

ПУ
№ 28/9

OCTOBER 2014 VOL 7 NO 10
www.nature.com/naturegeoscience

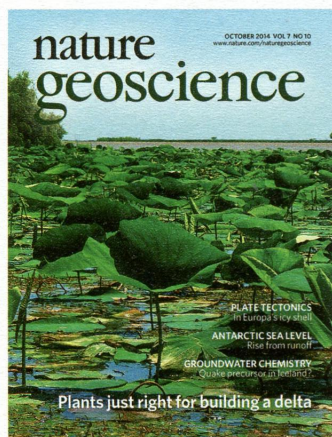
nature geoscience

PLATE TECTONICS
In Europa's icy shell

ANTARCTIC SEA LEVEL
Rise from runoff

GROUNDWATER CHEMISTRY
Quake precursor in Iceland?

Plants just right for building a delta

**COVER IMAGE**

Plants may enhance sedimentation and help deltas to keep up with rising sea levels. Numerical simulations show that intermediate vegetation height and density are optimal, whereas too much vegetation inhibits sediment deposition in deltaic marshes. The image shows freshwater marsh vegetation in Wax Lake Delta, Louisiana, in June 2014.

Letter p722

IMAGE: ELIZABETH OLLIVER

COVER DESIGN: DAVID SHAND

ON THE COVER**Plate tectonics**

In Europa's icy shell

Article p762; News & Views p695

Antarctic sea level

Rise from runoff

Letter p732

Groundwater chemistry

Quake precursor in Iceland?

Letter p752; News & Views p697



Nature Geoscience is printed on paper recycled from post-consumer waste.

EDITORIAL

689 Over to the diplomats

CORRESPONDENCE

691 Steps for success of OCO-2

John B. Miller, Pieter P. Tans and Manuel Gloor

691 Biological impact on Greenland's albedo

Liane G. Benning, Alexandre M. Anesio, Stefanie Lutz and Martyn Tranter

COMMENTARY

692 Cumulative emissions and climate policy

David J. Frame, Adrian H. Macey and Myles R. Allen

NEWS & VIEWS

695 Planetary science: Plate tectonics on ice

Michelle M. Selvens

696 Biogeochemistry: Microbial flexibility

Alicia Newton

697 Earthquakes: Hydrogeochemical precursors

S. E. Ingebritsen and M. Manga

698 Palaeoceanography: Tectonically driven upwelling

Johan Etourneau

700 Climate change: Dichotomy of drought and deluge

Richard P. Allan

701 Coastal processes: Storm-proofing with marshes

Sergio Fagherazzi

PERSPECTIVE

703 Atmospheric circulation as a source of uncertainty in climate change projections

Theodore G. Shepherd

REVIEW ARTICLE

709 Persistent growth of CO₂ emissions and implications for reaching climate targets

P. Friedlingstein, R. M. Andrew, J. Rogelj, G. P. Peters, J. G. Canadell, R. Knutti, G. Luderer, M. R. Raupach, M. Schaeffer, D. P. van Vuuren and C. Le Quéré

LETTERS

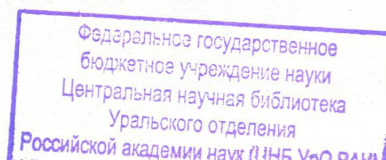
716 Global assessment of trends in wetting and drying over land

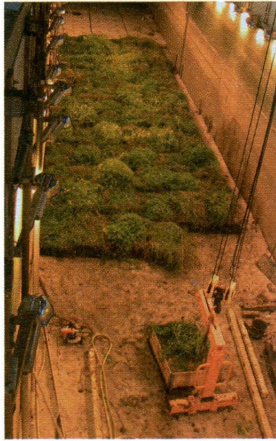
Peter Greve, Boris Orlovsky, Brigitte Mueller, Justin Sheffield, Markus Reichstein and Sonia I. Seneviratne

→N&V p700

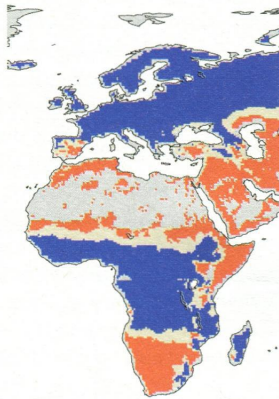
722 Optimum vegetation height and density for inorganic sedimentation in deltaic marshes

William Nardin and Douglas A. Edmonds





Salt marshes protect coastlines against waves. Wave flume experiments show that marsh vegetation causes substantial wave dissipation and prevents erosion of the underlying surface, even during extreme storm surge conditions. Image: Iris Möller Letter p727; News & Views p701



Past continental dryness trends are difficult to assess. A comprehensive analysis of hundreds of combinations of data sets suggests that only 24.6% of the global land area have been exposed to robust dryness changes since 1948. Letter p716; News & Views p700

- 727 Wave attenuation over coastal salt marshes under storm surge conditions**
Iris Möller, Matthias Kudella, Franziska Rupprecht, Tom Spencer, Maike Paul, Bregje K. van Wesenbeeck, Guido Wolters, Kai Jensen, Tjeerd J. Bouma, Martin Miranda-Lange and Stefan Schimmels
→N&V p701
- 732 Rapid sea-level rise along the Antarctic margins in response to increased glacial discharge**
Craig D. Rye, Alberto C. Naveira Garabato, Paul R. Holland, Michael P. Meredith, A. J. George Nurser, Chris W. Hughes, Andrew C. Coward and David J. Webb
- 736 Microbial shaping of sedimentary wrinkle structures**
G. Mariotti, S. B. Pruss, J. T. Perron and T. Bosak
- 741 Uplift of Africa as a potential cause for Neogene intensification of the Benguela upwelling system**
Gerlinde Jung, Matthias Prange and Michael Schulz
→N&V p698
- 748 Persistence of carbon release events through the peak of early Eocene global warmth**
Sandra Kirtland Turner, Philip F. Sexton, Christopher D. Charles and Richard D. Norris
- 752 Changes in groundwater chemistry before two consecutive earthquakes in Iceland**
Alasdair Skelton, Margareta Andrén, Hrefna Kristmannsdóttir, Gabrielle Stockmann, Carl-Magnus Mörth, Árný Sveinbjörnsdóttir, Sigurjón Jónsson, Erik Sturkell, Helga Rakeł Guðrúnardóttir, Hreinn Hjartarson, Heike Siegmund and Ingrid Kockum
→N&V p697
- 757 Seismic precursors linked to super-critical fluids at oceanic transform faults**
Louis Géli, Jean-Michel Piau, Robert Dziak, Vincent Maury, Delphine Fitzenz, Quentin Coutellier and Pierre Henry

ARTICLES

- 762 Evidence for subduction in the ice shell of Europa**
Simon A. Kattenhorn and Louise M. Prockter
→N&V p695
- 768 Vertical structure of stratospheric water vapour trends derived from merged satellite data**
M. I. Hegglin, D. A. Plummer, T. G. Shepherd, J. F. Scinocca, J. Anderson, L. Froidevaux, B. Funke, D. Hurst, A. Rozanov, J. Urban, T. von Clarmann, K. A. Walker, H. J. Wang, S. Tegtmeier and K. Weigel



nature publishing group

Nature Geoscience (ISSN 1752-0894, USPS 025065) is published monthly by Nature Publishing Group, a division of Macmillan Publishers Ltd, The Macmillan Building, 4 Crinan Street, London N1 9XW, UK. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form (electronic or otherwise) without prior permission from permissions@nature.com. US Periodicals postage paid at Jamaica, NY, and additional mailing post offices. US POSTMASTER: Send address changes to Nature Publishing Group, Air Business Ltd, c/o Worldnet Shipping Inc., 156-15, 146th Avenue, 2nd Floor, Jamaica, NY 11434, USA. © 2014 Macmillan Publishers Limited. All rights reserved. Printed in United Kingdom.