

# SPOT5(Take5) Operations in 2015

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1. After a successful Spot4/Take 5 experiment conducted by CNES in 2013, CNES has approached ESA in summer 2014 to seek support for an extended Spot5/Take5 to be conducted in 2015
  
2. CNES would in this experiment envisage lowering the satellite orbit, for a 5-day revisit, similar to the Spot-4/Take5 experiment conducted in 2013. Similar measurements as during the Spot-4/Take5 experiment could be re-conducted, as well as new experiment sites could be added.
  - a. The resolution would be 10m instead of 20m on SPOT4/Take5.
  - b. The experiment duration would be  $\pm$ April – Aug 2015.

3. CNES provides their own workforce/internal cost to the experiment for free, as well as the provision of the Level-1A to Level-2A processing resources.
4. CNES is seeking funding support from ESA to cover the extended operational cost. The ESA funding would include:
  - a. Operations cost of the external industrial teams (satellite and ground segment)
  - b. Processing cost for a defined number of sites (assumed  $\pm 100$  sites globally in total)
5. The ESA funding is **subject to PB-EO approval** on 19 Nov 2014.

# Status of Spot5-Take5 – sites definition

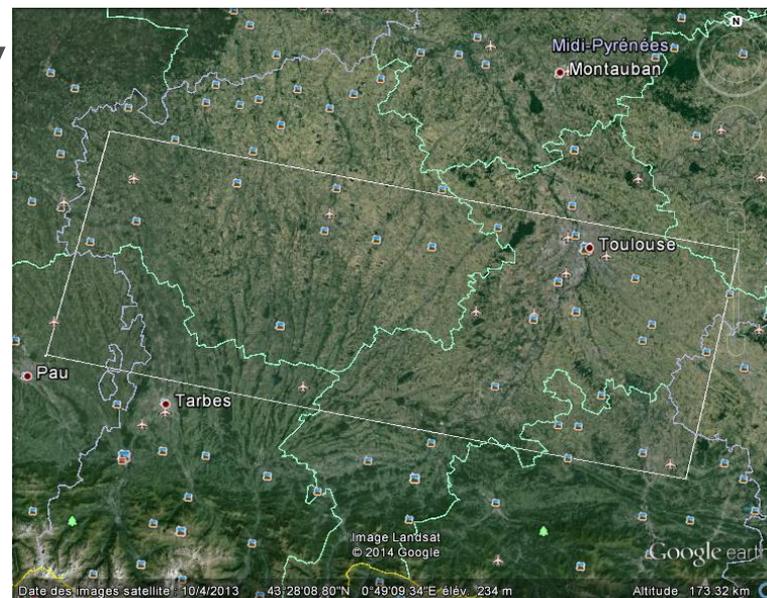


1. ESA has gathered **50-60 internal project 'site' needs** to cover
  - a. Sentinel-2 cal/val sites
  - b. Sentinel-2 preparatory exploitation project sites e.g. S2 for Agriculture (incl. contributions to GEOGLAM, JECAM)
  - c. Applications and projects within ESA's EOEP-4 (e.g. DUE)
2. ESA will/has **launched an external call** (see below) to worldwide users for definition of additional 30-40 sites
3. **CNES would also fund 12 sites.** A call for ideas was sent to TOSCA members at the beginning of 2014 and a call for sites was sent a few weeks ago => the list of proposed sites has just been confirmed by TOSCA
4. Other parties have signalled their interest to join, e.g. NASA, JRC, CSA – those partners would need to cover their own processing cost.

# Exemple of applications Midi-Pyrénées site



1. Validation of atmospheric and directional corrections
  - A part of the site observed with 2 different viewing angles
2. Land cover, crop masks (S2-Agri project)
3. Detection of irrigated surfaces
4. Sunflower monitoring, phenology, biophysical variables
5. Productivity of grasslands (EI-Purpan, Dynafor)
6. Estimation of soil water reserve



1. Atmospheric Correction 1
2. Cal/Val activities 13
3. DUE S2 for Agriculture & JECAM 12
4. DUE Permafrost / Lake Ice and River Ice 4
5. DUE GlobBiomass 4
6. DUE GlobWetland Africa 3
7. DUE Cadaster Env project 8
8. Forestry 9
9. REDD 10
10. Geo-referencing 1
11. Inland Water 1
12. SEOM Ocean 4
13. Snow and Ice 2

→ See Veronica Arpaia, Benjamin Koetz and Olivier Arino for details

## Objective:

Provide the user communities with a better characteristic of the distribution and changes, and an improved quantification of regional and global biomass

## Project Activities:

1. Improve above ground biomass maps (stock for 2010, and changes with regional cases in 2005, 2010 and 2015)

- Better geometric resolution
- Improved accuracy
- Validation (discrepancies, error statistics)

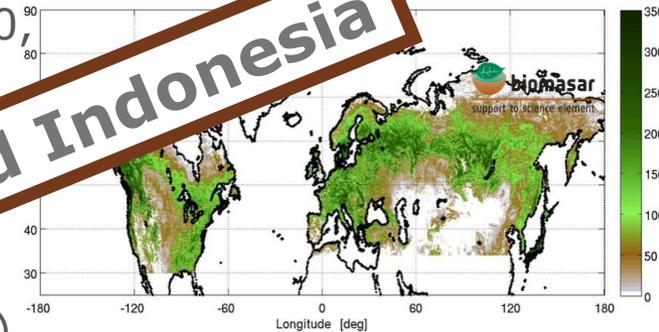
2. Platform for data sharing and validation

3. Better stratification of landscape (forest types/land use)

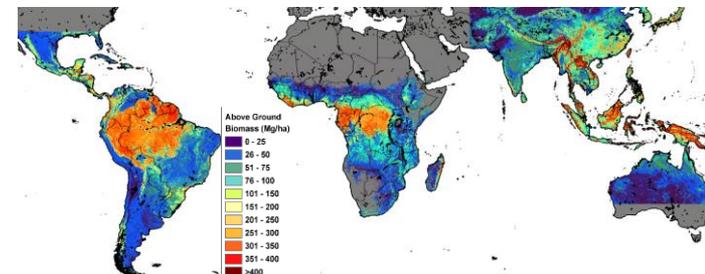
4. Harmonization of maps



**Local Validation Plots in Mexico and Indonesia**



Pan Boreal AGB map Santoro et al.

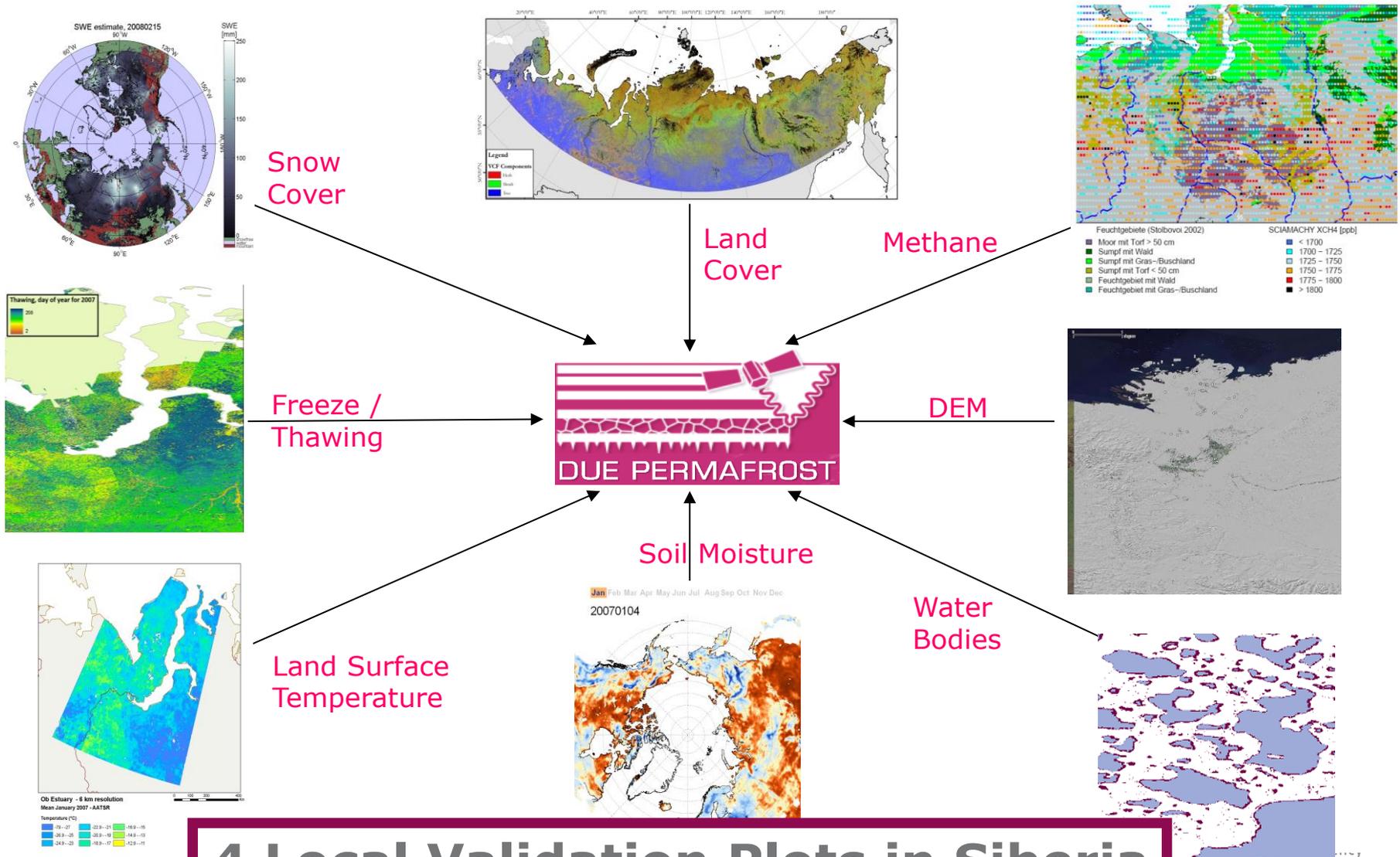


Pan Tropical map AGB - Saatchi et al.

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# Upcoming DUE Project GlobPermafrost: Permafrost not directly observable, but ...



**4 Local Validation Plots in Siberia**

## → GLOBWETLAND AFRICA

### Towards satellite-based Wetland Observing Systems in Africa

#### Take 5 experiment in GlobWetland Africa

- 3 test sites
- Assess high seasonal variability in surface water extent, land use and turbidity
- Complement S2 data to cover full hydrological year in 2015
- Test Sentinel 2 methods and applications
- Showcase utility of GW products in realistic scenarios

Inner Niger Delta  
(Mopti, Mali)

Lake Chad  
(Cameroon)

Lake Victoria  
(Kenya, Uganda)

#### GLOBWETLAND AFRICA IN A NUTSHELL

- Exploit increasing capabilities of satellite observations for wetlands inventory, assessment and monitoring
- Develop EO methods and tools to better assess conditions of wetlands and monitor trends over time
- Enhance capacity of African stakeholders to develop national and regional wetland observatories
- Access “freely available” satellite data from the Sentinel missions of the European Copernicus initiative

# ESA Sites definition: External call



1. ESA will/has launched a call at <https://earth.esa.int/web/guest/pi-community/apply-for-data/ao-s>
2. This call is addressed to the worldwide user community; selection of proposals will be done in accordance with a set of criteria
3. Offers shall be submitted **not later than 5<sup>th</sup> of December 2014 (tbc)** to [Spot5take5@esa.int](mailto:Spot5take5@esa.int) , using **the template of Annex 1 of the call**. It is **mandatory to send at the same time the shape file (kmz)** of the suggested area.
4. ESA proposes a free and open license (see Annex 2 of the call), with dissemination via a fast registration process @ESA.
5. The call is open to worldwide users, and should result in the definition of additional 30-40 sites, next to the ESA selected sites

1. **License:** Final agreement on the data license

2. **Contracts:**

- a. ESA to send RFQ to CNES, CNES to respond with proposal, contract to be agreed and signed
- b. ESA to send RFQ to Airbus DS, Airbus DS to respond with proposal, contract to be agreed and signed
- c. Any external partners to directly set up a contract with Airbus DS for the processing cost

3. **Sites:** Final confirmation of ESA internal and external and partners sites

## 4. Technical aspects:

- a. CNES to perform mission analysis: orbit determination, strategy to reach Take5 orbit, impact analysis of local hour drift...
- b. CNES to perform feasibility analysis: system update needs, feasibility to acquire all proposed sites, system test, preparation of operations and images processing

## 4. Spot 5 Take 5 user workshop towards late 2015/early 2016