S2S4E
Climate Services for Clean Energy

OUTLOOK

16 December, 2019

with

Sub-seasonal forecasts

for the weeks of
16 – 22 December, 23 – 29 December,
30 December – 5 January, 6 -12 January

&

Seasonal forecasts

for the months of
January, February, March 2020

The beta version of S2S4E Decision Support Tool (DST) is an operational climate service that integrates, for the first time, sub-seasonal to seasonal climate predictions with renewable energy production and electricity demand.

Find examples of how the DST forecasts can inform the energy sector in the

Case Studies Factsheets

available at:

www.S2S4E.eu

This outlook presents forecasts available on the DST on the 16th of December for the coming four weeks and next three months. These S2S4E forecasts were made by postprocessing the climate prediction systems: NCEP CFSv2 (sub-seasonal) and ECMWF SEAS5 (seasonal), following the methodology described in the **advanced help** of the DST.

▽ OUTLOOK USER GUIDE

PREDICTED TERCILE

- 🔴 Above
- ⚫ Normal
- 🔵 Below

The forecast information provided is probabilistic. Instead of one single model realisation, several realisations are considered (ensemble members), providing a set of several possible outcomes (48 for NCEP CFSv2 and 51 for ECMWF SEAS5). This information is summarised and transmitted in the form of probabilities. Three equiprobable categories (terciles) have been used: below normal, normal and above normal. Each one of these tercile categories contains one third (33.3%) of the events over the reference period. The forecasted probability corresponds to the percentage of ensemble members predicting below normal, normal or above normal conditions, based on the past climatology.

PROBABILITY RANGE

- ⚫ 50% to 100%
- • 34% to 49%

As seen in the DST, regions where the predicted probability of the most likely tercile equals or is higher than 50% are represented with a bigger symbol, to highlight areas of larger probability. Users can customise the exact percentage of predicted probability (from 0 to 100%) in the DST.

EXTREMES

- 🔺 Max (p90)
- 🔻 Min (p10)

To provide information about the probability of having very high or very low climate conditions, the DST displays the percentage of members under the 10th percentile and the percentage of members exceeding the 90th percentile. These 10th and 90th percentiles have been computed from the climatological period. Extreme events show with the triangle symbol when the probability of an extreme event occurring is over 25%

SKILL SCORES

In the maps presented in this outlook, only regions with positive skill are shown. Skill scores below 0 are defined as unskilful, those equal to 0 are equal to the climatology forecast, and anything above 0 is an improvement upon climatology, up to 1, which indicates a "perfect" forecast. In the DST these values have been expressed as percentages, where a skill of 1 would equal to 100% skill. FairRPSS for terciles and Brier Skill Scores for extremes are used.

@ If you have queries or feedback you can contact us at:

s2s4e@bsc.es

The DST outlooks are released once per month and available at:

s2s4e.eu/climate-services/outlooks

Subscribe to the outlooks and register to the DST at:

www.s2s4e.eu/dst

![S2S4E Climate Services for Clean Energy]

Temperature forecasts

Predicted tercile
- Above
- Normal
- Below

Probability range
- 50% to 100%
- 34% to 49%

Extremes
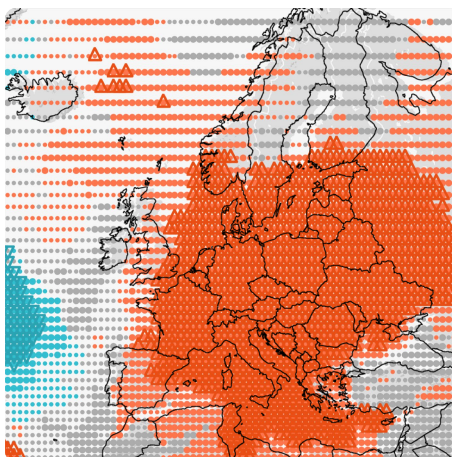- Max (p90)
- Min (p10)

Legend

SUB-SEASONAL

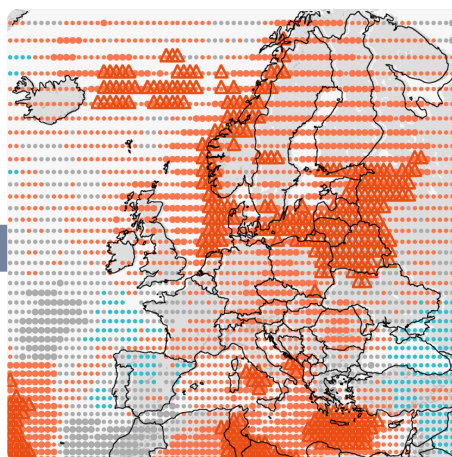Prediction system used:
NCEP CFSv2

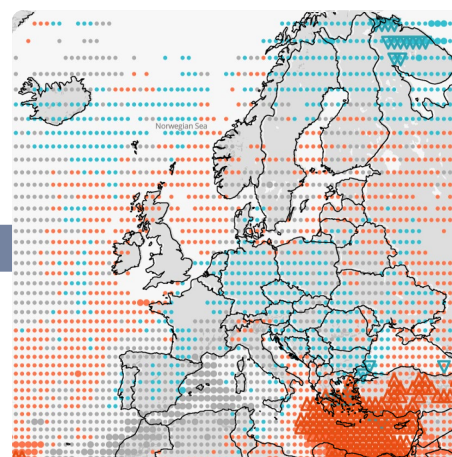Maps show areas where skill (fRPSS) > 0

16 – 22 December

Very high probability of *above normal* temperatures in most of Europe, **high** probability in Scandinavia (skill 30-40%).
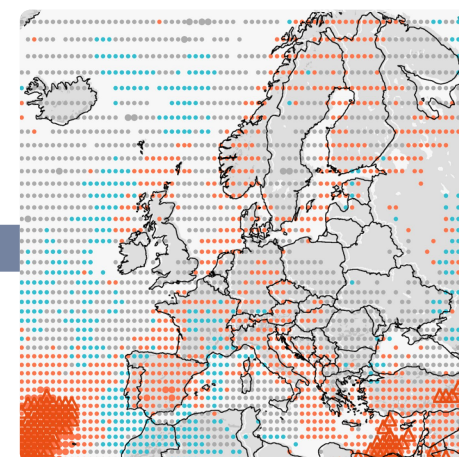
23 – 29 December

High probability of *above normal* temperatures in the North Sea and the Baltic Sea, Scotland, Scandinavian countries and in the Balkan region (skill ~20%).

30 December – 5 January

Enhanced probability of *below normal* temperatures in central Europe. **Enhanced** to **high** probability of *above normal* temperatures in the eastern Mediterranean.
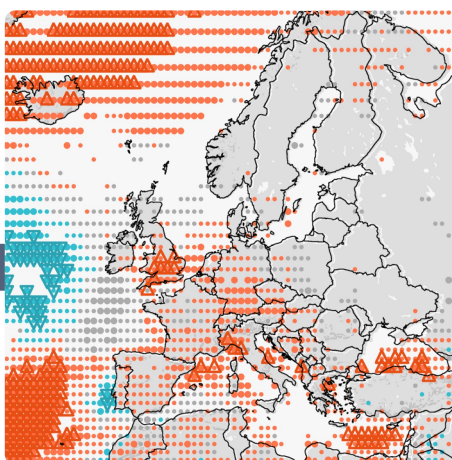
6 – 12 January

Normal to above normal temperatures expected for Europe.
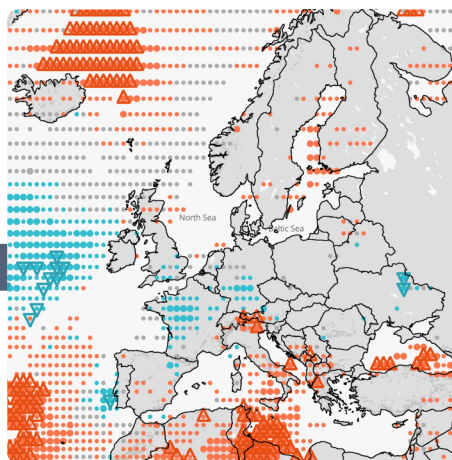
SEASONAL

Prediction system used:
ECMWF SEAS5
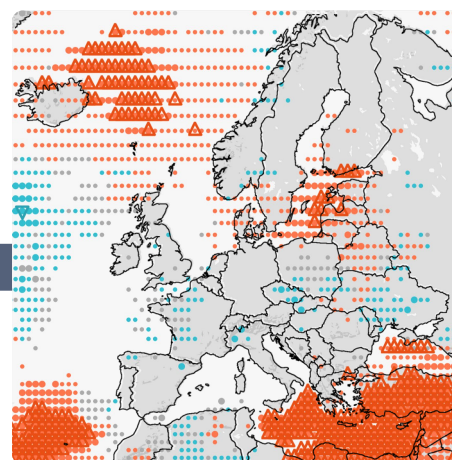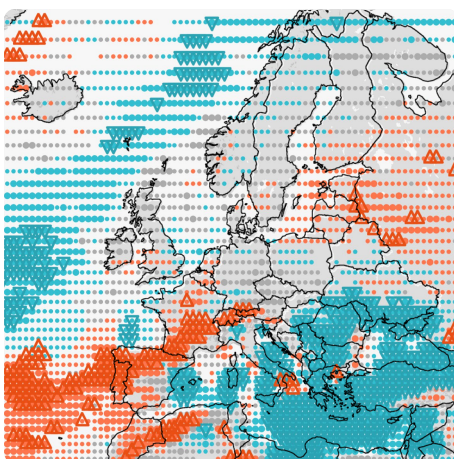
Maps show areas where skill (fRPSS) >0

January 2020

High probability of *above normal* temperatures in Central to Western Europe (skill 0-10%).

February 2020

High probability of *below normal* temperatures in France (skill~5%) and Germany.

March 2020

Enhanced probability of *below normal* temperatures may persist in France, whereas **high** probability of *above normal* temperatures are noted in the Baltic.

Browse the global forecasts in the DST:

www.S2S4E.eu/dst

S2S4E Climate Services for Clean Energy

Probability terms
Enhanced : 34% - 49%
High : 50% - 70% :
Very High : Greater than 70%

Predicted tercile
- Above
- Normal
- Below

Probability range
- 50% to 100%
- 34% to 49%

Extremes
- Max (p90)
- Min (p10)

Legend
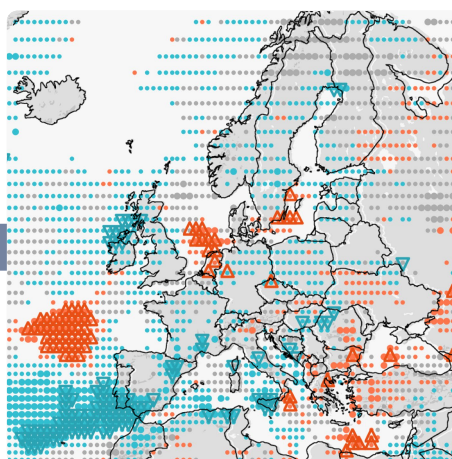
SUB-SEASONAL

Prediction system used:
NCEP CFSv2

Maps show areas where skill (fRPSS) > 0

16 – 22 December

Very high probability of above normal wind speeds in the west of the Iberian Peninsula and south west of France (20-30% skill). **Very high** probability of below normal wind speed in Balkan region and Turkey.

23 – 29 December
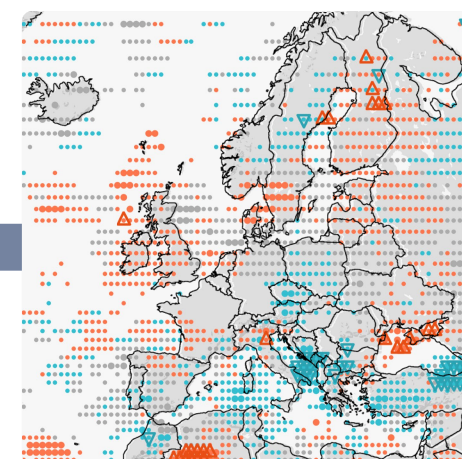
Generally wind speeds are expected to be below normal, especially south west of Spain.

30 December – 5 January
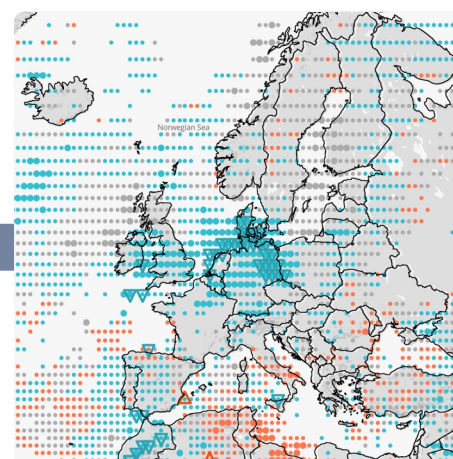
High probability of below normal wind speeds in the UK, northern Germany and Denmark (skill ~5%).

6 – 12 January
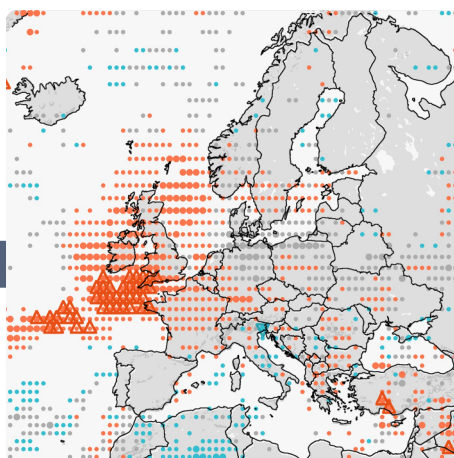
No clear signals, except a region of high probability of above normal wind speed in southern Sweden (~20% skill).
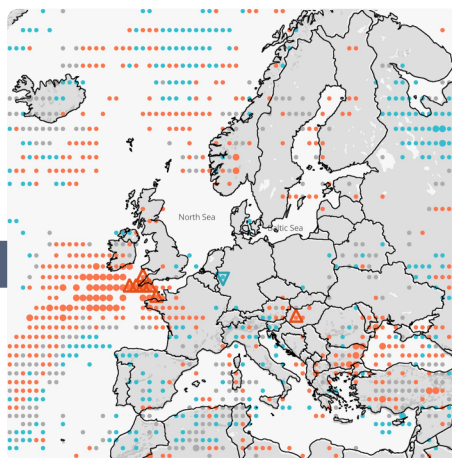
SEASONAL

Prediction system used:
ECMWF SEAS5

Maps show areas where skill (fRPSS) > 0

January 2020

High probability of above normal winds in North-Western Europe, especially British Isles, Northern France and Southern Scandinavia (skill ~10%).

February 2020

High probability of above normal winds to persist in the South of the British Isles and Western France. **High** probability of above normal winds also observed in the Black Sea region.

March 2020
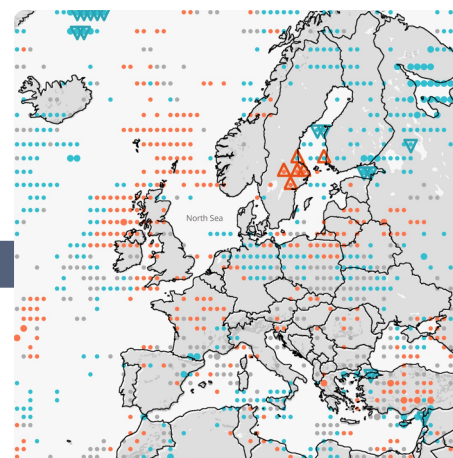
Enhanced probability of above normal winds in the North of the British Isles, whereas enhanced probability of below normal winds are noted in Germany through Ukraine.

Browse the global forecasts in the DST:

www.S2S4E.eu/dst

Precipitation forecasts

Probability terms

Enhanced : 34% - 49%
High : 50% - 70% :
Very High : Greater than 70%

Predicted tercile
- Above
- Normal
- Below

Probability range
- ⬤ 50% to 100%
- • 34% to 49%

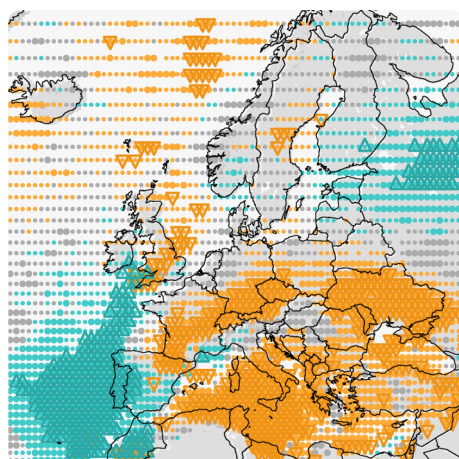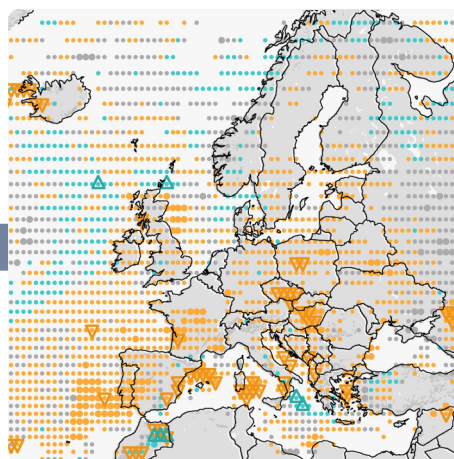**Extremes**
- 🔺 Max (p90)
- 🔻 Min (p10)

Legend

SUB-SEASONAL

Prediction system used:
NCEP CFSv2

Maps show areas where skill (fRPSS) > 0

16 – 22 December

Very high probability of below normal precipitation in the central Mediterranean region, southern Germany and France. High probability of above normal precipitation in the western Iberian peninsula (skill 10-20%).
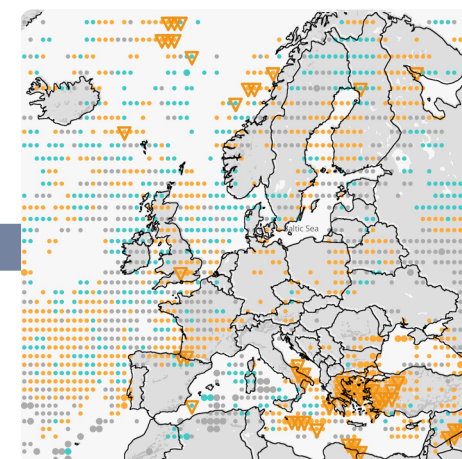
23 – 29 December

Enhanced probability of below normal precipitation in some areas of Europe (skill 0 - 10%)

30 December – 5 January
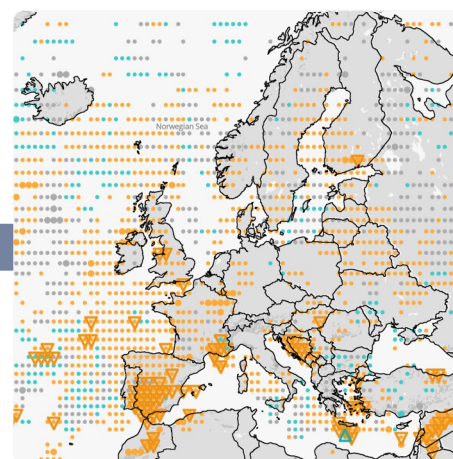
Enhanced probability of below normal precipitation in some areas of Europe (skill 0-10%)
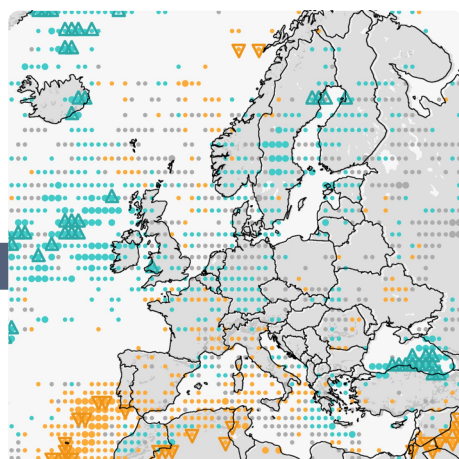
6 – 12 January

High probability in below normal precipitation in Greece and Turkey (skill 0-5%).
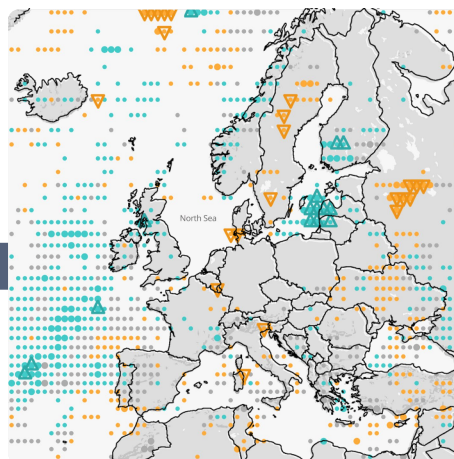
SEASONAL

Prediction system used:
ECMWF SEAS5

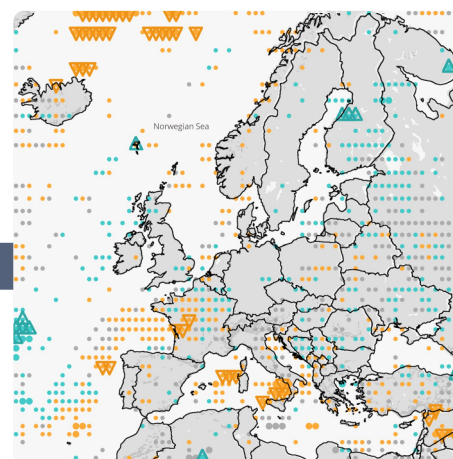Maps show areas where skill (fRPSS) > 0

January 2020

Enhanced to **high** probability of above normal precipitation over extended areas in Central and Northern Europe (skill 0-10%).

February 2020

Enhanced to **high** probability of above normal precipitation in the Atlantic façade and Baltic sea. No clear patterns noted in Europe mainland.

March 2020

Enhanced to **high** probability of below normal precipitation in Southern Italy, and the Bay of Biscay through France (skill 0-5%).

Browse the global forecasts in the DST:

www.S2S4E.eu/dst

Solar radiation forecasts

S2S4E Climate Services for Clean Energy

Probability terms

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High : 50% - 70% :
Very High : Greater than 70%

Predicted tercile
- Above
- Normal
- Below

Probability range
- 50% to 100%
- 34% to 49%

Extremes
- Max (p90)
- Min (p10)

Legend

SUB-SEASONAL

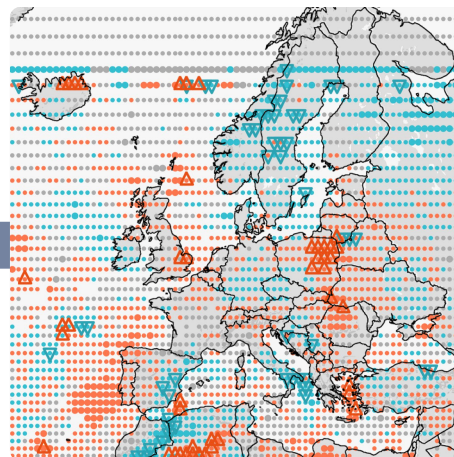Prediction system used:
NCEP CFSv2

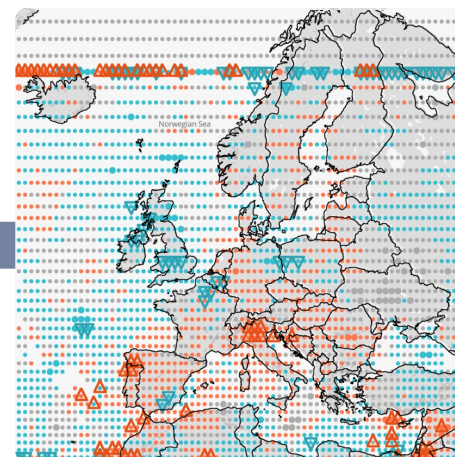Maps show areas where skill (fRPSS) > 0

16 – 22 December
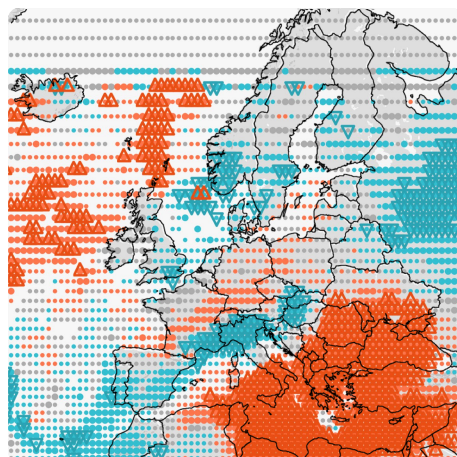
Very high probability of above normal solar radiation in eastern Mediterranean Tunisia, Lybia, Greece, Turkey (~20 % skill).
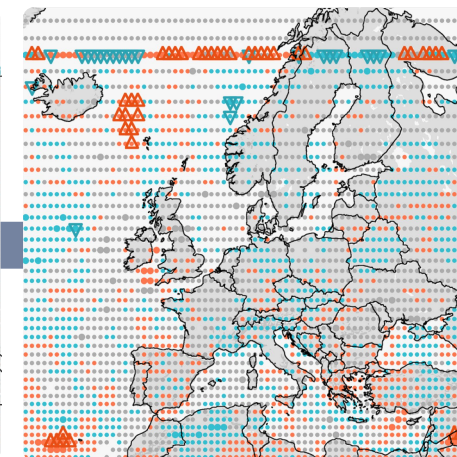
23 – 29 December

High probability of above normal radiation in Romania, east of Ukraine, Belarus and Poland. **Enhanced** probability of above normal radiation in the west of the Iberian peninsula.

30 December – 5 January

Enhanced probability of above normal radiation in the Mediterranean countries (skill ~5%).
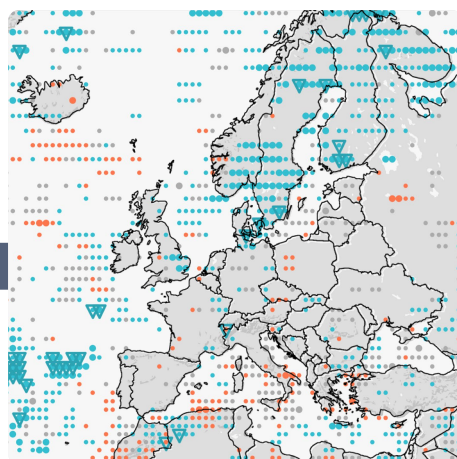
6 – 12 January

No clear signals.

SEASONAL
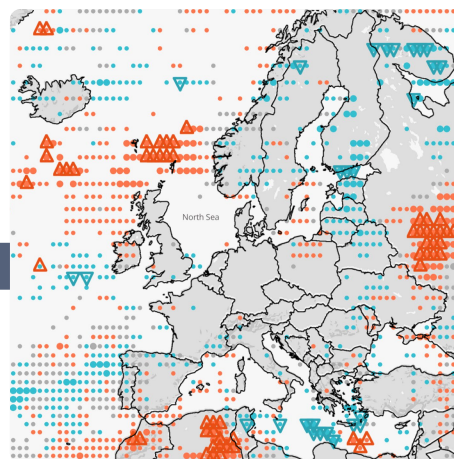
Prediction system used:
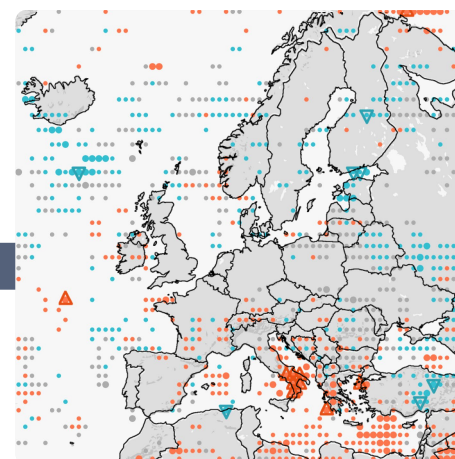ECMWF SEAS5

Maps show areas where skill (fRPSS) > 0

January 2020

High probability of below normal solar radiation in Southern Scandinavia and North Sea region.

February 2020

Enhanced to **high** probability of below normal solar radiation in many areas of Scandinavia, Baltic countries and Western Iberia.

March 2020

Enhanced to **high** probability of above normal solar radiation across the Mediterranean.

Browse the global forecasts in the DST:

www.S2S4E.eu/dst