GEO WEEK & MINISTERIAL SUMMIT 2023

Showcase FAO WaPOR

#TheEarthTalks

science & innovation
Department:
Science and Innovation
REPUBLIC OF SOUTH AFRICA

GEO WEEK 2023 MINISTERIAL SUMMIT

GEO GROUP ON EARTH OBSERVATIONS

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Food and Agriculture Organization of the United Nations

WaPOR

FAO's portal to monitor Water Productivity through Open-access of Remotely sensed derived data

Breaking barriers in global water productivity monitoring: introducing FAO WaPOR new open access portal and data

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wapor@fao.org

Ministry of Foreign Affairs of the Netherlands

IWMI International Water Management Institute

IHE DELFT Institute for Water Education under the auspices of UNESCO

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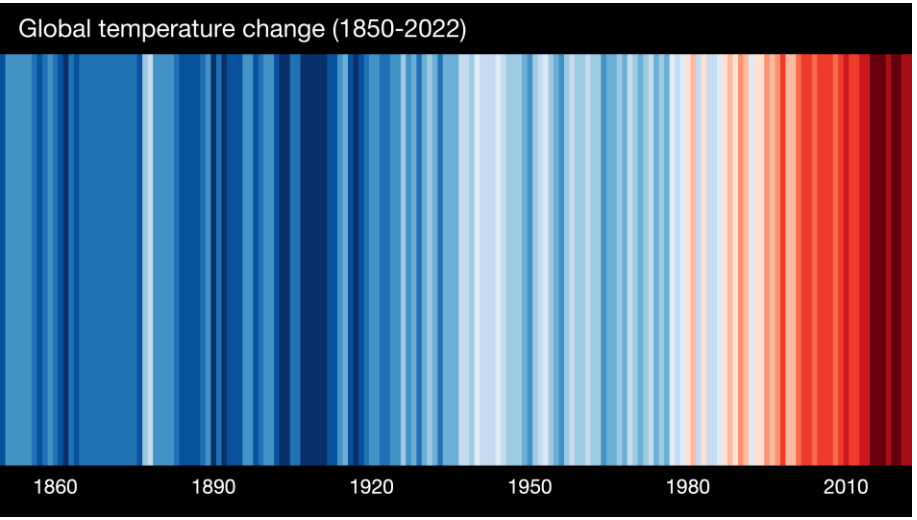

Water is central to food security and climate agenda

Over 700 million people suffer from hunger
(SOFI 2023)

Around 3.2 billion people live in agricultural areas with high to very high water shortages or scarcity
(SOFA 2020)

Water demand by agriculture projected to increase by 35% by 2050, and

From 2000 – 2019 total cropland increased with 63 M ha, almost 85% of this increase is irrigated
(SOLAW 2022)

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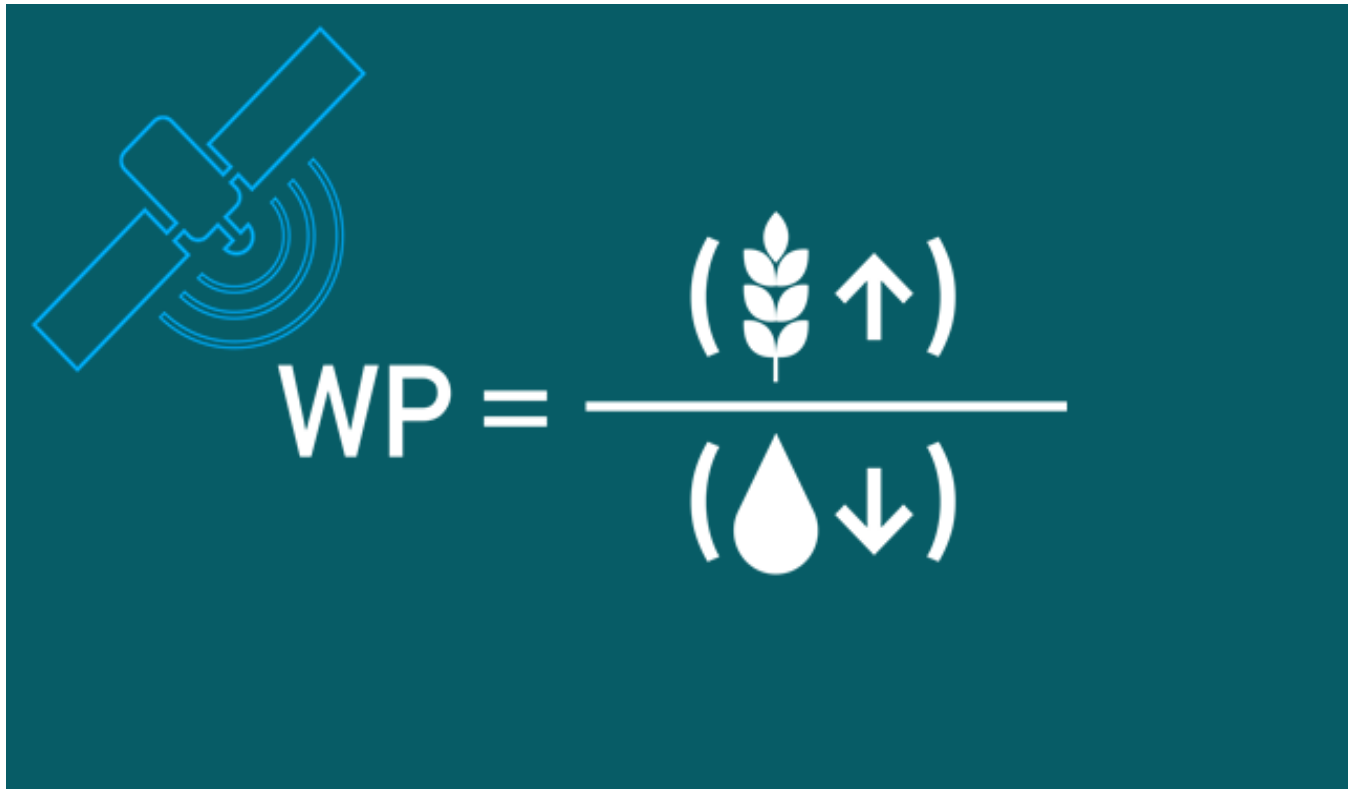
We need to produce more food with less water



Water Productivity = yield per unit of water consumed

UN 2023 Water Conference
22 – 24 Mar 2023, New York

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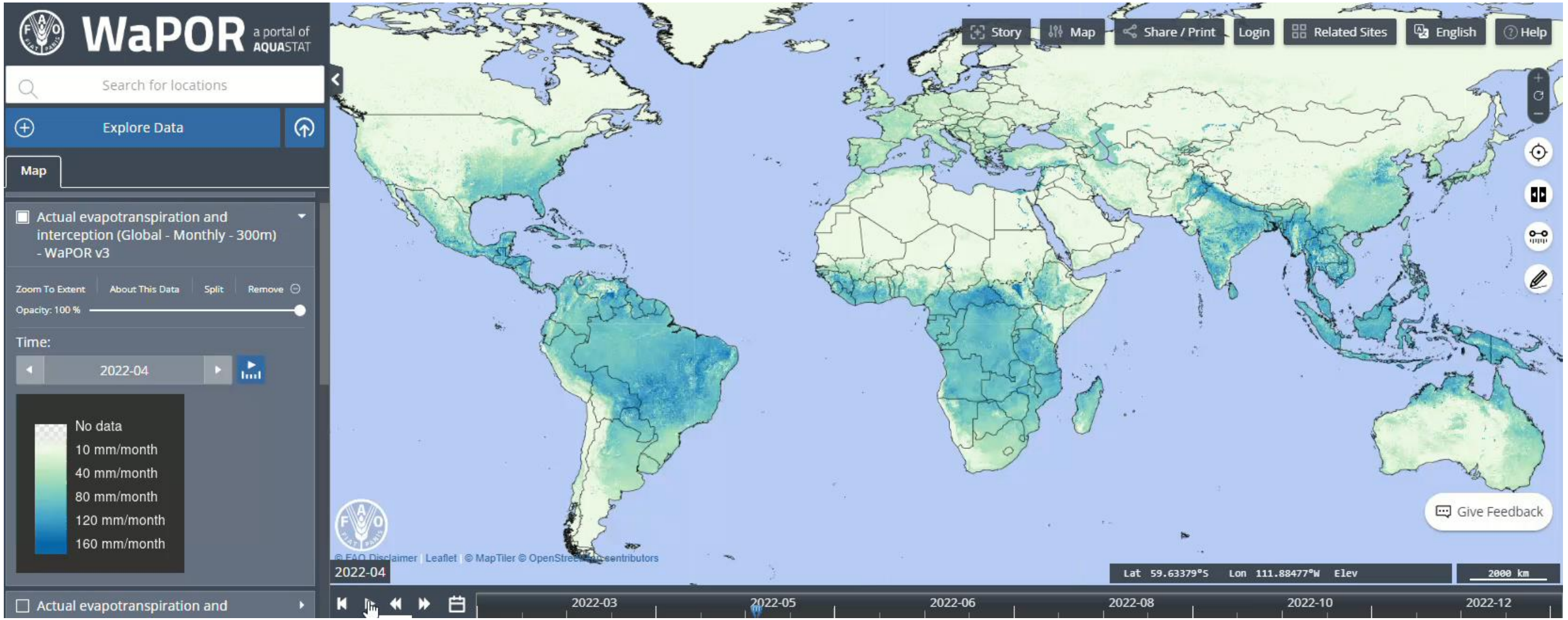
Global monitoring of water productivity



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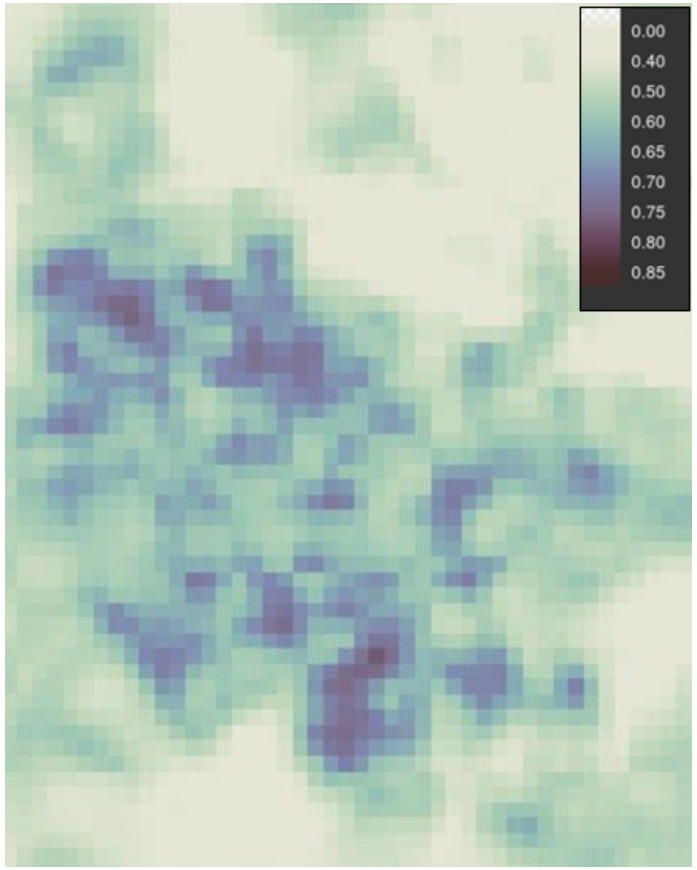
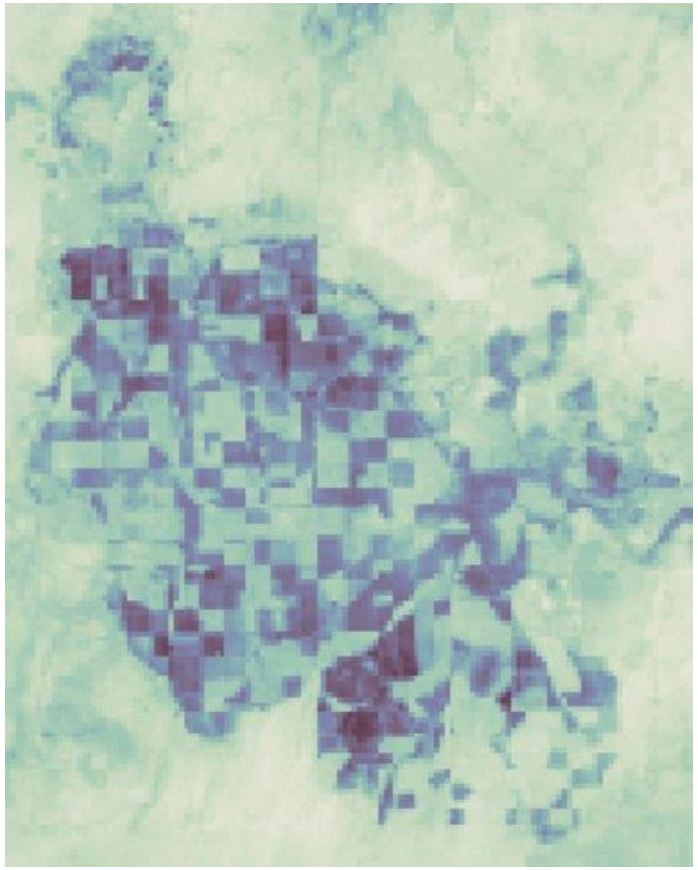
WaPOR V3: increased spatial resolution



Global data 300m



National data 100m, covering Africa and Near East

Sub-national areas 20m, >15 areas of ~100,000 ha

Relative Root Zone Soil Moisture 1-10 January 2022, Ethiopia

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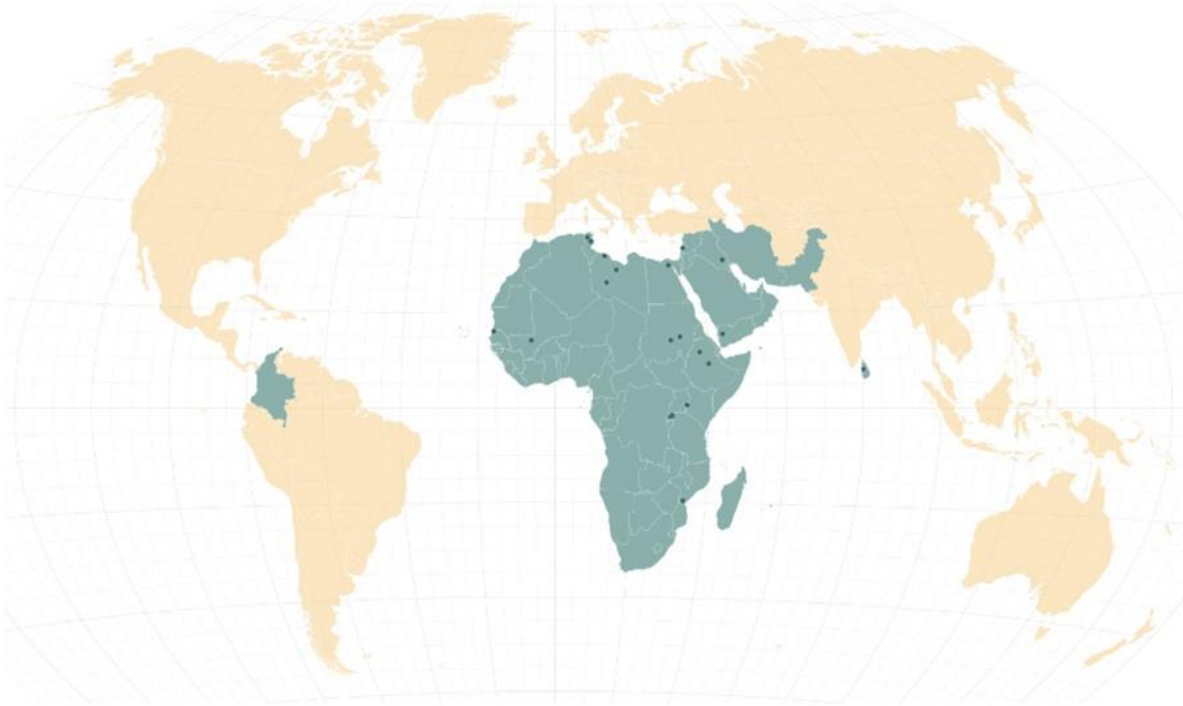
Data availability

- Water Productivity
- Actual Evapotranspiration (ETa)
- Reference Evapotranspiration
- Precipitation
- Relative root zone soil moisture
- Net Primary Production
- Quality layers

Daily (P, RET), dekadal, monthly, annual time steps

NRT update since 2018 (2009 on V2)

The three levels of WaPOR data are available for different areas



The global level (300m resolution) that covers the entire globe.

The national and sub-national / river basin level (100 m ground resolution) Northern and sub-Saharan Africa and the Near East (roughly a square of -30W, -40S, 65E, 40N)

The irrigation scheme and sub-basin (20 m ground resolution)

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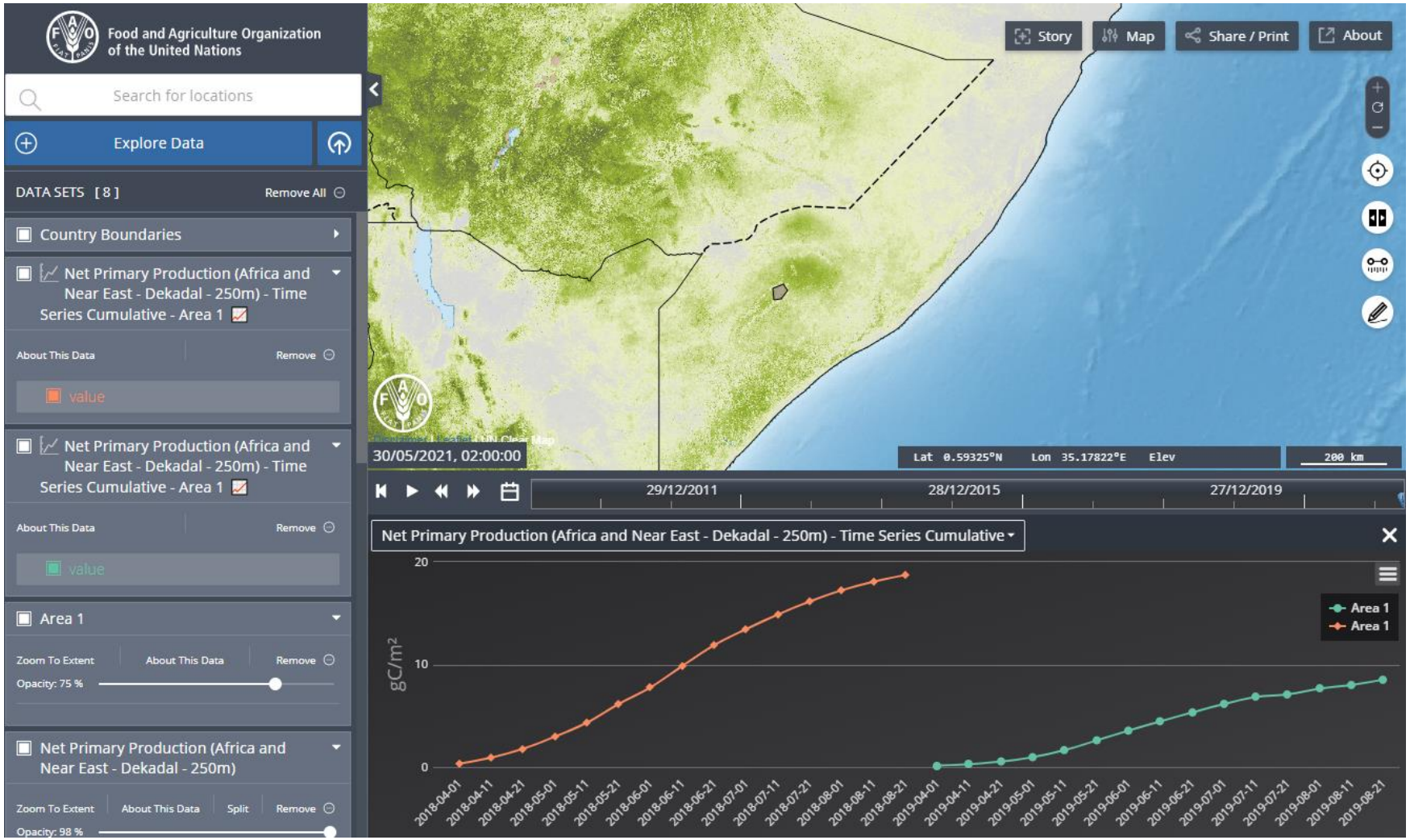
New data portal

New functionalities developed by WaPOR team in the geospatial platform to enhance analytical capabilities:

- Cumulated time series
- Direct comparison on the charts between different areas or different time periods
- Plotting of different variables on the same chart (such as Reference and Actual ET)

Watch the video at

https://www.youtube.com/watch?v=gA_t4HuFNhM



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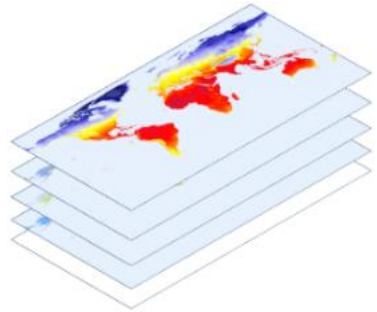
Knowledge sharing for sustainability



- Data distributed through ReST API for easier integration in ICT applications
- Open geospatial standards (wms, wcs, Cloud Optimized GeoTiff)
- Open codes and algorithms:

Wiki page for methodology
https://bitbucket.org/cioapps/wapor-et-look/wiki/Home

Bitbucket

PyWaPOR https://www.fao.org/aquastat/py-wapor/index.html

python

- Online courses, tutorials, hackatons
- Catalog of WaPOR applications and uses

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Action-oriented data for different users

scale

Farmers and other end-users (app developers, agricultural entrepreneurs): advisory services

Irrigation scheme managers, WUAs, river basin authorities: monitoring water use and irrigation performance

Policy makers: water allocation strategies, water productivity targets, SDGs

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Applications

LARI-LEB

PlantVillage Nuru

IRWI

There is a wide range of applications of WaPOR data that go beyond water productivity.

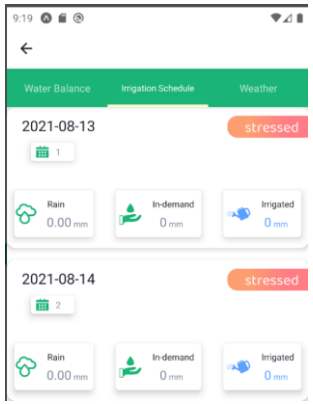
FAMEWS

FAO DSP

ICT-based solution (app) for irrigation scheduling advice

IRWI (Egypt), LARI-LEB (Lebanon), IREY (Tunisia), WaFIRR (Jordan-under finalization) app help farmers know:

- how much water is required so that they can decide when and how much to irrigate and
- how healthy is the crop and predicted yield during the season.



Apps can use WaPOR data in combination with user's inputs and other data sources

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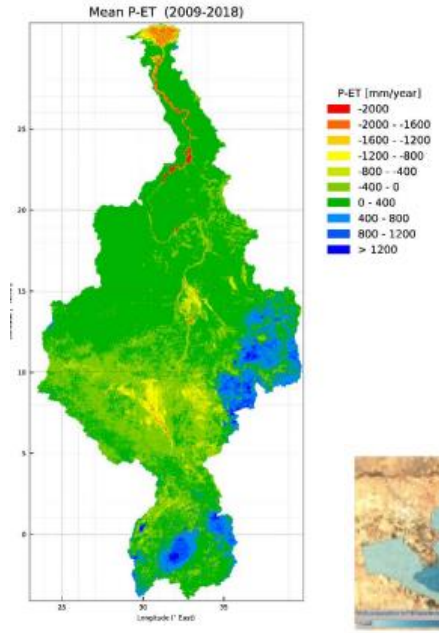
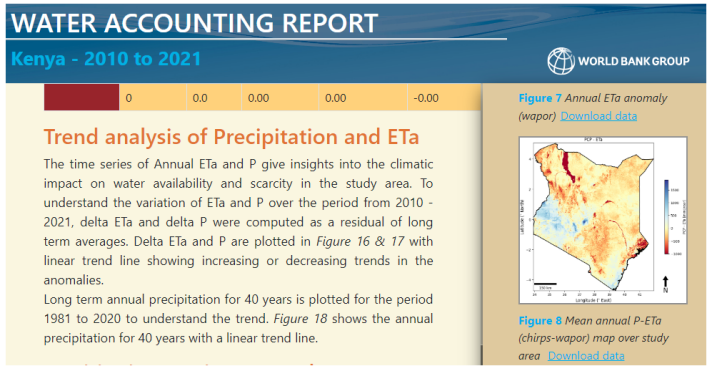
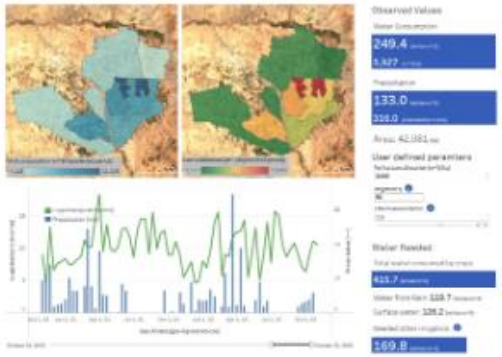
WaPOR for Water Accounting

Water Accounting from Remote Sensing aims to complement the lack of routine water resources data collection and incorporates spatially distributed water consumption.

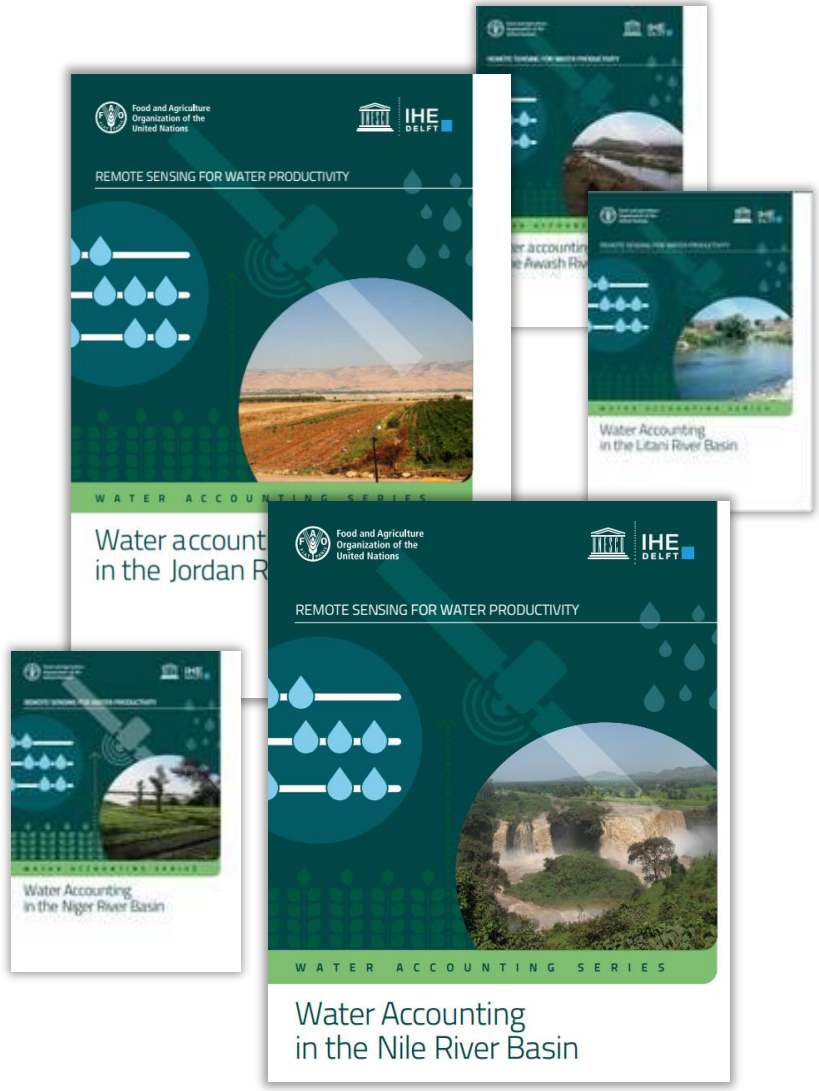




Water Accounting report (WB, Kenya)



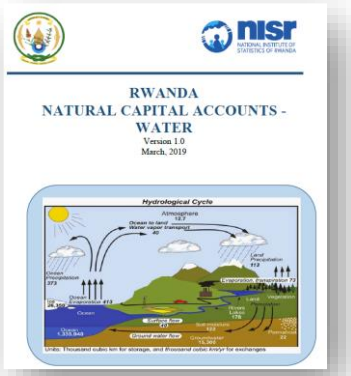
Water Consumption Dashboard (Resing, Morocco)



Informing national and global policies

League of Arab States guidelines on **Improved Water Allocation for Agriculture in the Arab Region**

Government of Rwanda using it for **Natural Capital Accounts**



Government of Egypt using it in the **Water Accounting Unit of MWRI**

Supporting data acquisition for **SDG monitoring and achieving targets** (SDG 6 in particular)

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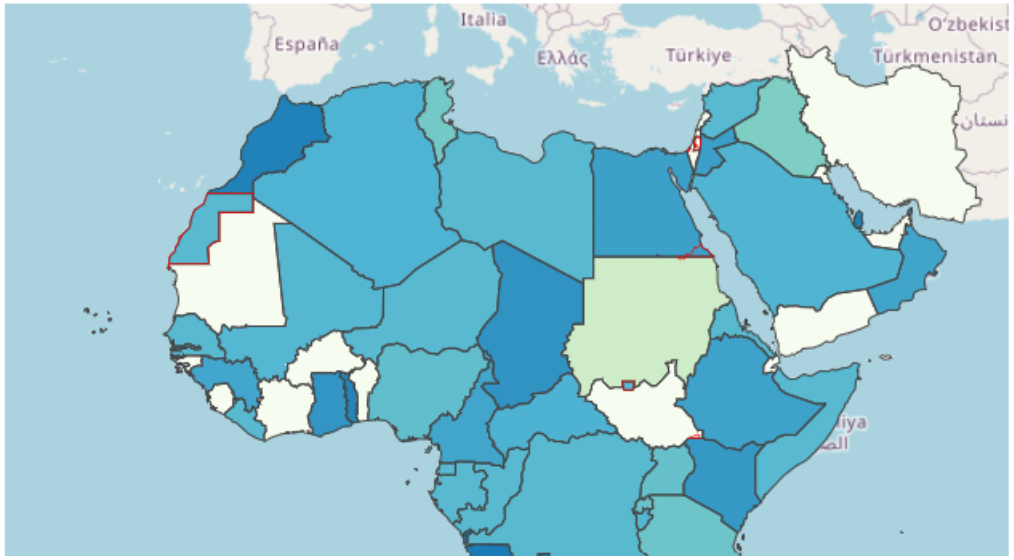
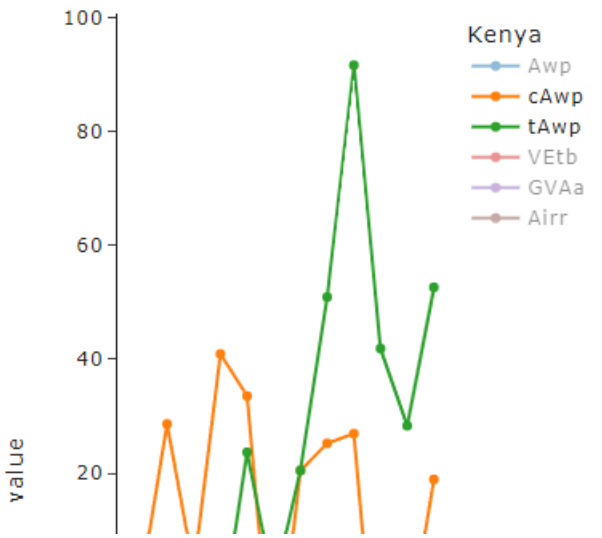
WaPOR4Awp - Agricultural Water Productivity

Change in agricultural water productivity (cAwp) [%]

WaPOR4Awp computes and visualizes agricultural water productivity data for countries in Africa and the Near-East using WaPOR data and methods for computing the values displayed in the dashboard are explained HERE





SUSTAINABLE DEVELOPMENT GOALS

Thank you!

data.apps.fao.org/wapor

wapor@fao.org

www.fao.org/in-action/remote-sensing-for-water-productivity

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