



The value of forecasting key-decision variables for rain-fed farming

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Rain-fed farmers are highly vulnerable to variability in rainfall. Timely knowledge of the onset of the rainy season, the expected amount of rainfall and the occurrence of dry spells can help rain-fed farmers to plan the cropping season. Seasonal probabilistic weather forecasts may provide such information to farmers, but need to provide reliable forecasts of key variables with which farmers can make decisions.

In this contribution, we present a new method to evaluate the value of meteorological forecasts in predicting these key variables. The proposed method measures skill by assessing whether a forecast was useful to this decision. This is done by taking into account the required accuracy of timing of the event to make the decision useful. The method progresses the estimate of forecast skill to forecast value by taking into account the required accuracy that is needed to make the decision valuable, based on the cost/loss ratio of possible decisions.

The method is applied over the Limpopo region in Southern Africa. We demonstrate the method using the example of temporary water harvesting techniques. Such techniques require time to construct and must be ready long enough before the occurrence of a dry spell to be effective. The value of the forecasts to the decision used as an example is shown to be highly sensitive to the accuracy in the timing of forecasted dry spells, and the tolerance in the decision to timing error. The skill with which dry spells can be predicted is shown to be higher in some parts of the basin, indicating that these forecasts have higher value for the decision in those parts than in others.

Through assessing the skill of forecasting key decision variables to the farmers we show that it is easier to understand if the forecasts have value in reducing risk, or if other adaptation strategies should be implemented.