

living planet symposium

BONN
23–27 May
2022

TAKING THE PULSE
OF OUR PLANET FROM SPACE

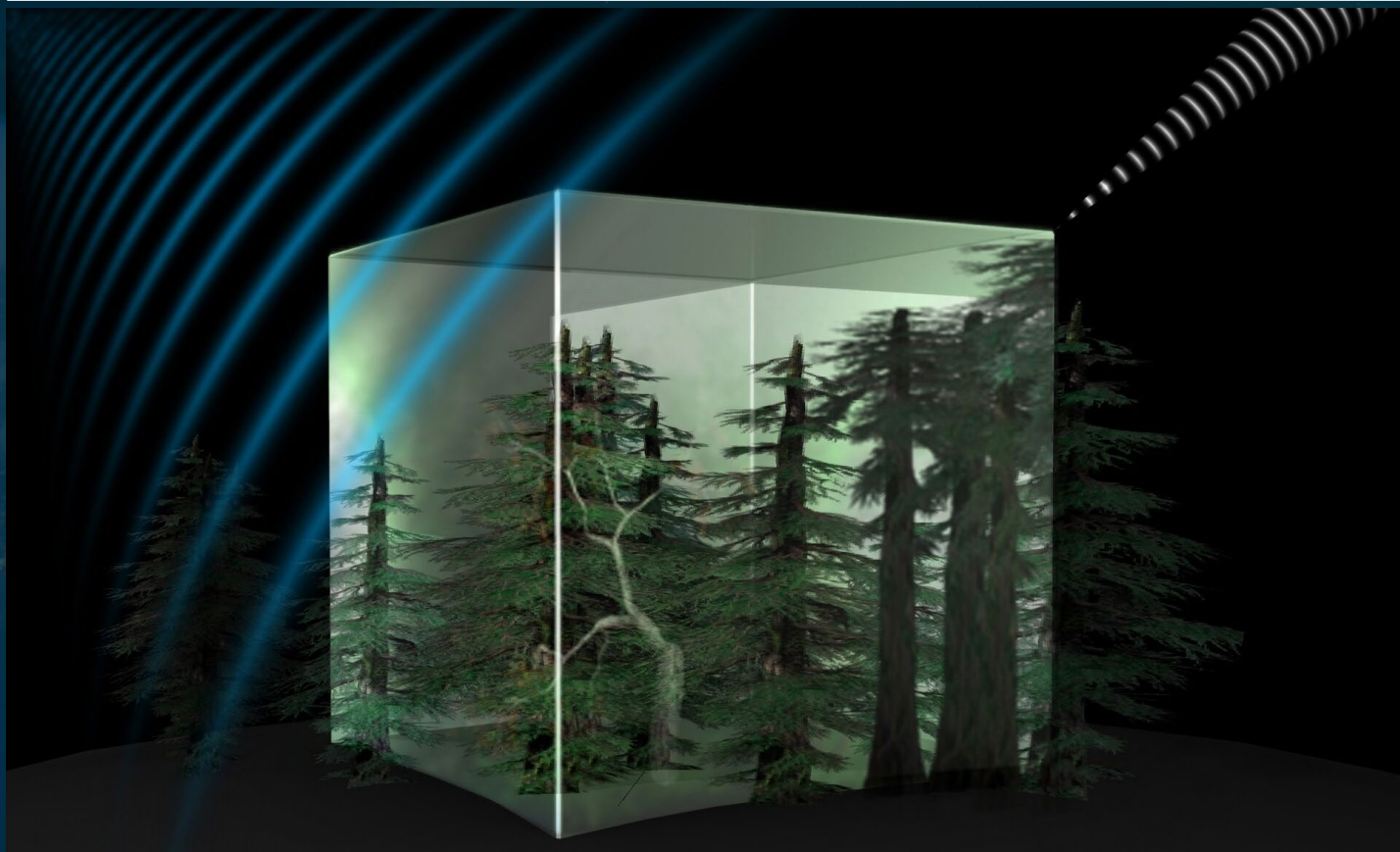


Climate system components and their interactions - Towards Earth system science for human livelihoods

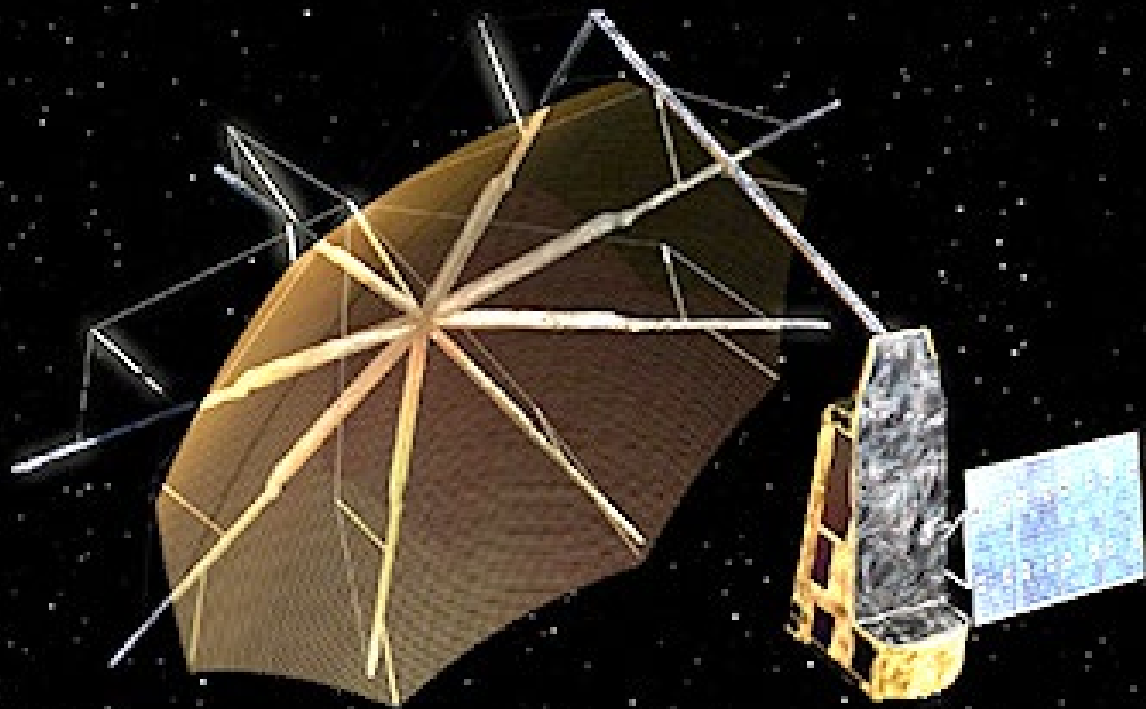
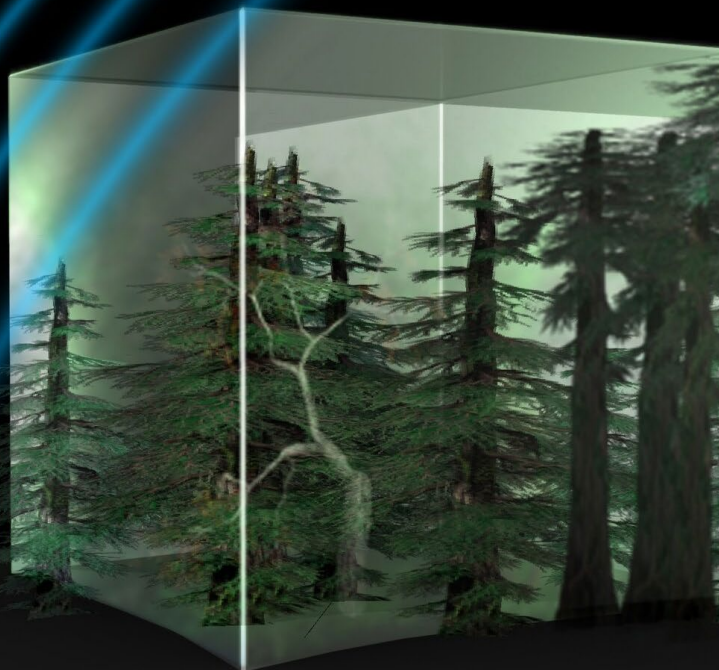
Christiane Schmullius

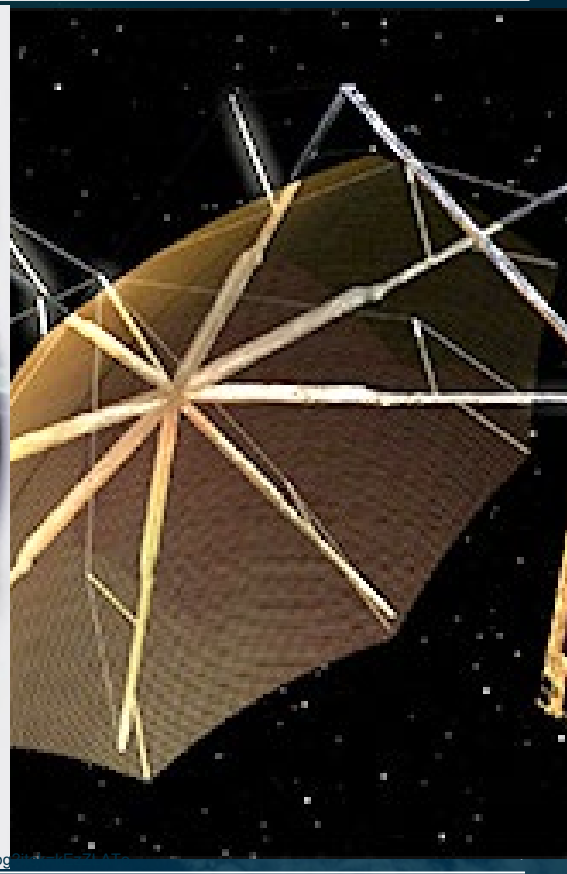
24. May 2022

Earth Explorer Biomass



Earth Explorer Biomass

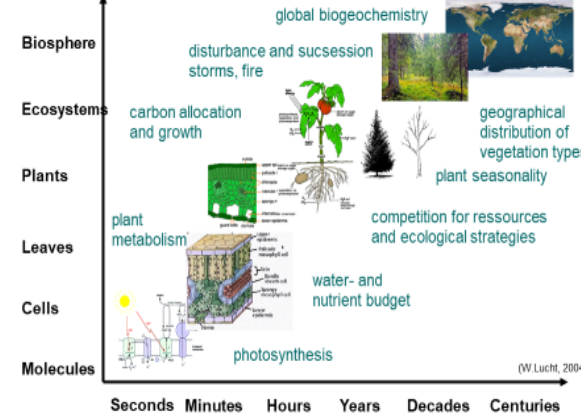




https://www.ehess.fr/sites/default/files/styles/taille_image_contenu_870/public/evenements/images/systeme_terre_site.jpg

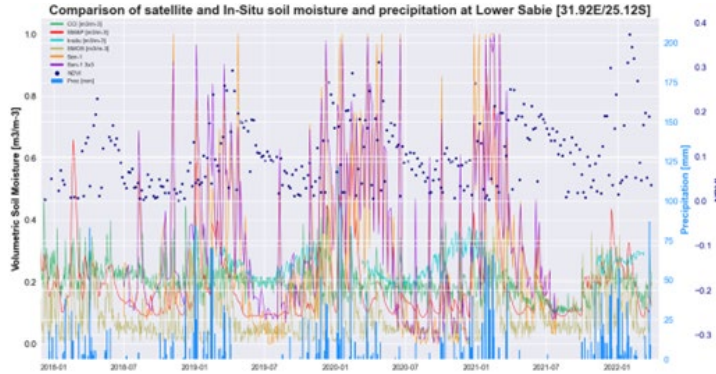
Contents

1) The **Big Picture** vs. *How much detail?*

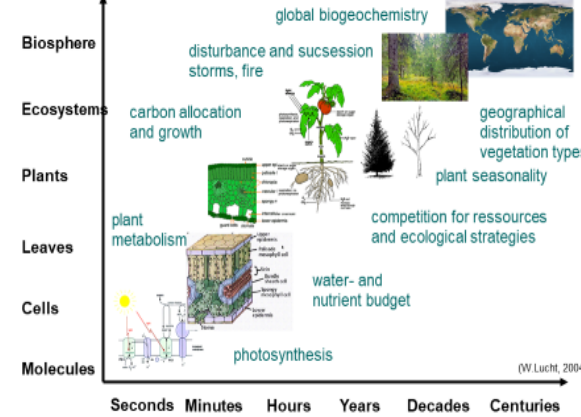


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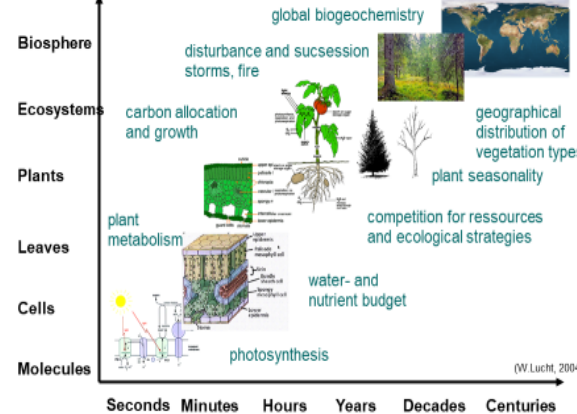


2) GAPS

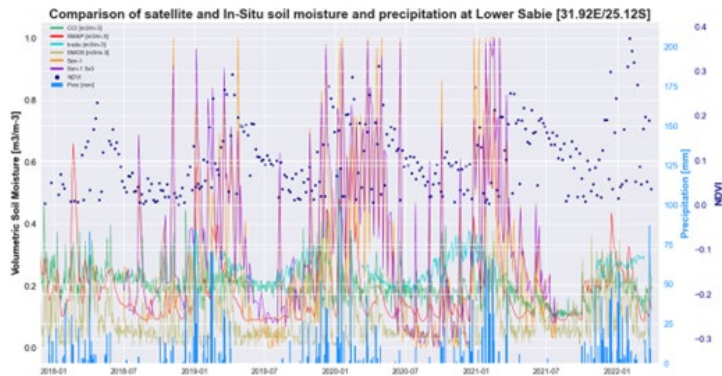


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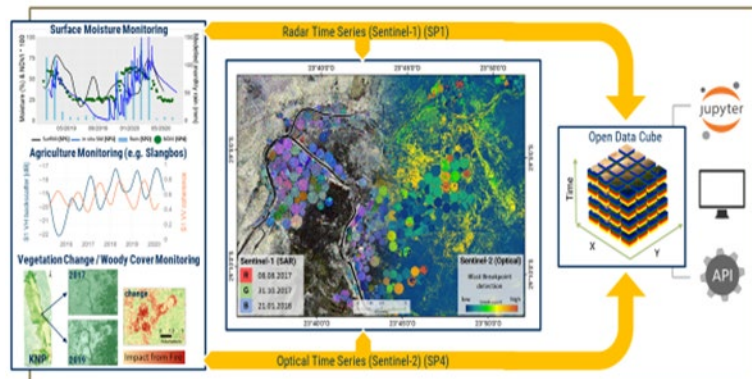
1) The Big Picture vs. *How much detail?*



2) GAPS



3) EO for Sustainable Livelihoods





How much heterogeneity do we need to take into account?

Is there a justification
For 3°, 0.5°, 1 km,
Or 10 m resolution?

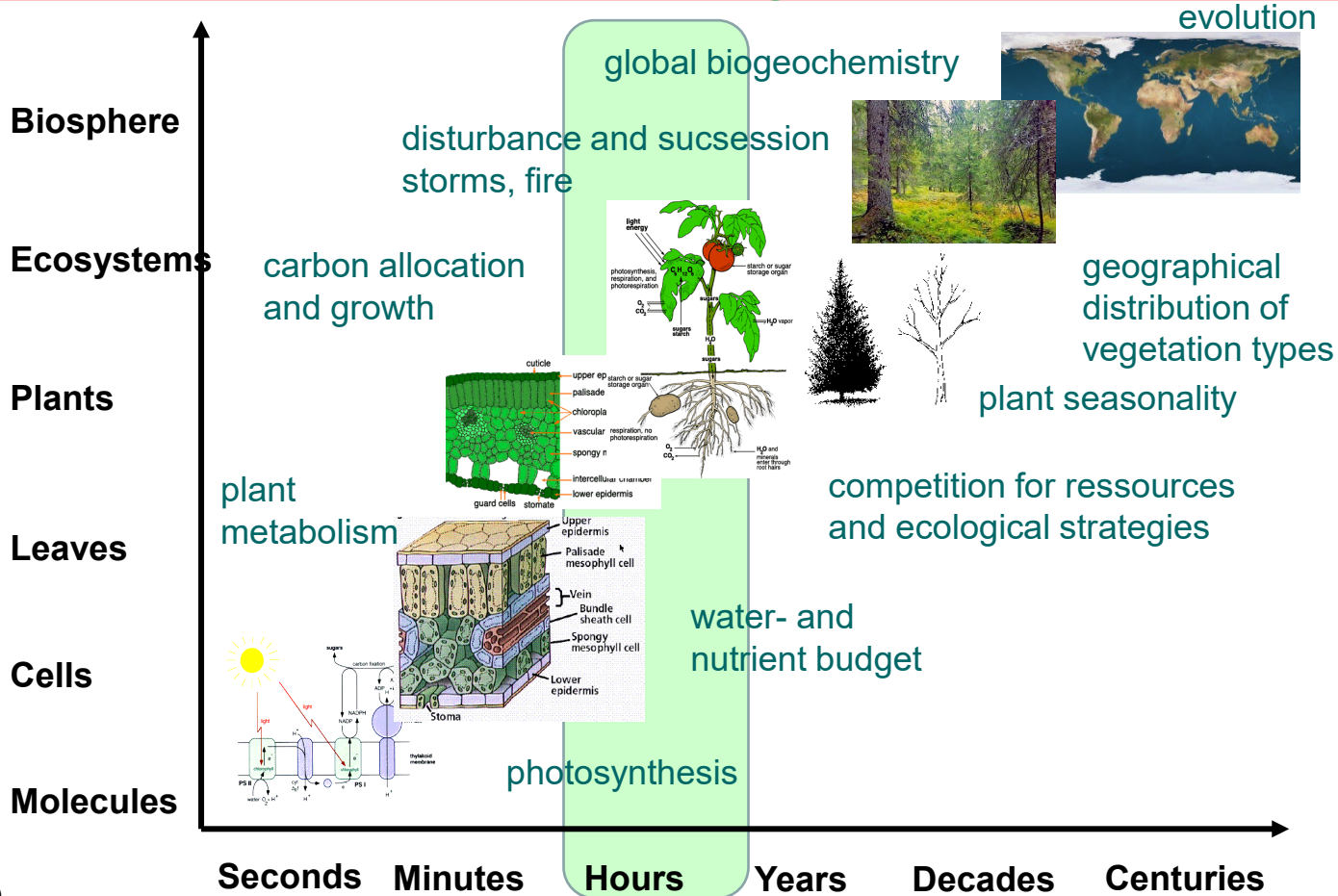


We still lack a full theory of ecology and ecosystems: e.g. a theory linking the metabolism of cells, individuals and ecosystems

(Wolfgang Lucht/PIK, 2004)



The Copernicus Break-Through



Research Needs:

1) The **Big Picture** vs. *How much detail is needed?*

Understand Inherent Connectivities



Savanna conditions, end of dry season, Kruger National Park. (Photo: Jussi Baade)

Comparison of satellite and In-Situ soil moisture and precipitation at Lower Sabie [31.92E/25.12S]



Research Needs:

1) The **Big Picture** vs. *How much detail is needed?*

Understand Inherent Connectivities

2) GAPS

Spatio-temporal Unmixing

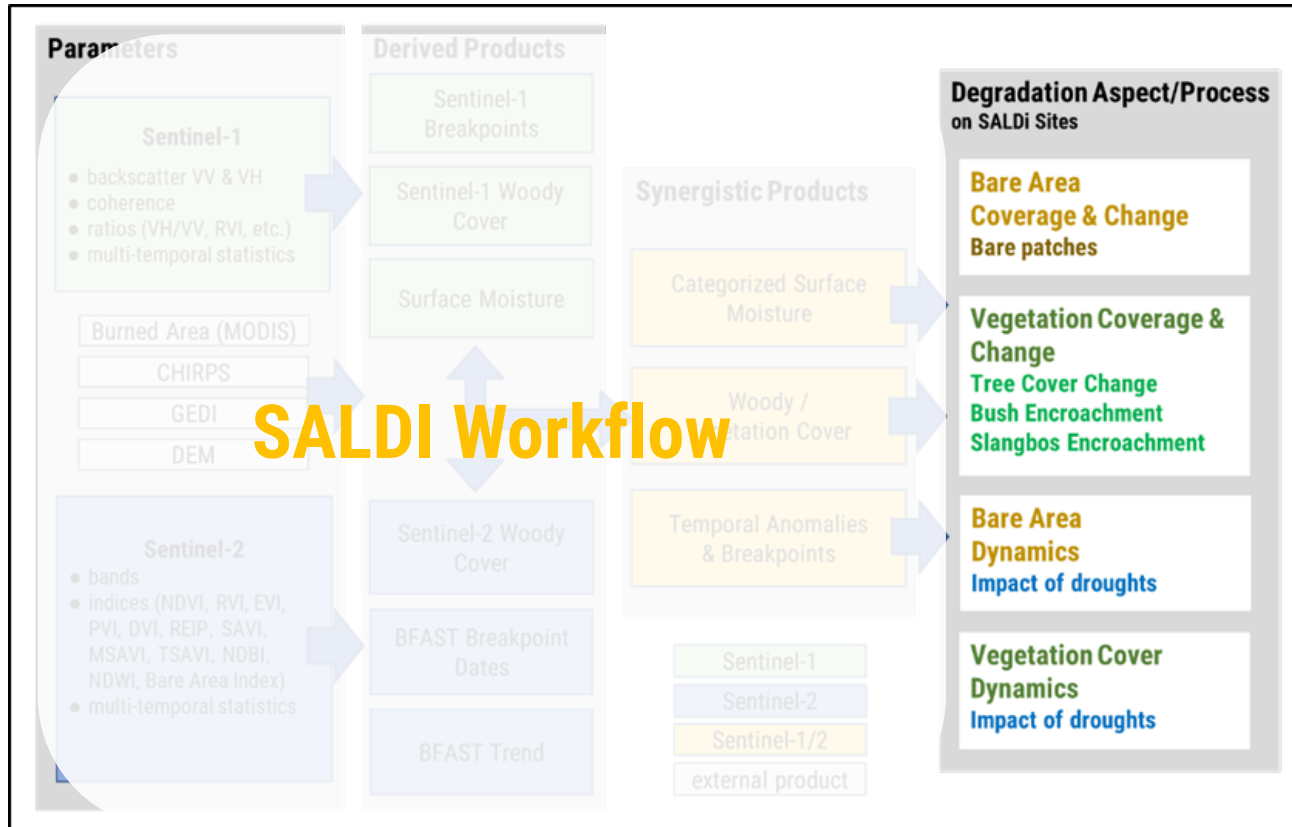


Fig. : The SALDi Workflow for generating specific land degradation indicators from Sentinel-1 and Sentinel-2 time series data and intermediate additional products, partly exploiting radar-optic synergies.

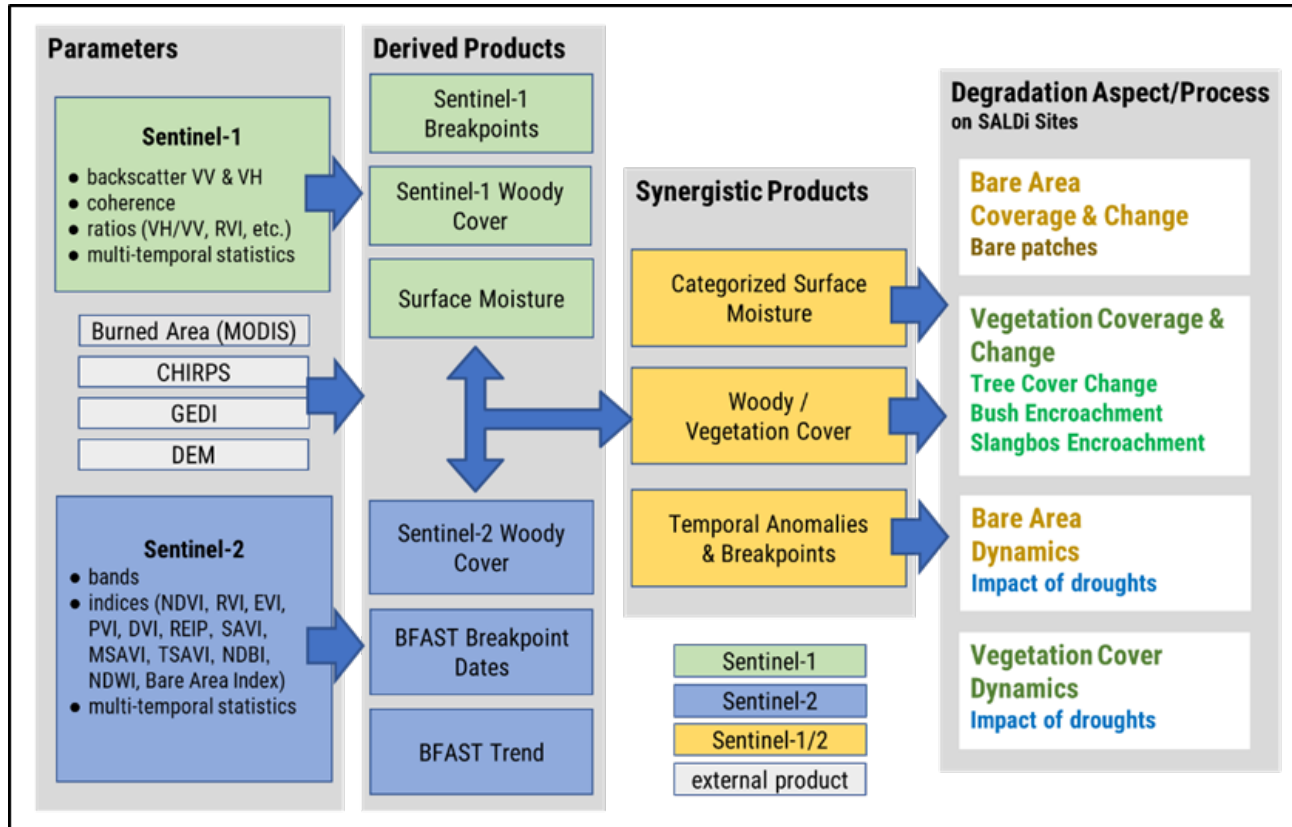


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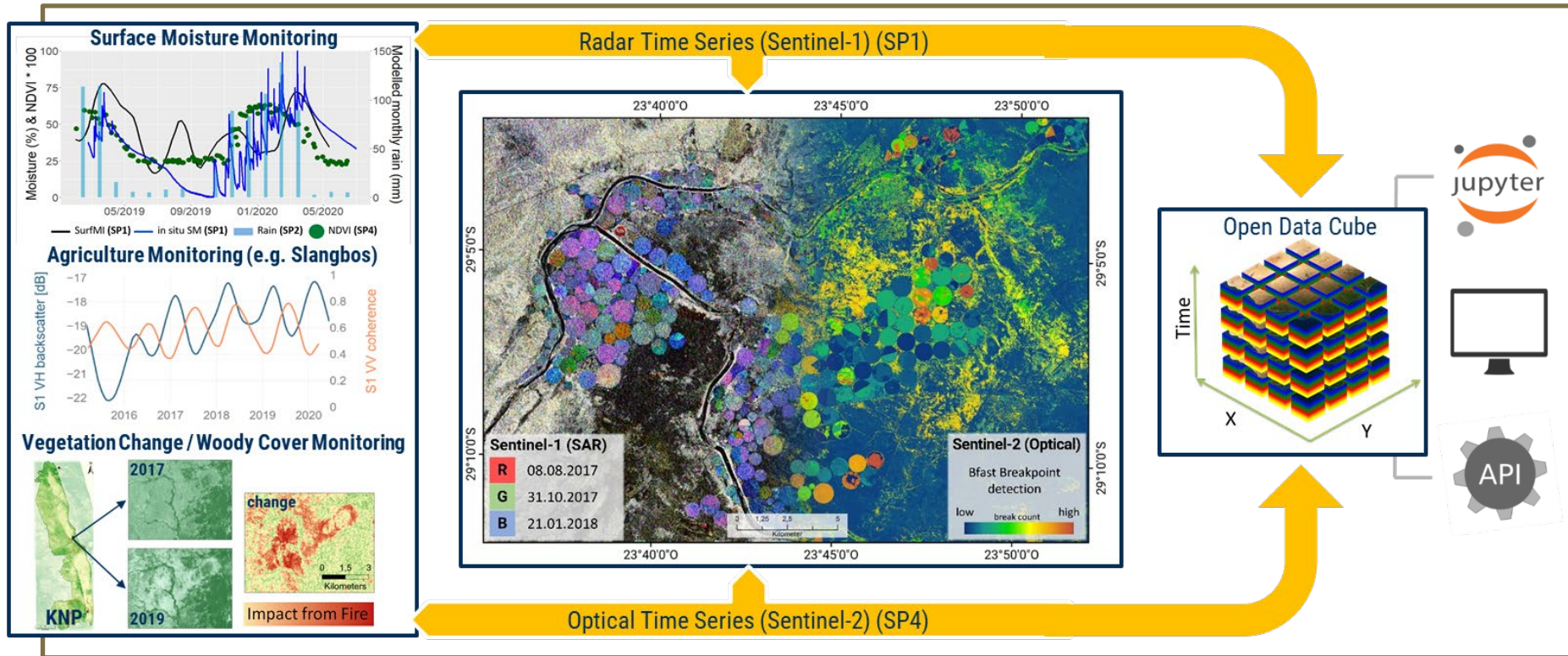


Fig. : The Open Data Cube is a cloud-based platform for an efficient and user-oriented analysis of land surface dynamics based on multi-temporal Earth observation data & products.

Research Needs:

1) The **Big Picture** vs. *How much detail is needed?*

Understand Inherent Connectivities

2) **GAPS**

Spatio-temporal Unmixing

3) *EO FOR Sustainable Livelihoods*

Pixel Parenting

ESA' Cross-cutting and Enabling Elements:

1) The **Big Picture** vs. *How much detail is needed?*

Regional Initiatives

2) **GAPS**

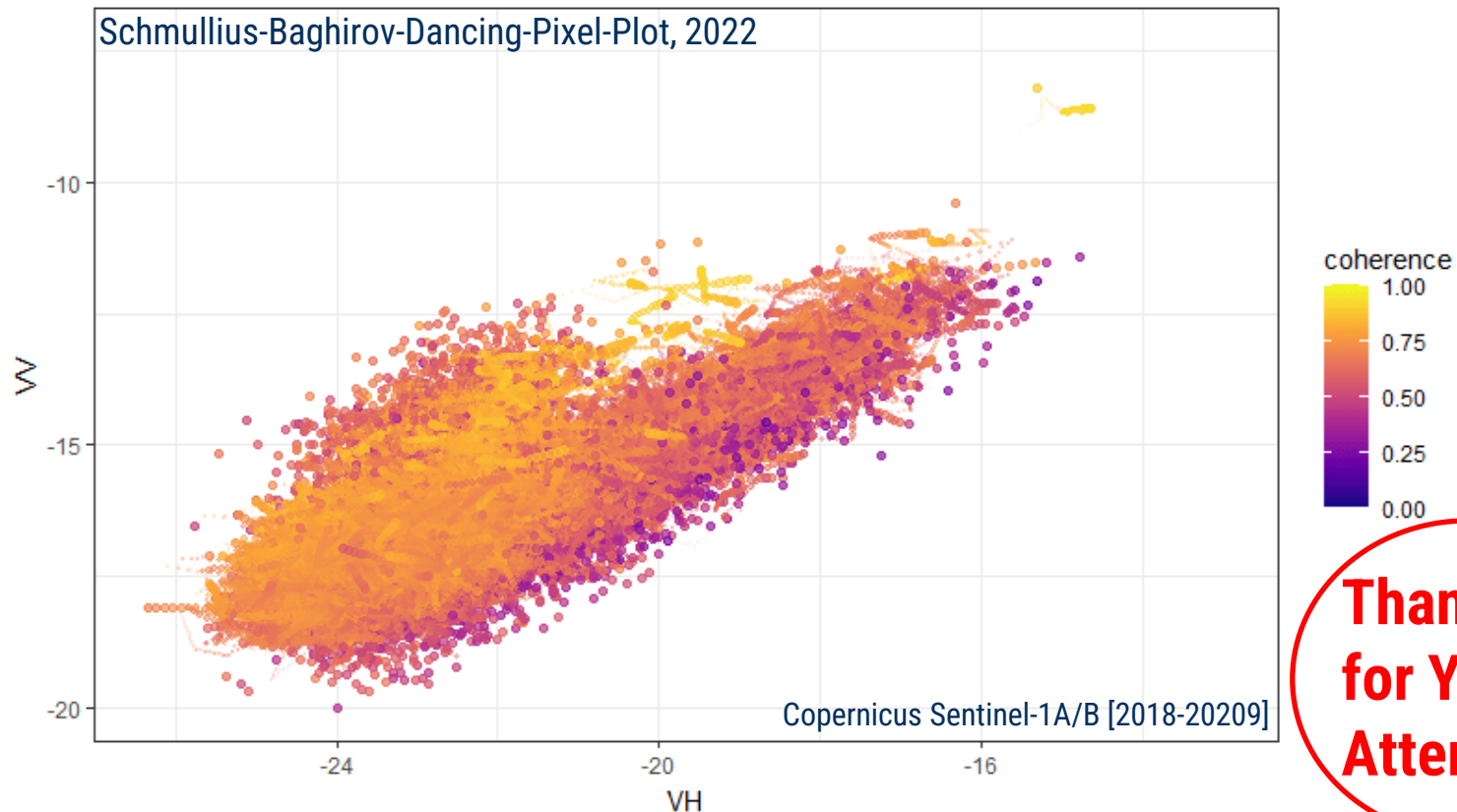
Sentinel User Preparation

3) *EO for Sustainable Livelihoods*

Foresight

Study area: Mokala NP (Grasland Clusters)

Date: 2018-01-11



**Thank You
for Your
Attention!**