Supporting Information

Pausas & Millán - Greening and browning in a climate change hotspot: the Mediterranean Basin. *BioScience.*

The following Supporting Information is available for this article:

S1. Methods for Figure 3.

S2. Summer storms loss on Mediterranean coast

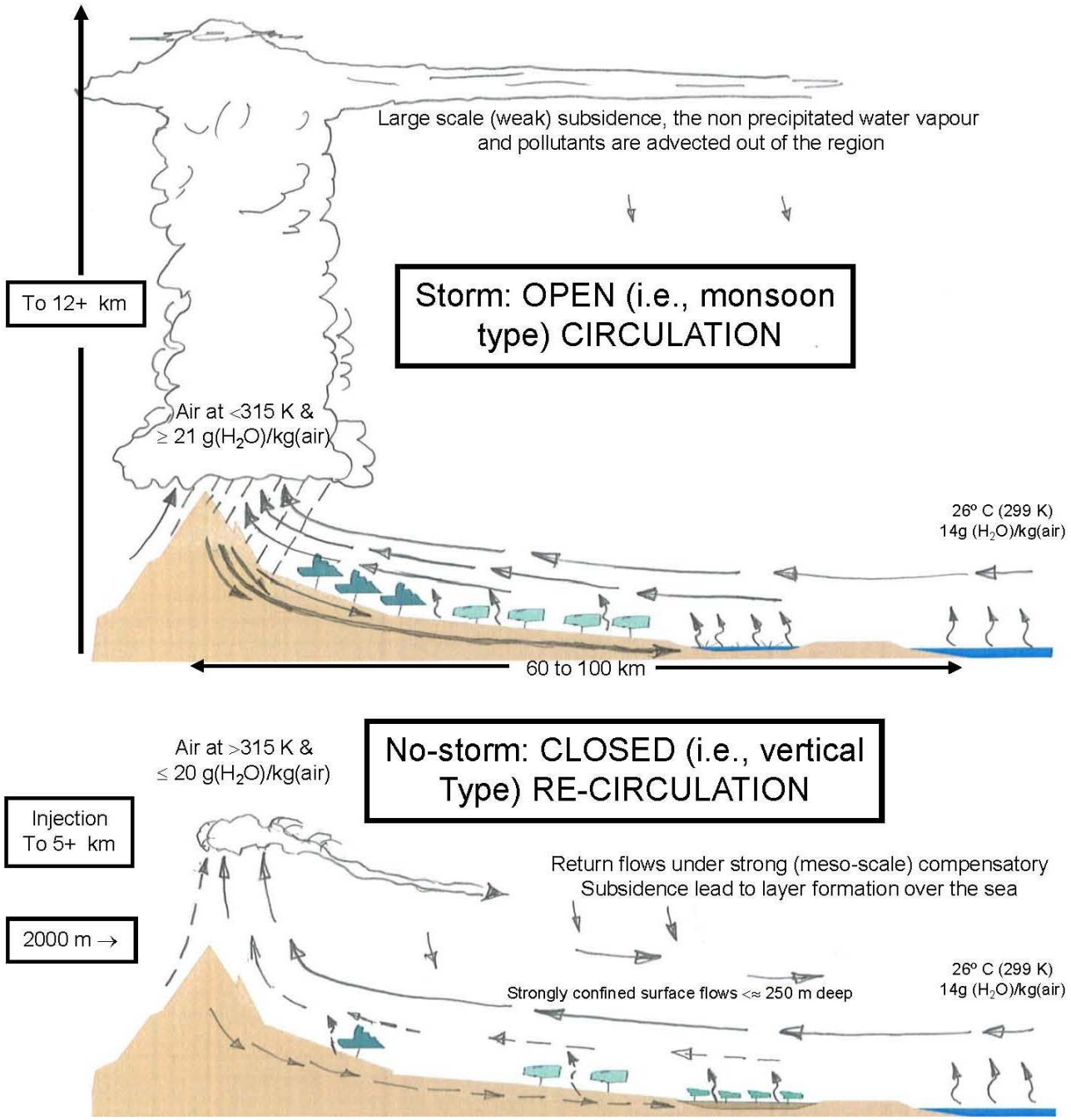
S1. Methods for Figure 3.

The NDVI data used for Figure 1 comes from Pausas & Ribeiro (2017). It is based on 16-day global NDVI images (resolution= 0.05 degrees) from 2/2000 to 7/2015 (355 global images, MODIS MOD13C1 data set obtained from the Land Processes Distributed Active Archive Center, USGS). Each image was crossed with the ecoregion map, and for each ecoregion, we extracted the mean of the NDVI. The 355 NDVI mean values for each ecoregion were treated as a time-series and decomposed into seasonality and trend using the BFAST approach (Verbesselt et al. 2010). The coefficient of the trend is used in Figure 3a, and the number of abrupt changes in the trend is used in Figure 3b.

Pausas, JG, Ribeiro, E (2017) Fire and plant diversity at the global scale. *Global Ecology and Biogeography*, 26: 889–897.

Verbesselt, J, Hyndman, R, Zeileis, A, Culvenor, D (2010) Phenological change detection while accounting for abrupt and gradual trends in satellite image time series. Remote Sensing of Environment 114, 2970-2980.

S2. Summer storms loss on Mediterranean coast



Schematic representation of the water cycle on the Mediterranean coasts (from Millán et al. 2005, Millán 2014). **The upper panel** represents the original (natural) conditions with little anthropogenic

disturbances (open circulation), where sea breezes and water evapotranspirated from natural ecosystems (marshes, lagoons, shrublands and forests) feed the storms in the mountains. The climatic values of the water vapour mixing ratio and the temperature at the coast of the incoming airmass in Jul-Aug are 14 g/kg and 26 C (299 K), respectively. However, by the time the same airmass reaches the interior, its temperature gain is some 16ºC. Thus the airmass in the combined breeze requires to gain an average of 7 g/kg along its land path to reach a water vapour mixing ratio of >= 21 g/kg to keep its Convective (orographic) Condensation Level (CCL) below the approximate height of the coastal mountain ranges (ca. 2000 m altitude). This additional water vapour comes from the evapotranspiration in natural ecosystems. **The lower panel** shows the conditions where reduced vegetation and desiccated coastal marshes do not generate enough water vapor to feed a storm (closed recirculation). Current observations suggest that the atmospheric circulations over the coasts of the Western Mediterranean Basin in summer had gone from being mostly open in the past (as they still are over central Italy) to being closed on the majority of the coasts nowadays. For more details see Millán (2014).

Millán, M. M., M. J. Estrela, M. J. Sanz, E. Mantilla, M. Martín, F. Pastor, R. Salvador, R. Vallejo, L. Alonso, and G. Gangoiti. (2005) Climatic feedbacks and desertification: the Mediterranean model. Journal of Climate 18:684-701.

Millán, M.M. (2014) Extreme hydrometeorological events and climate change predictions in Europe. Journal of Hydrology 518, Part B, 206-224.