

# NASA Sounder Science Discipline Meeting

## Introduction meeting

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# General Overview

## Proposed Sub-Group Organization

- Weather and Climate (Joao)
- Minor Constituents (Vivienne)
- Calibration and Radiation (Larrabee)

We recognize that team members needs may vary significantly, especially standard product tasks versus science investigations (which can include new products).

## Major Themes

- Resource for team members
  - Support team interactions with data providers (GESDIS, L1 b Teams, external data)
- Communicate successes, concerns to NASA HQ
- Outreach to the broader community to reinforce NASA long-term interest
- Ensure long-term sounder science continuity spanning 2002-2040's
- Foster collaboration between projects

# Input Streams

- What input streams will you use for your research ?
  - AIRS/CrIS/AMSU/ATMS radiances?
  - L2 products?
  - Other satellite, reanalysis data, etc.
- Will you download these data, use GESDIS tools, or hope to use cloud processing?
- What product accuracies do you expect or require?

## AQUA Orbit Drift

- The Aqua orbit drift will present opportunities and challenges.
- We propose to have the AQUA mission manager provide an update on the upcoming Aqua drift in a future meeting

## Product Homogenization and Missing Products

- Are team members interested in how records from different instruments might be tied together?
- An example: Vivienne proposed to retrieve PAN from AIRS for this round, but is definitely interested in how this ties in with the CrIS PAN product from previous work.
- Same issues apply to Ammonia, etc.
- These sounders are sensitive to several minor constituents that are not retrieved or characterized by any known investigators.
  - $SO_2$ : can impact the water band, sometimes severely
  - Dust and volcanic ash: Same, most evident in window bands
  - Fires (not very common)
  - Will these occasional effects hurt any investigations?

# Calibration Overview

- Unprecedented opportunity for Climate
  - AIRS operating for nearly 20 years
  - CrIS through 2040's with good AIRS and JPSS platform overlaps
  - CHIRP L1b combines AIRS + CrIS into common L1b format (SRF, channel centers)
- Issues
  - Sensor stability/year (AIRS) is 100X better than absolute calibration
  - Minimize sensor calibration offsets among satellites
  - Identify causes of sensor drifts to allow rigorous corrections for the climate record

## Suggested Calibration Themes

- Improve AIRS TVAC calibration: use physically based approach
- Longterm calibration for climate implies need for enhanced interactions between calibration teams and users
- Many sensor characteristic (bad channels, known calibration liens, noise covariances) not available to users.