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ABSTRACT. Daily Peak Wind Gust (DPWG) time series are important for the evaluation of wind-related hazard risks to different socioeconomic and environmental sectors. Yet wind time series analyses can be impacted by several artefacts, such as anemometer changes and site location changes, both temporally and spatially, that may introduce inhomogeneities that mislead the study of their decadal variability and trends. A previous study (EGU2018-14546 and Azorin-Molina *et al.* 2019. *Int. J. Climatol.* 39(4), 2260-2277) presented a strategy in the homogenization of this challenging climate extreme such as the DPWG. The automatic homogenization of this DPWG dataset was implemented in the recently developed version 3.1 of the R package *Climatol* which: (i) represents an advance in homogenization of this extreme climate record; and (ii) produced the first homogenized DPWG dataset to assess and attribute long-term variability of extreme winds across Australia. Given the inconsistencies of wind gust trends under the widespread decline in near-surface wind speed (stalling), the aim of this poster presentation is to show DPWG trends in 35 Bureau of Meteorology operated stations for 1948-2016, with particular focus on the spatiotemporal magnitude (wind speed maxima) of DPWG at annual, seasonal and monthly time-scales.

DPWG series

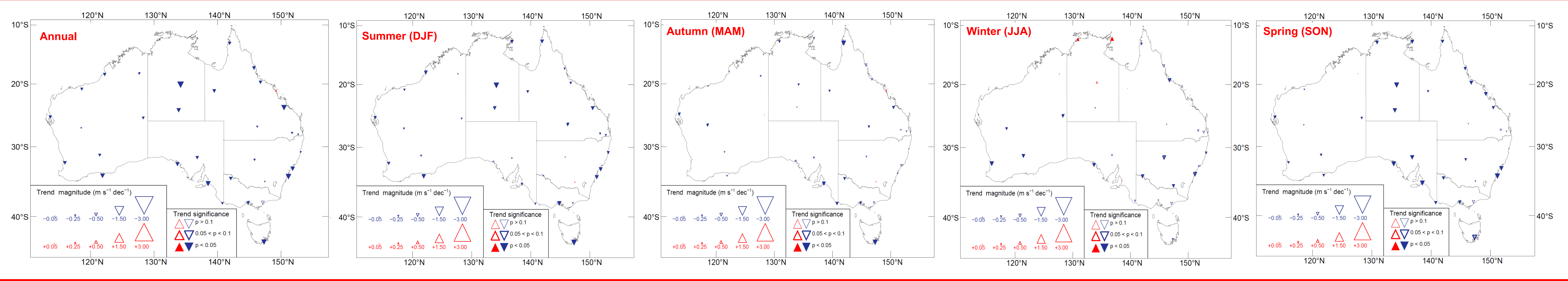
DPWG have substantial socioeconomic and environmental impacts

(Right) Wind erosion in a coastal sand beach due to gusty winds

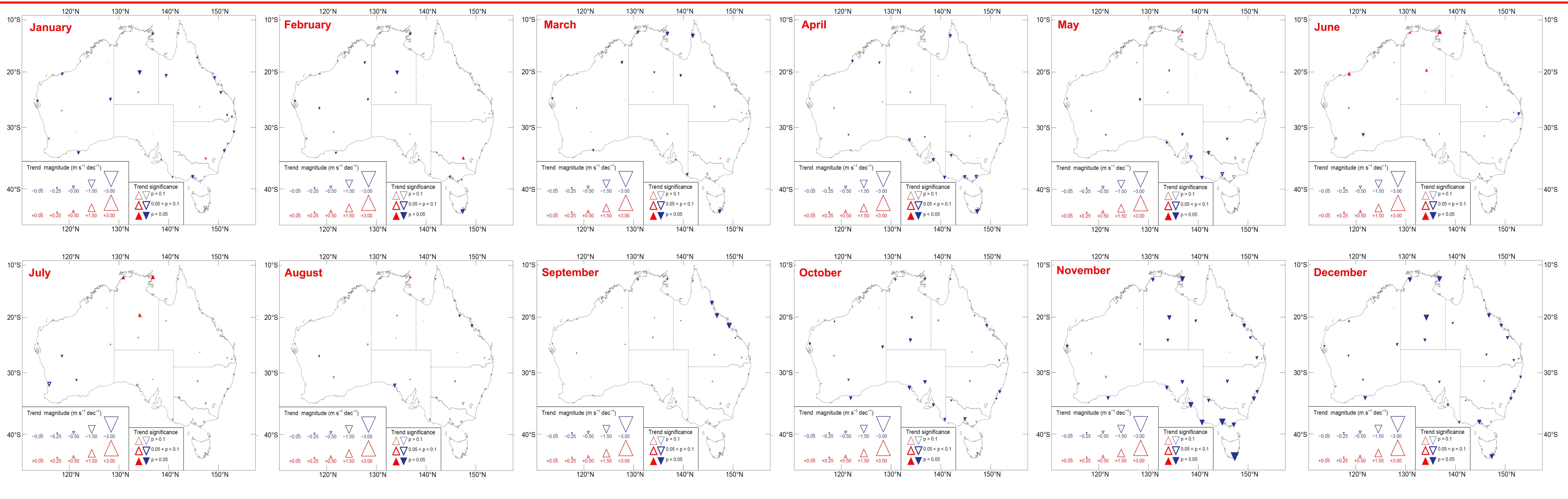
(Left) Location of the 35 Bureau of Meteorology operated stations used in the analysis.

(Right) Temporal coverage for 1/Jan/1948 to 31/Dec/2016 (69-years) series. Colors indicate the percentage of observations.

1. ANNUAL AND SEASONAL SPATIOTEMPORAL TRENDS OF DPWG ACROSS AUSTRALIA FOR 1948-2016



2. MONTHLY SPATIOTEMPORAL TRENDS OF DPWG ACROSS AUSTRALIA FOR 1948-2016



3. CONCLUDING REMARKS

- The main findings of this study can be summarized as follows:
- (i) DPWG showed an annual widespread dominance of statistically significant declining trends, particularly in summer and spring and over the eastern and southern part of the country.
 - (ii) At monthly time-scales, a distinct monthly cycle is detected with negative trends dominating across Australia in January-May and October-December, whereas non-significant declines or even positive trends were observed from June till September.