RO Group Meeting, Mar 4 2020

Stanislav Kireev

Statement of Work

- Continue development of STAR RO 1D-Var retrieval algorithm v.2:
  - Implement total pressure profile retrieval (add iteration loop)
  - Profile integration from the top to solve the hydrostatic + moist air state equations (not separate levels)
  - Switch from *wetPrf* to *atmPrf* input for N(z) (variable altitude grid)
  - Validation vs RAOB and UCAR processed retrievals for Cosmic and Cosmic-2;
- Reprocessing of Cosmic, Cosmic-2, and CWDP with updated 1D-Var
- Automation of the algorithm for using at ICVS
- R & D of combined IR/MW+RO retrieval algorithm for atmospheric temperature and water vapor

Most Current and Important Work

- Developed STAR RO 1D-Var retrieval algorithm v.1 + plotting/stat/validating routines:

  - Input: UCAR and/or STAR (ROPP, FSI) obtained N-values, GFS FG, pre-computed BG and measurement noise model
  - Output: Atmospheric temperature and water vapor profiles
  - Sensitivity study
  - Applied: Cosmic (1 year), Cosmic-2 (4 months), CWDP GeoOptics and Spire (2 months) missions
  - Results compared and validatied vs RAOB and corresponding UCAR processing

Planned Publication

“Development of RO 1-D Var Retrieval Algorithm at NOAA/STAR”