The Radiometric Calibration Network: RadCalNet

*M. Bouvet on behalf of the RadCalNet WG (CEOS/WGCV/IVOS)*
What is RadCalNet?

- **Site X**
  - Raw measurements
  - Calibration & QC & Processing
  - Surface reflectance and atmosphere products (RadCalNet specific)

- **FTP**
  - RadCalNet Processing & QC
  - Hyperspectral TOA reflectance @ 30 mins interval for nadir view

- **Site Y**
  - Raw measurements
  - Calibration & QC & Processing
  - Surface reflectance and atmosphere products (RadCalNet specific)

CEOS/WGCV/IVOS | 29 Aug – 02 Sept | Slide 2
The RadCalNet sites

Today 5 sites (+ more in preparation)
The RadCalNet processing

- MODTRAN 6
- TOA reflectance include propagation of the surface / atmosphere uncertainties to TOA uncertainties via pre-computed LUT from Montecarlo MODTRAN runs
The portal

Monthly Aerosol Optical Depth at 550nm (Month 04)

Webcam views for the day

### Atmospheric parameters

09:00

### BODA Reflectance

09:00

### TDA Reflectance

09:30

Contact Admin
Forum
Collection 2022

- Collection 2022 released on 22 April 2022
- Improved surface/atmosphere data quality of historical data
- TOA propagation now done with MODTRAN 6 (minor impact)
- Data availability (July 2022):

Collection 2022

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5072
Site Intercomparison - S2A @ RVUS

- RadCalNet TOA reflectance available every 30 mins
- Sampled at 10 nm spectral sampling interval
- S2A geometry is not exactly nadir
- BRDF effects not accounted for
Site Intercomparison S2A – 3 sites spectral synthesis

RVUS GONA LCFR Intercomparison

- RVUS S2A right
- GONA S2A right (500m)
- LCFR S2A mean
Mean relative uncertainties BOA/TOA at each sites
Users

RadCalNet users vs time

RadCalNet User Distribution (01/07/2022)

Total 567
Unknown 2
First RadCalNet user workshop (9 – June 2021)

- About 100 online participants
- 25 presenters
- 3 sessions:
  - Multispectral instrument calibration/radiometric validation
  - Hyperspectral instrument calibration/radiometric validation
  - Exploitation of surface reflectance measurements
First RadCalNet user workshop (9 – June 2021)

• Exploited for validation/calibration of L1 products from:
  • New space missions: e.g., Maxar (Worldview, GeoEye), Planet (Skysat constellation), etc..
  • National space agencies missions: e.g., ARGANS (Sentinel-2, Landsat-8), ISRO (AWiFS), AIST (ASTER), NASA (OCO, GOSAT), DLR (DESIS), etc...

• Presentations and programme available on https://www.radcalnet.org
Acceptance process for new sites

1. **Set up Site**
   - Site owner initially sets up an instrumented land-based site. No communication with the RadCalNet working group is required, but guidance documents are available on site selection, characterisation and instrumentation. Owners are welcome to contact the RadCalNet working group if desired.

2. **Register Interest**
   - Site owners write a letter to the RadCalNet WG (contact below) with site details to register interest in becoming a RadCalNet site. This includes details of site location and site owner. A RadCalNet WG member will be assigned to help guide the site owner through the joining process. The requirements of RadCalNet are available and site operators should be confident they can meet these requirements before registering.

3. **Submission**
   - Following the RadCalNet WG’s peer review of the site, the site’s documentation and the peer review comments are submitted to the WGCV RadCalNet Review Panel for them to make a recommendation to CEOS WGCV on site admission.

4. **Documents**
   - RadCalNet requires that ϰϱ days of data are operationally provided to the portal (not yet public) before a site can be accepted. This data should be in the RadCalNet data format.

5. **Data**
   - The site operator will need to submit to the working group documents describing the site, the instrumentation, processing and uncertainty analysis. Templates are available for all required documents.

6. **Peer review**
   - At this stage, in parallel with the provision of ϰϱ days of data, the RadCalNet WG reviews the data and documents provided by the site and discusses this iteratively with the site owner. Site owners must provide evidence of the traceability to SI and uncertainty of their data and consequently consistency with other sites using existing or new comparisons and/or satellite observations.

7. **Approval**
   - Following approval by the CEOS WGCV, the site is a RadCalNet site, data is made public and the site owner becomes a member of the RadCalNet WG.

**RadCalNet Helpdesk:**
admin-radcalnet@magellium.fr

**Version:** 1.0 — May 2013
Acceptance process for new sites

RadCalNet operationally provides top-of-atmosphere reflectances from a set of instrumented land sites which can be used in the vicarious calibration/validation of satellite-borne sensors. Reflectances are provided every 30 minutes between 9 am and 3 pm site local time at 10 nm spectral intervals in the region 400 nm – 2500 nm. The RadCalNet WG is a technical group of site owners and other experts and is part of CEOS-WGCV-IVOS; the WGCV Review Panel makes recommendations to CEOS-WGCV on site admission.

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- RadCalNet WG members contribute to the review
- Process overseen by WGCV
- Through an acceptance panel reporting to WGCV
New Sites Status

1. Initial concept
2. Identify location
3. Set up instruments
4. Collect data
5. Prepare draft documents
6. Prepare submission
7. Submit application to RadCalNet
8. First Review
9. Second Review
10. Acceptance

Sites:
- BTCN
- GONA
- RVUS
- BSCN
- LCFR

Questions:
- AERONET-OC site?
- KARI Site
- USGS site

Operation
Conclusion

- Almost 5 years of successful RadCalNet operation
- Continuous efforts to improve data quality
- 5 sites currently providing data. New sites expected to join the network.
- Growing user base
Thank you