

Copernicus (Global Land) Ground-Based Observations for Validation (GBOV) service



Land Monitoring

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3. University College of London, UK
4. University of Southampton, UK
5. University of Valencia, Spain
6. University of Leicester, UK
7. **Many partners contributing with ground data around the world!!!**





Outline

- Introduction/ Background
- Data collection and service status
- GBOV support to supersites development

<https://land.copernicus.eu/global/gbov>



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Introduction/ Background



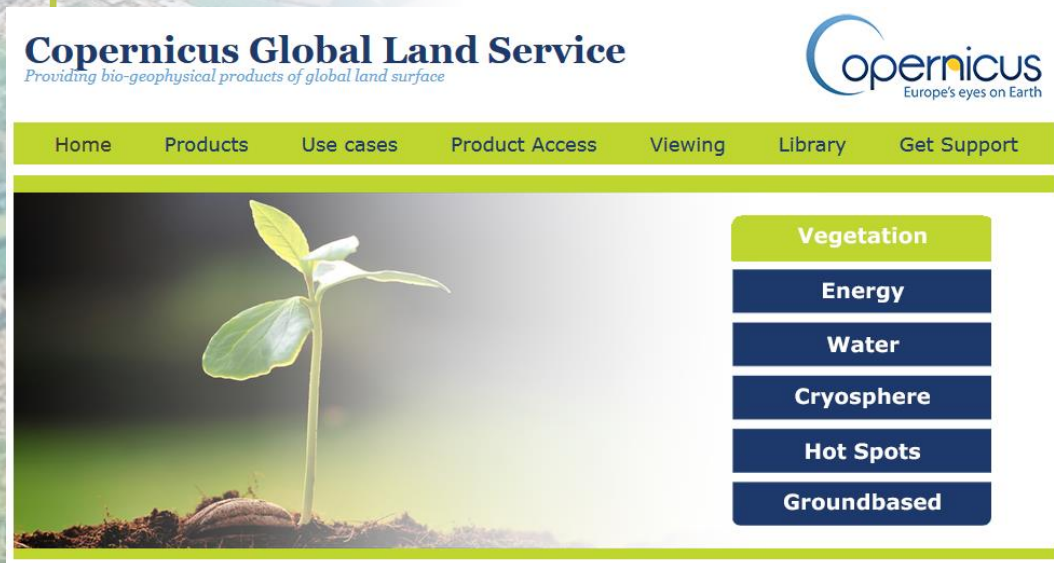


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Background

- Copernicus Global Land Service as been providing a wealth of EO products for several years
- There is a need for long term validation products derived from quality control data and consistent protocols

<https://land.copernicus.eu/global>



Burnt Area	NDVI
Dry Matter Prod.	Soil Water Index
FAPAR	Surf. Soil Moisture
FCOVER	VCI
Leaf Area Index	VPI
Land Cover	

Land Surface Temp.
Surface Albedo
TOC Reflectance

Lake Surf. Water Temp.
Lake Water Quality
Water Bodies
Water Level

Lake Ice Extent
Snow Cover Extent
Snow Water Equiv.





Objectives

- **GBOV** aims at facilitating the use of observations from operational ground-based monitoring networks and their comparison to Earth Observation products
- Component 1
 - Collection of multi-year ground-based observations of high relevance for the understanding of land surface processes from existing global networks.
- Component 2
 - Upgrade of existing sites with new instrumentation or establishing entirely new monitoring sites to close thematic or geographic gaps.



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GBOV portal

- Land Monitoring Service
 - <https://land.copernicus.eu>
- GBOV is attached to the **GLOBAL** land monitoring service
 - <https://land.copernicus.eu/global>
- And is accessible under the “Groundbased” tab
 - <https://land.copernicus.eu/global/gbov>
 - <https://gbov.acri.fr>



[@CopernicusGBOV](https://twitter.com/CopernicusGBOV)





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Data collection and service status





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Data base summary

RM#	RM definition
RM-1	Direct/Diffuse visible radiation
RM-2	Direct/Diffuse thermal radiation
RM-3	Atmospheric properties
RM-4	Transmission through canopy
RM-5	Soil BRP/BHR/DHR
RM-6	Fraction of Incident Photosynthetically Available Radiation (FIPAR)
RM-7	Leaf Area Index (LAI)
RM-8	Land Surface Emissivity (LSE)
RM-9	Ground and Surface Temperature
RM-10	Soil moisture at 5 cm
RM-11	Meteo properties



Short wave radiation



Long wave radiation



Atmospheric properties



Vegetation



Long wave radiation



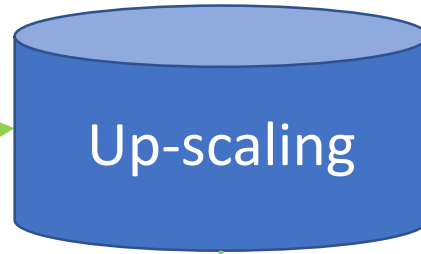
Soil moisture & meteo



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Data base summary

RM#
RM-1
RM-2
RM-3
RM-4
RM-5
RM-6
RM-7
RM-8
RM-9
RM-10
RM-11



Satellite/Instrument	Related LP
S2/MSI	1,2,3,4,5
MODIS	7
Landsat 8	1,2,3,4,5
Proba-V	6
SPOT	1,2

LP#	LP definition
LP-1	Top Of Canopy Reflectance (TOC-R)
LP-2	Surface Albedo (AI)
LP-3	Leaf Area Index (LAI)
LP-4	Fraction of Absorbed Photosynthetic Available Radiation (FAPAR)
LP-5	Fraction of Covered ground (Fcover)
LP-6	Soil Moisture (SM)
LP-7	Land Surface Temperature (LST)



Short wave 1km



Vegetation 20 300m



Soil moisture 10km



LST 7km



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Data base summary

- 84 sites:
 - 34 short wave sites (LP1 & LP2)
 - 25 vegetation sites (LP3, 4 & 5)
 - 20 soil moisture sites (LP6)
 - 23 LST sites (LP7)
- time series ≥ 2 years
 - Covering 2014-2019
 - 2020 processing in progress

▼ Figures about GBOV

200.9 MILLIONS RM DATA

11.6 THOUSAND LP DATA

158.12 GB TOTAL DISTRIBUTED DATA

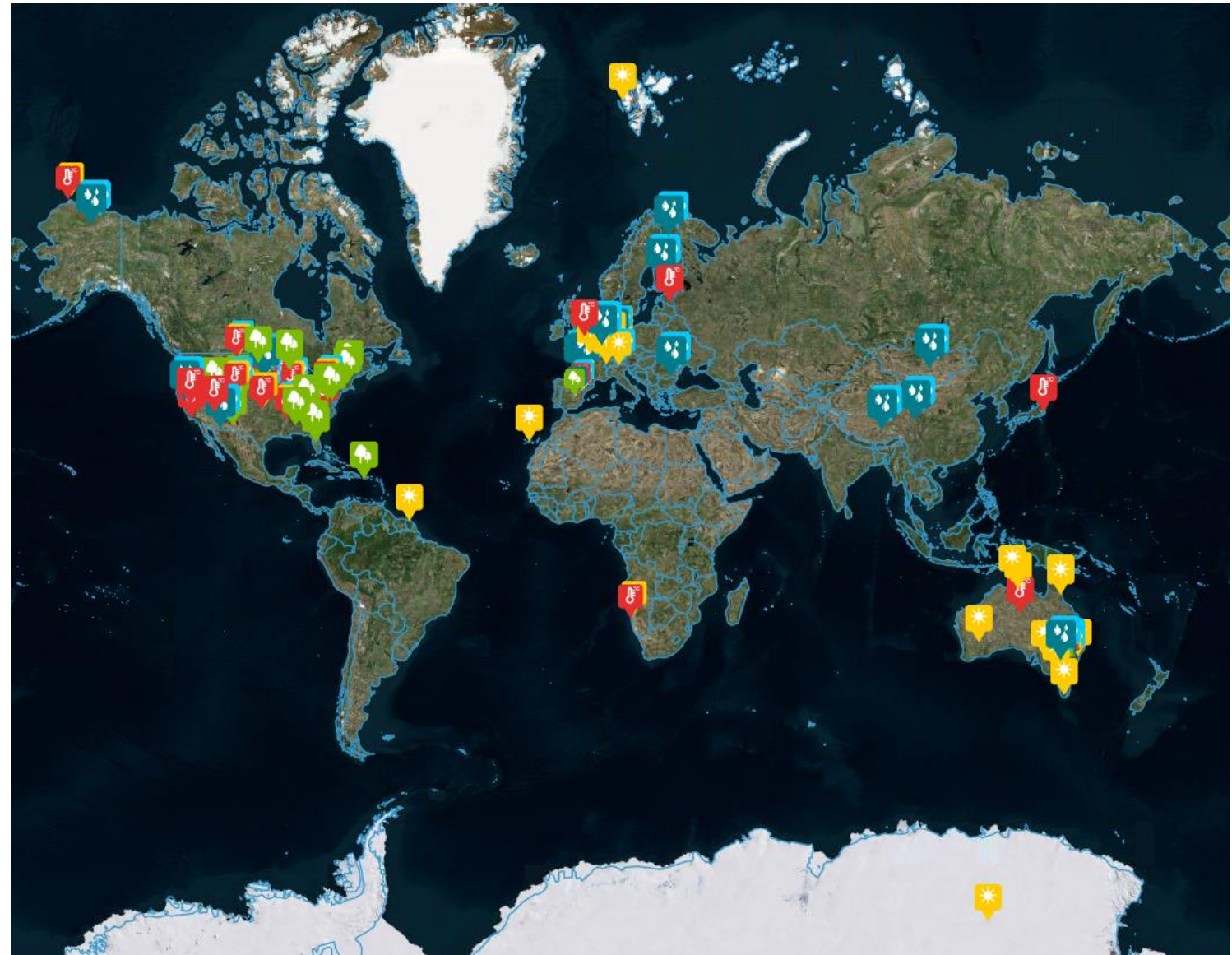
820 TOTAL NUMBER OF ORDERS

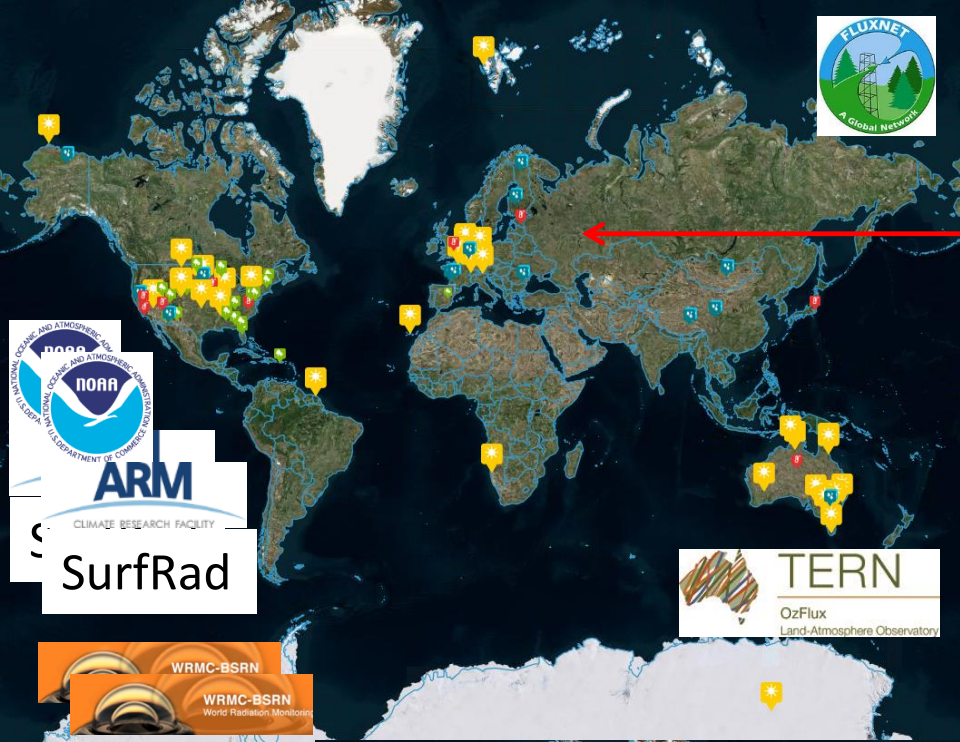
674 ORDERS INCLUDING LAND PRODUCTS





617 ORDERS INCLUDING REFERENCE MEASUREMENTS

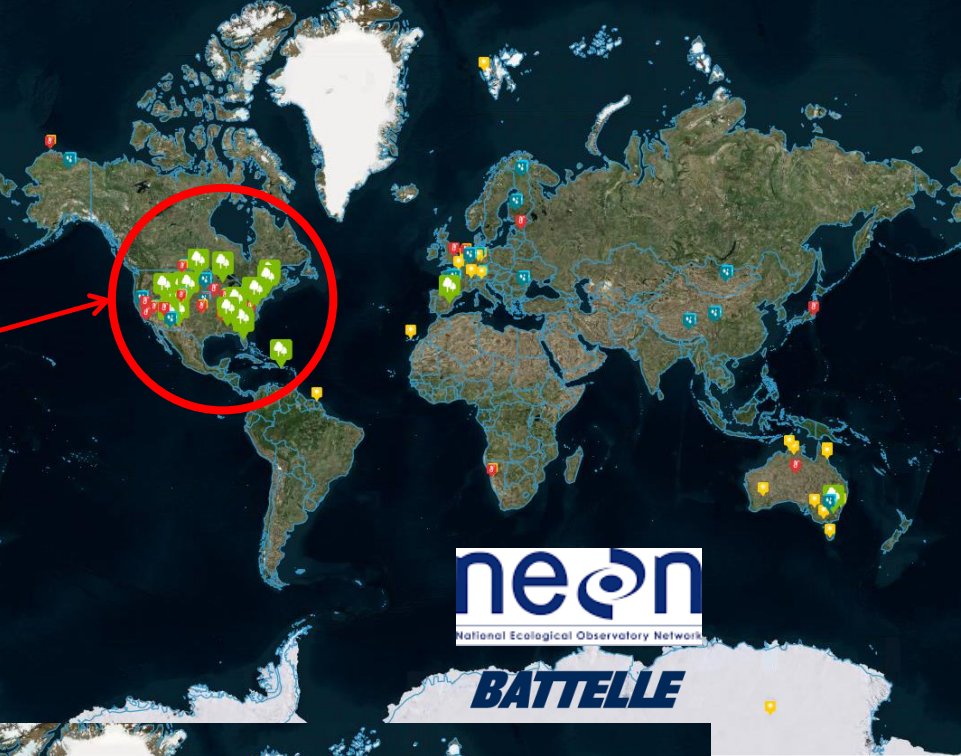
84 SITES

541 USERS





 Short wave
 Vegetation 
 Soil moisture 
 LST

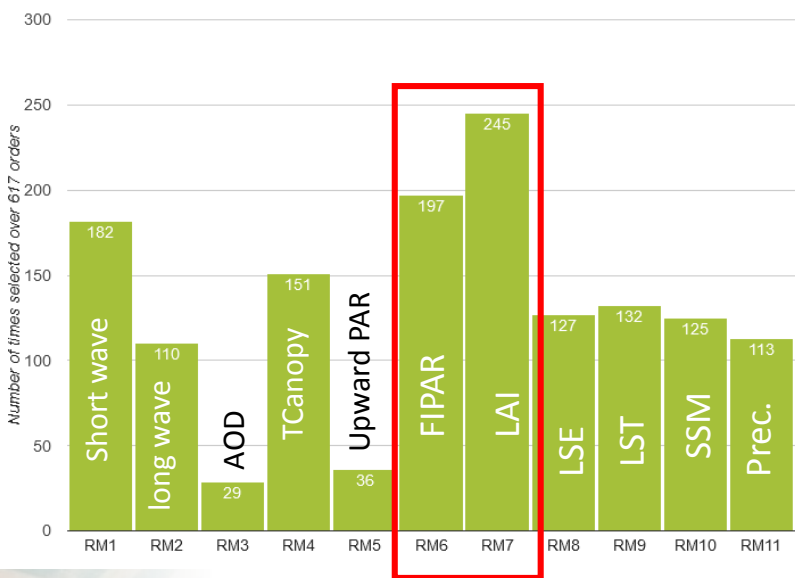
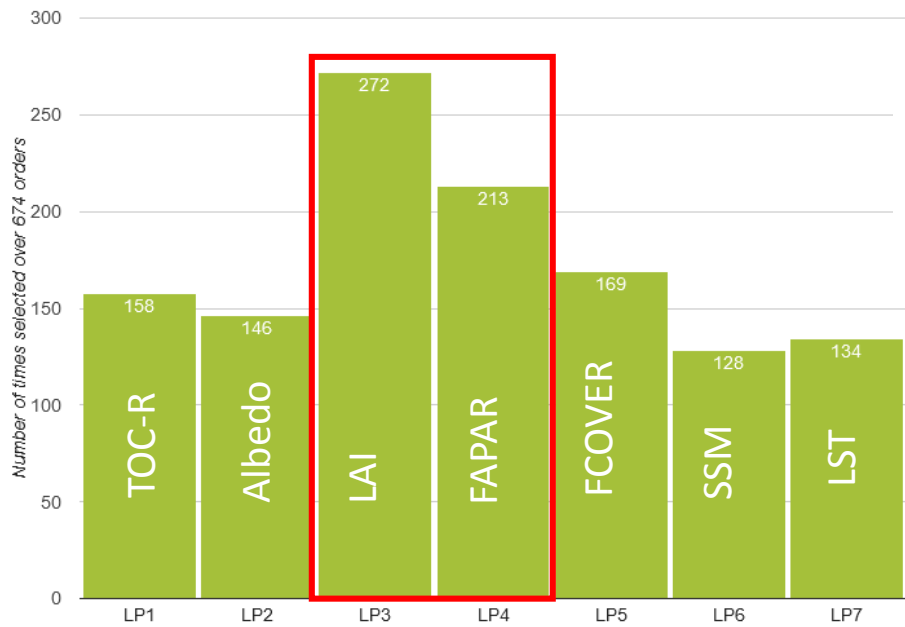




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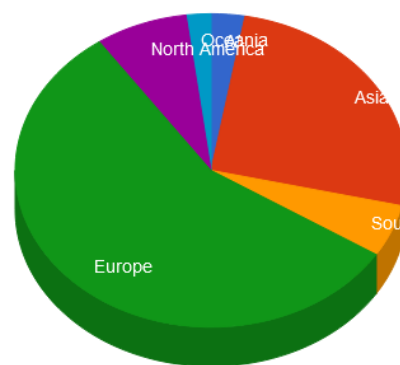
<https://land.copernicus.eu/global/gbov>

Some statistics...



User distribution by continent

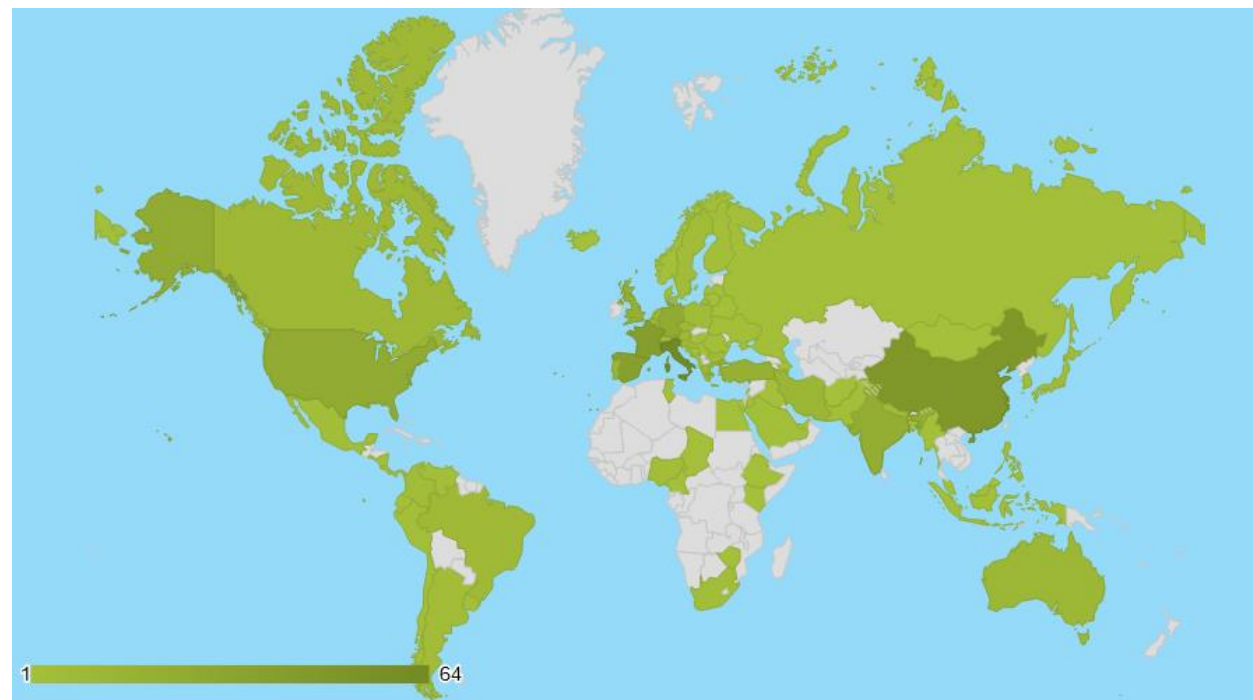
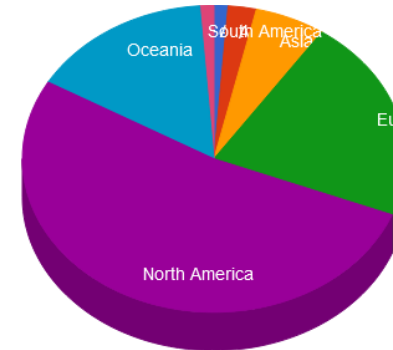
- Africa
- Asia
- South America
- Europe
- North America
- Oceania



Site distribution by continent

84 SITES
541 USERS

- Africa
- Antarctica
- Asia
- Europe
- North America
- Oceania
- South America





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GBOV support to supersites development





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2019 site upgrade

- 3 sites

- Hainich national park - Broadleaved Deciduous (CEOS LPV supersite, vegetation)
- Valencia Anchor station - Mediterranean crop (will cumulate vegetation, SSM and LST and could suite the super sites requirements)
- Tumbarumba - Broadleaved Evergreen (CEOS LPV supersite, will cumulate short wave, vegetation, SSM and LST)



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2020 site upgrade

• 3 sites

- Litchfield savanna (Australia) (CEOS LPV supersite) will cumulate short wave, vegetation, SSM and LST
- ~~Dahra (Senegal)~~
- Wombat (Australia)
- Skukuza (South Africa) will cumulate short wave, and LST



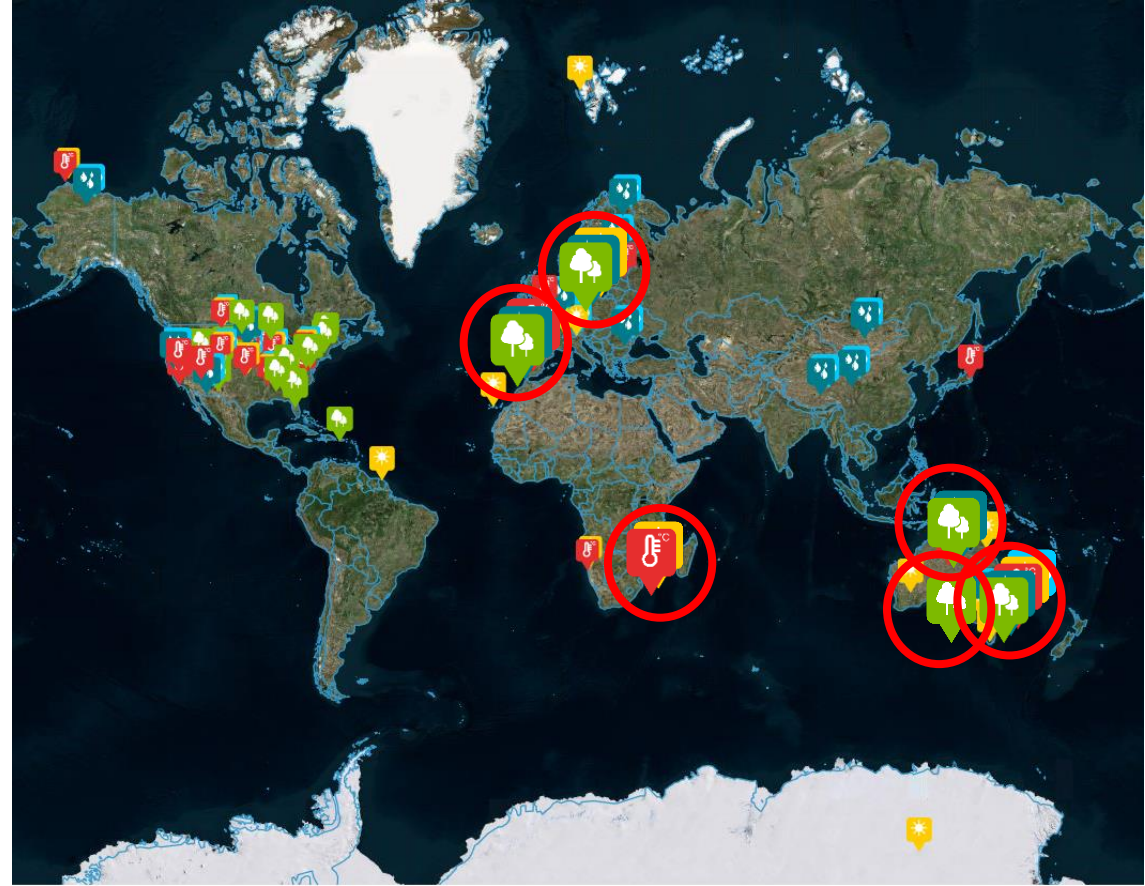
29/07/2019

VH-RODA 2019 – ESRIN, Frascati – November 18th 22nd 2019



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Status at the end of 2021





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Acknowledgments



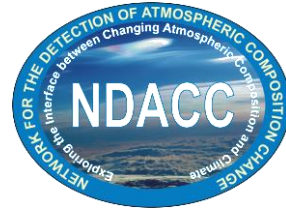
ICOS

INTEGRATED
CARBON
OBSERVATION
SYSTEM



TERN

OzFlux
Land-Atmosphere Observatory



United States Department of Agriculture
Natural Resources Conservation Service



AMERIFLUX

