



NILE BASIN INITIATIVE
INITIATIVE DU BASSIN DU NIL



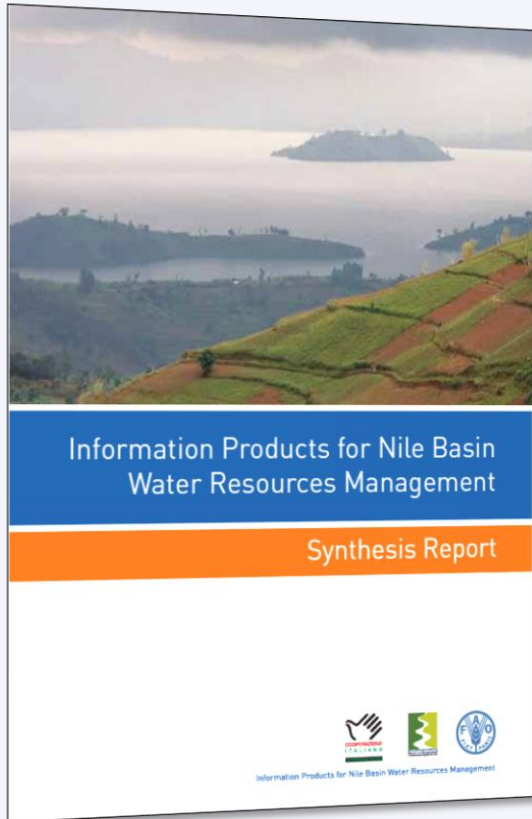
**FAO's WaPOR open access tool for monitoring
land and water productivity in agriculture**

7th NBIF - 20/09/2023, Livia Peiser, FAO

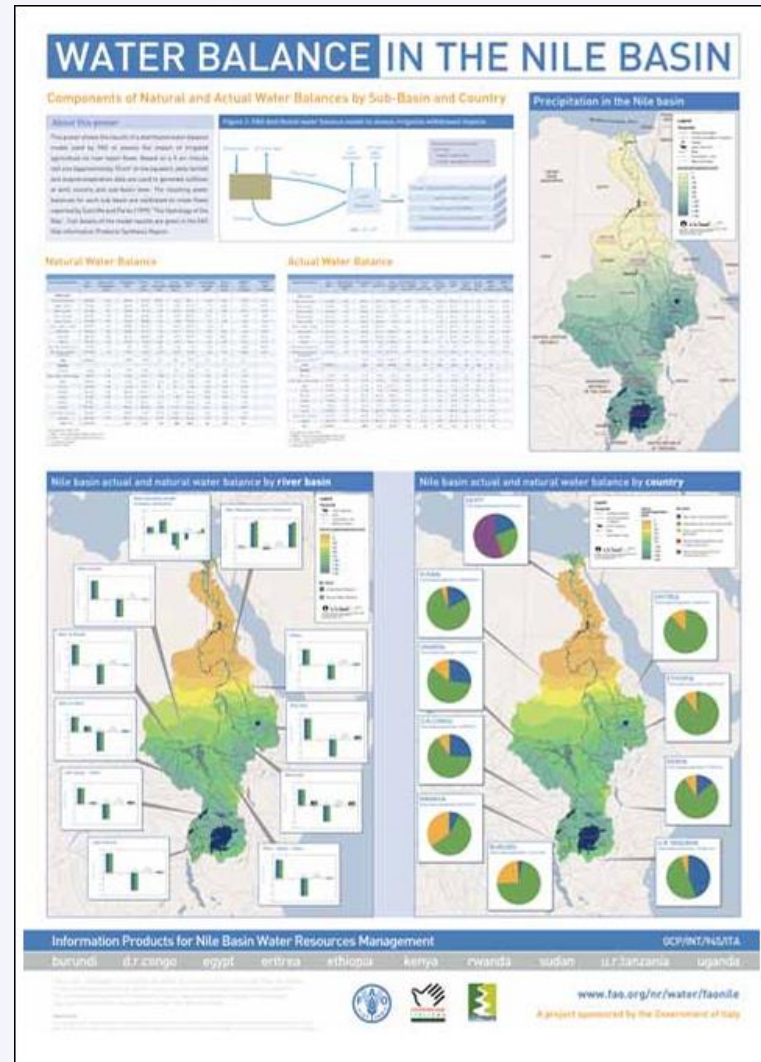
Outline

- Water and food in a changing climate
- FAO WaPOR open access data and information
- Selected examples of applications of WaPOR

FAO and NBI



(FAO & NBI 2011)



Context

Over 828 million people suffer from hunger (SOFI 2022)

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

Agricultural production needs to grow globally by 50% by 2050 (SOLAW 2022)

Current patterns of intensification are not proving sustainable (SOLAW 2022)

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



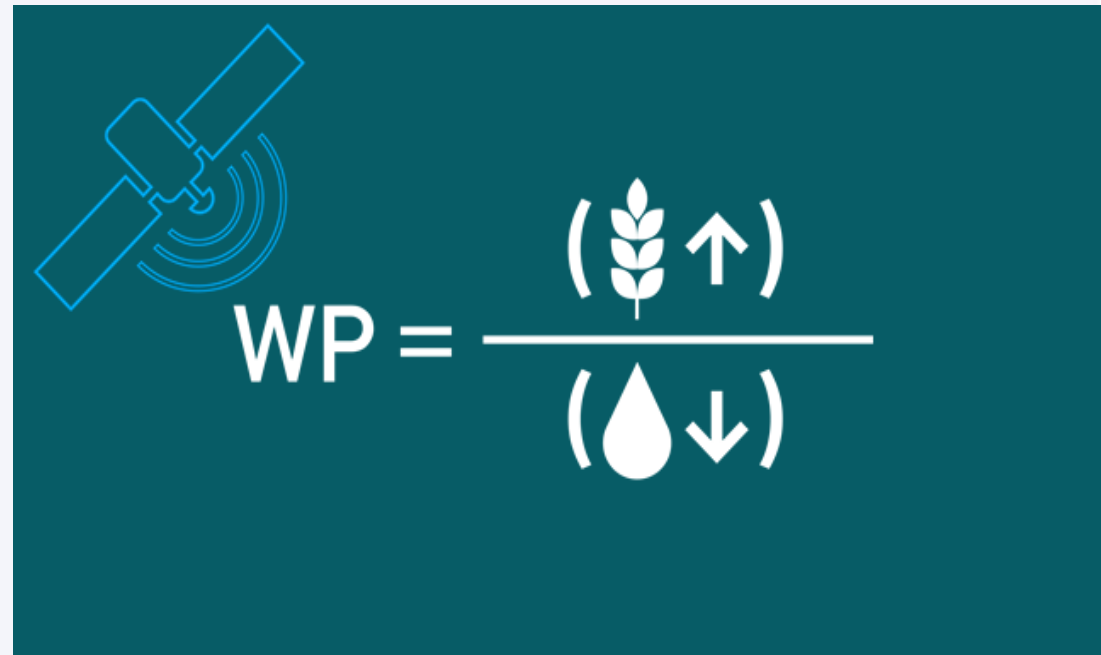
More food with less water

Water productivity in agriculture measures the output (kg/ha) per unit of water consumed (m³/ha).

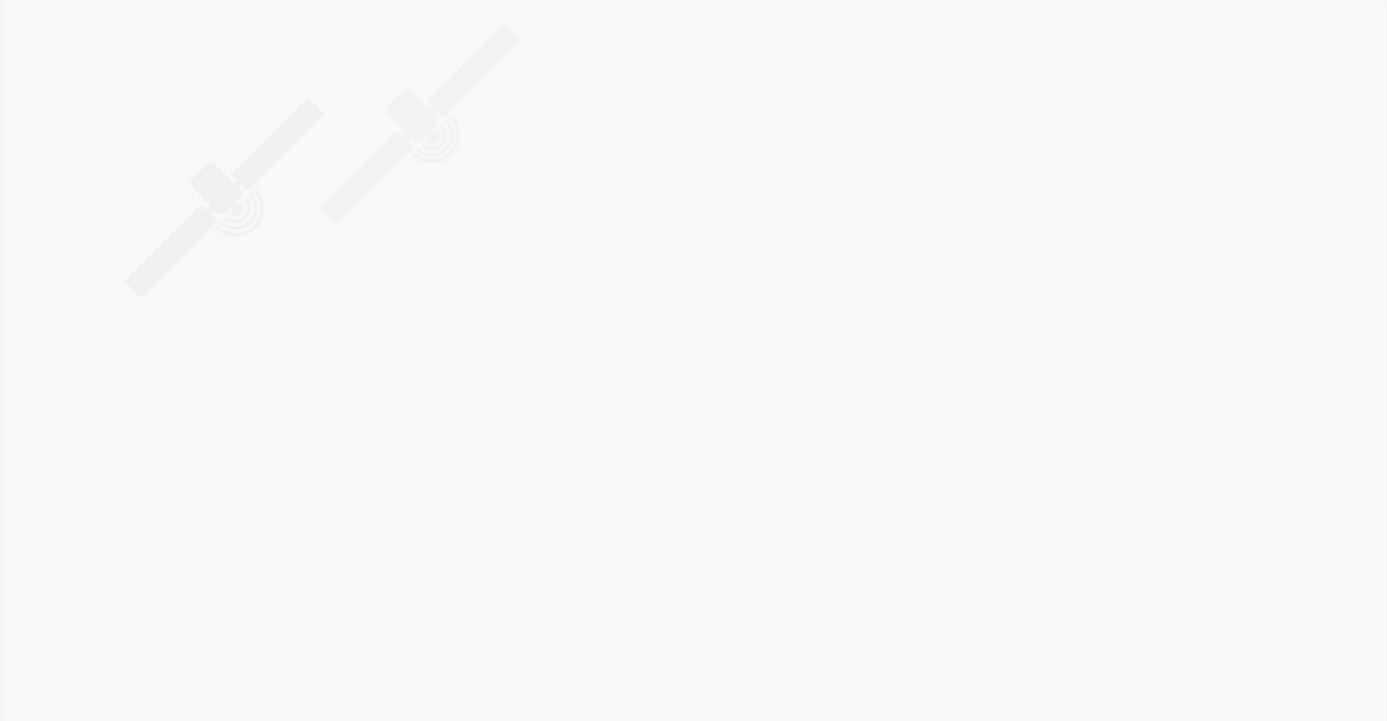
Measuring these two variables is not easy at appropriate scales for decision making

Satellites can help monitor water productivity in cost-effective ways.

Increasing water productivity is now a globally recognized target (SDG 6)



How WaPOR works

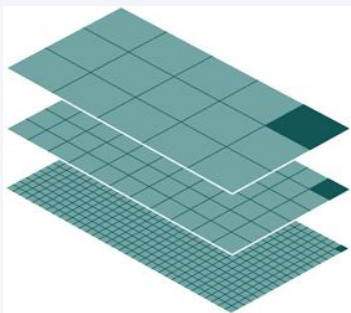


FAO WaPOR

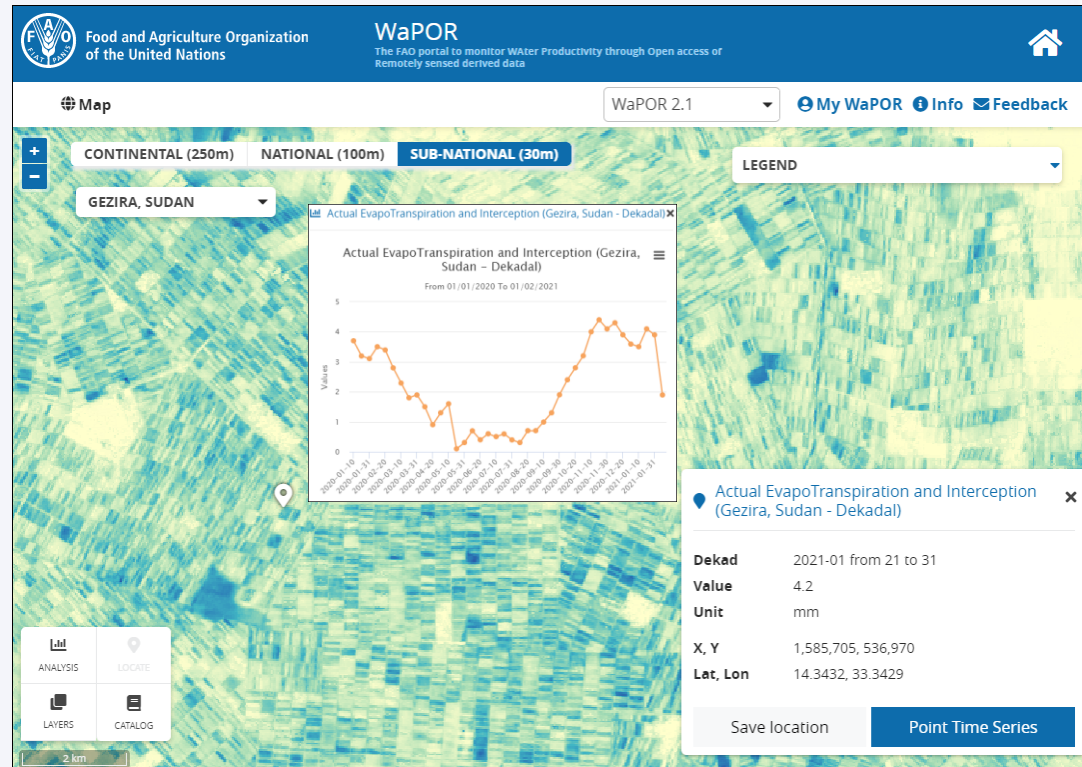


Near-real time (every 10 days) data on biomass development and water consumption (actual evapotranspiration), in addition to agro-climatic parameters on a daily time step (reference ET and precipitation).

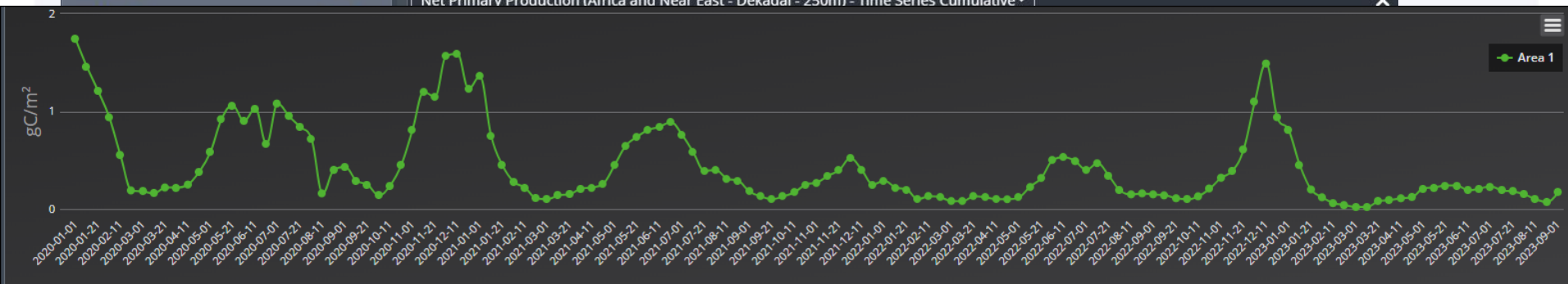
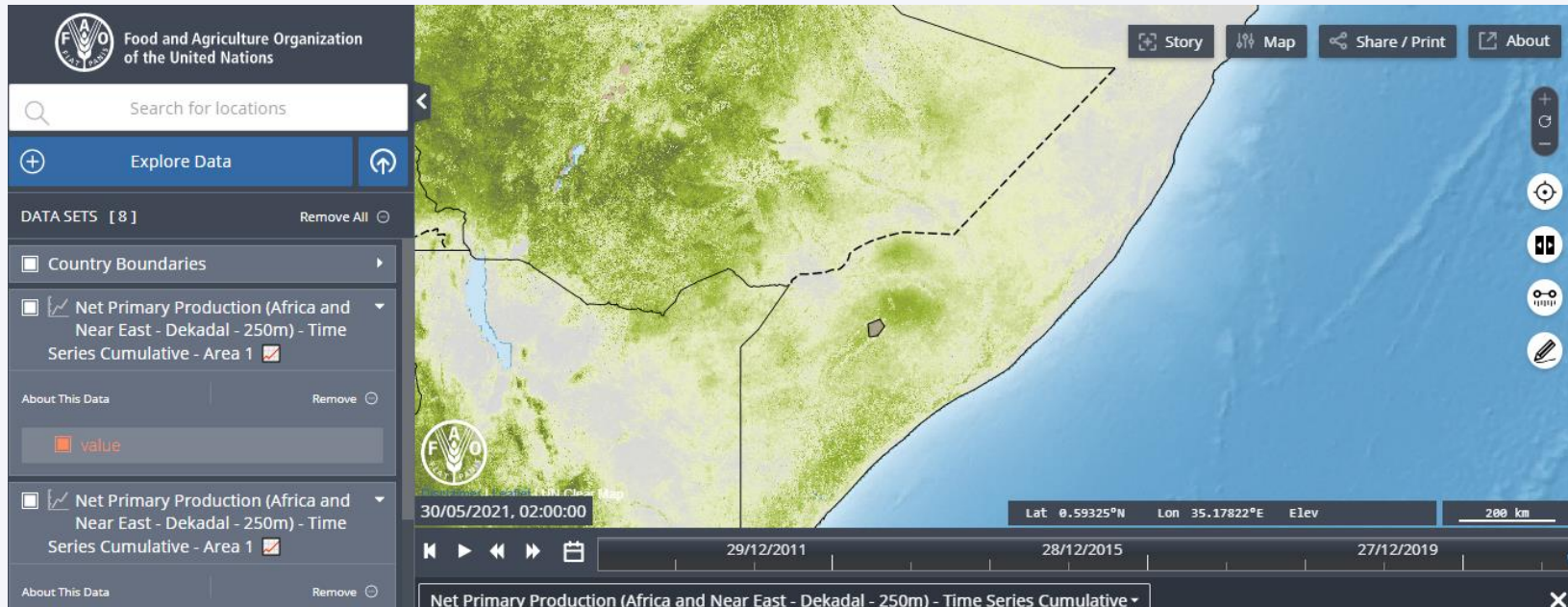
Spatial resolution ranges between 300 m and 20 m



300 m (global)
100 m (Africa)
20 m
(irrigation/watershed)



Examples of applications



Examples of applications



FAO WaPOR MAP - **2009**
ACTUAL EVAPOTRANSPIRATION
AND INTERCEPTION (ETIA) -
EXPANSION OF IRRIGATED
AREAS IN SOUTHERN EGYPT

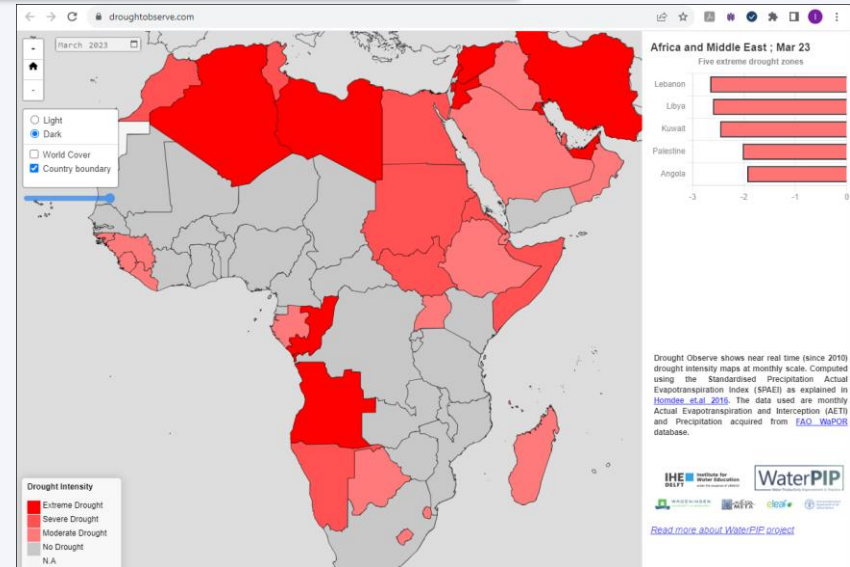


WAPOR.APPS.FAO.ORG

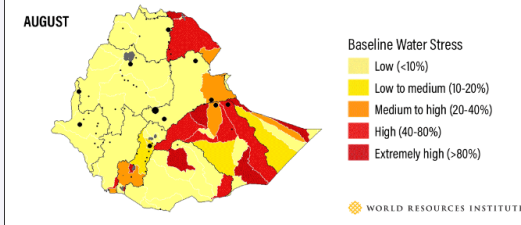
From our applications catalog



- Water Risk Maps (WRI)
- Drought Observe (IHE Delft – WaterPIP)
- Small-Scale Open Source Satellite-based Irrigation Advice (SOSIA, FutureWater)



Water Risk in Ethiopia (baseline year 2015)



SOSIA powered by FutureWater and Earth Engine Apps

Virtual Weather Station Data

This tool provides access to satellite-derived weather data using FAO WaPOR, CFSR, CHIRPS, and CFS data. Global coverage is provided with exception of WaPOR (limited region).

Instructions to users:

Step 1: Select your option between historical or short-term weather data from the dropdown menu

Step 2: Select your data variables by putting a tick in the checkboxes

Step 3: Select your location of interest by entering the coordinates or clicking on the map. You can zoom in/out on the map to a location and also use the search bar (at the top) to find a place.

Choose here your option

- Reference ET
- Air Temperature
- Precipitation
- Wind speed (BETA)
- Relative Humidity (BETA)
- Solar radiation (BETA)

manually enter longitude

manually enter latitude

Run analysis

Map Satellite

Uganda

Rwanda

Mwanza

Resources

- Data distributed through ReST API for easier integration in ICT applications
- Open geospatial standards (wms, wcs, CO GeoTiff)
- Open codes and algorithms:
Wiki page for methodology
<https://bitbucket.org/cioapps/wapor-et-look/wiki/Home>
- PyWaPOR <https://www.fao.org/aquastat/py-wapor/index.html>
- Online courses, tutorials, hackatons



<https://www.fao.org/in-action/remote-sensing-for-water-productivity/>

wapor@fao.org



Second Online WaPOR Hackathon: Communicating Data for Agricultural Applications



NILE BASIN INITIATIVE
INITIATIVE DU BASSIN DU NIL



**THANK
YOU!**