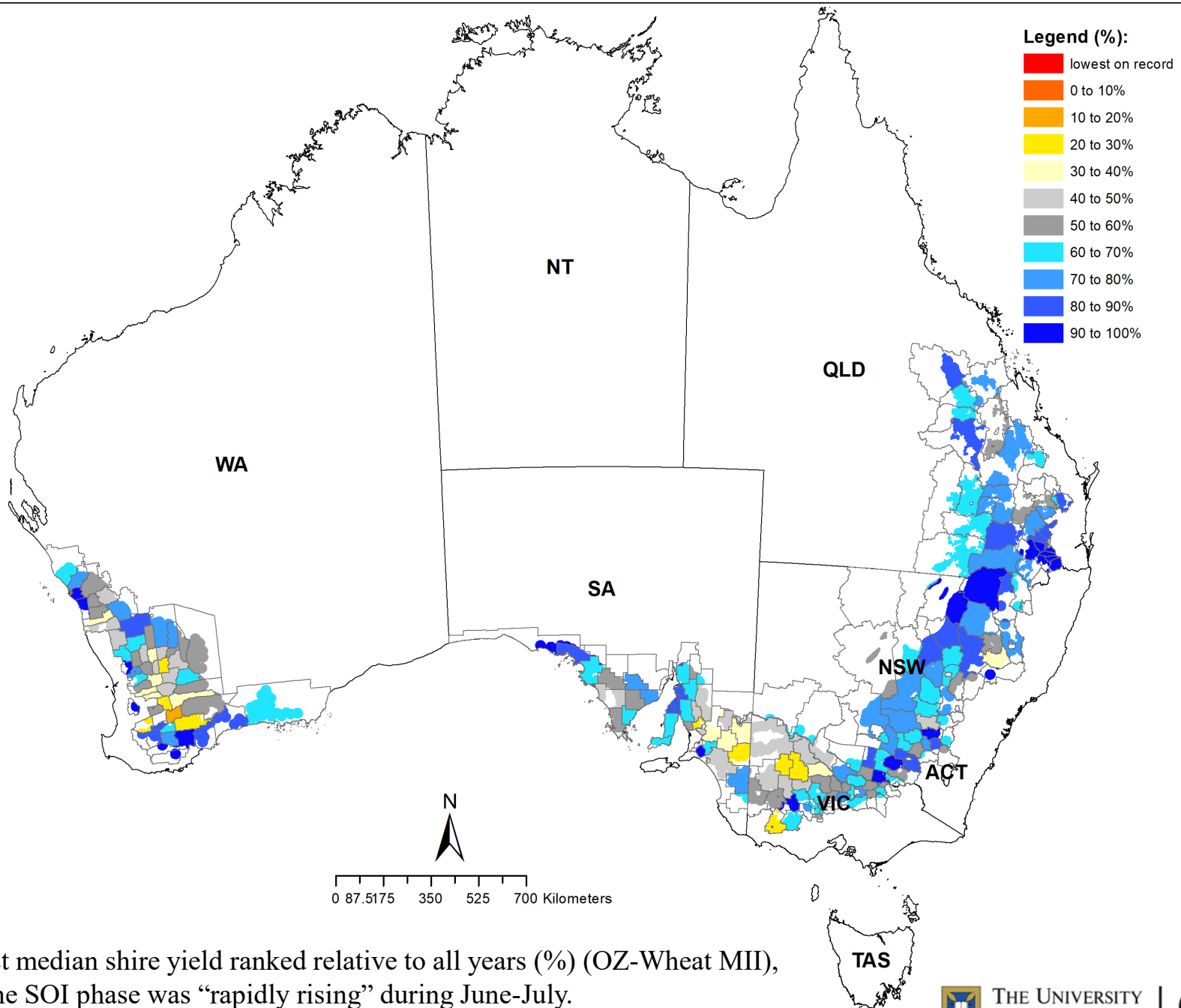
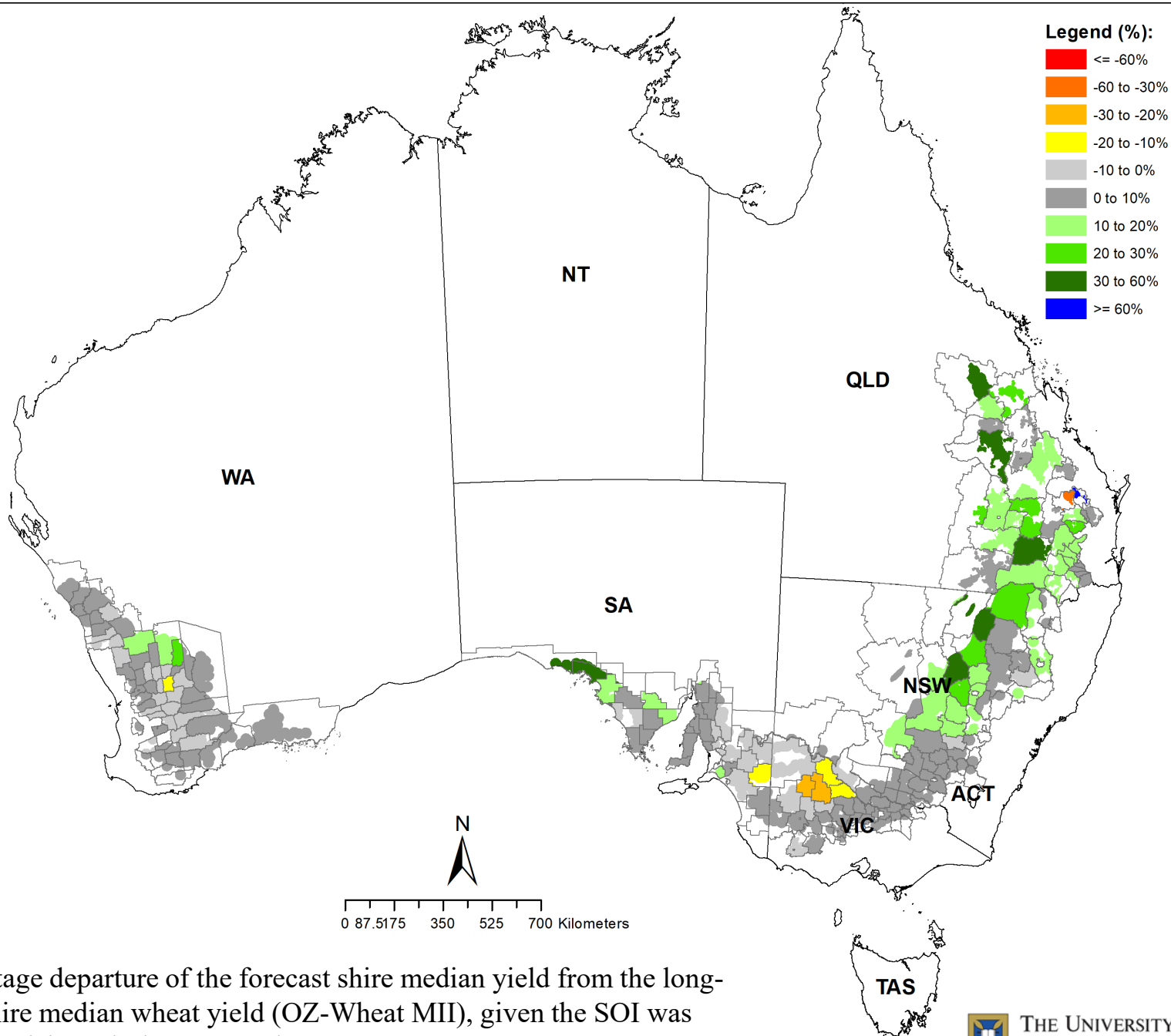


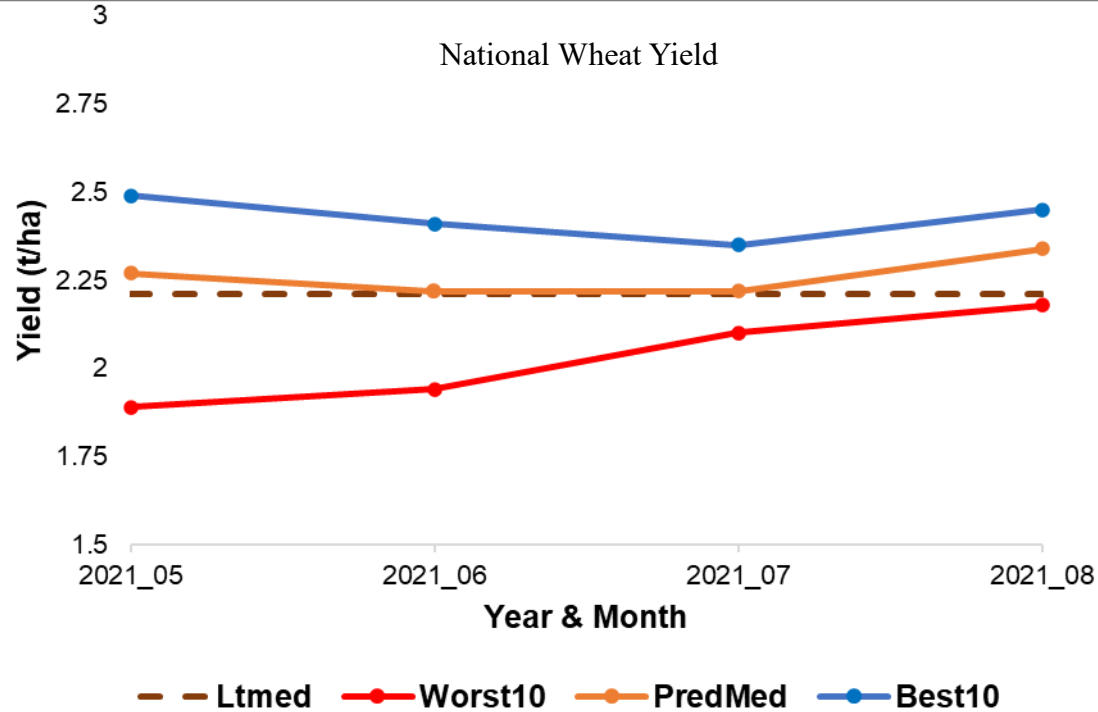
Simulated shire wheat yield long-term median (OZ-Wheat MII, from 1901-2021)



Forecast median shire yield ranked relative to all years (%) (OZ-Wheat MII), given the SOI phase was “rapidly rising” during June-July.



Percentage departure of the forecast shire median yield from the long-term shire median wheat yield (OZ-Wheat MII), given the SOI was “rapidly rising” during June-July.



## 1<sup>st</sup> August 2021 – State and National wheat outlook distribution.

Worst10 - forecast 10<sup>th</sup> percentile

Best10 - forecast 90<sup>th</sup> percentile

PredMed - Forecast median

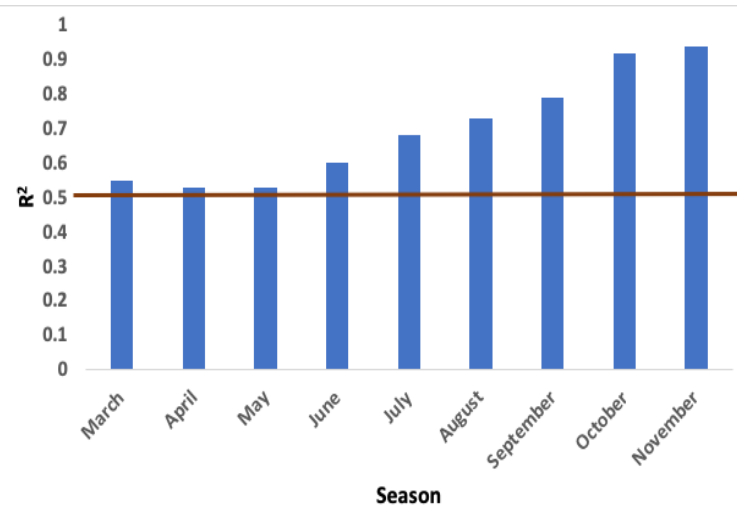
Ltmed - Long-term median yield; DFY% - Departure of forecast median from long-term median yield as a percentage.

Pred% - Forecast median shire yield ranked relative to all years (%)

Variability explain ( $R^2$ ) and lead time of forecast before harvest in December. Based on the last 30-years of actual ABS data vs forecast median yield from Oz-Wheat MII.

## National & State level summary

Region	Worst10	PredMed	Best10	Ltmed	Pred%	DFY%
AUS	2.18	2.34	2.45	2.21	77%	6
NSW	2.46	2.86	3.05	2.52	83%	13
QLD	2.05	2.2	2.35	1.91	83%	15
SA	2.23	2.61	2.82	2.49	68%	5
VIC	2.13	2.35	2.72	2.47	41%	-5
WA	1.92	2.02	2.11	1.98	59%	2



# **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  $R^2 > 0.60$ .