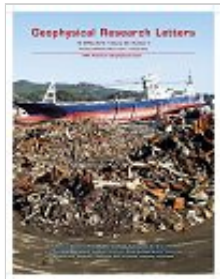


Issue Contents



Volume 39, Issue 7

April 2012

Brief Detailed

Atmospheric Science

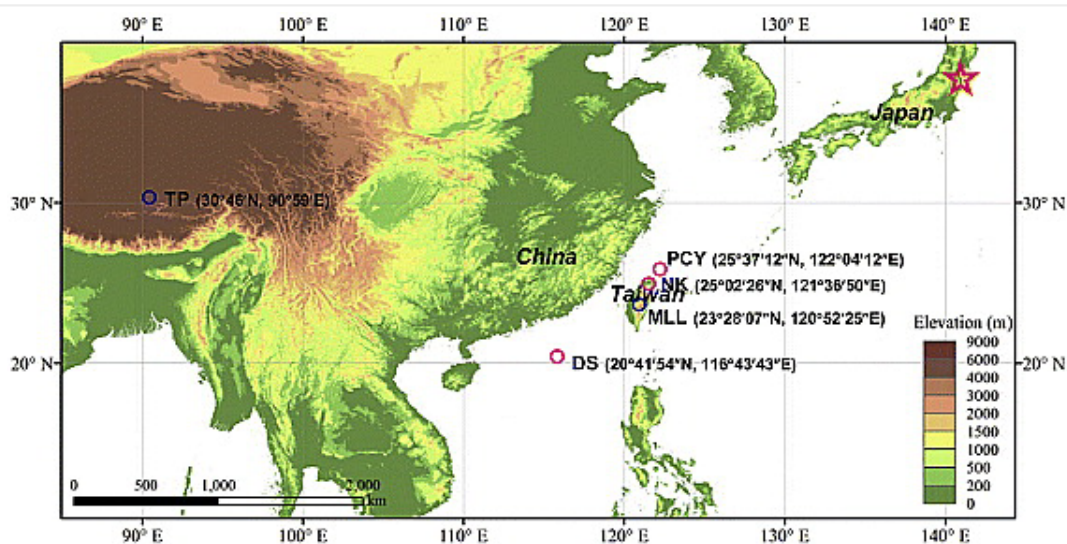
Hemispheric dispersion of radioactive plume laced with fission nuclides from the Fukushima nuclear event

Shih-Chieh Hsu, Chih-An Huh, Chuen-Yu Chan, Shuen-Hsin Lin, Fei-Jan Lin, Shaw Chen Liu

First Published: 12 January 2012 Vol: 39, L00G22 | DOI: 10.1029/2011GL049986

KEY POINTS

- A round of hemispheric transport for Japan radiation clouds is about 18 days
- The first two waves of radiation clouds transported at distinctive altitudes
- A schematic model is constructed for the hemispheric dispersion

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Solid Earth

Normal-faulting earthquakes beneath the outer slope of the Japan Trench after the 2011 Tohoku

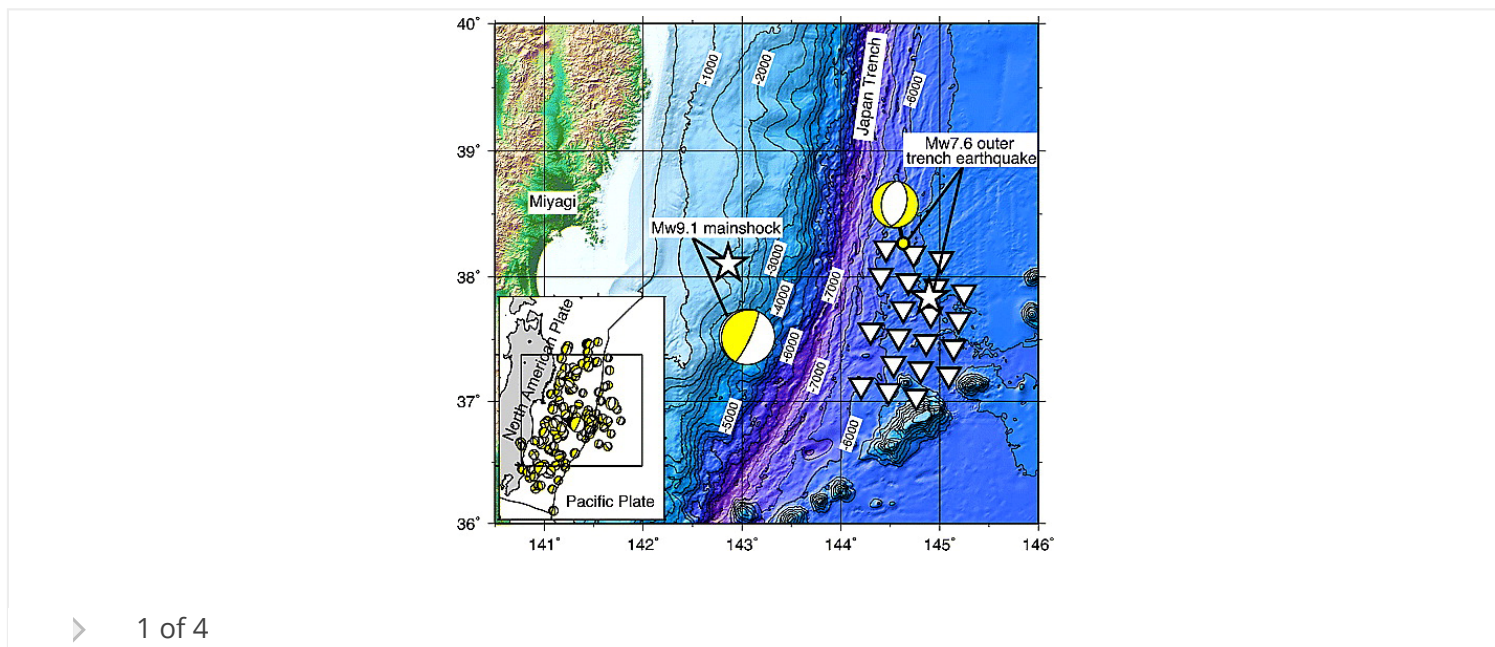
earthquake: Implications for the stress regime in the incoming Pacific plate

Koichiro Obana, Gou Fujie, Tsutomu Takahashi, Yojiro Yamamoto, Yasuyuki Nakamura, Shuichi Kodaira, Narumi Takahashi, Yoshiyuki Kaneda, Masanao Shinohara

First Published: 31 January 2012 Vol: 39, L00G24 | DOI: 10.1029/2011GL050399

KEY POINTS

- OBS observations for outer trench slope earthquakes after the 2011 Tohoku EQ
- Normal-faulting earthquakes in oceanic crust and mantle of the incoming plate
- Stress regime in the Pacific plate was changed by the 2011 Tohoku earthquake



Oceans

The 2011 Japan tsunami current velocity measurements from survivor videos at Kesennuma Bay using LiDAR

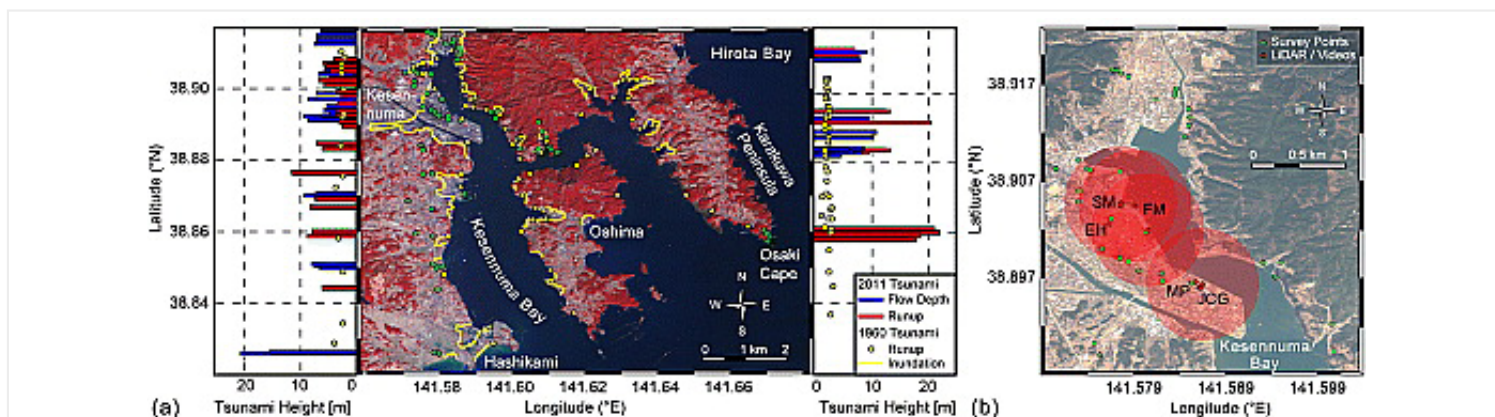
Hermann M. Fritz, David A. Phillips, Akio Okayasu, Takenori Shimozono, Haijiang Liu, Fahad Mohammed, Vassilis Skanavis, Costas E. Synolakis, Tomoyuki Takahashi

First Published: 21 January 2012 Vol: 39, L00G23 | DOI: 10.1029/2011GL050686

KEY POINTS

- Application of LiDAR in post-tsunami survey
- Tsunami video analysis using PIV
- Video based tsunami water level time series

Highlight



Atmospheric Science

The effect of translation speed upon the intensity of tropical cyclones over the tropical ocean

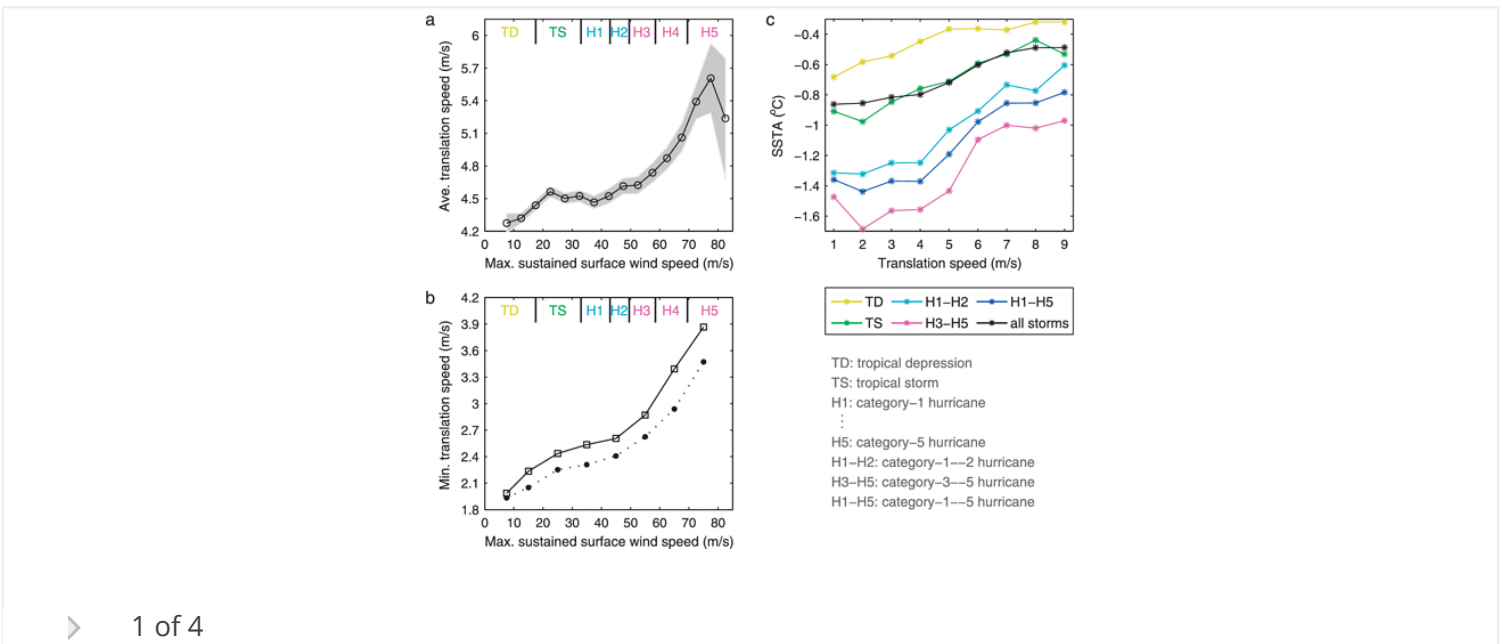
Wei Mei, Claudia Pasquero, François Primeau

First Published: 5 April 2012 Vol: 39, L07801 | DOI: 10.1029/2011GL050765

KEY POINTS

- The intensity of TCs correlates with their translation speed in the tropics
- Ave cold wake temperature is determined by TC intensity and translation speed
- TC-induced ocean cooling feeds back onto the TC intensification process

Highlight



Oceans

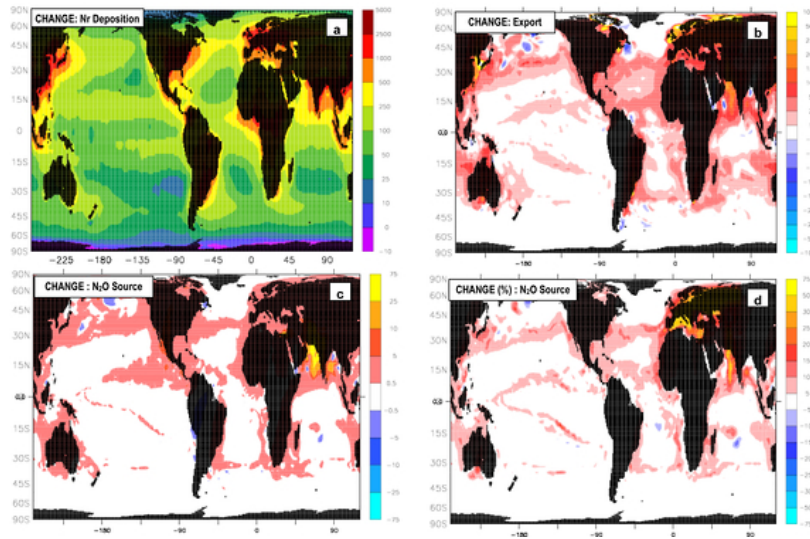
Quantifying the impact of anthropogenic nitrogen deposition on oceanic nitrous oxide

Parvatha Suntharalingam, Erik Buitenhuis, Corinne Le Quéré, Frank Dentener, Cynthia Nevison, James H. Butler, Hermann W. Bange, Grant Forster

First Published: 12 April 2012 Vol: 39, L07605 | DOI: 10.1029/2011GL050778

KEY POINTS

- Anthropogenic N deposition has modest global but high local impact on ocean N₂O
- Highest impact where high N deposition overlays hypoxic zones of high N₂O yield
- Previous scaling estimates omitted a source of new nitrogen in their analysis



1 of 1

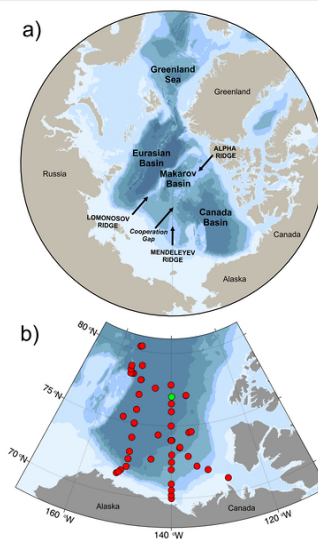
The Arctic Ocean warms from below

Eddy C. Carmack, William J. Williams, Sarah L. Zimmermann, Fiona A. McLaughlin

First Published: 7 April 2012 Vol: 39, L07604 | DOI: 10.1029/2012GL050890

KEY POINTS

- The deep water is warming at a measurable rate of ~ 0.0004 deg C yr⁻¹
- This heating is not escaping along the basin perimeter
- A greater fraction of the heat escapes vertically than previously thought



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Solid Earth

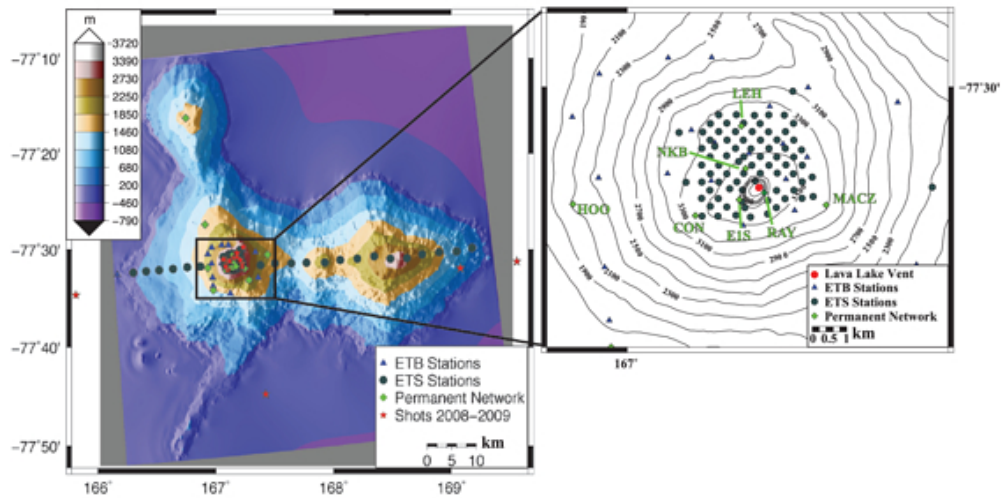
Imaging of Erebus volcano using body wave seismic interferometry of Strombolian eruption coda

J. A. Chaput, D. Zandomenighi, R. C. Aster, H. Knox, P. R. Kyle

First Published: 14 April 2012 Vol: 39, L07304 | DOI: 10.1029/2012GL050956

KEY POINTS

- High resolution scattering image of an active volcano
- Body seismic interferometry applied to eruption coda



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Climate

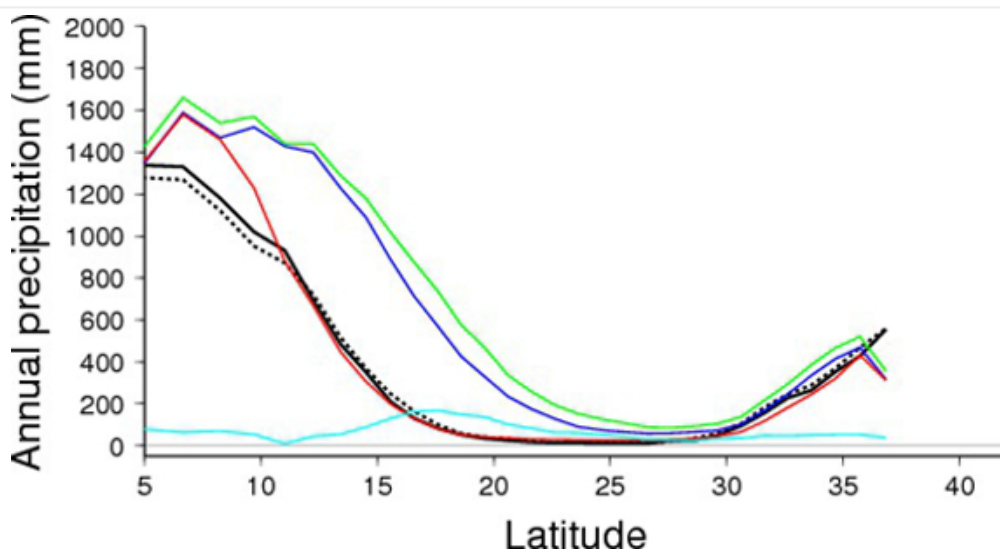
A reassessment of lake and wetland feedbacks on the North African Holocene climate

G. Krinner, A.-M. Lézine, P. Braconnot, P. Sepulchre, G. Ramstein, C. Grenier, I. Gouttevin

First Published: 3 April 2012 Vol: 39, L07701 | DOI: 10.1029/2012GL050992

KEY POINTS

- Open-water surfaces lead to increased precipitation rates in North Africa
- This provides a major positive feedback to the mid-Holocene
- Climate models should take this effect into account



> 1 of 3

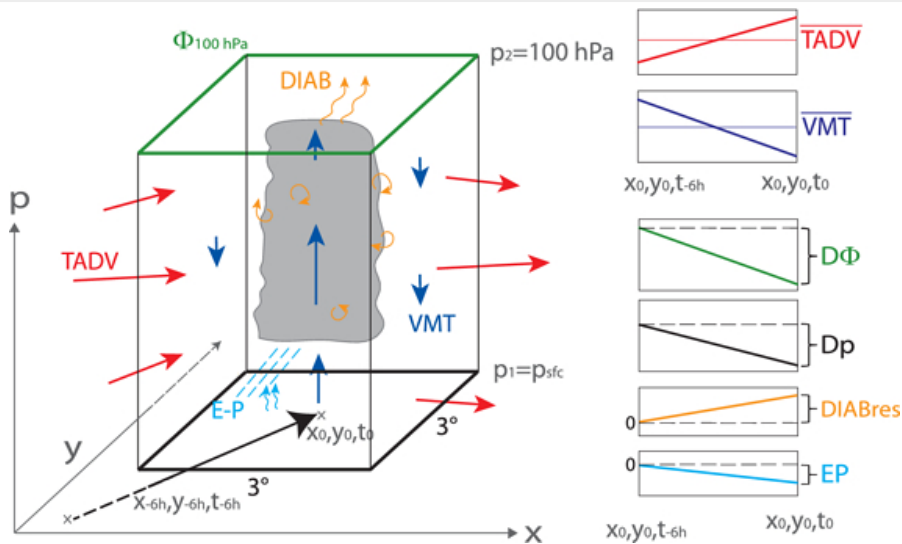
Diagnosing the influence of diabatic processes on the explosive deepening of extratropical cyclones

Andreas H. Fink, Susan Pohle, Joaquim G. Pinto, Peter Knippertz

First Published: 12 April 2012 Vol: 39, L07803 | DOI: 10.1029/2012GL051025

KEY POINTS

- Novel version of the classical surface pressure tendency equation is presented
- Role of diabatic processes to deepening of extratropical cyclones is quantified
- Predominance of diabatic contribution to deepening found for Xynthia and Klaus



> 1 of 4

Solid Earth

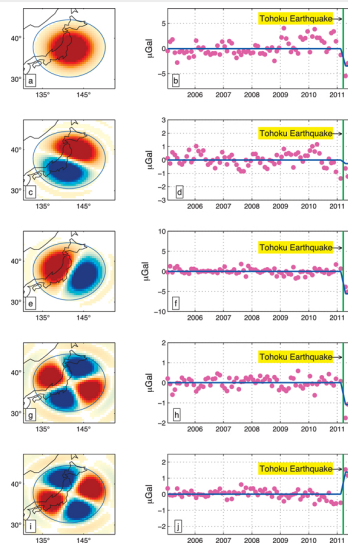
Coseismic and postseismic deformation of the 2011 Tohoku-Oki earthquake constrained by GRACE gravimetry

Lei Wang, C. K. Shum, Frederik J. Simons, Byron Tapley, Chunli Dai

First Published: 5 April 2012 Vol: 39, L07301 | DOI: 10.1029/2012GL051104

KEY POINTS

- The total seismic moment is estimated from GRACE data
- GRACE data are sensitive to the after-slip of the earthquake
- Inversion of GRACE data can now quantify the earthquake deformation mechanism



> 1 of 3

Oceans

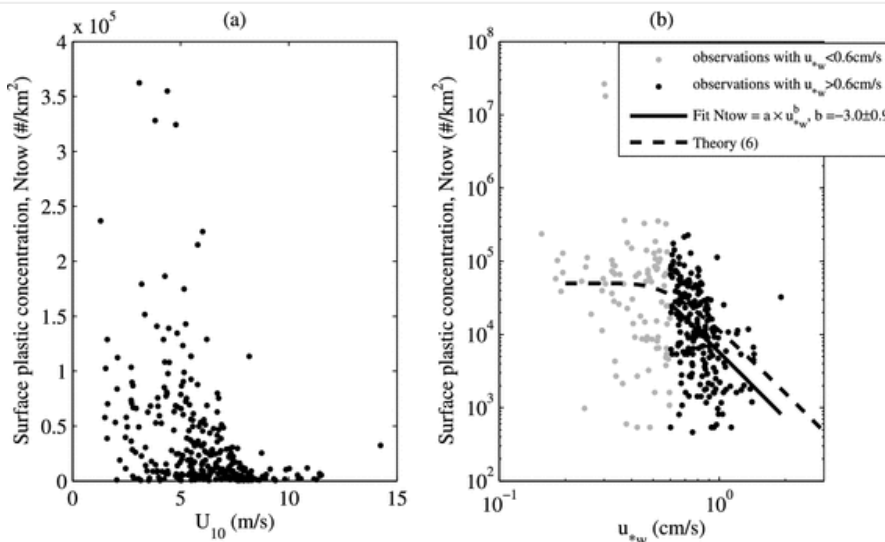
The effect of wind mixing on the vertical distribution of buoyant plastic debris

T. Kukulka, G. Proskurowski, S. Morét-Ferguson, D. W. Meyer, K. L. Law

First Published: 3 April 2012 Vol: 39, L07601 | DOI: 10.1029/2012GL051116

KEY POINTS

- Plastic debris is vertically distributed due to wind-driven upper ocean mixing
- Traditional measurements significantly underestimate marine plastic content
- A geophysical approach must be taken to quantify marine plastic pollution



> 1 of 4

Solid Earth

The March 11, 2011 Tohoku-oki earthquake and cascading failure of the plate interface

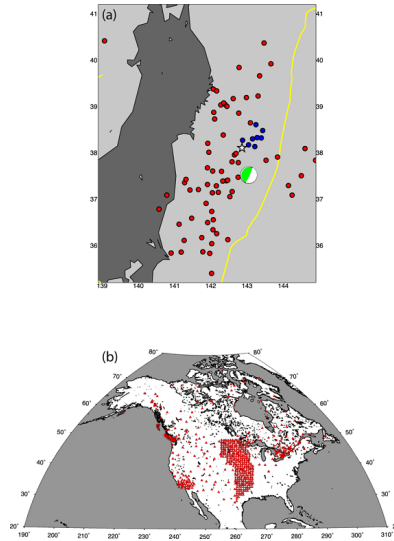
Eric Kiser, Miaki Ishii

First Published: 2 March 2012 Vol: 39, L00G25 | DOI: 10.1029/2012GL051170

KEY POINTS

- The 2011 Mw 9.0 Tohoku-oki earthquake has frequency-dependent rupture behavior
- Near-trench ruptures updip and south of the epicenter may be tsunami sources
- Seismicity surrounding the mainshock gives insights into future seismic hazards

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> 1 of 3

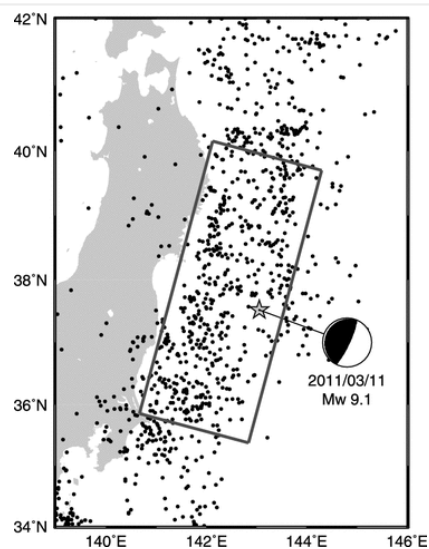
Tidal triggering of earthquakes prior to the 2011 Tohoku-Oki earthquake (M_w 9.1)

Sachiko Tanaka

First Published: 7 April 2012 Vol: 39, L00G26 | DOI: 10.1029/2012GL051179

KEY POINTS

- Tidal triggering prior to the 2011 Tohoku-Oki earthquake is observed
- Triggering occurred in and near the initial rupture site of the mainshock
- Influence existed over a decade-long period before the Tohoku-Oki earthquake



> 1 of 4

Ammonia sources in the California South Coast Air Basin and their impact on ammonium nitrate formation

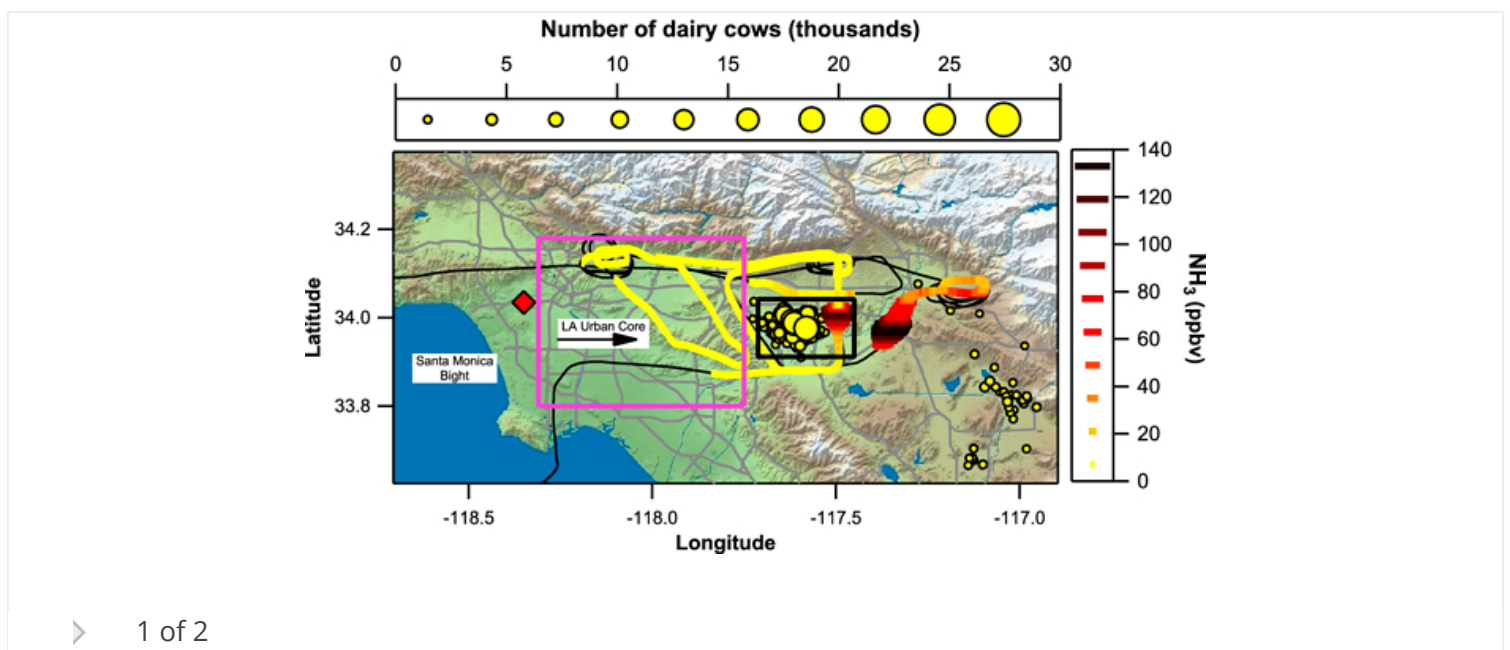
J. B. Nowak, J. A. Neuman, R. Bahreini, A. M. Middlebrook, J. S. Holloway, S. A. McKeen, D. D. Parrish, T. B. Ryerson, M. Trainer

First Published: 12 April 2012 Vol: 39, L07804 | DOI: 10.1029/2012GL051197

KEY POINTS

- Mass of SoCAB ammonia emissions is similar from automobile and dairy sources
- SoCAB dairy ammonia emissions are underrepresented in inventories
- Dairy ammonia emissions have larger impact on SoCAB ammonium nitrate formation

Highlight



Space Sciences

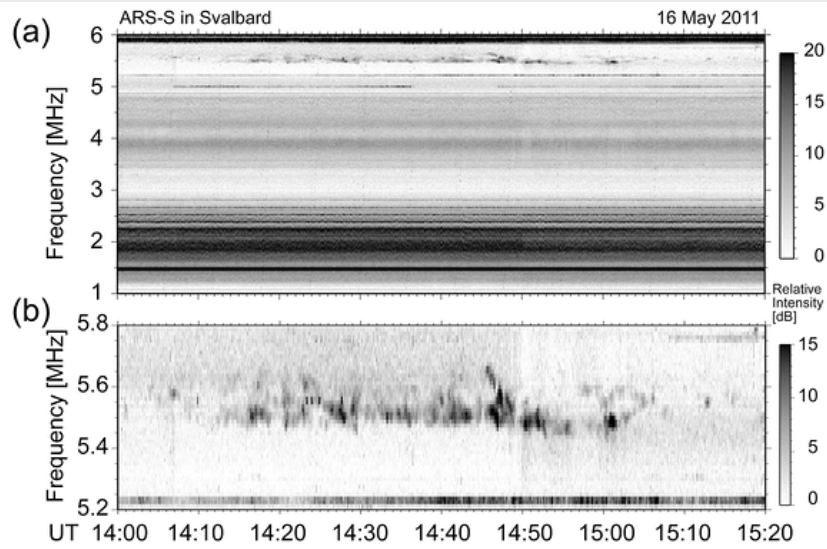
First observations of $4f_{ce}$ auroral roar emissions

Y. Sato, T. Ono, N. Sato, Y. Ogawa

First Published: 6 April 2012 Vol: 39, L07101 | DOI: 10.1029/2012GL051205

KEY POINTS

- First observations of auroral roar near 4 times electron cyclotron frequency
- The $4f_{ce}$ auroral roar occurs only under the sunlit condition from noon to evening
- Its origin should be upper hybrid waves favorably generated at $f_{UH} \sim 4f_{ce}$



> 1 of 3

Solid Earth

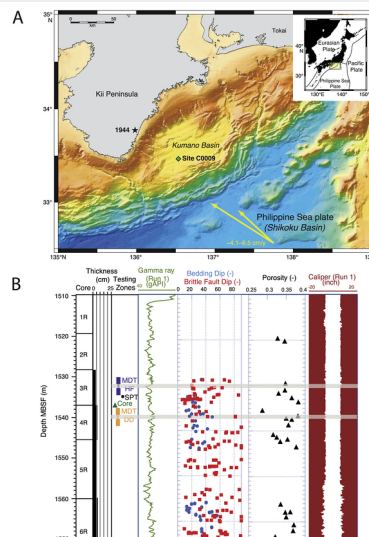
Scale dependence of *in-situ* permeability measurements in the Nankai accretionary prism: The role of fractures

David F. Boutt, Demian Saffer, Mai-Linh Doan, Weiren Lin, Takatoshi Ito, Yasuyuki Kano, Peter Flemings, Lisa C. McNeill, Timothy Byrne, Nicholas W. Hayman, et al

First Published: 6 April 2012 Vol: 39, L07302 | DOI: 10.1029/2012GL051216

KEY POINTS

- We present *in-situ* measurements of permeability in the active interior wedge
- *In-situ* permeability is 3 orders of magnitude larger than core-based measures
- Fractures and faults in the interior wedge material are fluid conduits



> 1 of 3

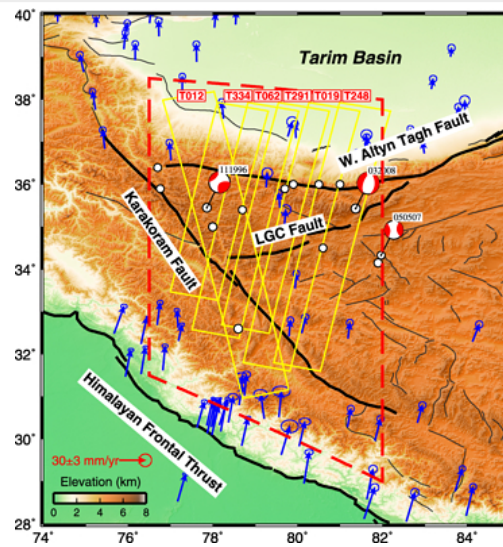
Satellite geodetic imaging reveals internal deformation of western Tibet

H. Wang, T. J. Wright

First Published: 7 April 2012 Vol: 39, L07303 | DOI: 10.1029/2012GL051222

KEY POINTS

- A new method to derive dense, regional-scale velocity fields from InSAR and GPS
- High strain found away from the major mapped faults of western Tibet
- Low slip rate of the Karakoram Fault (< 6 mm/yr) confirmed



> 1 of 3

Atmospheric Science

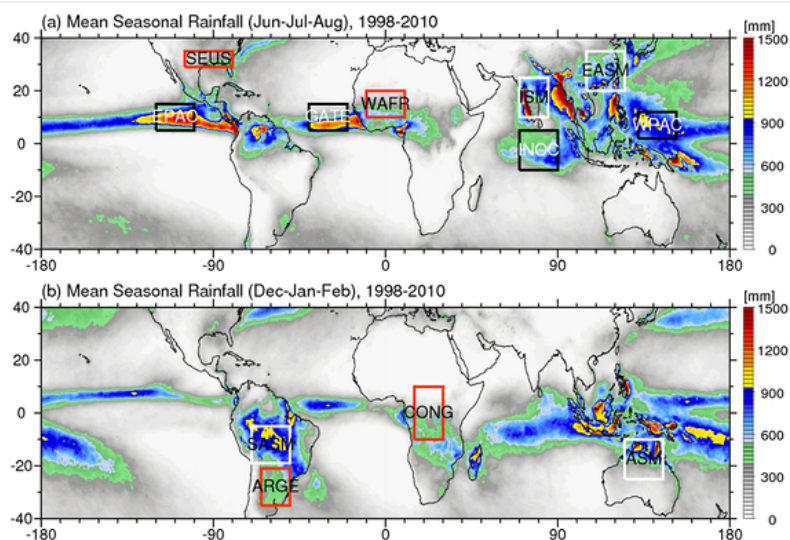
Properties of deep convection in tropical continental, monsoon, and oceanic rainfall regimes

Weixin Xu, Edward J. Zipser

First Published: 7 April 2012 Vol: 39, L07802 | DOI: 10.1029/2012GL051242

KEY POINTS

- Clear regime separation exists among continent, monsoon, and oceanic convection
- Regime variations are most evident in mixed-phase precipitation processes
- Monsoon actives (breaks) are slightly more continental (oceanic) in nature



> 1 of 4

Direct measurement of volume flux in the Faroe-Shetland Channel and over the Iceland-Faroe Ridge

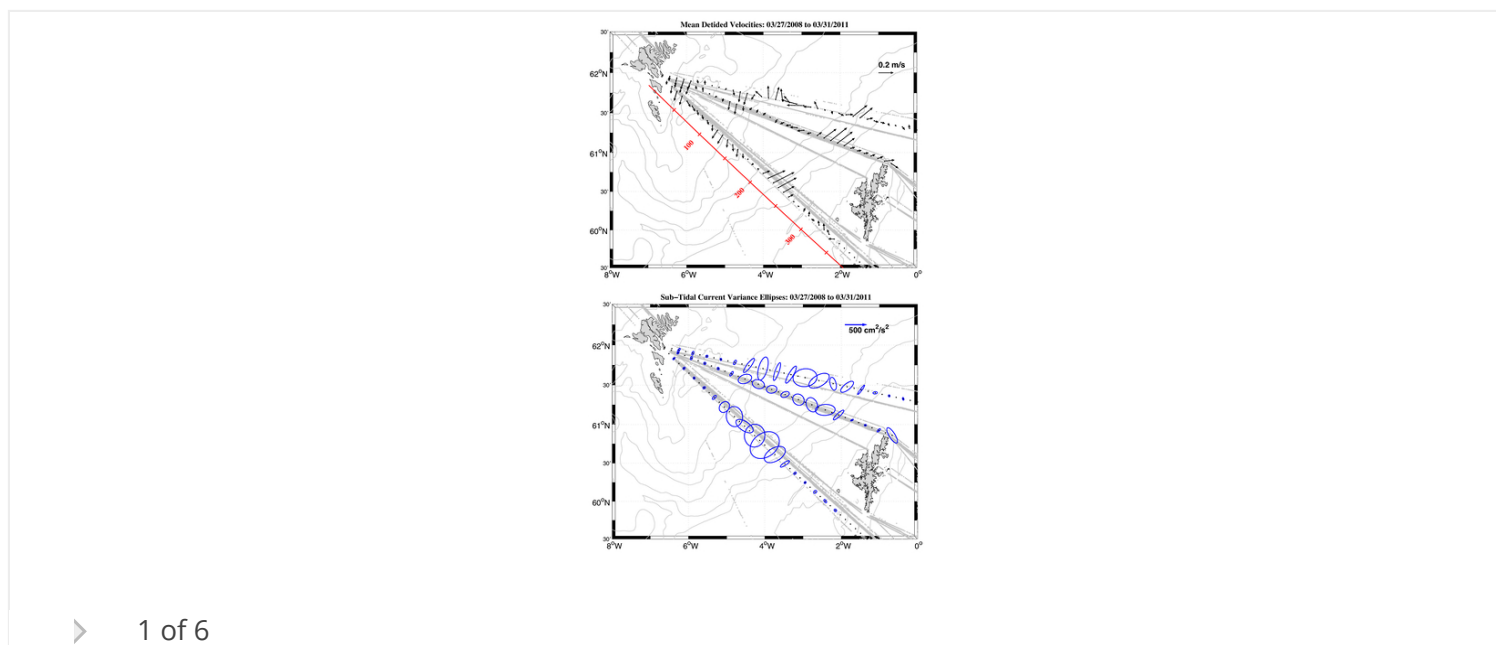
T. Rossby, C. N. Flagg

First Published: 4 April 2012 Vol: 39, L07602 | DOI: 10.1029/2012GL051269

KEY POINTS

- First direct measurement of exchange between the North Atlantic and Nordic Sea
- Power of the direct measurement of currents from vessels in regular traffic
- Will make accurate measurement of heat and salt flux possible

Highlight



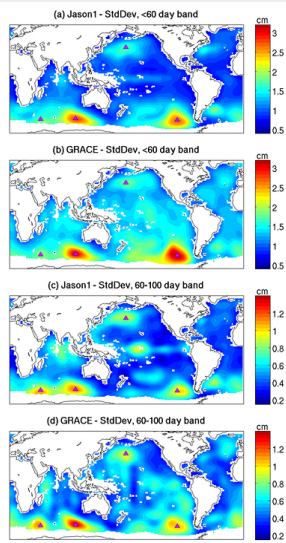
High frequency barotropic ocean variability observed by GRACE and satellite altimetry

Katherine J. Quinn, Rui M. Ponte

First Published: 5 April 2012 Vol: 39, L07603 | DOI: 10.1029/2012GL051301

KEY POINTS

- First global observational evidence for the barotropic ocean variability
- Confirms previous theoretical and model-based studies of barotropic behavior
- GRACE contains significant information over the oceans at subseasonal periods



> 1 of 4

Space Sciences

Modeling Arcibo conjugate heating effects with SAMI2

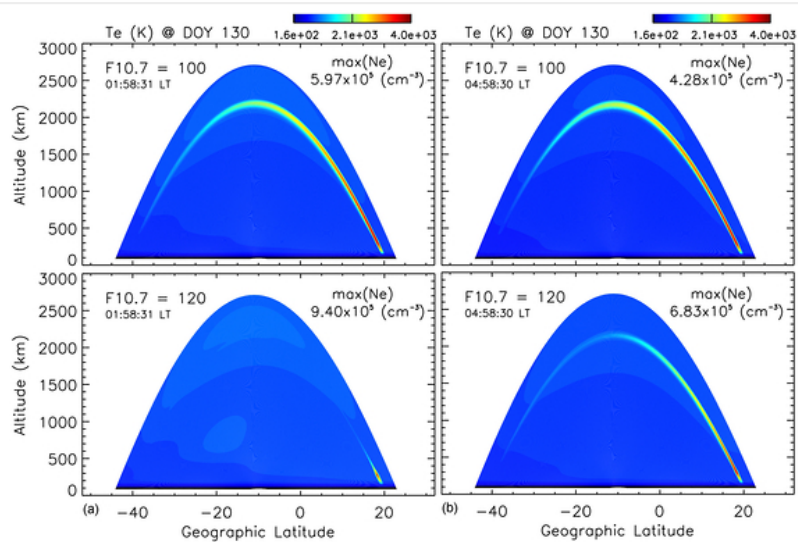
T.-W. Wu, J. D. Huba, G. Joyce, P. A. Bernhardt

First Published: 10 April 2012 Vol: 39, L07103 | DOI: 10.1029/2012GL051311

KEY POINTS

- Arcibo heater can affect topside conjugate ionosphere
- Likely to occur for low-density ionosphere F region
- Electron-N₂ collisions primarily inhibit conjugate effects

Free



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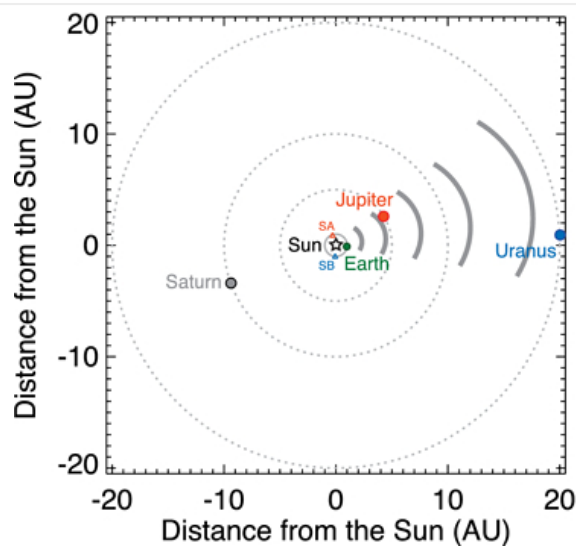
Earth-based detection of Uranus' aurorae

L. Lamy, R. Prangé, K. C. Hansen, J. T. Clarke, P. Zarka, B. Cecconi, J. Abouadarham, N. André, G. Branduardi-Raymont, R. Gladstone, et al

KEY POINTS

- We report the first Earth-based detections of Uranus aurorae
- This enabled us to investigate the atypical Uranian magnetosphere
- This opens a wide field of investigations of this poorly understood magnetosphere

Highlight



> 1 of 3

Planets

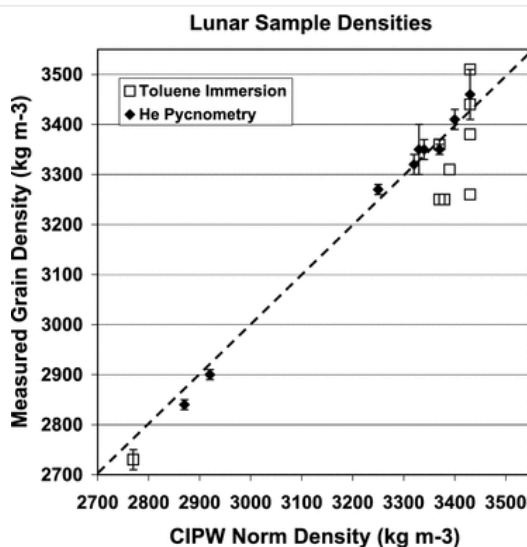
The density and porosity of lunar rocks

Walter S. Kiefer, Robert J. Macke, Daniel T. Britt, Anthony J. Irving, Guy J. Consolmagno

First Published: 13 April 2012 Vol: 39, L07201 | DOI: 10.1029/2012GL051319

KEY POINTS

- Accurate lunar rock densities are needed for geophysical modeling of the Moon
- We provide density and porosity results for all 3 major lunar rock types
- New densities and porosities are ~5 times more accurate than literature values



> 1 of 2

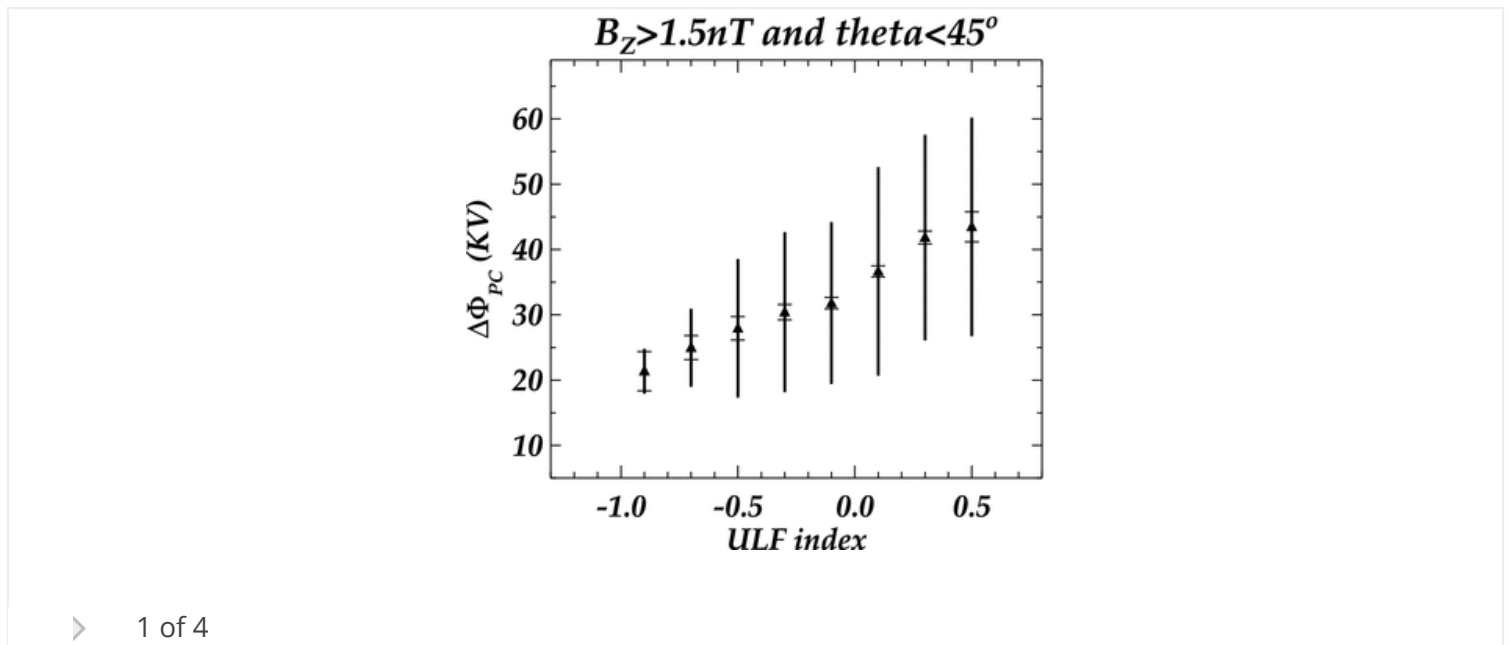
A suggestion that two-dimensional turbulence contributes to polar cap convection for B_z north

M. C. Kelley, H.-J. Kim

First Published: 12 April 2012 Vol: 39, L07102 | DOI: 10.1029/2012GL051347

KEY POINTS

- We explain polar cap convection when B_z is northward
- High-latitude 2-D turbulence is driven by Alfvén waves
- The 2-D turbulence supports an inverse cascade related to 2 of the polar cap scales



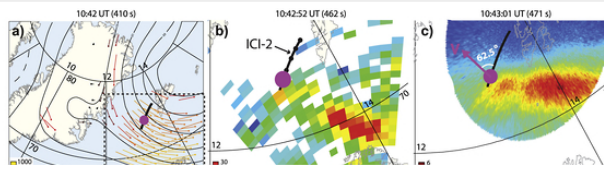
First in-situ measurements of HF radar echoing targets

J. Moen, K. Oksavik, T. Abe, M. Lester, Y. Saito, T. A. Bekkeng, K. S. Jacobsen

First Published: 13 April 2012 Vol: 39, L07104 | DOI: 10.1029/2012GL051407

KEY POINTS

- First documentation of 10-m scale electron density structures
- Shows how 10-m scale structures are located relative to km scale gradients
- Gradients are sufficient for the gradient drift instability to operate



> 1 of 2

Oceans

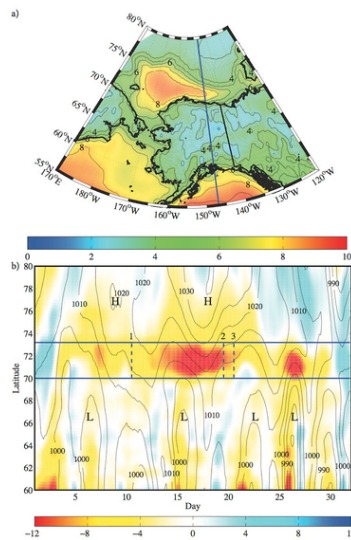
Storm-induced upwelling of high $p\text{CO}_2$ waters onto the continental shelf of the western Arctic Ocean and implications for carbonate mineral saturation states

Jeremy T. Mathis, Robert S. Pickart, Robert H. Byrne, Craig L. McNeil, G. W. K. Moore, Laurie W. Juranek, Xuewu Liu, Jian Ma, Regina A. Easley, Matthew M. Elliot, et al

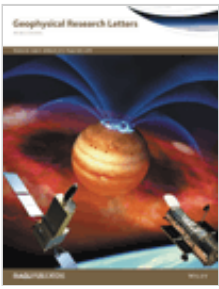
First Published: 11 April 2012 Vol: 39, L07606 | DOI: 10.1029/2012GL051574

KEY POINTS

- Low pressure storm systems in the Arctic induce strong upwelling along the shelf
- Upwelling leads to large fluxes of CO_2 out of the ocean
- Upwelling causes broad carbonate mineral suppression and undersaturation



> 1 of 3



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14-19 June 2015
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