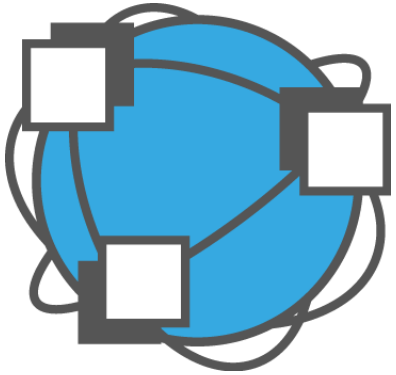
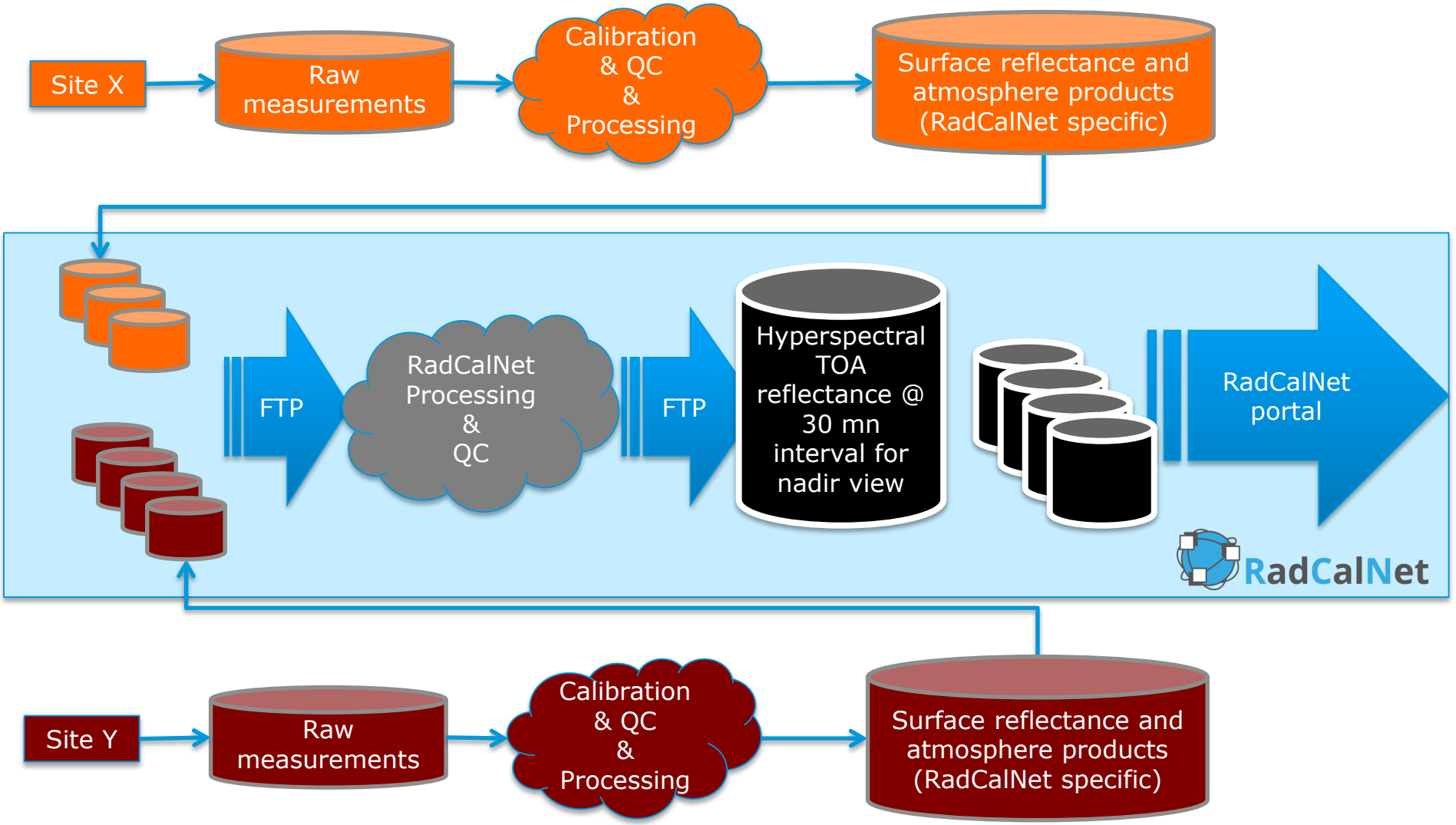
RadCalNet

Status



M. Bouvet on behalf of the RadCalNet WG

What is RadCalNet?




嘉賓樓
CEOS
CEOS WGCV IVOS-28 Meeting
RadCalNet & MTF Task Group Meetings
July 18-23, 2016 - Beijing, China
Hosted By
Key Lab of Quantitative Remote Sensing
Information Technology, Academy of
Opto-Electronics, Chinese Academy of Sciences

Timeline since last WGCV/IVOS meeting

- Jul. 2016: IVOS meeting in Beijing
- 2016/10/06: WGCV chairman sends invite to RadCalNet beta users
- Nov. 2016: Rounds of teleconferences
- 2017/03/13 AM: RadCalNet beta user workshop
- 2017/03/13 PM: RadCalNet WG meeting

The sites

- Since have been efforts dedicated to:
  - ✓ Operationally running the sites
  - ✓ Feeding surface and atmosphere data to the RadCalNet processing 'system'
  - ✓ Defining measurement uncertainties

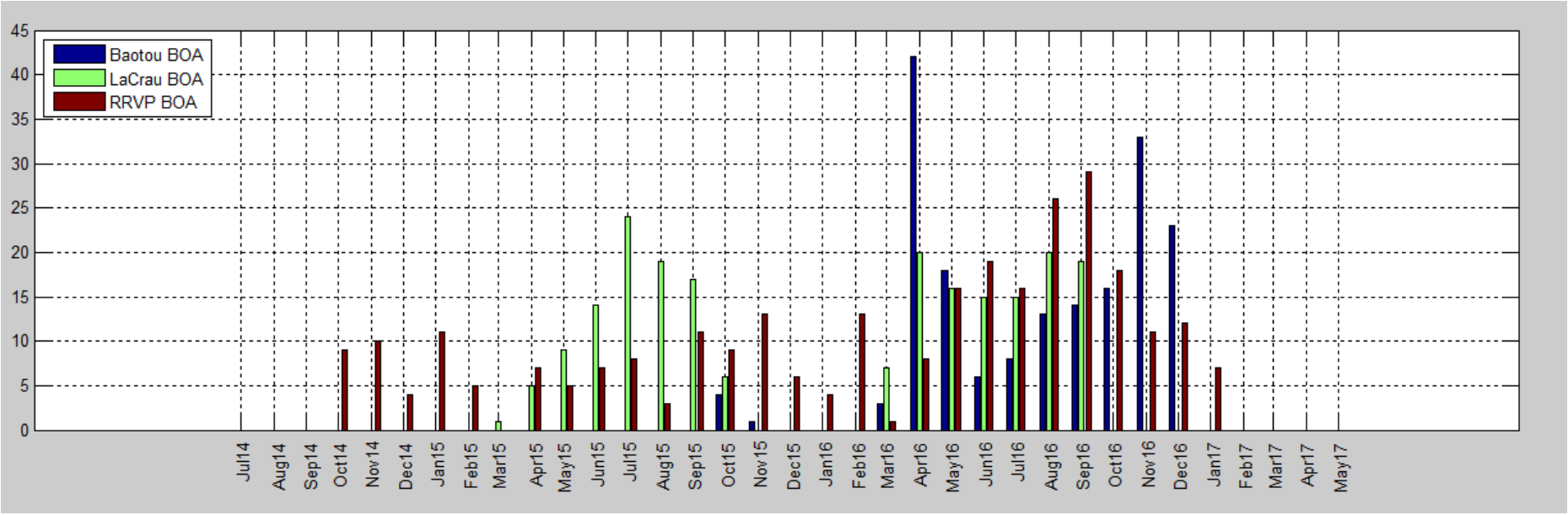



The sites

- Railroad Valley Playa, La Crau and Baotou are operational and delivering data to RadCalNet
- Gobabeb: instrument characterised and calibrated at NPL. Mast built and being tested. Site characterised in dec. 2015 by CNES and NPL. Full deployment and testing in UK waiting for appropriate weather window. Will be followed by installation at Gobabeb.

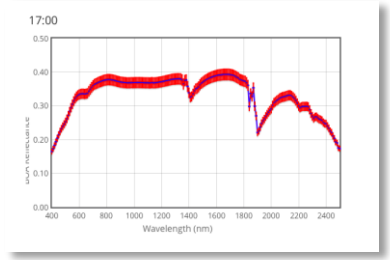
The data availability

	2014	2015	2016	2017	Total
LCFR		95	112		188
RVUS_00	23	85	173	7	288
BTCN_01 (black grave square)			65		65
BTCN_02 (grey grave square)		5	60		65
BTCN_03 (white gravel square)			51		51
Total Nb Days	23	185	461	7	657

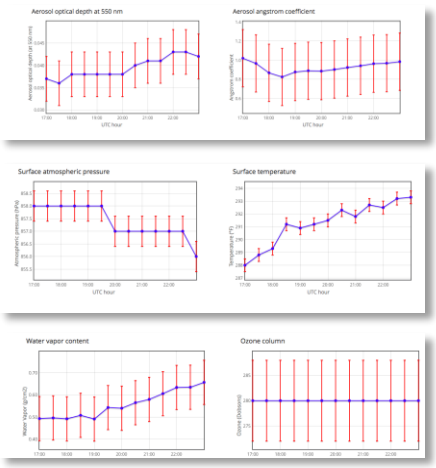


The RadCalNet processing

- MODTRAN 5
- On-going work by K. Thome / B. Wenny to **propagate the surface / atmosphere uncertainties to TOA uncertainties** via pre-computed LUT from Montecarlo MODTRAN runs

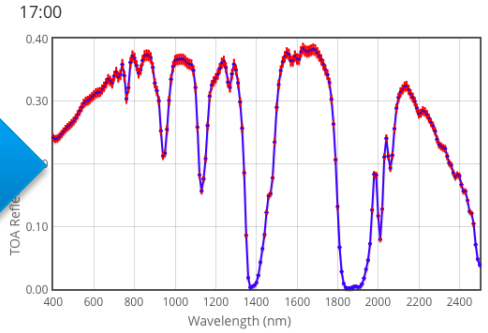


Surface reflectance



Atmospheric measurements

RadCalNet Processing



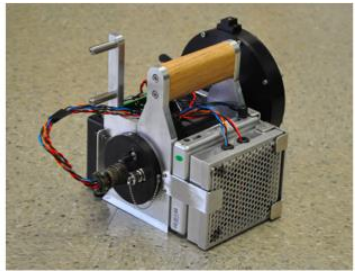
TOA reflectance

The BOA intercomparison of RadCalNet surface reflectance using portable transfer radiometers

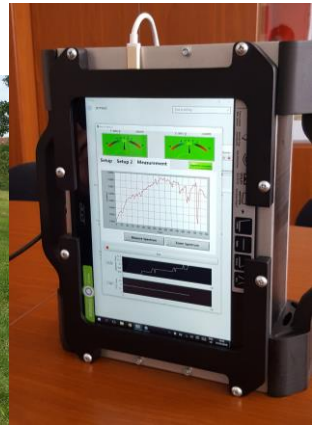
- Objective: identify site-to-site radiometric differences at surface radiance (reflectance) level

- Status
  - ✓ UoA and NPL transfer radiometer measurements compared last weeks both in the lab and in the field
  - ✓ Transfer radiometers might be operated at sites (blindly by site owners and/or with E. Wooliams) in the course of 2017

THE UNIVERSITY OF ARIZONA.



NPL National Physical Laboratory



Documentation for users: site questionnaires

Document title	Status
RadCalNet quick start guide	Available on RadCalNet portal
RadCalNet data format and processing	V5 available on RadCalNet portal
RadCalNet data policy	Done – Available on RadCalNet portal
CEOS site questionnaire – Template	V1 available on RadCalNet portal
CEOS site questionnaire - Baotou	Available on RadCalNet portal
CEOS site questionnaire - La Crau	Available on RadCalNet portal
CEOS site questionnaire – Railroad Valley Playa	Available on RadCalNet portal
CEOS site questionnaire – Gobabeb	Available on RadCalNet portal (version 28 Jun 2016) but will need an update when site operational
Paper on measurement uncertainties - Baotou	In preparation
Paper on measurement uncertainties - La Crau	In preparation
Paper on measurement uncertainties – Railroad Valley Playa	In preparation
Paper on measurement uncertainties – Gobabeb	In preparation

Documentation for candidate site owners: general documentation

Document title	Status
Requirement Document: membership criteria	Done – Available on RadCalNet site
Requirement Document : site data provision	In preparation
Good Practice Guide 1: site selection	In preparation
Good Practice Guide 2: site characterisation	In preparation
Good Practice Guide 3: site instrumentation and data processing	In preparation
Good Practice Guide 4: site quality assurance	In preparation

The portal

RadCalNet | CEOS Committee on Earth Observation Satellites | magellium

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 RadCalNet_File_Specs_v5.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 is available here : RadCalNetQuickstartGuide_20160915.pdf.

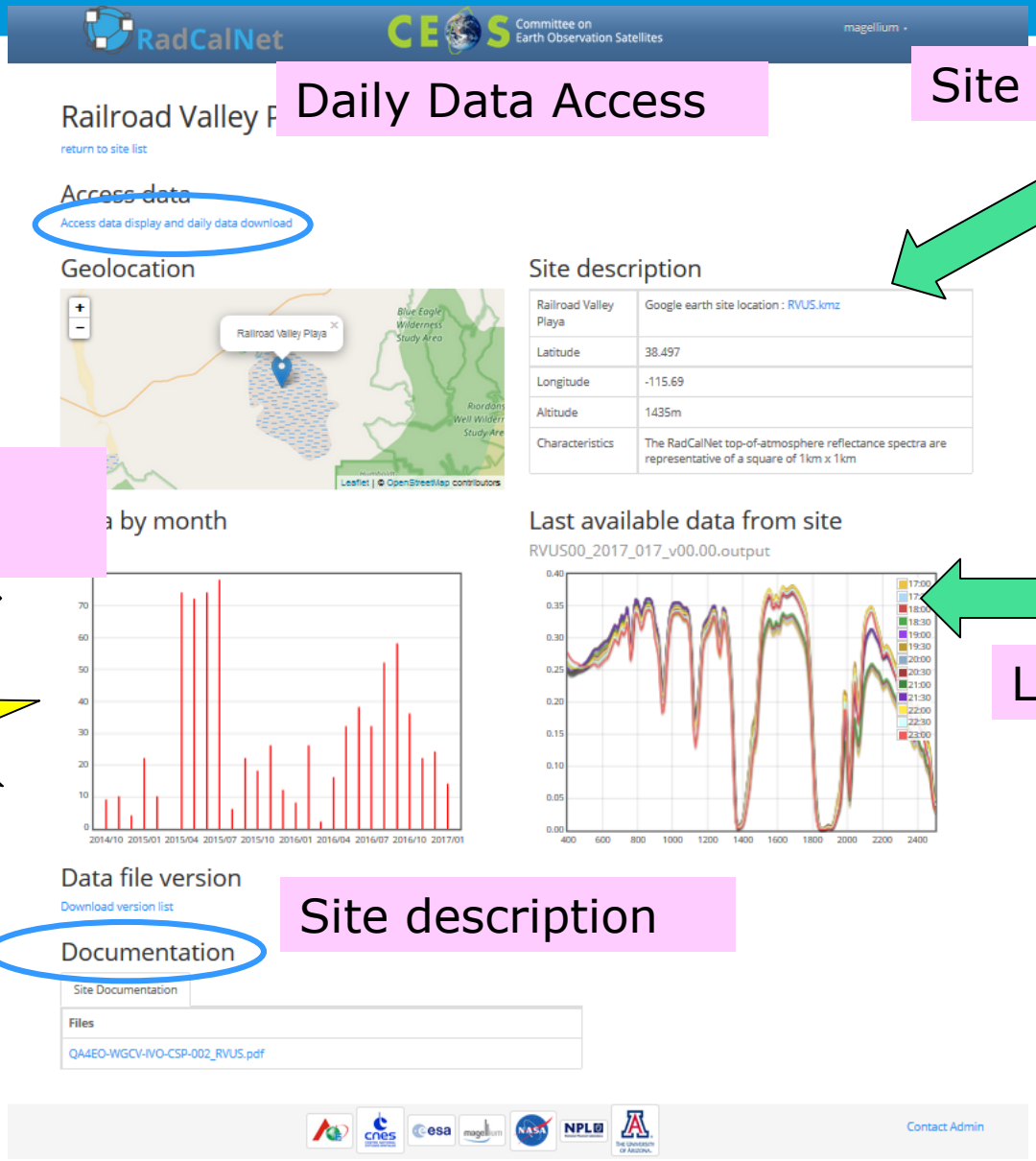
02-Fev-2017 *RadCalNet file specification has been updated to describe the MODTRAN data processing.*
19-Jul-2016 *The RadCalNet project status was presented at the CEOS/WGCV/IVOS meeting at AOE in Beijing (China). Please find the presentation here.*

Please select a site :

- Railroad Valley Playa
- La Crau
- Gobabeb
- Baotou

RadCalNet Documents

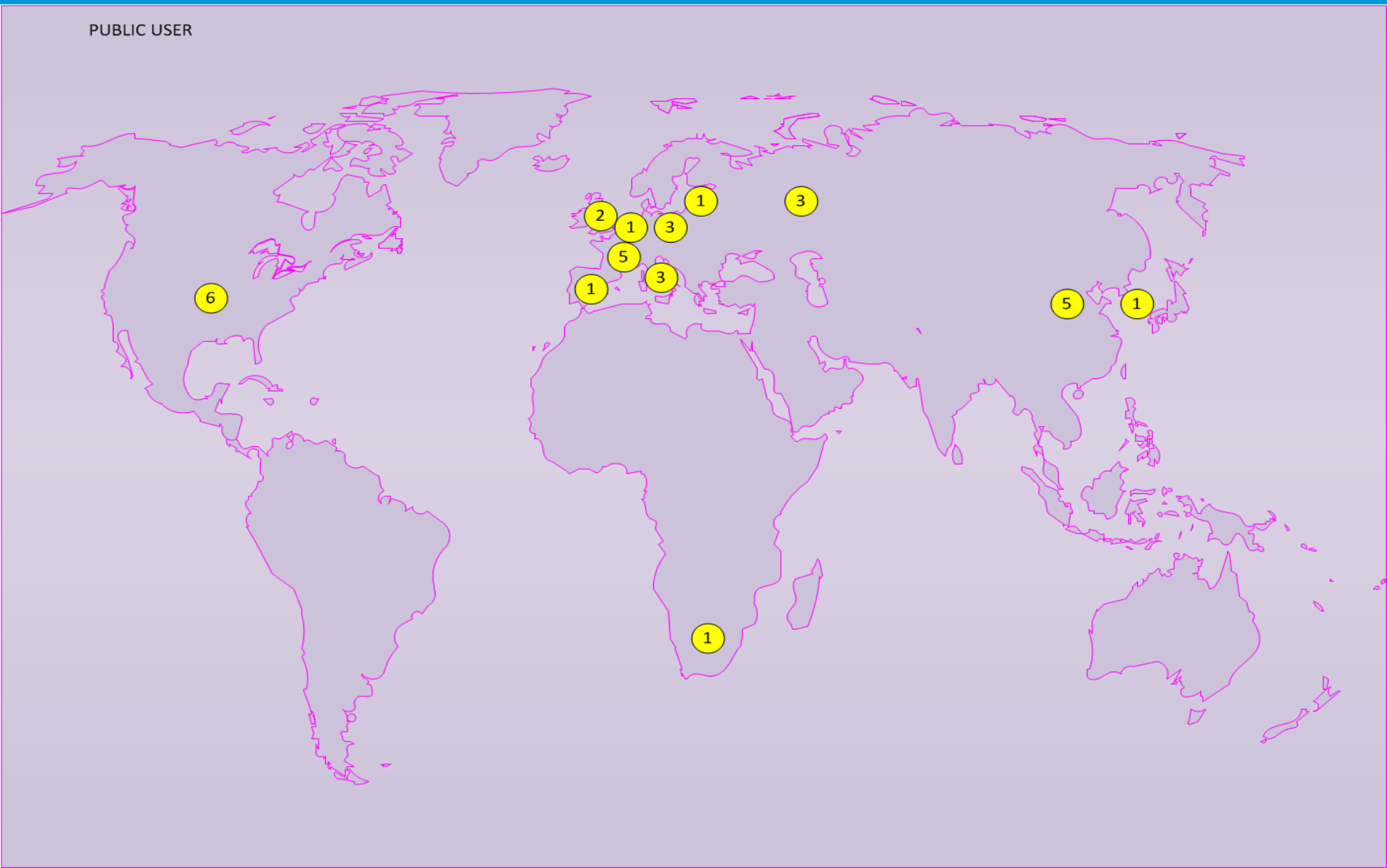
The portal


RadCalNet
CEOS Committee on Earth Observation Satellites
magellium
Railroad Valley P
return to site list
Access data
Access data display and daily data download
Geolocation
Railroad Valley Playa
Blue Eagle Wilderness Study Area
Leaflet | © OpenStreetMap contributors
Site description
Railroad Valley Playa
Google earth site location : RVUS.kmz
Latitude
38.497
Longitude
-115.69
Altitude
1435m
Characteristics
The RadCalNet top-of-atmosphere reflectance spectra are representative of a square of 1km x 1km
a by month
2014/10 2015/01 2015/04 2015/07 2015/10 2016/01 2016/04 2016/07 2016/10 2017/01
Last available data from site
RVUS00_2017_017_v00.00.output
Data file version
Download version list
Documentation
Site Documentation
Files
QA4EO-WGCV-IVO-CSP-002_RVUS.pdf
Contact Admin
Daily Data Access
Site Characteristics
New
Dataset Availability
New
New
Last Spectrum
Site description

The portal


radcalnet.org
RadCalNet
Committee on Earth Observation Satellites
Data
October 2016
Sun Mon Tue Wed Thu Fri Sat
Monthly Aerosol Optical Depth at 550nm (Month 10)
Download daily data for all instruments
Sensor : 00
Input version : 00
Output version : 00
Atmospheric parameters
BOA Reflectance
TOA Reflectance
17:00
17:30
TOA Reflectance
Wavelength (nm)
18:00
18:30
Contact Admin

Candidate public user



Current beta users

- *Russian sensors (K. Emelyanov and V. Kovalenko)*
- *Proba-V (S. Adriaensen) (and S. Sterckx remotely)*
- *Sentinel-2 (T. Scanlon)*
- *Sentinel-2 (B. Alhammoud)*
- *Rapideye Constellation (A. Brunn)*
- *GOES-13/15 (X. Wu) (15 mins)*
- *Landsat 7/Landsat 8/Sentinel-2 (D. Helder and X. Jing)*
- *CBERS04, ZY02C, ZY3, GF1 and GF2 satellites (Q. Han)*
- *Digital Globe sensors (T. Ochoa)*
- *Dove Constellation (N. Wilson)*

Beta Users Workshop Summary

General comments:

- Comparison of sensor observations to RadCalNet TOA simulations at RVUS and LCFR point towards consistency across the two sites and with space sensors radiometry levels.
- Beta users generally expressed their interest in using RadCalNet data to support their sensor in-flight radiometric performance assessment
- Overall satisfied by the portal functionalities and documentation

Beta Users Workshop Summary

Users suggestions:

- RadCalNet TOA simulation are provided for nadir view. Site BRDF data needed to exploit off-nadir sensor observations => requires collaboration with site owners
- Additional QC on the RadCalNet data could be implemented
- Additional information about site operation status would be useful to task sensors
- Communicate via email processing updates / important changes on portal / additional data availability
- In the long run, query tools (e.g.: API) to access RadCalNet data would be useful to automate data extraction
- Additional met data might be useful (e.g.: anemometer/rain gauge)

Acceptance process for new sites

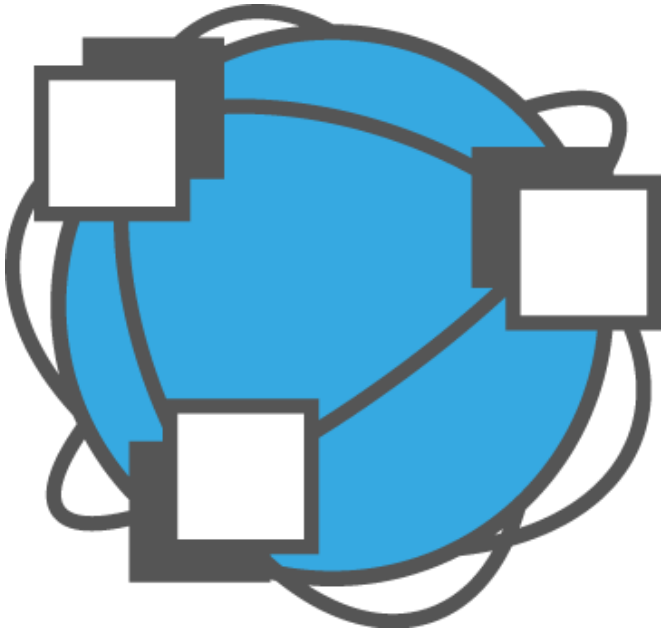
Activities	Check Requirements + Register intent	Instrument site + assess uncertianties	6 months of data + comparisons
Requirements (R), Guidance (G)	(R1) RadCalNet Membership Criteria	(G4) Instrumentation and Data Processing Guidance (G5) Uncertainty Analysis Guidance	(R2) RadCalNet Data Format Specification (R3) RadCalNet Comparisons Procedure
Documents from Site Operator	Letter of Intent (LOI) (req.)	Site Questionnaire Report (SQR) (req.) Uncertainty Summary Report (USR) (req.)	6 months' data (req.) Comparison data (req.)

- Process overseen by WGCV

Next steps

- Continue operation at the sites and on the portal for beta users
- Get the Gobabeb site running (by summer 2017)
- Use the portable transfer radiometer between the sites in early 2017 (?)
- Sites should go through the formal RadCalNet acceptance process of WGCV
- RadCalNet goes public after summer 2017

Questions?



Acceptance of new site into RadCalNet (from Beijing meeting)

ADD TRACY'S STEPS without steps 2 and 3

Governance of RadCalNet will be at the WGCV. RadCalNet should be run by WGCV and be on their agenda. WGCV would do this through a committee of representatives of the RadCalNet WG and WGCV representatives. They will be appointed by WGCV and would be the arbitrator for RadCalNet membership and monitoring. That governance process should be in place before RadCalNet becomes fully public. Note that there will also be a technical RadCalNet WG under IVOS, for technical aspects of the discussion. This would cover the work on the sites, the SI-traceability, discussion of comparisons and uncertainties, etc.