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Review Article

The case for a southeastern Australian Dust Bowl, 1895–1945

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ABSTRACT

Australia has an anecdotal history of severe wind erosion and dust storm activity, but there has been no lasting public perception of periods of extreme dust storm activity in this country, such as that developed in the USA following the Dust Bowl of the 1930s. Newspaper accounts of droughts and dust storms in southeastern (SE) Australia between 1895 and 1945 suggest that, at various times, the scale of these events was comparable to those experienced in the USA Dust Bowl. During this 50-year period, average annual rainfall values in this region were substantially below long-term averages, air temperatures were distinctly warmer, marginal lands were actively cropped and grazed, and rabbits were a burgeoning grazing pest. From the beginning of the Federation Drought of 1895–1902, dust storm activity increased markedly, with the downwind coastal cities of Sydney and Melbourne experiencing dust hazes, dust storms and falls of red rain relatively regularly. Between 1935 and 1945, Sydney and Melbourne received ten and nine long-distance dust events, respectively, with the years of 1938 and 1944/45 being the most intensely dusty. Entire topsoil horizons were blown away, sand drift was extreme, and crops and sheep flocks were destroyed. Although these periods of extreme dust storm activity were not as sustained as those experienced in the USA in the mid-1930s, there is a strong case to support the contention that SE Australia experienced its own extended, somewhat episodic version of a Dust Bowl, with a similar combination of causal factors and landscape effects.

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1. Introduction

In September 2009, a very large dust storm traversed New South Wales (NSW), Australia, enshrouding the coastal city of Sydney in a pall of thick reddish-brown dust for several hours. Leys et al. (2011) estimated that this storm transported 2.54 Mt of dust off-shore, and had a front some 3000 km long, stretching from south of Sydney to north of Brisbane as it crossed the coastline. Although occasional dramatic dust storms have reached coastal southeastern (SE) Australian cities of Melbourne (Lourensz and Abe, 1983; Raupach et al., 1994) and Brisbane (Knight et al., 1992; McTainsh et al., 2005) in recent decades, capturing the imagination of the urban population, this event of 2009 was regarded as the biggest storm to have made its way to Sydney in the last 60 years (Leys et al., 2011). The cause of this dust storm was the culmination of a long period of drought and loss of surface vegetation in western NSW and northeastern South Australia, and a particularly vigorous frontal system with gale force winds.

For the spectacle that this storm provided, this was essentially an isolated event in time, and of a type that was more commonplace in the first half of the twentieth century. There is a general consensus that the period of most severe wind erosion and dust storm activity in SE Australia since European settlement occurred during parts of the 50 years 'book-ended' by the so-called Federation Drought of 1895–1902 and the World War II Drought of 1940–1945 (Yu et al., 1993; Condon, 2002). During this period of time, the area bounded roughly by the latitudes 30–35 °S and the longitudes 140–143 °E, encompassing the Mallee region of

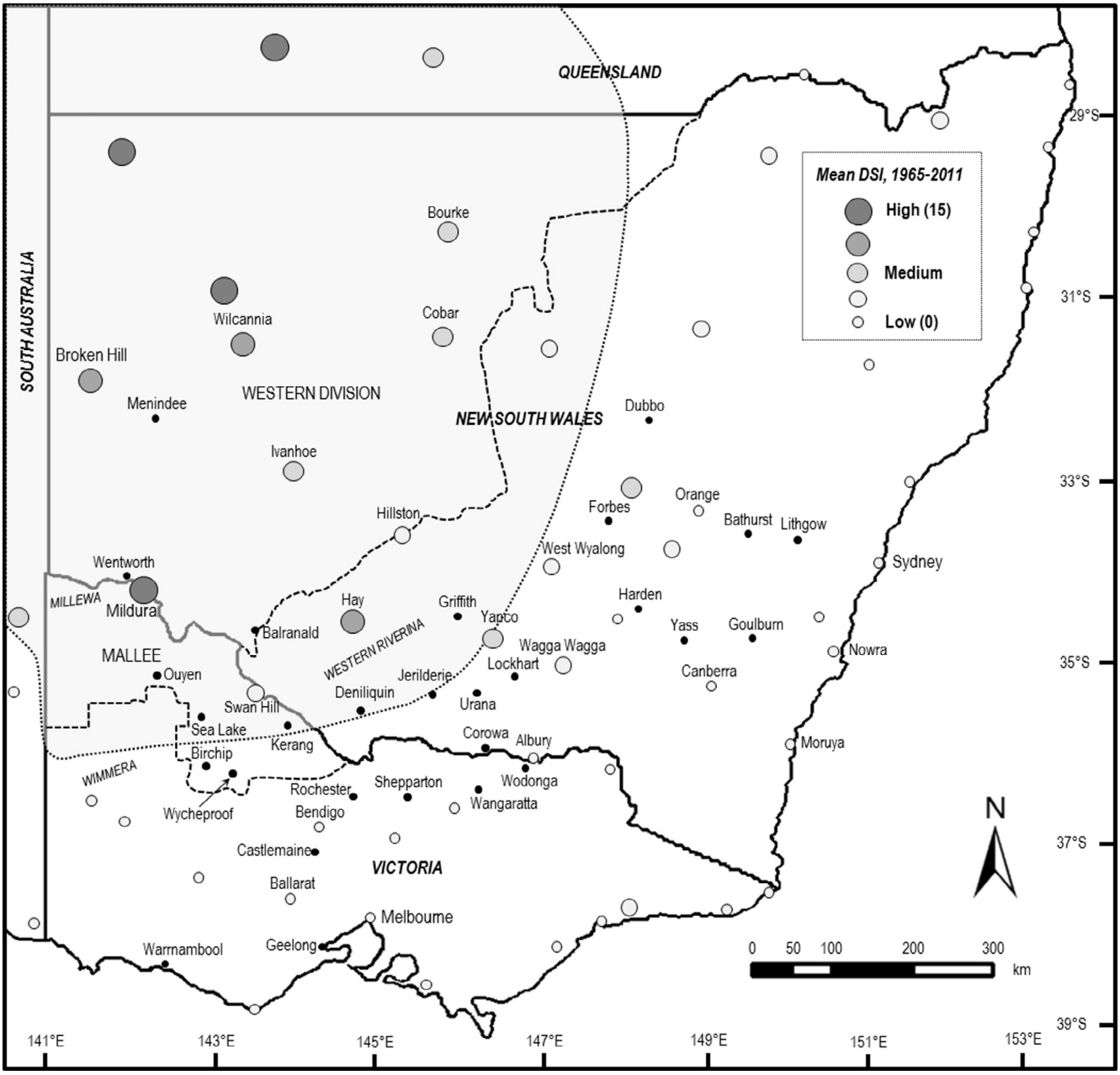

Fig. 1. The location of the Western Division and Mallee regions of SE Australia, and main towns mentioned in newspaper reports of dust storm activity. The area shaded light grey is part of the region of eastern Australia with the "greatest frequency" of dust storms in the late 1930s and early 1940s, according to Loewe (1943). The grey blobs indicate locations where O'Loingsigh et al. (2014) have calculated DSI values for period 1965–2011; the larger the blob, the greater is the frequency and intensity of dust storm events.