

## Comments on the Forum article :

*"Patterns of Strange Errors Plagues Solar Activity an Terrestrial Climate Data"* by  
**P. E. Damon and P. Laut**

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The purpose of this comment is to point out a number of false accusations and factual errors in the Forum article by Paul E. Damon and Peter Laut in EOS September 28, 2004 entitled "Pattern of Strange Errors Plagues Solar Activity and Terrestrial Climate Data". There is not much new information in the paper, since most of it has been published before – even several times – and replies to that criticism have also been published. Never the less, Damon and Laut (DL) here repeat the allegations once more without discussing the counter arguments raised in the previous replies, and without even informing the reader about those arguments. Here we will concentrate on the issues associated with the graphs shown in Figure 1 and 2. For other issues we refer to earlier published replies and the web page [www.dsri.dk/response](http://www.dsri.dk/response).

As a rule, the insulting statements that DL use in their article (such as "obtained by incorrect handling of physical data", "unacceptable data procedures" and "strange data selection") should prompt a responsible editor to allow a comment prior to publication from the scientists whose work is being attacked. In particular because such statements are no more valid than the basis on which such conclusions are drawn.

Let us first look at the paper Friis-Christensen and Lassen (1991) in the following called FCL. DL attempt to throw suspicion on the authors using the wording: "*Close analysis reveals questionable handling of the underlying physical data*" thus implying that FCL failed to inform the readers about their procedure regarding their essential figure. The fact is that FCL made their procedure perfectly clear to the reader by specifically describing it in the text. No "close analysis" is needed to read and understand the following text quoted from the FCL paper (page 699, column 3, lines 9-16): "*For the last two extrema [two solar minimum and two solar maximum values], the available data do not allow full smoothing. Therefore we filtered the second to last extrema by estimating the next extremum (because this is included in the filtering with a weight of one-eight only), the last extrema express the unfiltered epochs.*" Thus all DL had to do was to read – and their astonishing disclosure that the curve is composed of a smoothed curve and four additional points, which are partially filtered or unfiltered, is already evident for any serious reader of FCL and does not provide the slightest support for DL's title announcing a "Pattern of Strange Errors".

Then DL go on claiming that Lassen and Friis-Christensen (2000) (LFC) provided an update of their original paper. This is true, but it is certainly not the figure that DL show in their Fig. 1b! DL postulate that the figure is "an update as presented by LFC" and state that "they [LFC] arrive at a different curve (Figure 1 b)". The figure is, however, actually produced by Laut himself (!) (see Laut (2003)), which makes the subsequent discussion by DL on what LFC "draw special attention to" in the figure and whether the curve "exhibits ... the claimed agreement" an almost surreal experience to read.

The science issue discussed here is whether the rise in surface temperatures from 1970 to 1985 was associated with a real shortening of the solar cycle or whether this correlation was just an artefact caused by noise in the unfiltered or partly filtered data, as claimed by DL. LFC introduced the issue by mentioning that the currently available long term filtered values did not change the impression of a steep rise from 1970 to 1985 and they devoted a full section to discuss the issue. LFC showed that until 1985, corresponding to the last published data point in the FCL 1991 paper, the solar activity as calculated by the cycle length was indeed increasing in parallel with the temperature. But they also specifically stated that after this date the Northern Hemisphere Land surface temperature variations did no longer follow the solar activity variation expressed by the solar cycle length leaving sufficient room for other explanations, including anthropogenic effects.

Typical for the methodology of DL, they totally disregard the scientific argumentation in the section dedicated to the issue in LFC. It is correct that LFC refer to the long-term filtered solar cycle data but they neither use them in their figure nor do they calculate them. Actually, the final and correctly filtered values will not be known until the end of the current solar cycle. The “trivial arithmetic error” does not come from the LFC paper, but from a paper by Thejll and Lassen (2000), which is not even included in DL’s list of references!

The reason why LFC do not use these data in their interpretation and figure is that although such heavy filtering (a filter length of 5 solar cycles) may be relevant when discussing secular variations, it is obviously meaningless in a discussion about the effects of solar variations on shorter time scales as pertinent for the decrease in activity from the 1940ies to 1970, the increase to around 1990 and the subsequent decrease.

A further false allegation in the article by DL is the claim that FCL published a 95% correlation of sunspot cycle length (SCL) with global warming and that they had to lift the third cycle 0.2 degrees centigrade which they could only do by using the ordinate SCL as an unwarranted free parameter and resort to using partially filtered and unfiltered data.

The fact is, however, that FCL did not publish a correlation coefficient of 95% - nor any other number. The reason is that such a number would have limited physical meaning if the data represent a mixture of filtered and unfiltered data.

That said, anyone can of course calculate a linear correlation coefficient corresponding to the numbers and will find a value around 95%. And actually, the correlation coefficient for the data excluding the two unfiltered and the two partly filtered data points is the same! The comment about “lifting the third cycle ...” is wrong and pointless in this context because the linear correlation coefficient is calculated from the pure numbers and is independent of any graphical representation. DL continue their accusations by attacking papers favouring the hypothesis about a link between cosmic rays and cloud formation. The claims brought forward here are repetitions of statements found in Laut (2003). However, the arguments can easily be refuted and interested readers are encouraged to consult the web page [www.dsri.dk/response](http://www.dsri.dk/response) for details.

The 2003-paper by Laut is the culmination of his personal vendetta over many years trying to cast doubt on the Danish research in the solar activity-climate link, and typical for his activity, he is well aware of the comments invalidating his conclusions (in this particular case since he – as a former advisor on climate issues to the Danish Government – in 2003 wrote a letter to the Danish

Parliament referring to the response published on the above mentioned web page). However, this does not restrain him from simply repeating the accusations in his Forum article with Damon.

In summary, Laut's methodology consists of first writing false accusations, then totally neglecting the refutations, and finally referencing his very own claims as corroboration when publishing new accusations. This is in our view an interesting, but also the very only, conclusion that can be drawn from the article.

#### References:

Damon, P.E. and P. Laut, 2004, Patterns of Strange Errors Plagues Solar Activity an Terrestrial Climate Data, EOS, vol 85, 370, 2004.

Friis-Christensen, E. and K. Lassen, 1991. Length of the solar cycle: An indicator of solar activity closely associated with climate, Science 254, 698-700, 1991.

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Thejll, P. and K. Lassen, 2000. Solar forcing of the Northern Hemisphere land air temperature: New data, J. Atm. Solar-Terr. Phys., 62, 1207-1213.