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# Winds driven by the Saharan heat low

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In this paper we present an analysis of the winds driven by the Saharan heat low (SHL), generated in summer by the sensible heat fluxes over the hot Sahara desert. The SHL is longitudinally as wide as the Sahara desert and seasonally oscillates between 8 degrees north and 25 degrees north, to the west of the Hoggar massif. The SHL is the summer evolution of the West African heat low (WAHL), which is smaller and deeper in winter, and occupies a south-easterly position to the east of the Gulf of Guinea. These lows are important, because they drive the surface and the mid-tropospheric winds.
In the mixed layer above the surface, the desert winds have a cyclonic curvature up to 1.5 km in winter and up to 2.5 km in summer. In the free troposphere above the mixed layer, the winds are more intense with a small anticyclonic curvature.
The dry north-easterly surface winds to the north of the desert low are known as Harmattan; while the south-westerly surface winds to the south of the desert low carry moisture from the Tropical Atlantic. This moist air converges towards the thermal heat low, where it rises up to the mid-troposphere, and, subsiding to the north of the heat low, generates the Libyan anticyclone.
To the south of the desert low, the tropospheric winds are characterized by a strong easterly jet, known as African easterly jet, and it is important for the sub-Sahara region, because it acts as waveguide for the easterly weather perturbations, which bring the rainfall to the Sahel. In addition, about half of the hurricanes, which cross the Tropical Atlantic, are generated by these perturbations.