A climatology of *Very High* and *Extreme* fire weather days in southern Western Australia

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Abstract

Days of EXTREME and VERY HIGH fire danger for the 22 seasons 1970-71 to 1991-92 (November to April inclusive) were identified using three-hourly data from the Bureau of Meteorology stations in southern parts of the State. Calculations of the fire danger index (FDI) were made using the McArthur Mark IV grassland fire danger meter assuming average fuel amounts and 100 per cent fuel curing.

The average number of EXTREME (FDI > 49) days per season graded from about one in the south-west corner of the State to more than 15 in the Eucla and around Geraldton, with appreciable year-to-year variability. In south-east parts of the State most EXTREME days occurred during the first half of the season whereas in the Geraldton area the majority of these occurred during January and February. Active fire seasons in the Geraldton region tended to correspond to less active seasons at Esperance and vice-versa. An analysis of VERY HIGH and EXTREME fire danger days (FDI > 26) during the period revealed a similar distribution but values ranged from an average number of 10 days per season in the south-west corner to about 50 days at both Forrest and Geraldton. The monthly distribution of these events is also similar.

A study of weather patterns that led to the EXTREME fire weather conditions revealed that the pre-frontal trough was the major influence in south coastal areas whereas the combination of a strong high to the south of the State and a trough over the Gascoyne was dominant for west coastal areas. Strong afternoon sea breezes due to a deepening trough inland and a high to the west of the State also generated EXTREME conditions along the Geraldton coastline.