Validation Papers for Topical Collection in JGR

and

Future Validation Publications

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Thanks!

• To 15 lead authors of 19 papers

• ...and their 56+ co-authors

And to to the entire AIRS science team for supporting this effort.
Status of the JGR papers

- All papers are available on the AIRS team web page

- Expected publication date is May in Journal of Geophysical Research-Atmospheres.
  - Thanks to our editor Jose Fuentes and the many reviewers.
State of validation in the JGR Topical Collection, Part I

• Five papers on directly observed infrared radiances:
  – *Tobin et al.*, Radiometric and Spectral Validation of AIRS Observations with the Aircraft-based Scanning High Resolution Interferometer Sounder.
  – *Walden et al.*, Radiometric Validation of the Atmospheric Infrared Sounder (AIRS) over the Antarctic Plateau.
  – *Tobin et al.*, Use of AIRS High Spectral Resolution Spectra to Assess the Calibration of MODIS on EOS Aqua.
  – *Aumann et al.*, Three years of AIRS radiometric calibration validation using sea surface temperatures.
State of validation in the JGR Topical Collection, Part II

• Three papers on forward radiative transfer models / microwave retrieval:
  – *Strow et al.*, Validation of the Version 4 AIRS Radiative Transfer Algorithm.
  – *Rosenkranz and Barnet*, Microwave Radiative Transfer Model Validation.
  – *Rosenkranz*, Cloud Liquid-Water Profile Retrieval Algorithm and Validation.
State of validation in the JGR Topical Collection, Part III

- Two papers on the usefulness of in situ observations for validation of AIRS products:
  - *Whiteman et al.*, Analysis of Raman Lidar and Radiosonde Measurements from the AWEX-G Field Campaign and Its Relation to Aqua Validation.
  - *Miloshevich et al.*, Absolute Accuracy of Water Vapor Measurements from Six Operational Radiosonde Types Launched During AWEX-G, and Implications for AIRS Validation.
State of validation in the JGR Topical Collection, Part IV

- Five comparisons of retrieved temperature and water vapor with radiosonde observations:
  - *McMillin et al.*, Radiosonde Humidity Corrections and AIRS Moisture Data Validation.
  - *Szczodrak et al.*, Measurements of Temperature and Humidity Profiles Over the Ocean: Comparisons of AIRS Retrievals with Ship-Based Remote Sensing, In Situ Measurements and ECMWF Analysis.
  - *Gettelman et al.*, Relative Humidity over Antarctica from Radiosondes, Satellites and a General Circulation Model.
  - *Tobin et al.*, ARM Site Atmospheric State Best Estimates for AIRS Temperature and Water Vapor Retrieval Validation.
  - *Divakarla et al.*, Validation of AIRS Temperature and Water Vapor Retrievals with Matched Radiosonde Measurements and Forecasts.
State of validation in the JGR Topical Collection, Part V

• Three comparisons between AIRS and other satellite data sets or model reanalyses:
  – *Fetzer et al.*, Biases in Precipitable Water Vapor Climatologies from AIRS and AMSR-E.
  – *Susskind et al.*, Accuracy of Geophysical Parameters Derived from AIRS/AMSU as a Function of Fractional Cloud Cover.

• A Preface:
  – *Fetzer*, Preface to the Topical Collection on AIRS Validation.
Moving on: The next set of validation analyses and publications

• Some AIRS topics of great scientific interest:
  
  − Clouds
  
  − Surface temperature and emissivity
  
  − Over-land profile retrievals (especially planetary boundary layer).
  
  − Polar phenomena
  
  − Upper tropospheric water vapor
  
  − Trace gases
  
  − Aerosols
Some Proposed Validation Studies, and the next round of publications with potential 'volunteers' noted

- **Clouds**  
  - Two papers in preparation by B. Kahn and co-authors.

- **Surface temperature and emissivity**  
  - R. Knuteson and co-authors are organizing this effort.

- **Over-land profile retrievals (especially planetary boundary layer)**  
  - Need to re-examine radiosondes: J. Yoe [for L. McMillin], D. Tobin, M. Divakarla.

- **Polar phenomena**  
  - A. Gettelman and V. Walden have a paper in val issue.
  - J. Yoe, D. Tobin, M. Divakarla have access to polar radiosondes.
  - H. Ye looking at AIRS, AMSR-E and ECMWF water vapor.

- **Upper tropospheric water vapor**  
  - AIRS-MLS comparison: E. Fetzer.

- **Minor gases**  
  - M. Chahine (CO₂).
  - W. Irion (O₃).
  - W. McMillan (CO).

- **Aerosols**  
  - L. Strow and colleagues.

- **Sampling biases relative to radiosondes**  
  - T. Hearty, E. Fetzer (or NOAA colleagues?).
More Proposed Validation Proposals and potential authors

- **Clouds**
  - *Two papers in preparation by B. Kahn and co-authors.*

- **Surface temperature and emissivity**
  - *R. Knuteson and others are organizing this effort.*

- **Over-land profile retrievals (especially planetary boundary layer)**
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  - *L. Strow and colleagues.*

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Planning for the next round of validation publications

• A couple proposals:
  1. Organize another validation special issue.
     – A useful general resource.
  2. Write individual papers addressing science questions.
     – More timely and convenient for authors and specialized audience.

The research community has a strong interest in all AIRS validation publications
– Your contribution is welcome.