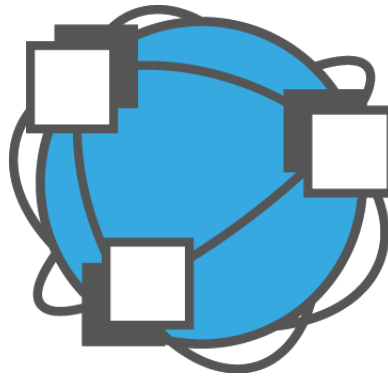


RadCalNet Status



M. Bouvet on behalf of the RadCalNet WG

29-03-2019

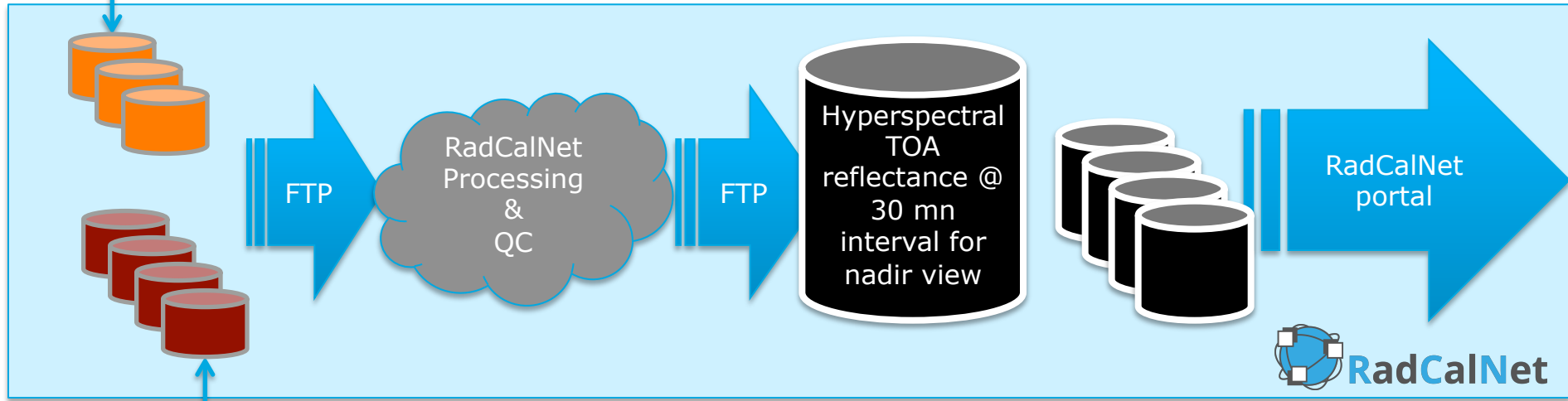


What is RadCalNet?

RadCalNet is a CEOS WGCV initiative to provide satellite operators with SI-traceable Top-of-Atmosphere (TOA) spectrally-resolved reflectances to aid in the post-launch radiometric calibration and validation of optical imaging sensors from a coordinated network of instrumented land-based test sites.



What is RadCalNet?



Acceptance process for new sites



RadCalNet How to Become a RadCalNet Site



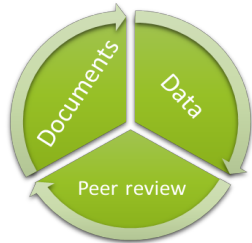
RadCalNet
RadCalNet operationally provides top-of-atmosphere reflectances from a set of instrumented land sites which can be used in the vicarious calibration / validation of satellite-borne sensors. Reflectances are provided every 30 minutes between 9 am and 3 pm site local time at 10 nm spectral intervals 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.

Site Setup
The 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 and owners are welcome to contact the RadCalNet working group if desired.

- G1 – Site Selection
- G2 – Site Characterisation
- G3 – Site Instrumentation

Set up Site

Register Interest



Register
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.

- R1 – Membership criteria
- Letter of Intent produced

Data
RadCalNet requires that 45 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.

- R2 – Data specification
- 45 days' data

Submission



Documents
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.

- G4 – Uncertainties analysis
- T1 – Site questionnaire
- T2 – uncertainty summary

Peer-review
At this stage, in parallel with the provision of 45 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.

- G5 – Peer review process

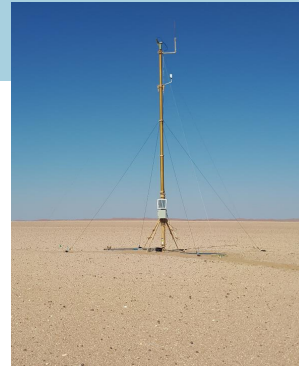
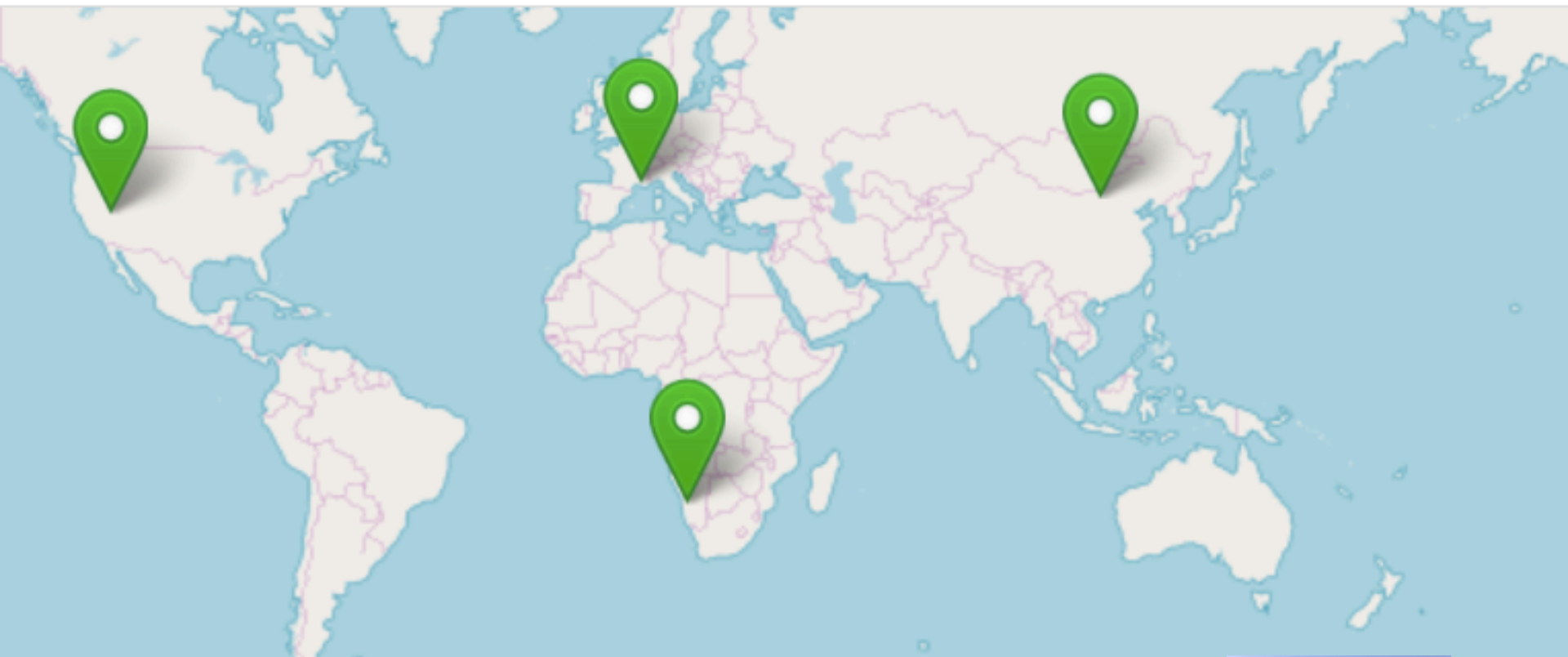
Submission
Following the RadCalNet WG's peer review of the site, the site's documentation and the peer review comments are submitted to the WGCV RadCalNet Review Panel for them to make a recommendation to CEOS WGCV on site admission.

Membership

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

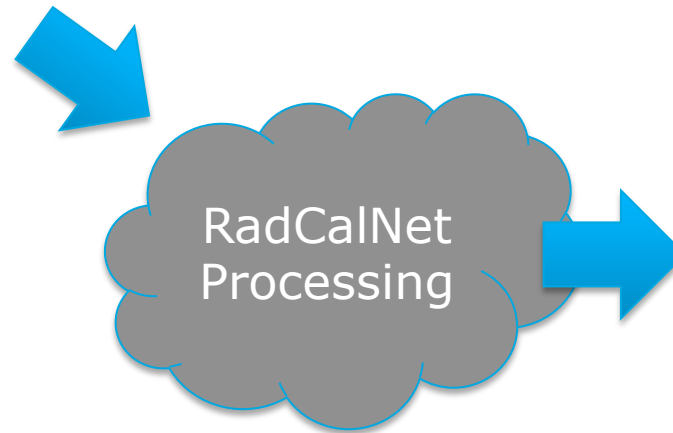
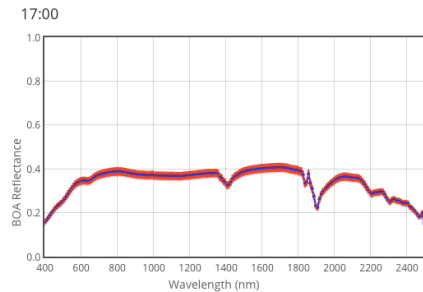
The first RadCalNet sites



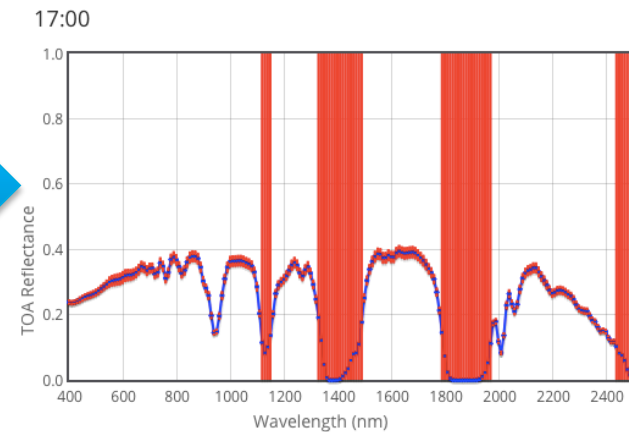
The RadCalNet processing

- MODTRAN 5
- TOA reflectance reprocessed last summer to include propagation of the surface / atmosphere uncertainties to TOA uncertainties via pre-computed LUT from Montecarlo MODTRAN runs

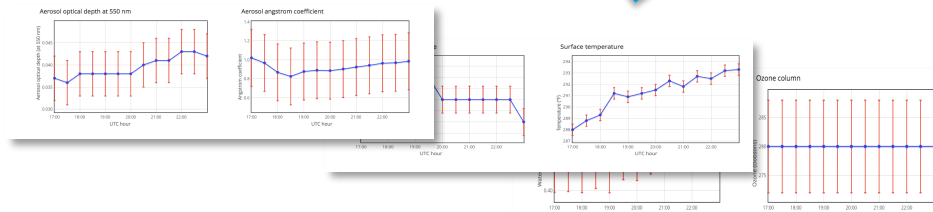
Surface reflectance



TOA reflectance



Atmospheric measurements



The portal

Welcome to the Radiometric Calibration Network portal

The portal provides access to all RadCalNet datasets, allowing users to visualize and download data acquired by the four instrumented reference test sites.

- University of Arizona's site at Railroad Playa, Nevada, USA,
- AoE's site at Baotou, China,
- the CNES site at La Crau, France,
- the new ESA/CNES site in Gobabeb, Namibia.

These test sites provide nadir-view top-of-atmosphere reflectance at 30 minute intervals from 9am to 3pm local standard time at 10 nm intervals from 400 nm to 2500 nm. This is calculated from ground nadir-view reflectance measurements, and atmospheric measurements such as surface pressure, columnar water vapour, columnar ozone, aerosol optical depth and the Angstrom coefficient. Correction to top-of-atmosphere will be performed for all sites in the same way using Modtran.

The data are provided in a text format, defined in [R2-RadCalNetRequirements-DataFormatSpecification_V9.pdf](#).

To download data from a site, please select a site.

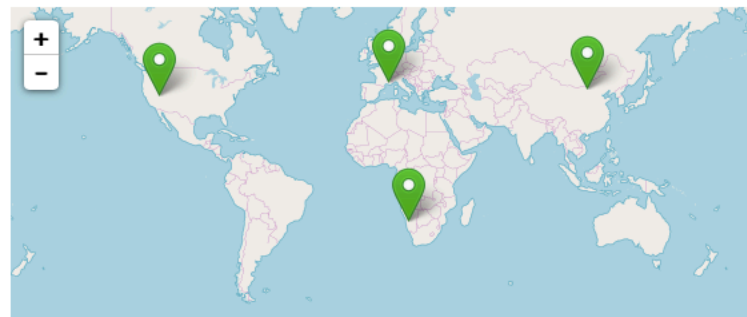
To download complete data sets, please press the hyperlink [download all data](#). Users are also asked to consider RadCalNet data policies especially providing appropriate citations when displaying data downloaded from this site.

A quickstart guide for new users and for becoming a new RadCalNet site is available here : [RadCalNetQuickstartGuide_20180702.pdf](#).

Please check the latest announcements, FAQ and discussions on the RadCalNet's [forum](#).

Please select a site :

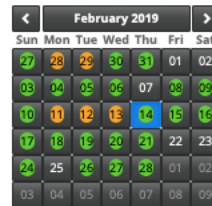
Railroad Valley Playa
La Crau
Gobabeb
Baotou



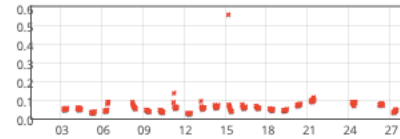
Gobabeb

[return to site description](#)

Data



Monthly Aerosol Optical Depth at 550nm (Month 02)

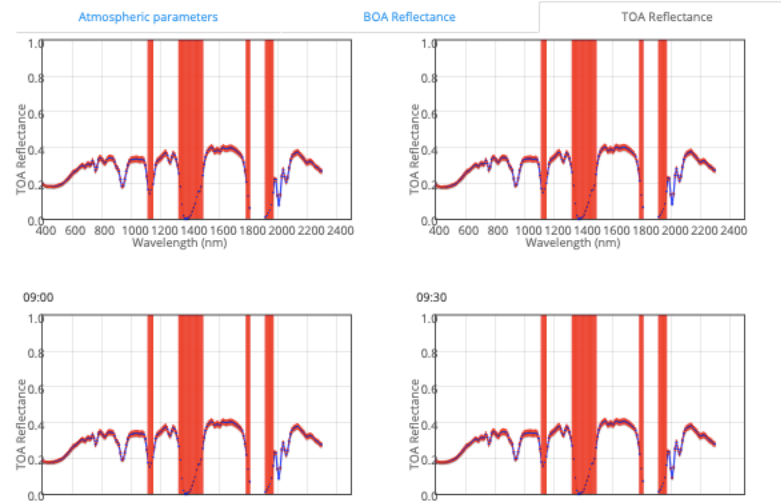


● All TOA simulations available for this day (every 30 mins between 9:00 and 15:00 Local Standard Time)

● TOA simulations only partially available for this day

[Download daily data for all instruments](#)

Sensor : 01 Input version : 01 Output version : 02





RadCalNet Documentation

- **G0**-RadCalNet Guidance – Becoming A RadCalNet Site
- **G1**-RadCalNet Guidance – Site Selection
- **G2**-RadCalNet Guidance – Site Characterisation
- **G3**-RadCalNet Guidance - Instrumentation And Data Processing
- **G4**-RadCalNet Guidance – Uncertainty Analysis
- **G5**-RadCalNet Guidance - Peer-Review And Comparison update
- **R1**-RadCalNet Requirements - RadCalNet Membership Criteria
- **R2**-RadCalNet Requirements – Data Format Specification
- RadCalNet Data Policy
- **T1**-RadCalNet Templates - Site Questionnaire
- **T2**-Uncertainty Summary Report – Template



RadCalNet documentation

RadCalNet Processing

- **D1**-RadCalNet Data Version Description
- **R2**-RadCalNet Requirements – Data Format Specification

RadCalNet individual site documentation

- Site questionnaires x 4
- Site uncertainty summary reports x 4

Timeline since last WGCV/IVOS meeting in Noordwijk



- March 2018: RadCalNet WG meeting #7 at ESTEC
- April/May 2018: 4 RadCalNet prototype sites endorsed by WGCV
- July 2018: RadCalNet portal and forum open to public
- June-Dec 2018: Gobabeb operation degraded
- Fall 2018: First known candidate sites formally invited
- Xmas 2018: AEO proposed a new sandy site
- March 2019: RadCalNet WG#8 Perth

Data generated since last IVOS meeting

	IVOS 30	IVOS 31	Nb of added days
BOA reflectances	1148	1988	840
TOA reflectances	1104	1983	879
BOA	Total	Total	Nb of added days
RVUS	466	656	190
LCFR	457	729	272
BTCN	152	236	84
GONA	73	367	294
TOA	Total	Total	Nb of added days
RVUS	466	656	190
LCFR	457	724	267
BTCN	152	236	84
GONA	73	367	294

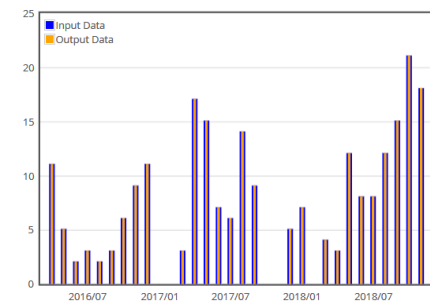
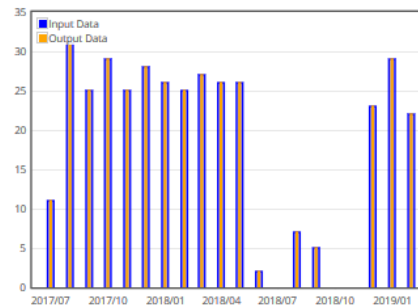
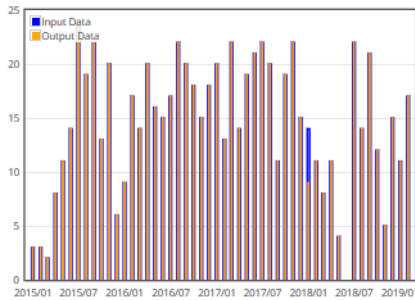
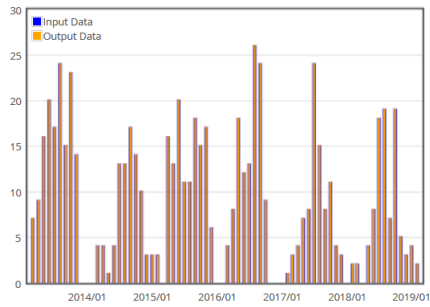
Data availability

RVUS

LCFR

GONA

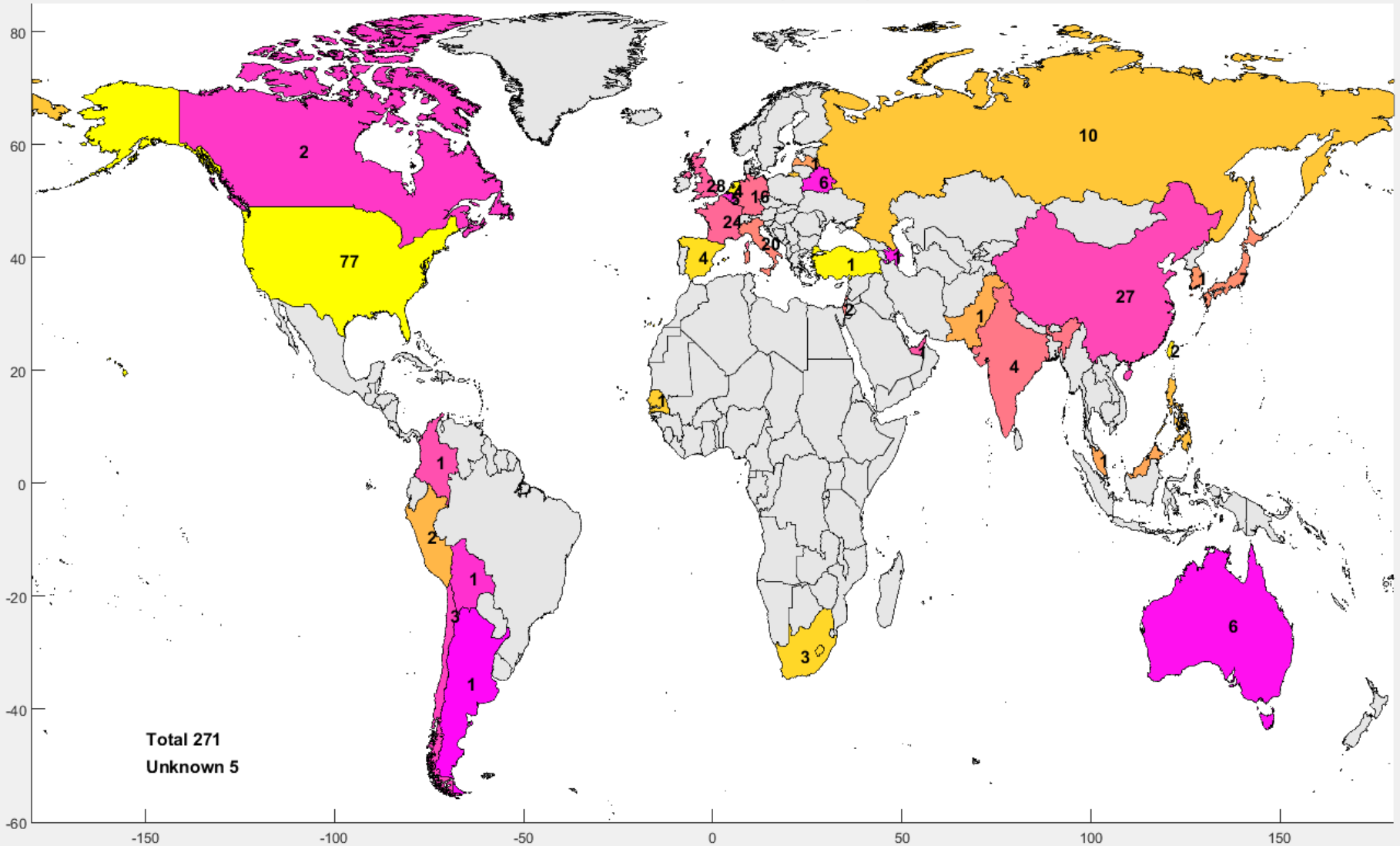
BTCN



BOA	2013	2014	2015	2016	2017	2018	2019	Total
RVUS	145	83	133	114	88	87	6	656
LCFR	0	0	145	201	218	137	28	729
BTCN	0	0	0	52	76	108	0	236
GONA	0	0	0	0	149	167	51	367
TOA	2013	2014	2015	2016	2017	2018	2019	Total
RVUS	145	83	133	114	88	87	6	656
LCFR	0	0	145	201	218	132	28	724
BTCN	0	0	0	52	76	108	0	236
GONA	0	0	0	0	149	167	51	367

Public users

RadCalNet User Distribution (14/03/2019)



Next steps

- Continue operation at the sites keeping data latency within 2 weeks
- Review of the candidacy of AOE sandy site before end of May 2019 and provide feedback to WGCV site admission panel before July 2019
- Reprocess the full RadCalNet BOA/TOA archive mainly in order to increase spectral resolution of TOA reflectance (keeping sampling at 10 nm) and improve the associated uncertainty estimates + improve BOA products quality.
- Next RadCalNet WG telecon early June 2019
- Provide sample of reprocessed data to beta users 3 months before pushing full collection on the portal
- Reprocessing complete and available before next IVOS meeting

Questions?

