

# GPM X-CAL OBJECTIVE

To make the GPM rain data set as clean and self-consistent as possible

**CONTEXT:** 3 Layer Process

Calibrate individual instruments as well as possible

Instrument Manufacturers/Agencies

**Cross Calibrate instruments @ TB Level**

**Intercalibration (X-CAL) Working Group**

Statistical Comparisons @ Rain Retrieval Level

GPM Algorithm Teams

Develop techniques for comparing similar, but not identical, microwave radiometers

Develop Traps and corrections for recurring instrument errors.

Pre screening step

# APPROACH (*IMAGERS*)

Use low inclination satellite as a transfer standard (e.g. TMI or GMI)

Complements Polar orbiter matchups done by NOAA

Gives many coincidences over a range of latitudes

## Instruments are not identical

Need to convert observations of one satellite to virtual observations of another for comparison

To develop conversions we put several teams to work on the same data

July 2005- June 2006 Where possible

TMI, SSM/I, Windsat, AMSR-E, AMSR-2, MADRAS

Use same models

Two classes of conversions

Matchup data/ compute TBs

(CSU, UCF, JAXA, TAMU)

Limiting value algorithms based on monthly histograms of TBs

(U. Mich. Yonsei U. (Korea))

## RESULTS (*imagers*)

Agreement between similar methods of the order 0.1K

This agreement is basis for credibility

Discovered (*and largely fixed*) TMI Calibration problem

Different calibration errors for Ascending and Descending passes of Sun-Sync instruments

Computed TMI TB errors using GDAS data set

Characterized by phase in TMI orbit and solar beta angle

Antenna is emissive but temperature isn't monitored

Included in TMI V-7 (but reversible)

Developed wild point traps for other sensors

# PLANS

Algorithm teams decided they want TMI and Metop-A as reference standards for now

Constants for SSM/I, SSMIS, AMSR-E, AMSR-2, MHS due by end of September

GPM-Core Launch early 2014

We should wrap up SSM/I at this meeting

AMSR-E is done.

AMSR-2 shouldn't be too hard to finish off

Mid summer we will have 1 year of data in hand.

We will have SSMIS data in mid summer—more sensor difficulties

MHS Preliminary based on SAPHIR (& TMI?)

SAPHIR discussions Today

# Objectives for this meeting

Determine status and way forward for MHS (&AMSU-B?) Intercalibrations

Determine status and prospects for MADRAS

Determine SSM/I corrections

Lay groundwork for future collaborations

Enjoy French hospitality and food.