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Daily stability patterns of atmospheric boundary layer in Coastal region REZA SADR, YUAN LI, Texas AM University, College Station — Physical processes that affect the coastal environment are often unique because of the dominant effect of the interactions between the land and the sea. Atmospheric stability plays a vital role in local and meso-scale atmospheric circulation and transportation processes in coastal region, yet relatively little is known about stability condition in this region. A coast separates two drastically different surfaces, where the atmospheric boundary layer in this region is horizontally inhomogeneous with rapid temporal forcing conditions. This works presents diurnal variation of turbulent characteristics and the atmospheric stability during different seasons of a year in Qatar coastal region of Qatar in the Persian Gulf. The micrometeorological data are collected from a measurement station in at the coastal site (26.08N, 51.36E) from September 2015 to August 2016 using sonic anemometers and a weather station. The results identify two stability patterns of 'orderly' and 'disheveled' daily patterns. An 'orderly' day is identified as days when at least, 90% of the time the wind comes from the land (180 - 360 direction). Days that are not accepted as 'orderly', are classified into 'disheveled'. The atmospheric stability analyze indicates that the 'orderly' days show a clear 'U' shape variation of the Obukhov stability parameter z/L, with an average value of 0.105. While the stability in 'disheveled' days represent a chaotic trend with a right-skewed distribution of more unstable cases, average z/L= -0.098. Similar orderly and disheveled trends are observed for turbulent kinetic energy and shear stress in these days.

Yuan Li
Texas A
M University

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