The AIRS/CrIS/IASI (and CHIRP) Radiatie Transfer Algorithms

AIRS Science Team Meeting

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Overview

Overview of talk

- Current status.
- Methods.
- Programmatics.
- Validation and sample results.
- Plans.

Status

Status - 1

- kCARTA calculations of layer-to-space optical depths for all parameters for the 49 and 703 SAF regression profiles for AIRS_L1C, CrIS FSR and IASI are complete.
- AIRS_L1C and IASI SARTA update was released May and June this year.
- Updated version of AIRS using L1C channel set with SRFs referenced to 10-Sep-2010 drift corrected.
- Spectroscopy based on HITRAN 2016 & LBLRTM12.8 CO2,CH4 line mixing.
- The kCARTA ias used to generate TOA radiances to compare directly with SARTA for validation.
- CrIS FSR SARTA update for 2019 currently in work.

Status - 2

- The 2019 SARTAs include the fixed gases, and variable O3, H2O, CO2, CH4, HNO3, N2O, SO2, NH3, the nonLTE and improved reflected surface thermal.
- The new SARTA includes hooks to HDO algorithm, the computation is turned off.
- HDO regression is in progress, regression residuals up to 10% rms. DIfferent method required for MW than for SW bands. Method based on depletion relative to standard abundance.
- To start on SARTA for CHIRP in due course.

Methods

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Programmatics

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Results

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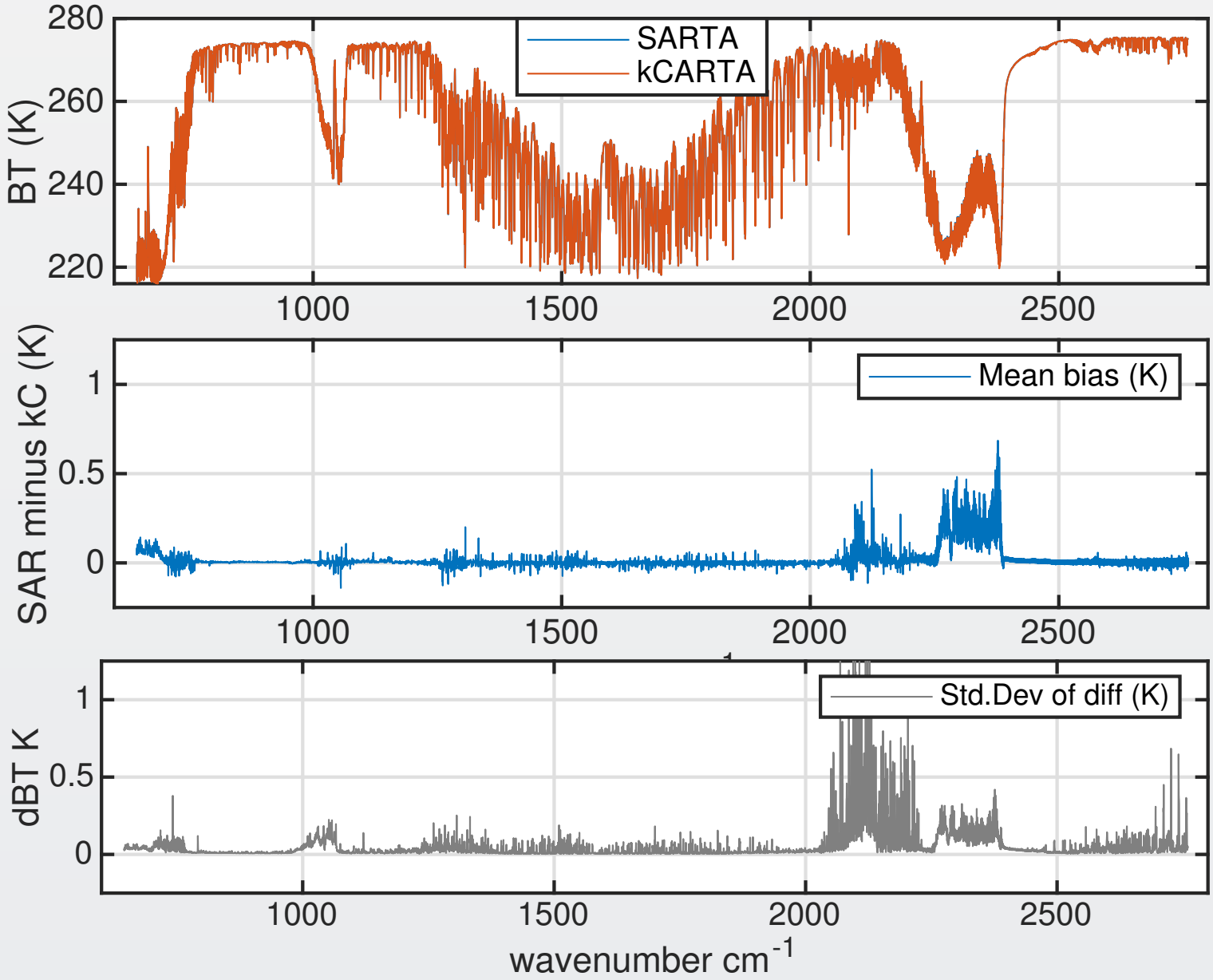
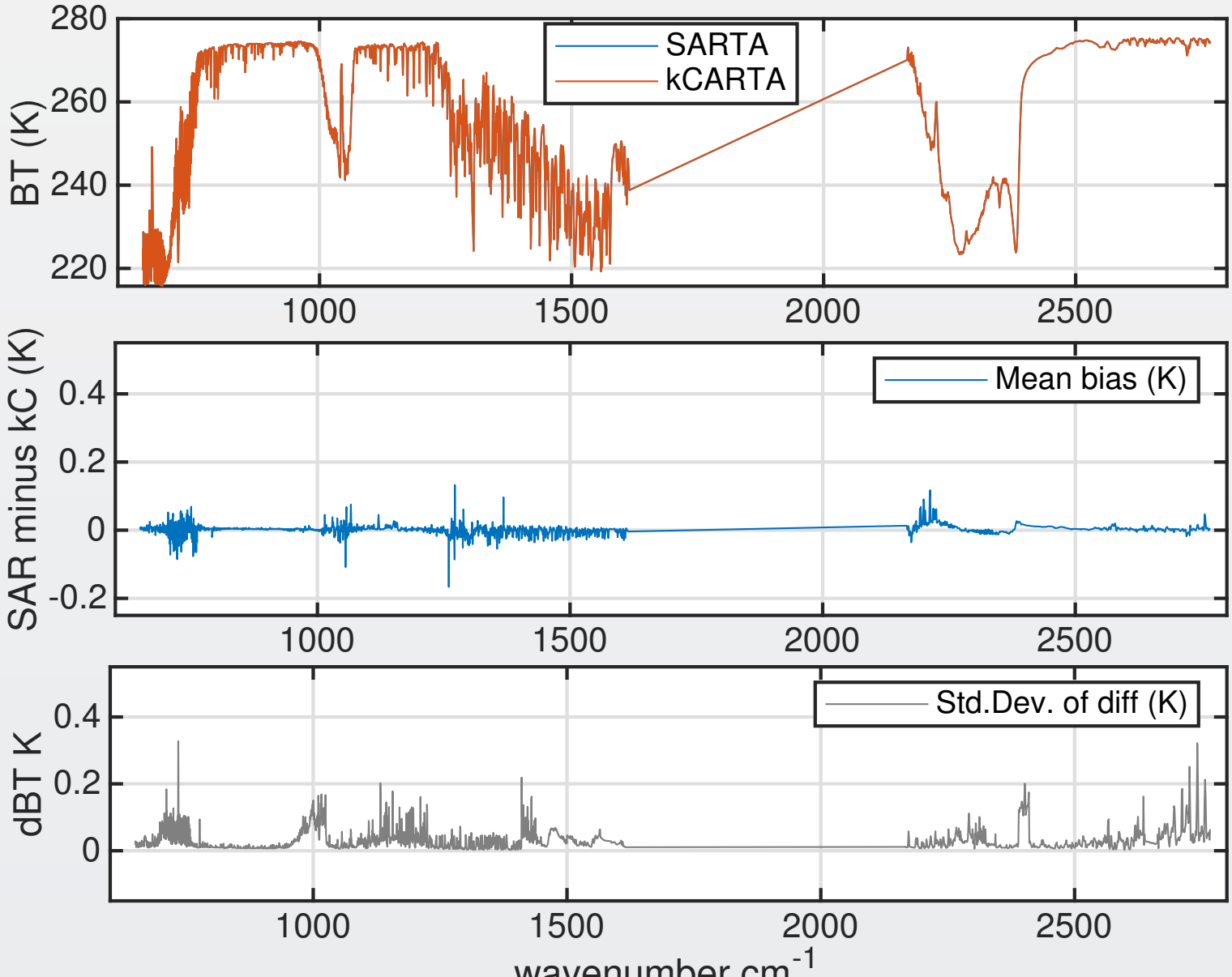
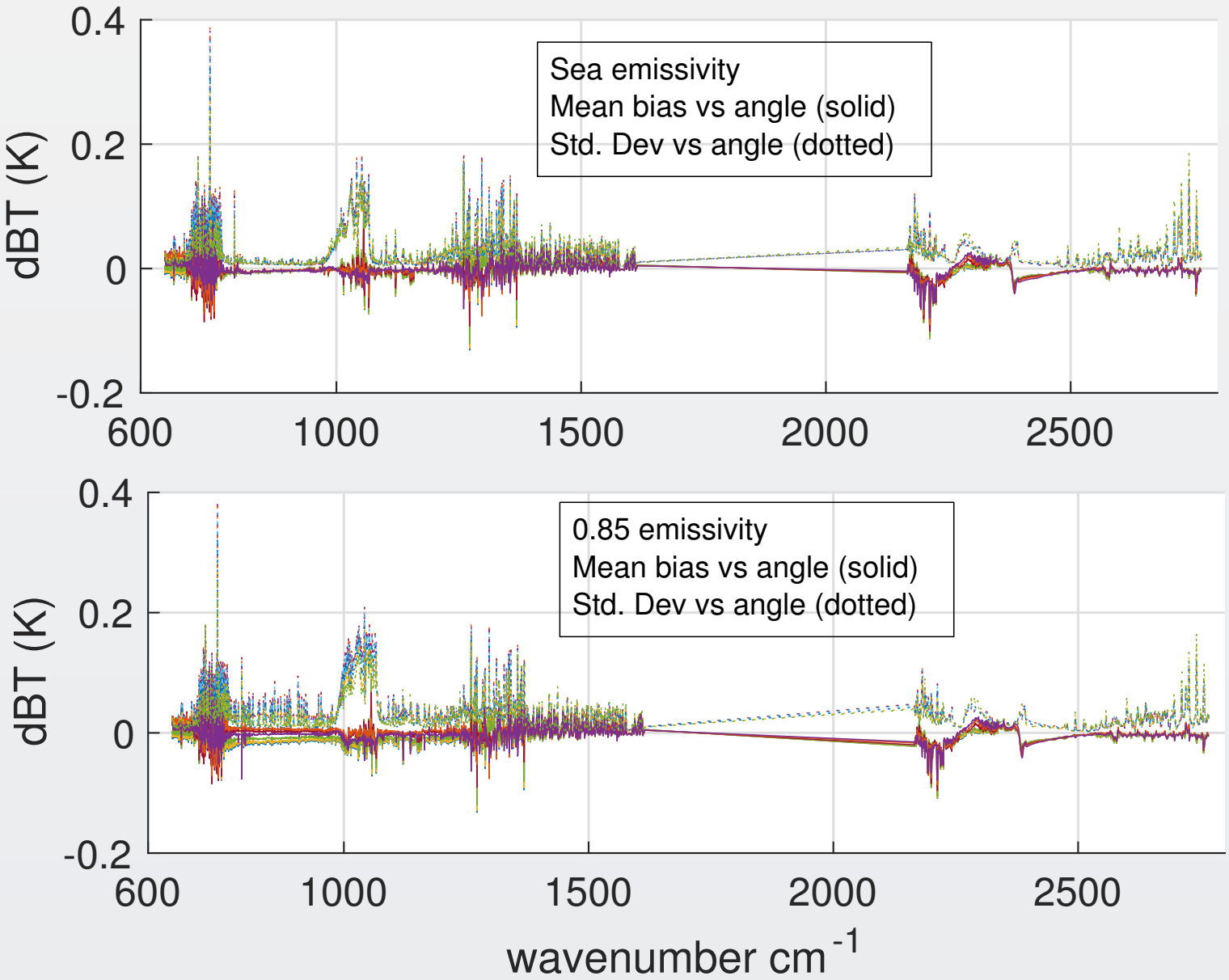
Results - IASI



Results - AIRS_L1C



Results - AIRS_L1C Mean & Std. Dev vs angle



Plans

Current and future Plans

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