

Intercomparison of operational wave forecasting systems against
in-situ observations: data from BoM, DMI, DWD, ECCC,
ECMWF, JMA, KMA, LPOS, METEOAM, METFR, METNO,
NCEP, NIWA, PRTOS, SHNSM, UKMO.

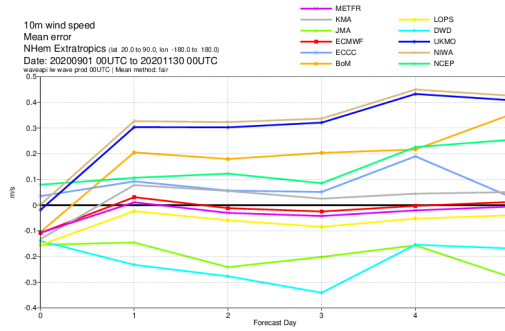
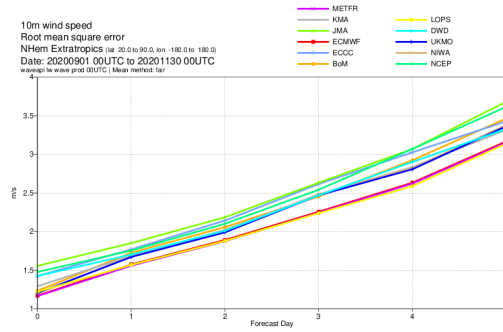
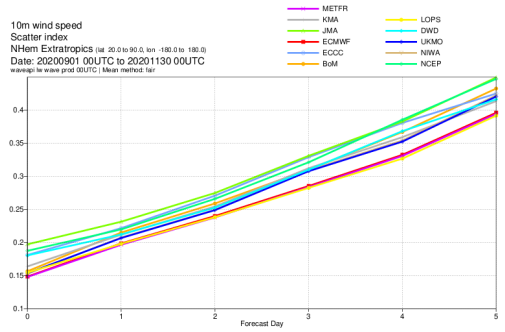
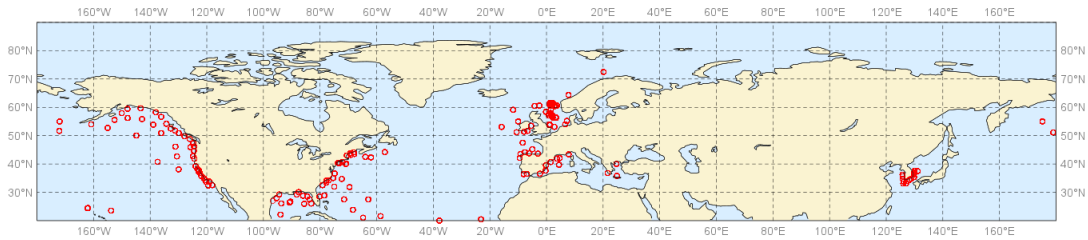
00 UTC runs only

WMO Lead Centre for Wave Forecast Verification LC-WFV,
European Centre for Medium-Range Weather Forecasts ECMWF

December 14, 2020

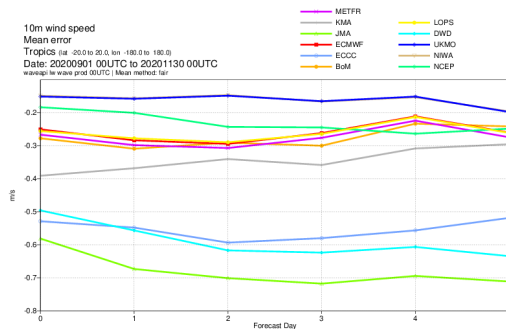
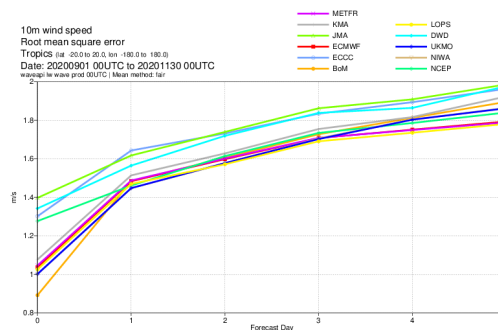
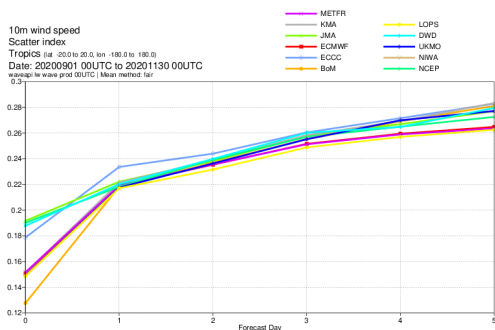
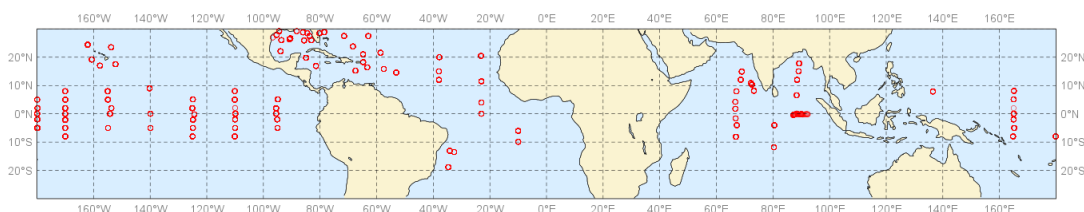
PART III: 10 meter wind speed (10ff)

Buoys observations - from 20200901 to 20201130 - (10ff)



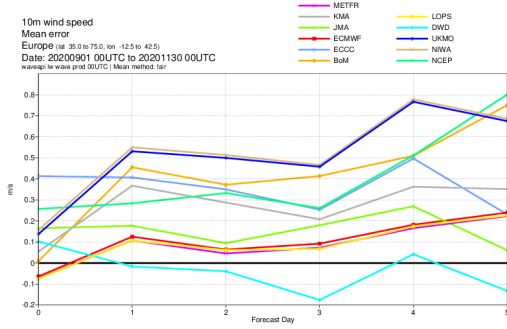
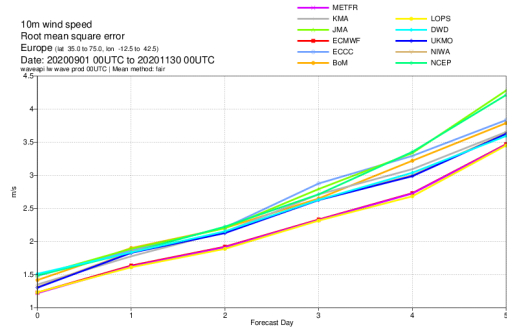
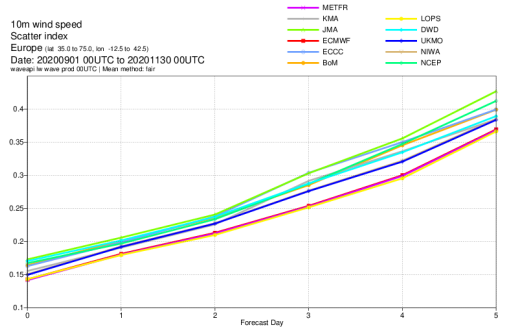
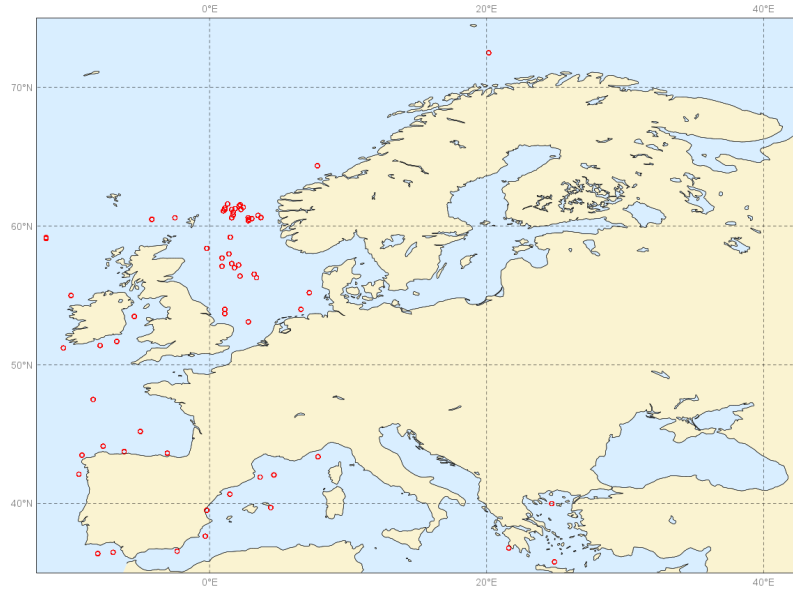
Northern Hemisphere. Top panel: observation distribution. Middle left panel: Forecast scatter index (standard deviation of the difference normalised by the mean of the observations). Middle right panel: Forecast root mean square error (RMSE). Bottom panel: forecast mean error (bias).

Buoys observations - from 20200901 to 20201130 - (10ff)



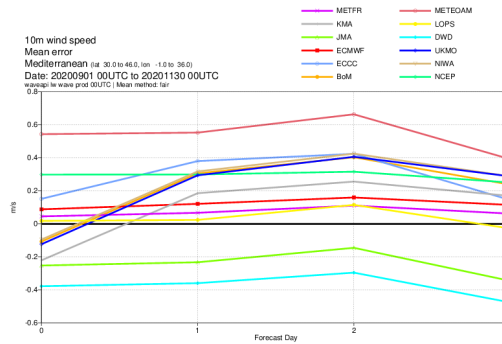
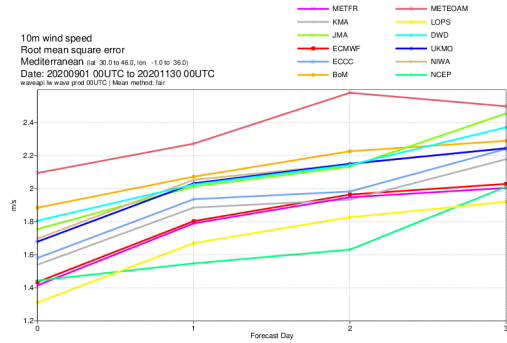
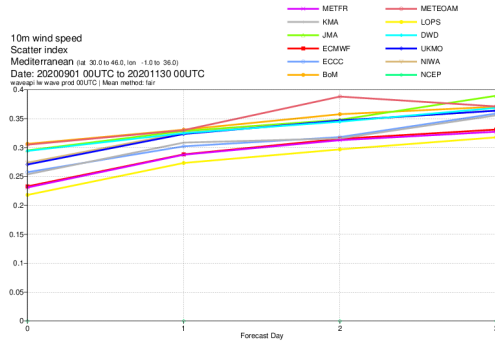
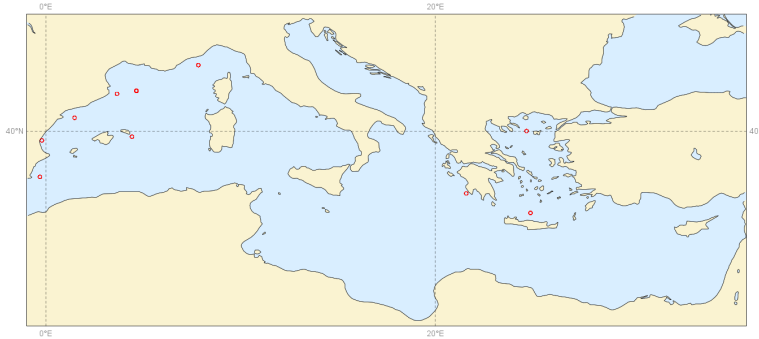
Tropics. Top panel: observation distribution. Middle left panel: Forecast scatter index (standard deviation of the difference normalised by the mean of the observations). Middle right panel: Forecast root mean square error (RMSE). Bottom panel: forecast mean error (bias).

Buoys observations - from 20200901 to 20201130 - (10ff)



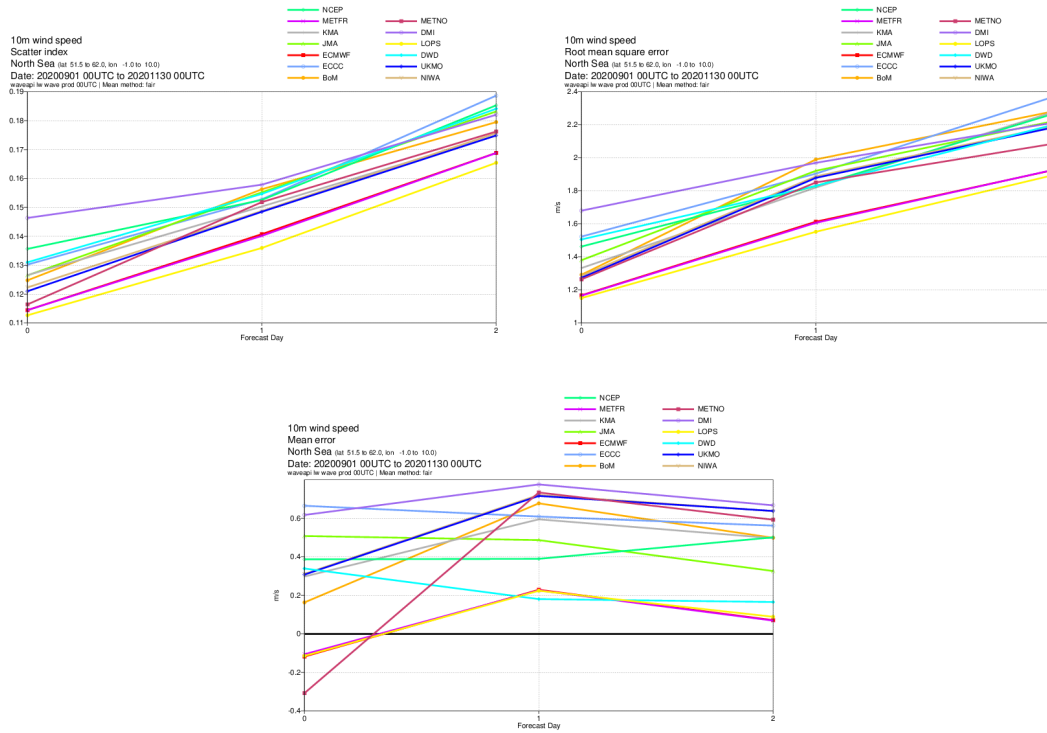
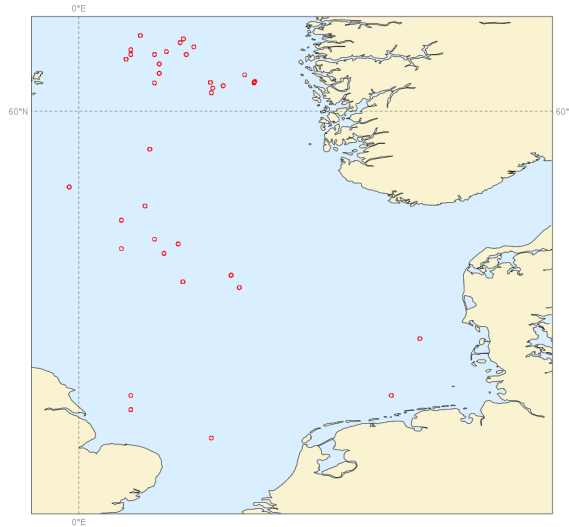
Europe. Top panel: observation distribution. Middle left panel: Forecast scatter index (standard deviation of the difference normalised by the mean of the observations). Middle right panel: Forecast root mean square error (RMSE). Bottom panel: forecast mean error (bias).

Buoys observations - from 20200901 to 20201130 - (10ff)



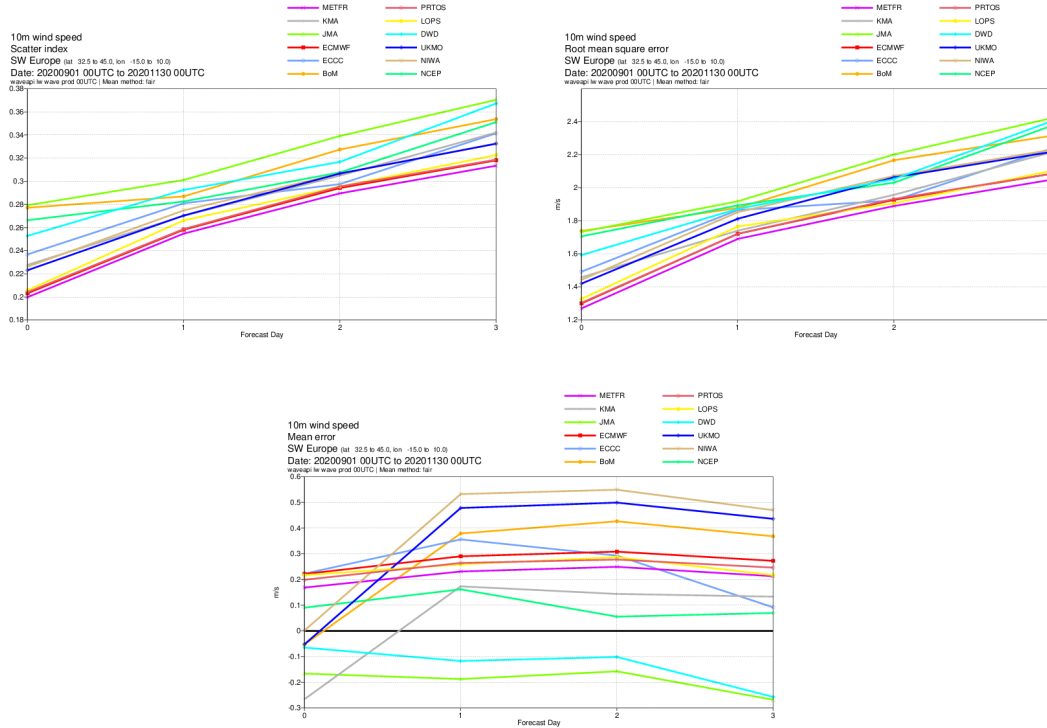
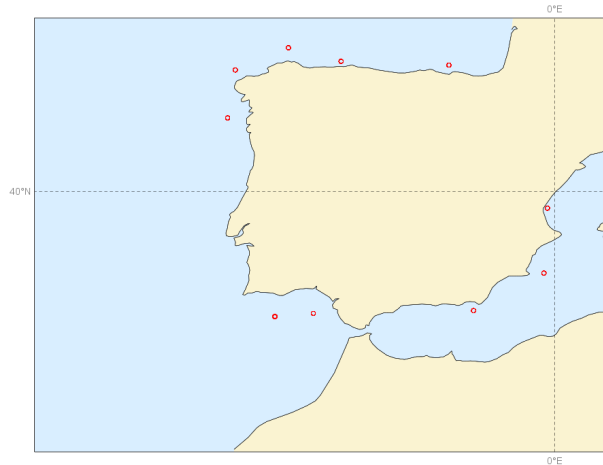
Mediterranean Sea. Top panel: observation distribution. Middle left panel: Forecast scatter index (standard deviation of the difference normalised by the mean of the observations). Middle right panel: Forecast root mean square error (RMSE). Bottom panel: forecast mean error (bias).

Buoys observations - from 20200901 to 20201130 - (10ff)



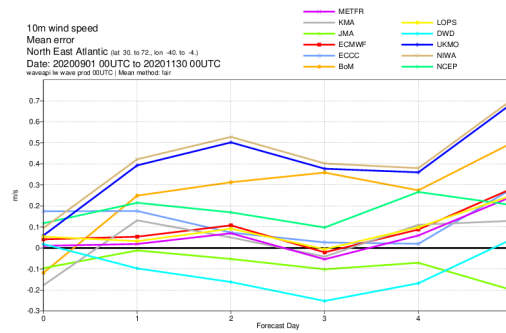
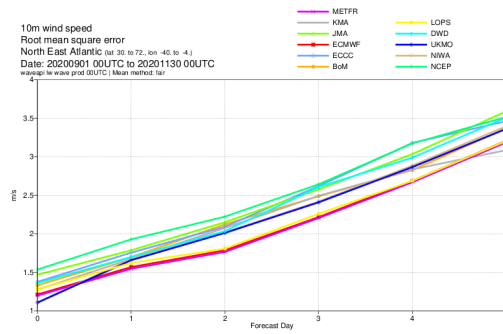
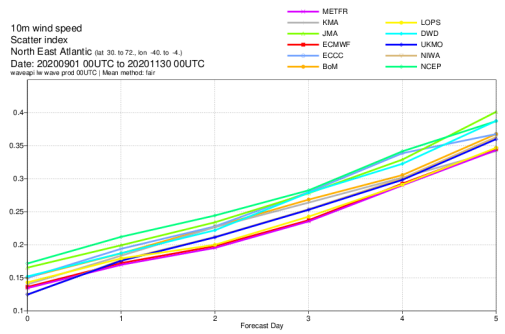
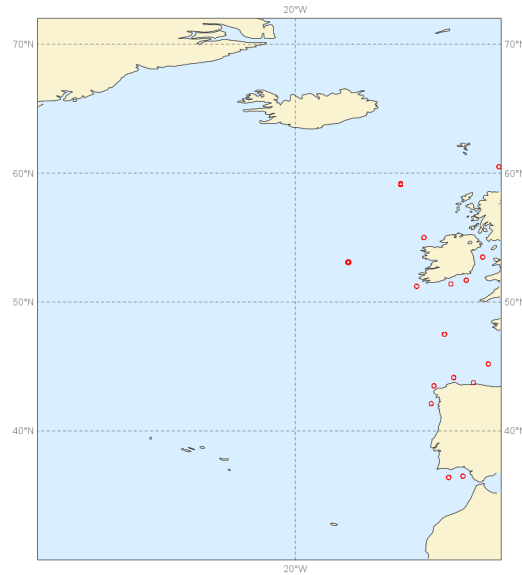
North Sea. Top panel: observation distribution. Middle left panel: Forecast scatter index (standard deviation of the difference normalised by the mean of the observations). Middle right panel: Forecast root mean square error (RMSE). Bottom panel: forecast mean error (bias).

Buoys observations - from 20200901 to 2020



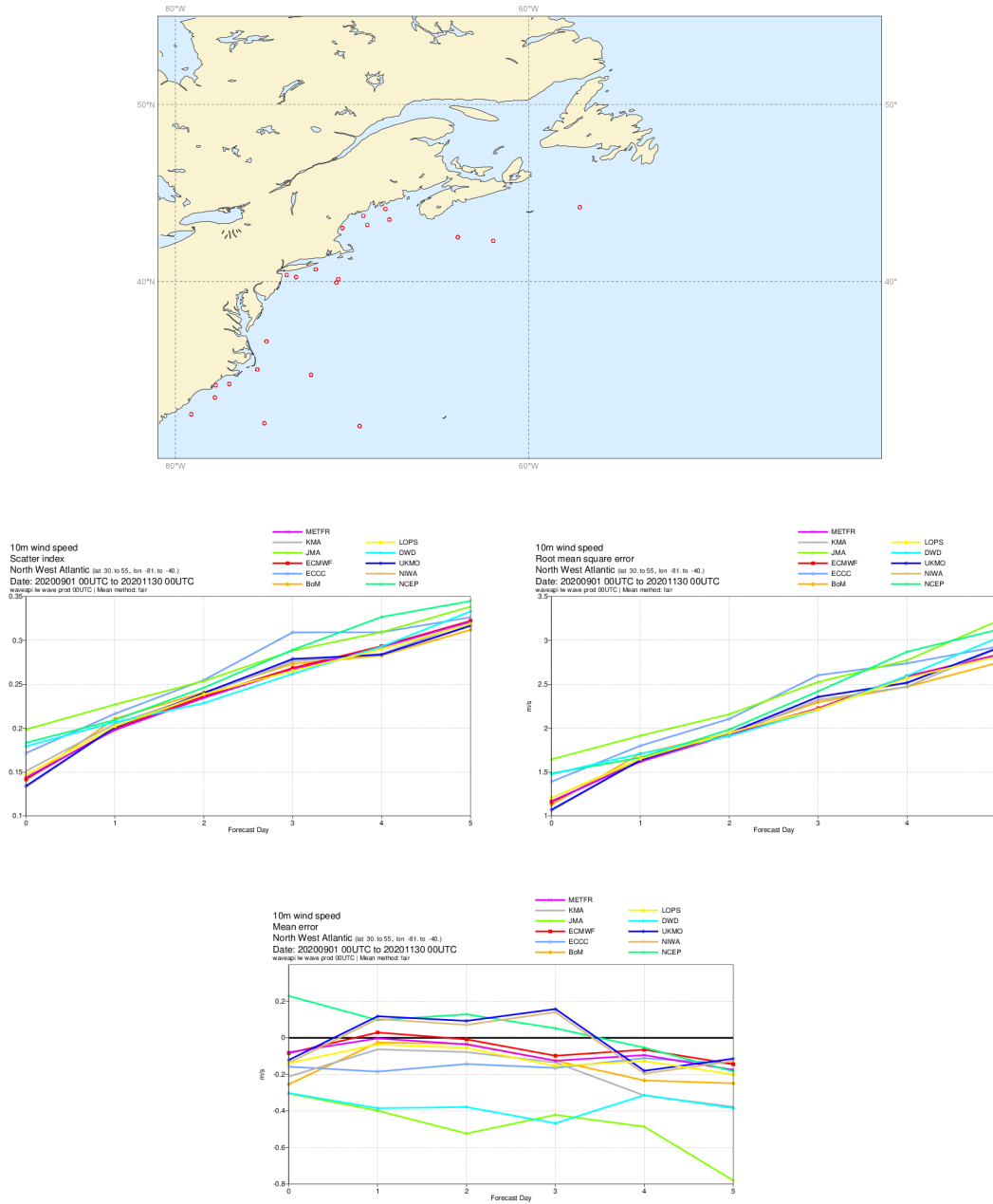
South West Europe. Top panel: observation distribution. Middle left panel: Forecast scatter index (standard deviation of the difference normalised by the mean of the observations). Middle right panel: Forecast root mean square error (RMSE). Bottom panel: forecast mean error (bias).

Buoys observations - from 20200901 to 20201130 - (10ff)



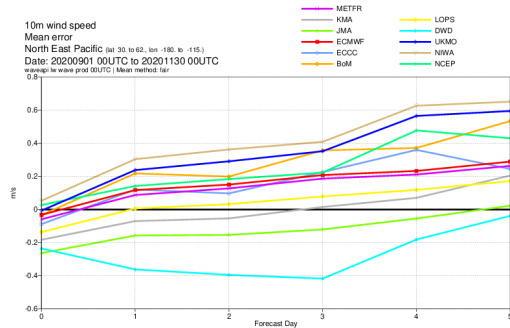
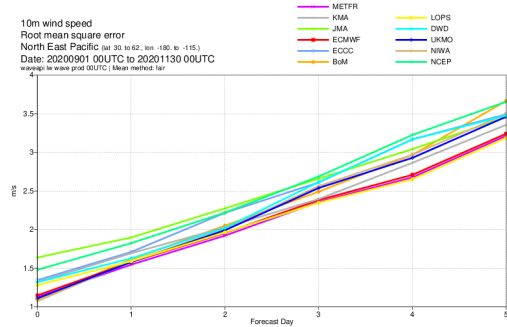
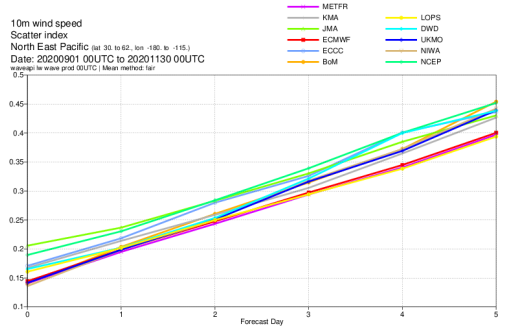
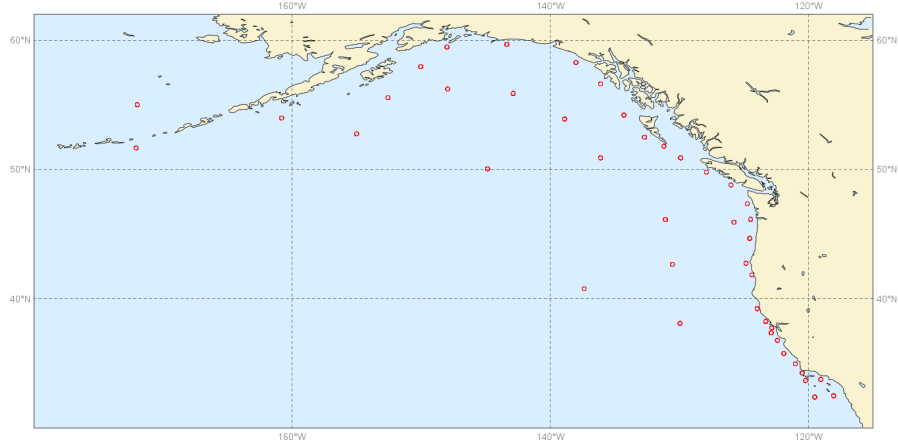
North East Atlantic. Top panel: observation distribution. Middle left panel: Forecast scatter index (standard deviation of the difference normalised by the mean of the observations). Middle right panel: Forecast root mean square error (RMSE). Bottom panel: forecast mean error (bias).

Buoys observations - from 20200901 to 20201130 - (10ff)



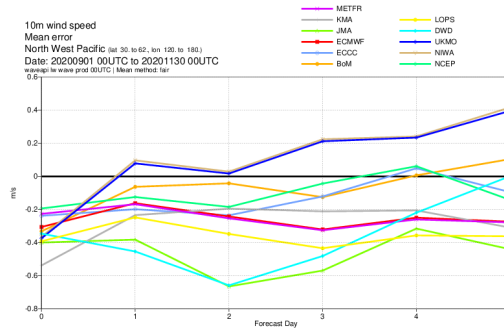
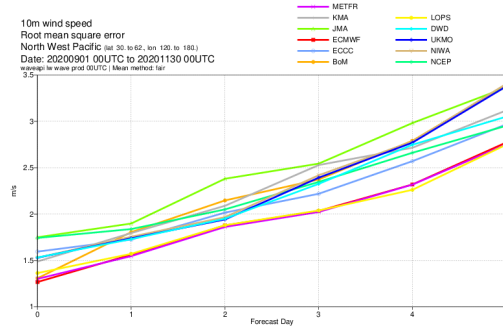
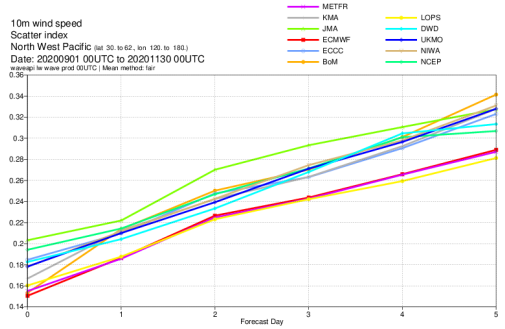
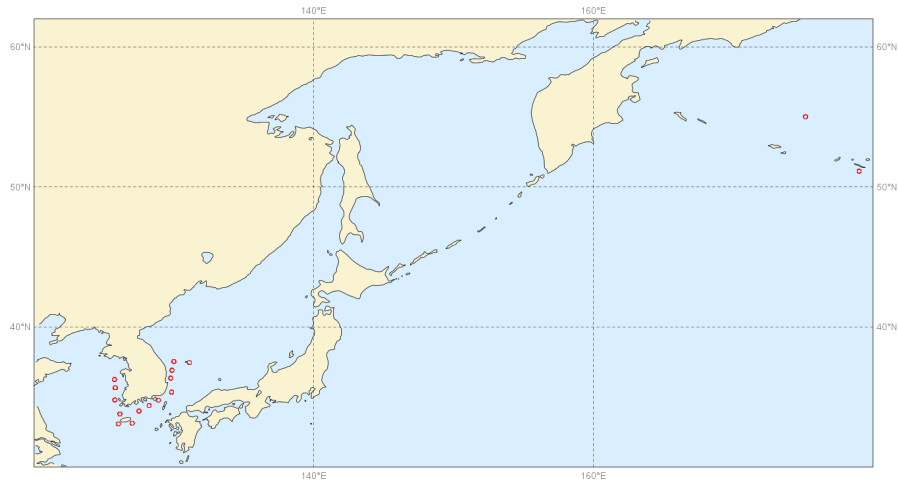
North West Atlantic. Top panel: observation distribution. Middle left panel: Forecast scatter index (standard deviation of the difference normalised by the mean of the observations). Middle right panel: Forecast root mean square error (RMSE). Bottom panel: forecast mean error (bias).

Buoys observations - from 20200901 to 20201130 - (10ff)



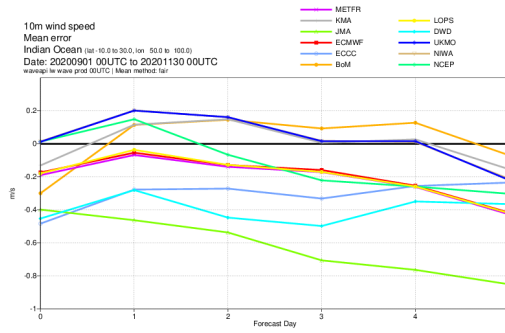
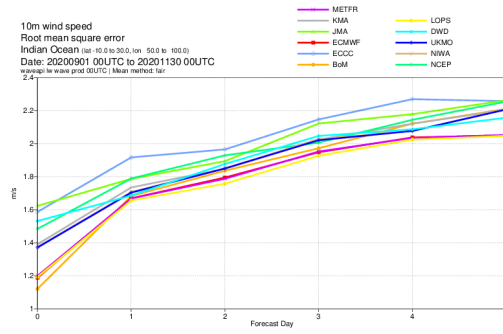
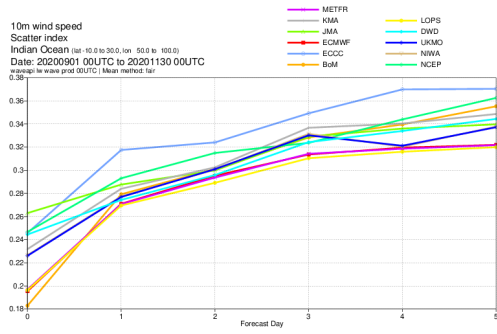
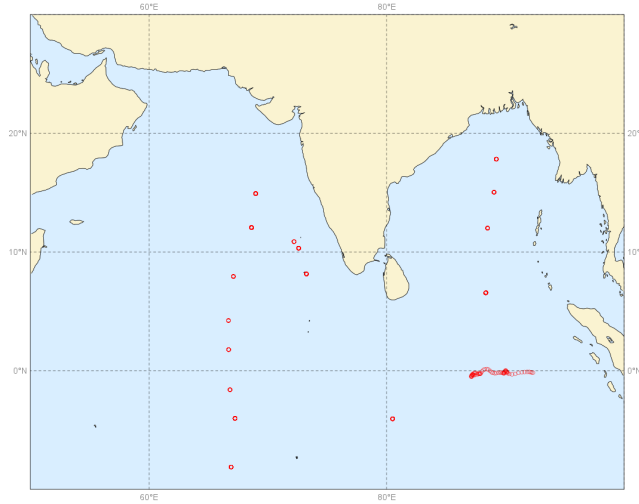
North East Pacific. Top panel: observation distribution. Middle left panel: Forecast scatter index (standard deviation of the difference normalised by the mean of the observations). Middle right panel: Forecast root mean square error (RMSE). Bottom panel: forecast mean error (bias).

Buoys observations - from 20200901 to 20201130 - (10ff)



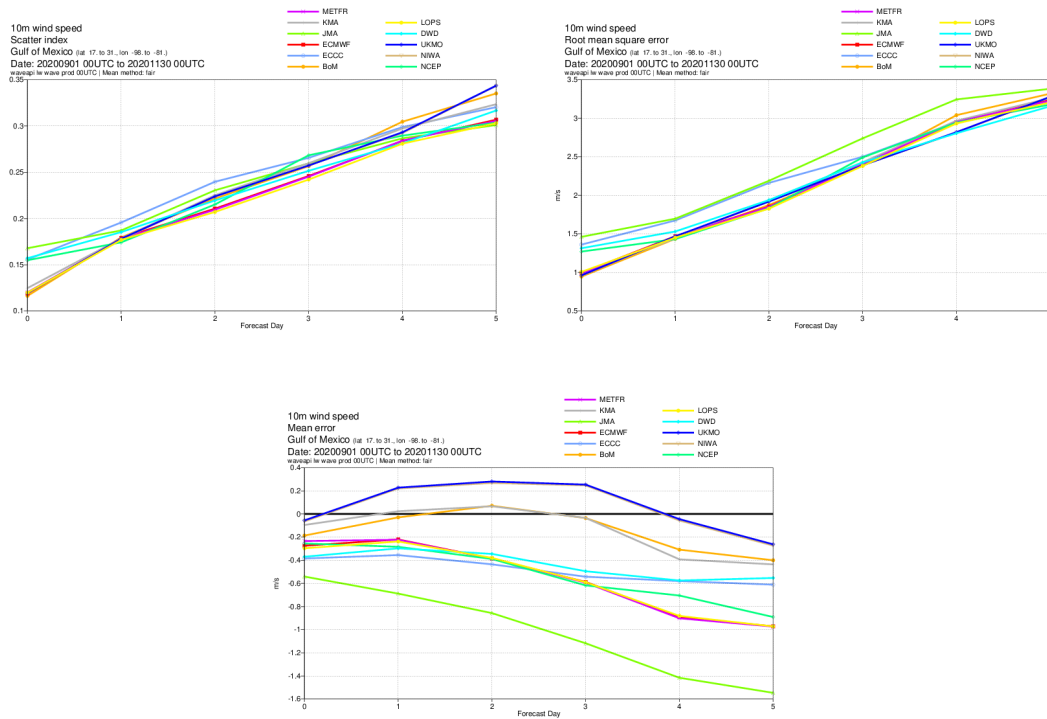
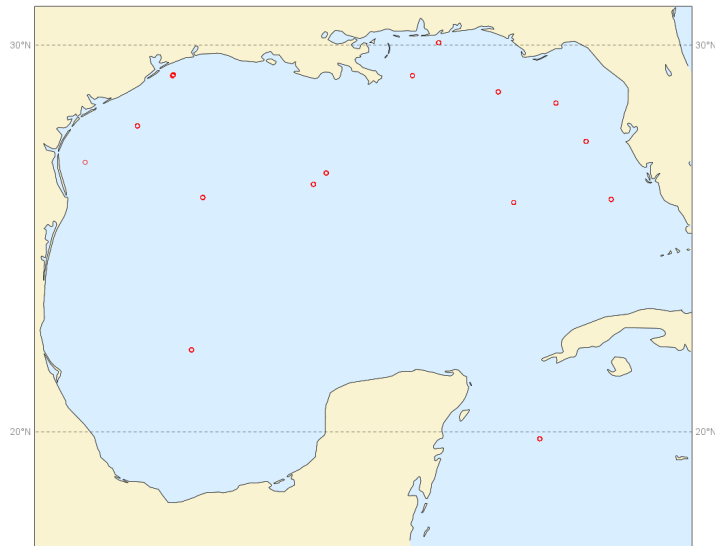
North West Pacific. Top panel: observation distribution. Middle left panel: Forecast scatter index (standard deviation of the difference normalised by the mean of the observations). Middle right panel: Forecast root mean square error (RMSE). Bottom panel: forecast mean error (bias).

Buoys observations - from 20200901 to 20201130 - (10ff)



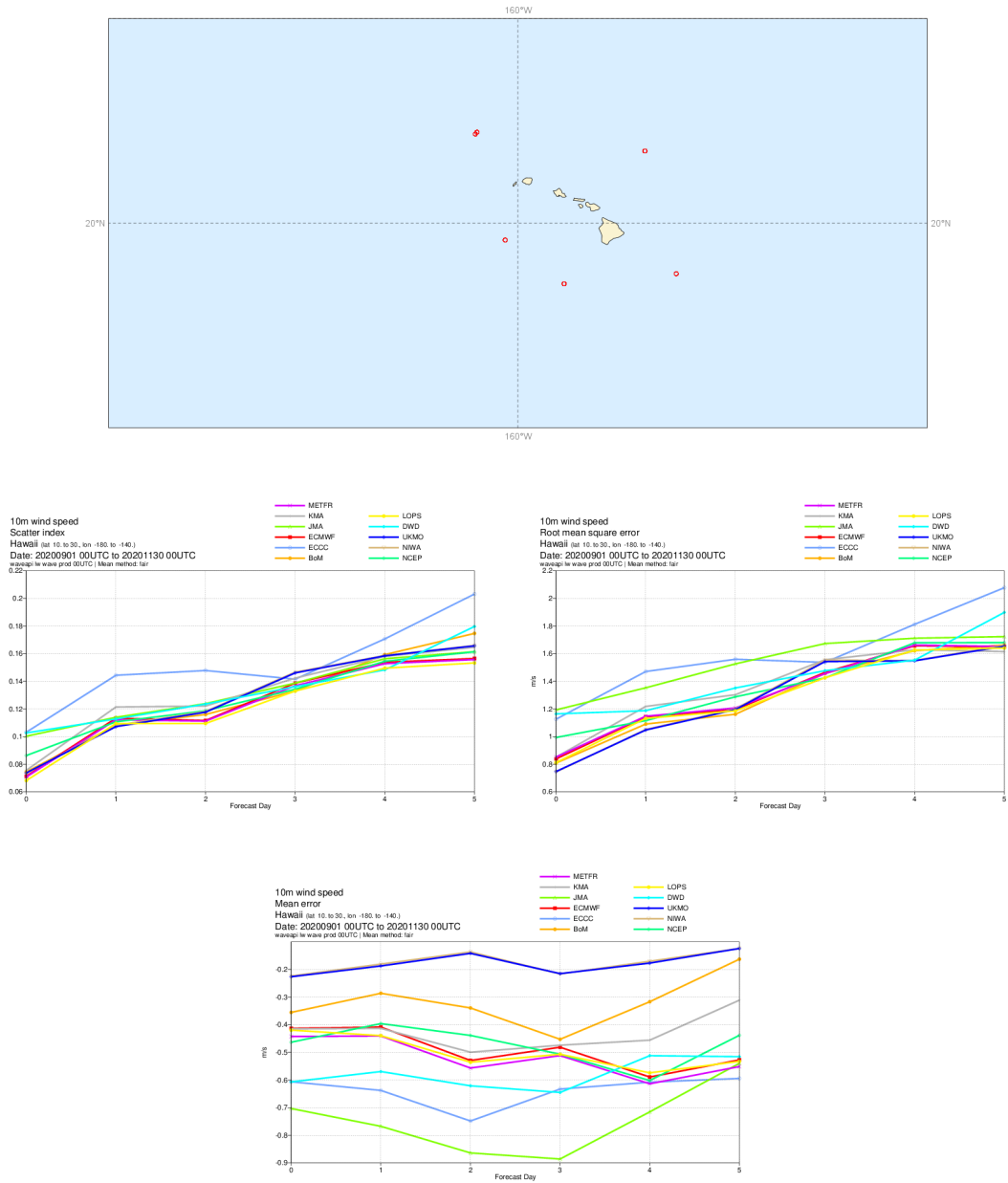
Indian Ocean. Top panel: observation distribution. Middle left panel: Forecast scatter index (standard deviation of the difference normalised by the mean of the observations). Middle right panel: Forecast root mean square error (RMSE). Bottom panel: forecast mean error (bias).

Buoys observations - from 20200901 to 20201130 - (10ff)



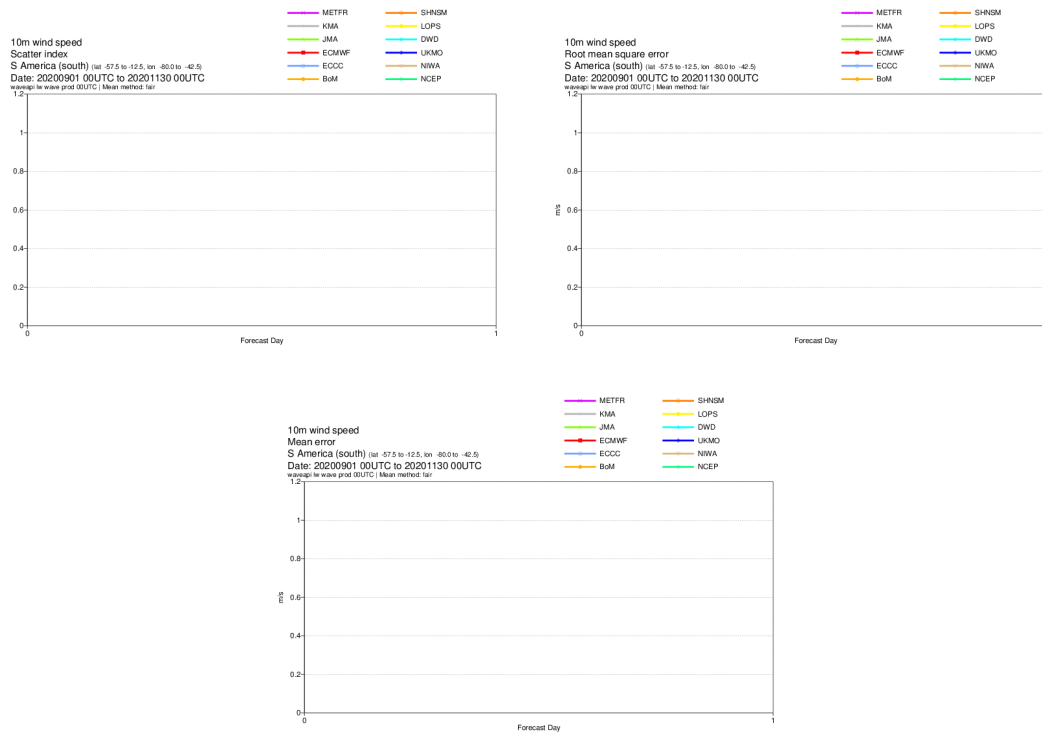
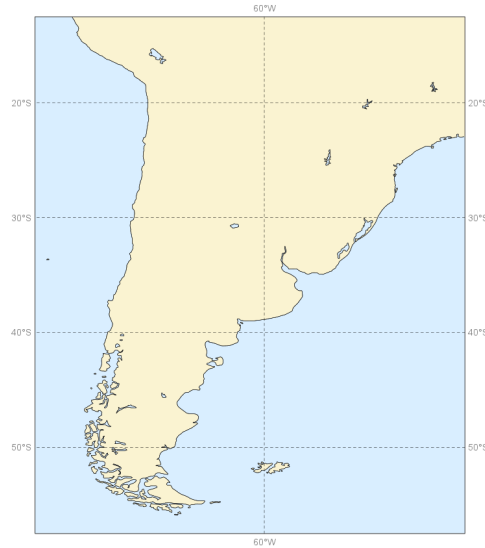
Gulf of Mexico. Top panel: observation distribution. Middle left panel: Forecast scatter index (standard deviation of the difference normalised by the mean of the observations). Middle right panel: Forecast root mean square error (RMSE). Bottom panel: forecast mean error (bias).

Buoys observations - from 20200901 to 20201130 - (10ff)



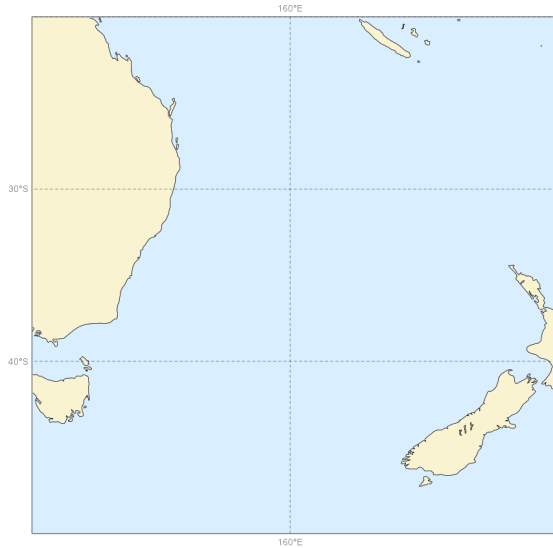
Hawaii. Top panel: observation distribution. Middle left panel: Forecast scatter index (standard deviation of the difference normalised by the mean of the observations). Middle right panel: Forecast root mean square error (RMSE). Bottom panel: forecast mean error (bias).

Buoys observations - from 20200901 to 20201130 - (10ff)

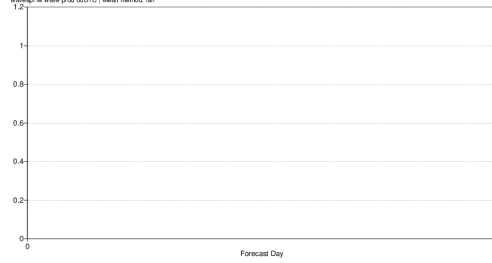


South of South America. Top panel: observation distribution. Middle left panel: Forecast scatter index (standard deviation of the difference normalised by the mean of the observations). Middle right panel: Forecast root mean square error (RMSE). Bottom panel: forecast mean error (bias).

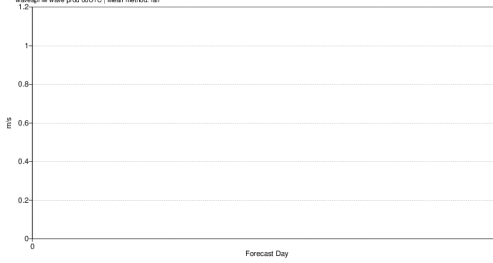
Buoys observations - from 20200901 to 20201130 - (1C)



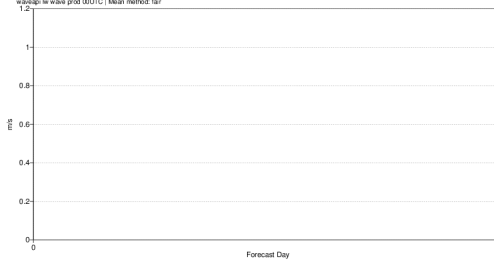
10m wind speed
Scatter index
Eaustnz (lat: 50 to 20, lon: 145 to 185)
Date: 20200901 00UTC to 20201130 00UTC
Average for every grid (0.05°). Mean method: lat



10m wind speed
Root mean square error
Eaustnz (lat: 50 to 20, lon: 145 to 185)
Date: 20200901 00UTC to 20201130 00UTC
Average for every grid (0.05°). Mean method: lat

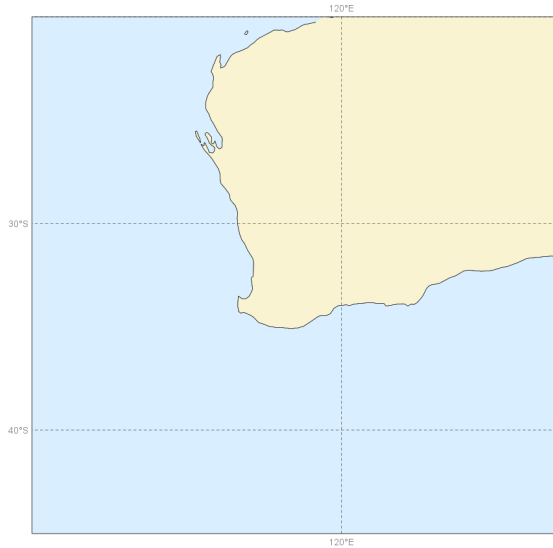


10m wind speed
Mean error
Eaustnz (lat: 50 to 20, lon: 145 to 185)
Date: 20200901 00UTC to 20201130 00UTC
Average for every grid (0.05°). Mean method: lat



East Australia - New Zealand. Top panel: observation distribution. Middle left panel: Forecast scatter index (standard deviation of the difference normalised by the mean of the observations). Middle right panel: Forecast root mean square error (RMSE). Bottom panel: forecast mean error (bias).

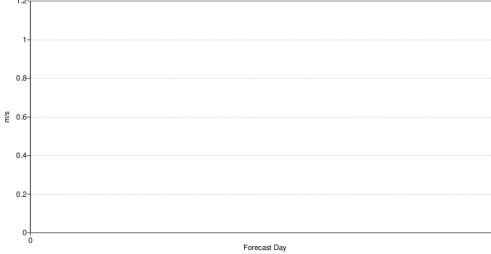
Buoys observations - from 20200901 to 2C



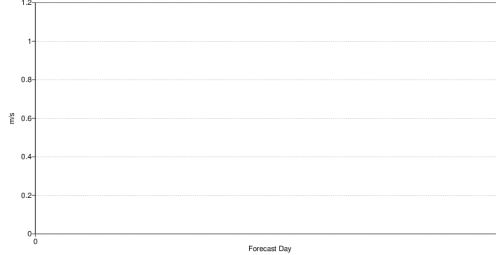
10m wind speed
Scatter index
Ssw.australia (lat -45 to -20, lon 105 to 145)
Date: 20200901 00UTC to 20201130 00UTC
Average for every grid (0.5°). Mean method for



10m wind speed
Root mean square error
Ssw.australia (lat -45 to -20, lon 105 to 145)
Date: 20200901 00UTC to 20201130 00UTC
Average for every grid (0.5°). Mean method for



10m wind speed
Mean error
Ssw.australia (lat -45 to -20, lon 105 to 145)
Date: 20200901 00UTC to 20201130 00UTC
Average for every grid (0.5°). Mean method for



South South West Australia. Top panel: observation distribution. Middle left panel: Forecast scatter index (standard deviation of the difference normalised by the mean of the observations). Middle right panel: Forecast root mean square error (RMSE). Bottom panel: forecast mean error (bias).