

Weekly Report – September 9, 2022
 Satellite Climate Studies Branch (SCSB)/CISESS
 NOAA/NESDIS/STAR
 Acting Branch Chief: Flavio Iturbide-Sanchez

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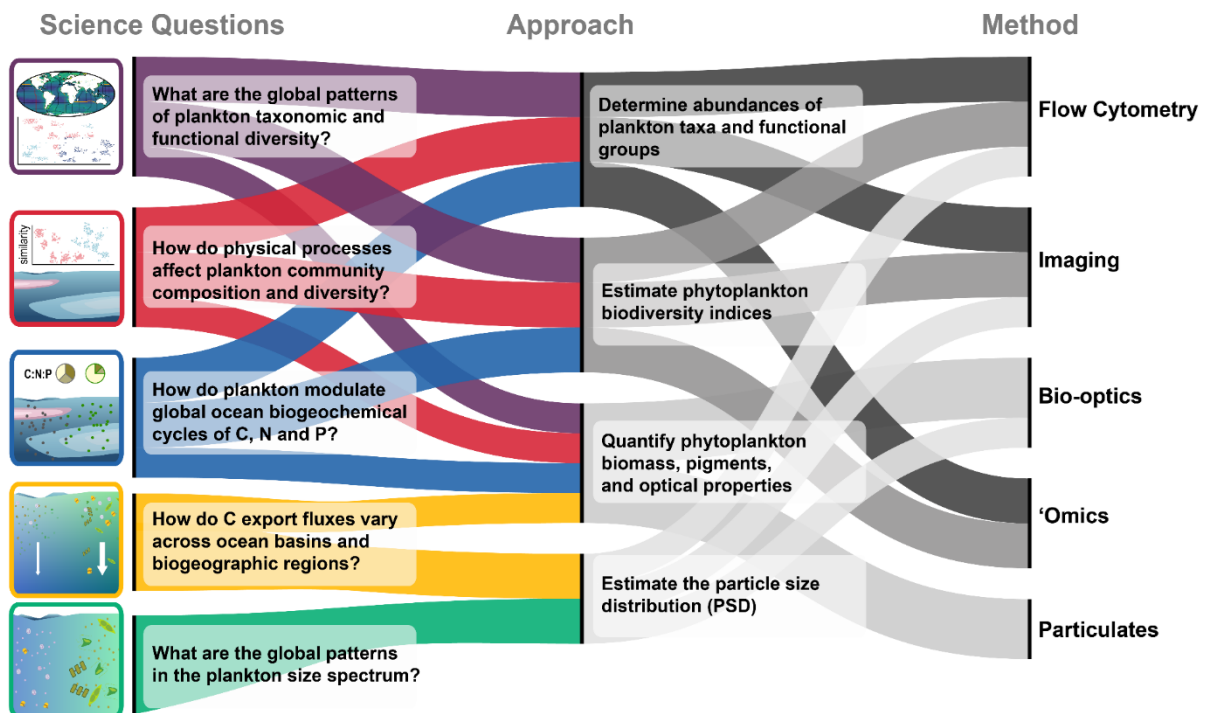
Date of Submission: 9 September 2022

HIGHLIGHTS FOR NESDIS LEADERSHIP

Data and Information

Martiny Participating in this Year’s Bio-GO-SHIP Cruise: Consortium Scientist Adam Martiny (UCI), the task leader of “UCI Bio-GO-SHIP - A Global Analysis of Large-Scale Changes to Ocean Plankton Systems” hit a delay last year when the BIO-Ship had a COVID-related cancellation. He is currently on this year’s cruise. The goal of the voyage is to:

- Collect multiple chemical and biological datasets (see figure below);
- Develop data standards and best practices for integration with existing repositories;
- Assess impact of large-scale hydrographic changes on near-surface ocean plankton community composition and traits; and
- Investigate relationships among euphotic zone plankton community structure, the vertical particle size distribution, and carbon export.



(Adam Martiny, CISESS & UCI, amartiny@uci.edu, Funding: GOMO)

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Use-Inspired Science

Smith Launches a New Snow Drought Proposal: A letter of intent to submit a proposal was submitted to the Climate Program Office (CPO) for a 2023 funding opportunity. The title is ‘A long-term observation-based analysis, assessment and multi-scale mapping of snow drought indicators over Western North America’. It was submitted to Competition 2: MAPP-NDIS Science for the 21st Century Western US Hydroclimate. The PI is Cezar Kongoli (ESSIC UMD & NOAA/NESDIS), and the co-PI is Thomas Smith (NOAA/NESDIS/SCSB).



(Thomas M. Smith, SCSB, tom.smith@noaa.gov; Funding: PDRA)

Partnerships

CISESS Internship Project in Collaboration with University of California, Irvine:



In collaboration with the Center for Hydrometeorology and Remote Sensing (CHRS), University of California–Irvine (a minority-serving institution–MSI), a PhD candidate, Vesta Gorogh, has completed CISESS’s 12-week internship program. To explore capabilities of fused satellite products for retrieval of precipitation rate, she investigated common and complementary information content of passive microwave and visible/infrared (VIS/IR) observations of precipitation processes. Under the supervision of CISESS Scientist Veljko Petkovic, she developed a Machine Learning (ML)-based model to optimize inputs from Low-Earth Orbit (LEO) satellites Passive Microwave (PMW) sensors, Geostationary Orbit (GEO) satellite Advanced Baseline Imager (ABI), and the Global Forecast System (GFS) for estimating instantaneous rainfall rates over the Eastern CONUS. The retrieved rain rates assessed against the current operational satellite and ground products showed improvements across all standard validation metrics. Using only raw information on the brightness temperatures and radiances from the GEO and LEO sensors, the new U-net model is capable of capturing features of precipitating systems at high accuracy and with improved spatial sampling (example in Figure 1). Gorogh presented these results to the lead scientists at NOAA, NASA and CHRS last week. Work on this promising model will continue through the continued collaboration between the UMD and UCI centers.

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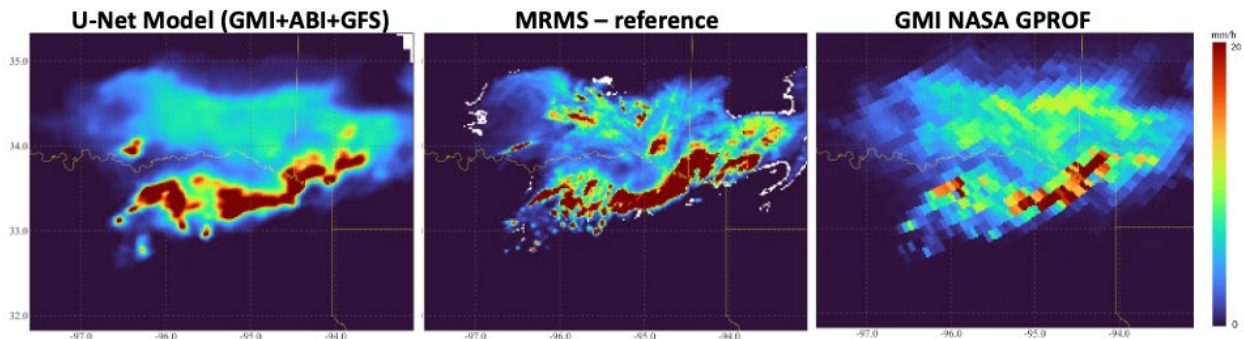


Figure 1. July 2017 rainfall event. (left) U-net model retrieved rates; (middle) Ground MRMS reference; (right) NASA GMI GPROF precipitation product.

(POC: Veljko Petkovic, veljko@umd.edu, Funding: CISESS Seed Grant & HPCC)

People

Vogel and Abecassis win NESDIS Collaboration Awards: CISESS Scientists Melanie Abecassis and Ronal Vogel received NESDIS Collaboration Awards for their contributions as part of a team who created new and upgraded existing content exploiting multimedia, and pivoted the CoastWatch Satellite Course to a virtual environment, hosting educational content on CANVAS at UMD/CISESS. The course materials include lectures, self-paced tutorials and tool demonstrations. Course resources are publicly available here: <https://coastwatch.gitbook.io/satellite-course/>. The course is followed by a hands-on workshop where participants apply what they have learned to their own projects. Their goal is that, upon course completion, the participants can apply satellite data to projects using their choice of software (e.g. R, python, ArcGIS). The award ceremony will be held on November 15. (Ron Vogel, CISESS, vogelr@umd.edu, and Melanie Abecassis, CISESS, melanie.abecassis@noaa.gov, Funding: Ocean Remote Sensing)

The screenshot shows the 'index' page of the 'CoastWatch Satellite Course'. The left sidebar contains a navigation menu with categories like 'Remote Sensing Basics', 'Ocean Color', 'Sea Surface Temperature', 'Altimetry', 'Ocean Surface Winds', 'Sea Surface Salinity', 'What Dataset to Choose?', 'Applications of Satellite Data', 'Tutorials', 'Archive', and 'Version'. The main content area is titled 'index' and features a 'Python Tutorial - How to work with OceanWatch data in Python'. The tutorial text explains how to use ERDDAP RESTful services to download data from Python. It includes a code block for a Python request to retrieve SST data from a specific URL.