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Centro Nacional de Supercomputación

EXCELENCIA SEVERO OCHOA

Preserving Mediterranean diet through Climate Services

Eleftheria Exarchou on behalf of

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Climate services for olive oil, wine and pasta

Involvement of users as project partners

Source: EUPORIAS and ECOMS FP7 EU projects

Choosing the "Champions" of each climate service is crucial

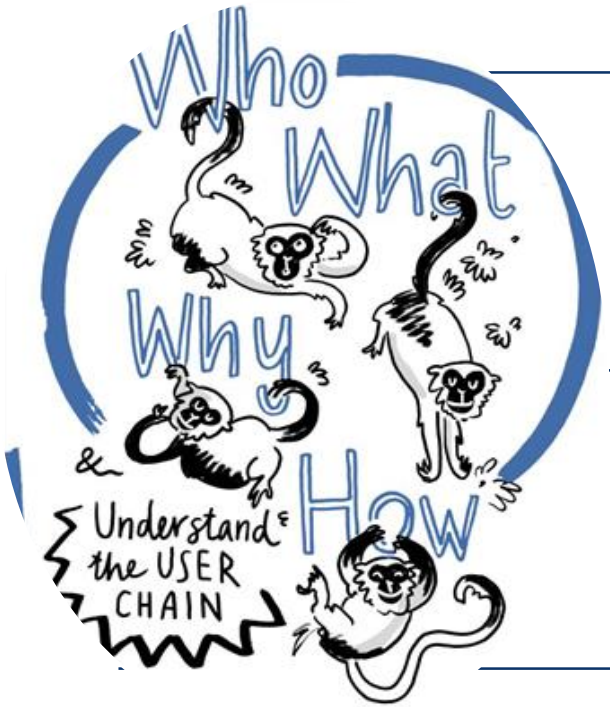
They should represent the sectorial expertise.

Their feedback will contribute to the co-development of the service.

Their sectorial network will be key to further disseminate service results.

Co-development of the climate service

User engagement in early stages of the service is crucial…



To understand the user chain

To understand the sectorial needs

To co-develop the service

Source: EUPORIAS and ECOMS FP7 EU projects

Interaction with users

How we interact with users?

Scoping workshops

Interviews

Focus groups

Participatory approaches with sectorial experts and/or farmers.

Not always easy

- A few climate info available
- All decisions are important

- No trust on climate info
- No common terminology

User interaction output (e.g. wine sector)

Weather forecast	Climate predictions			Climate projections
	Sub-seasonal	Seasonal	Decadal	
1-15 days	10-60 days	1-15 months	2-30 years	20-100 years

Siting, choice of scion variety and rootstock.

Assessment of water needs

Grow cycle management

Pathogen pressure, abiotic stresses

Crop forcing

Productivity, quality

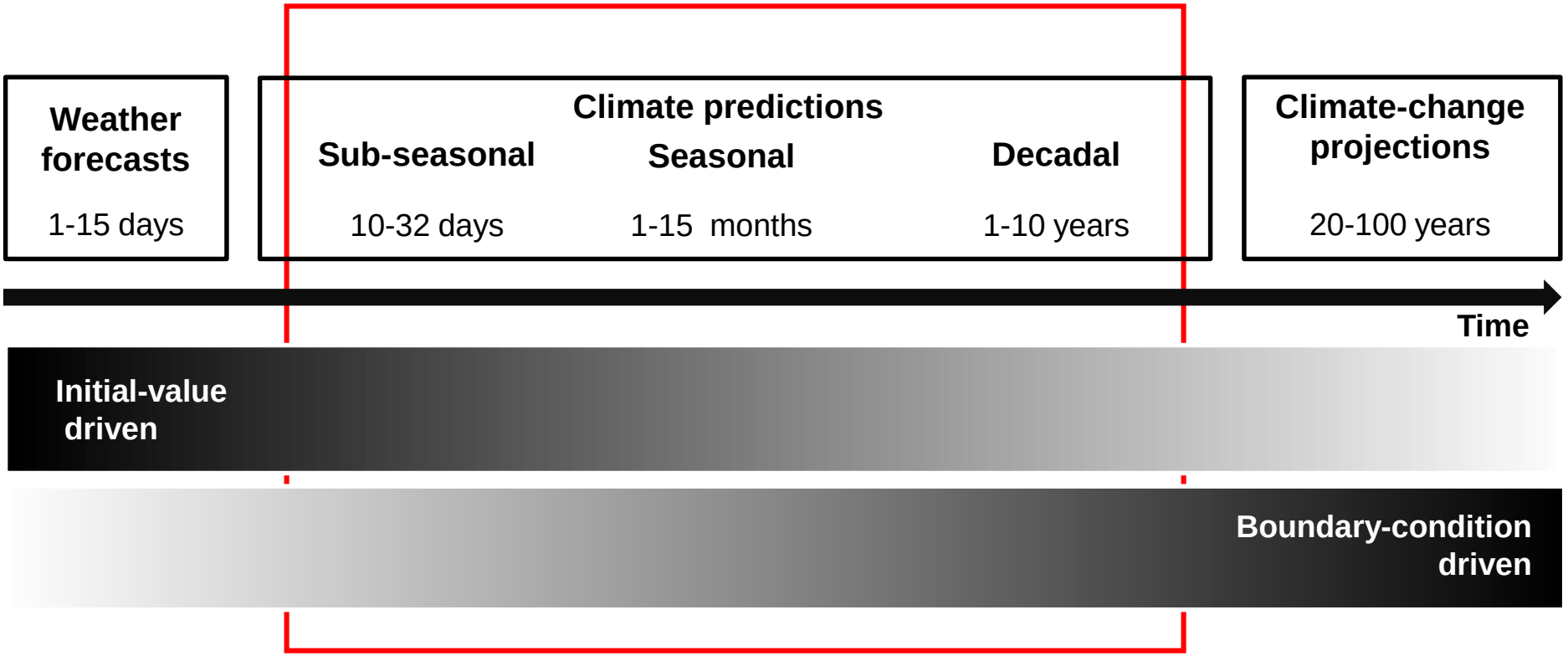
Wine style

Harvest date and duration

Time

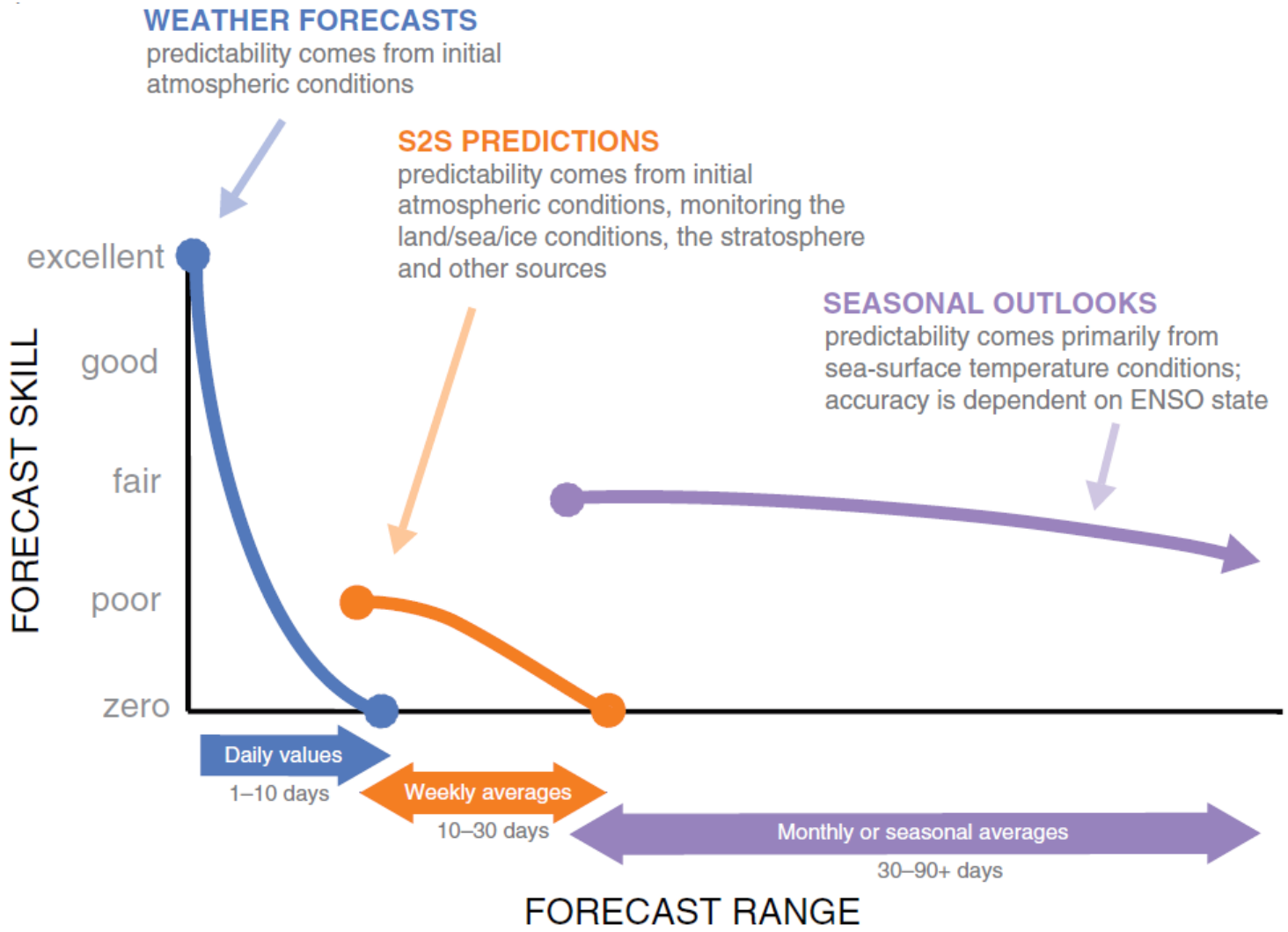
Adapted from: Antonio Graça, SOGRAPE VINHOS SA, 2014

ESS services based on climate predictions



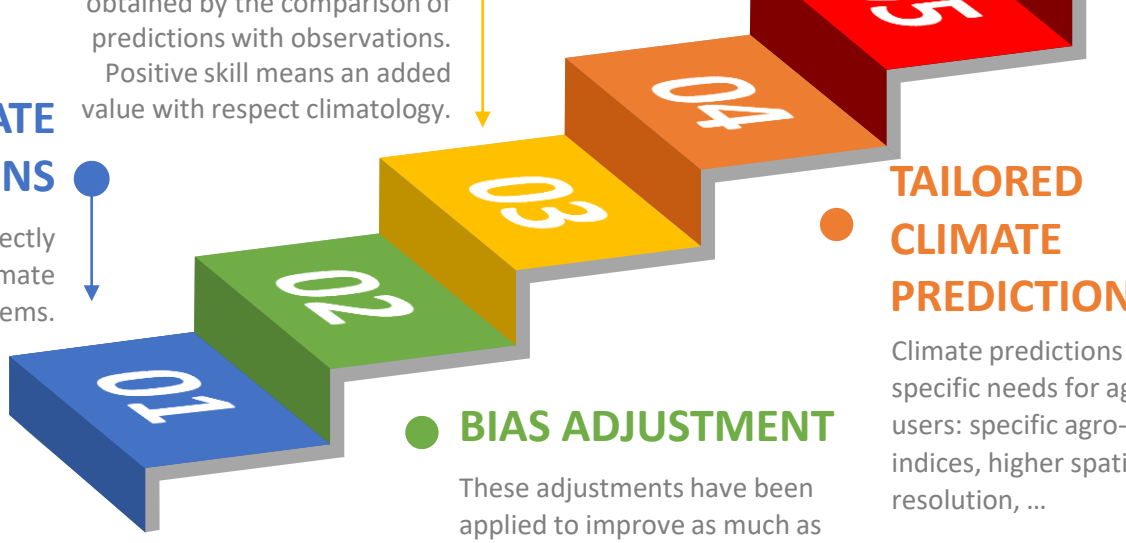
Adapted from: Meehl et al. (2009)

S2S Forecast range and skill



Qualitative estimate of forecast skill based on forecast range from short-range weather forecasts to long-range seasonal predictions, including potential sources of predictability. Relative skill is based on differing forecast averaging periods. (Source: White et al., 2017)

From climate to usable information by users



RAW CLIMATE PREDICTIONS

Predictions obtained directly from different climate prediction systems.

FORECAST QUALITY ASSESSMENT

Several skill scores have been obtained by the comparison of predictions with observations. Positive skill means an added value with respect climatology.

CLIMATE SERVICE PRODUCT

The final products from the service provide useful information for specific needs.

BIAS ADJUSTMENT

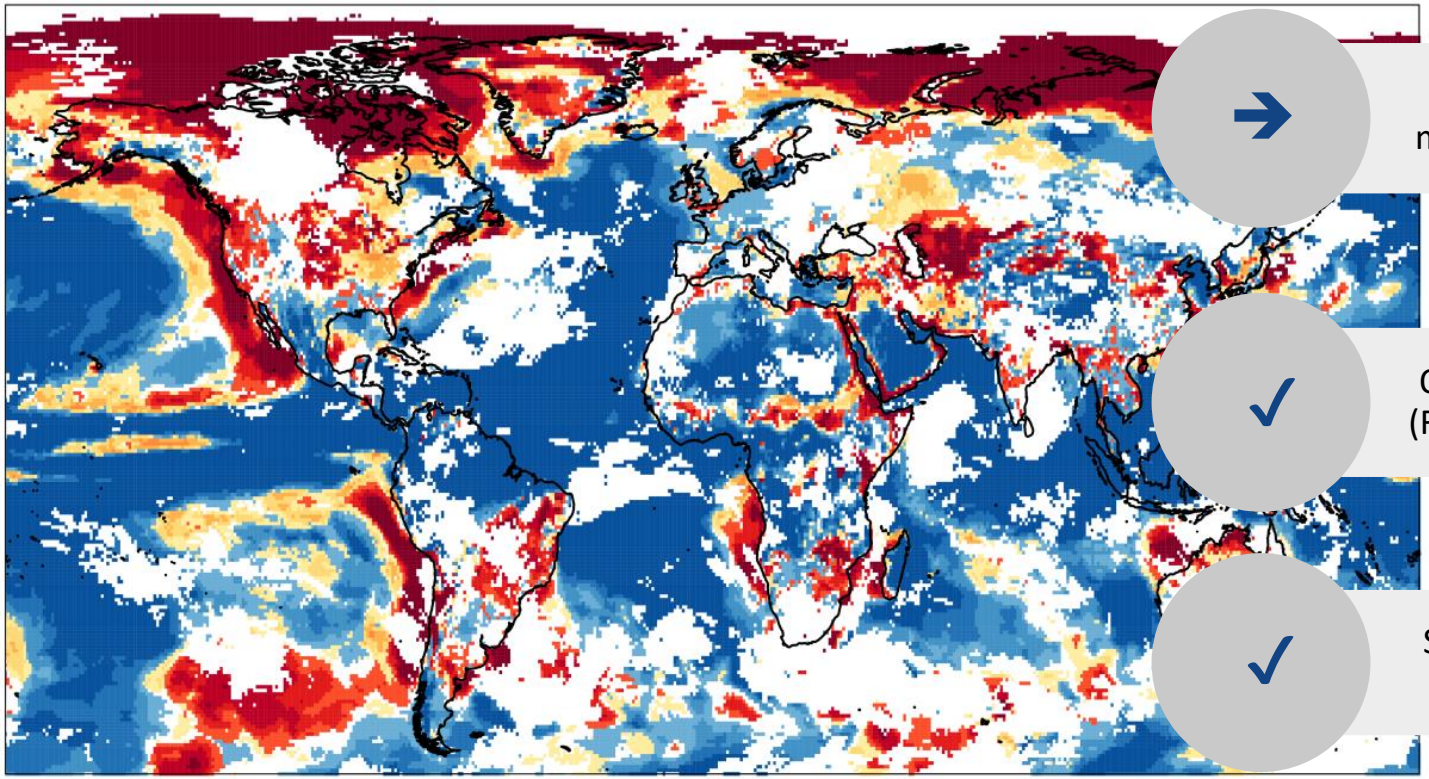
These adjustments have been applied to improve as much as possible reliability of the climate predictions.

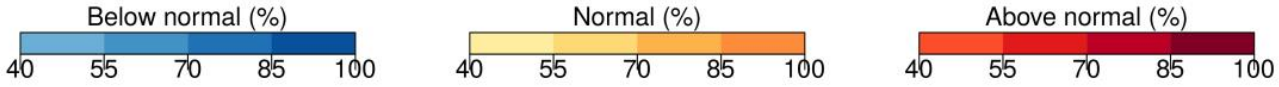
TAILORED CLIMATE PREDICTIONS

Climate predictions tailored to specific needs for agricultural users: specific agro-climatic indices, higher spatial resolution, …

Climate service product: most likely category map

Seasonal prediction of most probable category of temperature for May 2016 with ECMWF S4





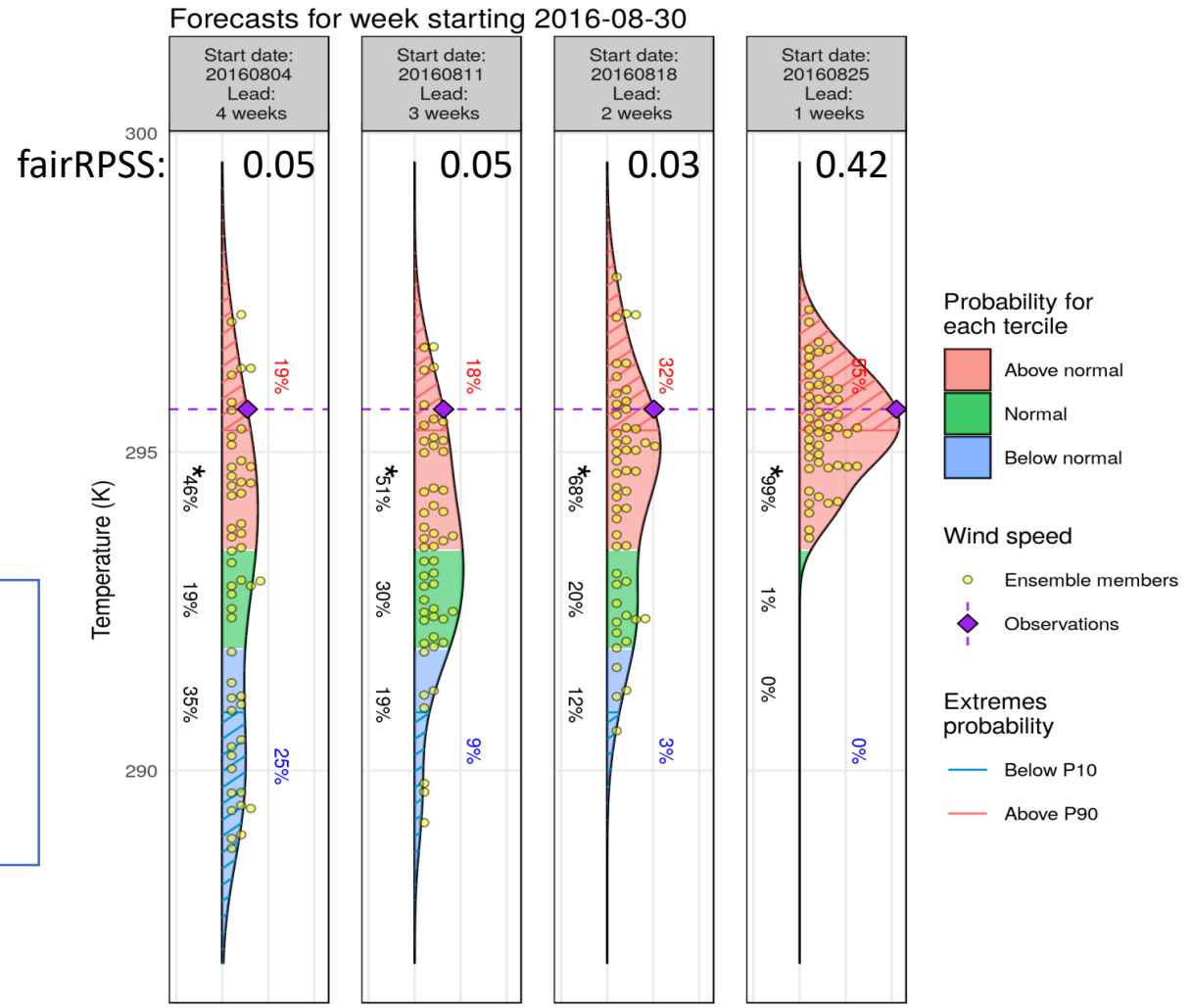
→ How will be the next month/season temperature?

✓ Only areas with positive skill (RPSS) are shown to the users

✓ Summarising information in one map only

Climate service product: temperature predictions for an specific point

Sub-seasonal predictions of temperature for 1st week of September 2016 with different lead times based on ECMWF monthly prediction system



System: ECMWF monthly prediction system
Reanalysis: ERA-Interim
Bias adjusted –calibrated
Hindcast: 1996-2015
Lat= 40.5 N/Lon = 358.5 E

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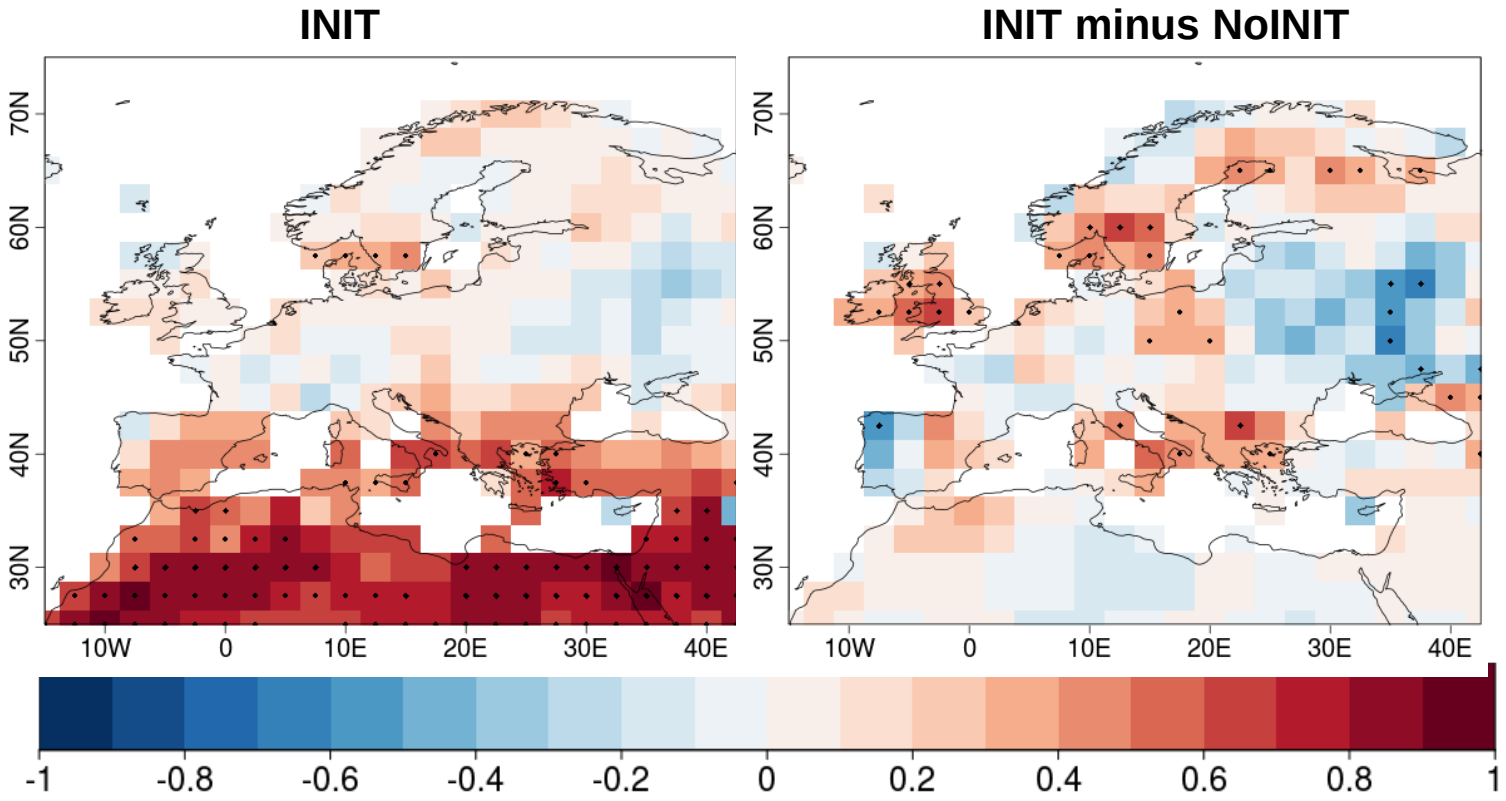
Example of climate service product: drought index (SPEI6)

Correlation between predicted and observed SPEI6 index averaged over 2 to 5 years for the month of August with EC-EARTH decadal predictions



INIT: Initialised decadal predictions
NoINIT: Non-initialised climate simulations

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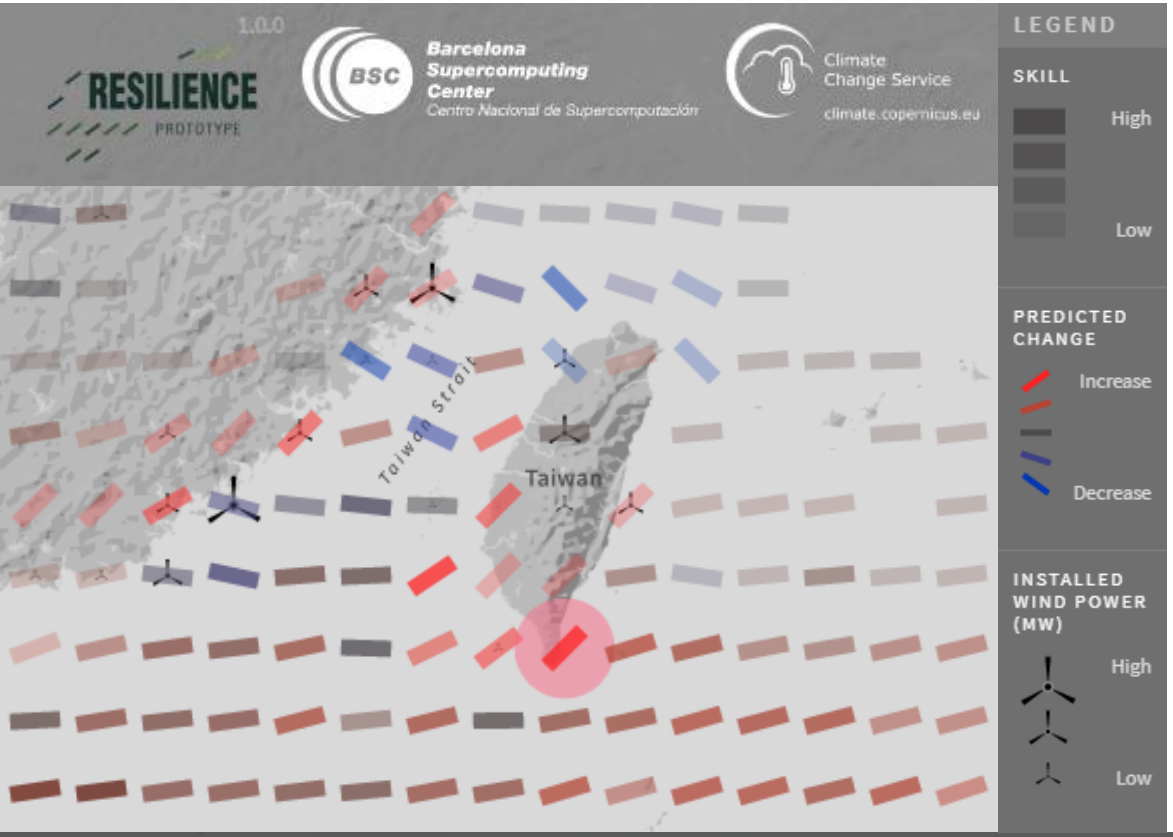
RESILIENCE tool: operational predictions



www.bsc.es/ess/resilience

and more…

Climate Services developed by ESS

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Agriculture

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Few businesses are as dependent on the weather as farming. Variables such as temperature, precipitation or wind speed are key for agricultural production, affecting every aspect in the management of agricultural operations. Applying High Performance Computing (HPC), the BSC produces climate information and services useful for the agricultural community. This information can be used to support your decision-making during the crop phenological cycle and to guarantee an optimal production in the face of current and future climate variability.

- Sub-seasonal to seasonal predictions
- Decadal predictions
- Climate projections

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Thank you!

Questions?

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