

Met4Cast Winter Forecast (2009/10)

INTRODUCTION

Met4Cast has now issued its seasonal forecast for the 2009/10 winter. As with all long range forecasts, there are many uncertainties on what the weather will be like day-to-day. Last year's forecast was very accurate (in terms of general temperature and rainfall predictions per month). It was significantly better than the Met Office's poor attempt. This forecast will be split into two sections: the first being an analysis on various conditions and models and the second a general forecast for each month. The MetOffice **have failed to produce a winter forecast**, but rather give some lousy figures on the chances of a mild, average or cold winter. They hint that there is a better chance of a milder than average winter in terms of temperature and suggest either an average or above average rainfall (they obviously don't have a clue).

ENSO (EL NINO/LA NINA)

La Nina is the change to cooler than average sea surface temperatures (SSTs) across the Pacific Ocean. This usual occurs shortly after an El Nino episode, which has the opposite effects, i.e. milder SST's.

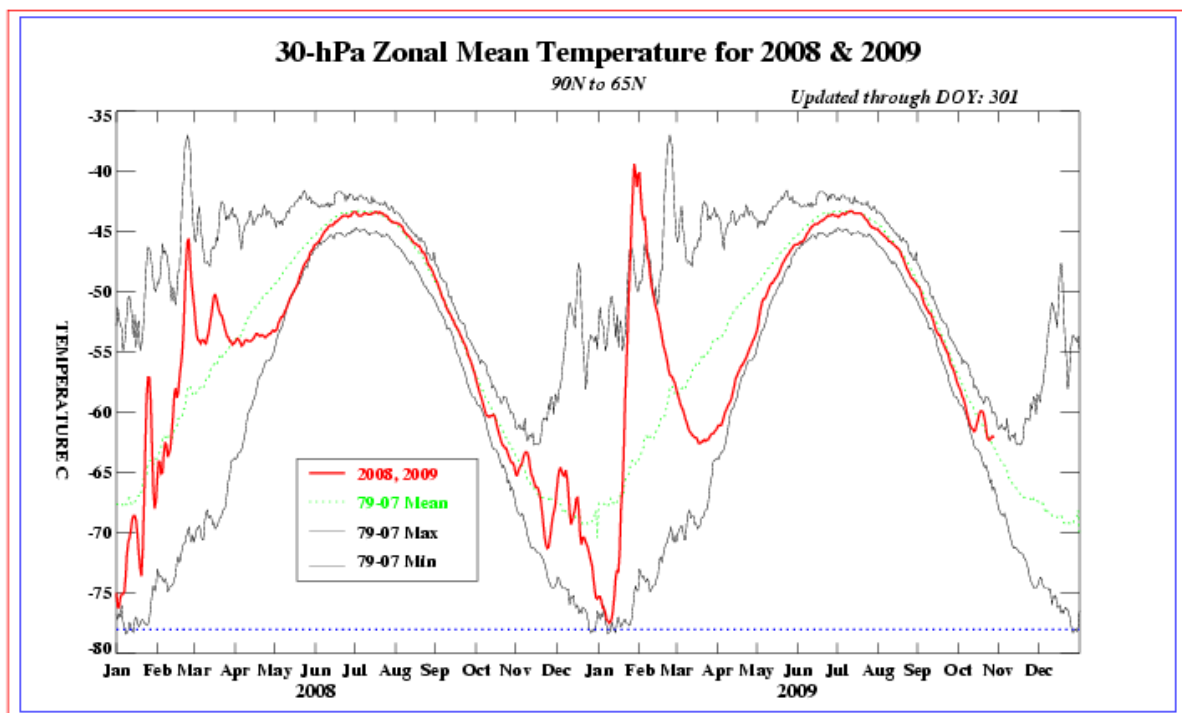
The NOAA have produced a report that analyses the El Nino/La Nina phasing and this year they are confident that El Nino is currently present with SSTs between 1c and 2c above the average and is expected to remain at least through this Winter. You can find out more details on how they produced this forecast [here](#). As stated early, El Nino usually brings milder SST's but it also brings wetter conditions toward the Atlantic. These usually take more of a southerly route up the jet stream so we can expect wetter conditions across South-West Europe and then areas east of that (e.g. areas such as Germany and western Russia).

Research from Fraedrich (1994) has indicated that during the winter months of an El Nino phase, there is an increase in the number of low pressure systems across Europe. This often suggests colder weather over Europe.

With low pressure systems over Southern Europe expected based on this, we can expect some more blocking patterns across northern Europe into Scandinavia.

THE STRATOSPHERE

The stratosphere is located above the tropopause. Unlike the lower layers of our atmosphere, as you advance through the stratosphere, temperature rise rather than fall. This is due to UV radiation being absorbed. Research has found that the warming of our stratosphere can lead to colder temperatures in the lower atmosphere. Steven DiMartino (2009) states that when temperature are warm in the stratosphere, the air presses down on the tropopause resulting in colder air temperatures in the lower levels of the atmosphere. I am yet to understand the reason for this but you can read up about the 'Stratospheric Connection to Northern Hemisphere Wintertime Weather' [here](#) by Thomson (2002).



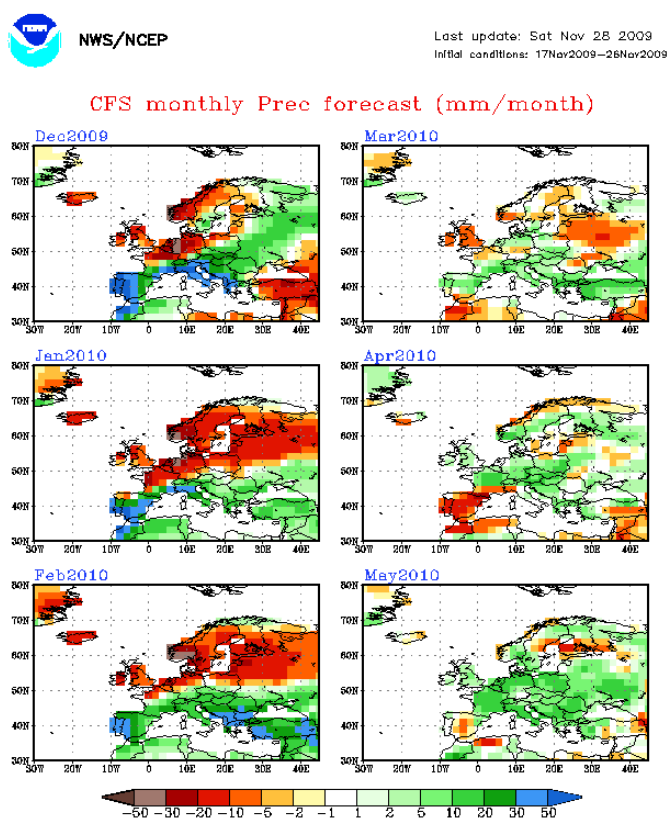
Above is a data chart showing the rise and fall in temperatures in the Stratosphere. As you can see, the temperatures follow cycles (much like the NAO). The green line indicates the average and the red line is the actual path taken. Interesting to note spike near February this year – it coincided with the cold period we had and that significant snow storm that brought out country to a standstill for days. The current path being taken is generally an average one, but you can see that in the last few weeks, value have risen a little above the norm. Some say that solar activity has started to pick up recently and this could cause further stratospheric warming. Indeed, NASA have spotted the first major activity of Solar Cycle 24. Check here:

http://www.nasa.gov/mission_pages/stereo/news/solarcycle24.html

NOAA (NAO)

North Atlantic Oscillation (NAO) is associated with the different sea level pressures between the Icelandic Low and the Azores high. This can mean fluctuations in temperature, rainfall and stormy conditions. During a positive phase (+NAO), there are an increased number of westerly winds, cool summers and mild and wet winters across the UK. During a negative phase (-NAO), there are a decreased number westerly winds; colder winters and stormy conditions develop across the Mediterranean. NAO has a strong influence on the weather across the world. Some will say that NAO has no direct influence on the weather across the UK and Europe. However, there may be an indirect influence which we must follow based on changes in the North Atlantic – check the latest day-to-day readings [here](#).

Last year, I was able to look through a data report from the climate centre at University College London (UCL). However, this year I was unable to do this because they had insufficient funding. Instead, I am only able to analyse PPN predictions from the Climate Forecast System (CFS) and make an informed guess on the likelihood of a positive, negative or neutral NAO this winter.



To the left you can see a prediction for the monthly precipitation amounts per month. At this stage, it is only worth looking around 2 months ahead for accuracy.

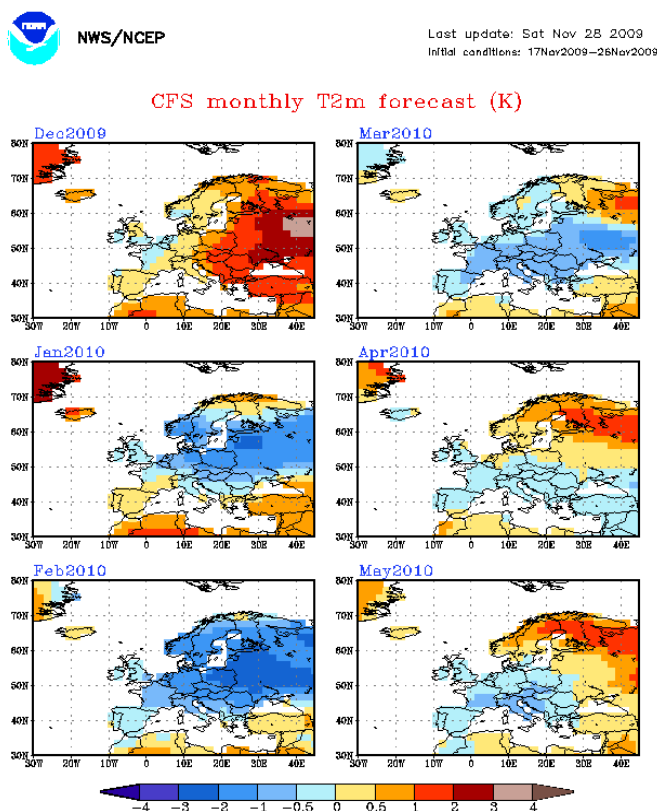
As you can see, PPN rates across Northern Europe are forecast to be below average and the UK near average in the south and below in north.

As a positive NAO phase (+NAO) brings wetter weather usually from a westerly air stream, it seems unlikely that we have a strong positive phase this winter. This suggests we are probably in for a negative NAO this winter

or possibly neutral conditions. That said, we will see wetter conditions in Southern Europe so maybe this argument is not sufficient to suggest either. That said, CFS are suggesting that if a +NAO phase occurs, the UK is unlikely to suffer from the significantly wetter conditions usually associated with it.

NOAA (CFS)

The Climate Forecast System (CFS) is a long range data model. Rather than forecasting just weeks in advance, it can forecast weather up to a year in advance. These models are highly unreliable in the long term and we can only take a look at these briefly and watch the patterns they suggest for the next 2 months at best. I have been keeping an eye on the models from the CFS for the last month and they have consistently shown a significant cold snap across Northern Europe this year and this extending into the UK.



Europe this December is looking rather mild in general and conditions in the UK are looking near average but possibly above average if we continue to see Atlantic lows.

Throughout January, the CFS expects temperatures to drop significantly across Europe and this is forecast to progress further west towards the UK.

It is maybe too early to think about February yet but it looks quit the case that temperatures will remain low.

THE FORECAST

I have covered a few different models and theories above and I think it is now time to write a forecast. There are other factors that can be looked at but I simply haven't the time to understand them all (let alone use the data in my forecast).

DECEMBER

December this year is looking a real mixture. GFS and indeed ECMWF are showing the jet sinking south for a while. Low pressure systems are forecast to continue into the beginning of the month and I can see the risk of some snowfall for northern and eastern areas. We may see a ridge of high pressure from the South-West later on in the month but I think this would be short lived. Currently I am forecasting a 30% chance of snow over the Christmas period due to the fact that a lot of moisture is expected and cooler air pushing through to end December.

Temperatures: Slightly above average

Precipitation: Slightly above average

JANUARY

I am forecasting January to be potentially the coldest month of winter of this year. With the anticipation of a blocking feature across Northern Europe and Scandinavia, I am forecasting an above average occurrence of easterly air streams. With Northern Europe expected to be dryer as a result, I can conclude that January precipitation is likely to be nearer average or slightly below in the west. Temperatures are expected to drop below average this month, especially in the east. Southern Europe is expected to be wetter than average due to El Nino. As a result, low pressure systems that push up from the south could well coincide with colder easterly winds resulting in snowfall across the UK. I believe this year, there is a reasonable chance for these.

Temperatures: Below average

Precipitation: Near average

FEBRUARY

February is quite a difficult month to forecast as it is a long way away. I would be inclined to predict a cold start to February as it will take a while for the cold air to be displaced after January's freeze. With El Nino expected to strengthen further, I would expect more unsettled weather to approach from the west. We are likely to see some early snowfall on the preceding edge of the Atlantic fronts, mainly across northern and western areas. Temperatures are expected to climb slowly.

Temperatures: Near average

Precipitation: Slightly above average