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EOS
Earth & Space Science News

WHERE
CURIOSITY
HAS TAKEN
US

Building Better Climate Models

No Tolerance for Sexual Harassment

Cheers, Yawns for Planet Nine

Outstanding Student Paper Awards

The following AGU members received Outstanding Student Paper Awards at the 2015 Fall Meeting in San Francisco, Calif. Winners have individual pages on AGU's website (see <https://membership.agu.org/ospa-winners/>).

Atmospheric and Space Electricity

Coordinator: Morris Cohen

Neal Dupree, University of Florida, *Oceanic lightning versus continental lightning: VLF peak current discrepancies*

Jackson McCormick, Georgia Institute of Technology, *X-ray solar flare induced ionospheric perturbations observed by VLF sferics*

Atmospheric Sciences

Coordinators: Shannon Capps, Sue Chen, Yongyun Hu, Roya Mortazavi

Sabour Baray, York University, *Quantifying sources of methane in the Alberta oil sands*

Quentin Coopman, University of Utah, University of Lille, *Effect of long-range aerosol transport on the microphysical properties of low-level clouds in the Arctic*

Khaled Ghannam, Duke University, *Closure of the heat flux budget with the ejection-sweep cycle in the convective atmospheric boundary layer*

Leah Grant, Colorado State University, *Cold pool and surface flux interactions in different environments*

Karl Lapo, University of Washington Seattle, *Evaluating patterns of solar irradiance errors over an area of complex topography*

Michael McClellan, Massachusetts Institute of Technology, *Measurement and modeling of site-specific nitrogen and oxygen isotopic composition of atmospheric nitrous oxide at Mace Head, Ireland*

Erin McDuffie, University of Colorado Boulder, *Toward a quantitative assessment of the influence of regional emission sources on ozone production in the Colorado Front Range*

Gergana Mouteva, University of California, Irvine, *Spatial and temporal variations of EC and OC aerosol combustion sources in a polluted metropolitan area*

Kyle Nardi, Temple University, *The climatology and impacts of atmospheric rivers near the coast of southern Alaska*

Peer Nowack, University of Cambridge, *Troposphere-stratosphere coupled chemistry-climate interactions: From global warming projections to air quality*

Steven R. Schill, University of California, San Diego, University of Wisconsin-Madison, *Development and application of a hygroscopicity basis set for the analysis of the mixing state of nascent sea spray aerosols*

Kate Skog, University of Wisconsin-Madison, *Formation of epoxide derived SOA and gas-phase acids through aqueous aerosol processing in the southeastern United States during SOAS*

Ivy Tan, Yale University, *Observational constraints on mixed-phase clouds imply higher climate sensitivity*

Alexander Teng, California Institute of Technology, *Isoprene peroxy radical dynamics: Constraints from laboratory studies*

Jordis Tradowsky, Free University of Berlin, *A site atmospheric state best estimate of temperature for Lauder, New Zealand*

Ian Philip White, University of Bath, *Dynamical response to the QBO in the northern winter stratosphere: Signatures in wave forcing and eddy fluxes of potential vorticity*

Wei Wu, University of Illinois at Urbana-Champaign, *Contrasting ice microphysical properties of wintertime frontal clouds and summertime convective clouds*

Lu Xu, Georgia Institute of Technology, *Ubiquitous presence of particle-phase organic nitrates in the southeastern United States*

Biogeosciences

Coordinator: Susan Natali

Kristofer Covey, Yale University, *Mapping tree density at the global scale*

Amanda D'Elia, University of California, Davis, *Deep carbon stocks in a California Delta floodplain: Evidence for long term sequestration potential of seasonally inundated soils*

Loïc Dutrieux, Wageningen University, *Reconstructing land use history from Landsat time-series. Case study of swidden agriculture intensification in Brazil*

Anne Griebel, University of Melbourne, *Effect of non-homogeneity in flux footprint on the interpretation of seasonal, annual, and interannual ecosystem carbon exchange*

Matthew Robert Hiatt, University of Texas at Austin, *River delta network hydraulic residence time distributions and their role in coastal nutrient biogeochemistry*

Tyler Hoecker, University of Montana, *Spatiotemporal trends in late-Holocene fire regimes in arctic and boreal Alaska*

Maria de los Angeles Gallego Mingo, University of Hawai'i at Mānoa, *Explaining two centers of $p\text{-CO}_2$ and CO_2 flux variability in the equatorial Pacific induced by ENSO*

Eugenie Paul-Limoges, ETH Swiss Federal Institute of Technology Zurich, *Contributions of understory and overstory to ecosystem CO_2 fluxes in a temperate mixed forest in Switzerland*

Victoria Scholl, Rochester Institute of Technology, *Assessing and adapting LiDAR-derived pit-free canopy height model algorithm for sites with varying vegetation structure*

Bingjie Shi, University of Waterloo, *Importance of tetrahedral iron during microbial reduction of clay mineral NAU-2*

Cryosphere

Coordinators: Elyn Enderlin, Kaitlin Keegan, Dan McGrath, Lucas Zoet

Ryan Cassotto, University of New Hampshire, *Large response to precipitation and tidal forcing at Columbia Glacier imaged with terrestrial radar interferometry*

Winnie Chu, Columbia University in the City of New York, *Extensive subglacial hydrological network and basal temperature layer in Southwest Greenland: An integrated approach of radar analysis and ice sheet modeling*

Luca Foresta, University of Edinburgh, *Mass balance of Icelandic ice caps from CryoSat swath mode altimetry*

Nicholas Holschuh, Pennsylvania State University, *Englacial structures as indicators of the controls on ice flow*

Felix Matt, University of Oslo, *Hydrological response to black carbon deposition in seasonally snow covered catchments in Norway using two different atmospheric transport models*

Brice Noel, Utrecht University, *A downscaled 1 km dataset of daily Greenland ice sheet surface mass balance components (1958-2014)*

Deepak Singh, University of Michigan, *Impact of dust on Mars surface albedo and energy flux with LMD general circulation model*

Donald Slater, University of Edinburgh, *Co-evolution of tidewater glacier calving front morphology and submarine melt rates in a high resolution ocean model*

Yvonne Smith, University of Leeds, *Exploring Northern Hemisphere ice sheet variability in the Pliocene using ice rafted debris records and iceberg trajectory modelling*

Earth and Planetary Surface Processes

Coordinators: Ken Ferrier, Xiaofeng Liu

Jonathan A. Czuba, University of Minnesota, Twin Cities, *Near-channel sediment sources now dominate in many agricultural landscapes: The emergence of river-network models to guide watershed management*

Jaap Nienhuis, Massachusetts Institute of Technology, *Wave-driven tidal inlet migration: Mechanics and effects on barrier morphology*

Laura Reynolds, University of California, Santa Barbara, *Dating historical sediments in estuaries: A multi-proxy approach*

Charles Shobe, University of Colorado Boulder, *Big blocks and river incision: A numerical modeling perspective*

Lauren Shumaker, Stanford University, *Constraining the formation of submarine gullies on continental slopes*

Matthew David Weber, University of California, Davis, *Fluvial change processes during an exceptional drought punctuated by atmospheric rivers*

Earth and Space Science Informatics

Coordinators: Mohamed Aly, Xiaogang Ma, Jonathan Petters, Som Sharma

James Ryan, University of Arizona, *EarthCubed: Community convergence and communication*

Education

Coordinator: Stacie Bender

John Leeman, Pennsylvania State University, *Podcasting as a medium to share STEAM fields*

Geodesy

Coordinators: Olivier de Viron, Rowena Lohman, Emily Montgomery-Brown

Stefanie Kaboth, Utrecht University, *Glacial-interglacial sea level reconstruction of the last 570 kyr: Inferences from a new benthic 18O record of IODP Site U1386 (Gulf of Cadiz)*

Hélène Le Mével, University of Wisconsin-Madison, *Magma injection models to quantify reservoir dynamics at Laguna del Maule volcanic field, Chile, between 2007 and 2015*

Patricia MacQueen, Colorado School of Mines, *Down conversion of ambient seismic noise as a tool to detect non-linearity and estimate instrument noise levels in a gravity meter*

Geomagnetism and Paleomagnetism

Coordinator: Julie Bowles

Annemarieke Béguin, Utrecht University, *Micromagnetic tomography in practice*

Anna Mittelholz, University of British Columbia, *Global-scale external magnetic fields at Mars from Mars Global Surveyor data*

Global Environmental Change

Coordinator: Wenhong Liu

Melanie K. Behrens, Carl von Ossietzky University of Oldenburg, *Trace element inputs to the upper West Pacific from Nd isotopes and rare earth elements*

Rebecca Caldwell, Indiana University, *Developing a truly global delta database to assess delta morphology and morphodynamics*

Elizabeth H. Camp, Portland State University, *Mean kinetic energy budget of wakes within model wind farms: Comparison of an array of model wind turbines and porous discs*

Veronique Oldham, University of Delaware, *The complexation of Mn(II) in the sediments and water column of two coastal estuaries*

Hydrology

Coordinators: Newsha Ajami, Terri Hogue, Kolja Rotzoll, Laurel Saito, Tara Troy

Scott T. Allen, Louisiana State University, *Stable isotopes indicate within-canopy processes during interception of rainfall*

Maartje Boon, Imperial College London, *3D observations of dispersion, mixing and reaction in heterogeneous rocks*

Andrea Cominola, Polytechnic University of Milan, *Modeling and managing urban water demand through smart meters: Benefits and challenges from current research and emerging trends*

David Dralle, University of California, Berkeley, *Using statistical mechanics and entropy principles to interpret variability in power law models of the streamflow recession*

Lauren Foster, Colorado School of Mines, *Energy budget changes impact arid mountain hydrology more than rain-snow transitions*

Abby G. Frazier, University of Hawai'i at Mānoa, *Rainfall trends through time: A running trend analysis of Hawaiian rainfall*

Danielle Grogan, University of New Hampshire, *The use and re-use of unsustainably mined groundwater: A global budget*

Francisco J. Guerrero, Oregon State University, *Reconstructing historical changes in watersheds from environmental records: An information theory approach*

Skuyler Herzog, Colorado School of Mines, *Engineered hyporheic zones as novel water quality best management practice: Flow and contaminant attenuation in constructed stream experiments*

Faye Jackson, University of Birmingham, *Understanding and predicting spatio-temporal variability of temperature in Scotland's rivers: Implications for riparian land management*

Tyler King, Utah State University, *High resolution channel geometry from repeat aerial imagery*

Bonnie McGill, Michigan State University, *Agricultural liming, irrigation, and carbon sequestration*

Lieke Melsen, Wageningen University, *Parameter transferability across spatial and temporal resolutions in hydrological modelling*

Kevin Roche, Northwestern University, *Turbulent hyporheic exchange in permeable sediments*

Zeinab Takbiri, University of Minnesota, *Microwave signatures of inundation area*

Yumeng Tao, University of California, Irvine, *Precipitation estimation from remotely sensed data using deep neural network*

Natalie Teale, Rutgers, The State University of New Jersey, *Synoptic-scale atmospheric conditions associated with flash flooding in watersheds of the Catskill Mountains, New York, USA*

Kathryn Wheeler, University of Delaware, *Leaf leachate chemistry: Regional variation across three watersheds in the northeastern United States*

Tiantian Xiang, Arizona State University, *Impact of land surface conditions on the predictability of hydrologic processes and mountain-valley circulations in the North American monsoon region*

Gang Zhao, Texas A&M University, *Sensitivity of reservoir storage and outflow to climate change in a water-limited river basin*

Mineral and Rock Physics

Coordinator: Heather Watson

Satoru Asayama, Osaka University, *Ultrafine particles preserved in the fault gouge of the Arima-Takatsuki Tectonic Line, Japan*

Tess Caswell, Brown University, *Creep and the characteristic length scale of strain-energy dissipation in polycrystalline ice: implications for tidal dissipation*

Bethany Chidester, University of Chicago, *Metal-silicate partitioning of lithophile elements at high pressures and temperatures*

Natural Hazards

Coordinators: Phu Nguyen, Daniel Write

Rui Chen, Northwestern University, *Determination of tsunami warning criteria for current velocity*

Qinghai Kong, University of California, Berkeley, *Smartphone MEMS accelerometers and earthquake early warning*

Pablo Valenzuela, University of Oviedo, *BAPA Database: A landslide inventory in the Principality of Asturias (NW Spain) by using press archives and free cartographic servers*

Near Surface Geophysics

Coordinators: Xavier Comas, Fred Day-Lewis, Sarah Kruse, George Tsoulias

Nils Gueting, Forschungszentrum Jülich, *High resolution imaging of aquifer properties using full-waveform GPR tomography*

Seogi Kang, University of British Columbia, *Revisiting the time domain induced polarization technique, from linearization to inversion*

Megan Miller, Arizona State University, *Spatiotemporal distribution of strain field and hydraulic conductivity at the Phoenix valley basins, constrained using InSAR time series and time-dependent models*

Henry Schreiner, University of Texas at Austin, *Measurement over large solid angle of low energy cosmic ray muon flux*

Emily Voytek, Colorado School of Mines, *Identifying hydrologic flowpaths on arctic hillslopes using electrical resistivity and self potential*

Nonlinear Geophysics

Coordinator: Kunlun Bai

Noah Gabriel Randolph-Flagg, University of California, Berkeley, *Evenly-spaced columns in the Bishop Tuff as relicts of hydrothermal convection*

Ocean Sciences

Coordinator: Victoria Coles

Chawalit Charoenpong, Massachusetts Institute of Technology, *Stable isotope evidence for abiotic ammonium production in the hydrothermal vent fluids from the Mid-Cayman Rise*

Emily Newsom, University of Washington, *The strong control of sea ice dynamics on lower cell circulation changes*

Paleoceanography and Paleoclimatology

Coordinator: Matthew Kirby

Benjamin Hatchett, University of Nevada, Reno, *A medieval perspective of historical California and Nevada droughts*

Allison Jacobel, Columbia University, *130 kyr of dust fluxes in the equatorial Pacific: Implications for ITCZ movement and intensity*

Julia Kelson, University of Washington, *Reconciling empirical carbonate clumped isotope calibrations: A comparison of calcite precipitation and acid digestion methods*

Planetary Sciences

Coordinators: Nathan Bridges, Sarah Stewart

Madison Douglas, Massachusetts Institute of Technology, *Analysis of volcanic deposits on venus using radar polarimetry*

Peter Gao, California Institute of Technology, *Frozen fractals all around: Aggregate particles in the plumes of Enceladus*

Kynan Hughson, University of California, Los Angeles, *Preliminary geological map of the Ac-H-5 Fejokoo Quadrangle of Ceres: An integrated mapping study using Dawn spacecraft data*

Lauren Jozwiak, Brown University, *Intrusive magmatism and explosive volcanism on the Moon and Mercury: Insights from floor-fractured craters*

Public Affairs

Coordinators: Denise Hills, Linda Rowan

Maya K. Buchanan, Princeton University, *Allowances for evolving coastal flood risk under uncertain local sea-level rise*

Kimberley Corwin, Boise State University, *Preparing for volcanic hazards: An examination of lahar knowledge, risk perception, and preparedness around Mount Baker and Glacier Peak, WA*

Jill Shipman, University of Alaska Fairbanks, *Developing short films of geoscience research*

Seismology

Coordinator: Miaki Ishii

Karianne Bergen, Stanford University, *Unsupervised approaches for post-processing in computationally efficient waveform-similarity-based earthquake detection*

Daniel C. Bowman, University of North Carolina at Chapel Hill, *High altitude infrasound measurements using balloon-borne arrays*

Laurence Cowton, University of Cambridge, *Volumetric measurements of a thin CO₂-saturated layer through time at the Sleipner Field, North Sea*

Andreas Mavrommatis, Stanford University, *Repeating earthquakes confirm and constrain long-term acceleration of aseismic slip preceding the M9 Tohoku-Oki earthquake*

Pamela Moyer, University of New Hampshire, *Constraining earthquake source parameters in rupture patches and rupture barriers on Gofar transform fault, East Pacific Rise from ocean bottom seismic data*

Marija Mustac, Australian National University, *Contending non-double-couple source components with hierarchical Bayesian moment tensor inversion*

Frederic Wagner, Uppsala University, *Migration based event detection and automatic P- and S-phase picking in Hengill, southwest Iceland*

Space Physics and Aeronomy

Coordinator: Elizabeth Mitchell

Prayitno Abadi, Nagoya University, *East-west asymmetric of scintillation occurrence in Indonesia using GPS and GLONASS observations*

Haoming Liang, University of California, Los Angeles, *Impact of heavy ions on reconnection rate and dipolarization fronts during magnetotail reconnection*

Andrew Marsh, University of California, Santa Cruz, *The NuSTAR sensitivity to quiet-Sun transient events*

Ryan M. McGranaghan, University of Colorado Boulder, *Reconstruction of three-dimensional auroral ionospheric conductivities via an assimilative technique*

Christian Nabert, Technical University of Braunschweig, *Efficient estimation of MHD parameters from magnetosheath observations*

Vu Nguyen, University of Colorado, *Addressing the question of large-scale nonlinear wave coupling in the space-atmosphere interaction region*

Anthony Saikin, University of New Hampshire, *The geomagnetic condition dependence of the spatial distributions of EMIC waves observed by the Van Allen Probes*

Pawel Swaczyna, Space Research Centre of the Polish Academy of Sciences, *Helium energetic neutral atoms—A new perspective for heliospheric and extraheliospheric observations with IMAP*

Patrick Tracy, University of Michigan, *Relative heating of heavy ions observed at 1 AU with ACE/SWICS*

Hong Zhao, University of Colorado Boulder, *The relative deep penetrations of energetic electrons and ions into the slot region and inner belt*

Study of Earth's Deep Interior

Coordinators: Allen McNamara, Laurent Montesi, Sabine Stanley

Lauren Harrison, University of British Columbia, *The Hawaiian mantle plume from toe to head along the Northwest Hawaiian Ridge*

Emmanuel Njinju, Oklahoma State University, *Mid-lithospheric discontinuity beneath the Malawi Rift, deduced from gravity studies and its relation to the rifting process*

Tectonophysics

Coordinators: Michele Cooke, Juli Morgan

Troy Barber, University of Texas at Arlington, *Controls on the formation of pulverized off-fault rocks: Laboratory investigations using Arkansas Novaculite*

Thomas Ferrand, Ecole Normale Supérieure de Paris, *High-pressure dehydration experiments of antigorite-olivine samples to explain seismicity in the lower Benioff plane*

Dawei Gao, University of Victoria, *On the possibility of slip-to-trench rupture in Cascadia megathrust earthquakes*

Emily Hopper, Brown University, *New insights on the final stages of the Appalachian orogeny in the southeast U.S.A.*

Cassidy Jay, Purdue University, *Kinematics and dynamics of the Main Ethiopian Rift*

Junle Jiang, California Institute of Technology, *Connecting depths of seismicity, fault locking, and coseismic slip using long-term fault models*

Robert McDermott, Utah State University, *Integrating hematite (U-Th)/He dating, microtextural analysis, and thermomechanical modeling to date seismic slip*

Christopher Thom, University of Pennsylvania, *Nanoscale characterization of fault roughness by atomic force microscopy*

Sarah Wehmann, University of Aberdeen, *Predicting fluid flow in stressed fractures: A quantitative evaluation of methods*

Volcanology, Geochemistry, and Petrology

Coordinators: Michael Bizimis, Eric Brown, Sarah Brownlee, Brian Dreyer, Nicholas Dygert, Qi Fu, Sarah Lambart, Noah McClean, Sean Mulcahy, Tyrone Rooney

Chelsea Allison, Arizona State University, *The plumbing system of a highly explosive basaltic volcano: Sunset Crater, AZ*

Thomas Benson, Stanford University, *The oldest known caldera associated with the Yellowstone hotspot: New geologic mapping, geochemistry, and ⁴⁰Ar/³⁹Ar geochronology for the northern McDermitt volcanic field, northern Nevada and southeastern Oregon*

Sophie Briggs, University of California, Santa Barbara, *The P-T history of the Alpine Schist, New Zealand: Constraining tectonic processes during the late stages of Gondwana breakup*

Andrew Fowler, University of California, Davis, *Alteration of crystalline and glassy basaltic protolith by seawater as recorded by drill core and drill cutting samples*

Elisabeth Gallant, University of South Florida, *Lava flow hazard assessment for the Idaho National Laboratory: A probabilistic approach to modeling lava flow inundation with MOLASSES*

Janine Krippner, University of Pittsburgh, *The 2005 and 2010 dome collapse driven block and ash flows on Shivelusho volcano; Kamchatka: Morphological analysis using satellite- and field-based data*

Emma Liu, University of Bristol, *What controls the sizes and shapes of volcanic ash? Integrating morphological, textural and geochemical ash properties to decipher eruptive processes*

Jillian Schleicher, University of Washington, *Multiphase simulations constraining the characteristic volumes and efficiency of mixing within magmatic mushes*

Sara Worsham, University of Saskatchewan, *Using a novel Mg isotope tracer to investigate the dolomitization of the Red River Formation in the Williston Basin*

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