

# Examples of Multi-Satellite Analyses for Advancing Earth System Science

\*Michael H. Freilich<sup>1</sup>

## 1. NASA Headquarters

This presentation will describe NASA's current and planned Earth observing capabilities, the resulting science and applications, and NASA's long-standing partnership with Japan, with particular emphasis on the revolutionary use of multi-satellite heterogeneous and homogeneous constellations. NASA and the Japan Aerospace Exploration Agency (JAXA) have a long history of collaboration on satellite missions and are cooperating on several Earth observing constellations. NASA and JAXA have partnered for the last several years on calibration and validation activities associated with JAXA's Greenhouse Gases Observing Satellite (GOSAT) and NASA's Orbiting Carbon Observatory (OCO-2) missions. And in 2012, JAXA's Global Change Observation Mission - Water (GCOM-W1) satellite joined Aqua and other NASA missions as part of the international Afternoon Constellation (A-Train). The results from these (and other) Earth observing missions are expanding our knowledge of the current state of the Earth system and our ability to predict how it may change in the future. These data also enable a wide range of practical applications that benefit society.

Keywords: TRMM, GPM, GOSAT, ASTER, AMSR-E, A-Train, Constellations, Small-Satellites, International Space Station