S2S4E
Climate Services for Clean Energy

OUTLOOK

16 September 2020

with

Sub-seasonal forecasts

for the weeks of
14 - 20 September, 21 - 27 September,
28 September - 4 October, and 5 - 11 October 2020

&

Seasonal forecasts

for the months of
October, November and December 2020

The S2S4E Decision Support Tool (DST) v1.5.1 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 September 2020 for the coming four weeks and next three months. These S2S4E forecasts were made by post-processing the climate prediction systems ECMWF-Ext-ENS (sub-seasonal) and ECMWF SEAS5 (seasonal), following the methodology described in the **advanced help** of the DST.

SUMMARY

Hot and sunny September in Europe

Most of Europe will see hot and sunny conditions this week (14-20 September). Hot weather with temperature extremes will persist in the Mediterranean until the end of September and early October, particularly in Italy, Greece and Cyprus.

Less windy than normal in North Sea

Below normal winds are predicted in the North Sea in September and October. The north of France and the English Channel will also see less windy conditions than normal in November.

Dry September and October, with reduced inflows

Below normal precipitation is predicted in many parts of Europe until the end of September and in October. In addition, below normal inflows are expected throughout most of Europe until October, except for northern Scandinavia, and some regions of Poland and Switzerland.

More snow than normal in late autumn

Above normal snow conditions are predicted in parts of Finland and Sweden, and in eastern Europe (particularly the Baltic region) in November and December.

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

s2s4e@bsc.es

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

s2s4e.eu/climate-services/outlooks

Subscribe to the outlooks and register to the DST at:

www.s2s4e.eu/dst

This project has received funding from the Horizon 2020 programme under grant agreement n°776787. The content of this report reflects only the author's view. The European Commission is not responsible for any use that may be made of the information it contains.

S2S4E Climate Services for Clean Energy

Probability terms

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

Temperature forecasts

Predicted tercile
- Above
- Normal
- Below

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

Extremes
- Max (p90)
- Min (p10)

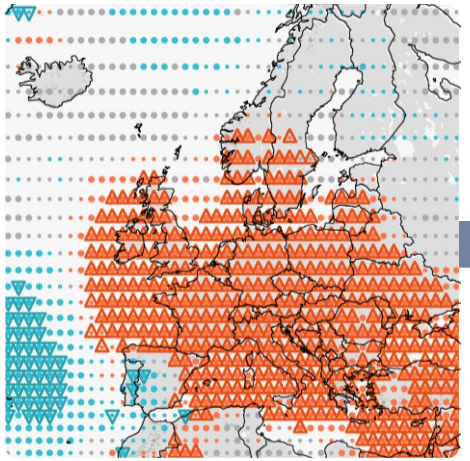
Legend

SUB-SEASONAL

Prediction system used: ECMWF-Ext-ENS

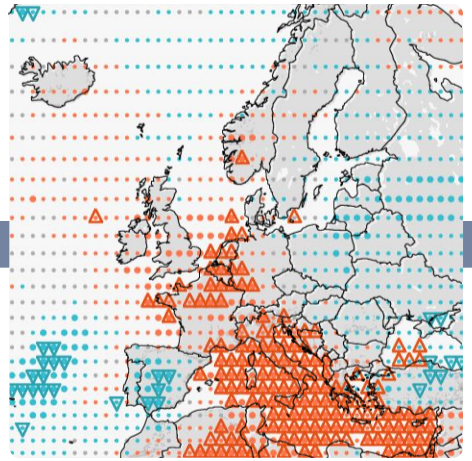
Maps show areas where skill (fRPSS) > 0

14 - 20 September



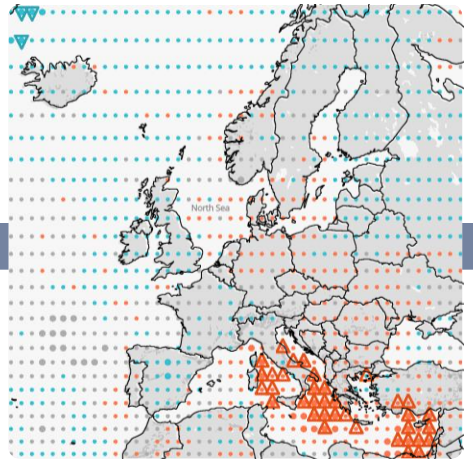
Very high probability of above normal temperatures in most of Europe, with risk of high extremes (~50% skill).

21 - 27 September



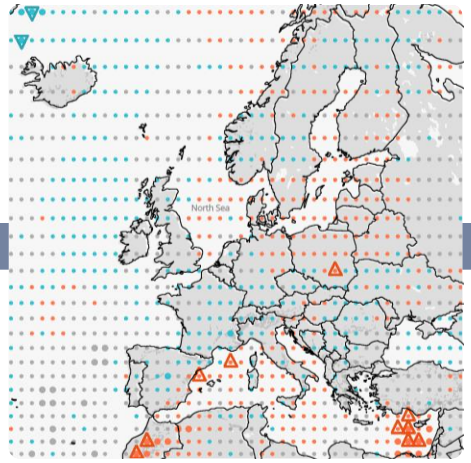
High probability of above normal temperatures in central Europe and the Mediterranean, with risk of high extremes in the Mediterranean and Benelux countries (~30% skill).

28 September - 4 October



Enhanced to **high** probability of above normal temperatures in eastern Europe and the Mediterranean, with risk of extremes in Italy and Greece. **Enhanced** probability of below normal temperatures in western Europe (<20% skill).

5 - 11 October



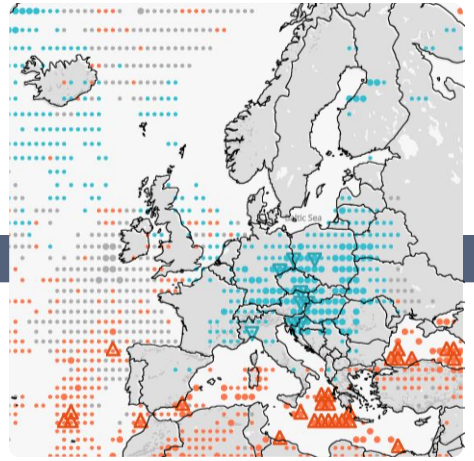
Enhanced probability of above normal temperatures toward the northwest of Europe, and **enhanced** probability of below normal temperatures towards the southwest of Europe (<20% skill).

SEASONAL

Prediction system used: ECMWF SEAS5

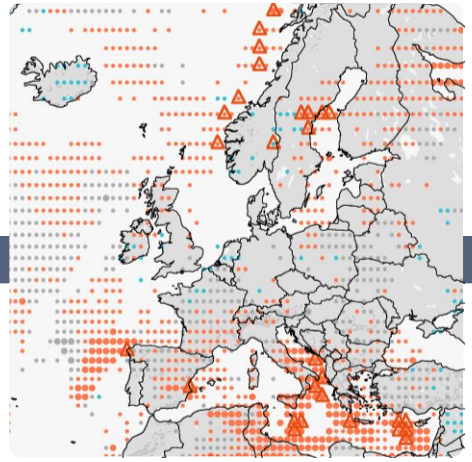
Maps show areas where skill (fRPSS) > 0

October 2020



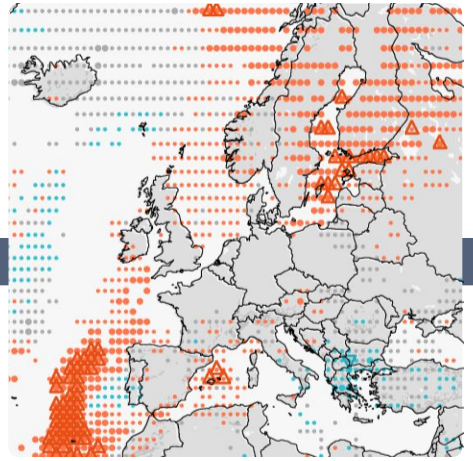
High probability of above normal temperatures across the Mediterranean sea. **High** probability of below normal temperatures in central Europe (5-15% skill).

November 2020



Above normal temperatures are likely to persist across the Mediterranean (**high** probability).

December 2020



High to **very high** probability of above normal temperatures across Scandinavia and western Europe (5-10% skill).

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%

Wind speed forecasts

Legend

Predicted tercile
- Above
- Normal
- Below

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

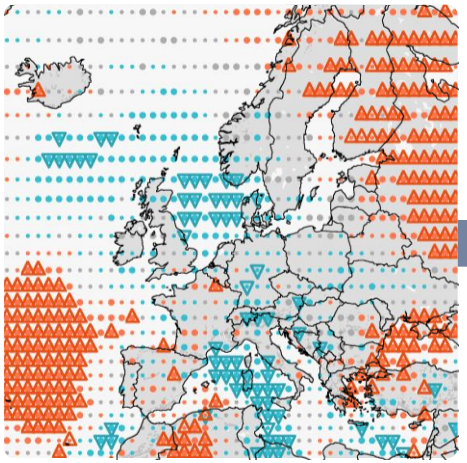
Extremes
- Max (p90)
- Min (p10)

SUB-SEASONAL

Prediction system used: ECMWF-Ext-ENS

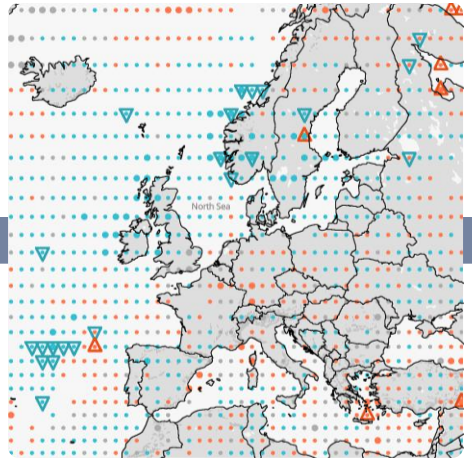
Maps show areas where skill (fRPSS) > 0

14 - 20 September



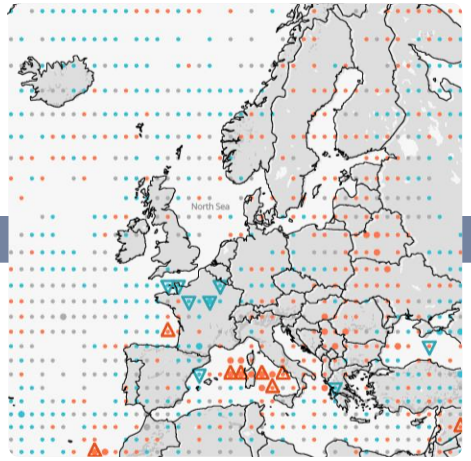
High probability of below normal wind speed in the North Sea, parts of Germany and the Mediterranean, with a risk of low extremes (~30% skill).

21 - 27 September



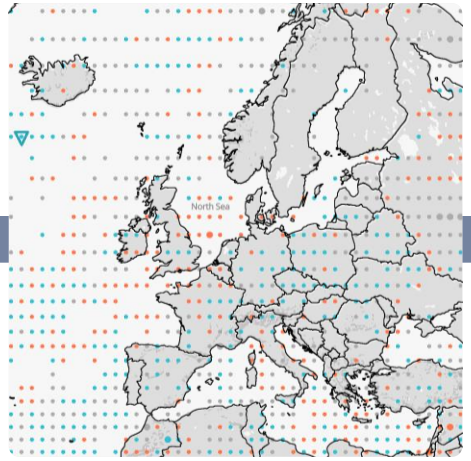
Enhanced probability of below normal wind speed in the North Sea and the coast of Norway (<10% skill).

28 September - 4 October



Forecasts show no clear signals; probabilities similar to climatology.

5 - 11 October



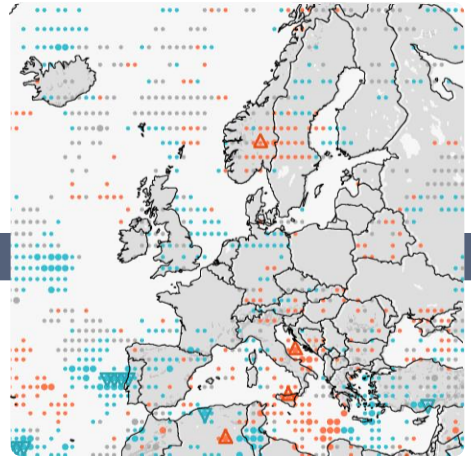
Forecasts show no clear signals; probabilities similar to climatology.

SEASONAL

Prediction system used: ECMWF SEAS5

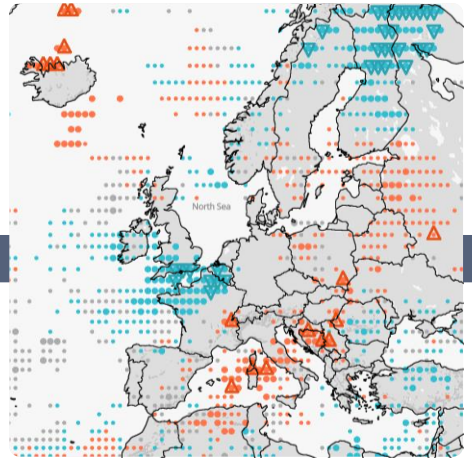
Maps show areas where skill (fRPSS) > 0

October 2020



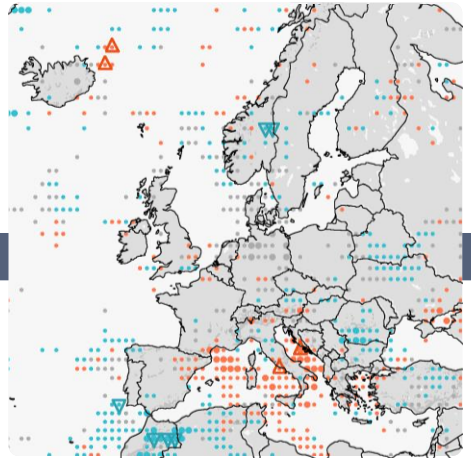
Enhanced to **high** probability of below normal wind speeds in the Iberian Peninsula, parts of France and the North Sea region. **Enhanced** probability of above normal wind speeds in Scandinavia and southern Italy.

November 2020



High to **very high** probability of below normal wind speeds in northern France (10-15% skill) and south of the British Isles. **High** probability of above normal winds persisting in the central Mediterranean (10-15% skill).

December 2020



High probability of above normal wind speeds across the Mediterranean. Over the rest of Europe, forecasts show no clear signals.

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%

Solar radiation forecasts

Legend

Predicted tercile
- Above
- Normal
- Below

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

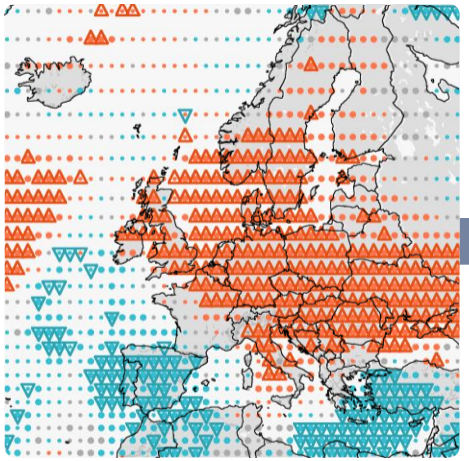
Extremes
- Max (p90)
- Min (p10)

SUB-SEASONAL

Prediction system used: ECMWF-Ext-ENS

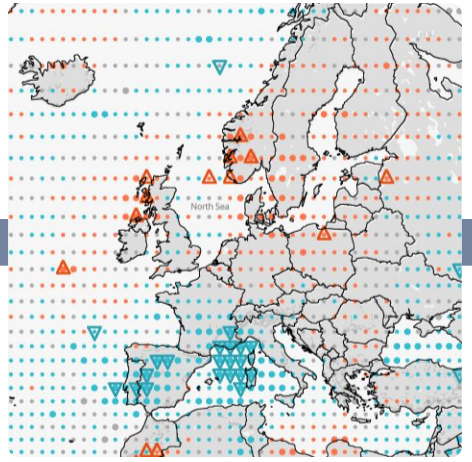
Maps show areas where skill (fRPSS) > 0

14 - 20 September



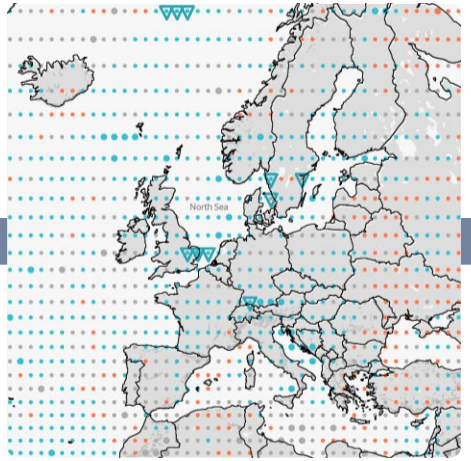
High probability of above normal solar radiation in central, northern and eastern Europe, with a risk of high extremes. **High** probability of below normal solar radiation in the Iberian Peninsula (~40% skill).

21 - 27 September



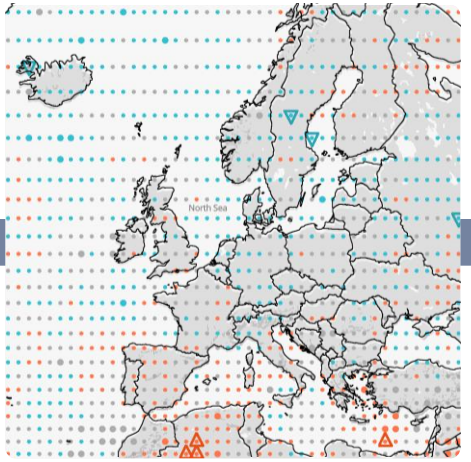
Enhanced probability of above normal solar radiation towards the northeast of Europe, and **enhanced** probability of below normal radiation towards the southwest (~30% skill).

28 September - 4 October



Generally **enhanced** probability of below normal solar radiation in Europe (10-30% skill).

5 - 11 October



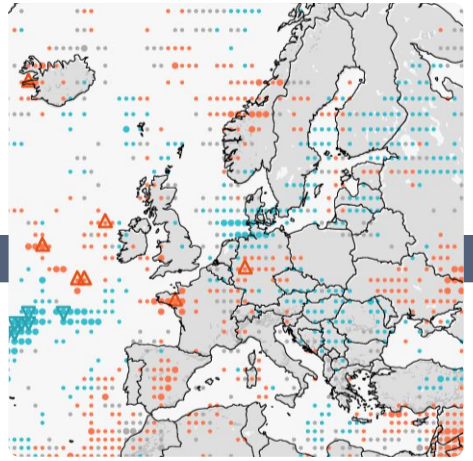
Enhanced probability of below normal solar radiation in central and northern Europe, and **enhanced** probability of above normal solar radiation in southern Europe (10-30% skill).

SEASONAL

Prediction system used: ECMWF SEAS5

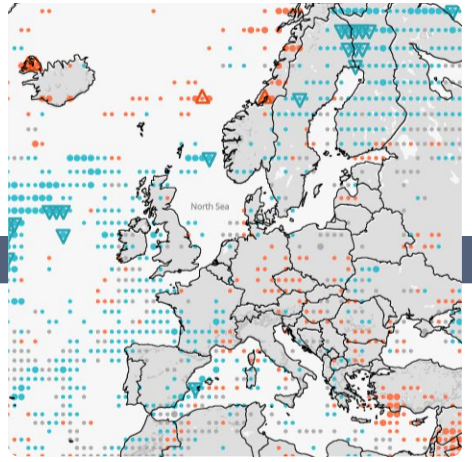
Maps show areas where skill (fRPSS) > 0

October 2020



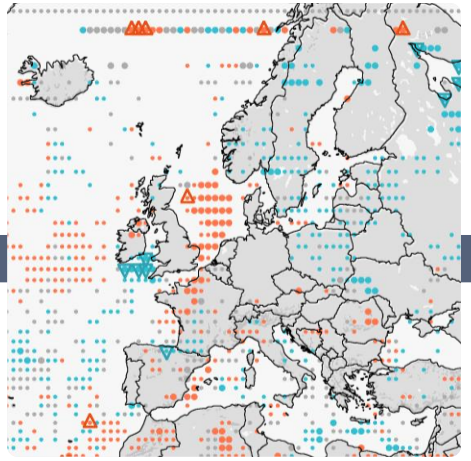
High probability of above normal solar radiation in the Iberian Peninsula and parts of France. **High** probability of below normal solar radiation over Denmark and northern Germany.

November 2020



Enhanced to **high** probability of below normal solar radiation over many areas of the Atlantic shores. **Enhanced** probability of above normal solar radiation in Germany and nearby areas in central Europe.

December 2020



Enhanced to **high** probability of below normal solar radiation in Scandinavia towards the Baltic Sea region. **Enhanced** to **high** probability of above normal solar radiation in northern France.

Browse the global forecasts in the DST:

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Precipitation forecasts

Probability terms

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

Legend

Predicted tercile
- Above
- Normal
- Below

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

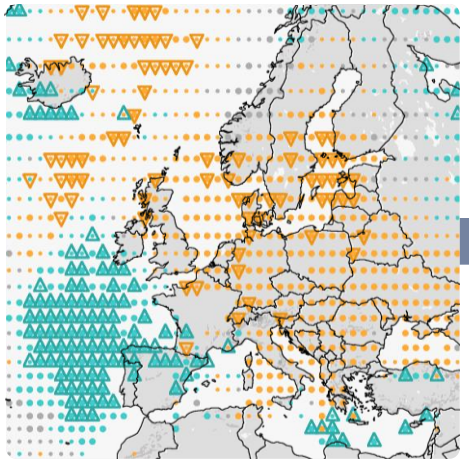
Extremes
- Max (p90)
- Min (p10)

SUB-SEASONAL

Prediction system used: ECMWF-Ext-ENS

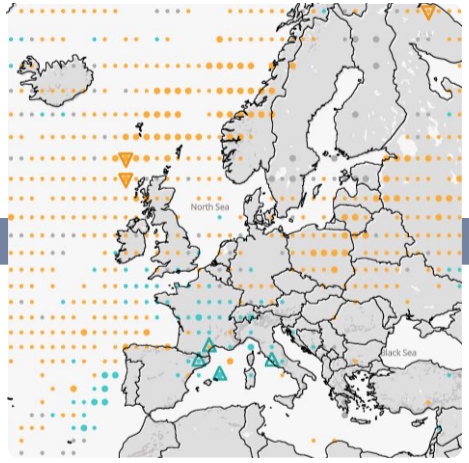
Maps show areas where skill (fRPSS) > 0

14 - 20 September



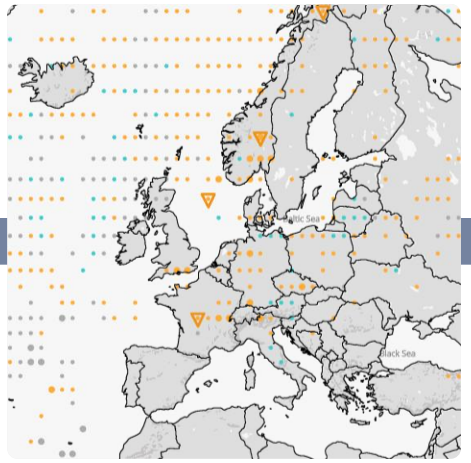
Very high probability of below normal precipitation in most of Europe, particularly in Germany and Alpine region. **High** probability of above normal precipitation north of the Iberian Peninsula, with risk of extremes (~10% skill).

21 - 27 September



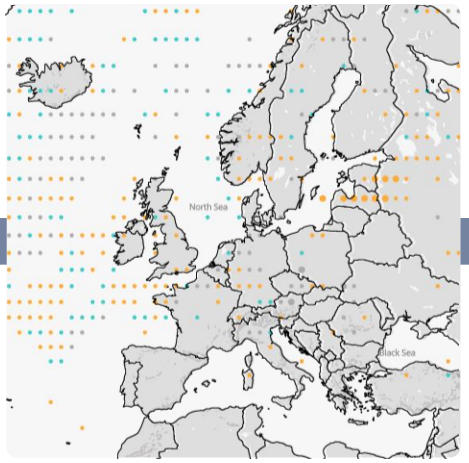
Generally **enhanced** probability of below normal precipitation, except for France where there is **enhanced** probability of above normal precipitation (<5% skill).

28 September - 4 October



Generally **enhanced** probability of below normal precipitation (<5% skill).

5 - 11 October



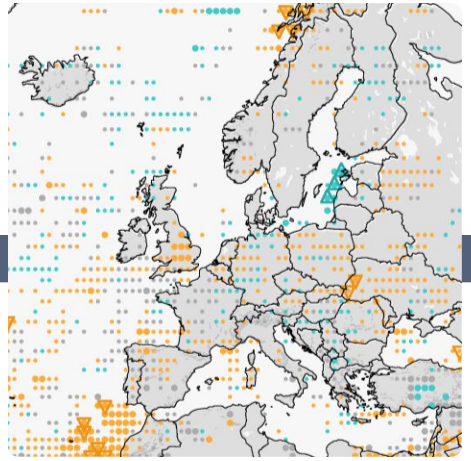
Forecasts show no clear signals; probabilities similar to climatology.

SEASONAL

Prediction system used: ECMWF SEAS5

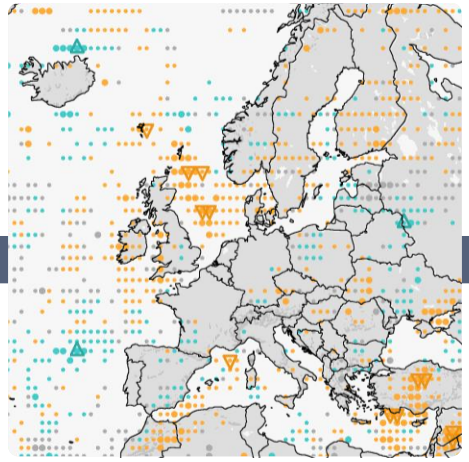
Maps show areas where skill (fRPSS) > 0

October 2020



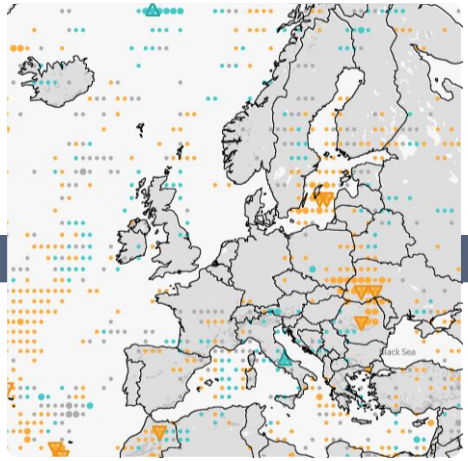
Enhanced probability of below normal precipitation in many areas of southern Europe. **High** probability of above normal precipitation in the Baltic Sea region.

November 2020



High probability of below normal precipitation in the British Isles, the North Sea towards southern Scandinavia, and Finland.

December 2020



Enhanced to **high** probability of above normal precipitation in Italy and the Balkans. **High** probability of below normal precipitation in the Baltic Sea.

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%

Inflow anomaly forecasts

Legend

Predicted tercile
- Above
- Normal
- Below

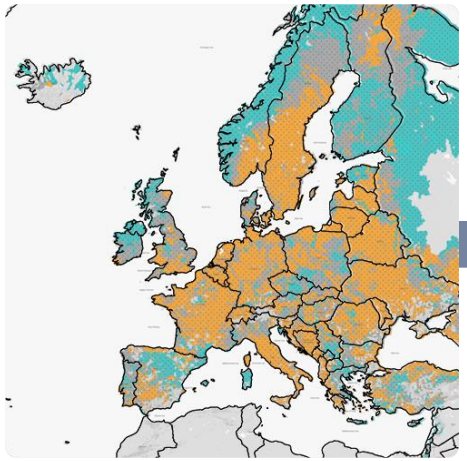
Probability range
- 50% to 100%
- 34% to 49%

SUB-SEASONAL

Prediction system used: ECMWF-Ext-ENS

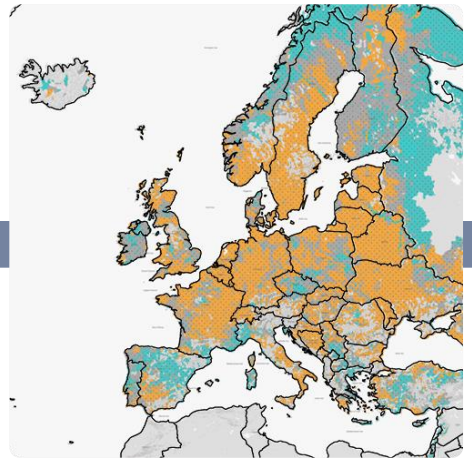
Maps show areas where skill (fRPSS) > 0

14 - 20 September



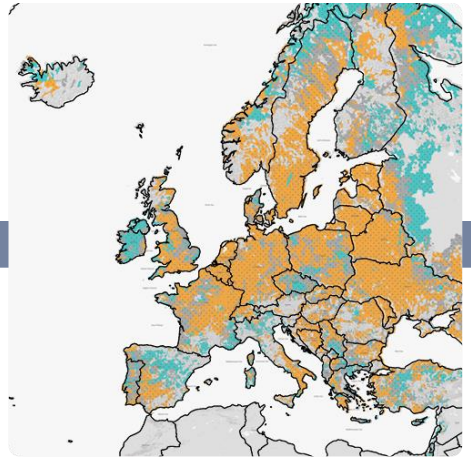
High probability of above normal inflows in western coast of Norway, southern Finland and Ireland. **High** probability of below normal inflows in western, central and eastern Europe, southern Sweden and Norway.

21 - 27 September



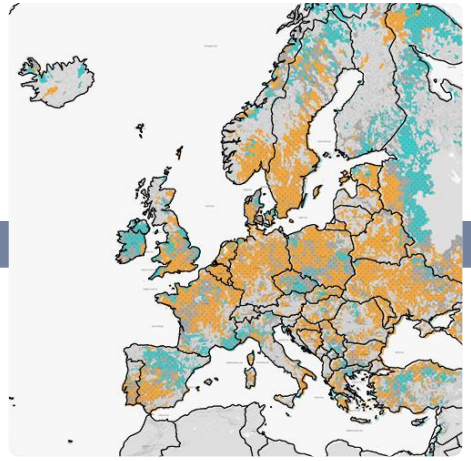
High probability of above normal inflows in northern Norway, western Russia and Spain. **High** probability of below normal inflows in the UK, Sweden and southern Norway, and western, central and eastern Europe.

28 September - 4 October



High probability of above normal inflows in northern Scandinavia and Ireland. **High** probability of below normal inflows persists in other parts of Europe.

5 - 11 October



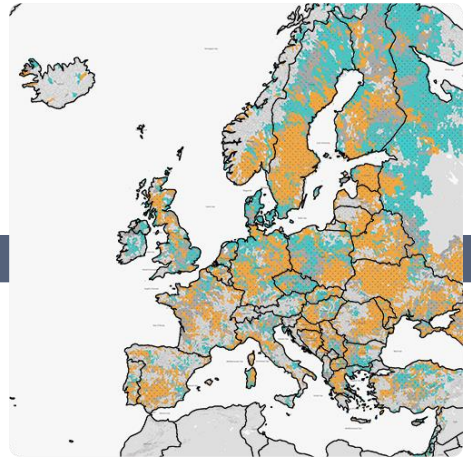
High probability of above normal inflows in Ireland and western Russia. **High** probability of below normal inflows persists in other parts of Europe.

SEASONAL

Prediction system used: ECMWF SEAS5

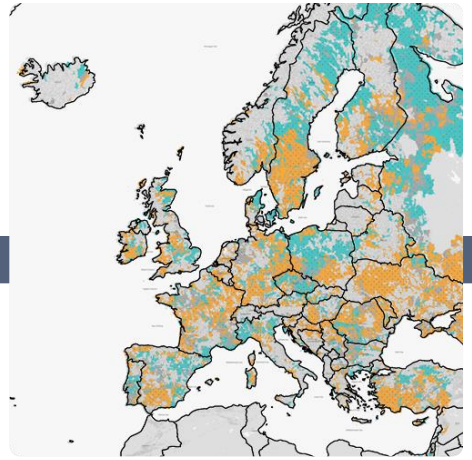
Maps show areas where skill (fRPSS) > 0

October 2020



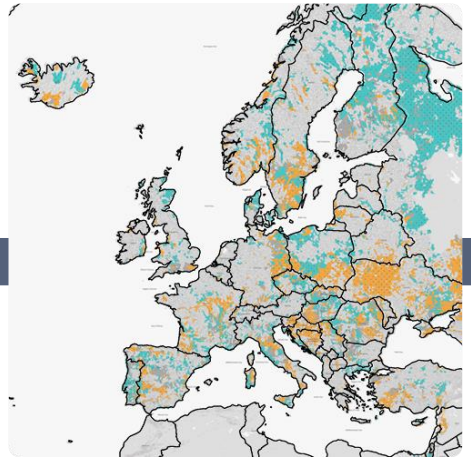
High probability of above normal inflows in southern Scandinavia. **High** probability of below normal inflows in parts of eastern Europe and southern Sweden. Mixed patterns over central and western Europe.

November 2020



High probability of above normal inflows in northern Sweden and western Russia. **High** probability of below normal inflows in parts of eastern Europe and southern Sweden. Mixed patterns over central and western Europe.

December 2020



High probability of above normal inflows in Finland and western Russia. **High** probability of below normal inflows in parts of eastern Europe. Mixed patterns over central Europe.

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%

Snow max anomaly forecasts

Legend

Predicted tercile
- Above
- Normal
- Below

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

SUB-SEASONAL

Prediction system used: ECMWF-Ext-ENS

Maps show areas where skill (fRPSS) > 0

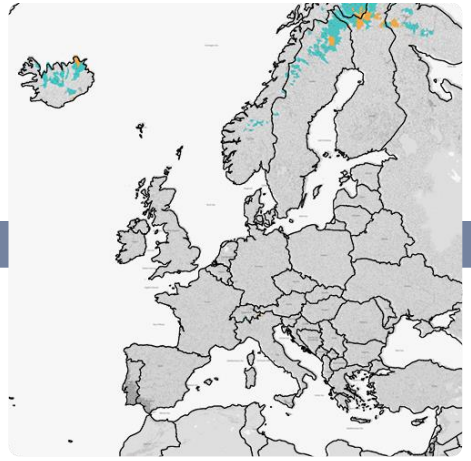
14 - 20 September

High probability of above normal snow conditions in the highly elevated basins in central Norway and north Sweden.

21 - 27 September

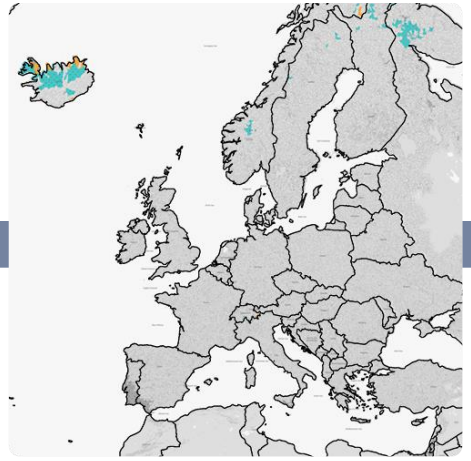
High probability of above normal snow conditions mainly in Iceland, and in a few locations in Sweden and Norway.

28 September - 4 October



High probability of above normal snow conditions mainly in Iceland and Scandinavia, particularly in the northern regions.

5 - 11 October



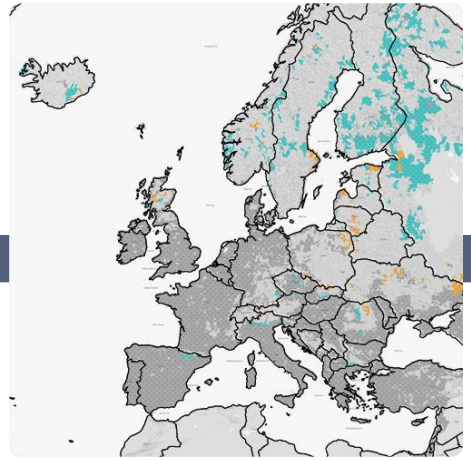
High probability of above normal snow conditions in northwestern Russia and Iceland.

SEASONAL

Prediction system used: ECMWF SEAS5

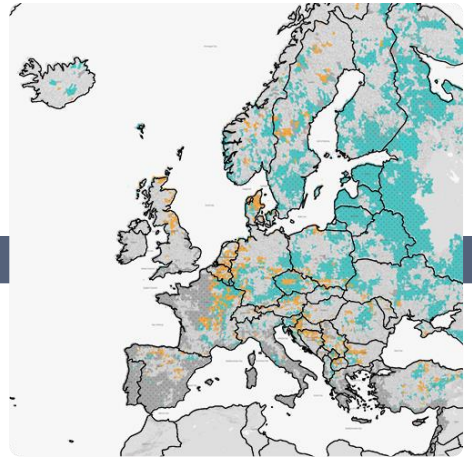
Maps show areas where skill (fRPSS) > 0

October 2020



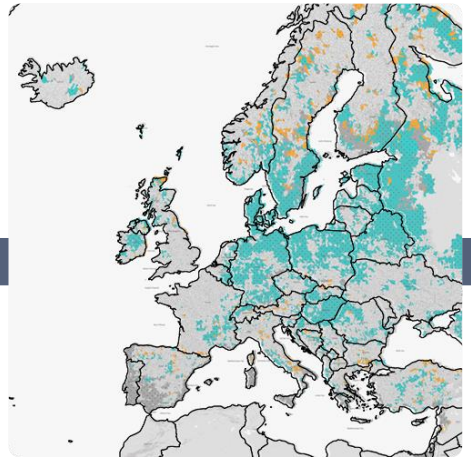
High probability of above normal snow conditions in Scandinavia and western Russia.

November 2020



High probability of above normal snow conditions in various regions in eastern Europe and Scandinavia.

December 2020



High probability of above normal snow conditions in various regions in eastern and central Europe, Ireland, and southern regions of Scandinavia.

Browse the global forecasts in the DST:

www.S2S4E.eu/dst

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 (51 for both ECMWF-Ext-ENS and 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 are shown with a triangle symbol when the probability of an extreme event occurring is over 25%.

SKILL SCORES

Fair	>0% to <15%
Good	15-30%
Very good	>30%

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 are available at:

s2s4e.eu/climate-services/outlooks

Subscribe to the outlooks and register to the DST at:

www.s2s4e.eu/dst

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S2S4E
Climate Services for Clean Energy

OUTLOOK USER GUIDE

The S2S4E Decision Support Tool (DST) v1.5.1 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