



AIRS

Workshop Lecture & Lab



- Overview of AIRS
 - Instrument
 - Radiances
 - Spectral Resolution
 - Gases Absorption
 - Temperature Inversion
 - Surface Property/Signature
 - Cloud, Dust, and Ash Signature
 - Regression Retrieval
 - Spectral Movie
- RTTOV-10
- AIRS Lab

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IMAPP Training Workshop 2011
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RTTOV 10 Theory & Exercise



- Overview of RTTOVS Radiative Transfer Model
 - ❑ Gases Absorption (water Vapor & other trace gases)
 - ❑ Aerosol/Clouds Scattering and Absorption
 - ❑ Surface Emissivity/Reflectivity
 - ❖ IRSSE & ISEM-6
 - ❑ Model Example
- An Exercise in Radiative Transfer Modeling with RTTOV-10 (RTTOV10_Workshopv4.doc; prepared by Dr. Nadia Smith)
 - ❑ Running RTTOV-10 using VMware Player
 - ❖ RTTOV-10 in IMAPP Virtual Appliance (VA)
(prepared by Willem Marais)

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AIRS Lab

Visualization of Radiances & Retrievals



Lab Exercises

- Identify Atmospheric Gases Absorption Feature
- Identify Land/Ocean Surface Emission Feature
- Identify Temperature Inversion Absorption Feature
- Identify Clouds Absorption Feature
- Examine Characteristic of AIRS Profile Retrievals
- Optional Exercises (Take Home):
- Trace gases detection & further investigation on temperature inversion
- Data: see next slides
- Hydra: <http://www.ssec.wisc.edu/hydra/>

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AIRS Lab

Visualization of Radiances & Retrievals



AIRS Lab Spectra and Retrieval Data:

➤ **Level 1B Spectral Data file (calibrated and navigated spectral radiances):**

AIRS.

**2011.02.21.180.L1B.AIRS_Rad.v5.2.1.0.D110521
81631.hdf**

AIRS.

**2002.10.28.123.L1.AIRS_Rad.v2.6.10.3.A023022
00913.hdf**

➤ **Level 2 Retrieval Data file (Temperature and water vapor profile and surface skin temperature & others):**

AIRS.2011.02.21.180.atm_prof_rtv.hdf

AIRS.2002.10.28.123.atm_prof_rtv_npc030.hdf

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