• **JPSS SPARKS Presentations:**
  On August 2, R. Ferraro gave a presentation entitled "Exploitation of Satellite Products to Monitor the Hydrological Cycle" as part of the JPSS Students Profession and Academic Readiness with Knowledge in Satellites (SPARKS) project. SPARKS is co-lead by the City University of New York (CUNY) and IM Systems Group (IMSG). The talk was given at the Earth System Science Interdisciplinary Center (ESSIC) in College Park, MD and was attended by ten students, comprised of the CUNY SPARKS group, as well as summer interns at the Cooperative Institute for Climate and Satellites (CICS-M).

  On August 1, CICS-MD Scientist Chris Grassotti also gave a presentation to the JPSS SPARKS audience. His topic was “MiRS Retrieval Products,” the subject of his CICS Task.

  *Importance:* Providing specific remote sensing skills to students ensures a stronger likelihood that they will be employed by NESDIS through federal or private sector positions. *POC:* R. Ferraro & C. Grassotti

• **International Precipitation Working Group (IPWG) Accomplishments**
  SCSB Scientist Ralph Ferraro and CICS-MD Scientist Nai-Yu Wang have an article in press at the *Quarterly Journal of the Royal Meteorological Society* that highlights the recent work of the International Precipitation Working Group (IPWG). The IPWG, cosponsored by CGMS AND WMO, provides is an international forum to address the issues and challenges of satellite-based quantitative precipitation retrievals and products. The most visible project of the IPWG has been its ongoing intercomparison of satellite-based precipitation products. These studies target specific periods and regions comparing both satellite and model-based precipitation products against surface reference datasets from both gauges and radars. IPWG developed a “template” that is now used by the international remote-sensing community for satellite precipitation validation (see the figure below).
IPWG also identifies critical issues, provides recommendations to the CGMS, and supports upcoming precipitation-oriented missions. It has made major contribution to most of the prominent precipitation missions of the last 20 years, including TRMM, Megha-Tropiques, and GPM. Through joint work with the International Workshop on Space-based Snowfall Measurement (IWSSM) group, IPWG has addressed frozen precipitation issues and, with the Ocean Rainfall And Ice-phase precipitation measurement Network (OceanRAIN), precipitation over the oceans. This is just a sampling of the accomplishments documented the article.


**Importance**: NOAA’s participation in WMO activities is critical to the success of global utilization of NOAA data. **POC**: R. Ferraro

- **Ammonia Emissions from Biomass Burning:**
  In the August 2018 issue of *Atmospheric Environment*, CICS-MD Scientists Daniel Tong and Youhua Tang (OAR/ARL) co-authored an article that evaluates the EPA National Emissions Inventory (NEI) and other emission databases that are critical to air quality forecast models. Their “truth” comparison was based on a statistical regression/observation model prediction (SOM) using meteorological data and fire properties to estimate ammonia emissions from biomass burning. Satellite data was used to estimate annual fire strength and frequency. In addition, satellite data was used to calculate the total NH₃ emissions across the CONUS (“Calculated”).
The chart above has a log scale for kg/yr of ammonia. NEI, along with Global Fire Emissions Database (GFED) and Fire Inventory from the National Center for Atmospheric Research (FINN), are compared with the statistical regression/observation model (SOM) and the calculated annual total. All five showed similar year-to-year differences but the magnitude was very different. The best of the three inventories (NEI) averaged 90% of the predicted and 77% of the calculated annual emissions per year. The other two inventories were an order of magnitude lower. The SOM model was 85% of the calculated amount but still would provide a good estimate of ammonia emissions, which is needed as climate change continues to alter fire frequency, intensity and magnitude. Bray, Casey D., William Battye, Viney P. Aneja, Daniel Q. Tong, Pius Lee and Youhua Tang, 2018: Ammonia emissions from biomass burning in the continental United States, Atmos. Environ., 187, 50–61, https://doi.org/10.1016/j.atmosenv.2018.05.052.

Importance: Accurate air quality forecast warnings are necessary to avoid harm to people with lung and heart conditions. POC: D. Tong & Y. Tang