



## Atmospheric Chemistry and Physics (ACP)

### Absorptivity of brown carbon in fresh and photo-chemically aged biomass-burning emissions

In this paper, researchers report on experiments conducted to investigate light absorption of organic aerosol in fresh and photo-chemically aged biomass-burning emissions.

#### Reference

Saleh, R. et al.: [Absorptivity of brown carbon in fresh and photo-chemically aged biomass-burning emissions](#), *Atmos. Chem. Phys.*, 13, 7683–7693, 2013

### ACE–FTS observations of acetonitrile in the lower stratosphere

This work reports the first infrared satellite remote-sensing measurements of acetonitrile in the Earth's atmosphere using solar occultation data from the Atmospheric Chemistry Experiment Fourier transform spectrometer (ACE–FTS) between 2004 and 2011.

#### Reference

Harrison, J. J. and Bernath, P. F.: [ACE–FTS observations of acetonitrile in the lower stratosphere](#), *Atmos. Chem. Phys.*, 13, 7405–7413, 2013

### Impacts of aircraft emissions on the air quality near the ground

The continuing increase in demand for commercial aviation transport raises questions about the effects of resulting emissions on the environment. Here, the authors investigate, using a global chemistry transport model, to what extent aviation emissions outside the boundary layer influence air quality in the boundary layer.

#### Reference

Lee, H. et al.: [Impacts of aircraft emissions on the air quality near the ground](#), *Atmos. Chem. Phys.*, 13, 5505–5522, 2013

### Halogen species record Antarctic sea ice extent over glacial–interglacial periods

Here, the authors present speciation measurements of bromine and iodine in the TALDICE (TALos Dome Ice Core) ice core (159°11' E, 72°49' S; 2315 m a.s.l.) spanning the last 215 ky. Based on the results obtained, they propose the use of both halogens for examining Antarctic variability of past sea ice extent.

#### Reference

Spolaor, A. et al.: [Halogen species record Antarctic sea ice extent over glacial–interglacial periods](#), *Atmos. Chem. Phys.*, 13, 6623–6635, 2013

### A decadal satellite analysis of the origins and impacts of smoke in Colorado

In this article, the authors analyse the record of aerosol optical depth measured by the MODerate resolution Imaging Spectroradiometer (MODIS) aboard the Terra satellite. They combine this with measurements of surface particular matter (PM<sub>2.5</sub>) to investigate the impact of fires on aerosol loading and air quality over Colorado from 2000 to 2012.

#### Reference

Val Martin, et al.: [A decadal satellite analysis of the origins and impacts of smoke in Colorado](#), *Atmos. Chem. Phys.*, 13, 7429–7439, 2013

### Formation of aqueous-phase $\alpha$ -hydroxyhydroperoxides ( $\alpha$ -HHP): potential atmospheric impacts

The focus of this work is on quantifying the degree of the aqueous-phase formation of  $\alpha$ -hydroxyhydroperoxides ( $\alpha$ -HHPs) via reversible nucleophilic addition of H<sub>2</sub>O<sub>2</sub> to aldehydes.

#### Reference

Zhao, R. et al.: [Formation of aqueous-phase  \$\alpha\$ -hydroxyhydroperoxides \( \$\alpha\$ -HHP\): potential atmospheric impacts](#), *Atmos. Chem. Phys.*, 13, 5857–5872, 2013

### Classifying organic materials by oxygen-to-carbon elemental ratio to predict the activation regime of Cloud Condensation Nuclei (CCN)

The results presented in this paper suggest that atmospheric particles dominated by hydrocarbon-like organic components do not activate CCN (i.e., insoluble regime) whereas those dominated by oxygenated organic components activate CCN (i.e., highly soluble regime) for typical atmospheric cloud life cycles.

#### Reference

Kuwata, M. et al.: [Classifying organic materials by oxygen-to-carbon elemental ratio to predict the activation regime of Cloud Condensation Nuclei \(CCN\)](#), *Atmos. Chem. Phys.*, 13, 5309–5324, 2013

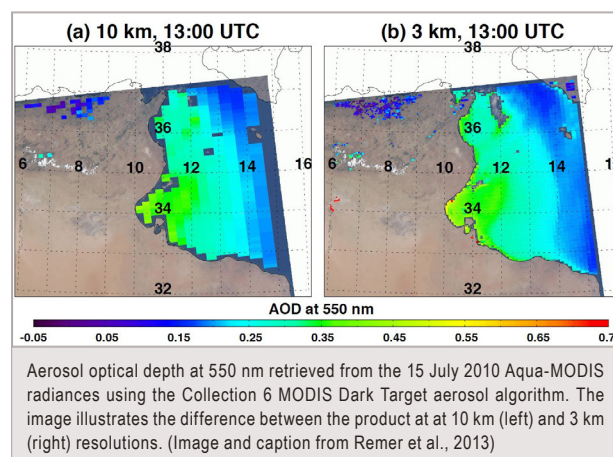
# Atmospheric Measurement Techniques (AMT)

## MODIS 3 km aerosol product: algorithm and global perspective

After more than a decade of producing a nominal 10 km aerosol product based on the dark target method, the MODerate resolution Imaging Spectroradiometer (MODIS) aerosol team will be releasing a nominal 3 km product as part of their Collection 6 release. This new product is expected to become an important tool for the aerosol community.

### Reference

Remer, L. A. et al.: [MODIS 3 km aerosol product: algorithm and global perspective](#), Atmos. Meas. Tech., 6, 1829–1844, 2013



# Biogeosciences (BG)

## Increased soil temperature and atmospheric N deposition have no effect on the N status and growth of a mature balsam fir forest

Nitrogen (N) is a major growth-limiting factor in boreal forest ecosystems. Increases of temperature and atmospheric N deposition are expected to affect forest growth directly and indirectly by increasing N availability due to higher rates of N mineralization. Here, the authors report on experiments conducted on a mature balsam fir stand in Canada to understand the potential impacts of these changes.

### Reference

D'Orangeville, L. et al.: [Increased soil temperature and atmospheric N deposition have no effect on the N status and growth of a mature balsam fir forest](#), Biogeosciences, 10, 4627–4639, 2013

## Impact of change in climate and policy from 1988 to 2007 on environmental and microbial variables at the time series station Boknis Eck, Baltic Sea

The temporal development of phytoplankton was monitored from 1988 to the end of 2007 at the time series station Boknis Eck in the western Baltic Sea. The results are reported in this paper.

### Reference

Hoppe, H.-G. et al.: [Impact of change in climate and policy from 1988 to 2007 on environmental and microbial variables at the time series station Boknis Eck, Baltic Sea](#), Biogeosciences, 10, 4529–4546, 2013

## Seasonal measurements of total OH reactivity emission rates from Norway spruce in 2011

One way to investigate the chemical interplay between biosphere and atmosphere is through the measurement of total hydroxyl (OH) reactivity, the total loss rate of OH radicals. This study presents the first determination of total OH reactivity emission rates based on a branch cuvette enclosure system mounted on a Norway spruce throughout spring, summer and autumn 2011.

### Reference

Nölscher, A.C. et al.: [Seasonal measurements of total OH reactivity emission rates from Norway spruce in 2011](#), Biogeosciences, 10, 4241–4257, 2013

## Iodine-129 concentration in seawater near Fukushima before and after the accident at the Fukushima Daiichi Nuclear Power Plant

Anthropogenic radionuclides were released into the environment in large quantities by the Fukushima Daiichi Nuclear Power Plant accident. To evaluate accident-derived  $^{129}\text{I}$ , the  $^{129}\text{I}$  concentrations in seawater before and after the accident were compared.

### Reference

Suzuki, T. et al.: [Iodine-129 concentration in seawater near Fukushima before and after the accident at the Fukushima Daiichi Nuclear Power Plant](#), Biogeosciences, 10, 3839–3847, 2013

## Climate of the Past (CP)

### LGM permafrost distribution: how well can the latest PMIP multi-model ensembles perform reconstruction?

In this paper, global-scale frozen ground distribution from the Last Glacial Maximum (LGM) is reconstructed using multi-model ensembles of global climate models, and then compared with evidence-based knowledge and earlier numerical results. Modeled soil temperatures, taken from Paleoclimate Modelling Intercomparison Project phase III (PMIP3) simulations, are used to diagnose the subsurface thermal regime and determine underlying frozen ground types for the present day and the LGM.

#### Reference

Saito, K. et al.: [LGM permafrost distribution: how well can the latest PMIP multi-model ensembles perform reconstruction?](#), *Clim. Past*, 9, 1697–1714, 2013

### On the effect of orbital forcing on mid-Pliocene climate, vegetation and ice sheets

In this article, the authors present results from modelling of the mid-Pliocene warm period (3.3–3 million years ago) using the Earth system model of intermediate complexity CLIMBER-2 analysing the effect of changes in boundary conditions as well as of orbital forcing on climate.

#### Reference

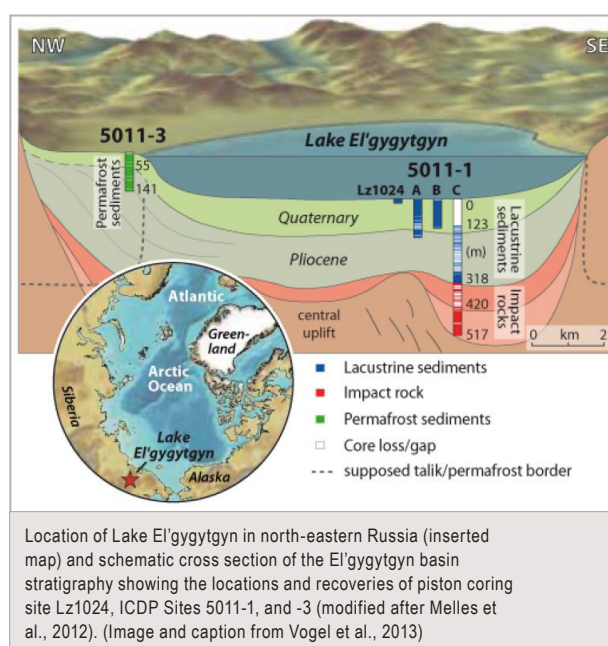
Willeit, M., Ganopolski, A., and Feulner, G.: [On the effect of orbital forcing on mid-Pliocene climate, vegetation and ice sheets](#), *Clim. Past*, 9, 1749–1759, 2013.

### Detailed insight into Arctic climatic variability during MIS 11c at Lake El'gygytyn, NE Russia

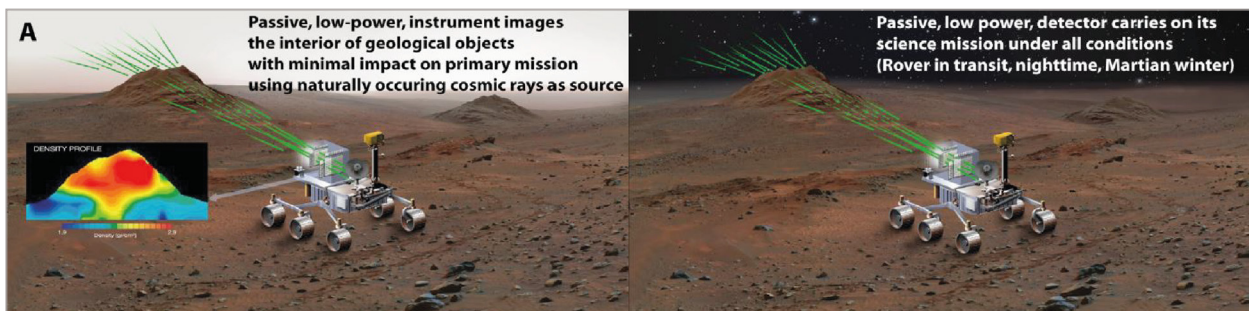
This articles presents a detailed multi-proxy record of the climate and environmental evolution at Lake El'gygytyn, Far East Russian Arctic during the period 430–395 ka covering the marine isotope stage (MIS) 12/11 transition and the thermal maximum of super interglacial MIS 11c.

#### Reference

Vogel, H. et al.: [Detailed insight into Arctic climatic variability during MIS 11c at Lake El'gygytyn, NE Russia](#), *Clim. Past*, 9, 1467–1479, 2013



## Geoscientific Instrumentation, Methods and Data Systems (GI)



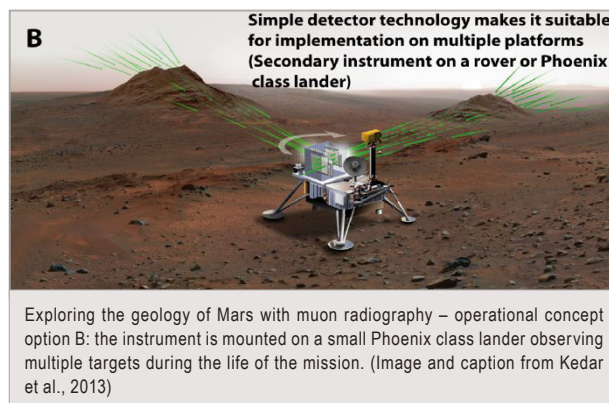
Exploring the geology of Mars with muon radiography – operational concept option A: muon instrument mounted as a secondary instrument on a rover. Muons generated by interactions of primary cosmic rays in the planet's atmosphere (green spheres) pass through a geologic object of interest, and are partially absorbed by the object. A passive muon detector composed of parallel scintillating plates on a lander or a rover records the tracks of the muons. These are analysed on site to determine the direction from which they entered the detector and the amount of energy absorbed by the target. The observations are distilled into a density image of the geological target, much like an X-ray radiograph would, except using muons as a passive source of radiation. (Image and caption from Kedar et al., 2013)

## Muon radiography for exploration of Mars geology

Preliminary estimates of muon production on Mars indicate that the near horizontal Martian muon flux, which could be used for muon radiography, is as strong or stronger than that on Earth, making the technique suitable for exploration of numerous high priority geological targets on Mars. The results are reported in this paper.

### Reference

Kedar, S. et al.: [Muon radiography for exploration of Mars geology](#), *Geosci. Instrum. Method. Data Syst.*, 2, 157–164, 2013



# Hydrology and Earth System Sciences (HESS)

## Comparative assessment of predictions in ungauged basins – Part 2: Flood and low flow studies

The objective of this paper is to assess the performance of methods that predict low flows and flood runoff in ungauged catchments. The aim is to learn from the similarities and differences between catchments in different places, and to interpret the differences in performance in terms of the underlying climate-landscape controls.

### Reference

Salinas, J. L. et al.: [Comparative assessment of predictions in ungauged basins – Part 2: Flood and low flow studies](#), *Hydrol. Earth Syst. Sci.*, 17, 2637–2652, 2013

## Palaeoclimatological perspective on river basin hydrometeorology: case of the Mekong Basin

The main aim in this paper is to develop a river basin scale approach for assessing interannual hydrometeorological and discharge variability on long, palaeological, time scales. For the development of the basin-wide approach, the authors used the Mekong River basin as a case study area, although the approach is also intended to be applicable to other basins.

### Reference

Räsänen, T. A. et al.: [Palaeoclimatological perspective on river basin hydrometeorology: case of the Mekong Basin](#), *Hydrol. Earth Syst. Sci.*, 17, 2069–2081, 2013

## Geoscientific Model Development (GMD)

### Editorial: The publication of geoscientific model developments v1.0

In this editorial, GMD Executive Editors assess the lessons learned over the first few years of the journal's life, and describe some changes to GMD's editorial policy, which will ensure that the models and model developments are published in such a way that they are of maximum value to the community.

### Reference

GMD Executive Editors: [Editorial: The publication of geoscientific model developments v1.0](#), *Geosci. Model Dev.*, 6, 1233–1242, 2013

## Nonlinear Processes in Geophysics (NPG)

### Clifford algebra-based structure filtering analysis for geophysical vector fields

In this paper, a new Clifford algebra-based vector field filtering method, which combines amplitude similarity and direction difference synchronously, is proposed. The method may provide a new powerful and applicable tool for geophysical vector field analysis.

### Reference

Yu, Z. et al.: [Clifford algebra-based structure filtering analysis for geophysical vector fields](#), *Nonlin. Processes Geophys.*, 20, 563–570, 2013