



NASA SBIR 2008 Phase I Solicitation

S1.08 In Situ Airborne, Surface, and Submersible Instruments for Earth Science

Lead Center: GSFC

Participating Center(s): ARC, JPL, MSFC, SSC

There are new platform systems that have the potential to benefit Earth science research activities. To capitalize on these emerging capabilities, proposals are sought for the development of in situ instruments for use on radiosondes, dropsondes, tethered balloons, kites, Unmanned Aerial Vehicles (UAVs), Unmanned Surface Vehicles (USVs), or Unmanned Underwater Vehicles (UUVs). Both miniaturization of current techniques, as well as innovative new methods that lead to compact and lightweight systems are important. Details of complete instrument systems are desired, including data acquisition, power, and platform integration. Instrument performance goals such as resolution, accuracy, and response time should be discussed, as well as maintenance and reliability considerations. An outline of potential use by NASA and a plan for commercial production and marketing should be included as well. Technology innovation areas of interest include:

- Atmospheric measurements including aerosol properties, temperature, humidity, solar radiation, clouds, liquid water, ice, precipitation, and chemical composition (carbon dioxide, methane, reactive gases and radicals, dynamical tracer species).
- Three-dimensional wind measurements near the Earth's surface, and within the troposphere and lower stratosphere.
- Oceanic and coastal measurements including inherent and apparent optical properties, temperature, salinity, chemical composition, nutrient distribution, and currents.

Instrument systems to support field studies of fundamental processes are of interest, as well as for satellite measurement calibration and validation. Applicability to NASA's Airborne Science, Ocean Biology and Biogeochemistry, and Applied Sciences programs, including support of the Integrated Ocean Observing System (IOOS), is a priority.