

ROYAL METEOROLOGICAL SOCIETY: AUSTRALIAN BRANCH MEETING

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Recent Trends in Meteorological Training in the USA

D. R. Johnson

Professor Johnson, Chairman of the Board of Education of the American Meteorological Society, spoke first about trends in meteorological education in the USA. In the second part of his talk, he reported on research work at the University of Wisconsin designed to enable the operational forecaster to interact with the computer.

He stated that the considerable advance in theory from Petterson's kinematic rules of 25 years ago to the present sophisticated mathematical models has not been accompanied by similar progress in using the computer to prepare forecasts.

The rapid development of meteorological knowledge resulted from the provision of large government funding over two decades, but this growth era has now ended in the USA. The annual output of Ph.D.s in meteorology increased from 7 to 65 per year over a 20-year period but has now peaked. He sees meteorology as having reached an era of slow growth and increasing diversification. This limitation of growth is now general throughout American universities as budgets have stabilised and he expects a 20 per cent decrease in overall student enrolments in the next 15 years.

The future job market in the USA is indeterminate for pass (B.Sc.) graduates in meteorology as the military and government have reduced their intake. There is also a trend to recruitment at the technical officer level in both institutions, e.g. the military is now training enlisted men as forecasters rather than recruiting graduates as junior officers. There has, however, been a great expansion in private sector meteorology and some small firms have grown rapidly into million dollar companies.

The Board of Human Resources of the American Meteorological Society is conducting a survey into training in meteorology at the present time. There is a general desire in the profession for a syllabus with greater emphasis on applications (e.g. forecasting). Academics, however, maintain that it is most important to teach basic theory plus the use of the computer as a preparation for employment. The second topic (computer-forecaster interaction) was introduced by an excellent film showing computer analysis of hourly data. These are displayed on television consoles at the forecasting desk. Each analysis shows the latest cloud picture from the geostationary satellite with geographical boundaries superimposed and analyses of selected fields (isobars, streamlines, isotherms) also added, all in colour.

The AFOS system at present in use in the USA is unidirectional and highly centralised - all the analyses come from Washington and cannot be amended. The meteorology department of the University of Wisconsin is experimenting with a system that allows the forecaster to amend the television display analyses at selected areas in the light of local information. The evolution in time of a high resolution cloud field is integrated from geostationary satellite pictures (at 30 minute intervals) and this is used together with local radar observations to amend the centralised analyses.

He referred to an ailment in forecasters called 'meteorological cancer' whose symptoms are apathy and withdrawal resulting from the mechanical dissemination of output from Washington without personal intervention in the forecast process. This can be alleviated by courses for forecasters designed to improve their understanding of the computerised system.

In reply to questions after the film, Prof. Johnson said that the National Science Foundation will sponsor, in the near future, a workshop to investigate the introduction of a system similar to the modified AFOS into educational institutions. It is hoped this will assist in closing the gap between research, academic teaching, and forecasting. Case histories on video tape will be programmed through the system for training purposes.

K.T.M.