Secretary’s Weekly Report –
National Oceanic and Atmospheric Administration (NOAA)
NESDIS – STAR

Division/Program: CICS

Submitted by: Hugo Berbery, Deputy Director, 301-405-0323
Prepared by: Debra Baker, 301-405-5397
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- **SFR Assessment in Alaska**
  The microwave Snowfall Rate (SFR) product, developed by SCSB Scientists Huan Meng and Ralph Ferraro and CICS-MD Scientists Jun Dong and Cezar Kongoli, is undergoing assessment at several NWS Weather Forecast Offices (WFOs) this winter. The task is led by NASA SPoRT and will last until the end of February. The SFR product has expanded to being retrieved from a total of nine polar-orbiting satellites from JPSS, POES, NASA, and DMSP. We have received some user feedback and have been interacting with several forecasters. These R2O and O2R activities benefit both users and the developers of the SFR product. Based on user feedback, the product is helpful to forecasters in their operations in regions with limited observations. For instance, a forecaster from Anchorage, AK WFO stated: *This product has been especially useful in the Copper River Basin, an area where we have no radar imagery and very few surface observations (ASOS/Mesonet/Snotel). Not only does it give us an idea of where it is precipitating, but helps verify model performance in a location where they really struggle with QPF and where there can be wildly different model forecasts for precipitation. In this case, I was able to use the SFR product to help figure out which guidance was verifying the best and lean toward that solution for the new forecast.*

The figure above shows a series of SFR images during a heavy snowstorm in the county warning area (CWA) of the Anchorage office on December 7, 2017. Feedback from the office about this event reads: the SFR product did a great job of accurately depicting where the heaviest snow was falling in northeast Prince William Sound (Valdez/Thompson Pass) and across the Copper River Basin. Thompson Pass observed 15" of snow in a 90 minute period and 40" of snow in 12 hours. These products helped define the area over which the heaviest snow was falling. It was underdone on the snow rates, but did show a large area of 0.15"/hr liquid equivalence.

*Importance:* The proving ground activities demonstrate the utility of the SFR product and promote its applications in NWS weather forecasting operations. *POC:* H. Meng
• **Science Publication on Aerosols:**

CICS Scientist Zhanqing Li and his graduate student Yuwei Zhang are co-authors of a new article in *Science*. Their article, “Substantial convection and precipitation enhancements by ultrafine aerosol particles,” appeared in the January 26th issue. They looked at the climate impact of ultrafine particles, defined as particles of 50 nanometers or less. These vanishingly small particles were thought to have a very limited climate effects but this study found that they can intensify storms, increase the size of clouds and cause more rain to fall when specific conditions are present.


*Importance:* Aerosol impacts are a key uncertainty in understanding the current and future climate as well as extreme weather. **POC:** Z. Li
• **NESDIS Water Team Workshop:**
  The NESDIS Water Team, which supports the NOAA Water Initiative (NWI), held a planning workshop on January 30 in College Park, MD. Overall, there were 18 participants, with about half of them communicating remotely. The purpose of the workshop was to develop a general understanding of the primary objective teams on the NWI, which are led by different NOAA line offices and then to make strong connections between NESDIS products and services, and how these can contribute to the objectives of the NWI.

![NOAA Water Initiative](image)

STAR members on the team include R. Ferraro (NESDIS Water Team co-lead), C. Brown, T. Smith, H. Meng, N-Y. Wang, K. Garrett, S. Boukabara, R. Kuligowski, X. Zhan, and E. Leuliette. A short white paper will be developed describing the outcome of the workshop, including a matrix of existing and emerging products and services that will form NESDIS’s contribution to the NWI over the next several years. The report will be distributed to NESDIS management.

*Importance:* The NOAA Water Initiative is one of NOAA’s highest priority programs; NESDIS products and services will contribute to improved end to end water prediction. *POC:* R. Ferraro