



S2S4E

Climate Services
for Clean Energy

Sub-seasonal to seasonal climate predictions for energy

Boosting renewables in the energy mix

I Vigo, I. Christel, A Soret, J Cannata, A Manrique-Suñén, LI Lledó, V Torralba, N Cortesi, LI Palma, N González-Reviriego and F J Doblas-Reyes

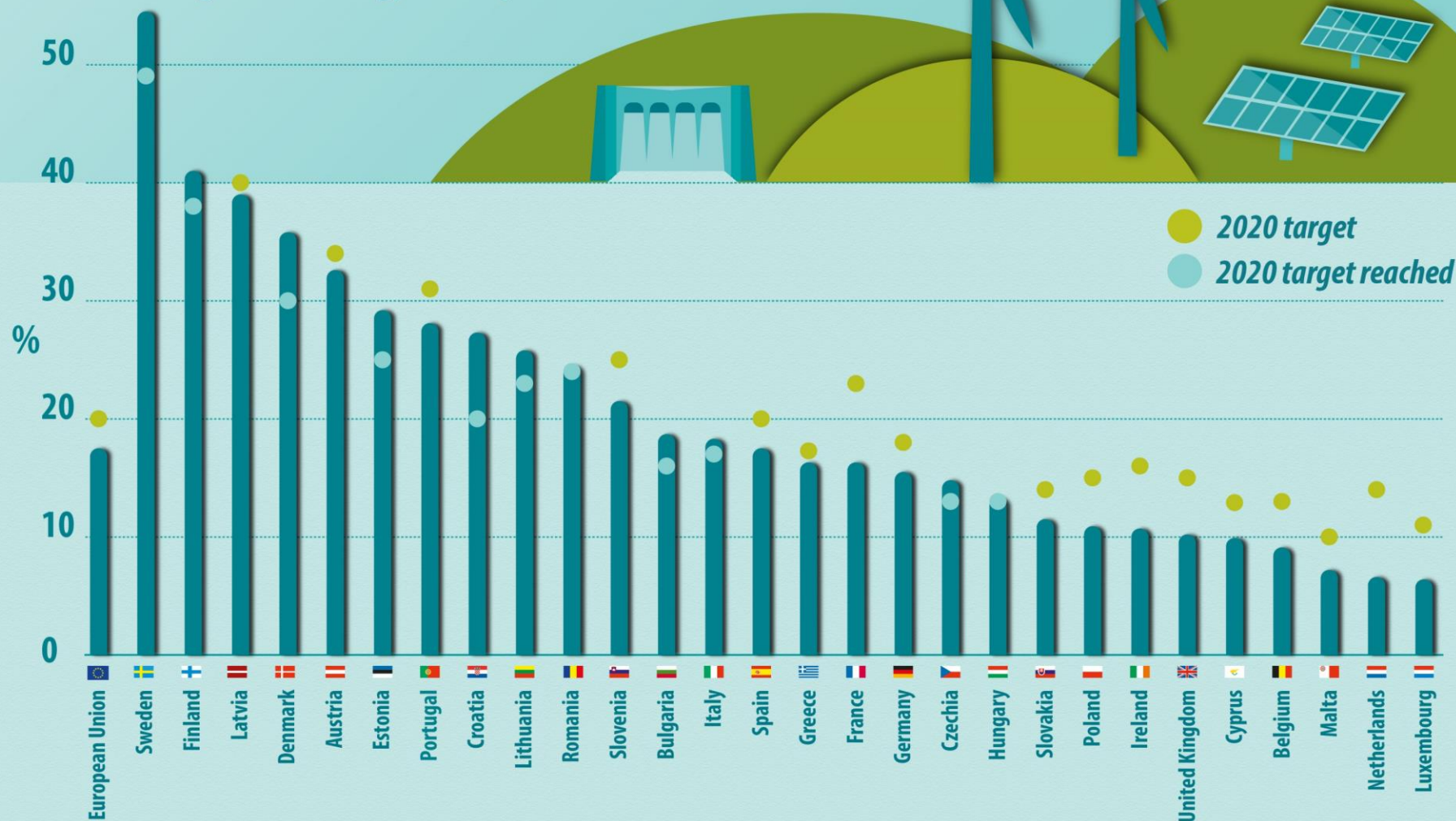
Barcelona Supercomputing Center



*This project has received funding from the Horizon 2020 programme under grant agreement n°776787.
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Share of energy from renewable sources in the EU Member States

(2017, in % of gross final energy consumption)

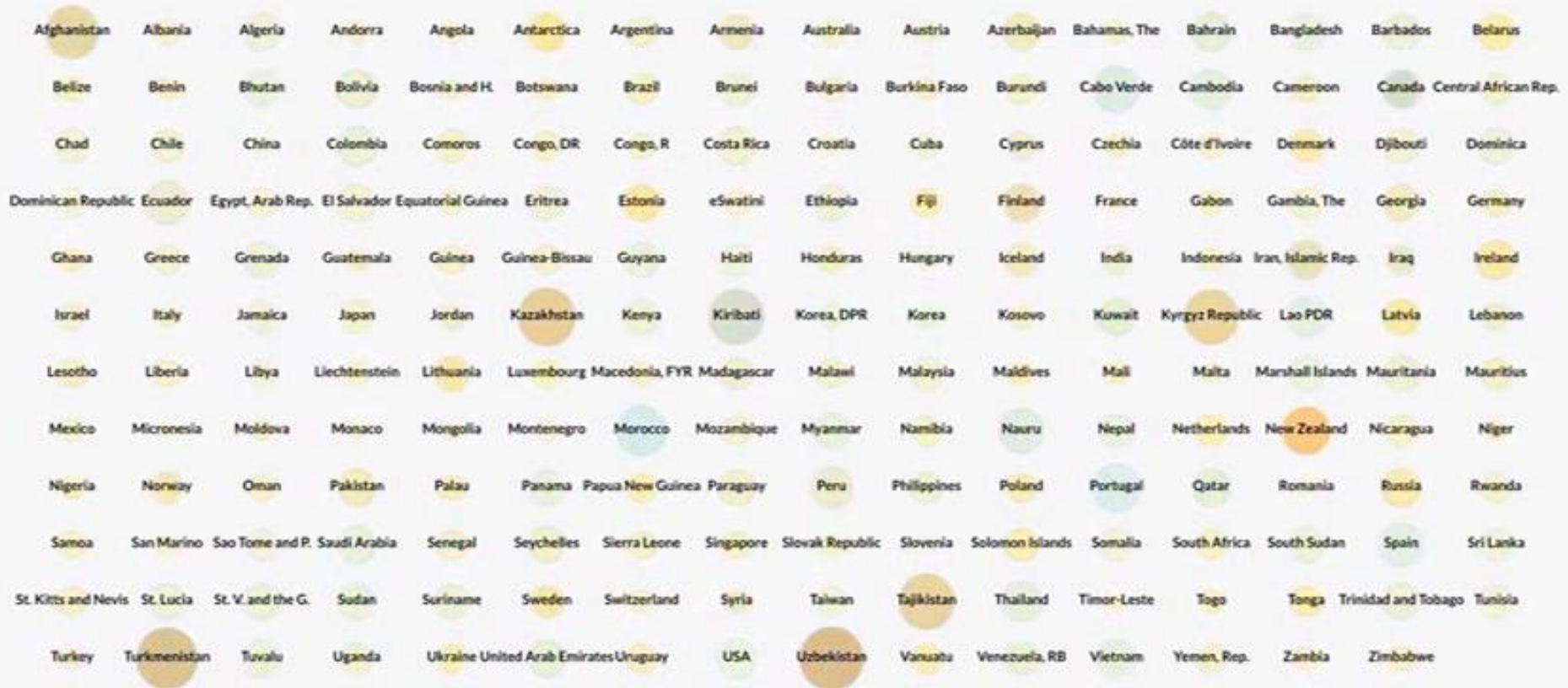




... and climate change too, but what about climate variability?

Temperature Anomalies by Country
Years 1880 - 2017

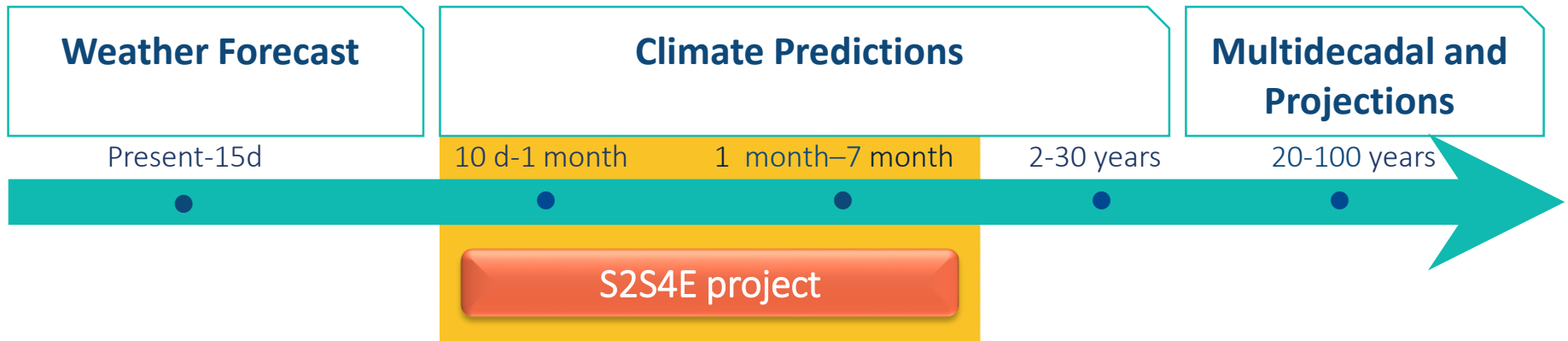
1971



Data Source:
NASA GISS, GISTEMP Land-Ocean Temperature Index (LOTI), ERSSTv5, 1200km smoothing
<https://data.giss.nasa.gov/gistemp/>
Average of monthly temperature anomalies. GISTEMP base period 1951-1980.

Video license: CC-BY-4.0
Antti Lipponen (@anttilip)

Link: <https://youtu.be/PhbdyNnUliM>



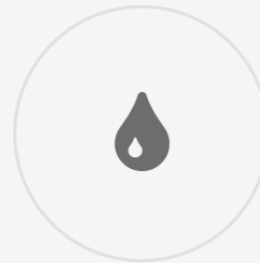
WIND POWER

Wind speed and capacity factor predictions



SOLAR POWER

Solar radiation and capacity factor predictions



HYDROPOWER

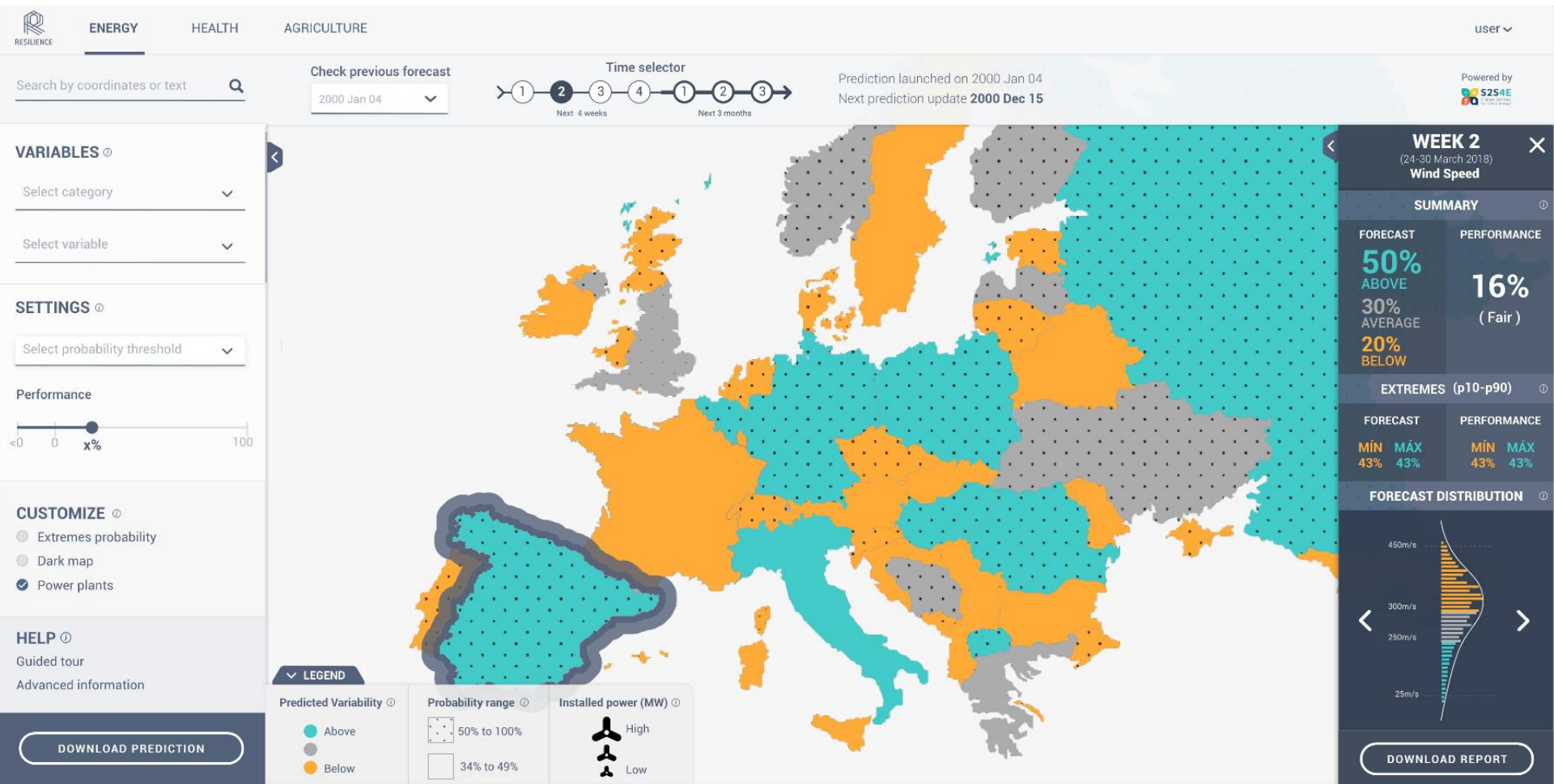
Prediction and changes in inflow predictions



ENERGY DEMAND

Temperature and consumption rates predictions

Decision Support Tool





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2000 Jan 04



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Next prediction update 2000 Dec 15

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VARIABLES

Select category

Select variable

SETTINGS

Select probability threshold

Performance



CUSTOMIZE

- Extremes probability
- Dark map
- Power plants

HELP

- Guided tour
- Advanced information

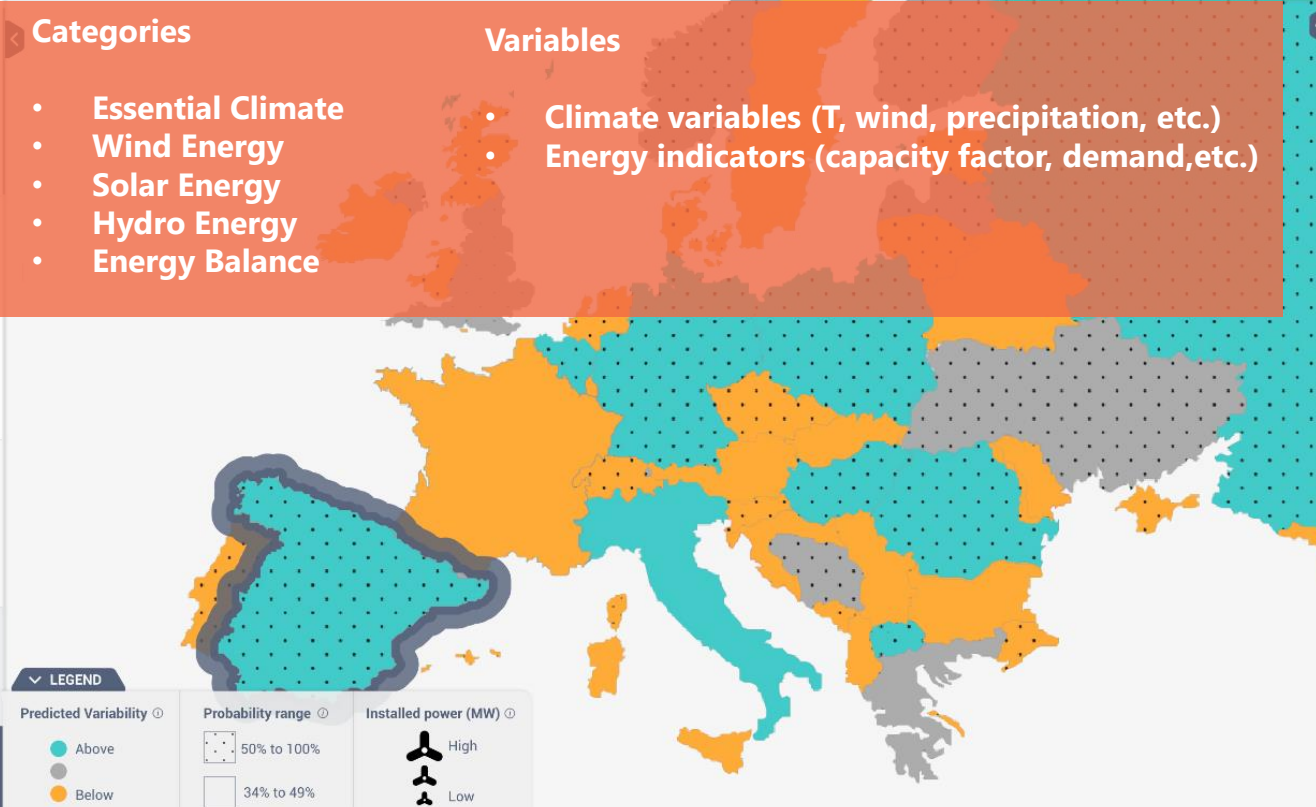
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Categories

- Essential Climate
- Wind Energy
- Solar Energy
- Hydro Energy
- Energy Balance

Variables

- Climate variables (T, wind, precipitation, etc.)
- Energy indicators (capacity factor, demand, etc.)



LEGEND

Predicted Variability	Probability range	Installed power (MW)
● Above	 50% to 100%	High
● Below	 34% to 49%	Low

WEEK 2
(24-30 March 2018)
Wind Speed

SUMMARY

FORECAST	PERFORMANCE
50% ABOVE 30% AVERAGE 20% BELOW	16% (Fair)

EXTREMES (p10-p90)

FORECAST	PERFORMANCE
MIN 43% MAX 43%	MIN 43% MAX 43%

FORECAST DISTRIBUTION

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Select category

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Performance

0 100

CUSTOMIZE

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HELP

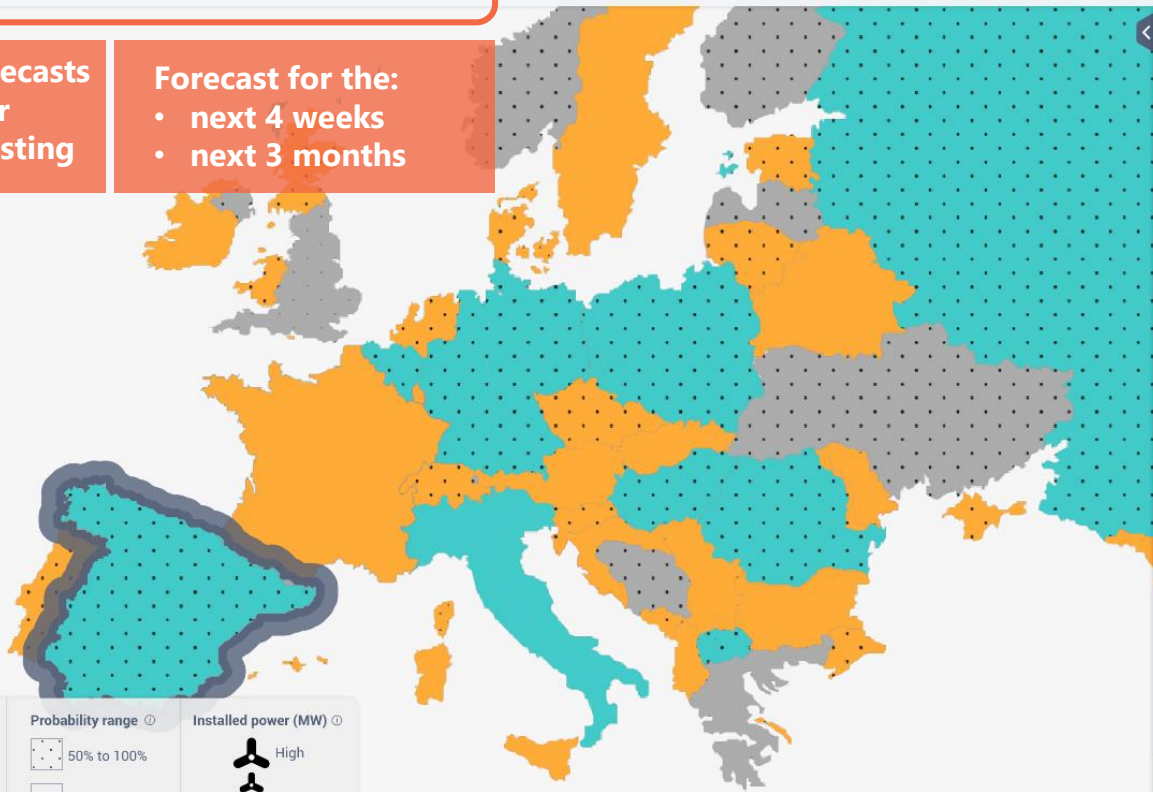
Guided tour

Advanced information

Past forecasts for Backtesting

Forecast for the:

- next 4 weeks
- next 3 months



LEGEND

<p>Predicted Variability</p> <ul style="list-style-type: none"> Above Below 	<p>Probability range</p> <ul style="list-style-type: none"> 50% to 100% 34% to 49% 	<p>Installed power (MW)</p> <ul style="list-style-type: none"> High Low
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WEEK 2 (24-30 March 2018) Wind Speed

SUMMARY

<p>FORECAST</p> <p>50% ABOVE</p> <p>30% AVERAGE</p> <p>20% BELOW</p>	<p>PERFORMANCE</p> <p>16% (Fair)</p>
--	--------------------------------------

EXTREMES (p10-p90)

<p>FORECAST</p> <p>MIN 43%</p> <p>MAX 43%</p>	<p>PERFORMANCE</p> <p>MIN 43%</p> <p>MAX 43%</p>
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FORECAST DISTRIBUTION

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2000 Jan 04 ▾



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VARIABLES

Select category ▾

Select variable ▾

SETTINGS

Select probability threshold ▾



CUSTOMIZE

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WEEK 2
(24-30 March 2018)
Wind Speed

SUMMARY

FORECAST	PERFORMANCE
50% ABOVE	16% (Fair)
30% AVERAGE	
20% BELOW	

EXTREMES (p10-p90)

FORECAST	PERFORMANCE
MIN 43%	MIN 43%
MAX 43%	MAX 43%

FORECAST DISTRIBUTION

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Prediction launched on 2000 Jan 04
Next prediction update **2000 Dec 15**



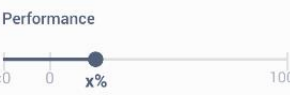
VARIABLES ⓘ

Select category ▾

Select variable ▾

SETTINGS ⓘ

Select probability threshold ▾



CUSTOMIZE ⓘ

- Extremes probability
- Dark map
- Power plants

HELP ⓘ

- Guided tour
- Advanced information



LEGEND

Predicted Variability ⓘ	Probability range ⓘ	Installed power (MW) ⓘ
Below	50% to 100% 34% to 49%	High Low

WEEK 2 (24-30 March 2018) Wind Speed

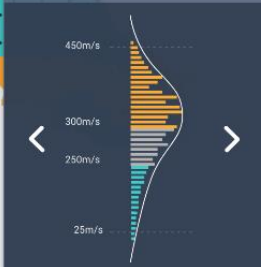
SUMMARY ⓘ

FORECAST	PERFORMANCE
50% ABOVE 30% AVERAGE 20% BELOW	16% (Fair)

EXTREMES (p10-p90) ⓘ

FORECAST		PERFORMANCE	
MIN	MAX	MIN	MAX
43%	43%	43%	43%

FORECAST DISTRIBUTION ⓘ



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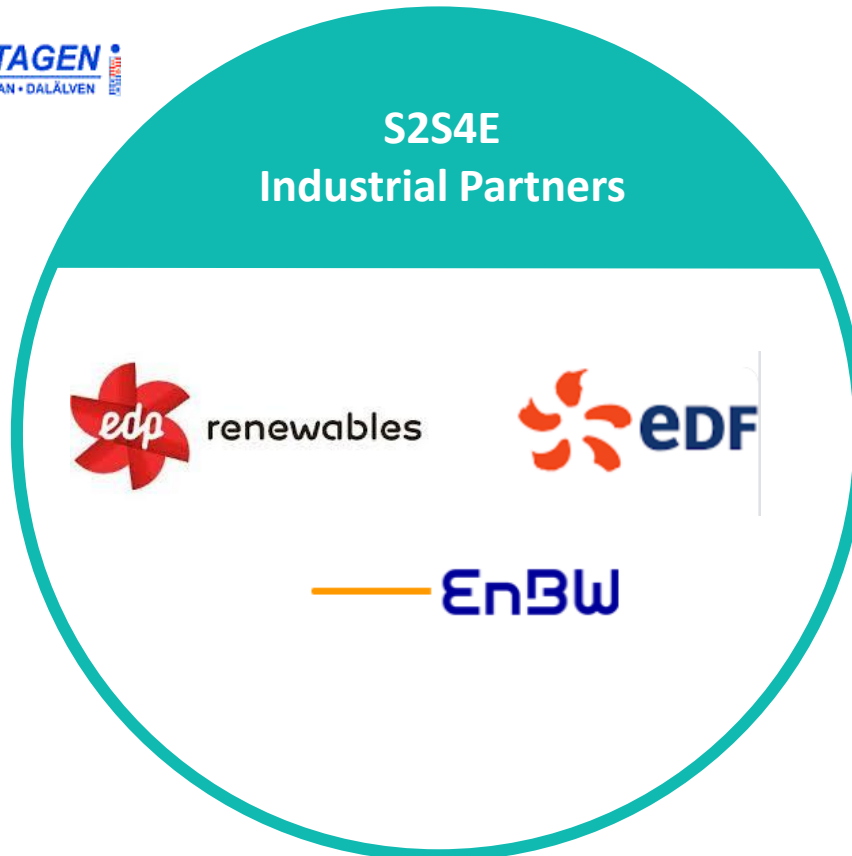
← Access to data reports and advanced climate explanations →

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UMEÄLVEN • ÄNGERMANÄLVEN • INDALSÄLVEN • LJUNGAN • LJUSNAN • DALÄLVEN



...and external stakeholders



17-21 JUNE 2019

EU SUSTAINABLE ENERGY WEEK

SHAPING EUROPE'S ENERGY FUTURE



Official EUSEW 2019 Side Event

DST LAUNCH EVENT

Thursday, June 20th, 14:00h

at

Norway House, Brussels

5 minutes walk from Berlaymont

Register at s2s4e@bsc.es

Thank you

Ilaria.vigo@bsc.es



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Climate Services
for Clean Energy



Public reports will be available for download on our website:
www.s2s4e.eu



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