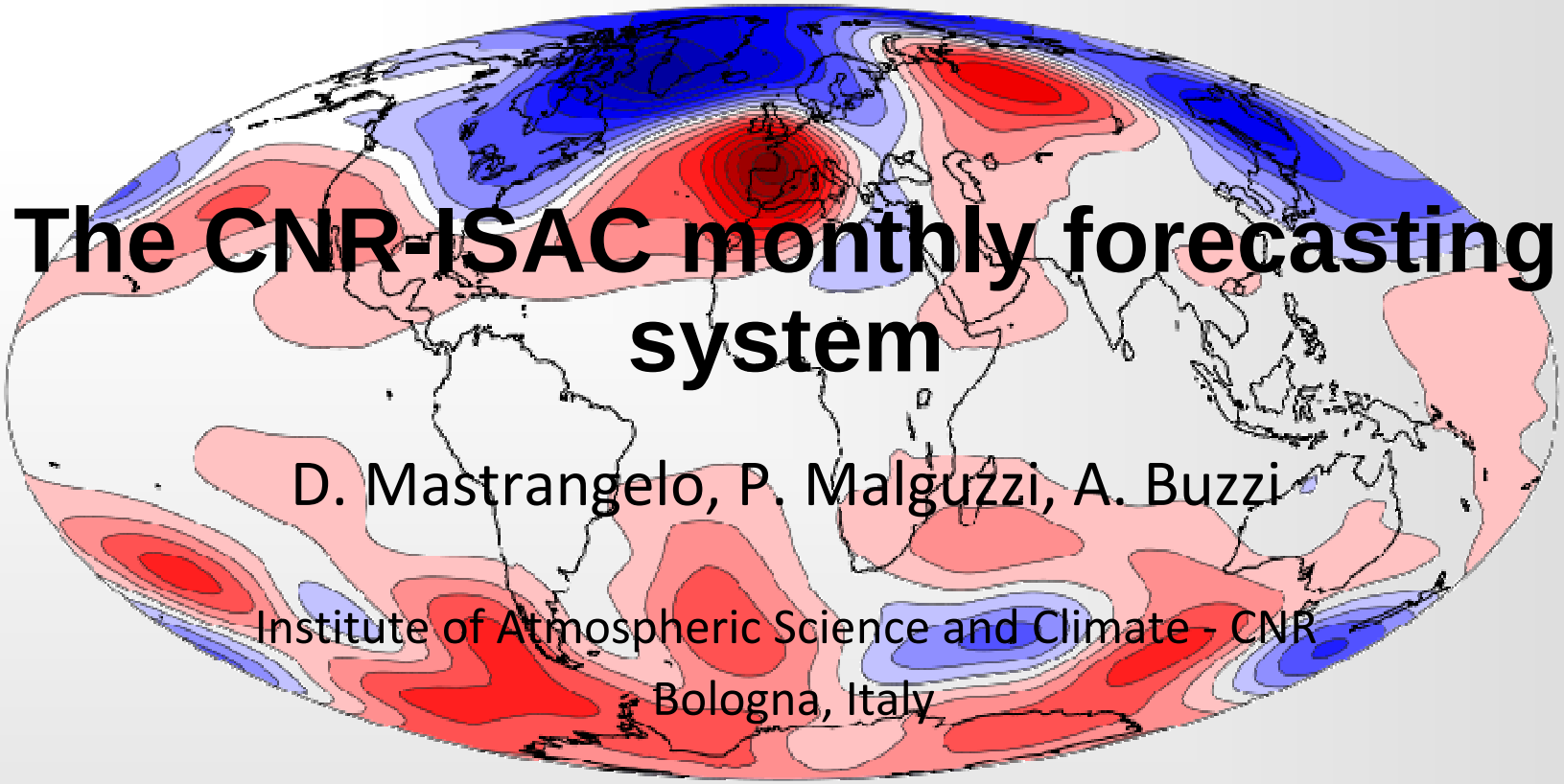

The CNR-ISAC monthly forecasting system

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MedCOF-1, Belgrade Serbia, 18-19 November 2013

Operational monthly forecasting system

- monthly forecasts produced, on a monthly basis, in the framework of a cooperation with the Italian Civil Protection Agency
- probabilistic forecasting system based on GLOBO general circulation model
- forecast calibrated by using a “mean” (1989–2009) modelled month obtained through monthly reforecast runs
- forecast of 3 meteorological variables:
  - 500-hPa geopotential height (Z500)
  - 850-hPa temperature (T850)
  - accumulated precipitation (PCP)

http://www.isac.cnr.it/dinamica/projects/forecast_dpc/month_en.htm

Model and numerical set up

- atmospheric general circulation model GLOBO (*Malguzzi et al., 2011, Wea Forecasting,* 2011)
- uniform latitude-longitude grid with horizontal grid spacing of 1.0 deg longitude x 0.75 deg latitude
- 50 vertical hybrid levels, 4 soil layers
- time step of 430 s
- sea-surface temperature (SST) is computed by superimposing and partially relaxing the SST anomaly for the initialization day to the SST climatological trend
- sea-ice cover in the initialization conditions evolves according to the climatological trend
- the SST and sea-ice cover climatological trends have been computed from a 20-year dataset (ECMWF ERA-Interim)

Forecasting strategy and initialization data

Forecast month

Ensemble mean of:

32 forecast runs initialized with **NCEP GFS ensemble forecast data**

- 00 UTC control run + 13 perturbed members
- 12 UTC control run + 17 perturbed members

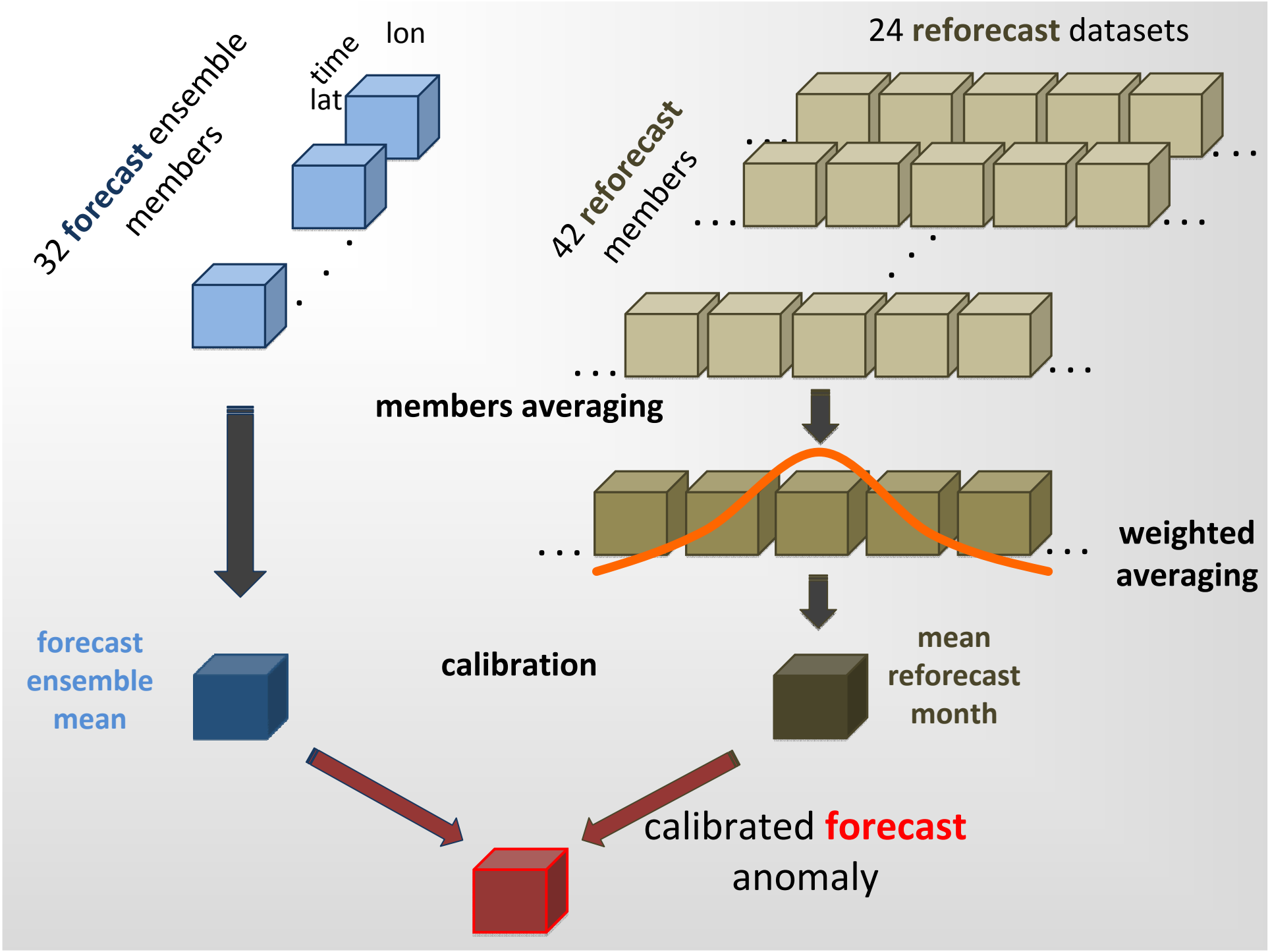
Mean reforecast month

Weighted average of:

24 reforecast datasets, 2 for each calendar month, made up of **42 runs** initialized with **ECMWF ERA-Interim reanalysis data**

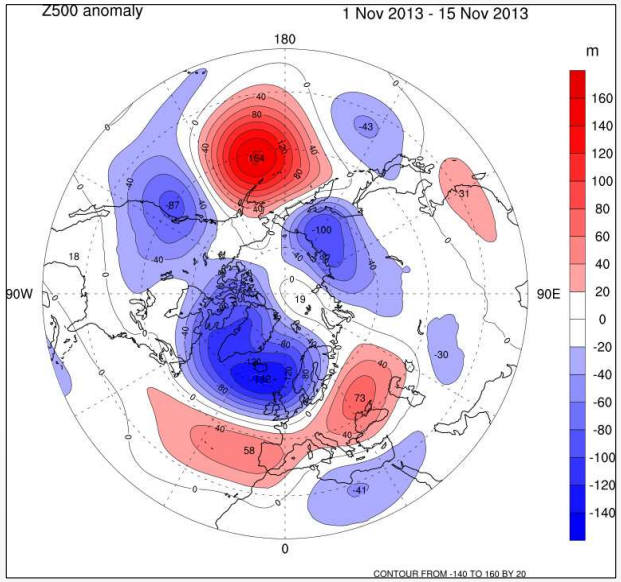
- same initialization date for 21 years (1989–2009)
- 2-member ensemble each year obtained through lagged initialization time (00 and 12 UTC)

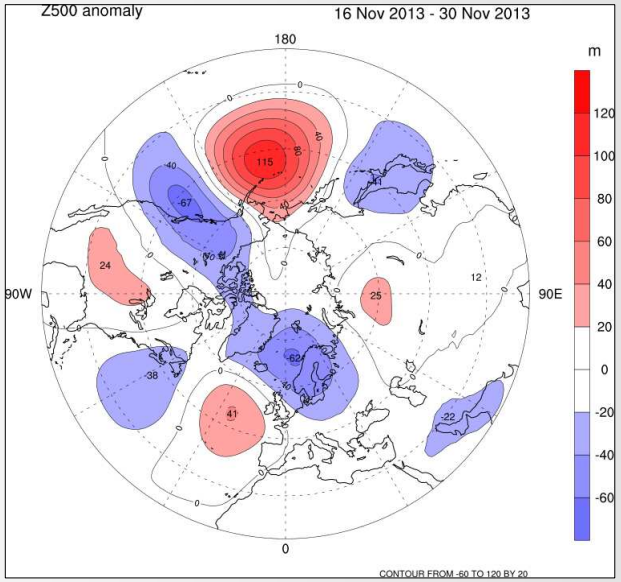
total of 1008 monthly reforecast runs


32 forecast ensemble members
time
lat
lon
24 reforecast datasets
42 reforecast members
members averaging
weighted averaging
forecast ensemble mean
calibration
mean reforecast month
calibrated forecast anomaly

GPH at 500 hPa, november 2013

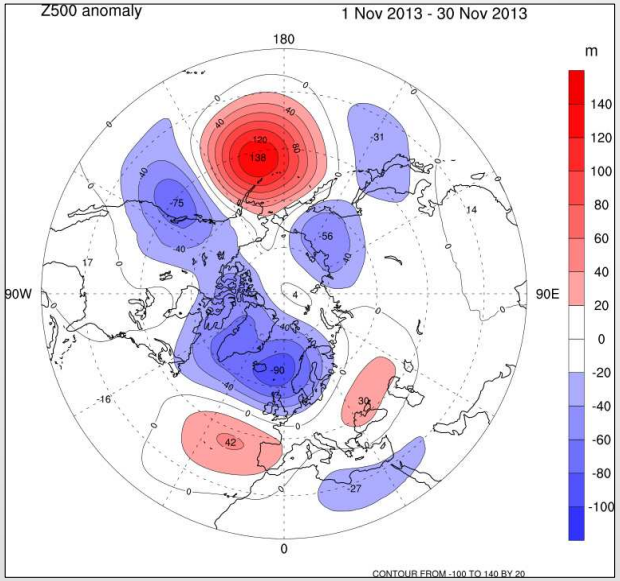
1-15





16-30

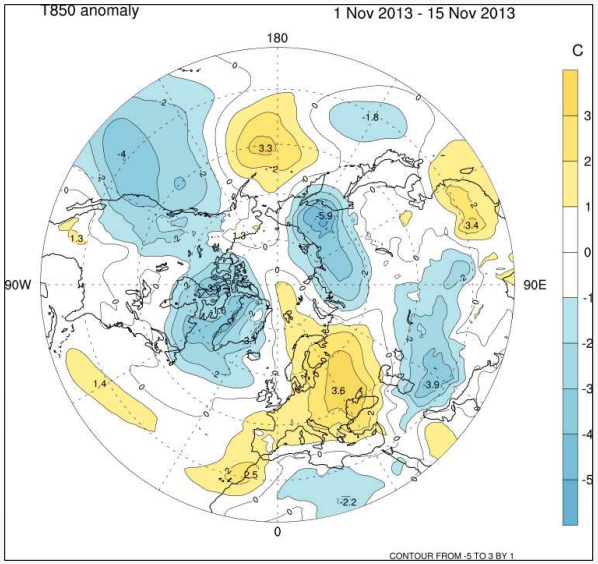
monthly mean

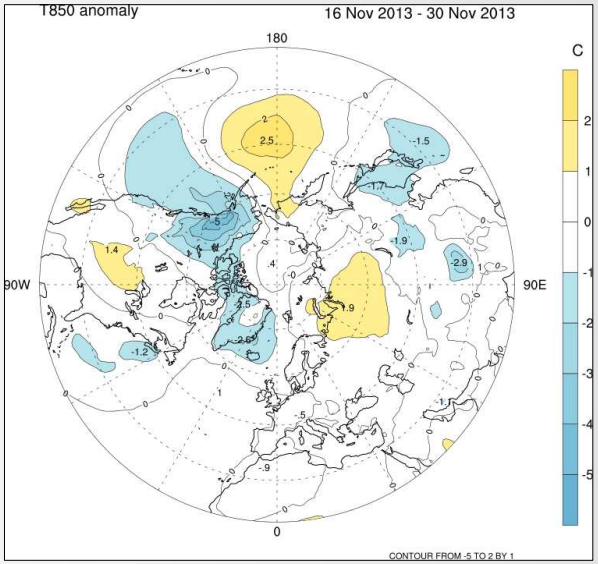


500-hPa geopotential height forecast anomaly (ensemble mean); c.i. 20 m.

T at 850 hPa, november 2013

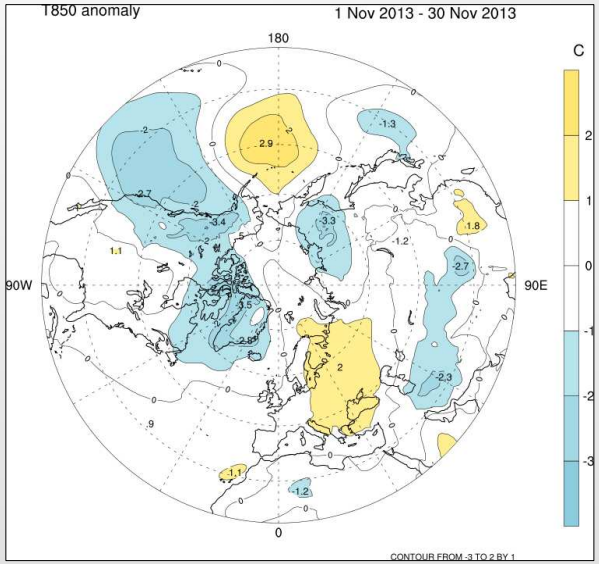
1-15





16-30

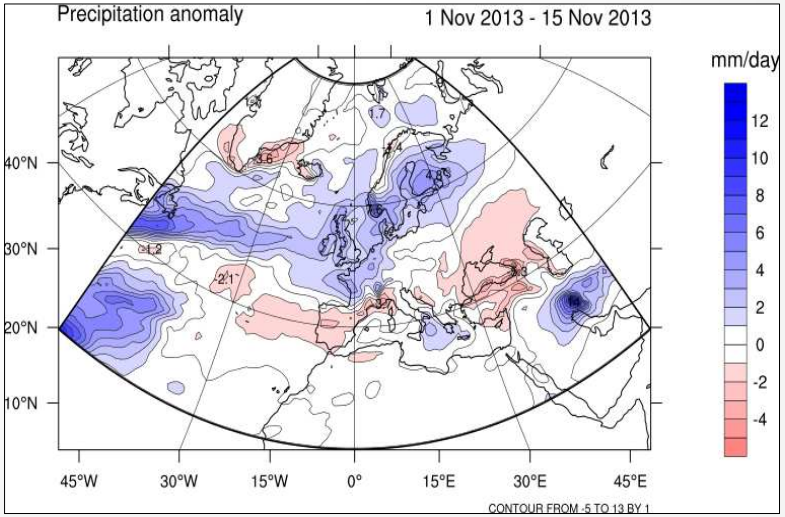
monthly mean

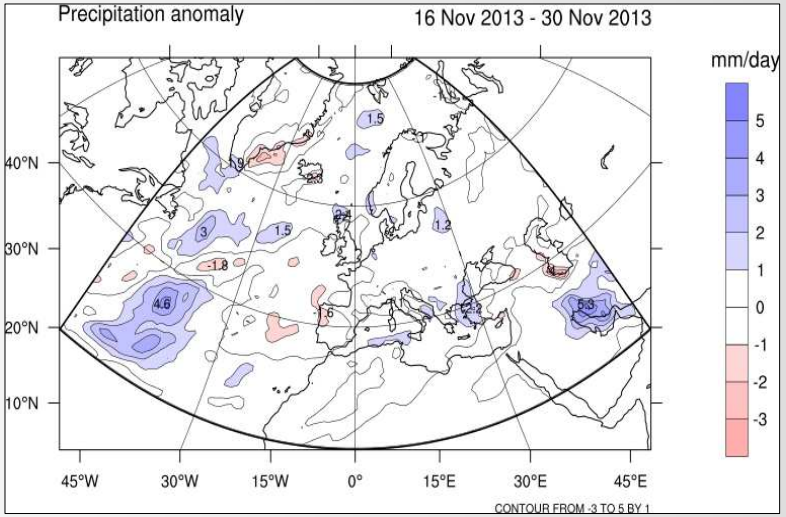


850-hPa temperature forecast anomaly (ensemble mean); c.i. 1.0 ° C.

Accumulated precipitation, november 2013

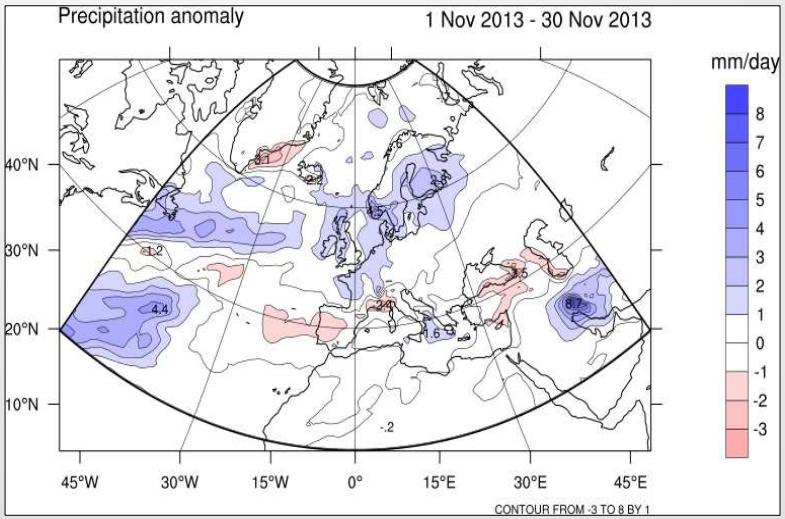
1-15





16-30

monthly mean



Accumulated precipitation forecast anomaly (ensemble mean); c.i. 1 mm

Tabella riassuntiva di probabilità suddivisa in terzili novembre 2013

	Temperatura a 850 hPa			Precipitazione		
	P(x<33p)	P(33p<x<66p)	P(x>66p)	P(x<33p)	P(33p<x<66p)	P(x>66p)
Nord	19	3	78	50	19	31
Centro	17	9	74	39	22	39
Sud	16	16	68	28	25	47