More to forecasts than computer models

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Weather forecasts are becoming increasingly accurate, with seven-day forecasts now more than 90% accurate; up 20% from just a few years ago, according to Mallee farmer and Nuffield Scholar Robin Schaefer.

Robin, General Manager of the collaborative farming business Bulla Burra, based at Loxton, makes full use of Bureau of Meteorology forecasts and private forecasters when making decisions about his cropping program and farm management but believes there is more to weather forecasting than ocean temperatures and computer programs.

He also stresses the importance of using forecasts as decision-making guides, not viewing them as absolutes, which would increase risk rather than reduce it.

"Despite the on-going increase in forecast accuracy, it is unlikely forecasting will ever be 100% accurate," he said.

"We use weather forecasts from diverse sources including private forecasters, mainly to work out the risk of dry conditions so we can manage to reduce risk without putting the business at risk. We also use 'Productionwise', a production forecast system that provides an additional perspective."

A Nuffield Scholar, Robin used his scholarship to research weather forecasting; a project that took him to 'mainstream' sources including scientists and weather bureaus and to forecasters using what many could consider 'alternative' methods such as the influence solar and lunar cycles, for example.

Access to greater computing power has significantly increased the capabilities of forecasters and the accuracy of forecasts, he said, because modern forecasting begins with 'plugging' real data into computer models that determine the weather between the real data points. More data points enable more accurate forecasts, he said, but also require more computing power.

Much of the world's weather is influenced by 'teleconnections' – phenomena such as the Indian Ocean Dipole and the Southern Oscillation Index – that interact with and impact on weather systems and mechanisms, he said, and he expects identification of more of these phenomena and improved understanding of what

MALLEE FARMER AND NUFFIELD SCHOLAR ROBIN SCHAEFER.

systems they drive or influence will in time result in more reliable seasonal forecasts.

One private researcher and crop forecaster has identified 27 individual 'teleconnections' as influencing weather in North America, for example, but several of these are not considered statistically significant and he currently uses only 11 of them to generate his forecasts.

Robin is optimistic that development of 'steerable' dual-pole radar imagery and related technology that can provide detailed information about precipitation, including droplet size and whether it is rain or hail, will significantly improve aspects of rainfall forecasting in the relatively near future.

While 'scientific' forecasting is essential, he believes there is potential for growers to use non-mainstream inputs such as solar and lunar cycles and moon influences to augment formal 'mainstream' forecasts when making decisions about their cropping programs.

One forecaster he encountered during his Nuffield studies is studying the impact of cosmic radiation on cloud formation.

Another is exploring the influence of the moon on rainfall patterns and how rain-bearing systems track around the globe, based on the premise that since the moon's gravity drives the oceans tides it also influences the atmosphere, which contains more water than is in the world's lakes and rivers.

There is no doubt local factors can influence local weather, he said, and there is a place for local knowledge and observations as adjuncts to formal forecasts in the decision-making process.

In parts of Africa, forecast accuracy has been improved by taking account of local 'inputs' based on indigenous landowners' observation of phenomena such as the growth and flowering patterns of native vegetation and the behaviour of animals and insects as well as the outputs of computer models.

An example from the USA, where several farmers growing irrigated corn noticed that thunderstorms consistently developed along a particular track at the same time each year, after the corn had been harvested, highlights that local phenomena can influence local weather and points to the value of growers' personal experiences and observations.

Researchers who decided to explore the phenomenon worked out that it was driven by a temperature and moisture gradient generated at the edge of the irrigation area. The 'tracking' phenomenon – and the showers – began once the corn had been harvested and the corn butts began 'wicking' moisture from the soil.