the  $4f_{ce}$  roar source height
- The new waves, like 4th but unlike 2nd and 3rd harmonics, occur in sunlight

▶ 1 of 4

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## Infrasonic waves generated by supersonic auroral arcs

Victor P. Pasko

First Published: 9 October 2012 Vol: 39, L19105 | DOI: 10.1029/2012GL053587

### KEY POINTS

- Complex infrasonic waveforms generated by auroral arcs are explained
- The synchronization of arc and the acoustic wave is important
- A body force acting in the electrojet volume is quantified

▶ 1 of 3

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## The observed composition of ions outflowing from Titan

J. H. Westlake, C. P. Paranicas, T. E. Cravens, J. G. Luhmann, K. E. Mandt, H. T. Smith, D. G. Mitchell, A. M. Rymer, M. E. Perry, J. H. Waite Jr., et al

First Published: 6 October 2012 Vol: 39, L19104 | DOI: 10.1029/2012GL053079

### KEY POINTS

- The Cassini INMS observes ions from below Titan's exobase near 3000 km altitude
- The composition is ionospheric, namely CH<sub>3</sub><sup>+</sup>, CH<sub>4</sub><sup>+</sup>, CH<sub>5</sub><sup>+</sup>, HCNH<sup>+</sup>, and C<sub>2</sub>H<sub>5</sub><sup>+</sup>
- The ions are observed to have a speed of 0.8-1.5 km/s relative to Titan

▶ 1 of 3

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### **First-principles physics of cusp/polar cap thermospheric disturbances**

Herbert C. Carlson, Timothy Spain, Anasuya Aruliah, Asmund Skjaeveland, Joran Moen

First Published: 5 October 2012 Vol: 39, L19103 | DOI: 10.1029/2012GL053034

#### **KEY POINTS**

- The physical principles for strong thermospheric upwelling in polar cusp
- Provides conditions to realistically quantify cusp density disturbances
- New methodology validated for improving 3-D thermospheric modelling

▶ 1 of 2

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### **Heliospheric modulation of galactic cosmic rays during grand solar minima: Past and future variations**

M. J. Owens, I. Usoskin, M. Lockwood

First Published: 5 October 2012 Vol: 39, L19102 | DOI: 10.1029/2012GL053151

#### **KEY POINTS**

- An explanation for the observed cosmic ray flux through the Maunder Minimum
- Solar dynamo continues to cycle through grand solar minima

- The open solar flux may plateau in cycle 24 even if sunspot number drops

Highlight

▶ 1 of 3

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## The influence of hemispheric asymmetries on field-aligned ion drifts at the geomagnetic equator

A. G. Burrell, R. A. Heelis

First Published: 4 October 2012 Vol: 39, L19101 | DOI: 10.1029/2012GL053637

### KEY POINTS

- Conjugate hmF2 differences act as a proxy for the plasma pressure gradient
- The field-aligned drifts and conjugate hmF2 differences are strongly correlated
- The modeled neutral wind and field-aligned drift are strongly correlated

▶ 1 of 5

## The Cryosphere

### Spring snow cover extent reductions in the 2008–2012 period exceeding climate model projections

C. Derksen, R. Brown

First Published: 10 October 2012 Vol: 39, L19504 | DOI: 10.1029/2012GL053387

#### KEY POINTS

- N. Hemisphere spring snow cover extent reductions since 1967 are significant
- Rate of June snow loss exceeds the rate of September sea ice loss (1979-2011)
- Snow reductions since 2005 exceed an ensemble of CMIP5 simulations

▶ 1 of 4

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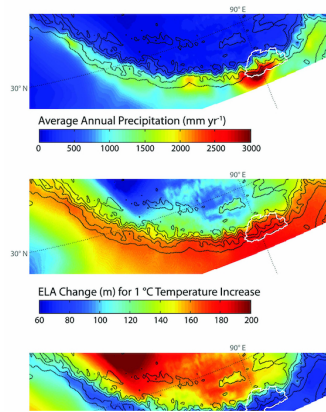
### Sensitivity and response of Bhutanese glaciers to atmospheric warming

Summer Rupper, Joerg M. Schaefer, Landon K. Burgener, Lora S. Koenig, Karma Tsering, Edward R. Cook

First Published: 9 October 2012 Vol: 39, L19503 | DOI: 10.1029/2012GL053010

#### KEY POINTS

- Uncertainty in climate results in order magnitude differences in glacier change
- Even in the absence of additional warming, glacierized changes are substantial
- Glacier changes are unlikely to be compensated for by precipitation changes



▶ 1 of 2

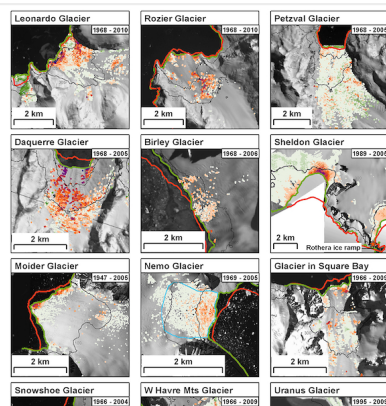
## Multi-decadal glacier surface lowering in the Antarctic Peninsula

Matthias Kunz, Matt A. King, Jon P. Mills, Pauline E. Miller, Adrian J. Fox, David G. Vaughan, Stuart H. Marsh

First Published: 9 October 2012 Vol: 39, L19502 | DOI: 10.1029/2012GL052823

### KEY POINTS

- Assessment of multi-decadal glacier volume change in the Antarctic Peninsula
- Mean surface lowering of  $0.28 \pm 0.03$  m/yr at glacier fronts over recent decades
- Post-1990 increase in lowering, in agreement with increased temperatures



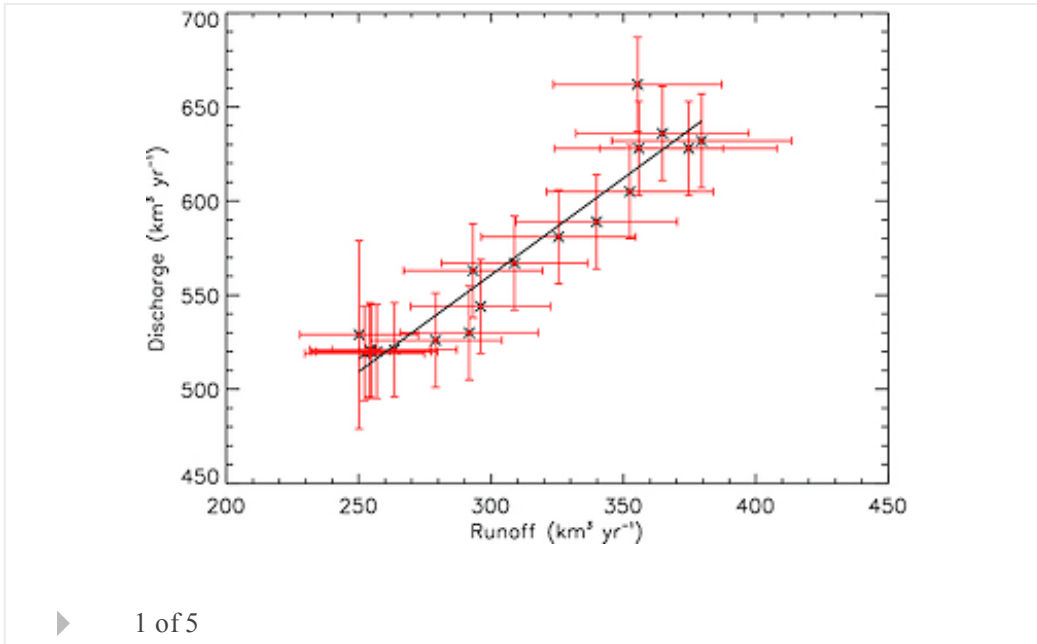
▶ 1 of 3

## Recent large increases in freshwater fluxes from Greenland into the North Atlantic

Jonathan Bamber, Michiel van den Broeke, Janneke Ettema, Jan Lenaerts, Eric Rignot

**KEY POINTS**

- FWF from Greenland increasing faster than known
- Little impact on Arctic Ocean, significant change to North Atlantic
- Trend is monotonic and similar order of magnitude to GSA



▶ 1 of 5

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