

VIS/NIR subgroup report

March 3, 2023

VIS/NIR highlights (non-lunar)

- We have had 6 monthly web meetings during the last year
 - Presented visible imager and visible calibration strategies
- VIS/NIR reference status update
 - CLARREO sensor has been postponed and is now scheduled to operate in 2025
 - TRUTHS sensor to launch in 2030
 - NOAA21 – VIIRS RSB channel calibration is very good
 - Might use as the future reference
- The sensor / retrieval continuity session
 - VGT 1/2/Proba surface reflectance continuity – Marta Luffarelli
 - Historical GOES recalibration and archiving – Jessica Matthews
 - MODIS and VIIRS cloud retrieval continuity – Kerry Meyer
 - MODIS and VIIRS aerosol continuity – Rob Levy

VIS/NIR highlights (non-lunar)

- Inter-calibration
 - OCO-2/3 ray-matching - Thomas Kuroso
 - Himawari 8/9 and VIIRS ray-matching – Kazuki KODERA
- Discussion of DCC algorithm and product promotion
 - Seb Wagner – migrating DCC algorithm from MODIS to VIIRS and in MICMICS
 - Kazuki KODERA – implementing DCC calibration for Him-8/9

GSICS DCC algorithm uncertainties discussion

- Discuss Hu BRDF uncertainty
- Discuss Pixel size and homogeneity domain uncertainty
- The GEO sensor are radiance-based measurements, must include solar spectra uncertainty
- Need to examine the source of the JMA DCC noise over the TWP
- Discuss the ATBD comments
- Discuss empirical SWIR band BRDFs
- Finalize ATBD and netCDF file parameters
- Future web meeting to discuss agency plots for the paper
- Will hold GSICS monthly web meeting to promote the GSICS DCC product
- Raj discusses implementation to SWIR bands
 - Need band specific empirical DCC BRDF models
 - Is working on ATBD

GSICS VIS/NIR ray-matching calibration strategy

- I want to start sharing agency best practices through monthly web meeting
- Work together with IR group on version 2 ray-matching and leverage any existing algorithm techniques and coding
- Need a volunteer to promote this calibration strategy

Future web meetings

- Fred Wu, Characterization and correction of ABI solar diffuser residual BRDF
- Discuss agency report and other presentation calibration results, where we did not have enough time for discussion
- DCC algorithm paper and GSICS product promotion for $< 1\mu\text{m}$
- DCC algorithm for $>1\mu\text{m}$
- Ray-matching discussions
- Welcome all calibration presentations for monthly web meetings
 - We will have more time for discussions
 - Please email your presentation title
- Usually have the monthly web meetings on the second Thursday of the month
 - Email announcement about 2-weeks ahead of time and reminder about 2 days in advance

VisNIR Session — Lunar part

Seb Wagner (EUMETSAT) presented updates on lunar calibrations for Sentinel-2 and Meteosat-8 end-of-life tests

- S2 work on stray light assessments and determining Moon image oversampling
- MSG1 (Meteosat-8) was given 8 hours to run test acquisitions of the Moon
 - series of images acquired in rapid succession; analysis ongoing

Jack Xiong (NASA) reported on inter-calibration of MODIS and SNPP and N20 VIIRS

- Calibration differences were reduced with using TSIS-1 HSRS solar spectrum
- [First Moon images taken by NOAA-21 VIIRS this week!](#)

Emma Woolliams (NPL) gave presentation on the Lunar Irradiance Model of ESA (LIME)

- Rigorous uncertainty analysis applied to lunar Langley acquisitions
- CoMet toolkit used for spectral interpolation/processing
- LIME toolkit: in development for operating lunar calibration using LIME
 - expected to be available for community use by the end of 2023

VisNIR Session — Lunar part

Bikash Basnet (NOAA) reported on using H. Kieffer's SLIMED lunar model at NOAA

- Comparisons of using SLIMED and GIRO on the same GOES-16 and 17 datasets
 - results show clearly some limitations of GIRO
 - this work transitioned well to the next talk:

Discussion on implementing a new GSICS lunar model — led by Tom Stone (USGS) and Hugh Kieffer (Celestial Reasonings)

- Tom presented a proposed framework for software system development
- Hugh has distributed a document describing SLIMED implementation
- Potential multi-agency effort, under GSICS
- Emma Woolliams stressed the importance of tracking uncertainties
- Suggestion to potentially use the LIME toolkit as a starting point
 - Fred Wu indicated possible NOAA support for this

Tentative Action: NOAA to study using the LIME toolkit for implementing a new GSICS lunar calibration model