

Seasonal forecast issued in May 2015: prediction for the JJA season

Global view

In line with most of the world's research centers, the CMCC-SPS predicts a rapid warming of the equatorial Pacific compartment, which will possibly lead to an intense El Niño event starting from the summer. Sea surface temperature anomalies in the NINO3 region are predicted to exceed 2°C and persist at least until the fall (Fig. 1).

Warm anomalies in eastern equatorial Pacific have been persisting since more than a year, but it is the first time that such an intense and sudden warming is foreseen by all the members of the ensemble set.

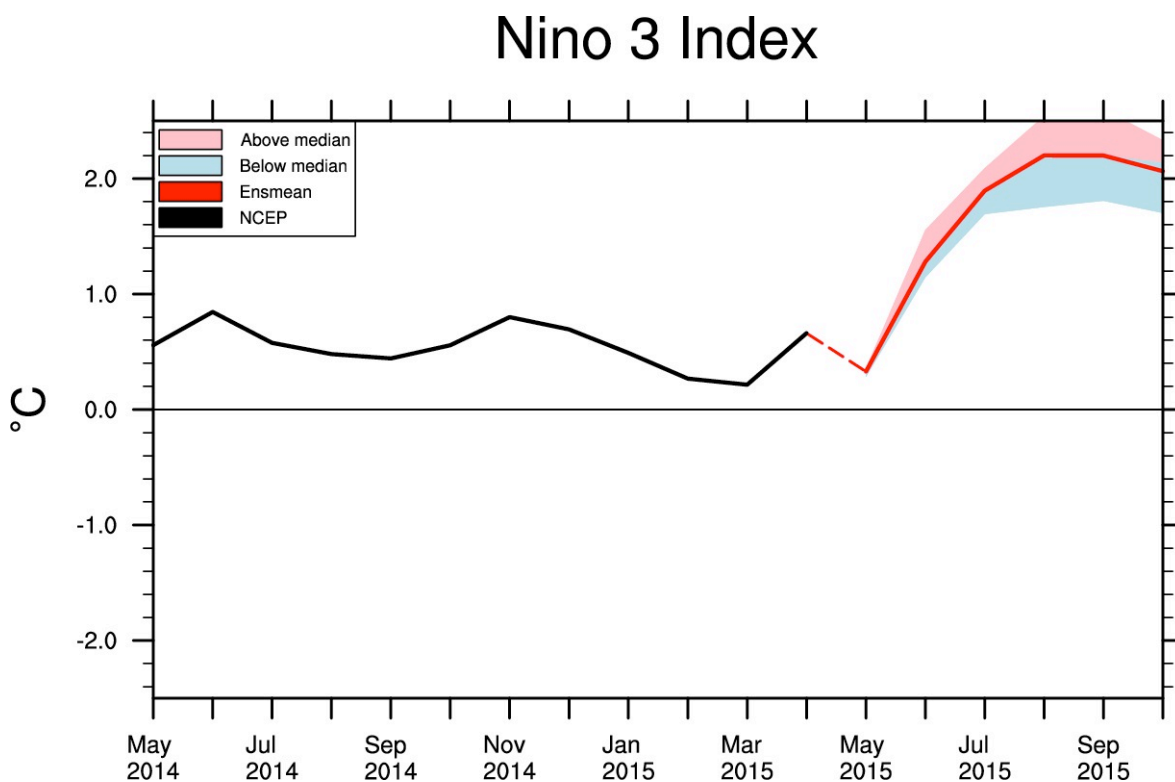


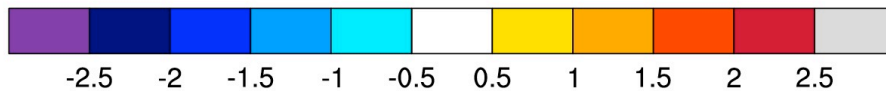
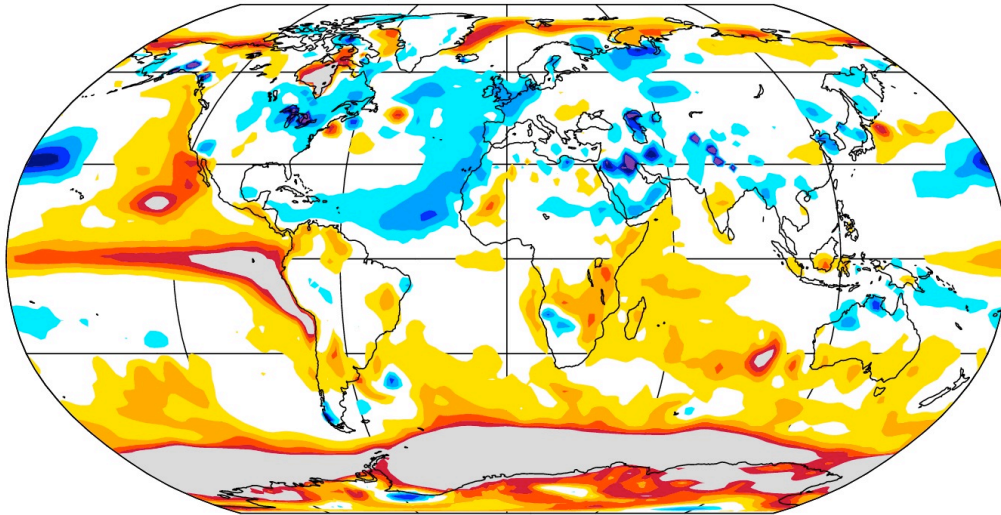
Fig. 1. Surface temperature anomalies predicted for the NINO3 region. Black line points out observations, red line indicates the CMCC-SPS ensemble mean, light blue (pink) shading represents values below (above) the median.

Given the low spread between the ensemble members, uncertainties about the ENSO+ signal and its magnitude appear to be very low. On the top of this, this El Niño episode seems to be well structured in the entire equatorial Pacific, with intense warming foreseen for the central and west central Pacific as well (not shown).

At the moment its impacts are predicted to be quite important, with warm waters in the entire Southern Ocean and the western and southern Indian Ocean, the Pacific coast of South America and the southern and eastern coast of Australia (Fig. 2). The positive PDO pattern that has recently been establishing in the northern Pacific will be persisting, as well as the cold anomaly in northern Tropical Atlantic. An exacerbation of the colder than normal

condition is predicted for the eastern North Atlantic, whose negative anomaly will affect the climate of western Europe. In this area, a cold summer is foreseen. On land, most of temperature and precipitation anomalies are induced by the ENSO+ pattern. Northern Brazil, Central America and Indonesia will experience high temperatures and drought conditions, with chances for wild fires (Figs 2-3).

201505 jja 2 meter Temperature anomalies [°C]



201505 jja 2 meter Temperature anomalies (%)

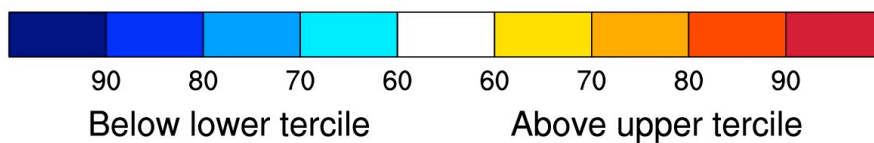
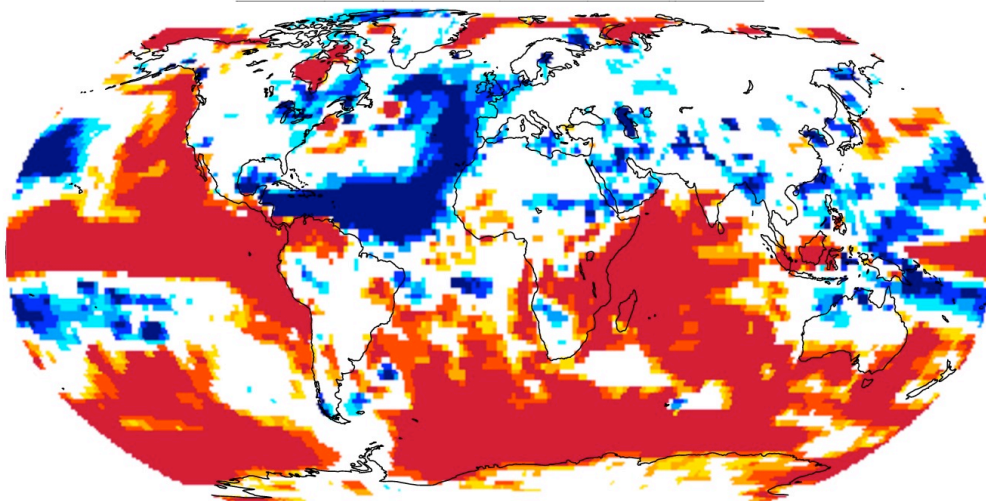
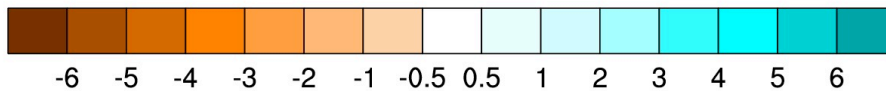
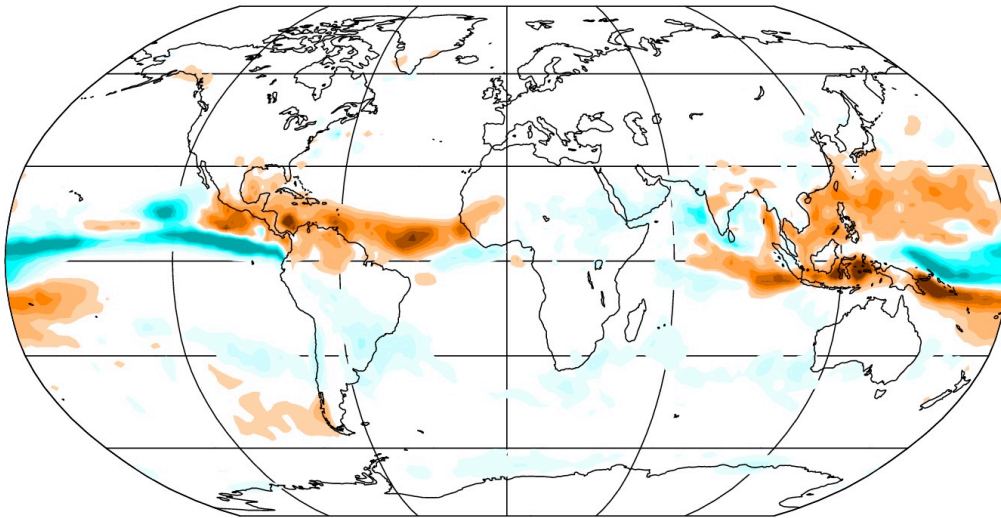


Fig. 2. (top) Global surface temperature anomalies (°C) predicted for summer 2015; (bottom) probability of occurrence of temperature anomalies displayed in the top figure. Values in percentage are shaded.

Likelihood of a weak Indian Summer Monsoon are high, with below normal precipitation in India and Bangladesh. Southeast Africa and part of South America will be warm and wetter than normal, while a cold summer is foreseen for the south Asia.

201505 jja Precipitation anomalies [mm/day]



201505 jja Precipitation anomalies (%)

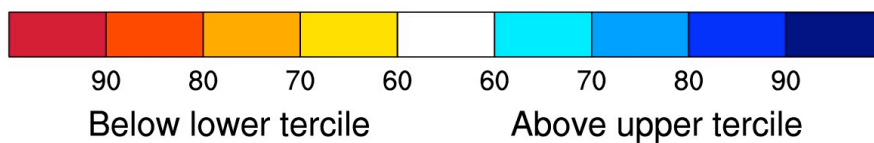
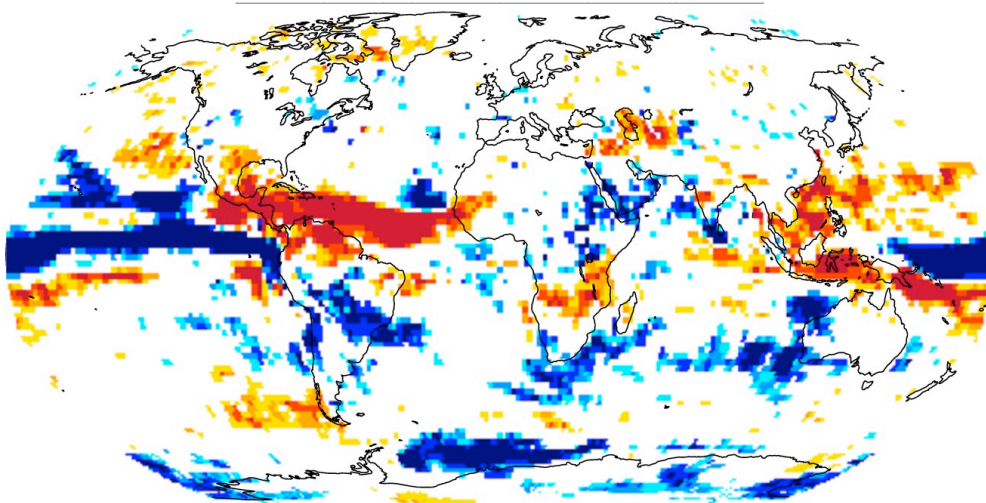


Fig. 3. (top) Global precipitation anomalies (mm/day) predicted for summer 2015; (bottom) probability of occurrence of precipitation anomalies displayed in the top figure. Values in percentage are shaded.

Europe and the Mediterranean

Our SPS predicts a potential blocking situation, with quite higher geopotential height centered in the continental eastern Europe and negative anomalies in the near Atlantic (Fig 4). This mean situation is predicted to persist for several weeks (not shown the same pattern for the JAS season), but at the moment temperature anomalies do not seem to follow the synoptic pattern. In fact, warm anomalies are relegated to a little region between the Balkans, Romania and Ukraine, and most of the ensemble members do not agree on the direction of the anomaly, which, consequently, turns out to be non-significant.

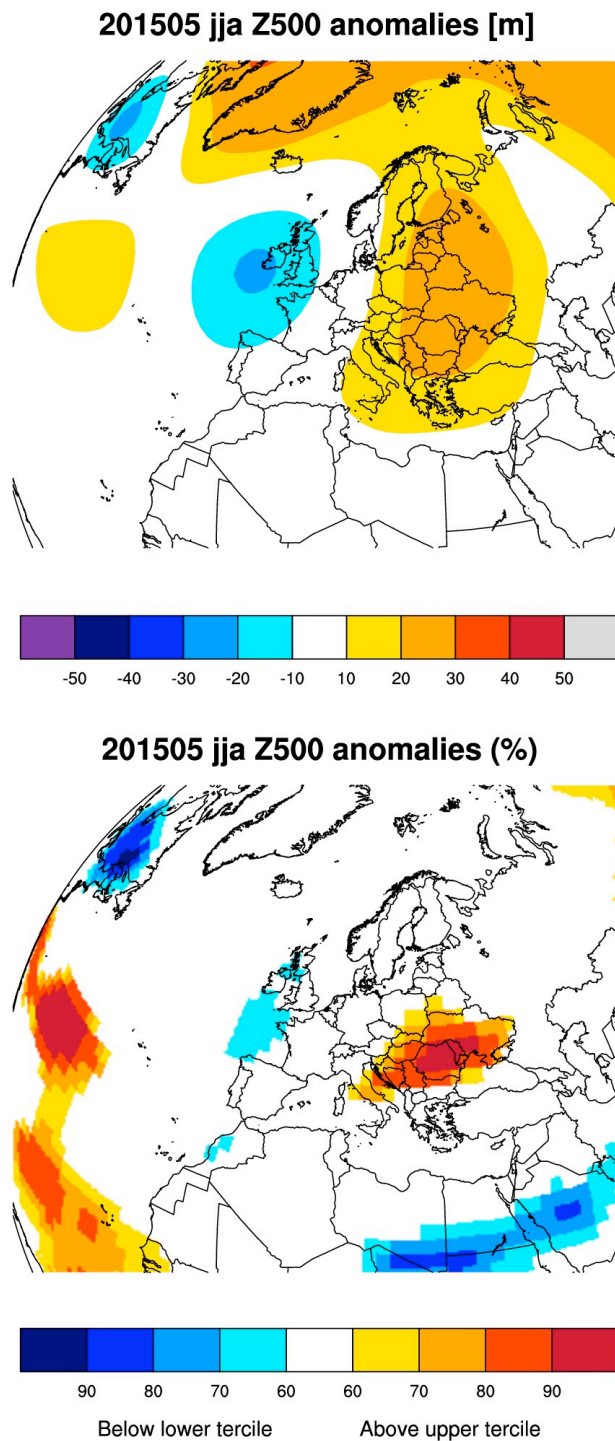
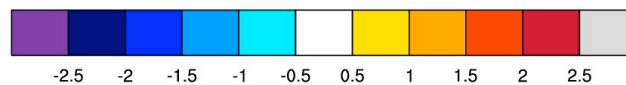
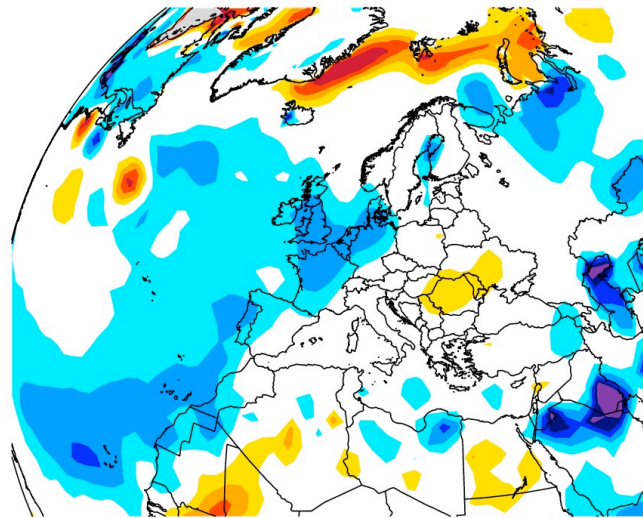


Fig. 4. (top) Europe geopotential anomalies at 500 hPa (m) predicted for summer 2015; (bottom) probability of occurrence of geopotential anomalies displayed in the top figure. Values in percentage are shaded.

The Atlantic coast, with particular regards to Portugal, France, UK and Benelux will be much colder than average (Fig. 5), particularly in the month of July (not shown). The eastern Mediterranean and its coasts, as well as the Spanish coasts, show a high chance for colder temperatures (Fig. 5).

201505 jja 2 meter Temperature anomalies [°C]



201505 jja 2 meter Temperature anomalies (%)

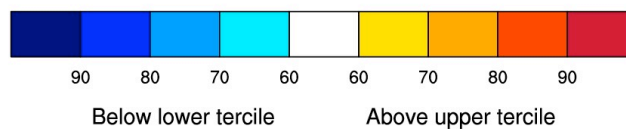
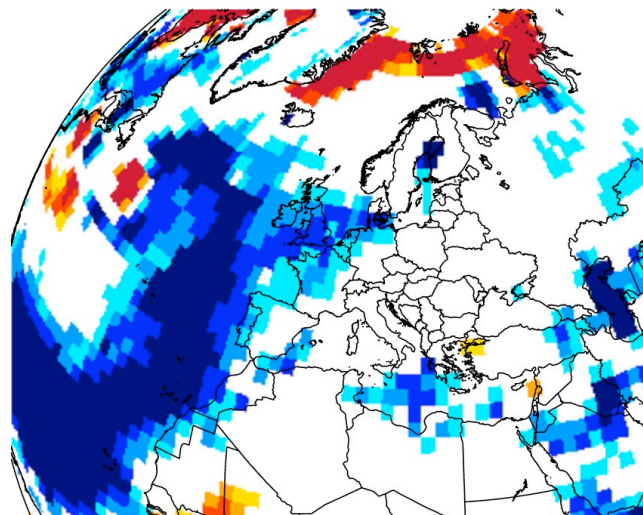
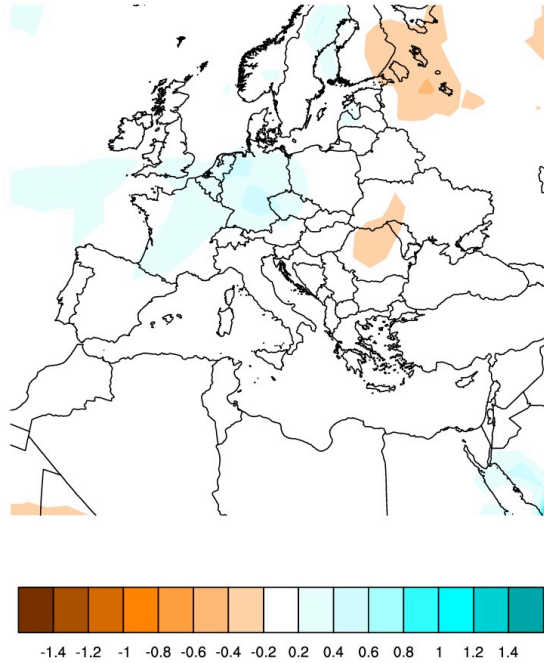


Fig. 5. (top) Europe temperature anomalies (°C) predicted for summer 2015; (bottom) probability of occurrence of temperature anomalies displayed in the top figure. Values in percentage are shaded.

Precipitation anomalies are scattered and not very intense. Nevertheless, a few features may be identified according to the geopotential anomalies shown in Fig. 4: there is a chance for dryer than normal condition in eastern Europe and wet anomalies in central Europe (Fig. 6). Also, as one could expect in summer months, precipitation and temperature anomalies are spatially correlated.

201505 jja Precipitation anomalies [mm/day]



201505 jja Precipitation anomalies (%)

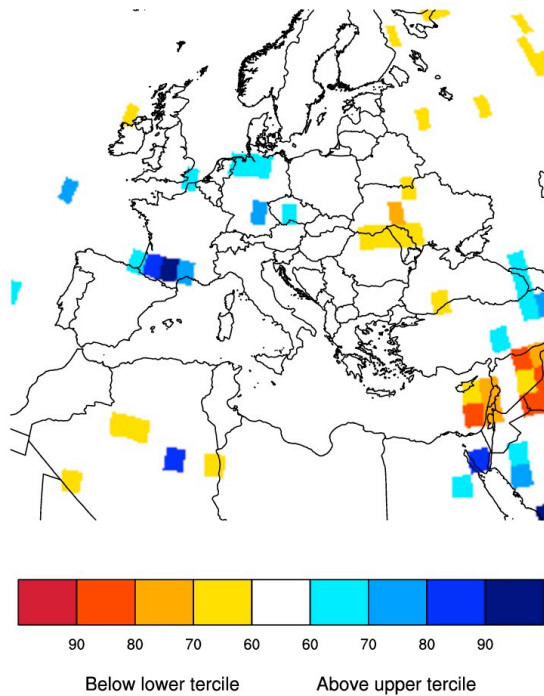


Fig. 6. (top) Europe precipitation anomalies (mm/day) predicted for summer 2015; (bottom) probability of occurrence of precipitation anomalies displayed in the top figure. Values in percentage are shaded.