



Model analysis of a frontal feature at the leading edge of the Harmattan

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During the period 23rd-24th January 2006, measurements from the LAUVA backscatter lidar situated at Niamey show evidence for an overnight passage of a dust plume. This feature is consistent with on-site reports of a coherent nocturnal feature experienced regularly in this region. Using the UK Met Office Unified Model at high resolution to examine the dynamical nature of this dust plume, we present evidence of a frontal feature at the leading edge of the Harmattan flow.

In this particular case study, a coherent front forms in the model around 2200UTC at approximately 14°N and propagates southwards, eventually colliding with the northward propagating inter-tropical front (ITF) at around 0400UTC over northern Benin. Examination of the front on the larger scale reveals the significant east-west extent of this front across West Africa. The work presented here will show in detail the evolution of this front, including its origin, how it interacts with the ITF, and the influence of local orography.