

Climate change: Now for the bad news

By David Dowling

It's always hard to choose when someone asks whether you want the good or the bad news first. Honestly, you would just do without the bad news altogether if you had the choice.

But they always seem to go hand in hand and the bad usually outweighs the good. So it goes with the related issues of climate change and the medium-term weather outlook.

A series of CRDC-sponsored workshops in November at Dalby, Goondiwindi, Moree and Wee Waa brought together three of the experts in the field. And they found it difficult to put any sort of positive spin on the situation.

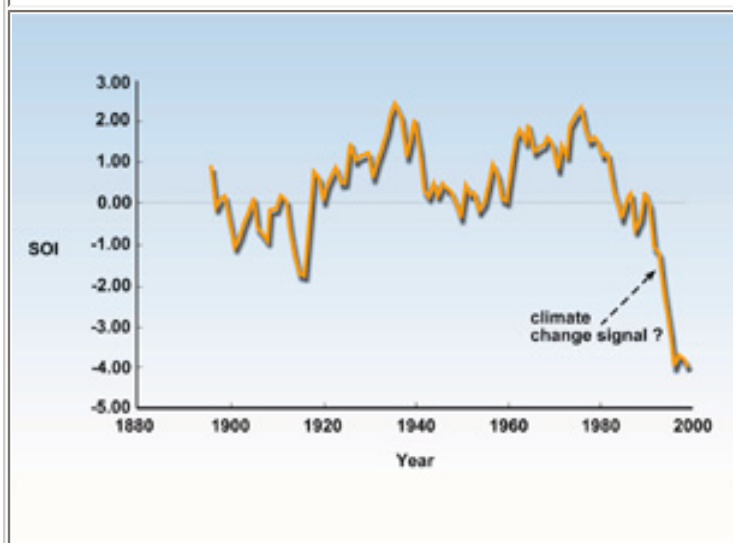
- Dr Roger Stone from the Queensland DPI's Centre for Climate Applications (QCCA) gave an analysis of the current El Niño situation and the likely future outcomes;
- Dr Yaya Abawi, also from the QCCA looked at the influence of SOI values on stream flows and water availability and introduced a new, freely available stream flow forecasting model, Flowcast (see following article); and,
- Dr Ian Watterson from CSIRO Atmospheric Research in Melbourne looked at the broader issues of global warming, climate change and the possible effects on agriculture.

The good news

Believe it or not, there was some good news. The current El Niño-inspired drought has a good chance of breaking in the autumn of 2003. Any serious break in the pattern is unlikely before then, despite some reports to the contrary.

This El Niño has not been a particularly 'strong' one in terms of eastern equatorial Pacific Ocean temperatures. But the worst droughts in Australia often occur during these 'weak' El Niño events. The current situation shows all the signs of having matured and most models are now pointing to a breakdown of the El Niño next

FIGURE 1: Twenty year moving average of mean SOI



autumn — the time of year when they usually break.

But there are no guarantees. The situation could still follow the path of the early 90s with the El Niño pattern persisting for several years.

The other good news is that some areas of southern Queensland and northern NSW can get average or above summer rainfall in a year like this — purely from storm rain.

The bad news

The bad news came from Ian Watterson's information that the greenhouse effect, global warming and climate change are with us and we had better start getting used to the idea. The CSIRO has refined their climate models significantly in recent years. Major climate changes are forecast whatever action is taken on greenhouse gas emissions.

Almost all of Australia's broadacre cropping zone will become hotter and drier. On average, Australia will warm up by between 0.4°C and 2°C by 2030, and between 1°C and 6°C by 2070.

There will be significantly more days over 35°C and significantly fewer frosts.

On rainfall, there is no clear signal for much of the cotton belt. There is likely to be a slight drying in most areas — it may get drier in winter but wetter in summer.

In any case, rain is likely to fall on fewer days meaning more dry spells, greater evaporation and a reduction in average soil moisture. Importantly for irrigators, there will be a reduction in stream flow and less water available for irrigation.

The only positive effect may be enhanced plant growth due to increased CO₂ in the atmosphere. But the whole world will get this effect, so it won't give us any marketing advantages.

A recent CRDC-commissioned report of the Macquarie Valley suggests that by 2030:

- Average temperatures will rise by about 1°C;
- Evaporation rates will increase by about eight per cent in winter and four per cent in summer;
- The area planted to cotton will fall by between eight and 23 per cent; and,

- Net cotton production is likely to remain fairly static because of higher yields — partly caused by increased CO2 levels.

While this doesn't suggest a total disaster, it does suggest that competition for diminishing water supplies will intensify and that the politics of water will continue to overheat.

The really bad news

Unfortunately, it seems that the practical effects of global warming may be being felt already. Dr Roger Stone presented information which suggests the 20 year moving average of the SOI has actually been in decline since the late 1970s (Figure 1). So the three serious droughts we have had in the past 20 years may be just a sign of things to come.

The big danger is that global warming will produce a permanent pool of warm water in the eastern equatorial Pacific ocean — a semi-permanent El Niño state.

But according to Roger, there is no cause to panic. "The very long-term climate models provide useful background information, but the three month climate forecasts are the only definitive, carefully tested climate forecast information we have."

For more information, visit the Long Paddock website <http://www.longpaddock.qld.gov.au/> or download the latest climate change information from the CSIRO Atmospheric Research site at <http://www.dar.csiro/impacts/future.html>

[Go back](#)