

# EARTH OBSERVATION INFORMATION SERVICES TO SUPPORT AGRICULTURAL PLANNING, MONITORING AND MANAGEMENT



Remco Dost  
eLEAF

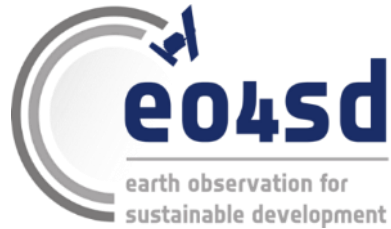


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# A dedicated programme for sustainable development: EO4SD

- EO4SD – Earth Observation for Sustainable Development:  
An ESA initiative for large-scale exploitation of satellite data in support of international development



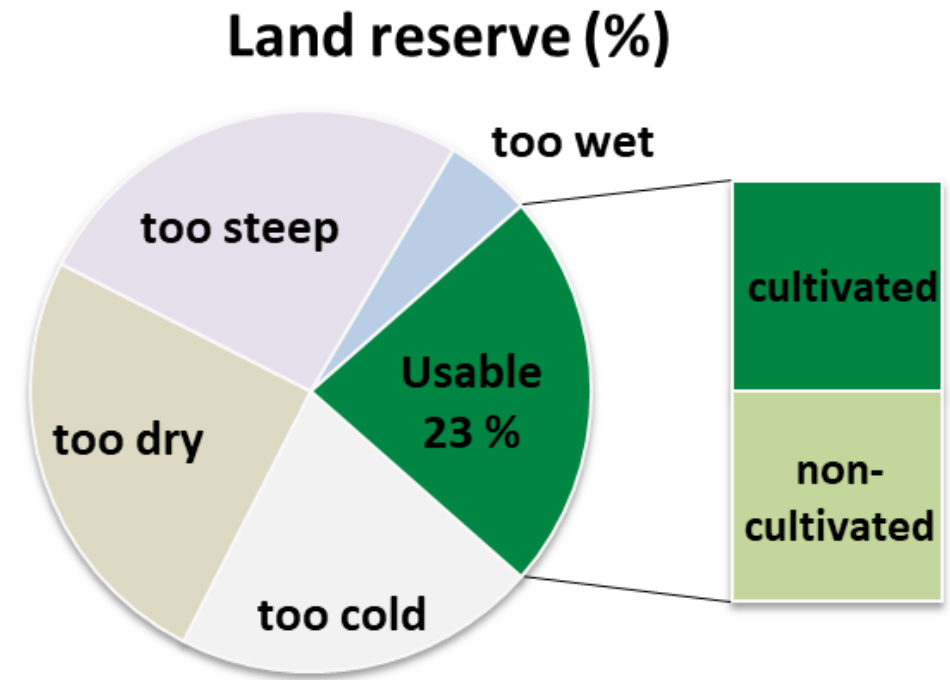
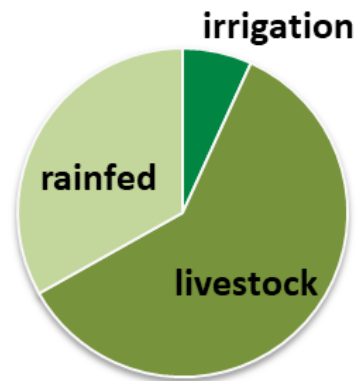
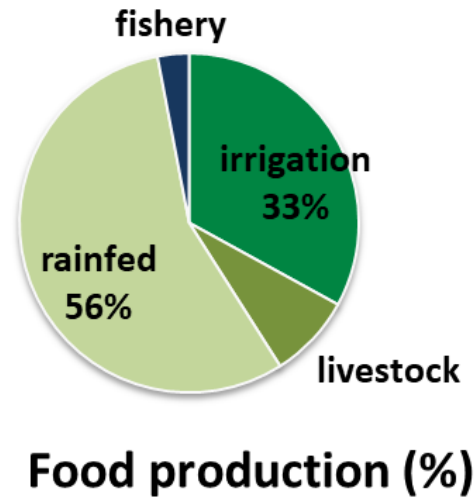
- What EO-based information is most needed and how can it be used in Official Development Assistance (ODA) activities and working practice?



# Setting the stage: world food production

Farmers need to produce 70% more food by 2050

But can we and how?



# Role of Earth Observation

**Agricultural  
productivity**



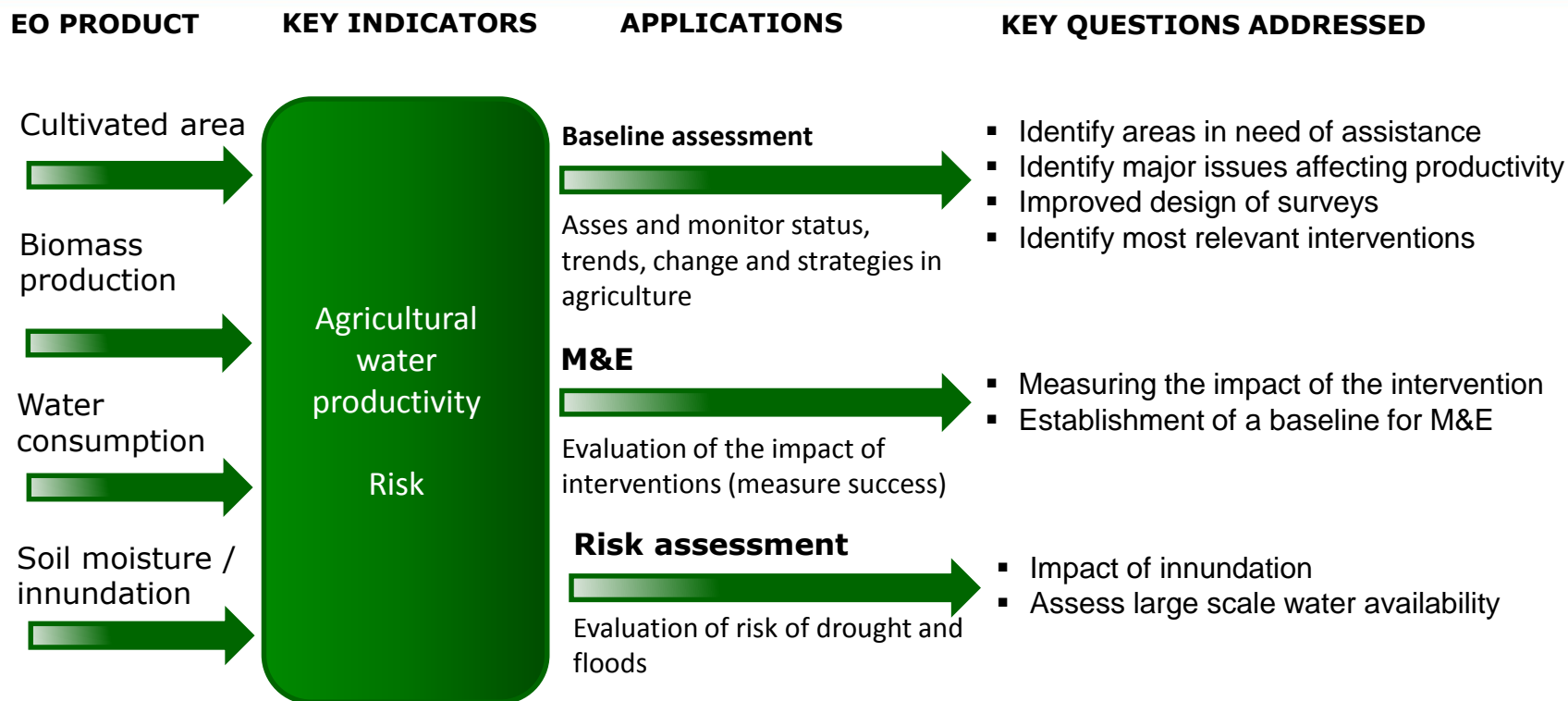
**Access  
to information**



- Monitor the baseline, status and trends of production of agricultural areas
- Assess the status of agricultural production on a wide range of spatial and temporal scales.
- Provides historical and actual global information on a regular basis



# Multi-scale monitoring Service to assess food security and risk

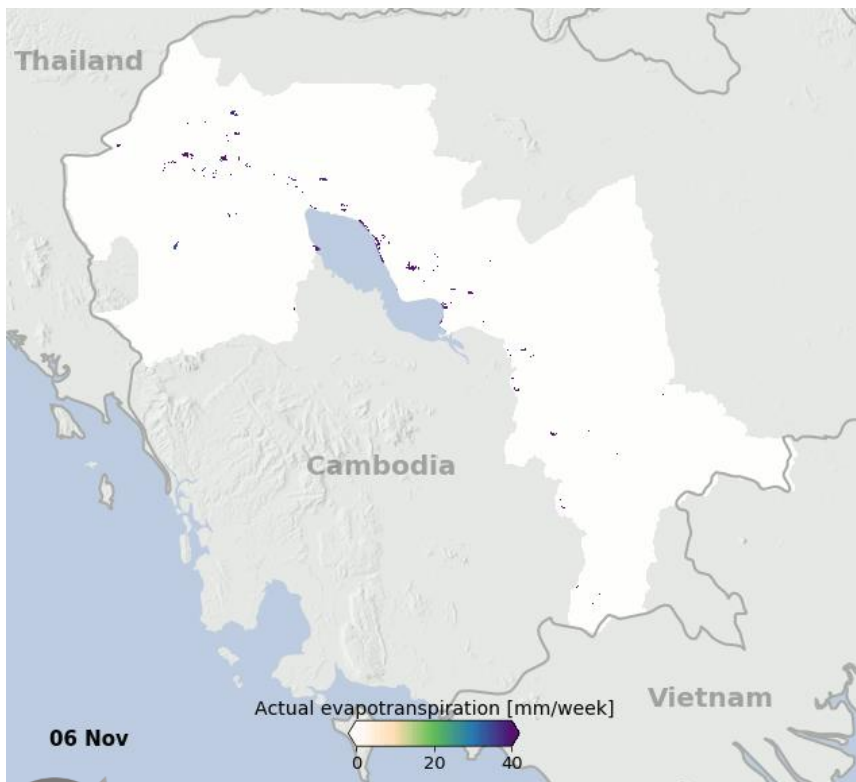


Related projects:	
Cambodia	Tonle Sap Poverty Reduction and Smallholder Development Project (TSSD)
	Strengthening Coordination for Management of Disasters Project (SCMD)
	Climate –resilient rice commercialization sector development program (RICE SDP)

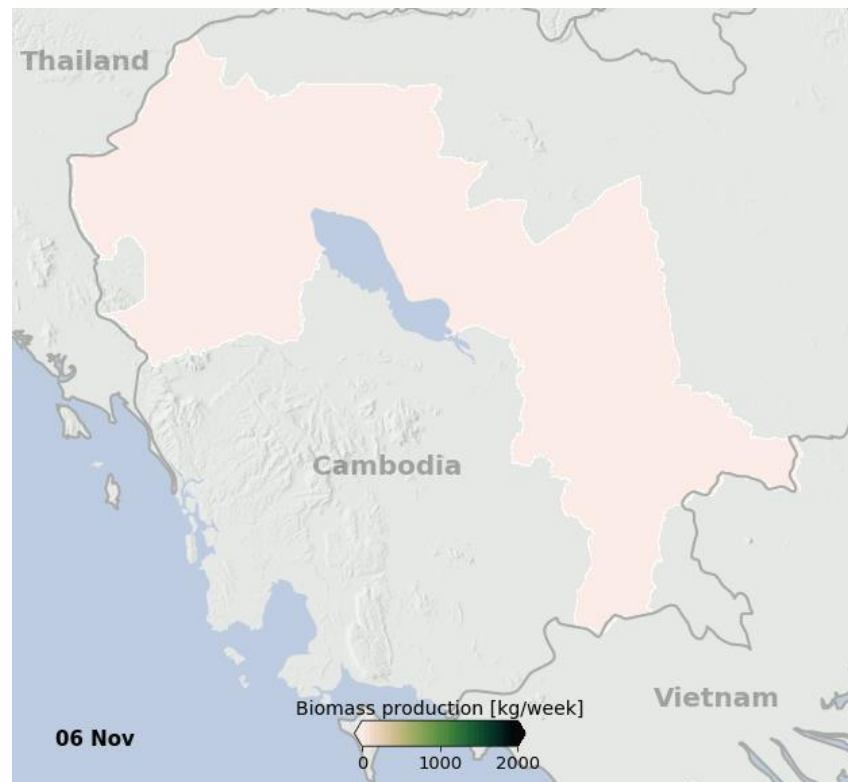


# Base line - Weekly production data Cambodia

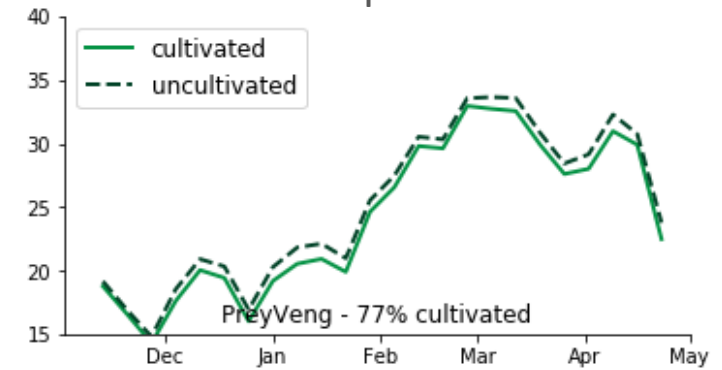
Water consumption  
(mm/week)



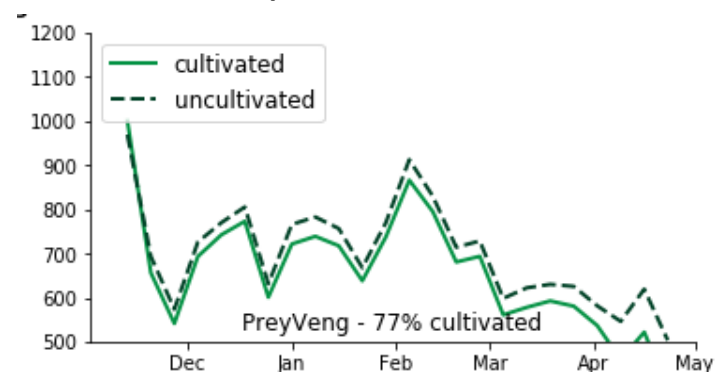
Biomass production  
(kg/ha/week)



Water consumption

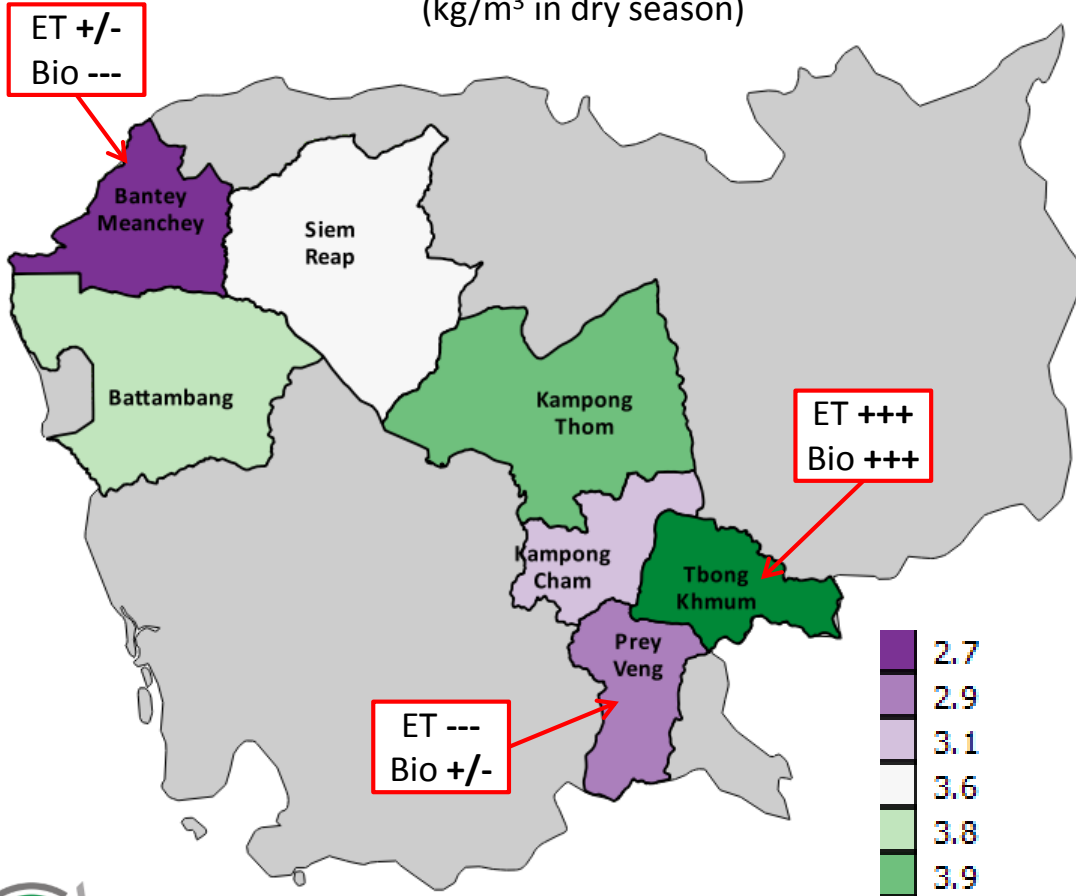


Biomass production



# M&E - Water productivity analysis

## Biomass water productivity (kg/m<sup>3</sup> in dry season)



Before intervention (hectares)



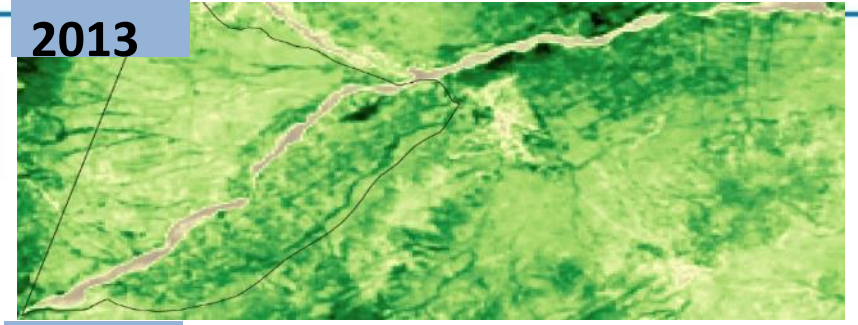
Degradation  
**12 134**  
Stable  
**0**  
Improvement  
**1 687**

After intervention (hectares)

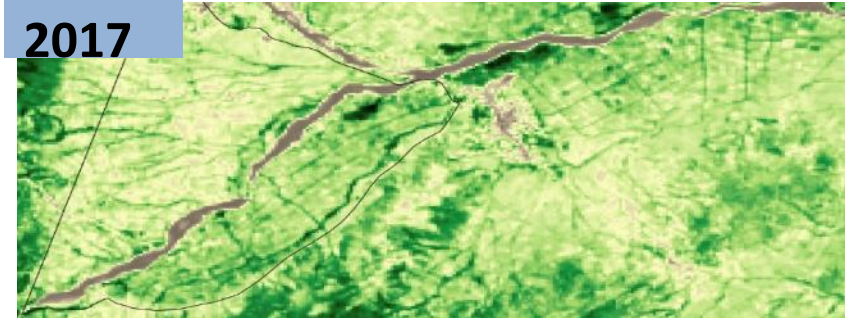


Degradation  
**3 757**  
Stable  
**838**  
Improvement  
**9 327**

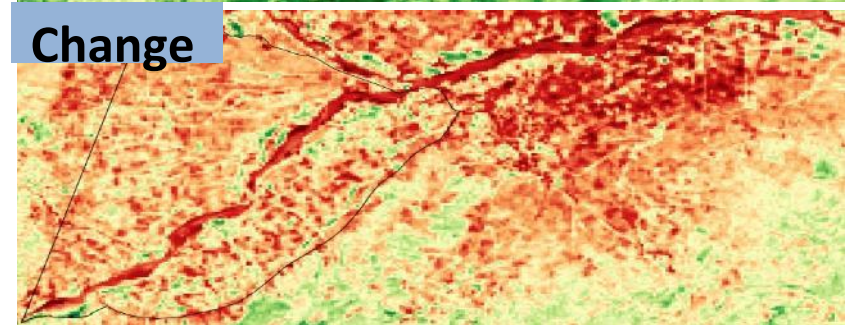
2013



2017

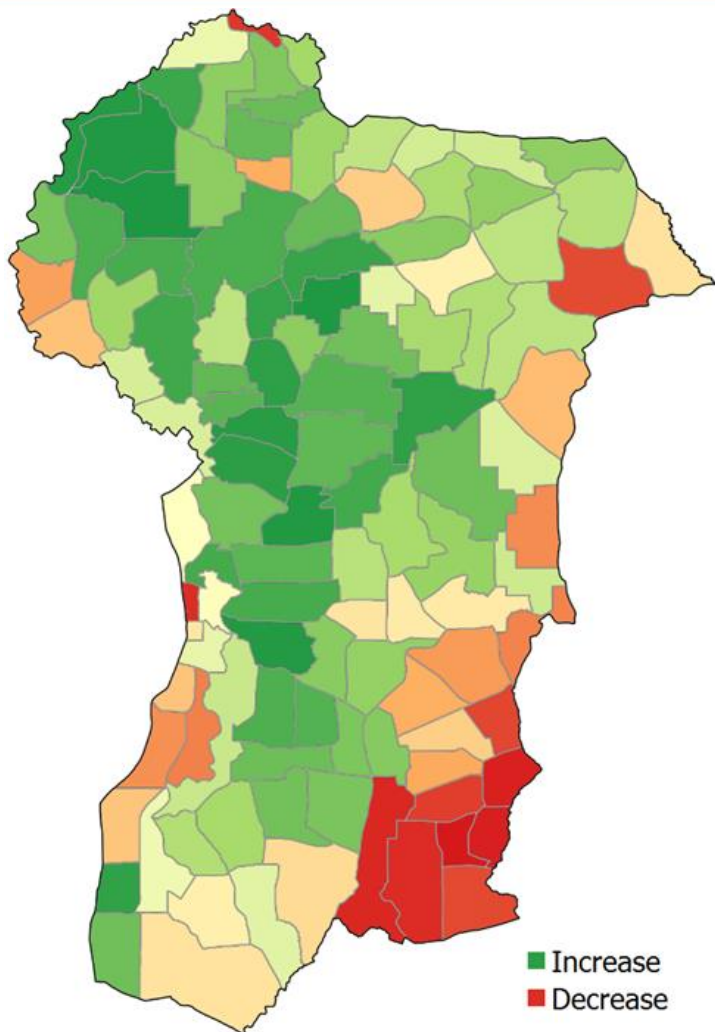


Change

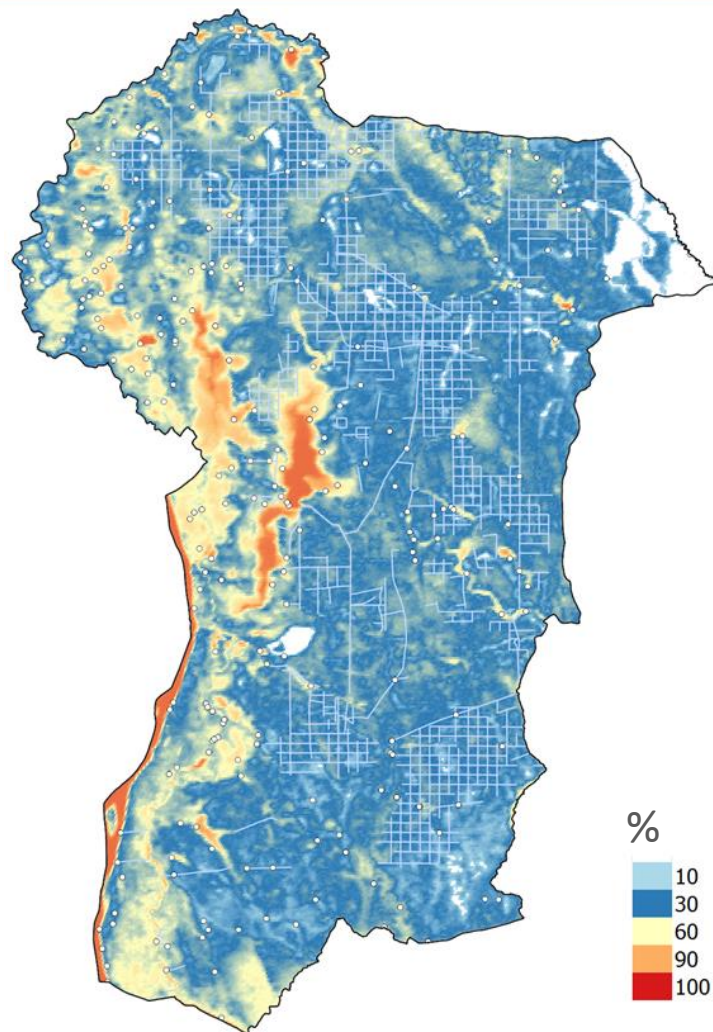




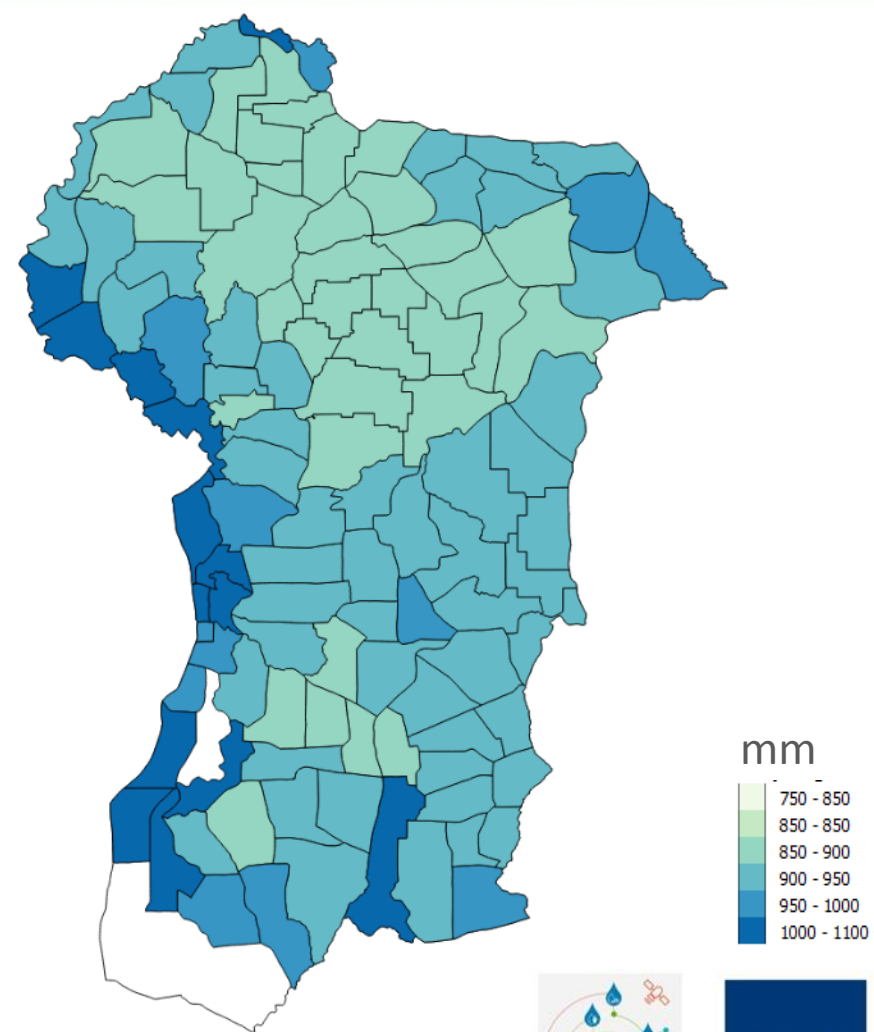
# Risk assessment – Country scale



Crop productivity intensity change



Inundation frequency



Water consumption / deficit  
by evapotranspiration





# How to obtain information?

- **Do it yourself**

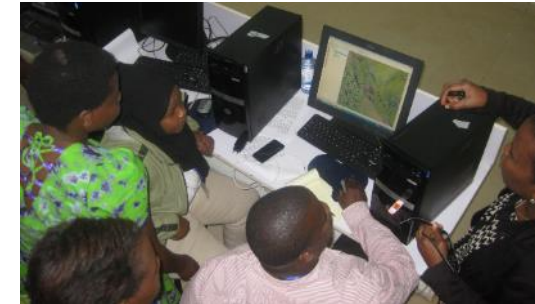
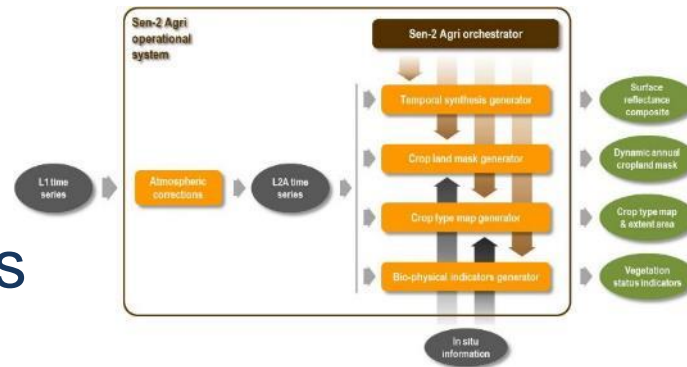
- Specialized software
- Online options (e.g., Google Earth Engine)
- Existing tools (e.g., Sen2Agri)
- Expertise needed
  - Capacity building

- **Use free, existing products**

- Raw images
- Processed products (e.g. surface reflectance)
- Higher-level products
- Do they suit needs?

- **Get experts on board**

- No need for processing facilities
- No need for image interpretation
- Direct access to required information
- Comes at a cost but possibly cheaper than setting it up



Burnt Area	Land Cover
Dry Matter Prod.	NDVI
FAPAR	Soil Water Index
<b>FCOVER</b>	VCI
Leaf Area Index	VPI

# eo4sd.esa.int/agriculture

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## agriculture and rural development

earth observation for sustainable development



→ **Learn more about the ESA initiative**

an ESA initiative to support the uptake of EO derived information in international sustainable development.

