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Nocturnal boundary layer observations in Kumasi during the DACCIWA field campaign

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During the West African Monsoon (WAM) there is a strong diurnal cycle: low-level flow is inhibited by dry boundary layer convection during the day, whilst at night low-level flow is much stronger, with a pronounced nocturnal low-level jet (LLJ). Past studies identified the LLJ as a major contributor for heat and moisture transport. In southern West Africa (SWA) the shear-generated turbulence underneath the LLJ, which mixes moist surface air upward, can lead to the formation of low-level stratus clouds leading to errors in global climate models. However, the questions of the formation of an LLJ in SWA and the presence of clear nights with an LLJ remain. The Dynamics-aerosol-chemistry-cloud interactions in West Africa (DACCIWA) field campaign is expected to answer to this need. This study presents case studies of observations made in the Kumasi supersite and compares these observations with ERA-I re-analyses.