

ROYAL METEOROLOGICAL SOCIETY: AUSTRALIAN BRANCH MEETING

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Long-range Weather Forecasting : The State of the Art

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'...Semicivilized and barbarous peoples have given credence to the prophecies of their priests and medicine men. Today fakirs and charlatans in the various professional and scientific fields, astrologers, fortune tellers and long range weather forecasters command in civilised communities a lucrative following.'

E.B. Garriott (1903)

'Seventy-five years later and I believe nothing has changed.' It was on this hard hitting note that Mr Wright (Bureau of Meteorology) began his address. He added that if this really is the situation, then the wide acceptance given to present day long-range weather forecasters must arise more from the underlying need for such a service than from the satisfaction being given.

United States figures show that around 2000 customers subscribe on a regular basis to the monthly forecasts issued by the long-range weather forecasting office in that country. These customers are spread across a whole range of activities and surprisingly the greater percentage are from outside the 'agribusiness' sector. This is probably indicative of the fact that only 20 to 30 per cent of the variability in the major crop yields in the US can be attributed to meteorological factors. On the other hand, in Australia weather and climate account for between 60 and 80 per cent of the variability in the major crop yields. Surely then the demand for long-range weather prediction in this country must exist on a scale similar to that in the US.

Even forecasts of limited true predictive skill, i.e. bordering on being merely climatological advices, would be of value to those who knew how to use them. However, there is no recognised scientifically based establishment in Australia providing either a routine long-range weather prediction service or even a routine climatological advisory service. We would appear then to have reached the stage, Mr Wright believes, where those charged with the responsibility of decision making and planning in the fields where weather and climate are important factors can either ignore these factors or turn to those less qualified to provide the information.

Despite the evidence that most if not all long-range weather forecasters in Australia lack both a scientific basis for their methods and a sufficiently consistent measure of skill, Mr Wright feels we should not be too critical since in general they are acting in good faith in response to a community need. Why is it though that the recognised meteorological establishments have shown a reticence to involve themselves in long-range weather prediction or at least advertise the fact that an alternative in the form of a climatological advisory service could be provided? Why is it that in recent years research into long-range weather forecasting has been so little and so uncoordinated? Mr Wright believes that it may be that the subject has been put in the 'too hard' category. He added that many scientists are under pressure, either self-generated or otherwise, to carry out research that will produce results in the short-term.

Mr Wright then went on to describe the various methods and techniques and the underlying physical and dynamical factors of long-range weather prediction - from the explicit physical dynamical numerical modelling approach to the multitude of pure statistical approaches.

It was becoming obvious that a compromise between the two extremes offered the best hope for the future. A bewildering array of statistical techniques were being used or had been used in the past, but some of these were characterised mostly by their lack of statistical rigour. Mr Wright felt that in the immediate future most promise lay in establishing relationships between the atmosphere and oceans. The latter had a longer 'memory' than the former and they might be expected to interact on the longer time scale.

Mr Wright concluded his most interesting and stimulating survey of this controversial area of meteorology with a description of the styles of long-range weather predictions currently issued in the US and UK. In Australia, he reiterated, no method of long-range weather forecasting either in the past or the present has demonstrated consistently useful skill. This included the various experimental methods tried in the Bureau of Meteorology, the efforts of Mr Lennox Walker, and the rainfall trend predictions of Dr E.G. Bowen.

M.J.C.