GRWG UV Sub-Group Briefing Report & Introducing Special Session on Strategy for Inter-calibration of SWIR Spectrometers

Rose Munro
**Selected GRWG-UV Subgroup Baseline Projects**

**Reference Solar Spectrum**

Aim: to evaluate the available reference solar spectra and make a recommendation for a reference solar spectrum for community use. **Lead – Larry Flynn (NOAA)**

**White Paper on Ground-based Characterisation of UV/Vis/NIR/SWIR spectrometers**

Aim: to prepare a white paper documenting best-practise for the on-ground calibration of UV/Vis/NIR/SWIR spectrometers based on in-orbit experience from relevant missions. **Lead – Rosemary Munro (EUMETSAT) (transferred from R. Lang)**

**Match-ups and Target Sites**

Aim: to produce over-pass comparisons of UV sensors for specific target sites in use by the community. As a first step summaries of methods and results for target sites currently in use will be collected. **Lead – TBC.**

**Cross-calibration below 300nm**

Aim: To devise new methods for comparison of wavelength pairs for different viewing geometries taking into account contribution function equivalence to allow radiometric performance comparisons for ozone profile wavelengths from 240 – 200 nm. **Lead Larry Flynn (NOAA).**
White Paper on Ground-based Characterisation

White Paper still in drafting stage – contributions and/or offers to author sub-sections welcome!

Proposed table of contents

• Accuracy, sensitivity and repeatability
  I. Sources / commissioning
  II. Thermal and pressure environment / stability and characterization

• Instrument components
  I. Detector level
    a) Noise
    b) PRNU/PPG
    c) SMEAR
    d) Etaloning
  II. Stray-light
  III. Grating and alignment (ISRF)
    a) Spectral assignment
    b) Spectral stability
  IV. Pointing and Spatial stability (ISRF/PSF)
    a) Spatial and spectral aliasing
    b) Radiometric and spectral scene in-homogeneity errors.
    c) Detector co-registration (overlap)
  V. Polarisation sensitivity
  VI. Radiometric response
    a) Sources
    b) Geometry
  VII. Diffuser characterisation
  VIII. Degradation and contamination
  IX. ..........?
White Paper on Ground-based Characterisation

Linked to planned:

“CEOS WGCV Workshop on On-Ground Calibration and Characterisation”
currently anticipated for February 2020.

See also Agenda item 10b.
De Facto Scope of the UV Sub-Group

- Class of instruments addressed **reflective solar spectrometers**
- Main focus on atmospheric trace gases
- Moderate to high spectral resolution to **resolve trace gas absorption features**
- Polarization important

- Long list of relevant instruments (not exhaustive) TOMS, SBUV, OMPS, GOME, SCIAMACHY, GOME-2, OMI, Sentinel-5 Precursor, Sentinel-5, Sentinel-4, GEMS, TEMPO, EMI, GOSAT, OCO-2 & -3, Tansat, Copernicus CO₂
Propose renaming to **Reflective Solar Spectrometer Sub-Group (or similar)**

Addressing the following aspects for UV – SWIR **spectrometers**

- On-ground characterisation
- Solar calibration
- Lunar calibration
- Inter-calibration
- Polarization
- Development of common methods for use of invariant targets & vicarious calibration sites with homogeneous surface over sufficiently large area.
Outlook for UV Sub-Group (II)

Consistent with CEOS WGCV strategy discussed in WGCV meeting #44 (http://ceos.org/wp-content/uploads/2018/06/WGCV44_Minutes_v1.01.pdf)

- GHG instrument L1 activities in cooperation with GSICS/UVSG
- GHG L2 addressed under CEOS WGCV/ACSG

Special Session on Strategy for Inter-calibration of SWIR Spectrometers – Thursday 15:00
Thank you for your Attention

Questions?