



Food and Agriculture Organization
of the United Nations

WaPOR

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

Measuring Water Productivity through Remote Sensing

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Ministry of Foreign Affairs of the
Netherlands



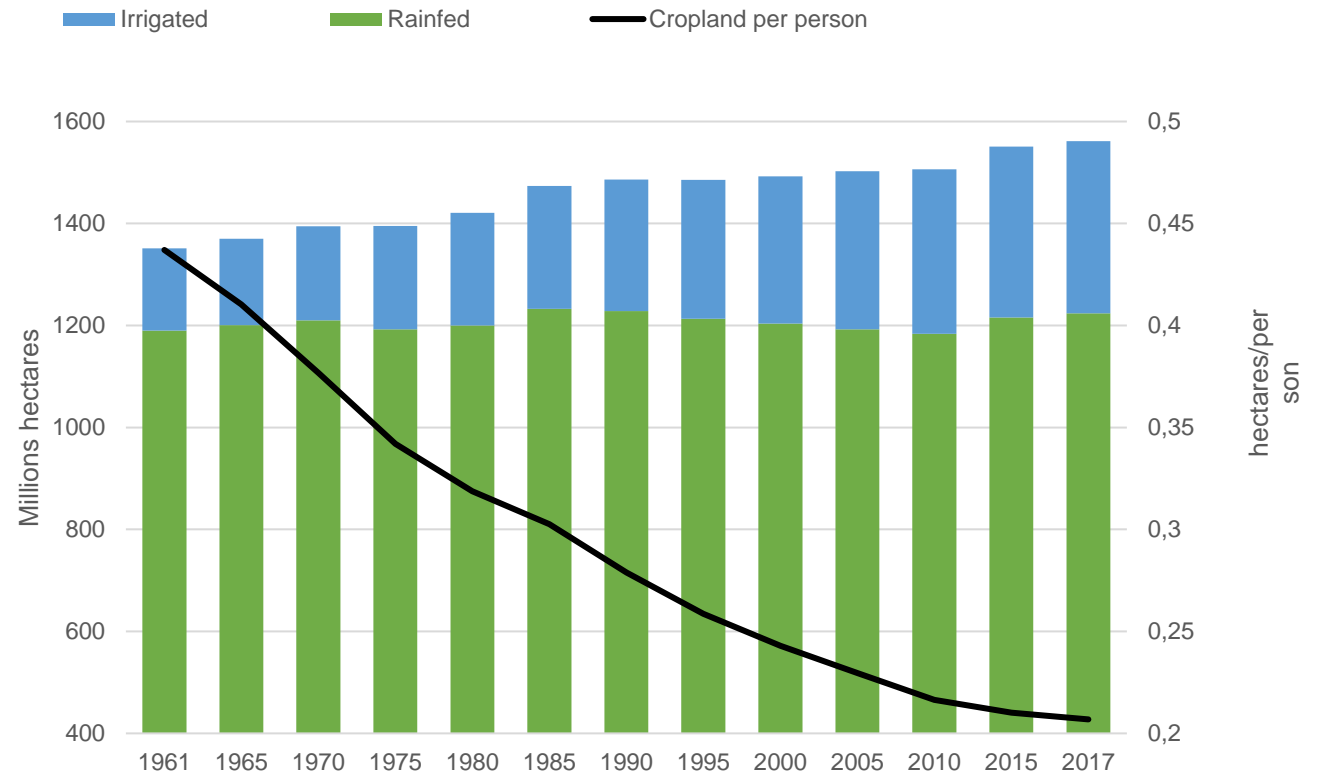
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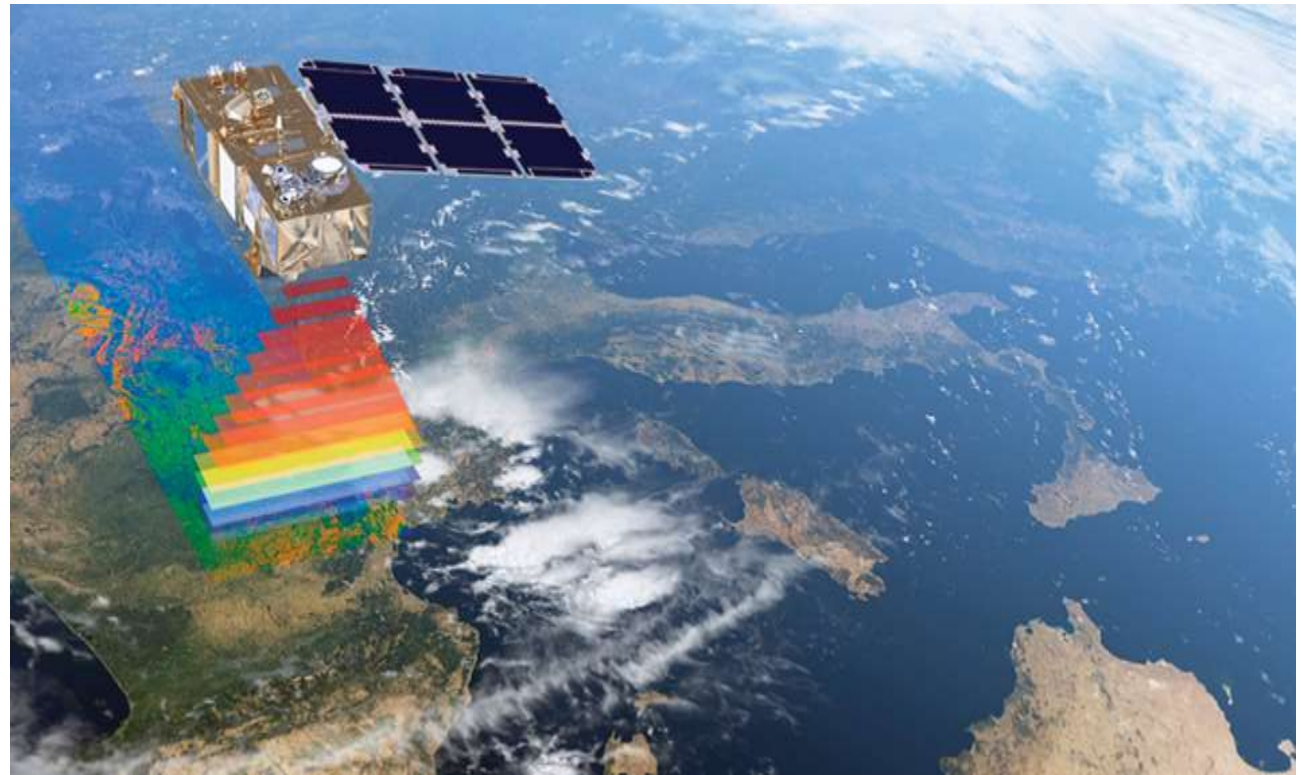
We need to produce more food with less water

Net increase in cultivated area over the last 60 years is attributable to a net increase in irrigated cropping

At the same time, agriculture is facing growing water scarcity



Monitoring water use in agriculture in space and time

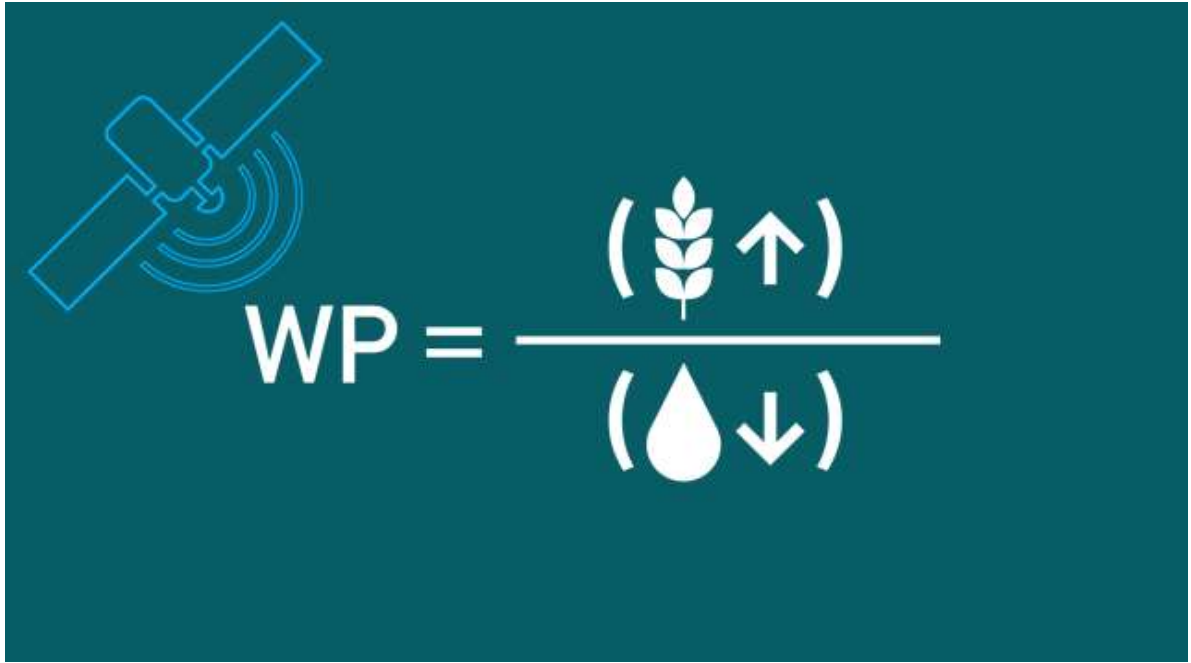


Remote sensing of water productivity

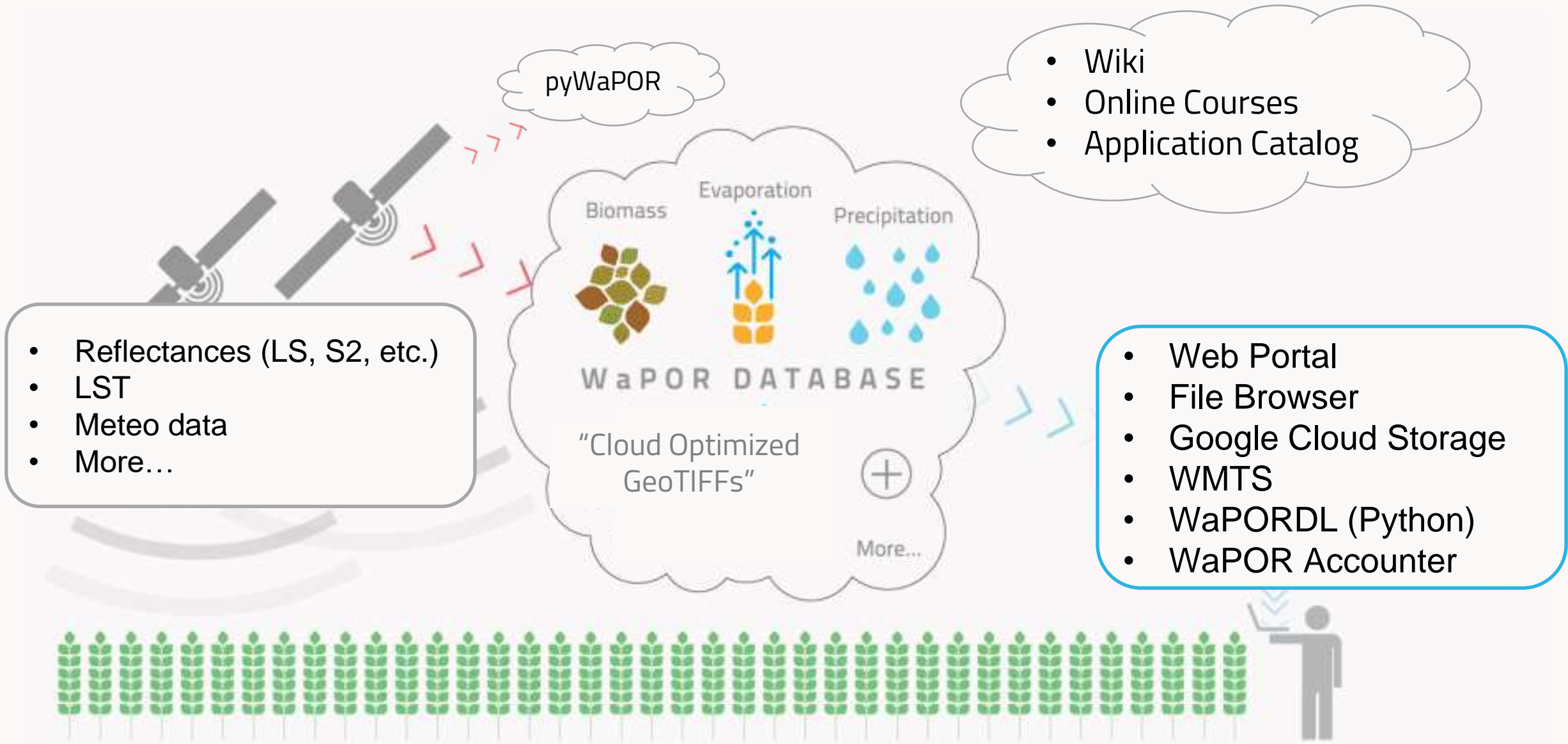
Water productivity in agriculture measures the output (kg/ha) per unit of water consumed (m³/ha).

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

Increasing water productivity is now a globally recognized target (SDG 6.4)


$$WP = \frac{(\text{Crop Yield } \uparrow)}{(\text{Water Consumption } \downarrow)}$$

How It Works






The three levels of WaPOR data are available for different areas



- Water Productivity
- Actual Evapotranspiration (ETa)
- Reference Evapotranspiration
- Precipitation
- Relative Root Zone Soil Moisture
- Net Primary Production

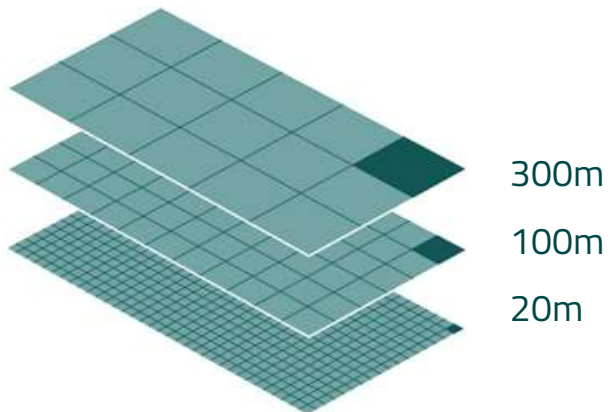
Daily (P, RET), dekadal, monthly, annual time steps



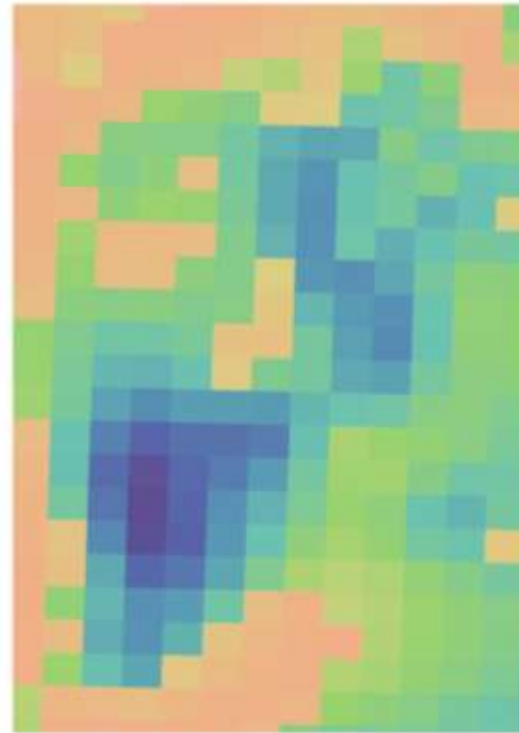
-  The global level (300m resolution) that covers the entire globe.
-  The national and sub-national / river basin level (100 m ground resolution) Northern and sub-Saharan Africa and the Near East (roughly a square of -30W, -40S, 65E, 40N)
-  The irrigation scheme and sub-basin (20 m ground resolution)

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).

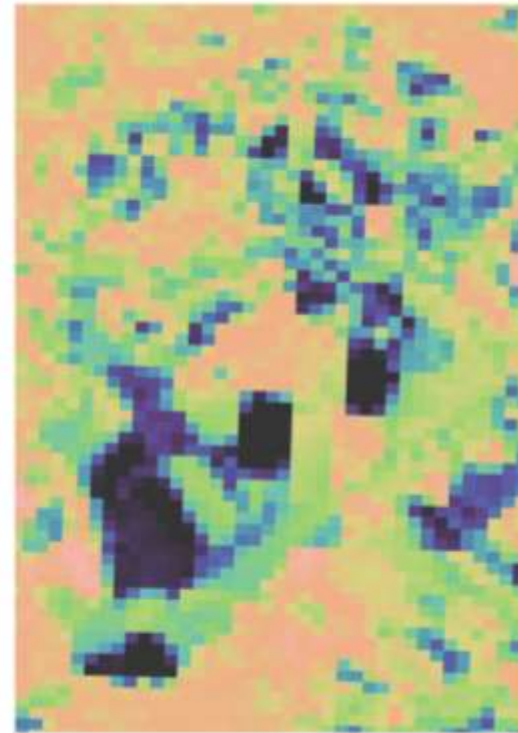
Spatial resolution ranges between 300 m and 20 m



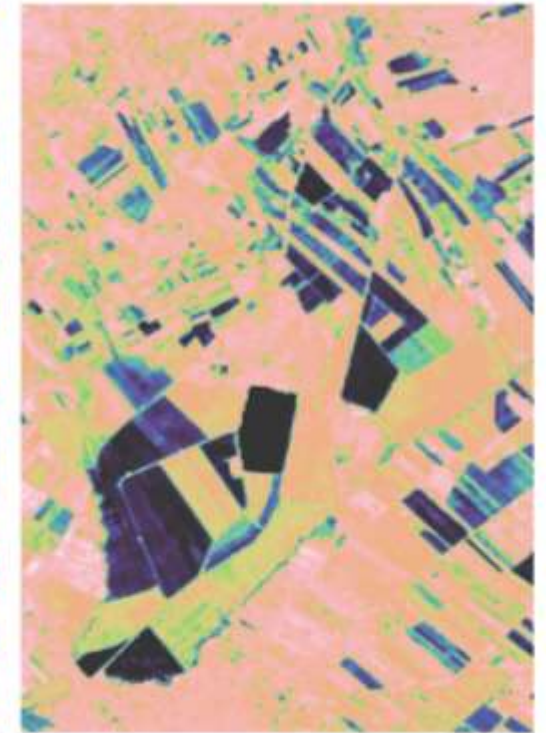
Beqaa Valley, Lebanon



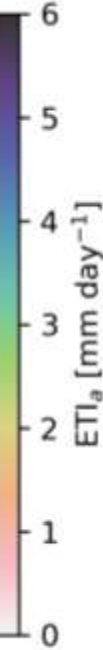
**Global data
300m**



**National data 100m,
covering Africa and
Near East**



**Sub-national
areas 20m, >25
areas of
~100,000 ha**

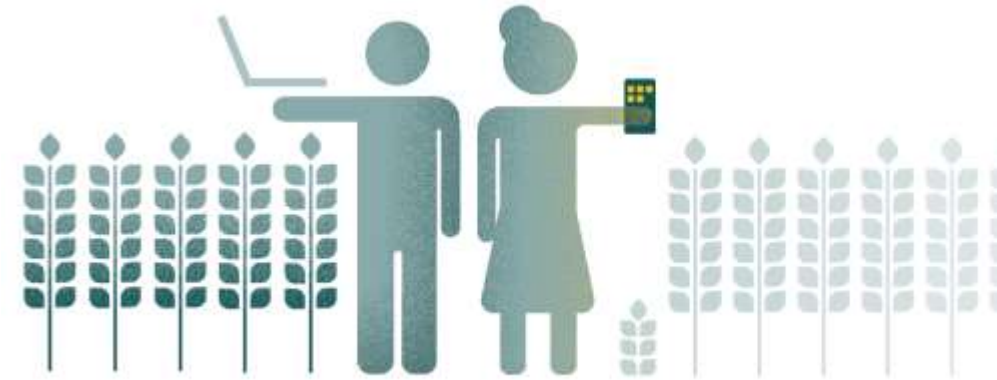


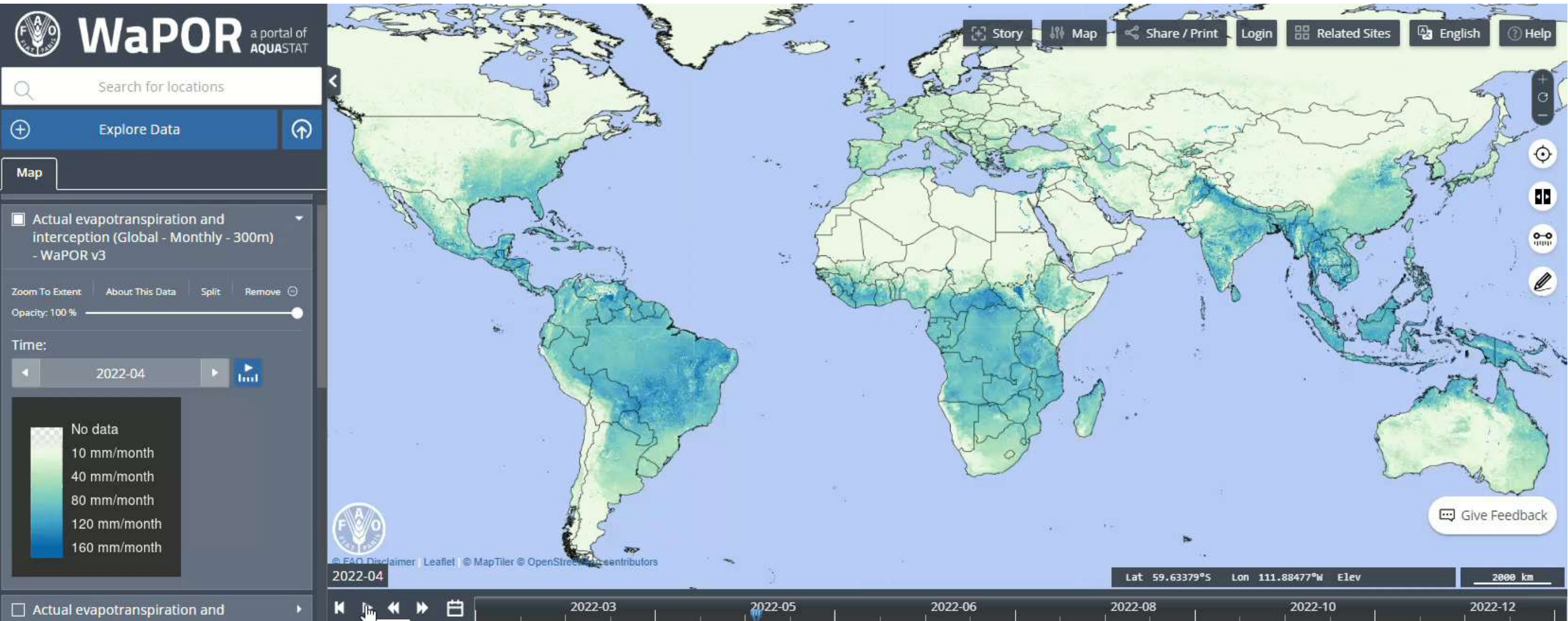
scale

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





**Join us to build a water and food secure future
where no one is left behind**



<https://data.apps.fao.org/wapor>

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