

Interactive comment on “How unusual was autumn 2006 in Europe?” by G. J. van Oldenborgh

G. J. van Oldenborgh

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Dear William Connolley,

thank you for your comments. The short reply is of course that I am much more interested in this region because I happen to live and work there, so that 3σ excursions in western Europe are — subjectively — more interesting than 3σ excursions in northern Siberia. Europe has not been selected *a-posteriori* for this study because that area was unusual, it was selected because first I had to write a background article on the Dutch extremes for my employer, the Royal Dutch Meteorological Institute (KNMI), and later a European take for the EUMETNET CSN, which grew into this article. On a global scale this argument does not hold, as a researcher in Omsk or Tomsk would have written about the Siberian anomalies.

The dangers of focusing on too small an area are well-known; my favourite example is that the average flood in Europe affects roughly 1% of Europe's rivers, so on average

Europe will experience a '1 in 100 year flood' every year.

The method proposed by you (I was not aware of it), does have a few drawbacks. It assumes a stationary climate, which is definitely not true. It also assumes that temperatures are distributed according to a normal distribution. The first problem I solved in first approximation by subtracting a regression against T_{global} , the second by explicitly checking the normality in Europe and using a GPD when the distribution is too skewed.

As an example, the Atlantic area which had larger deviations in 1998 is one of the areas where the effect of global warming is most apparent due to the small natural variability, so that the stationarity assumption implicit in your analysis is not valid. I computed the skewness of of the R2 reanalysis 2m temperatures, and found that this area has large positive skewness, even over 1948-1997 (excluding 1998). This makes high extremes there more likely than a normal distribution would indicate.

It would be worthwhile to investigate whether extremes are becoming more prevalent after correcting for the simple shift of the PDF due to global warming, and without normality assumption. This would require $\mathcal{O}(100)$ years of data, so it would exclude any areas for which long-term measurements are not available. I will report back when I have finished the analysis.

Interactive comment on Clim. Past Discuss., 3, 811, 2007.

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