National Aeronautics and Space Administration

Earth System Science Pathfinder (ESSP) Program Office Executive Summary

Winter/Spring 2024

(Please click on ***hyperlinks*** for more information)

Upcoming Launches: PREFIRE

The two **Polar Radiant Energy in the Far-InfraRed Experiment (PREFIRE)** CubeSats are planned to be launched this spring! The CubeSats will be launched two weeks apart during May/June 2024, each on a Rocket Lab Electron Rocket and from Māhia, New Zealand. ***PREFIRE*** will measure Far InfraRed radiation over the Arctic to better understand how efficiently polar regions emit radiation into space. The results will be used to inform climate models. The PREFIRE Principal Investigator (Tristan L'Ecuyer) is located at the University of Wisconsin, and JPL is the implementing institution.

Of note for Earth Venture Proposers

NASA is in the process of updating the Hosted Payload Interface Guide (HPIG) for Proposers document and is seeking feedback/input from industry, academia and other Government agencies. Additional detail can be found ***HERE***, with responses requested by April 30, 2024.

Recent project and investigation news and highlights:

- A model of one of the **EVM-1 CYGNSS** MicroSats, will be ***on display at the Smithsonian*** Institution's National Air and Space Museum beginning in 2026. CYGNSS was the first Earth Venture Mission in the ESSP Program and is an 8-Microsatellite constellation. It was developed collaboratively by the University of Michigan and the Southwest Research Institute (SwRI), and has been operating since data collection began in 2017. The CYGNSS MicroSats use GPS radio signals to measure oceanic surface-level winds that are used in forecasts of hurricane and tropical storm strength and movement. CYGNSS can also measure soil moisture on a short temporal cycle, producing maps of flood water evolution. These maps can be used by local first-responders to effectively plan their crisis mitigation efforts. The Principal Investigator (Chris Ruf) is located at the University of Michigan.

- The **EVS-3 project IMPACTS** (Investigation of Microphysics and Precipitation for Atlantic Coast-Threatening Snowstorms) was recently highlighted in a January 2024 issue of ***Scientific American***.

- **EVI-3 ECOSTRESS** (Ecosystem Spaceborne Thermal Radiometer Experiment) is one of the primary sources of data that a Dutch company is using to provide a ***useable tool to farmers*** across the globe that can help them make more effective day-to-day decisions about crop management. The company *IrriWatch*, founded by a Dutch professor and scientist, makes use of the freely available thermal data from ECOSTRESS (NASA), Landsat (USGS/NASA), and VIIRS (NASA/NOAA) to calculate evapotranspiration, which is an indicator of plant health. The products provided to farmers can be used to gauge daily irrigation needs as well as using plant stress to alert farmers to disease, pests, and other problems. Extrapolations of the data to things like carbon soil sequestration or dry matter production can be used to validate environmentally friendly farming practices or prediction of crop yields.