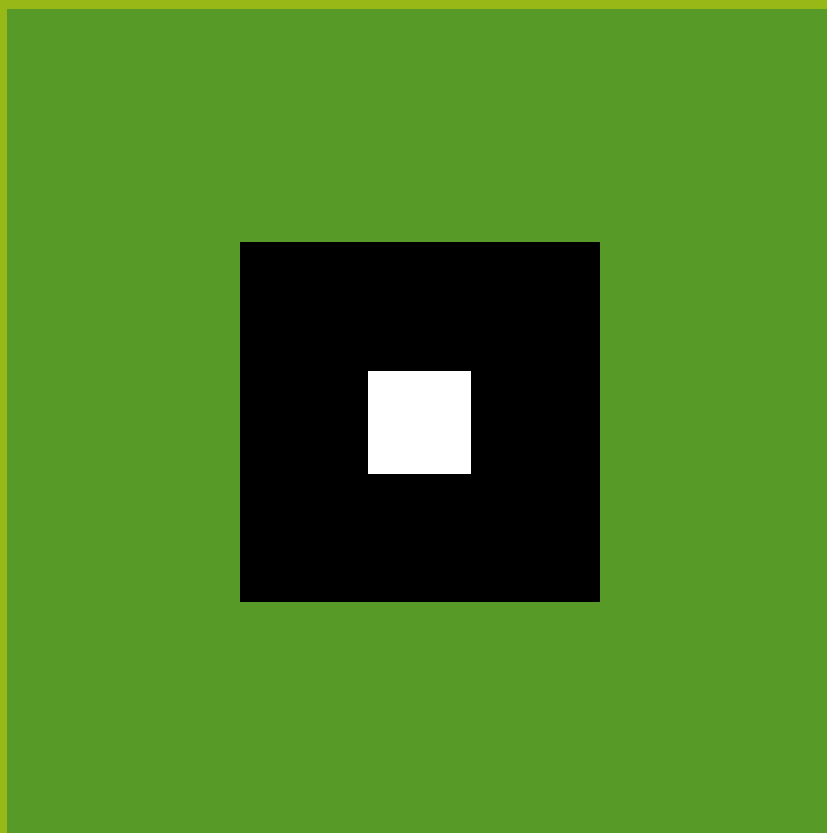
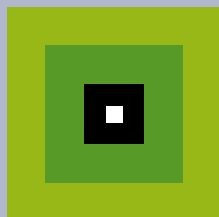


earth and environment

IOP Publishing presents a collection
of content in earth and environmental science

iopscience.org/earth-science





The front-cover design is influenced by the Bauhaus colour theorist Johannes Itten (1888–1967), and his extensive study of the dichotomy between the subjective and objective qualities of colours. The design extends from Itten's approach, offering a two-tonal composition coupled with black and white as active non-colour values. Here, a colour gamut is associated with a simple geometric shape, together forming a colour-form unit, which is deployed as a colour-coding system to present IOP's family of subject-led collections.

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Foreword



Guillaume Wright
Publisher

Welcome to this special collection from IOP Publishing, a compilation of research exploring a diverse range of exciting and cutting-edge topics within the earth and environmental sciences. Through not only physics, but chemistry and biology also, the earth sciences span a huge domain of disciplines, and the interdisciplinary nature of much of the work featured within this collection is testament to this.

From key topics such as renewable energy, remote sensing, food security, atmospheric fluid dynamics, inverse modelling of natural processes, to geophysical surveying, earth magnetism and the physics of oceans, this collection showcases some of the very best work across a range of our titles. In addition to the research and review articles from our featured journals, we highlight news stories in critical areas of environmental science via our community website *environmentalresearchweb*.

We hope you enjoy this collection!

Environmental Research Letters

erl.iop.org

IMPACT FACTOR 4.090 | ELECTRONIC ONLY | OPEN ACCESS



Environmental Research Letters (ERL) is a high-impact, open access, broad-scope letters journal covering all areas of environmental science. The journal features fast publication times, high article visibility and guaranteed exposure via its sister community website [environmentalresearchweb](http://environmentalresearchweb.org).

Editor-in-Chief

Daniel M Kammen, University of California, Berkeley, USA

Scope

ERL is intended to be the meeting place of the research and policy communities concerned with environmental change and management, and the journal's coverage reflects the increasingly interdisciplinary nature of environmental science. Submissions from across all components of the Earth system, i.e. land, atmosphere, cryosphere, biosphere and hydrosphere (freshwater and marine), and exchanges between these components are welcome. Core content draws on observations, numerical modelling, theoretical and experimental approaches to environmental science, and especially science relevant to policy, impacts and decision-making. In addition, approaches from a range of physical and natural sciences, economics, and political, sociological and legal studies are strongly encouraged. Typical areas of interest include:

- Biodiversity
- Biogeochemical cycles
- Climate
- Energy
- Environmental health
- Environmental risk assessment
- Food
- Natural resources
- Policy and law
- Pollution
- Water resources

Submission

We consider submissions of concise, high-impact original research articles of outstanding quality not normally more than 4000 words, making a timely and significant advance to subject(s) of particular interest to the environmental science research community and deserving of rapid publication. The scope, impact and written style of an ERL article should be such that it will appeal to the journal's very broad, interdisciplinary readership. This gives authors an opportunity to convey to a wider audience (including policymakers and the general public), as well as to specialists, the importance of their work.

Testimonials

“ERL is dedicated to bringing together intellectual and professional scientists, economists, engineers and social scientists, as well as the public sector and civil society who are engaged in efforts to understand the state of natural systems and, increasingly, the human footprint on the biosphere.”

Dan Kammen, ERL Editor-in-Chief

“I just wanted to let you know that my first submission to ERL has been a wonderful experience and has far exceeded my expectations. It has been a real pleasure and keep up the good work!”

Judah Cohen, ERL author

“The people at ERL are doing a fantastic job, and I would definitely submit to ERL again in preference to other competing journals.”

Leon Rotstajn, ERL author

“My experience of working with the staff and editors at ERL/IOP has been a very positive one. ERL has now become my standard place to submit over other competitors in part because I think I hit a broader audience with ERL.”

Ken Caldeira, ERL author

Top five articles

- Redefining agricultural yields: from tonnes to people nourished per hectare **Emily S Cassidy, Paul C West, James S Gerber and Jonathan A Foley** 2013 *Environ. Res. Lett.* **8** 034015
- Quantifying the consensus on anthropogenic global warming in the scientific literature **John Cook, Dana Nuccitelli, Sarah A Green, Mark Richardson, Bärbel Winkler, Rob Painting, Robert Way, Peter Jacobs and Andrew Skuce** 2013 *Environ. Res. Lett.* **8** 024024
- Are global wind power resource estimates overstated? **Amanda S Adams and David W Keith** 2013 *Environ. Res. Lett.* **8** 015021
- Quantitative maps of groundwater resources in Africa **A M MacDonald, H C Bonsor, B É Ó Dochartaigh and R G Taylor** 2012 *Environ. Res. Lett.* **7** 024009
- Arctic warming, increasing snow cover and widespread boreal winter cooling **Judah L Cohen, Jason C Furtado, Mathew A Barlow, Vladimir A Alexeev and Jessica E Cherry** 2012 *Environ. Res. Lett.* **7** 094005

environmentalresearchweb keeps scientists and policymakers up to the minute with the latest news and views on environmental research from around the globe. The site's coverage is in-depth and wide ranging, from climate change to air pollution, from renewable energy to policy, from economics to hydrology, and from health issues to sustainability. *environmentalresearchweb* is a member of the Guardian Environment Network, a collection of the world's best environment sites (www.guardian.co.uk/environment/series/guardian-environment-network).

Editor

Liz Kalaugher, IOP Publishing, Bristol, UK

Top five articles

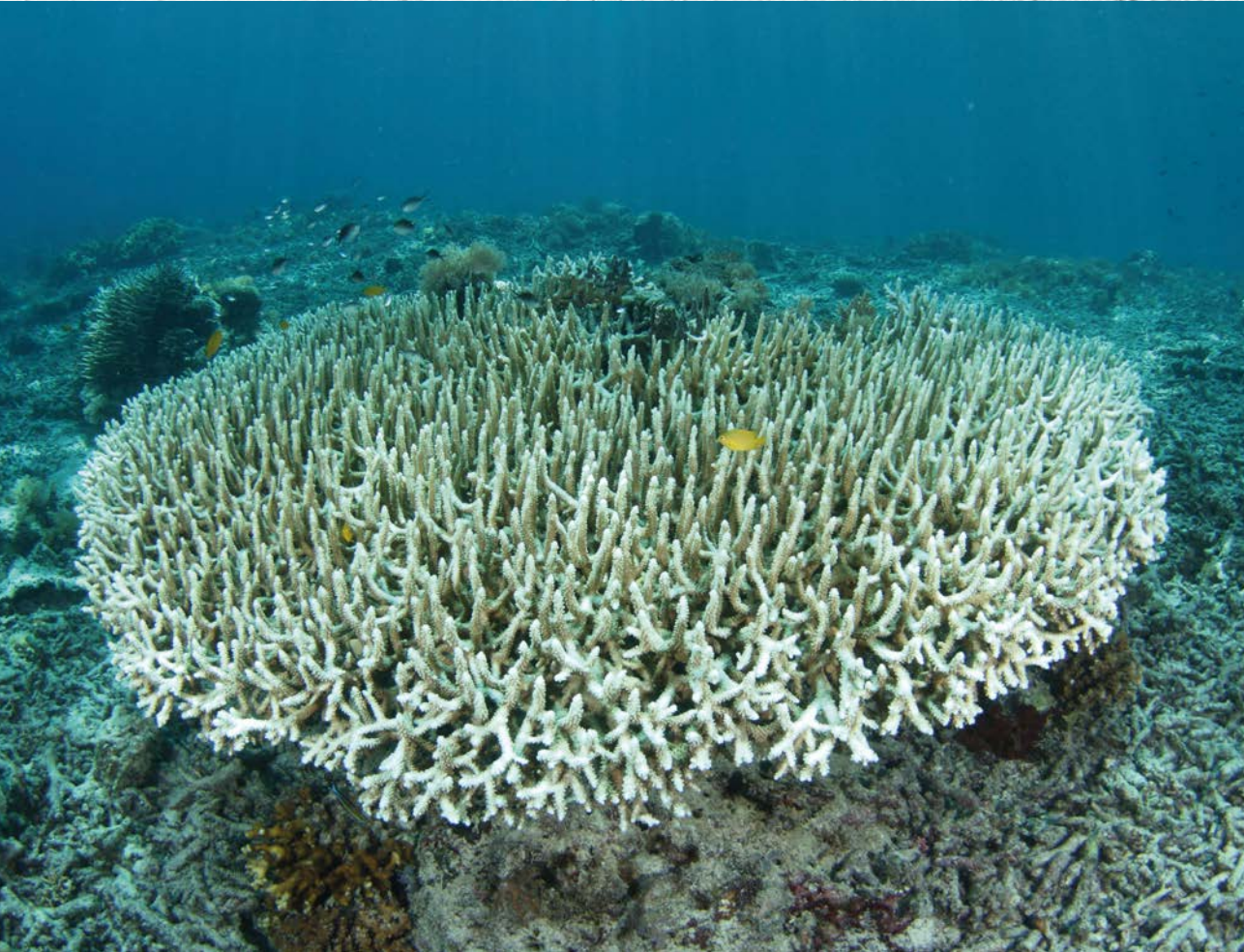
- Fukushima radiation could reach US coast in five years
<http://environmentalresearchweb.org/cws/article/news/50176>
- Global warming set to bring colder, snowier winters
<http://environmentalresearchweb.org/cws/article/news/48293>
- The rise and rise of water shortage
<http://environmentalresearchweb.org/cws/article/news/43685>
- Oil spill affects both land and sea
<http://environmentalresearchweb.org/cws/article/news/42922>
- Climate change brings colder winters to Europe and Asia
<http://environmentalresearchweb.org/cws/article/news/52135>

Testimonials

- “ | *Thanks for your news article that by far is the nicer and most detailed account of our research.*
- “ | *I bookmarked your site and it's really great and useful.*

Image top right: melting glacier aerial, iStock Photo Library.

Image bottom right: bleaching coral, iStock Photo Library.



Journal of Geophysics and Engineering

iopscience.org/jge

IMPACT FACTOR 0.895



Published in partnership with the Sinopec Geophysical Research Institute, *Journal of Geophysics and Engineering* is an interdisciplinary journal that covers research and developments in geophysics and related areas of engineering.

Partner

Sinopec Geophysical Research Institute

Editors-in-Chief

Yanghua Wang, Director of Centre for Reservoir Geophysics, Imperial College London, UK
Shouli Qu, Director of Sinopec Geophysical Research Institute, Nanjing, China

Scope

Journal of Geophysics and Engineering aims to promote research and developments in geophysics and related areas of engineering. It has a predominantly applied science and engineering focus, but solicits and accepts high-quality contributions in all earth-physics disciplines, including geodynamics, natural and controlled-source seismology, oil, gas and mineral exploration, petrophysics and reservoir geophysics. The journal covers those aspects of engineering that are closely related to geophysics, or on the targets and problems that geophysics addresses. Typically, this is engineering focused on the subsurface, particularly petroleum engineering, rock mechanics, geophysical software engineering, drilling technology, remote sensing, instrumentation and sensor design.

Submission

The journal welcomes the submission of articles that report developments in geophysics and in related areas of engineering. Although focusing primarily on applied science and engineering the journal also publishes papers on all earth-physics disciplines.

With its international readership, high online visibility and a median receipt to first decision time of 44 days in 2013, *Journal of Geophysics and Engineering* should be the first choice for your next article.

Top five articles

- A shale rock physics model for analysis of brittleness index, mineralogy and porosity in the Barnett Shale **Zhiqi Guo, Xiang-Yang Li, Cai Liu, Xuan Feng and Ye Shen** 2013 *J. Geophys. Eng.* **10** 025006
- A new stochastic inversion workflow for time-lapse data: hybrid starting model and double-difference inversion **Yi Tao, Mrinal K Sen, Rui Zhang and Kyle T Spikes** 2013 *J. Geophys. Eng.* **10** 035011
- Modeling and analysis of seismic wave dispersion based on the rock physics model **Yaojun Wang, Shuangquan Chen, Lei Wang and Xiang-Yang Li** 2013 *J. Geophys. Eng.* **10** 054001
- A multi-approach geophysical estimation of soil dynamic properties in settlements: a case study in Güzelbahçe-İzmir (Western Anatolia) **Mustafa Akgün, Tolga Gönenç, Aykut Tunçel and Oya Pamukçu** 2013 *J. Geophys. Eng.* **10** 045001
- Modelling tectonic features of the Kissamos and Paleohora areas, Western Crete (Greece): combining geological and geophysical surveys **M Moisi, F Vallianatos, P Soupios, S Kershaw, D Rust and S Piscitelli** 2013 *J. Geophys. Eng.* **10** 025015

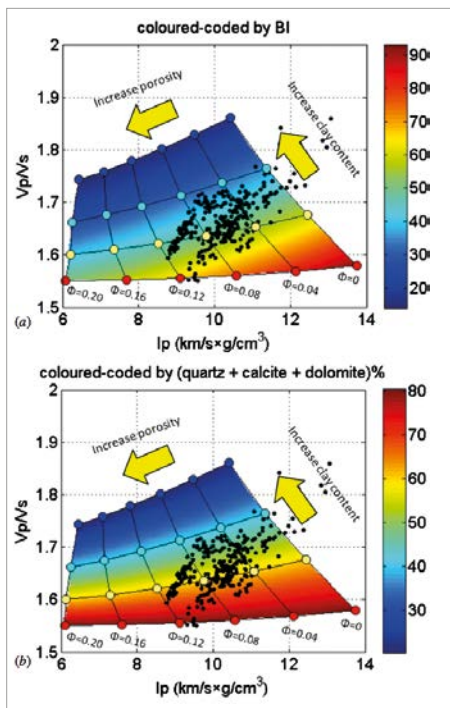


Figure 9 from **Zhiqi Guo et al** 2013 *J. Geophys. Eng.* **10** 025006

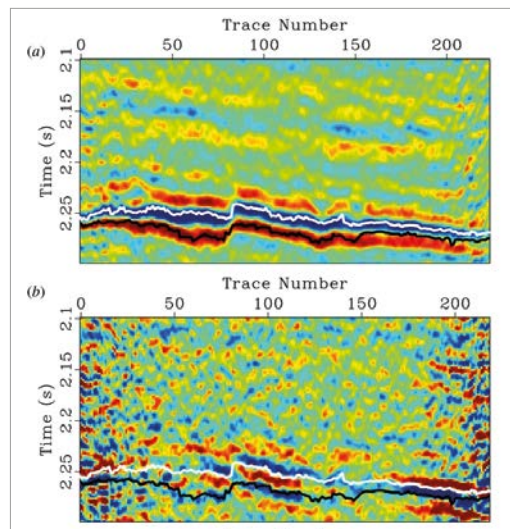


Figure 9 from **Yi Tao et al** 2013 *J. Geophys. Eng.* **10** 035011

Inverse Problems

iopscience.org/ip

IMPACT FACTOR 1.802



The leading journal in inverse problems, with a broad readership of mathematicians, physical scientists and those working in geophysics, radar, optics, biology, acoustics, communication theory, signal processing and imaging, among others.

Editor-in-Chief

Professor Alfred Louis, Universität des Saarlandes, Saarbrücken, Germany

Scope

As an interdisciplinary journal, the readership and authorship includes those working in geophysics, acoustics, radar, remote sensing and imaging of all kinds. Recent works in the area of Earth and the environment published in *Inverse Problems* include research into geophysical imaging, identification of pollution sources, modelling of vegetation, and the monitoring of oil and gas reservoirs. The emphasis is on publishing original contributions to methods of solving mathematical, physical and applied problems. Due to the broad scope of the journal, we require that authors provide sufficient introductory material to appeal to the wide readership and that articles that are not explicitly applied include a discussion of possible applications.

Testimonials

“ For me also it was a great pleasure working with you on the special issue, as well as interacting with such a professional publishing team as yours on a regular basis. For me, the *Inverse Problems* journal is professionally very important: you do a great job promoting and facilitating research in our area.

Fioralba Cakoni

“ The journal *Inverse Problems*, as the leading journal in the area, is one of my favorite choices for publishing my research results. It's my great pleasure and honor that I can contribute a little bit of my time to our topical journal. The refereeing also helps me a lot since it keeps me up to date with other researchers' result. So I hope I can continue this in the future.

Bangti Jin

“ Indeed my experience with *Inverse Problems* has been very positive both as an author and as a referee. I look forward to future work with *Inverse Problems*.

Gaik Ambartsoumian

Top five articles

- Data inversion in coupled subsurface flow and geomechanics models **Marco A Iglesias and Dennis McLaughlin** 2012 *Inverse Problems* **28** 115009
- Identification of multiple moving pollution sources in surface waters or atmospheric media with boundary observations **M Andrie and A El Badia** 2012 *Inverse Problems* **28** 075009
- An inverse radiative transfer model of the vegetation canopy based on automatic differentiation **M Voßbeck, M Clerici, T Kaminski, T Lavergne, B Pinty and R Giering** 2010 *Inverse Problems* **26** 095003
- An ill-posed parabolic evolution system for dispersive deoxygenation–reaeration in water **M Azañez, F Ben Belgacem, F Hecht and C Le Bot** 2014 *Inverse Problems* **30** 015002
- Estimation of aquifer dimensions from passive seismic signals with approximate wave propagation models **Timo Lähivaara, Nicholas F Dudley Ward, Tomi Huttunen, Janne Koponen and Jari P Kaipio** 2014 *Inverse Problems* **30** 015003

Insight articles

- Estimating the division rate for a growth-fragmentation equation with a self-similar kernel
iopscience.org/0266-5611/labtalk-article/56254
- Estimation of aquifer dimensions from passive seismic signals with approximate wave propagation models
iopscience.org/0266-5611/labtalk-article/56095
- Wave-equation-based linearized seismic inversion
iopscience.org/0266-5611/labtalk-article/51290
- Best basis choice in geophysical tomography
iopscience.org/0266-5611/labtalk-article/49850
- Mathematics of Planet Earth IP webpage
iopscience.org/0266-5611/page/MathematicsPlanetEarthHighlights

IMPACT FACTOR **3.673** | ELECTRONIC ONLY | OPEN ACCESS



Now seen as the leading open access journal in physics, with an Impact Factor of 3.673, the ongoing mission of *New Journal of Physics* (NJP) is to provide free access to high-quality research for the global physics community. NJP offers authors fast publication times and high visibility for their work.

Partner

Deutsche Physikalische Gesellschaft
Institute of Physics

Deutsche Physikalische Gesellschaft  DPG

IOP Institute of Physics

Editor-in-Chief

Eberhard Bodenschatz, Max-Planck-Institut für Dynamik und Selbstorganisation, Göttingen, Germany and Cornell University, NY, USA

Submission

NJP welcomes you to submit your high-quality, high-impact earth, environment and climate physics research. In addition, NJP offers you the opportunity to publish a range of other supplementary materials, general scientific summaries and video abstracts to accompany your work, and allow it to be disseminated to a wider audience. NJP also offers Fast Track Communications, the fastest way to present your highest impact, novel and important results in earth physics.

Selected articles

- The relationship between the statistics of open ocean currents and the temporal correlations of the wind stress **Golan Bel and Yosef Ashkenazy** 2013 *New J. Phys.* **15** 053024
- Toward a mode reduction strategy in shallow moist convection **Thomas Weidauer and Jörg Schumacher** 2013 *New J. Phys.* **15** 125025

Video abstracts

- On the origin and evolution of icicle ripples **Antony Szu-Han Chen and Stephen W Morris** 2013 *New J. Phys.* **15** 103012

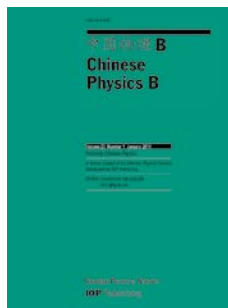
Image: white icicles, iStock Photo Library.



Chinese Physics B

iopscience.org/cpb

IMPACT FACTOR 1.392



Chinese Physics B is an international monthly journal that covers the latest developments and achievements in all branches of physics. It is published by the Chinese Physical Society and hosted online by IOP Publishing.

Partner

Chinese Physical Society

Editor-in-Chief

Zhong-Can Ouyang, Institute of Theoretical Physics, Chinese Academy of Sciences, Beijing, China

Scope

Articles, including papers and rapid communications, are those approved as creative contributions to the whole discipline of physics and of significance to their own fields.

Submission

Chinese Physics B publishes original papers and rapid communications reflecting creative and innovative achievements in physics, as well as review articles covering important accomplishments in the frontiers of physics. Submissions to *Chinese Physics B* are handled by the Editorial Office, which is based at the Institute of Physics at the Chinese Academy of Sciences in Beijing.

Chinese Physics B welcomes submissions in the field of earth and environmental physics.

Top five articles

- Effects of clouds, sea surface temperature, and its diurnal variation on precipitation efficiency
Yu Shen Xin-Yong et al 2013 *Chinese Phys. B* **22** 094213
- Continuity and momentum equations for moist atmospheres **Ran Ling-Kun et al** 2014
Chinese Phys. B **23** 019201
- Effects of water and ice clouds on cloud microphysical budget: An equilibrium modeling study
Gao Shou-Ting et al 2014 *Chinese Phys. B* **23** 024204
- Microstructure and its influence on CH₄ adsorption behavior of deep coal **Feng Yan-Yan et al** 2014
Chinese Phys. B **23** 028201
- Propagation characteristics of power line harmonic radiation in the ionosphere **Wu Jing et al** 2014
Chinese Phys. B **23** 034102

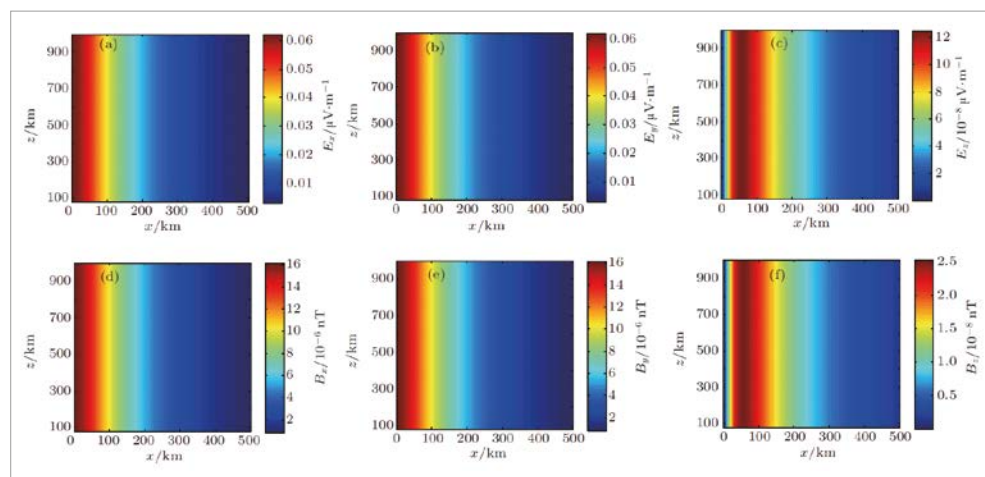


Figure 4 from **Wu Jing et al** 2014 *Chinese Phys. B* **23** 034102

Chinese Physics Letters

iopscience.org/cpl

IMPACT FACTOR 0.924



Chinese Physics Letters is an international journal reporting novel experimental and theoretical results in all fields of physics. It is published by the Chinese Physical Society and hosted online by IOP Publishing.

Partner

Chinese Physical Society

Editor-in-Chief

Bang-Fen Zhu, Department of Physics, Tsinghua University, Beijing, China

Scope

Chinese Physics Letters provides rapid publication of short reports and important research in all fields of physics. The journal provides its diverse readership with coverage of major advances in all aspects of physics, including the newest and most important achievements of physicists in China as well as other parts of the world.

Submission

Authors can choose to submit their work as an Express Letter; to be considered for an Express Letter authors must be able to demonstrate the novelty, importance and urgency of their article in its specific field.

Submissions to *Chinese Physics Letters* are handled by the Editorial Office, which is based at the Institute of Physics at the Chinese Academy of Sciences in Beijing.

Chinese Physics Letters welcomes submissions in the areas of earth, environmental and climate physics.

Top five articles

- An Improved Model of the Jovian Magnetosphere **Meisam Omid** *et al* 2014 *Chinese Phys. Lett.* **31** 039601
- Photometric Calibration of the Barium Cloud Image in a Space Active Experiment: Determining the Release Efficiency **Xie Liang-Hai** *et al* 2014 *Chinese Phys. Lett.* **31** 019401
- Counter-Streaming Interaction between Fast Magnetosonic Wave and Radiation Belt Electrons **Zhu Hui** *et al* 2013 *Chinese Phys. Lett.* **30** 059401
- Large Bi-Polar Signature in a Perpendicular Electric Field of Two-Dimensional Electrostatic Solitary Waves Associated with Magnetic Reconnection: Statistics and Discussion **Li Shi-You** *et al* 2013 *Chinese Phys. Lett.* **30** 019401
- Field-Aligned Electrons in Polar Region Observed by Cluster on 30 September 2001 **Zhang Zi-Ying** *et al* 2012 *Chinese Phys. Lett.* **29** 099401

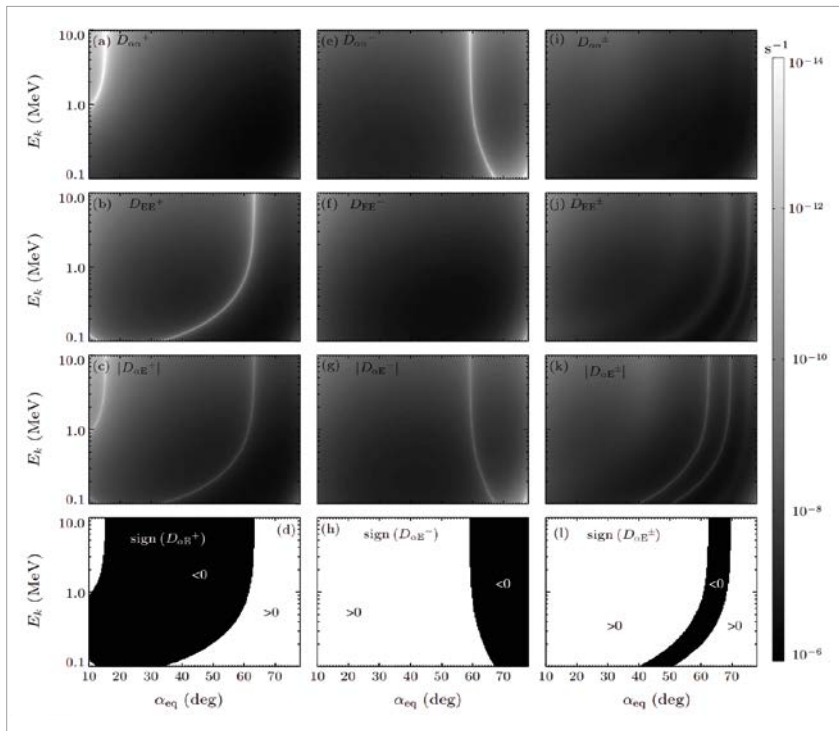


Figure 3 from **Zhu Hui** *et al* 2013 *Chinese Phys. Lett.* **30** 059401

Fluid Dynamics Research

iopscience.org/fdr

IMPACT FACTOR 0.656



Published by IOP Publishing on behalf of the Japan Society of Fluid Mechanics, *Fluid Dynamics Research* is an international journal publishing original and creative works in all fields of fluid dynamics.

Partner

The Japan Society of Fluid Mechanics



Editor-in-Chief

Mitsuaki Funakoshi, Graduate School of Informatics, Kyoto University, Japan

Scope

The journal's scope includes theoretical, numerical and experimental studies that contribute to the fundamental understanding and/or application of fluid phenomena.

The journal also publishes invited papers and reviews on topics of timely interest. These collections of invited articles cover a broad range of research fields connected to fluid dynamics, expanding the coverage of topics and bringing additional insights from other disciplines.

Submission

Fluid Dynamics Research publishes papers, reviews and special issues that contribute to the fundamental understanding and/or application of fluid phenomena.

All article submissions and the peer-review process are managed by the *Fluid Dynamics Research* Editorial Office.

Fluid Dynamics Research invites authors to submit their original and creative works in all fields of fluid dynamics and welcomes work related to the earth, environment and climate.

Top five articles

- Numerical study of surface water waves generated by mass movement **Belgacem Ghozlani et al** 2013 *Fluid Dyn. Res.* **45** 055506
- Instability in temperature modulated rotating Rayleigh–Bénard convection **Jitender Singh and S S Singh** 2014 *Fluid Dyn. Res.* **46** 015504
- A technique for detection of interfacial waves forming a two-dimensional pattern **Ammar Safaie et al** 2014 *Fluid Dyn. Res.* **46** 015507
- Maximum entropy state of the quasi-geostrophic bi-disperse point vortex system: bifurcation phenomena under periodic boundary conditions **Satoshi Funakoshi et al** 2012 *Fluid Dyn. Res.* **44** 031407
- Multi-scale generation of turbulence with fractal grids and an active grid **Stefan Weitemeyer et al** 2013 *Fluid Dyn. Res.* **45** 061407

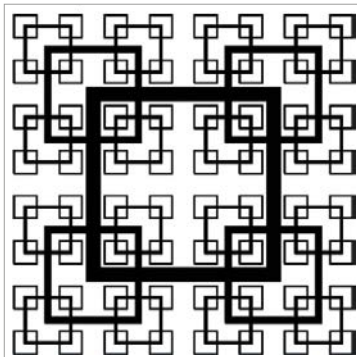


Figure 1 from **Stefan Weitemeyer et al** 2013 *Fluid Dyn. Res.* **45** 061407

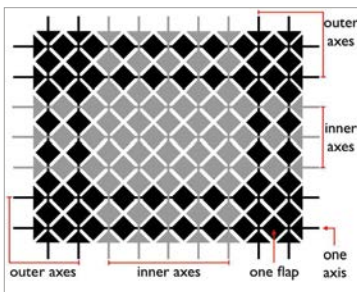


Figure 9 from **Stefan Weitemeyer et al** 2013 *Fluid Dyn. Res.* **45** 061407

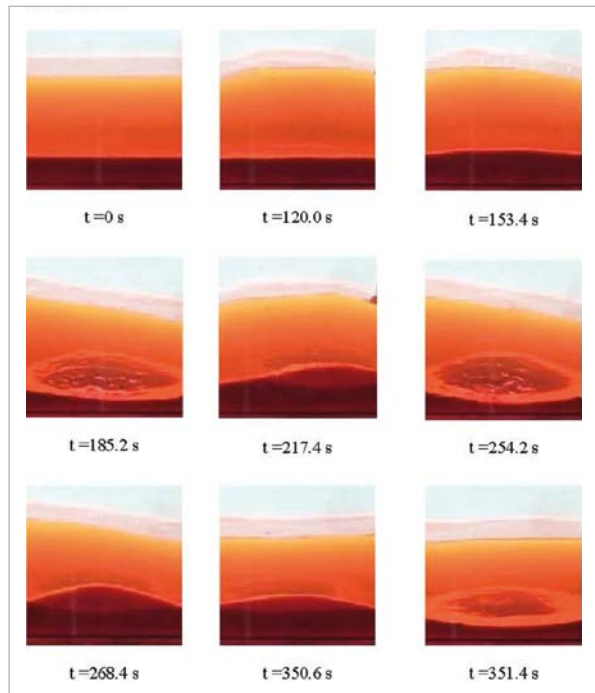
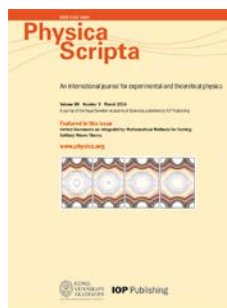


Figure 3 from **Ammar Safaie et al** 2014 *Fluid Dyn. Res.* **46** 015507

IMPACT FACTOR **1.296**



Physica Scripta is an international journal for experimental and theoretical physics, which publishes original research and Invited Comments on a wide range of physics subjects.

Partners

Royal Swedish Academy of Sciences
Physical Societies of the Nordic Countries



Editor-in-Chief

Dr Suzy Lidström, Royal Swedish Academy of Sciences, Stockholm, Sweden

Scope

Physica Scripta publishes original research in all physics disciplines, including earth and environmental physics. Earth physics is also featured in the *Physica Scripta* Topical Issue programme, with a focus on oceanic turbulence in the recent issue based on the 3rd International Conference on Turbulent Mixing and Beyond.

Submission

Physica Scripta is the perfect outlet for your research that has an earth physics focus but will be of interest to a wider physics community, or articles that are interdisciplinary in nature and breach multiple subjects. Authors are encouraged to submit their high-quality novel research work to this international journal, to ensure that it is seen by the worldwide readership of *Physica Scripta*.

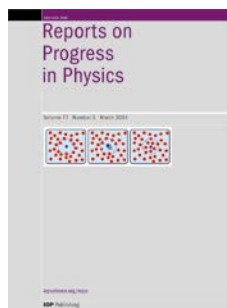
Selected articles

- Generation of zonal flow and magnetic field by coupled Rossby–Alfvén–Khantadze waves in the Earth's ionospheric E-layer **T D Kaladze, W Horton, L Z Kahlon, O Pokhotelov and O Onishchenko** 2013 *Phys. Scr.* **88** 065501
- Near-inertial waves and deep ocean mixing **V I Shrira and W A Townsend** 2013 *Phys. Scr.* **88** 014036
- Interrelation between ball lightning and optically induced forces **V P Torchigin and A V Torchigin** 2013 *Phys. Scr.* **88** 035402
- Snails home **D J Dunstan and D J Hodgson** 2014 *Phys. Scr.* **89** 068002

Reports on Progress in Physics

iopscience.org/ropp

IMPACT FACTOR 15.633



Reports on Progress in Physics is the dedicated reviews journal of IOP Publishing. The journal publishes reviews in all areas of physics including environmental physics and geophysics.

Editor-in-Chief

Professor Laura H Greene, University of Illinois- Urbana Champaign, USA

Scope

The journal publishes review articles in all areas of physics. The intended readership is graduate students, those new to a field or anyone interested in gaining an overview of a research topic in physics.

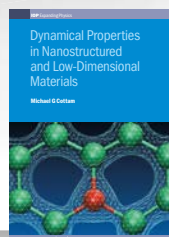
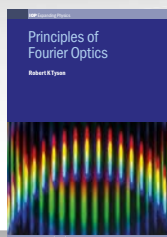
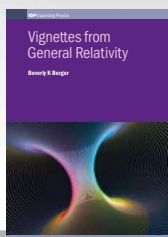
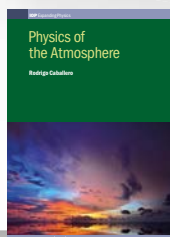
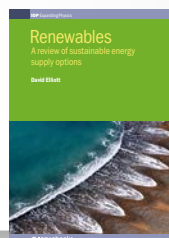
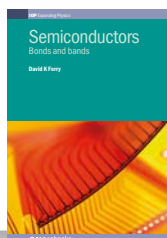
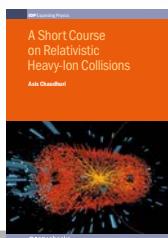
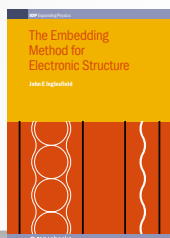
Top five articles

- On the genesis of the Earth's magnetism **Paul H Roberts and Eric M King** 2013 *Rep. Prog. Phys.* **76** 096801
- Geodetic imaging with airborne LiDAR: the Earth's surface revealed **Chen Hua et al** 2013 *Rep. Prog. Phys.* **76** 086801
- The physics of wind-blown sand and dust **Jasper F Kok, Eric J R Parteli, Timothy I Michaels and Diana Bou Karam** 2012 *Rep. Prog. Phys.* **75** 106901
- Our sustainable Earth **Raymond L Orbach** 2011 *Rep. Prog. Phys.* **74** 112801
- Future electricity production methods. Part 1: Nuclear energy **Hervé Nifenecker** 2011 *Rep. Prog. Phys.* **74** 022801

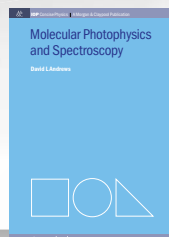
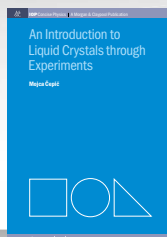
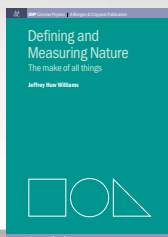
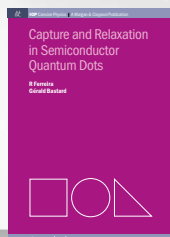


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