

Comparison of FFDI Derived from Gridded and Station-based Data

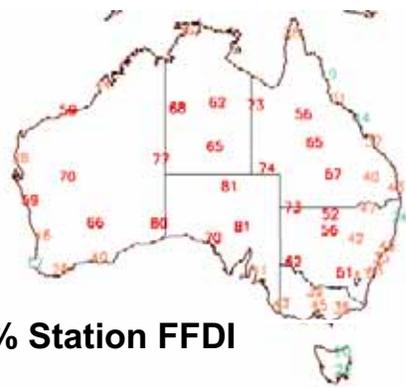
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The distribution of Forest Fire Danger Index (FFDI) varies across Australia. Historically, FFDI and fire danger warning thresholds have been evaluated using widely-spaced station data. In order to accurately capture regional variations in these levels, FFDI calculations need to be based on high-resolution, gridded numerical forecasts and observations. Here we undertake a comparison of FFDI from these two sources.

Station FFDI

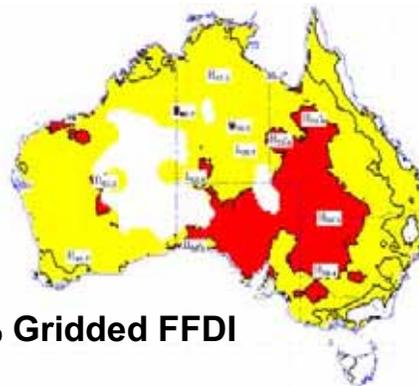
- Data from 1957-2003
- 54 stations
- 1500 RH, wind speed, temperature



99.5% Station FFDI

Gridded FFDI

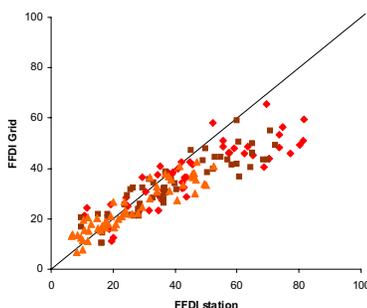
- Data from 2000-2006
- 3-hr forecasts of afternoon relative humidity (RH) and wind speed on 12.5-km grid
- 25-km analysis of daily maximum temperature and rainfall



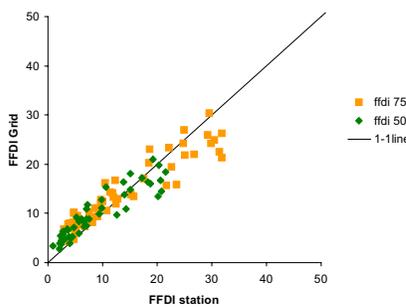
99.5% Gridded FFDI

The 99.5% level of FFDI, representative of 'extreme' fire weather conditions are shown above. The patterns in the analyses are similar with **FFDI 1.) being above 50 for most of the interior of Australia; 2.) between 25 and 50 for large parts of the coastal regions; and 3.) less than 25 for southwest WA, some east coast locations and Tasmania.** The percentile approach suggests that different regional warning thresholds might more accurately reflect dangerous fire conditions.

Grid vs Station 99.5, 99 and 95 Percentiles



Grid vs Station 75 and 50 Percentiles



Scatterplots of station vs. gridded FFDI for other percentile levels show very good agreement. The deviations at the highest FFDI values are likely due to the shorter gridded time series which omits the most extreme years of the longer record (e.g. 1982-3).

Gridded FFDI may be used with confidence to identify high fire danger days and set regional variations in fire danger warning thresholds.