# VITIGEOSS

**VINEYARD INNOVATIVE TOOL BASED ON THE INTEGRATION OF EARTH OBSERVATION SERVICES AND IN-FIELD SENSORS**

## Applying user-centered design to the coproduction of climate services across time scales
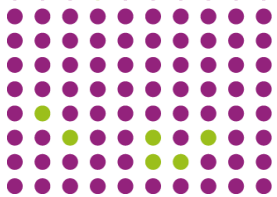
### VitiGEOSS vineyard management solution

Marta Terrado, Diana Urquiza, Isadora Christel, Andrea Manrique, Andria Nicodemou, Nube González-Reviriego, Nuria Pérez-Zanon

Barcelona Supercomputing Center (BSC-CNS)
Department of Earth Sciences

**BSC** Barcelona Supercomputing Center
Centro Nacional de Supercomputación

# Climate change impact on viticulture



'You have to protect the grapes from getting sunburn'

By Stav Dimitropoulos and Will Smale
Business reporters

10 September 2020

Winemakers in many of the world's traditional wine regions now have to guard against their grapes being too ripe because of higher temperatures

NEWS

## Spanish vineyards in danger from drought

04 JULY 2017

*By Lucy Shaw*

A lack of rain in Spain could spell disaster for both grape and olive growers this year temperatures wreak havoc across vineyards and olive groves.

Rainfall is currently at less than half the historic average in Spain

**Grape growers hoping rain holds off**

Karen Coltman · 05:00, Jan 15 2022

ROSS GIBLIN

# Responding to the needs of the viticulture sector

- **Optimise the vineyard management process** through the use of open European Earth Observation services

- **Combine different sources of information across different timescales** tailored to the needs of grape growers and wine producers

- **Respond to future wine industry challenges** to boost vineyard sustainability, mitigate and adapt to the effects of climate change and promote local economic growth
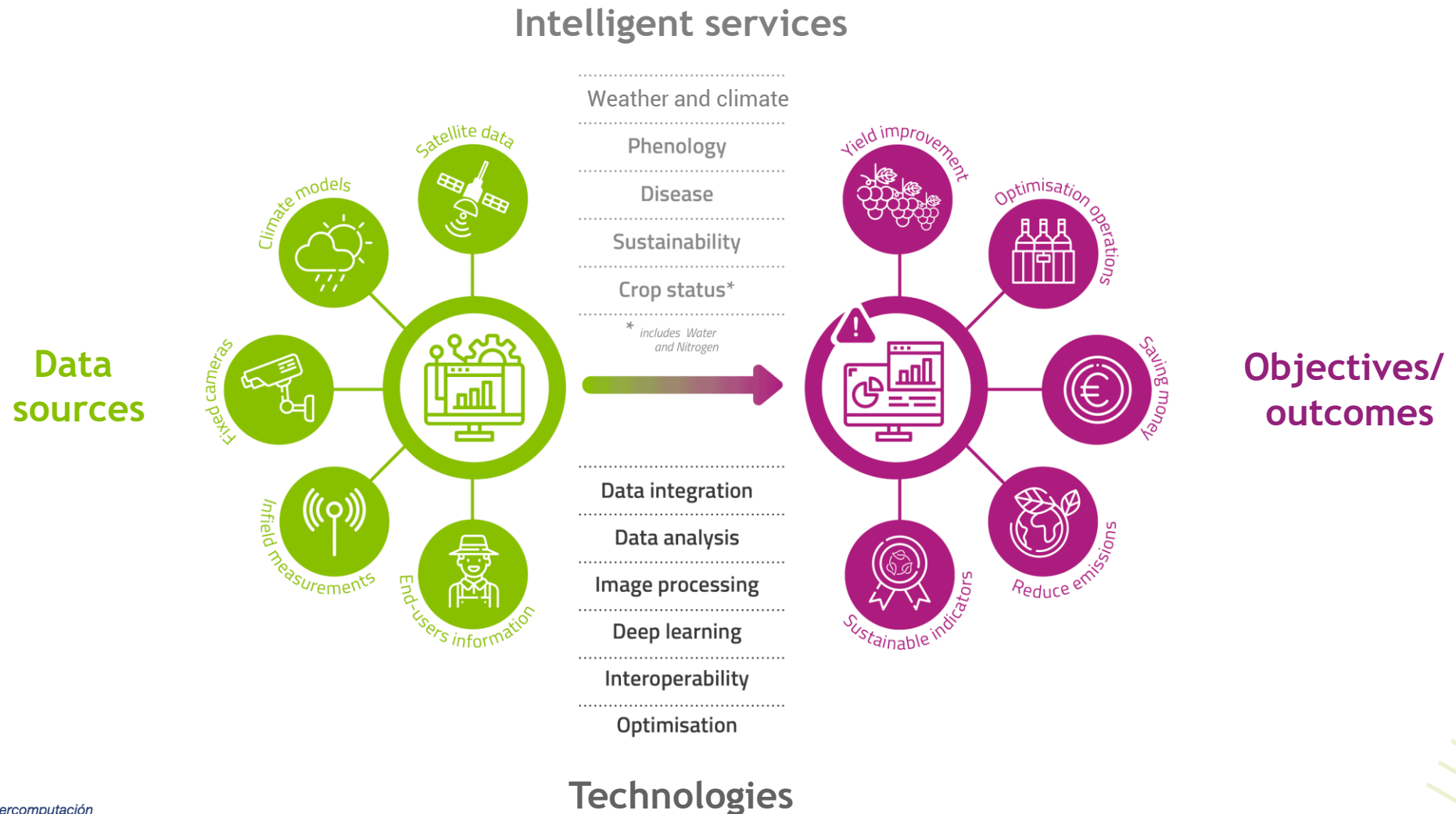
# Real user needs

**1** **Quinta do Ataíde** (Portugal) - Symington Family Estates

**2** **Juneda** (Spain) – Familia Torres Wines

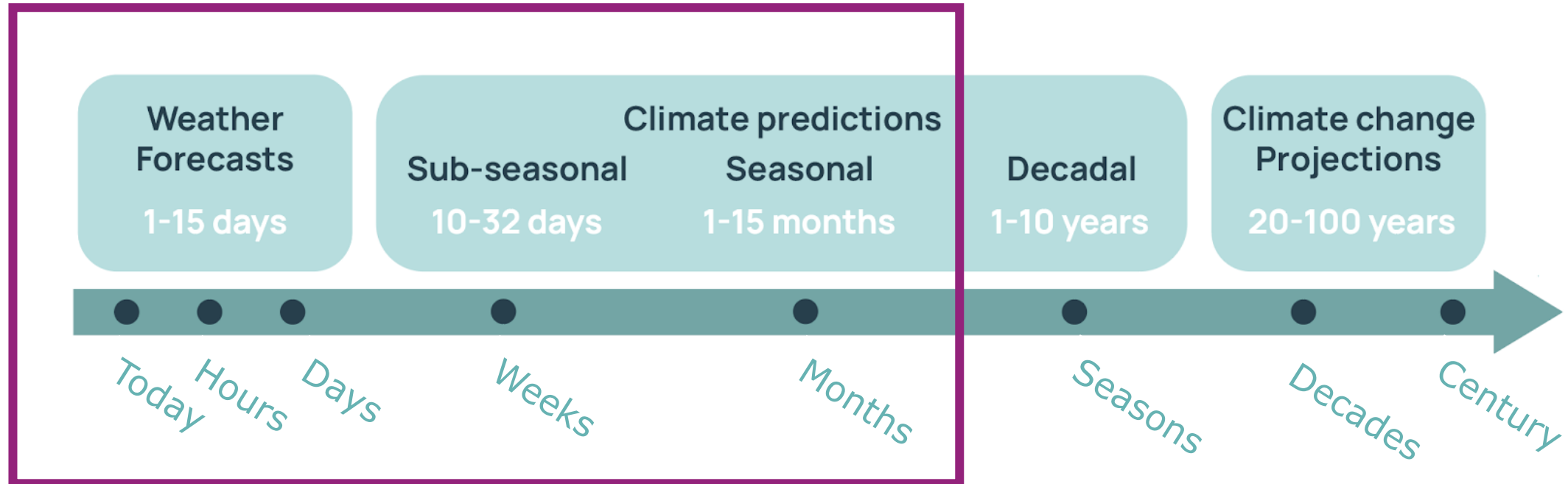**3** **Mirabella Eclano Estate** (Italy) - Mastroberardino Società Agricola srl,

# Seamless approach
# to different type of data sources



**Data sources**

**Intelligent services**

- Weather and climate
- Phenology
- Disease
- Sustainability
- Crop status*

\* includes Water and Nitrogen

- Data integration
- Data analysis
- Image processing
- Deep learning
- Interoperability
- Optimisation

**Technologies**

**Objectives/ outcomes**

Climate models

Satellite data

Fixed cameras

Infield measurements

End-users information

Yield improvement

Optimisation operations

Saving money

Reduce emissions

Sustainable indicators

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# Seamless approach
# to different time scales

# Weather forecasts

## Weather forecasts are a familiar concept
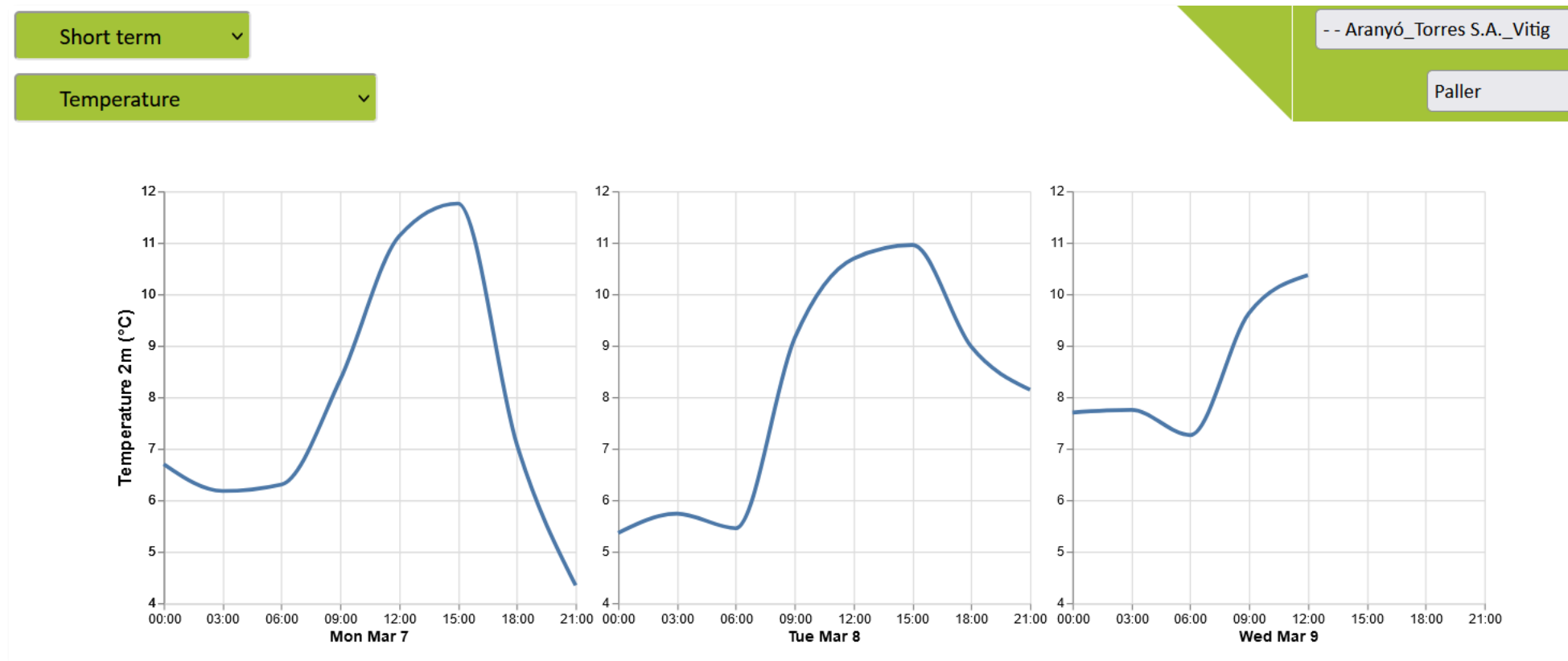
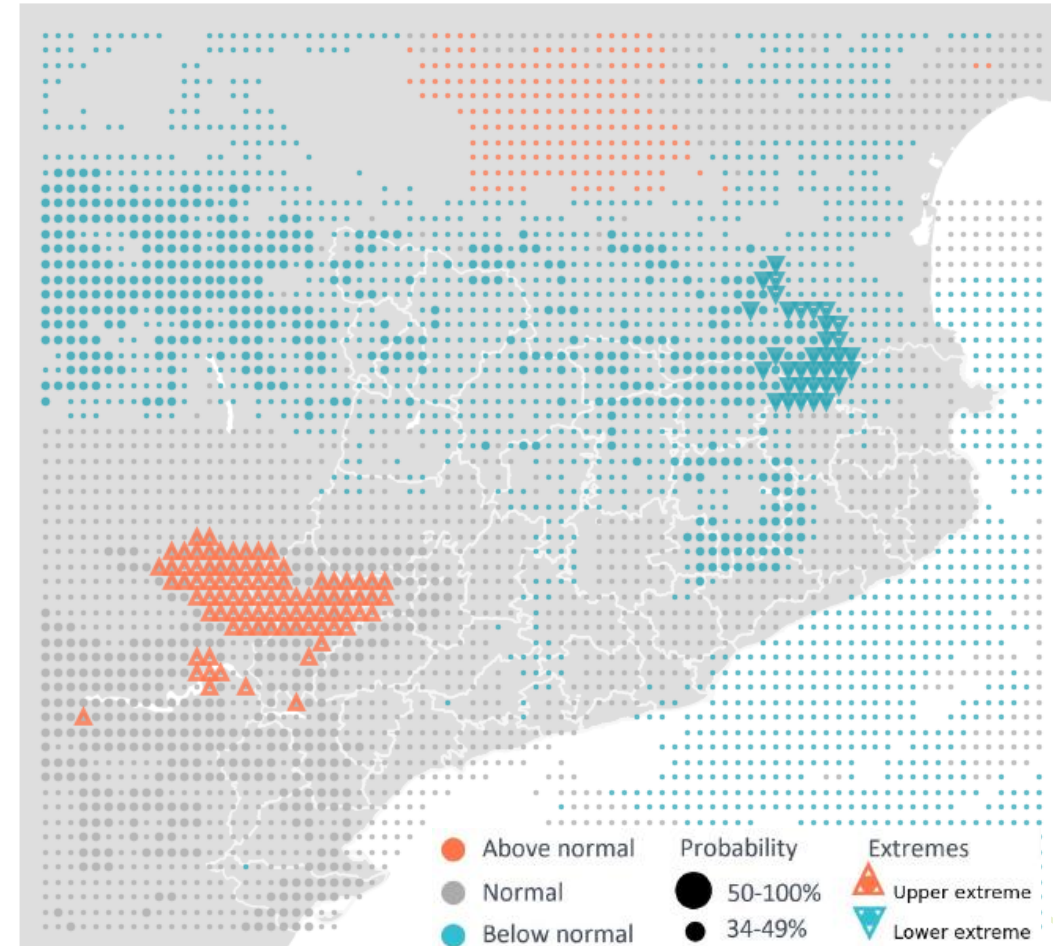# Sub-seasonal and seasonal climate predictions



**Temperature (Aranyó)**

Seasonal forecast issued on Jun 2021

Legend:
- Above normal
- Normal
- Below normal
- Upper extreme
- Lower extreme

Skill < 0%

July — 22.8 25.5
August — 23.5 25.8
September — 21.4 23.1 [°C]
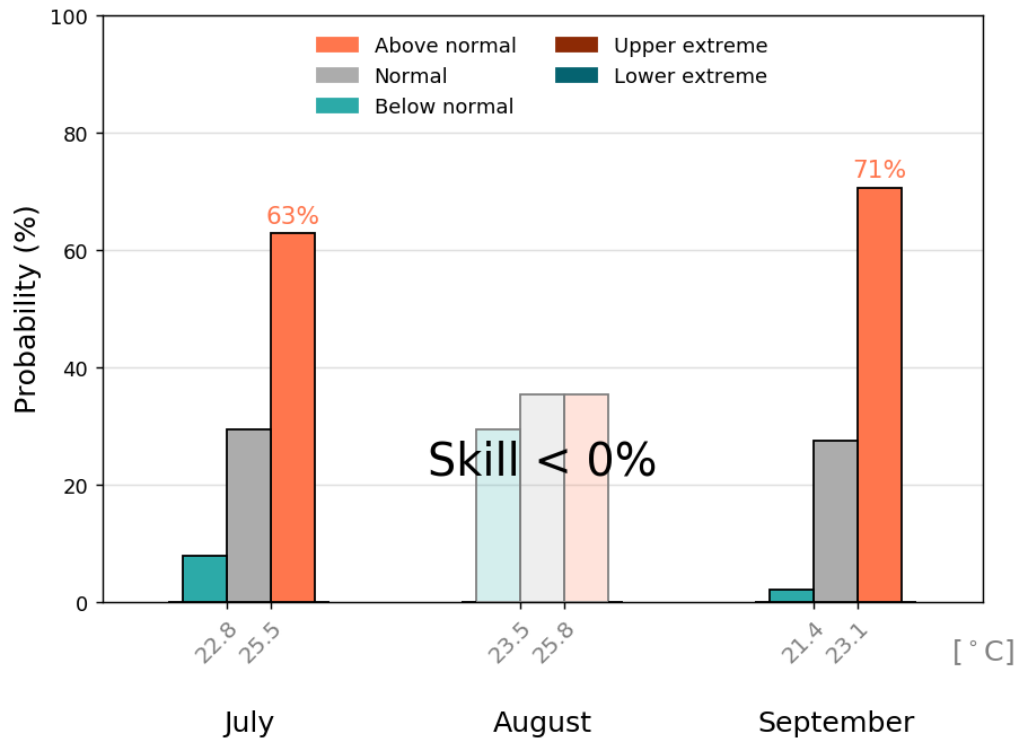
**Seasonal forecast of temperature**

Issued on 01 Nov 2020, valid for DJF



Legend:
- Above normal
- Normal
- Below normal
- Probability: 50-100%, 34-49%
- Extremes: Upper extreme, Lower extreme

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# User-centered design approach

## Individual interviews



## Visualisation aspects

- Terciles probabilities
- Forecast quality (skill)
- Extreme probabilities
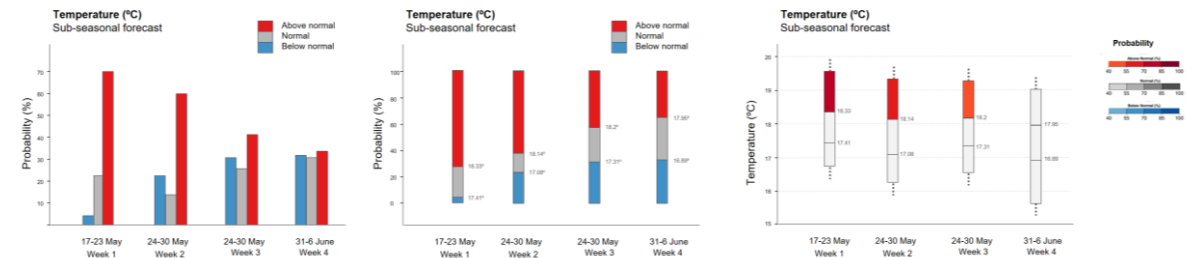
# Dashboards as a first step for integrating different information



Preview of the VitiGEOSS vineyard management solution
(under development)

# Take-home messages

- Having **different types/sources of crop relevant information on a single platform** facilitates the decision-making of grape growers and wine producers

- Having access to **seamless climate information** (integration of different temporal and geographical scales) is needed to support multiple types of decisions and user profiles

- Applying **a user-centered design approach** ensures that information is user relevant and that users can understand and apply it in their decision-making context

- Products integrating in a seamless way different sources of information, temporal and geographical scales and coproduced with users boost the **uptake of services for climate adaptation.** More research needed in **methodological implementation of seamless approaches.**

# VITIGEOSS

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# Thank you!

marta.terrado@bsc.es

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A project coordinated by:

**eurecat**