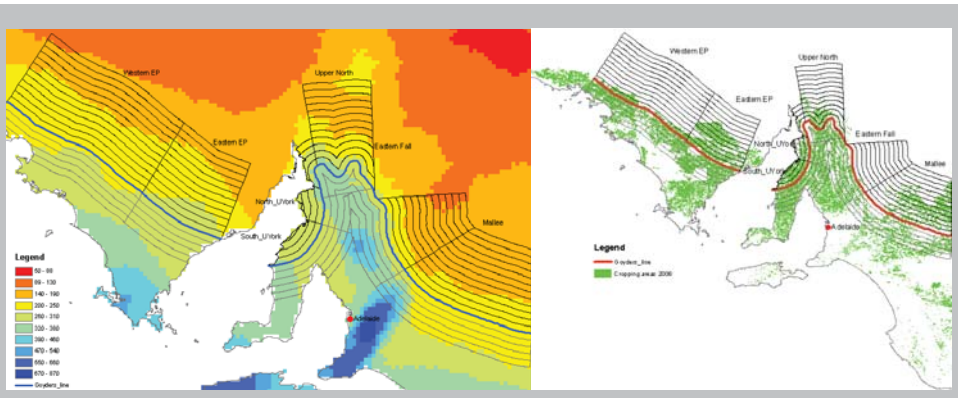
primary production

trend

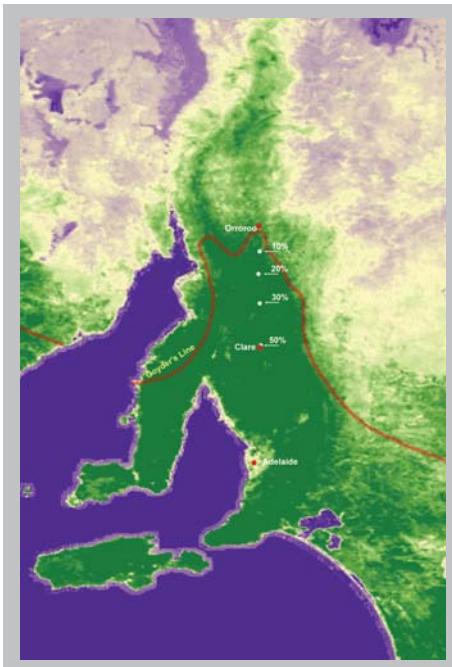
TREND is testing the concept that space can be used as a proxy for time when considering future climates. We are applying this concept to dryland grain and irrigated wine grape production in South Australia.

Dryland farmers are aware of sharp rainfall gradients driven by elevation and distance from the coast. It is well recognised that Goyder's line defines the edge of the grains belt. This line may shift over time, changing SA's agricultural production.

Figures from Nidumolu *et al.* (2012) *Climate Research* **51**:249-260



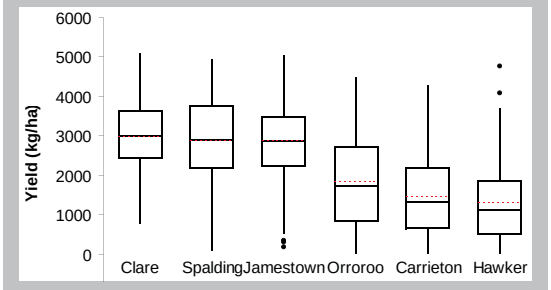
Average rainfall (mm) during the growing season from April to October and vegetation (in green) during 2008. Goyder's line is shown on the maps above with 10km buffers.



Many growing centres in the northern agricultural region receive just enough rainfall to be productive. This map shows the % reduction in average rainfall that would effectively move Goyder's line south (indicating cropping would be less reliable in these regions).

Changes in climate will change the patterns and effects of crop diseases. In partnership with the Grains Research and Development Corporation, the climatic drivers of several fungal pathogens in dryland cropping systems are being investigated.

Cereal pathogen monitoring using a spore trap near Port Germein. The spore trap is surrounded by infected wheat stubble. A comparison site is being run at Belair, a much cooler and wetter site. Because wheat stubble from the same source and disease level is being used, we can test the role of climate in developing spores. Climate data is collected using a field meteorological station.



The historical wheat yield at key cereal cropping regions is shown. We expect that wheat yield will decline if rainfall declines.

We are studying irrigated vineyards, using field measures and modelling to understand how temperature can vary across a vineyard in regions such as Adelaide Hills and Eden Valley (pictured).

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