Forecasting climate extremes to aid decisions on multi-week timescales

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Extreme events such as droughts, heat waves and floods can have significant and long lasting financial, infrastructural and environmental impacts. While probabilistic seasonal outlooks are commonplace, there are relatively few probabilistic outlooks available on multiweek timescales. Additionally, many services focus on the middle of the distribution of possible outcomes – e.g., forecasts of probability of above or below median, or probability of mean conditions exceeding some threshold. These do not encompass the types of extreme events that can be the most damaging, such as several consecutive days of extreme heat, unusually large numbers of cold days in a season, or an extended period where rainfall is in the lowest decile of historical years.

Advance warning of extreme events that impact particular industries enable managers to put in place response measures which can help to reduce their losses. This can involve:

- Active responses which aim to reduce the severity of the impact. For example, losses in dairy production due to extreme heat can be mitigated by adjusting grazing rotations such that cows are in shadier paddocks during these events
- Defensive responses which aim to account for any losses incurred due to an event. For example, the purchase of new farm equipment can be deferred if a forecast extreme event indicates a likely unavoidable financial loss in the near future

To meet this need, the Australian Bureau of Meteorology is developing a suite of forecast products communicating risk of extreme events using data from the Bureau’s new seasonal forecasting system ACCESS-S. Each prototype forecast product is trialed with external users through a webpage to assess usefulness and popularity.