

**Memo 09/11**

## More droughts ahead

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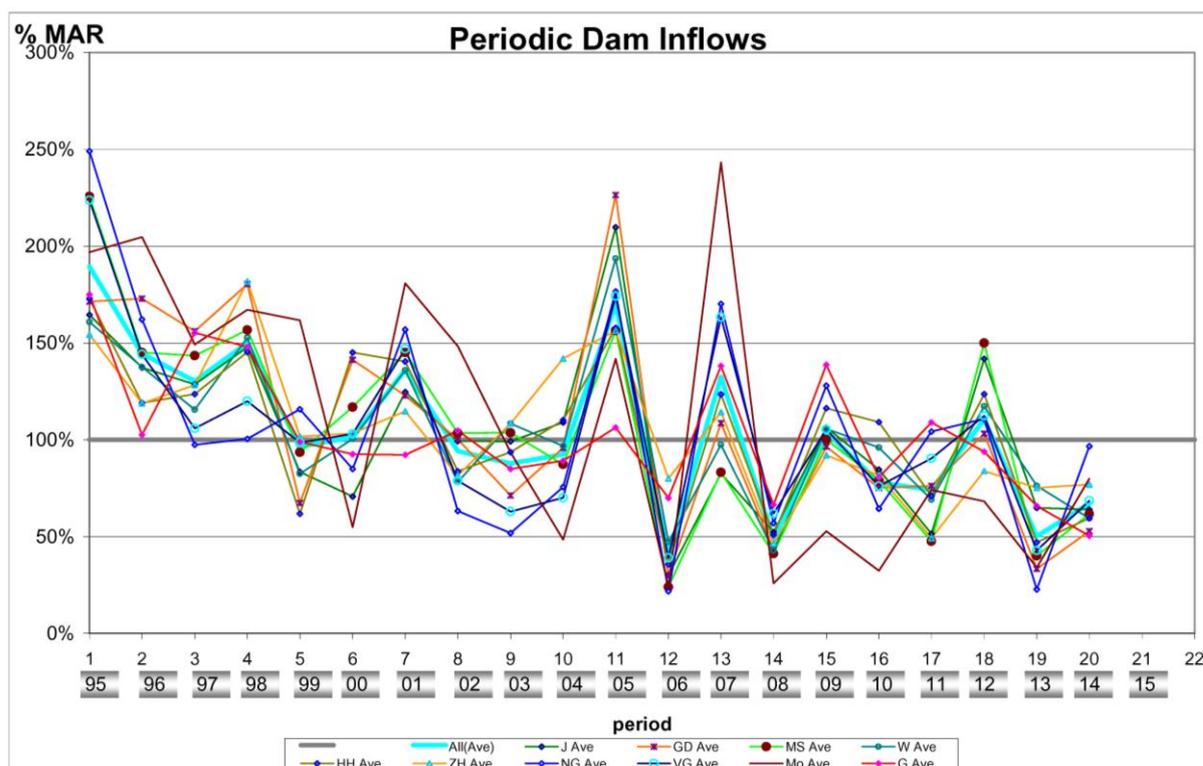
This is the conclusion in my article *The likelihood of a global drought in 2009-2016* published in *Civil Engineering* in June 2008

### Quote:

#### Drought alert

It is very important to note that periodicity in the data was used as the prediction tool and NOT the sunspot cyclicality.

Figure 3 is our river flow prediction model prepared by Alwyn vd Merwe. We are presently in period year 13 (2007-08). Note the very clear, well above average recorded river flows for the present hydrological year (13). Even more importantly, note the succession of below average river flows in the period years that lie ahead (14 to 20). Analyses of other long hydrological data series show similar characteristics.



**Figure 3. River flow prediction model.**

This prediction model is based on the thoroughly studied, synchronous linkage between periodic solar activity and the hydro-meteorological processes. It has been tested and verified. The likelihood of prolonged, severe droughts from next year onwards is very real

Can we venture an estimate of how severe the droughts are likely to be? There were five dry (drought) sequences during the past century. One of them was the Great Depression Drought. As a first estimate there is therefore a 20% likelihood of it being repeated in the years ahead. Note also the saw-tooth shape of the annual sequences. This flip-flop mechanism from flood to drought sequences and reverse is currently being investigated by my colleague David Bredekamp.

As I write these notes there is a considerable volume of international Internet traffic expressing concerns relating to the lack of solar activity during the past year and the possibility that the world may be entering an ice age. While this may be premature, the linkage between the abnormally cold weather being experienced in the northern hemisphere and the abnormal lack of sunspot activity during this period is causing considerable concern. This supports the prediction that severe global droughts may be imminent.

All indications are that we are now on the threshold of global cooling associated with the second and less active solar cycle. The delayed solar minimum occurred earlier this year (January 2008) but solar activity continues to be abnormally quiet. A severe global drought will almost certainly be one of the consequences.

### **Unquote.**

Severe regional droughts occurred in parts of South Africa and elsewhere within a year of the publication of my 2008 article. Three seawater desalination plants were constructed in Mossel Bay, Sedgefield and Plettenburg Bay. Water restrictions were imposed at Port Elizabeth. Severe drought conditions also occurred in other parts of South Africa and elsewhere in the world. The severe drought is still raging in the Horn of Africa where famine conditions have just been declared by the UN.

Since then we have had good rains and moderate floods that have filled most of our dams. With this in mind have a closer look at the prediction model in Fig 3 above. Note that we are currently in the generally dry period associated with the second and less active solar cycle (years 14 to the end of the cycle).

Note in particular the oscillating pattern of wet and dry sequences. The global distribution of regional droughts followed by high rainfall and floods confirms the validity of the prediction model. Based on the model, we are about to enter another period of low rainfall and droughts.

### **Cause of oscillations**

The cause of the well-documented oscillations within the 11-year cycles has long been a puzzle. I made enquiries but was unsuccessful.

As mentioned in the 2008 article my colleague David Bredekamp has studied this phenomenon. His conclusion is that during global drought years, the excess solar energy is stored in the oceans until it reaches a point where the additional energy is discharged into the atmosphere where it triggers high rainfall sequences and floods. This continues until the excess energy is exhausted, climate becomes quieter, droughts occur, and the excess energy is stored in the oceans once more.

This also confirms that it is variations in the receipt, storage, and redistribution of solar energy via the oceanic and atmospheric processes that drives the world's climate. The greenhouse effect caused by human activities, if present, is undetectable against this background. It is certainly not the driver of climatic processes. Temperature never has and never will feature in the design of structures and water supply systems exposed to hydro-climatic extremes. It is fundamentally impossible for global climate computer models to replicate the properties of river flow shown in Fig 3 above, now or in the future.

### **Precautionary measures**

It is essential that all South African water supply authorities start planning for the inevitable droughts that will occur as our available water resources approach depletion. With this in mind I am in the process of bringing my handbook on analytical methods for water resource development and management up to date. It will consist of individual chapters in e-book readable format. I am also in the process of producing a set of PowerPoint presentations that will consist of several hundred slides. The set will be in tablet readable format.

It will be several weeks before this material becomes available.

### **Recommendation**

I recommend very strongly that all water supply authorities and interested parties involved in drought operation procedures should make an immediate start by listing the likely consequences when the inevitable drought occurs and the associated conflicts of interest. The next and very difficult step will be for the parties to get together, discuss their differences and draw up a preliminary plan of action. This will have to be followed by detailed calculations and an agreed report on the procedures to be implemented as soon as available storage has dropped to a predetermined level.

The whole process will take at least six months to complete.

Please do not underestimate the difficulties involved in this procedure as well as the political, social and economic consequences if water supplies fail due to the lack of preparedness.

Bear in mind that my material will provide guidelines, not answers.

### **The science**

The data used to produce Fig 3 were not manipulated in any way. Nor was any computer programming involved. All that was done was to rearrange the observations into sequences as described in Memo 06/11 and my 2008 article.

The most prominent feature is the very clear, closely synchronous observations that are associated with the solar magnetic reversal that identifies the commencement of the second of the pair of solar cycles at year 11 in the figure. This oscillatory pattern then subsides for the rest of the solar cycle.

The dominant role of received solar energy in global climate variability is now incontestable. History will not treat the once esteemed Royal Society and other scientific institutions kindly for their role in deliberately discouraging research that did not acknowledge the dominant role of human activities for which there is no analytically believable evidence. Their action has caused incredible adverse consequences to humanity.

## **Coincidence?**

As a matter of interest, there is a growing concern that the world is entering into an economic recession that could last for several years. The Great Depression Drought (Dustbowl Drought in the USA) occurred during the period 1929-1932. This coincided with the severe economic depression. These are period years 17-20 (2011-2014) in our prediction model. There is now a real likelihood that this combination could occur again with devastating consequences. This probability should not be ignored.

## **References**

Alexander, Bailey, Bredenkamp, van der Merwe and Willemse *Linkages between solar activity, climate predictability and water resource development*. Journal of the South African Institution of Civil Engineering, Vol 49 No 2 June 2007, pages 32-44, Paper 659 and the references therein.

Alexander. *The likelihood of a global drought in 2009-2016*. *Civil Engineering* June 2008.