

ATMS

Advanced Technology Microwave Sounder

Mission

Provide sounding profiles of atmospheric temperature and moisture in conjunction with CrIS

Instrument Contractor

Northrop Grumman Electronic Systems (NGES), Azusa, California

Coverage

22 bands from 23 GHz to 183 GHz

Nadir Resolution

15.8-74.8 km

Average Data Rate

32,000 bps

Average Power

130 Watts

Mass

85 kilograms

What is ATMS?

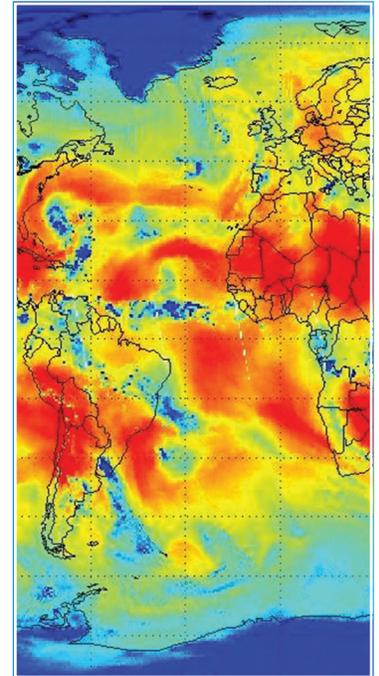
The Advanced Technology Microwave Sounder (ATMS) instrument is the next generation cross-track microwave sounder providing atmospheric temperature and moisture for operational weather and climate applications.

ATMS is a key instrument that collects microwave radiation from the Earth's atmosphere and surface all day and all night, even through clouds. ATMS currently flies on the Suomi NPP satellite mission and will fly on the JPSS-1 and JPSS-2 satellite missions.

ATMS combines the capabilities of current generation microwave temperature sounders (Advanced Microwave Sounding Unit, AMSU-A) and microwave humidity sounders (MHS*) currently flying on NOAA's Polar-orbiting Operational Environmental Satellites (POES).

Drawing directly from its AMSU-A and MHS* heritage, ATMS offers improved capabilities, including reduced volume, mass, power and improved spatial coverage with no gaps in between swaths.

ATMS data was assimilated into NOAA's National Weather Service numerical weather prediction models only seven months after launch. In conjunction with CrIS, ATMS provides all-weather microwave temperatures and moisture data to produce atmospheric profiles.



ATMS channel 18-microwave antenna temperature at 183.3 GHz. 11/08/2011

Benefits

As compared to legacy instruments, ATMS offers more channels, better resolution and a wider swath, improving the accuracy of short- and medium-term forecasting, storm tracking and, with continued measurements over time, climate prediction models.

ATMS helps collect essential data for accurate near-term weather predictions needed for farming, commercial and defense aircraft flight path planning, terrestrial extreme weather preparedness and oceanographic inputs for civilian and defense ships. ATMS measurements also provide rainfall rates, snow and ice information.

Historically, microwave sounders like ATMS have the greatest impact on forecast accuracy, so this next-generation instrument will continue to play a key role. Together, CrIS and ATMS primarily provide data on the hydrologic cycle, which includes water vapor, clouds and precipitation. Because clouds are opaque in the infrared part of the spectrum (measured by the CrIS) and largely transparent at microwave frequencies (measured by ATMS), operating them together makes it possible to cover a broader range of weather conditions. ATMS is able to provide a view inside and below clouds and can be used to produce images inside storms, including hurricanes.

This will provide invaluable data for understanding storms and making predictions up to five to seven days in advance of a severe weather event.

*Note: Prior to NOAA-18, MHS was referred to as AMSU-B.

