# Ensemble forecast products for user decisions on multi-week to seasonal timescales

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Ensemble-based forecasts are the bread and butter of probabilistic multi-week and seasonal outlooks. While many of us know what kinds of products our research could ultimately produce, the question of *why* we produce them is sometimes not front of mind. The "why" is ultimately to help decision makers in weather and climate sensitive sectors make better choices. No matter how accurate a weather forecast or climate outlook is, if it does not provide the information users need, if it is not issued when users are making their critical decisions, if it is misinterpreted and if it cannot help make a decision – then the forecast has little real value.

A newly funded multi-institution 5-year project will deliver direct value to the agricultural sector through providing forecasts of extremes and equipping farmers with the information and tools to be forewarned and prepared. The project is supported by funding from the Australian Government Department of Agriculture and Water Resources as part of its Rural R&D for Profit programme. The Bureau of Meteorology (BoM), working with a number of research partners, will develop and deliver ensemble forecast products of the likelihood of climate extremes on multi-week to seasonal timescales – beyond the 7-day weather forecast. This will provide farmers with the first ever forecasts of extremes weeks to seasons ahead. The forecasts will be based on BoM's seasonal forecast system, ACCESS-S. The BoM component of the project includes research to 1) evaluate user needs, 2) understand large-scale drivers (e.g., El Niño, the MJO) of extremes, 3) improve ACCESS-S to give better forecasts of extremes, and 4) develop experimental forecast products which will be trialed by users to assess value. A subset of products that have sufficient accuracy and utility will be delivered as official BoM forecasts to the benefit of agriculture. Project partners who are agricultural climate and systems analysis researchers, with particular expertise in the dairy, beef, sheep, grains, sugar and wine industries, will use BoM output to determine climate extremes scenarios through appropriate risk management frameworks, farm system models and economic frameworks.

We will present the plan and scope of the project, as well as the first set of ensemble forecast products that will be trialed with project partners and stakeholders.