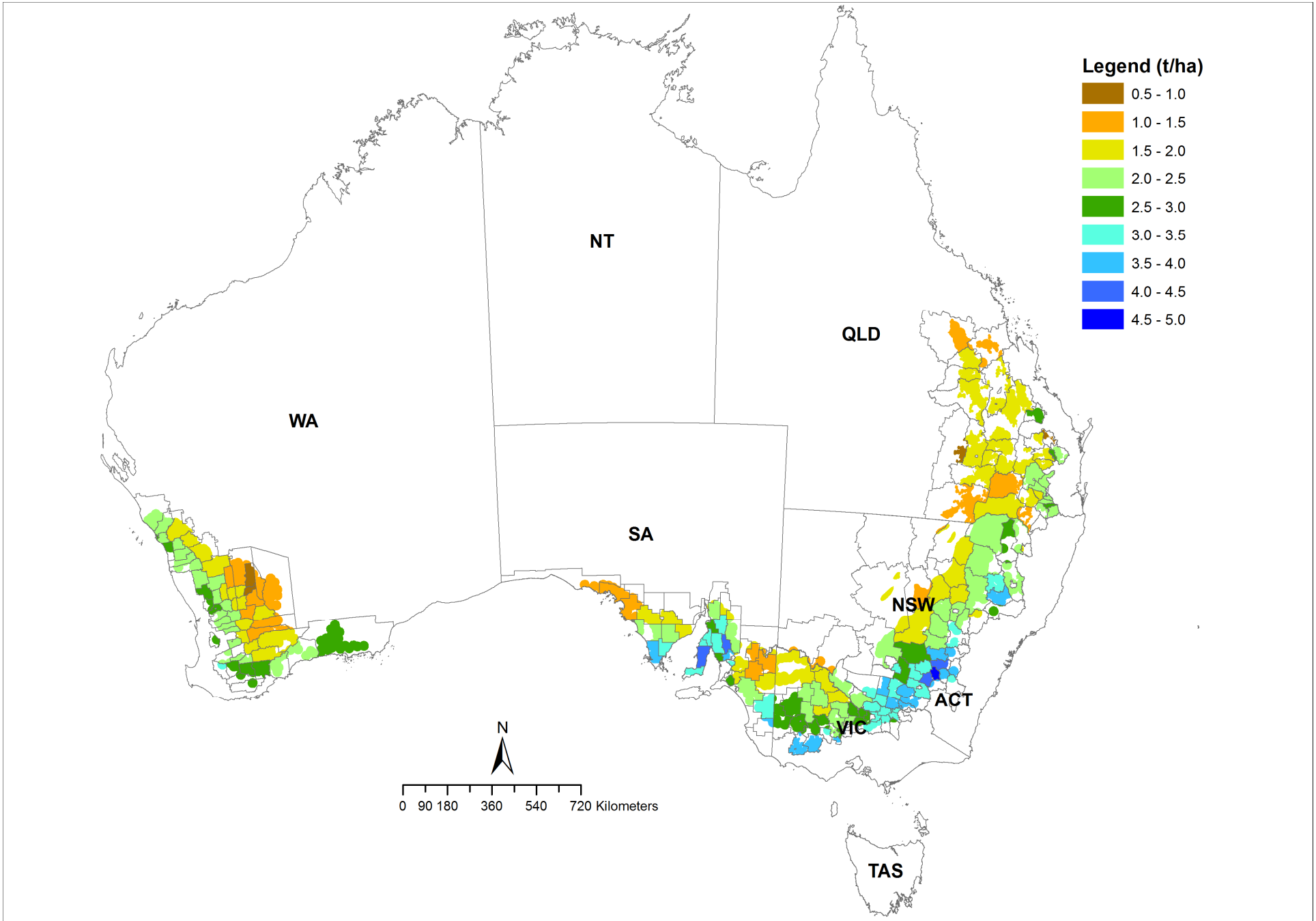

Simulated shire wheat yield long-term median (OZ-Wheat MII, from 1901-2017)

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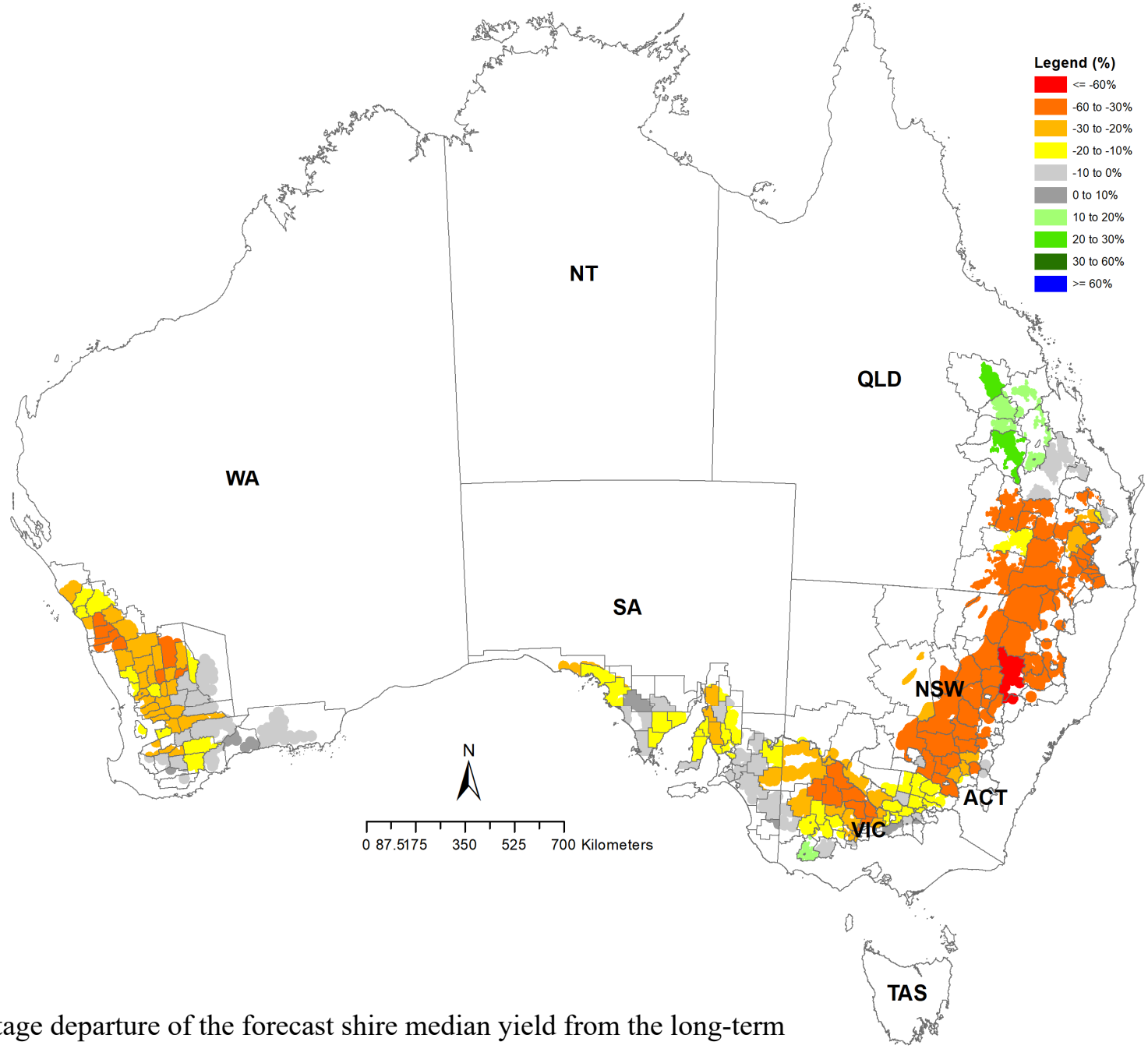

Percentage departure of the forecast shire median yield from the long-term shire median wheat yield (OZ-Wheat MII), given the SOI phase was “rapidly falling” during August-September.

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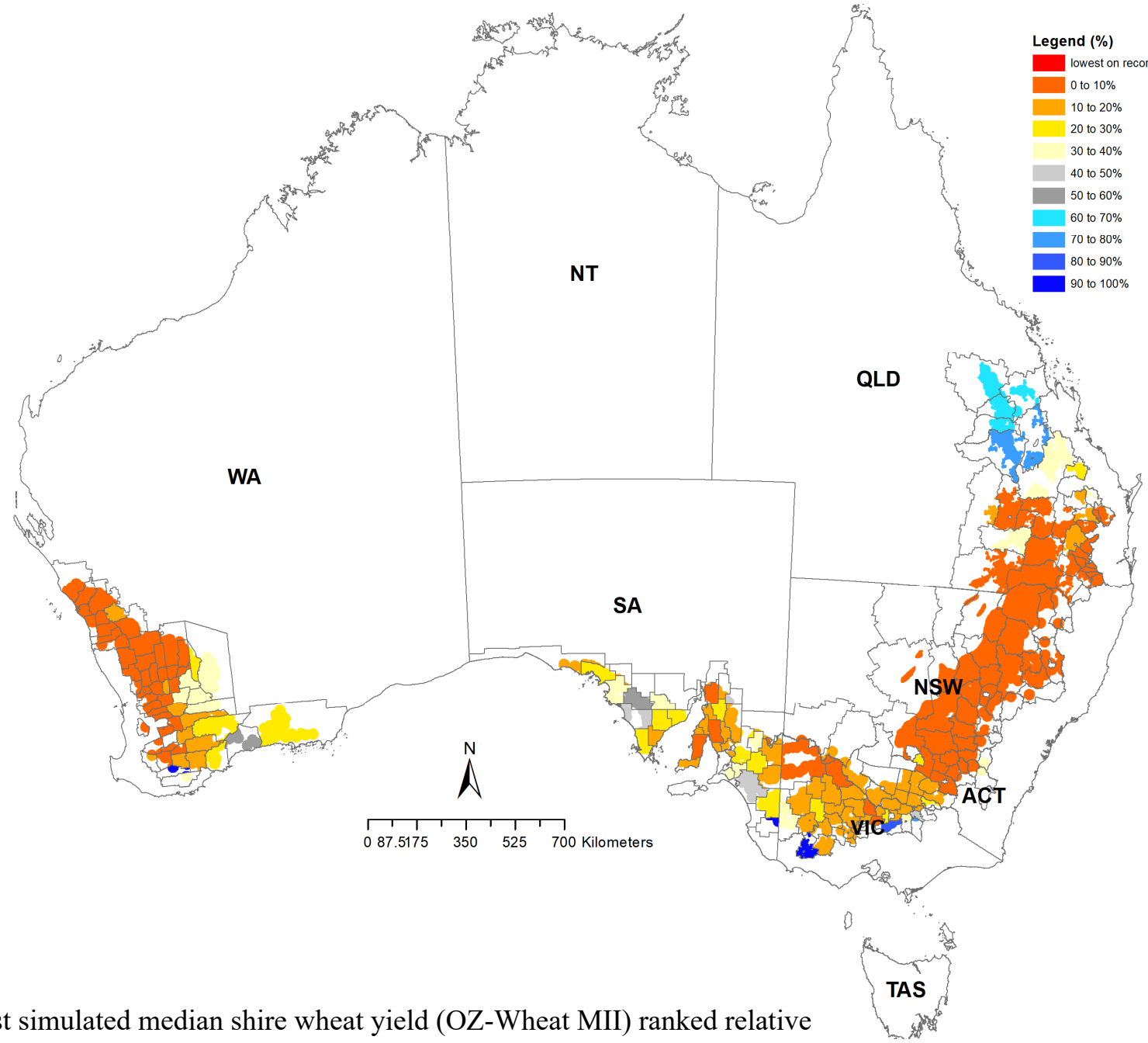

Forecast simulated median shire wheat yield (OZ-Wheat MII) ranked relative to all years, given the SOI phase was “rapidly falling” during August-September.

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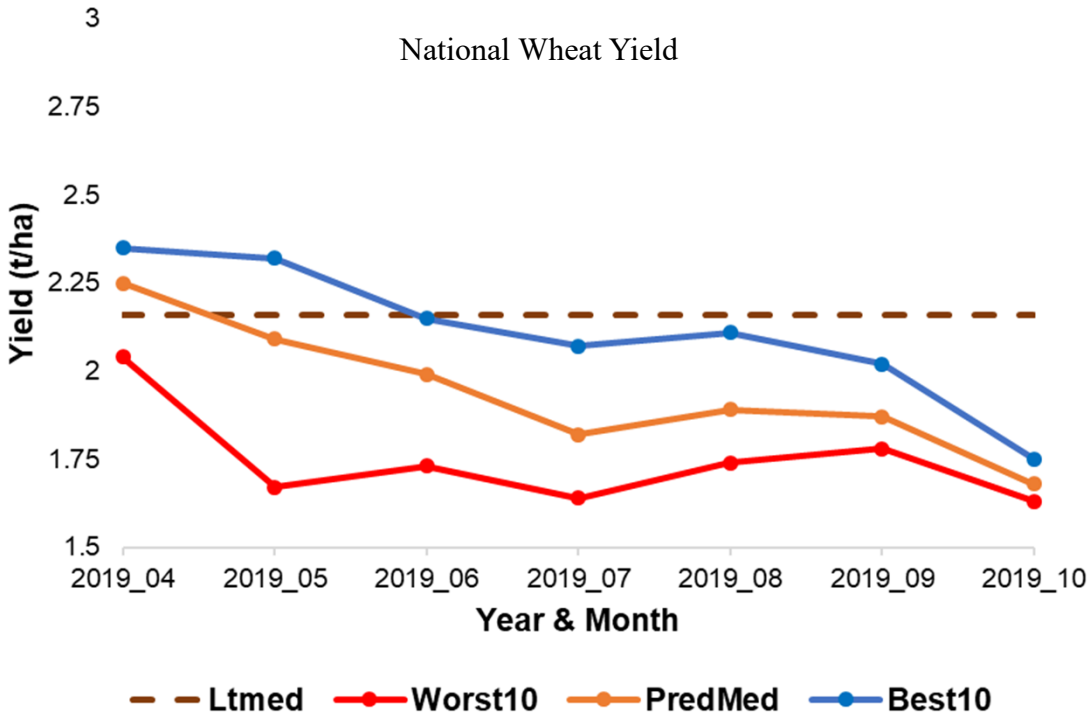
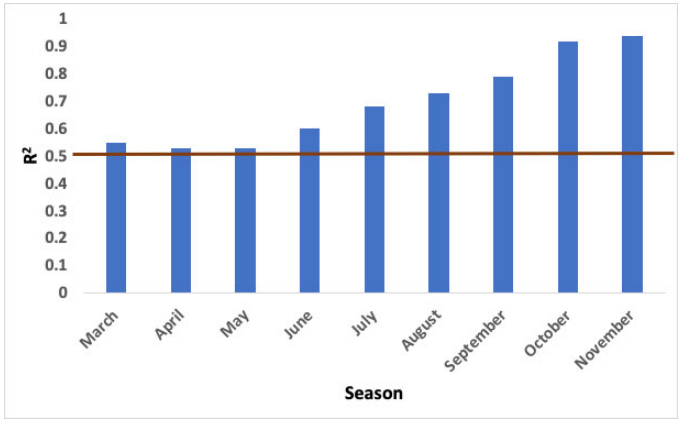


1st October 2019 – State and National wheat outlook range (Worst10 and Best10) and forecast median (PredMed) while Ltmed = Long-term median yield; Pred%= Predicted Percentile ranking of PredMed; DFY= Deviation Percentage of Forecast median from Long-term Median.



	March	April	May	June	July	August	September	October	November
AVG_ABS%DEV	13	14	13	13	11	10	9	5	5

Variability explain (R^2) and lead time of forecast before harvest in December. Based on the last 28 years of actual ABS data vs forecast median yield from Oz-Wheat. The average absolute Percent deviation (AVG_ABS%DEV) from the actual measured national yield (ABS) across all years is given below the figure. It varied from 13% (in March), 11% (July) to 5% in October.

OZ-Wheat MII: regional scale crop simulation model developed by UQ QAAFI.

Descriptive note:

The seasonal wheat outlook is based on the integration of (i) a simple agro-climatic wheat stress index model (Oz-Wheat MII) (i.e. Bare fallow routine - Ritchie, 1972; Wheat stress index model adapted from - Fitzpatrick and Nix, 1969; Nix and Fitzpatrick, 1969), which is sensitive to water deficit or excess during the growing season, (ii) actual climate data up to the forecasting date and (iii) projected climate data after that date. These projected data are drawn from historical analogue years based on similarity to the prevailing phase of the Southern Oscillation Index (SOI) (Stone et al., 1996). The Oz-Wheat model is run from 1 October the year before sowing in order to account for the influence of the summer fallow on starting soil moisture conditions. The model input parameters for each shire (i.e. potential available water content, planting rain & stress index period) have been selected based on the best fit when calibrated against actual shire wheat yields from Australian Bureau of Statistics (ABS) for the period 1976 – 2000, 2005, 2010 & 2015 (MII). Cross validated spatial correlation when predicting the shire wheat yields for the 2000 season (MI) was 0.8 across all main wheat producing shires in Australia (Potgieter et. al., 2006). For the updated MII 75% of the 237 shire have R2 > 0.60.