

# WRI – A climate service for seasonal and weekly predictions of agricultural irrigation needs

## WRI climate service

### The problem

Water management is a crucial issue in Mediterranean countries, especially in summer, when precipitation is at its climatological minimum and water resources are needed by economic activities and civil use. This conflict is expected to increase, according to future climate change impact studies, as more frequent and intense drought periods will likely occur.

### Service description

WRI (Water Resources for Irrigation) is a support tool to provide **mid-term and seasonal forecasts of irrigation needs for crops** on a GIS platform. The products available on the WRI platform are:

- Early crop classification map;
- Seasonal irrigation anomaly forecast (monthly), as shown in Figure 1
- Precipitation 7-day forecast (daily);
- Irrigation 7-day forecast (daily);
- Maximum evapotranspiration 7-day forecast (daily);
- Previous irrigation assessment (daily).

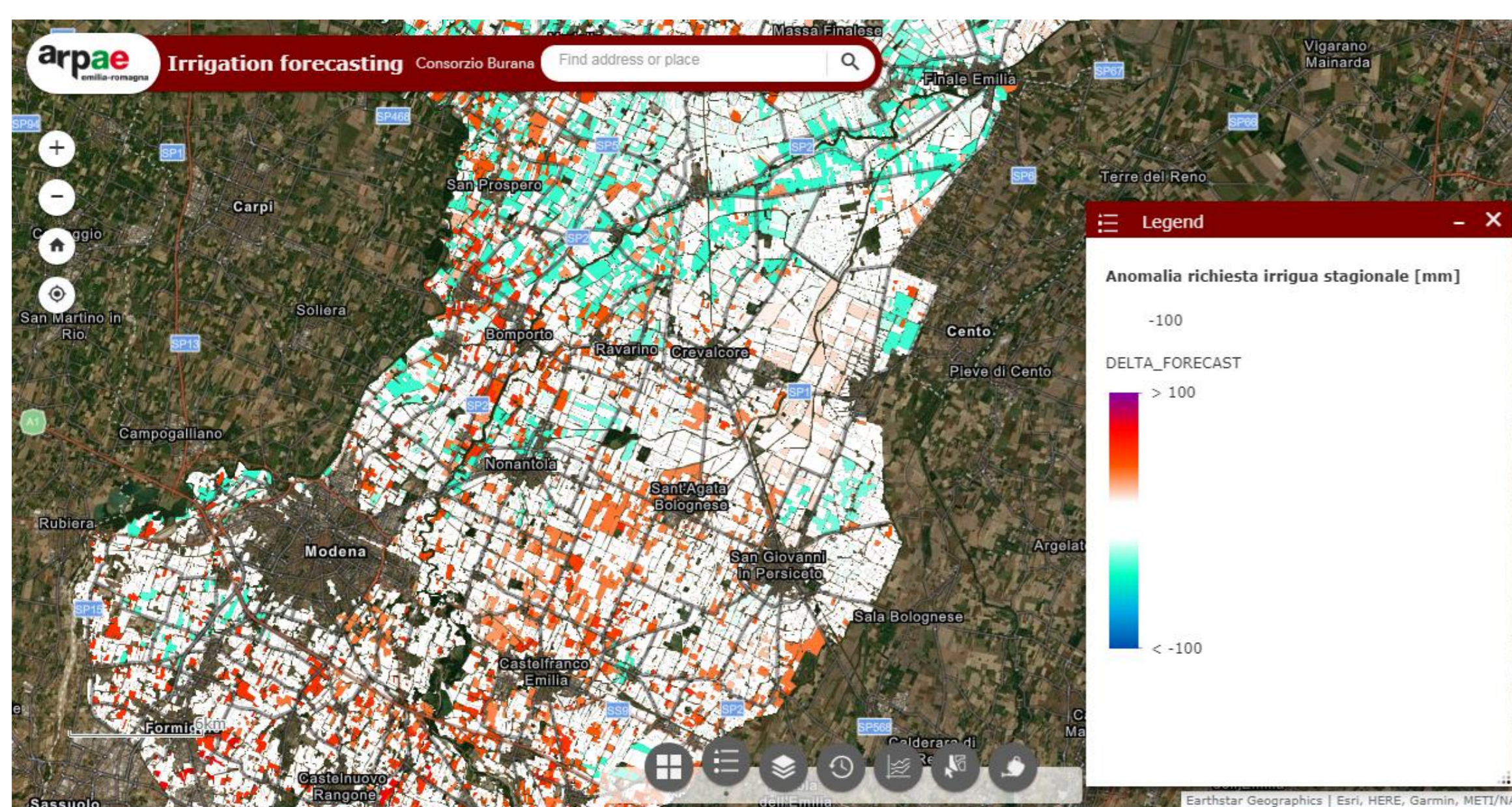


Figure 1. Map of seasonal forecast MJJ 2020 for the Burana Irrigation consortium

### Output format

Data can be displayed as thematic maps on the GIS platform where maps (see Figure 2) can be zoomed in and out and a time slider allows to consult all the available maps. Moreover data can be displayed also on time plots for each computational units (see Figure 3).

## Input data

The operational chain, set up to provide this climate service, foresees the use of different data source:

- Early crop classification maps, obtained from multi-temporal satellite data (Copernicus Sentinel 2ab) and field surveys;
- Downscaled seasonal forecasts (Copernicus multi-model ensemble) combined with local weather and climate data; 7-day numerical forecasts (COSMO-LAMI and Ecmwf model);
- Technical data and soil map of Emilia-Romagna region.

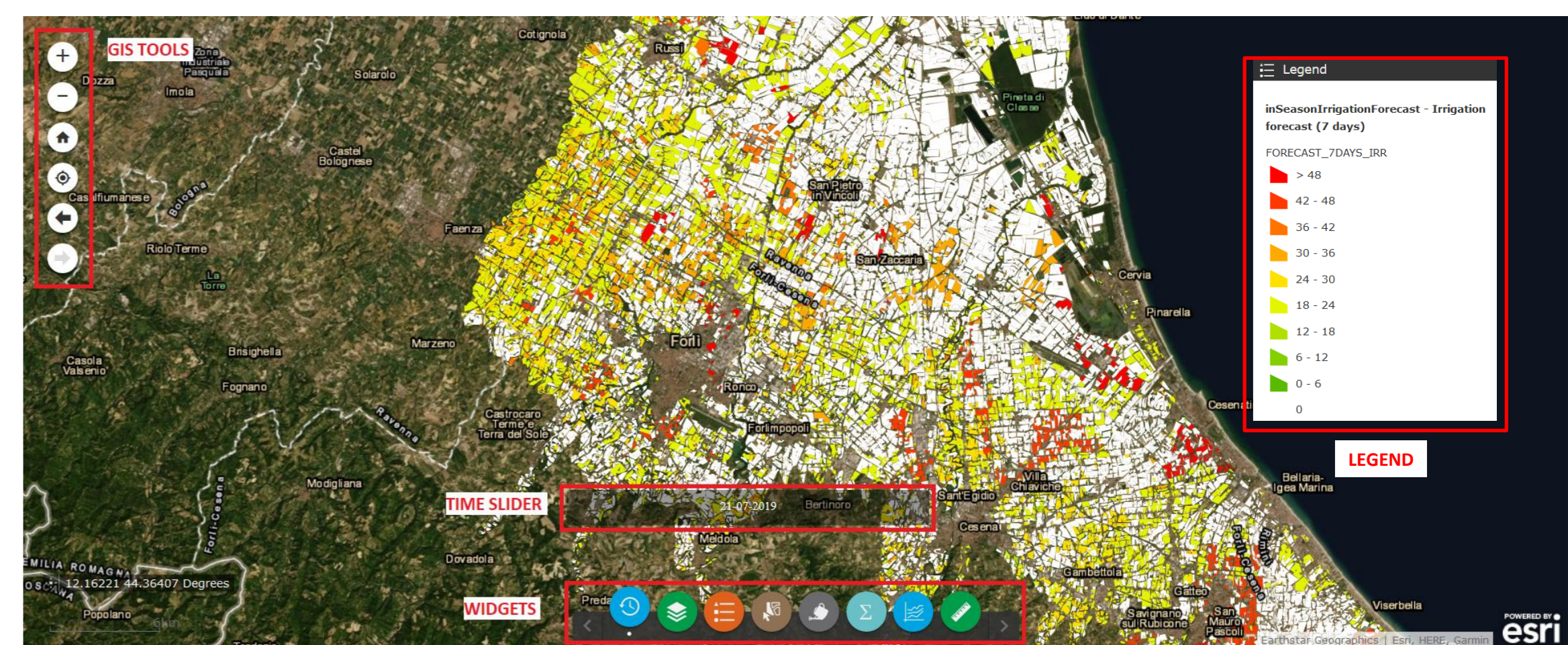


Figure 2. The WRI webGIS interface

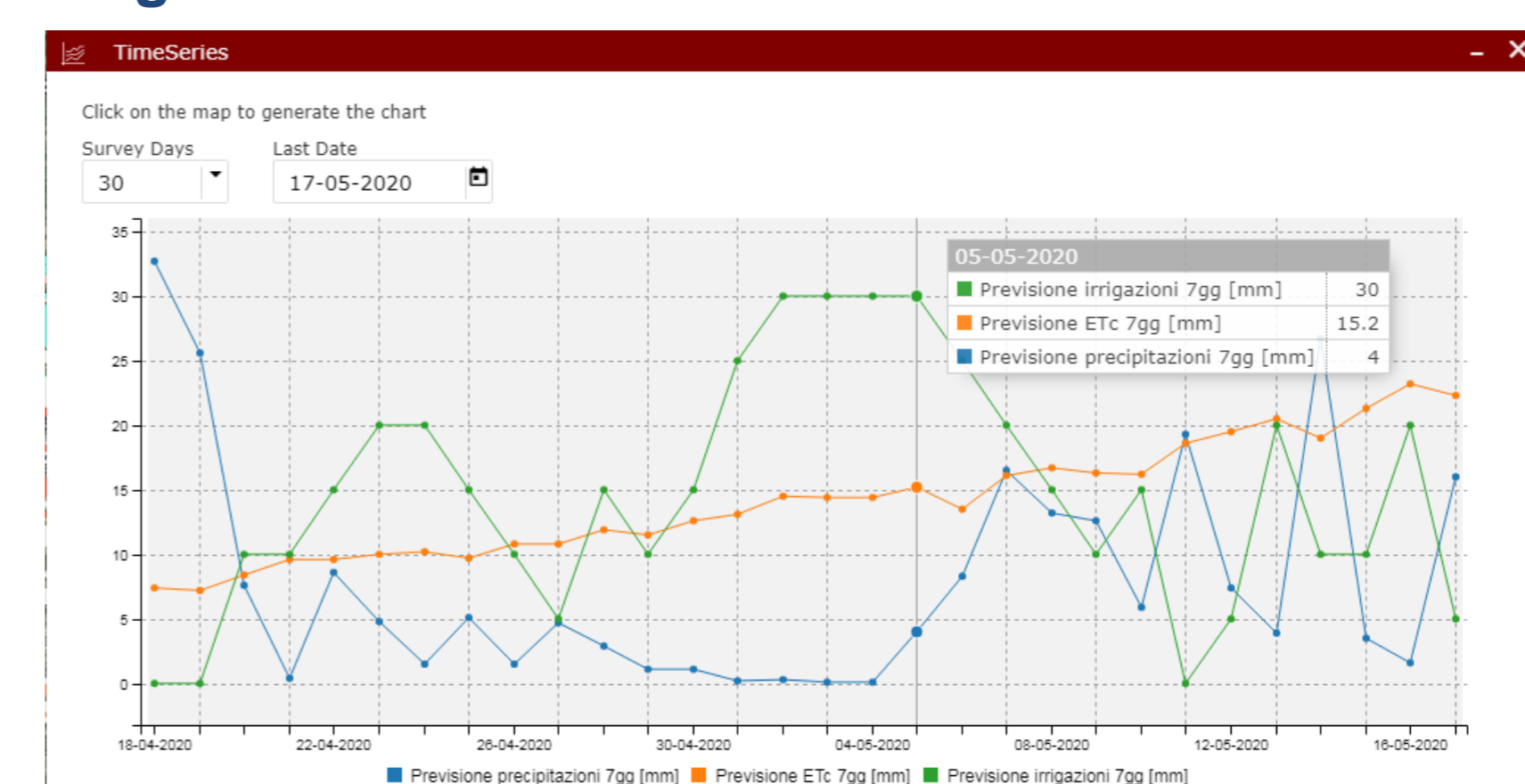


Figure 3. The WRI time plot

## The users & the benefits

WRI is addressed to authorities in charge of water management in agriculture sector (i.e.: land reclamation and irrigation consortia and regional departments).

WRI is being tested over two land reclamation and irrigation consortia of Emilia-Romagna, Italy (Bonifica Burana and Bonifica Romagna).

Early irrigation forecasts make water managers aware of the expected seasonal demand allowing them to manage the irrigation demand at medium-term (strategic support).

Repeated forecasts can help them in fine tuning water procurement and distribution to farming districts in order to better set up the supply and the distribution of water to irrigation districts (tactical support).