Collaboration in science research & science communication

Sea surface temperature anomalies, Nov 2016

Sea surface temperature anomalies compared to 1982-2010

Niño3.4

Stephanie Schollaert Uz, PhD
PACE Project, Earth Sciences Division
NASA GSFC (Global Science & Technology Inc.)
Collaboration in science research

Multi-decadal variability in tropical Pacific basin-wide chlorophyll from a statistical reconstruction
Stephanie Schollaert Uz\textsuperscript{1}, Tony Busalacchi\textsuperscript{2}, Tom Smith\textsuperscript{3}, Mike Evans\textsuperscript{4}, Chris Brown\textsuperscript{3}, Eric Hackert\textsuperscript{4}
\textsuperscript{1}Ocean Ecology Lab, NASA GSFC (GST)
\textsuperscript{2}University Corporation for Atmospheric Research
\textsuperscript{3}National Oceanic and Atmospheric Administration
\textsuperscript{4}University of Maryland at College Park

Brings together a team of experts with different skills and ideas.
Collaboration in science research

**El Niños**
- weakened easterly trade winds
- less upwelling, biological productivity

**La Niñas**
- intensified easterly trade winds
- more upwelling, biological productivity

Collaboration in science communication

[Link to ClimateBits.org](http://climatebits.org/)

2 min introductory narrated, global visualizations

**Monsoons:** During summer when land heats up, the winds in some tropical areas reverse and bring a large-scale sea breeze and rain over land. [More information](http://climatebits.org/)

**El Niño:** A change in wind and ocean circulation along the equator in the Pacific that impacts weather patterns around the world and disrupts the marine food web. [More information](http://climatebits.org/)

**Carbon Dioxide:** Measurements from the Mauna Loa observatory since 1958 and recent satellite imagery show an annual cycle plus a long-term rise in atmospheric CO₂ levels. [More information](http://climatebits.org/)

**Fast Carbon, Slow Carbon:** A banana and a chunk of coal are examples of fast and slow carbon cycling between the air and land. [More information](http://climatebits.org/)

**UV Index:** The strength of ultraviolet radiation received at the surface of the Earth, or UV Index, varies by month, sun angle, clouds, air pollution and land elevation. [More information](http://climatebits.org/)

**Ozone Hole:** The annual thinning of the ozone layer above Antarctica is slowly improving, thanks to the Montreal Protocol that limited the use of ozone depleting chemicals. [More information](http://climatebits.org/)
Collaboration in science communication

El Nino ClimateBits on Earth Observatory

- team of science writers
- cutting-edge visualizers
- award-winning website
- large following
Collaboration in science communication

NASA Earth Observations for easy-to-access satellite images

http://neo.sci.gsfc.nasa.gov/

50 datasets routinely updated and easily accessible
Collaboration in science communication

PACE Communications Coordination: engage within and outside of the project


ADVANCED SPACE-BASED MEASUREMENTS OF SEA & SKY
announcing the new Plankton, Aerosol, Cloud, ocean Ecosystem mission

399,847 people reached

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👍 Jariya Suriyong, Mary Barlow and 105 others
181 shares
Viewing phytoplankton communities from space leads to more accurate local monitoring and enables society to plan and prepare for disruptions.
Upcoming collaboration in science research

PHYTOPLANKTON
Many shapes, colors and sizes..
Those traits define their role in ocean carbon cycle

DIATOM
DINOFLAGELLATE
SILICOFLAGELLATE
PICOEUKARYOTES
COCCOLITHOPHORE

Liubescic
Upcoming collaboration in science research

Expedition to investigate ocean particles from sea to space

A month-long campaign across the Pacific on the *R/V Falkor* will monitor the diversity of oceanic phytoplankton, microscopic plant-like organisms, and their impact on the marine carbon cycle. Novel measurements will be compared to satellite observations and used in the formulation of the upcoming Plankton, Aerosol, Cloud, ocean Ecosystem (PACE) mission.

[Sea to Space Particle Investigation](#)
Upcoming collaboration in science research

R/V Falkor expedition to investigate ocean particles from sea to space

Chief scientist: Ivona Cetinic
NASA Goddard (USRA)
phytoplankton ecologist, improving phytoplankton diversity estimates from space with in-situ optical measurements and water samples.

Wayne Slade
Sequoia Scientific, Inc.
oceanographer and engineer, develops technology to characterize particle sizes in the ocean.

Meg Estapa
Skidmore College
biogeochemical oceanographer, uses sediment traps, in situ optical sensors and satellite data to study the ocean’s biological carbon pump.

Stephanie Schollaert Uz
NASA Goddard (GST)
physical oceanographer, exploring the response of biology to wind and ocean forcing; coordinating communication for PACE.

Hugo Berthelot
Université de Bretagne Occidentale
measures the carbon and nitrogen uptake rates by plankton to study the influence of different communities on the ecosystem dynamics.

Benjamin Knorlein
Brown University
uses holographic microscopy to extract phytoplankton data using high-performance computers.

Antonio Mannino
NASA Goddard
PACE Deputy Project Scientist (Ocean), uses in situ sensors and satellite data to study particulate and dissolved organic carbon.

Noah Walcutt
University of Rhode Island
measures carbon export from the surface ocean to the mesopelagic through in situ imaging to monitor particulate sinking.

Sea to Space Particle Investigation
Upcoming collaboration in science research

Learn more about the expedition!
Dec 6 webinar – teaser (5 min)
Jan 17 webinar – Chief Scientist Ivona Ceticic (10 min)
Feb shipboard webinar (45 min) – date and time TBD
Summary

• Collaboration within your group, interdisciplinary, interagency and/or international

• Can increase the breadth and depth of the science research

• Good collaboration: mutual respect, curiosity about a problem and contributions that advance the science

• Bad collaboration: stuck, uninspired, too focused on limitations, incompatible personalities

• Importance of communication, both within a project and externally (presenting at science meetings, writing up papers, press conferences, social media outlets) and the benefit of science writers, visualizers, producers.