Integrated Sounding System (ISS)

The Integrated Sounding System (ISS) is a dynamic meteorological observing system that combines surface, sounding, and remote sensing instrumentation to provide a comprehensive description of lower atmospheric thermodynamics and winds. The core instruments are a balloon-borne rawinsonde sounding system, a radar wind profiler for high-resolution measurements of wind components from the surface to the mid-troposphere, a radio acoustic sounding system for virtual temperature profiles, and a meteorological station that collects surface wind, pressure, thermodynamics, radiation and precipitation data. Other instruments may be added if additional measurements are needed.

EOL has a variety of radar wind profilers available for deployment with the ISS. Our research system is the 449-MHz Modular Wind Profiler which is a scalable system being developed to provide extended altitude coverage and greater flexibility. Spaced antenna techniques enable the system to make rapid wind measurements. This system is deployable in various configurations ranging from a small network of boundary layer profilers to a mid-troposphere radar and ultimately a full-troposphere radar. Standard LAP3000 915 MHz or 1290 MHz boundary layer Doppler Beam Swinging wind profilers are also available.
ABOUT THE ISS

A suite of integrated instruments to measure the atmospheric boundary layer and beyond. Our three ISS include:

- Wind Profiler: vertically pointing UHF clear-air radar for measuring winds, precipitation, and temperature aloft
- Upper-Air Soundings: rawinsonde weather balloons
- Surface Meteorology: 10 m tower with sensors to measure winds, temperature, humidity, pressure, solar radiation, and precipitation
- Lab Trailer: space to integrate, analyze and disseminate measurements

Deployment options include the 449-MHz modular wind profilers, standard LAP3000 wind profilers, MISS (Mobile ISS for rapid deployments such as storm chasing), RASS (Radio Acoustic Sounding System to profile vertical temperature), wind lidar, a ceilometer, and ship-board operations. The ISS are deployed for a wide variety of research efforts including: boundary layer evolution, mountain weather, land-ocean-atmosphere interaction, air quality, precipitation, and severe weather studies, as well as for education and outreach activities.

UPPER-AIR SOUNDING SYSTEM

The balloon-borne radiosonde systems measure wind, pressure, temperature and humidity up to around 100,000 feet (30 km) in the stratosphere. The balloons are tracked using GPS, and the data is transmitted back via a radio link. Three Vaisala (MW-41) sounding system are available for deployment with the ISS and the RS41 radiosonde can be equipped with additional user supplied sensors or instruments.

MOBILE INTEGRATED SOUNDING SYSTEM (MISS)

MISS is a mobile suite of instruments designed to be rapidly deployed to collect measurements of the atmosphere. MISS includes:

- Wind Profiler: a vertically pointing UHF clear air radar (915 or 449-MHz)
- Upper-Air Soundings: rawinsonde weather balloons
- Surface Meteorology: basic winds, temperature, humidity, pressure, and rain gauge

The system is deployed for storm chasing, mountain weather research, and educational purposes.

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