

# → EARTH OBSERVATION FOR SUSTAINABLE DEVELOPMENT

Climate Resilience

**Webinar Series on how to use Earth  
Observation to tackle Climate Change**

*Webinar 06: How-to' Session: Using the EO4SD  
CR Platform to access EO data (hands-on)*

*4. EO-based data offer through the EO4SD CR Platform*

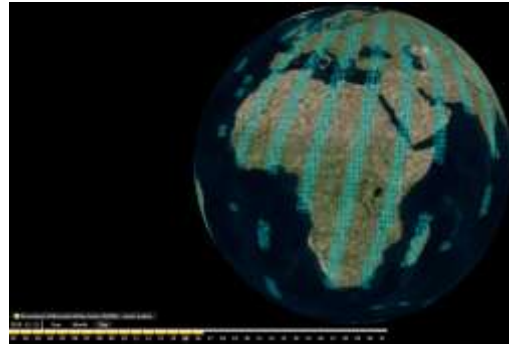
*Anestis Trypitsidis, Research Associate & PM, NOA*



## One stop shop for a variety of EO data and products

### Available EO data and products:

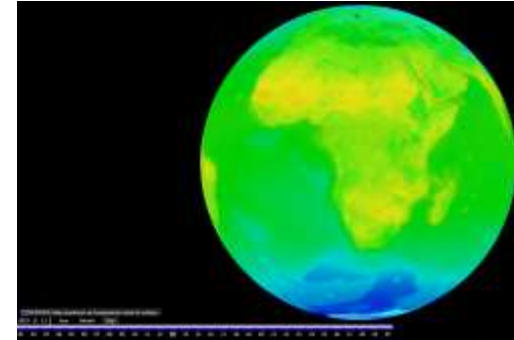
- Satellite-based products
  - Historical
  - Real time
- Model data – Reanalysis and projected
- Climate indicators
- Customized EO4SD products



Satellite data e.g. Sentinel 2



EO4SD customized product e.g. Combined Water and Wetness Probability Index for Inner Niger Delta



Model data e.g. NEX-GDDP - NASA earth exchange global daily downscaled projections

# Data discovery Tab in EO4SD CR Platform



- EO4SD Products - 1-in-10 maximum 1-day rainfall
- EO4SD Products - 1-in-10 maximum 30-day rainfall
- EO4SD Products - 1-in-10 maximum 5-day rainfall
- EO4SD Products - 1-in-100 maximum 1-day rainfall
- EO4SD Products - 1-in-100 maximum 30-day rainfall
- EO4SD Products - 1-in-100 maximum 5-day rainfall
- EO4SD Products - 1-in-20 maximum 1-day rainfall
- EO4SD Products - 1-in-20 maximum 30-day rainfall
- EO4SD Products - 1-in-20 maximum 5-day rainfall
- EO4SD Products - 1-in-50 maximum 1-day rainfall
- EO4SD Products - 1-in-50 maximum 30-day rainfall
- EO4SD Products - 1-in-50 maximum 5-day rainfall
- EO4SD Products - Inner Niger Delta Wetland and Water inventory - Niger
- EO4SD Products - Jalaur river inundation - Panay Island, Philippines
- EO4SD Products - Pantanal Wetland and Water inventory - Brazil
- EO4SD Products - Potential Evapotranspiration (PET)

## EO4SD CR Products

- Inner Niger Delta area, Jalaur river in Panay island, Philippines etc.



## Climate indicators

- EO4SD Products - Climate Indicators
  - Max number of consecutive dry days
  - Max number of consecutive wet days
  - No. days > 35°C
  - No. tropical nights (min temp >20°C)



## Global Data

- Copernicus C3S, ESA-CCI, GPCP, GPM IMERG, MODIS, NEX-GDDP, SM2RAIN, SMOS, Sentinel



- ARS Sea Level Rise
  - ARS Sea Level Rise 2.6
  - ARS Sea Level Rise 4.5
  - ARS Sea Level Rise 8.5
- Copernicus C3S
- ERAS daily accumulated precipitation [m]
- ERAS daily average temperature of air at 2m above the surface
- ESA-CCI
- GPCP
- GPM IMERG
- HYDRO-ESTIMATOR
- MODIS
- NEX-GDDP
- SM2RAIN
- SMOS



## Summary of provided climate indexes

| Product                                     | Spatial coverage | Time coverage  | User / use case                               | Availability |
|---|------------------|----------------|---|--------------|
| ESA CCI Sea Surface Temperature             | Global           | 1991 – 2010    | WB's CC Unit, ADB's SERD                      | Available    |
| ESA CCI Sea Level Anomaly                   | Global           | 1993 – 2015    | WB's CC Unit, ADB's SERD                      | Available    |
| ESA CCI Chlorophyll-a concentration         | Global           | 1997 – 2018    | IDB   | Available    |
| ESA CCI Soil Moisture                       | Global           | 1978 – 2018    | ARC, WB's FCI                                 | Available    |
| C3S ERA5 Air Temperature                    | Global           | 1979 – 2019    | WB's CC Unit                                  | Available    |
| C3S ERA5 Precipitation                      | Global           | 1979 – 2019    | WB's CC Unit, IFC, MIGA, WB's FCI             | Available    |
| GPM IMERG precipitation                     | Global           | 2000 – present | WB's GFDRR, WB's CC Unit, ARC, WB's FCI       | Available    |
| NOAA's Hydro-Estimator precipitation        | Global           | 2006 – present | ADB's SERD, WB's GFDRR, ARC, WB's FCI         | Available    |
| NASA GPCP precipitation                     | Global           | 1996 – 2019    | IFC, MIGA, ARC, WB's FCI                      | Available    |
| SM2Rain precipitation                       | Global           | 2007 – 2019    | WB's FCI                                      | Available    |
| SMOS Soil Moisture                          | Global           | 2010 – present | WB's GFDRR, ADB's SERD, ARC                   | Available    |
| MODIS NDVI                                  | Global           | 2000 – present | WB's Lake Victoria team, WB's FCI             | Available    |
| Sentinel 2 Level 1 (true color, NDVI, NDWI) | Global           | 2015 – present | WB's Lake Victoria team, WB's GFDRR, WB's FCI | Available    |

## Further data to be provided

| Product                                       | Spatial coverage | Time coverage  | User / use case                       | Availability      |
|---|------------------|----------------|---------------------------------------|-------------------|
| C3S ERA5 land – Runoff                        | Global           | 1981 – 2019    | WB’s CC Unit                          | Not yet available |
| C3S ERA5 land - Surface air relative humidity | Global           | 1981 – 2019    | WB’s CC Unit                          | Not yet available |
| C3S ERA5 land - Potential Evaporation         | Global           | 1981 – 2019    | WB’s CC Unit                          | Not yet available |
| C3S ERA5 land - Air Temperature               | Global           | 1979 – 2019    | WB’s CC Unit                          | Not yet available |
| C3S ERA5 land - Precipitation                 | Global           | 1979 – 2019    | WB’s CC Unit                          | Not yet available |
| CGLS Lake water quality                       | Global           | 2006 – present | WB’s CC Unit                          | Not yet available |
| CGLS vegetation index                         | Global           | 2006 – present | WB’s CC Unit                          | Not yet available |
| CGLS Soil Moisture                            | Global           | 1978 – 2019    | WB’s CC Unit, ARC,<br>WB’s FCI        | Not yet available |
| CGLS Surface Water Explorer                   | Global           | 1984 - 2018    | ADB’s SERD, WB’s<br>GFDRR, ADB’s EARD | Not yet available |



## Indicators developed for the CCKP

| Product  | Spatial coverage | Time coverage | User / use case | Availability |
|--|------------------|---------------|-----------------|--------------|
| 10/20/50/100-year return period 1-day maximum rainfall from reanalysis             | Global           | 1979 – 2020   | WB's CC Unit    | Available    |
| 10/20/50/100-year return period 5-days maximum cumulative rainfall from reanalysis | Global           | 1979 – 2020   | WB's CC Unit    | Available    |
| 10/20/50/100-year return period 1-day maximum rainfall from satellite              | Global           | 1996 – 2019   | WB's CC Unit    | Available    |
| 10/20/50/100-year return period 5-days maximum cumulative rainfall from satellite  | Global           | 1996 – 2019   | WB's CC Unit    | Available    |
| Standardised Precipitation-Evapotranspiration Index (SPEI) log-logistic method     | Global           | 1979 – 2020   | WB's CC Unit    | Available    |
| Potential EvapoTranspiration (PET)   | Global           | 1979 – 2020   | WB's CC Unit    | Available    |
| Sea Level Rise data calculated from CMIP5 ensemble RCP2.6 RCP4.5 RCP8.5            | Global           | 2007 - 2100   | WB's CC Unit    | Available    |
| Hot days (Number of days with temperature > 35°C)                                  | Global           | 1979 – 2020   | WB's CC Unit    | Available    |
| Tropical nights (Number of days with min temperature > 20°C)                       | Global           | 1979 – 2020   | WB's CC Unit    | Available    |
| Wet Days (Maximum number of consecutive wet days)                                  | Global           | 1979 – 2020   | WB's CC Unit    | Available    |
| Dry Days (Maximum number of consecutive dry days)                                  | Global           | 1979 – 2020   | WB's CC Unit    | Available    |

## Indicators developed for IFAD

| Product   | Spatial coverage | Time coverage  | User / use case | Availability |
|---|------------------|----------------|-----------------|--------------|
| C3S ERA5 monthly and annual 1-day maximum precipitation                       | Global           | 1979 – 2019    | IFAD            | Available    |
| C3S ERA5 monthly and annual 5-days accumulated precipitation                  | Global           | 1979 – 2019    | IFAD            | Available    |
| C3S ERA5 monthly and annual daily maximum air temperature at 2m above surface | Global           | 1979 – 2019    | IFAD            | Available    |
| C3S ERA5 monthly and annual daily mean air temperature at 2m above surface    | Global           | 1979 – 2019    | IFAD            | Available    |
| C3S ERA5 monthly and annual daily minimum air temperature at 2m above surface | Global           | 1979 – 2019    | IFAD            | Available    |
| ESA CCI soil moisture annual  | Global           | 1979 – 2018    | IFAD            | Available    |
| ESA CCI soil moisture monthly   | Global           | 1979 – 2018    | IFAD            | Available    |
| Annual number of frost days   | Global           | 1979 – 2019    | IFAD            | Available    |
| 6-month SPEI log-logistic annual  | Global           | 1979 – 2019    | IFAD            | Available    |
| 9-month SPEI log-logistic annual  | Global           | 1979 – 2019    | IFAD            | Available    |
| 12-month SPEI log-logistic annual   | Global           | 1979 – 2019    | IFAD            | Available    |
| 18-month SPEI log-logistic annual   | Global           | 1979 – 2019    | IFAD            | Available    |
| Monthly and annual MODIS NDVI   | Global           | 2000 – present | IFAD            | Available    |

# Data offer through the EO4SD CR Platform



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Material

- Capacity Building for ADB
- Capacity Building for IFAD
- Webinar Series 1: Module 1
- Webinar Series 1: Module 2
- Webinar Series 1: Module 3

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### EO4SD CR Capacity Building material

Here you will find the material on Capacity Building generated by the EO4SD climate cluster for engaged IPIs and client states. Please note that the presentations are formatted as pdfs to activate the slide show mode as you open the file in order to facilitate the visualization of the animations.

All the available material is listed below:

- 1 - Earth Observation for Sustainable Development Initiative and Climate Resilience Project
- 2 - Showcasing Climate Resilience through EO-based data and services
- 3 - Adding value to the Copernicus Climate Change Service (C3S)
- 4 - Portfolio of sectoral climate services
- 5 - Introduce prototypes - EO-based climate services
- 6 - Climate science, IPIs, and drivers to action
- 7 - Introduction to climate risk and vulnerability
- 8 - Using climate-related EO data in decision-making
- 9 - EO4SD CR Platform Overview
- 10 - Introduction to the EO4SD CR Platform
- 11 - Access to EO data, Model data and Products
- 12 - Evidence and Retrospective Data
- 13 - Evaluation and Creation of Knowledge
- 14 - Use of the Jupyter Notebook
- 15 - Use of the Application programming interface (API)

### Available data and products through EO4SD CR Platform

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#### COPERNICUS C3S - ERA5

##### DAILY ACCUMULATED PRECIPITATION

- **Product:** Precipitation
- **Date:** 01/1979 to present
- **Frequency:** Daily
- **Resolution:** 0.25 degrees (=25km)
- **Metric:** Meter (m)
- **Source:** ERA5 is 5<sup>th</sup> generation ECMWF atmospheric reanalysis of the global climate. Reanalysis combines model data with observations from across the world into a globally complete and consistent dataset.

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European Space Agency

