Science Algorithm - discussion

AMSU-A and AMSU-B provide "all-weather" surface and atmospheric temperature/moisture data, respectively. The HIRS provides cloud and clear-sky temperature and moisture data, and the AVHRR provides surface temperature and cloud information.

NOAA-15, NOAA-16, and NOAA-17, containing an operational configuration of HIRS, AMSU, Microwave Humidity Sounder (MHS), which is very similar to AMSU-B, and AVHRR instruments were tentatively scheduled for launch into an afternoon orbit (1330 ascending) on May 20, 2005. ATOVS and AMSU-B product systems are currently in an operational check-out phase with operational implementation of product systems expected within 30 to 90 days from launch.

AMSU-B microwave sounding products are available for NOAA-15 and NOAA-16. NOAA-18, containing an operational configuration of HIRS, AMSU, Microwave Humidity Sounder (MHS), which is very similar to AMSU-B, and AVHRR instruments was tentatively deployed into an evening orbit (1930 ascending) on September 21, 2000, and NOAA-17 into a mid-morning orbit (1030 ascending) on June 22, 2002.

Several components of the current operational science algorithm for deriving ATOVS scientific products are scheduled for replacement. The revised operational system is referred to as ATOVS System 2005. The motivation for these changes is to achieve a scientific re-alignment that is more consistent with existing NWP and Climate applications and requirements for utilizing satellite data, and planned next generation (NPP, METOP and NPOESS) satellite product systems.

Science Algorithm - discussion

AMSU-A and AMSU-B are measured at high density with field of view closest to HIRS to identify the tropospheric layers (1000 to 700) and (500 to 300) mb; now stores 3-hr forecast at 100 km grid for all available levels. Surface pressure to serve as input for retrieval.

AMSU-B Measurements (calibrated and limb adjusted) at full density with field closest to HIRS for identification.

Science Algorithm - discussion

Preliminary Validation / Results

Preliminary Validation / Results

Sea AMSU-A predictors: AMSU-A 4-14
Sea AMSU-B predictors: AMSU-B 4-14
Land AMSU-A predictors: AMSU-A 5-14
Land AMSU-B predictors: AMSU-B 3-5

t - A priori guess products vector, (151), from AMSU regression,

Regression coefficients and samples of collocated radiosonde (Y) and satellite observations (X) as stored on dedicated Matchup Data Bases (MDB) that are compiled in support of NESDIS operational products tuning and validation, and archived (NCDC-SAA)

AMSU-A predictors include AMSU radiance emissivity f: MSPPS

- Earth-location Calibration
- AMSU-A Predictors
- AMSU-B Predictors
- Microwave Products
- Contamination Detection
- Precipitation Cloud
- SST/Sea Ice
- SST
- AMSU-HIRS

- Component

COMPONENTS

CHANGES

$\text{FG}_i (y) = \text{FGCOEF}_{i,0} + \text{FGCOEF}_{i,j} M(x)_j$

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<td>Updated SST/Satellite, ice/Snow, 2008</td>
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<td>AMSU-A Predictors</td>
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