FRIDAY MORNING PRESENTATIONS

Polar Science Communication Workshop: Improving communication skills through intensive training and periodic follow-up (Invited)

The Polar Science Communication Workshop, a three-day workshop in 2017, focused on sharing polar science and research results with non-specialist audiences, covering topics such as oral/written communication skills, storytelling, social media, interview strategies, and more. This presentation, including CIRES’ Mahsa Moussavi and Allen Pope, will cover highlights from the workshop, successes and lessons learned, and some of the ways participants have put their new skills to use.

08:00 - 08:15 • Marriott Marquis, Marquis 7-8 • D51A-01

Recent increases in the burden of atmospheric CH$_4$: Implications for the Paris Agreement

U.S. and U.K researchers discuss how recent increases in atmospheric methane (CH$_4$) abundance threaten to increase warming, jeopardizing the goals of the UNFCCC’s Paris Agreement to limit globally averaged temperature increases to 2 or even 1.5°C above pre-industrial temperatures. The work, led by NOAA’s Edward Dlugokencky, will draw on NOAA’s longterm atmospheric composition datasets, including isotopic information measured in collaboration with CU’s INSTAAR, to describe methane’s trajectory and sources, presenting evidence of an increase in emissions from microbial sources, especially in the tropics. Knowing whether such climate “feedbacks” are responsible for global methane increases, is critical information for policy makers seeking to reduce climate change impacts.

Edward Dlugokencky, NOAA; Martin Manning, Victoria University of Wellington; et al.

09:30 - 09:45 • Convention Ctr, 151B • A51D-07

The ubiquity of biomass burning particles in the remote troposphere

CIRES and NOAA’s Gregory Schill will present findings from the Atmospheric Tomography (ATom) mission, which collected nearly continuous atmospheric aerosol profiles to produce the first global map of biomass burning aerosol abundance. Aerosol from wildfires and open burning account for about a third of all accumulation-mode aerosol on a global average, and thus have immense potential to affect the Earth’s climate system.

Gregory Schill, CIRES and NOAA

10:35 - 10:50 • Convention Ctr, 151A • A52C-02

Friday morning poster sessions appear on the following page

For more information, contact Katie Weeman • katherine.weeman@colorado.edu • 303-775-9674 • http://cires.colorado.edu/news/
FRIDAY MORNING POSTERS 08:00 - 12:20
Convention Ctr. Poster Hall A-C.

Combining high-resolution topography and Sentinel-1A/B radar observations for the study of coastal megacities, **G51B-0481**

Rapid population growth has resulted in an increase of megacities (over ten million inhabitants) worldwide, particularly in the developing world. Associated urbanization results in anthropogenic coastal subsidence processes that, in conjunction with sea-level rise due to climate change, have the potential to cause inundation, flooding, storm surges and infrastructure damage. In this poster, CIRES’ Kristy Tiampo and colleagues discuss their work to better understand these phenomena through satellite-based measurements.

Kristy French Tiampo, Michael J Willis, and R Steven Nerem, CIRES and CU Boulder

Using satellite measurements to improve regional estimates of the impacts of sea level change, **OS51E-1304**

Sea level rise, which can flood coastal regions and damage infrastructure, varies by region. In this poster, CU Boulder’s Eduard Heijkoop presents his team’s work to harness satellite measurements (WorldView and ICESat) to assess seal level rise in vulnerable coastal locations that do not have tide gauge or digital elevation model data. The researchers experimented with a variety of techniques (eg, laser altimetry, SAR altimetry, geod models, and more) and will report on locations around the world that are particularly vulnerable to sea level change.

Eduard Heijkoop, CU Boulder, with CIRES co-authors

FRIDAY AFTERNOON PRESENTATIONS

Observed cloud-radiation processes and their impact on the Arctic surface

Clouds are an important mechanism through which atmospheric moisture impacts the Arctic. Cloud processes, which impact the opacity of the clouds, control the radiative budget and are dependent on presence of liquid water in the atmosphere, and its temperature. CIRES and NOAA’s Matthew Shupe highlights diverse observations from ground-based remote sensors to illustrate how Arctic moisture in the form of clouds impacts the Arctic system, and how interactions with the system impact the clouds themselves.

Matthew Shupe, CIRES and NOAA
13:40 - 13:55 • Convention Ctr, 152A • A53D-01

An assessment of Arctic observing based on the historically low sea ice coverage of the Bering Sea in winter 2017–18

Last year, the Bering Sea experienced the lowest sea ice extent observed since the 1850s, resulting in damage to coastal communities and raising concerns about migratory species and marine ecosystems. CIRES and NSIDC’s Matthew Druckenmiller presents his team’s effort to harness this record-setting season as an opportunity to assess the state of sustained observations of rapid Arctic change. The team is using the International Arctic Observations Assessment (IASOA) framework to evaluate and understand knowledge and operational gaps related to disaster preparedness, maintaining critical infrastructure, food security, and marine ecosystems.

Matthew Druckenmiller, CIRES, National Snow and Ice Data Center, CIRES and CU Boulder
13:55 - 14:10 • Convention Ctr, 101 • OS53B-02

Unexpected and significant biospheric CO₂ fluxes in the Los Angeles Basin indicated by atmospheric radiocarbon

NOAA’s John Miller presents results from an air sampling network for CO₂ and radiocarbon (¹⁴C) measurements within the Los Angeles megacity monitoring network. Surprisingly, CO₂ emissions and concentrations in the Los Angeles area...
are not entirely dominated by fossil-fuels combustion; 20 percent of CO\textsubscript{2} variability is from the biosphere. Also surprising: the net uptake of CO\textsubscript{2} peaks in summer, rather than the spring, which would be expected for natural, unmanaged ecosystems in the area. Miller will discuss the implications, including the possibility that managed, urban ecosystems play a substantial role in regulating carbon fluxes in the Los Angeles region.

John Miller, NOAA
14:10 - 14:25 • Convention Ctr, 151B • A53F-03

**Historical and real-time snow product suite for the Indus River Basin**

In data-sparse regions like High Mountain Asia, modeling of snow and ice can help improve development and management of critical water resources. CU Boulder’s Karl Rittger presents his team’s work to harness remote sensing and hydrologic modeling to provide near real-time information on snow, ice, and water resources in the Indus River Basin. This provides critical, actionable information for the water management community and other Pakistani government decision makers focused on the development and management of critical water resources.

Karl Rittger, CU Boulder’s Institute of Arctic and Alpine Research, CIRES and the National Snow and Ice Data Center
14:25 - 14:40 • Convention Ctr, 145A • H53F-04

**Aerially guided leak detection and repair: A pilot field study for evaluating the potential of methane emission detection and cost-effectiveness**

Preventing, identifying and repairing methane leaks for the hundreds of thousands of existing oil and gas operations in the United States relies on costly, infrequent ground-based inspection of many facilities. CIRES and NOAA’s Stefan Schwietzke, who is also a contributing scientist with the Environmental Defense Fund in Europe, presents empirical results from pilot work to detect and assess leaks by small aircraft in real-world conditions. Recently published results show that the aerial approach has the potential to be very cost effective and result in more rapid, focused, and directed ground inspection and repairs.

Stefan Schwietzke, CIRES and NOAA and colleagues
16:45 - 17:00 • Convention Ctr, 151B • A54G-04

**Evaluating the impact of educational activities on student engagement in climate science using galvanic hand sensors**

Engaging, interactive teaching strategies improve climate science literacy. CIRES graduate student Ariel Morrison measured engagement in university students using wristbands containing skin conductance sensors during educational, climate change activities like watching short videos, doing worksheets, having group discussions, and answering questions out loud. Engagement was highest when students spoke out loud in front of the group, especially for non-STEM majors.

Ariel Morrison, CIRES and CU Boulder
17:45 - 18:00 • Marriott Marquis, Marquis 9-10 • ED54B-08

**FRIDAY AFTERNOON POSTER 13:40 - 18:00**

**Convention Ctr. Poster Hall A-C.**

**VIIRS Nighttime Lights Image Services, IN53D-0636**

Scientists use monthly composites and nightly mosaics of light pollution extensively across many disciplines. In this poster, CIRES and NOAA’s Jesse Varner presents NOAA’s National Centers for Environmental Information (NCEI)’s global nighttime lights products derived from the Visible Infrared Imaging Radiometer Suite (VIIRS). NCEI developed a new suite of geospatial web services that provide detailed, widely accessible, high-resolution, frequently updated data to researchers.

Jesse Varner, CIRES and NOAA’s National Centers for Environmental Information