

National Aeronautics and Space Administration

TA-WG Briefing

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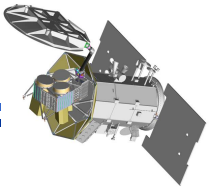
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Understanding
the Interaction
Between Ocean
Circulation, the
Water Cycle,
and Climate by
Measuring
Ocean Salinity

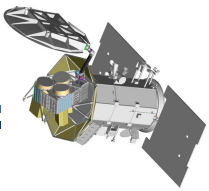


Aquarius/SAC-D

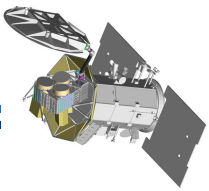
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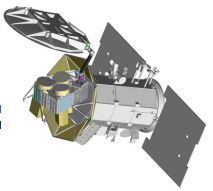
- Purpose
 - Assess and recommend improvements for instrument calibration
 - Scope
 - Calibration drift (electronics, DR-fitting, TA expected, etc...)
 - Third Stokes (electronics vs. APC correction)
 - Warm-end bias (SMOS vs. Aquarius matchups)
 - Cold sky calibration (drift over time, nonlinearity)
- Action
 - Concentrated on calibration drift
 - Starting whole dynamic range calibration assessment
 - Recommendations to date
 - Exponential long-term drift correction implemented in V1.3.5
 - Suspend DR-fitting to aid separating instrument from model errors
- Participants
 - Thomas Meissner; Brown, Shannon T; Misra, Sidharth; Yueh, Simon H; Gary Lagerloef; Dinnat, Emmanuel; Bindlish, Rajat; Levine, David M.; rogerhjang@gmail.com; Fore, Alexander; Hacker, Peter W.; Kim, Edward J.; Hong, Liang; Patt, Frederick S.; Feldman, Gene C.; Gales, Joel M.; ljones5@cfl.rr.com



- Findings
 - Instrument errors
 - There is a long-term gain drift well modeled by exponential decay
 - There are shorter-term non-monotonic offset errors (i.e., “the wiggles”)
 - Geophysical model errors
 - There remain modeling errors in the TA-TA_exp global average comparison
 - Dynamic range
 - Cold-sky and SMOS matchups over land indicate the full dynamic range calibration has too high a slope
 - Noise diode and APC coefficients are only consistent for ocean scenes
- Recommendations to SOCB for release of V2 dataset
 - Implement exponential-decay gain correction by fitting entire time series
 - Choose an instrument error analysis method (e.g., Brown or Lagerloef) and correct residuals by removing offset in TA
 - Advise users the calibration is valid over ocean, but not land



- Collaborate with Model WG on residual offset error correction
- Collaborate with Antenna WG on harmonizing ND cal with APC
- Continue to investigate instrument behavior to determine cause of instrument calibration errors to inform correction methodology



- Regional dTA analysis – Piepmeier
- Separating instrument from model errors – Lagerloef
- Antarctica and Separating instrument from model errors – Brown
- Cold sky cal – Dinnat
- Warm end cal – Bindlish