Aims and Scope. Geophysical Research Letters publishes high-impact, innovative, and timely research on major scientific advances in all the major geoscience disciplines. Papers are communications-length articles and should have broad and immediate implications in their discipline or across the geosciences. GRL maintains the fastest turn-around of all high-impact publications in the geosciences and works closely with authors to ensure broad visibility of top papers.

Editors: Noah Diffenbaugh (Editor-in-Chief) (diffenbaugh@stanford.edu), Lisa Beal, M. Bayani Cardenas (http://orcid.org/0000-0001-6270-3105), Kim Cobb, Meghan Cronin, Andrew J. Dombard, Tatiana Ilyina (http://orcid.org/0000-0002-3475-4842), Benoit Lavraud, Andrew V. Newman, W.K. (Bill) Peterson (http://orcid.org/0000-0002-1513-6096), Jeroen Ritsema (http://orcid.org/0000-0003-4287-7639), Julienne Stroeve (http://orcid.org/0000-0002-0476-3813), Joel A. Thornton, Michael Wyssession, Paul D. Williams.

Associate Editors: Christopher Arridge, Olivier Bachmann, Rose Cory, Ake Fagereng, Mark E. Inall, Valeriy Ivanov, Steven Jacobsen, Paola Passalacqua, Joshua Schwarz, Shafer Smith, Toste Tanhua, Jacob Tielke, Peter A. Traykovskiy, Lixin Wang, Andrew Yau.

AGU Editorial Team. For assistance with submitted manuscripts, file specifications, or AGU publication policy please contact grl@agu.org.

For submission instructions or to submit a manuscript visit: http://grl.submit.agu.org.

The journal to which you are submitting your manuscript employs a plagiarism detection system. By submitting your manuscript to Geophysical Research Letters accepts articles for Open Access publication. Please visit http://olabout.wiley.com/WileyCDA/Section/id-406241.html for further information about OnlineOpen.

Publication Charges. The publication charge income received for Geophysical Research Letters helps support rapid publication, allows more articles per volume, makes possible the low subscription rates, and supports many of AGU's scientific and outreach activities. Publication charge information can be found here: http://publications.agu.org/author-resource-center/.

To encourage papers to be written in a concise fashion, there is an excess length fee. For Geophysical Research Letters the fee is assessed only on the equivalent of more than 12 publication units. The excess length fee does not apply to review articles, and the editor may waive the fee on a limited number of concisely written papers that merit being longer. There is no charge for color in any format.

Copyright and Photocopying. Copyright © 2016 American Geophysical Union. All rights reserved. No part of this publication may be reproduced, stored or transmitted in any form or by any means without the prior permission in writing from the copyright holder. Authorization to copy items for internal and personal use is granted to libraries and other users registered with their local Reproduction Rights Organisation (RRO), e.g. Copyright Clearance Center (CCC), 222 Rosewood Drive, Danvers, MA 01923, USA (www.copyright.com), provided the appropriate fee is paid directly to the RRO. This consent does not extend to other kinds of copying such as copying for general distribution, for advertising or promotional purposes, for creating new collective works or for resale. Special requests should be addressed to: publications@agu.org.

Disclaimer. The Publisher, American Geophysical Union, and Editors cannot be held responsible for errors or any consequences arising from the use of information contained in this journal; the views and opinions expressed do not necessarily reflect those of the Publisher, American Geophysical Union, and Editors; neither does the publication of advertisements constitute any endorsement by the Publisher, American Geophysical Union, and Editors of the products advertised.

Individual Subscriptions. Member subscriptions are available through members.agu.org or by contacting the AGU Member Service Center. The Service Center is open from 8:00 a.m. to 8:30 p.m. Eastern time: +1 202 462 6900, +1 800 966 2481; Fax: +1 202 777 7393; e-mail: service@agu.org. Questions about meetings or membership will be referred to the appropriate staff.

Publisher. Geophysical Research Letters is published on behalf of the American Geophysical Union by Wiley Periodicals, Inc., 111 River St., Hoboken, NJ 07030-5774, +1 201 748 6000.

Delivery Terms and Legal Title. Where the subscription price includes print issues and delivery is to the recipient's address, delivery terms are Delivered At Place (DAP); the recipient is responsible for paying any import duty or taxes. Title to all issues transfers FOB our shipping point, freight prepaid. We will endeavour to fulfil claims for missing or damaged copies within six months of publication, within our reasonable discretion and subject to availability.

GEOPHYSICAL RESEARCH LETTERS, (ISSN 0094-8276), is published semi-monthly by Wiley Subscription Services, Inc., a Wiley Company, 111 River St., Hoboken, NJ 07030-5774.

Periodical Postage Paid at Hoboken, NJ and additional offices.

Postmaster: Send all address changes to GEOPHYSICAL RESEARCH LETTERS, John Wiley & Sons Inc., C/O The Sheridan Press, PO Box 465, Hanover, PA 17331.

Journal Customer Services. For institutional subscription information, claims and any enquiry concerning your journal subscription please go to www.wileyonlinelibrary.com/journal/grl or contact your nearest office.

Americas: Email: cs-journals@wiley.com; Tel: +1 781 388 8598 or +1 800 835 6770 (toll free in the USA & Canada).
Europe, Middle East and Africa: Email: cs-journals@wiley.com; Tel: +44 (0) 1865 778315.
Asia Pacific: Email: cs-journals@wiley.com; Tel: +65 6511 8000.
Japan: For Japanese speaking support, Email: cs-japan@wiley.com; Tel: +65 6511 8010 or Tel (toll-free): 005 316 50 480.


Production Editor. For assistance with post-acceptance articles and other production issues please contact GRLprod@wiley.com.

Access to this journal is available free online within institutions in the developing world through the AGORA initiative with the FAO, the HINARI initiative with the WHO, the OARE initiative with UNEP, and the ARDI initiative with WIPO. For information, visit www.aginternetwork.org, www.who.int/hinari/en/, www.oaresciences.org, or www.wipo.int/ardi/en.

ISSN 0094-8276 (Print) ISSN 1944-8007 (Online)

View this journal online at http://grl.agu.org

Cover: The present-day Gangteng monastery in the Phobjikha Valley, Bhutan, that was reduced to rubble in a major earthquake in 1714. Photo credit: György Hetényi. See also Hetényi et al. (pp. 10,695–10,702, doi: 10.1002/2016GL071033).
Space Sciences

10,557  Keizo Fujimoto
Three-dimensional outflow jets generated in collisionless magnetic reconnection (doi 10.1002/2016GL070810)

10,565  A. Divin, V. Semenov, D. Korovinskiy, S. Markidis, J. Deca, V. Olshevsky, and G. Lapenta
A new model for the electron pressure nongyrotropy in the outer electron diffusion region (doi 10.1002/2016GL070763)

10,574  Robin Ramstad, Stas Barabash, Yoshifumi Futaana, Hans Nilsson, and Mats Holmström
Effects of the crustal magnetic fields on the Martian atmospheric ion escape rate (doi 10.1002/2016GL070135)

10,580  Changsup Lee, Jeong-Han Kim, Geonhwa Jee, Hans Nilsson, and Mats Holmström
New method of estimating temperatures near the mesopause region using meteor radar observations (doi 10.1002/2016GL071082)

Planets

Transport of solar wind plasma onto the lunar nightside surface (doi 10.1002/2016GL071094)

10,595  Megan Bruck Syal, Jared Rovny, J. Michael Owen, and Paul L. Miller
Excavating Stickney crater at Phobos (doi 10.1002/2016GL070749)

10,602  Christopher Hamann, Robert Luther, Matthias Ebert, Lutz Hecht, Alex Deutsch, Kai Wünne, Sebastian Schäffer, Jens Osterholz, and Bernd Lexow

10,611  Morgan E O'Neill and Yohai Kaspi
Slantwise convection on fluid planets (doi 10.1002/2016GL071188)

Solid Earth

10,621  E. Calais, T. Camelbeeck, S. Stein, M. Liu, and T. J. Craig
A new paradigm for large earthquakes in stable continental plate interiors (doi 10.1002/2016GL070815)

Magnitude-based discrimination of man-made seismic events from naturally occurring earthquakes in Utah, USA (doi 10.1002/2016GL070742)

10,646  Matthew J. Genge, Martin Suttle, and Matthias Van Ginneken
Olivine settling in cosmic spherules during atmospheric deceleration: An indicator of the orbital eccentricity of interplanetary dust (doi 10.1002/2016GL070874)

10,654  Abhey Ram Bansal, Dongdong Yao, Zhigang Peng, and Dimas Sianipar
Isolated regions of remote triggering in South/Southeast Asia following the 2012 Mw 8.6 Indian Ocean earthquake (doi 10.1002/2016GL069955)

10,663  Junle Jiang and Yuri Fialko
Reconciling seismicity and geodetic locking depths on the Anza section of the San Jacinto fault (doi 10.1002/2016GL071113)

10,672  Samira Maghsoudi, David W. Eaton, and Jörn Davidsen
Nontrivial clustering of microseismicity induced by hydraulic fracturing (doi 10.1002/2016GL070983)

10,680  Pieter-Ewald Share and Yehuda Ben-Zion
Bimaterial interfaces in the south San Andreas Fault with opposite velocity contrasts NW and SE from San Gorgonio Pass (doi 10.1002/2016GL070774)

10,688  Stephen J. Bauer, W. Payton Gardner, and Hyunwoo Lee
Release of radiogenic noble gases as a new signal of rock deformation (doi 10.1002/2016GL070876)
György Hetényi, Romain Le Roux-Mallouf, Théo Berthet, Rodolphe Cattin, Carlo Cauzzi, Karma Phuntsho, and Remo Grolimund

Joint approach combining damage and paleoseismology observations constrains the 1714 A.D. Bhutan earthquake at magnitude $8 \pm 0.5$ (doi 10.1002/2016GL071033)

David T. Sandwell and Paul Wessel

Interpolation of 2-D vector data using constraints from elasticity (doi 10.1002/2016GL070340)

Mahesh N. Shrivastava, Gabriel González, Marcos Moreno, Mohamed Chlieh, Pablo Salazar, C. D. Reddy, Juan Carlos Báz, Gonzalo Yáñez, Juan González, and Juan Carlos de la Llera

Coseismic slip and afterslip of the 2015 $M_w$ 8.3 Illapel (Chile) earthquake determined from continuous GPS data (doi 10.1002/2016GL070684)


The tectonic development and erosion of the Knox Subglacial Sedimentary Basin, East Antarctica (doi 10.1002/2016GL070315)

Hydrology and Land Surface Studies

Liran Goren

A theoretical model for fluvial channel response time during time-dependent climatic and tectonic forcing and its inverse applications (doi 10.1002/2016GL070451)

N. I. Tananaev, O. M. Makarieva, and L. S. Lebedeva

Trends in annual and extreme flows in the Lena River basin, Northern Eurasia (doi 10.1002/2016GL070796)

K. J. Harding, T. E. Twine, A. VanLooce, J. E. Bagley, and J. Hill

Impacts of second-generation biofuel feedstock production in the central U.S. on the hydrologic cycle and global warming mitigation potential (doi 10.1002/2016GL069981)

Sjoerd Groeskamp, Ryan P. Abernathey, and Andreas Klocker

Water mass transformation by cabbeling and thermobaricity (doi 10.1002/2016GL070860)

The Cryosphere

S. Szanyi, J. V. Lukovich, D. G. Barber, and G. Haller

Persistent artifacts in the NSIDC ice motion data set and their implications for analysis (doi 10.1002/2016GL069799)

Richard I. Cullather, Young-Kwon Lim, Linette N. Boisvert, Ludovic Brucker, Jae N. Lee, and Sophie M. J. Nowicki

Analysis of the warmest Arctic winter, 2015–2016 (doi 10.1002/2016GL071228)


Sensitivity of Pine Island Glacier to observed ocean forcing (doi 10.1002/2016GL070500)

Oceans

Feng Xu and Alexander Ignatov

Error characterization in iQuam SSTs using triple collocations with satellite measurements (doi 10.1002/2016GL070287)

Sjoerd Groeskamp, Ryan P. Abernathey, and Andreas Klocker

Water mass transformation by cabbeling and thermobaricity (doi 10.1002/2016GL070860)
10,846 Zachary K. Erickson, Andrew F. Thompson, Nicolas Cassar, Janet Sprintall, and Matthew R. Mazloff
An advective mechanism for deep chlorophyll maxima formation in southern Drake Passage
(doi 10.1002/2016GL070565)

10,856 Dhruv Balwada, Joseph H. LaCasce, and Kevin G. Speer
Scale-dependent distribution of kinetic energy from surface drifters in the Gulf of Mexico
(doi 10.1002/2016GL069405)

10,864 Thomas Frederikse, Riccardo Riva, Marcel Kleinenherrenbrink, Yoshihide Wada, Michiel van den Broeke, and Ben Marzeion
Closing the sea level budget on a regional scale: Trends and variability on the Northwestern European continental shelf
(doi 10.1002/2016GL070750)

10,873 Laura C. Gillard, Xianmin Hu, Paul G. Myers, and Jonathan L. Bamber
Meltwater pathways from marine terminating glaciers of the Greenland ice sheet (doi 10.1002/2016GL070969)

10,883 Shahrzad Davarpanah Jazi and Mathew G. Wells
Enhanced sedimentation beneath particle-laden flows in lakes and the ocean due to double-diffusive convection
(doi 10.1002/2016GL069547)

Climate

10,891 M. Mariani, M.-S. Fletcher, A. Holz, and P. Nyman
ENSO controls interannual fire activity in southeast Australia (doi 10.1002/2016GL070572)

10,901 Alison Theobald and Hamish McGowan
Evidence of increased tropical moisture in southeast Australian alpine precipitation during ENSO
(doi 10.1002/2016GL070767)

Global linkages originating from decadal oceanic variability in the subpolar North Atlantic
(doi 10.1002/2016GL071134)

10,920 Brian Zambri and Alan Robock
Winter warming and summer monsoon reduction after volcanic eruptions in Coupled Model Intercomparison Project 5 (CMIP5) simulations (doi 10.1002/2016GL070460)

10,929 Evgenia S. Kandiano, Marcel T. J. van der Meer, Henning A. Bauch, Jan Helmke, Jaap S. Sinninghe Damsté, and Stefan Schouten
A cold and fresh ocean surface in the Nordic Seas during MIS 11: Significance for the future ocean
(doi 10.1002/2016GL070294)

10,938 A. Bodas-Salcedo, T. Andrews, A. V. Karmalkar, and M. A. Ringer
Cloud liquid water path and radiative feedbacks over the Southern Ocean (doi 10.1002/2016GL070770)

Atmospheric Science

10,947 Xubin Zeng and Kerrie Geil
Global warming projection in the 21st century based on an observational data-driven model
(doi 10.1002/2016GL071035)

10,955 Karen A. McKinnon and Peter Huybers
Seasonal constraints on inferred planetary heat content (doi 10.1002/2016GL071055)

10,965 Kenji Izumi and Patrick J. Bartlein
North American paleoclimate reconstructions for the Last Glacial Maximum using an inverse modeling through iterative forward modeling approach applied to pollen data (doi 10.1002/2016GL070152)

10,973 Hong-Li Ren, Fei-Fei Jin, Ben Tian, and Adam A. Scaife
Distinct persistence barriers in two types of ENSO (doi 10.1002/2016GL071015)

10,980 Philip W. Mote, David E. Rupp, Sihan Li, Darrin J. Sharp, Friederike Otto, Peter F. Uhe, Mu Xiao, Dennis P. Lettenmaier, Heidi Cullen, and Myles R. Allen
Perspectives on the causes of exceptionally low 2015 snowpack in the western United States
(doi 10.1002/2016GL069965)

10,989 Matthias Röthlisberger, Stephan Pfahl, and Olivia Martius
Regional-scale jet waviness modulates the occurrence of midlatitude weather extremes
(doi 10.1002/2016GL070944)

10,998 Mariko Oue, Pavlos Kollias, Kirk W. North, Aleksandra Tatarevic, Satoshi Endo, Andrew M. Vogelmann, and William I. Gustafson Jr.
Estimation of cloud fraction profile in shallow convection using a scanning cloud radar
(doi 10.1002/2016GL070776)
S. Whitburn, M. Van Damme, L. Clarisse, S. Turquety, C. Clerbaux, and P.-F Coheur
Doubling of annual ammonia emissions from the peat fires in Indonesia during the 2015 El Niño
(doi 10.1002/2016GL070620)

Nili Harnik, Gabriele Messori, Rodrigo Caballero, and Steven B. Feldstein
The Circumglobal North American wave pattern and its relation to cold events in eastern North America
(doi 10.1002/2016GL070760)

Justin Mabie, Terence Bullett, Prentiss Moore, and Gerald Vieira
Identification of rocket-induced acoustic waves in the ionosphere (doi 10.1002/2016GL070820)

Marcus Löfverström and Johan Liakka
On the limited ice intrusion in Alaska at the LGM (doi 10.1002/2016GL071012)

Xiaoxiao Tan, Yi Huang, Minghui Diao, Aaron Bansemer, Mark A. Zondlo, Joshua P. DiGangi, Rainer Volkamer, and Yongyun Hu
An assessment of the radiative effects of ice supersaturation based on in situ observations
(doi 10.1002/2016GL071144)

G. Dagan and R. Chemke
The effect of subtropical aerosol loading on equatorial precipitation (doi 10.1002/2016GL071206)

Carlos R. Mechoso, Teresa Losada, Shunya Koseki, Elsa Mohino-Harris, Noel Keenlyside, Antonio Castaño-Tierno, Timothy A. Myers, Belen Rodriguez-Fonseca, and Thomas Toniazzo
Can reducing the incoming energy flux over the Southern Ocean in a CGCM improve its simulation of tropical climate? (doi 10.1002/2016GL071150)

Guoxing Chen and Wei-Chyung Wang
An effective approach to evaluate GCM simulated diurnal variation of clouds (doi 10.1002/2016GL070446)

Boqi Liu and Congwen Zhu
A possible precursor of the South China Sea summer monsoon onset: Effect of the South Asian High
(doi 10.1002/2016GL071083)

Chao Chen, Xiaolong Fan, Tasneem Shaltout, Chong Qiu, Yan Ma, Andrew Goldman, and Alexei F. Khalizov
An unexpected restructuring of combustion soot aggregates by subnanometer coatings of polycyclic aromatic hydrocarbons (doi 10.1002/2016GL070877)

E. J. Hughes, J. Yorks, N. A. Krotkov, A. M. da Silva, and M. McGill
Using CATS near-real-time lidar observations to monitor and constrain volcanic sulfur dioxide (SO₂) forecasts
(doi 10.1002/2016GL070119)