

عنوان مقاله:

A Study on the Structural and Formation of the Low-Level Jet Stream over the Northern Persian Gulf (Case study on sinking the Behbahan cargo vessel)

محل انتشار:

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خلاصه مقاله:

A strong low level jet (LLJ) in the northern region of the Persian Gulf (PG) observed on 5th Jun 2020 that sank the Behbahan cargo vessel. In this article, we have used the WRF-V3 model and reanalysis ERA5 data to study the vertical structure, diurnal variation and intensity of the LLJs. The aimed topography's region, the pressure gradient and the land-sea breeze are the essential key factors in analyzing the diurnal variation of the LLJ over the PG that is known as the Shamal wind. The low terrain height in the northern of the PG and Zagros Mountains channelized the northwest winds and increased the pressure gradient that increased the wind speed. The decreasing friction over the PG during nighttime and the differences in temperature and specific heat capacity between water and land cause an increase in the LLJ intensity. The LLJ's core 22-24 ms⁻¹ was located over the study region in 925hPa on 4th and 5th June at 18 and 00 UTC respectively. Thereafter core's wind speed decreased to 10-14 ms⁻¹ at 12UTC on 5th June. The mix-down of momentum from the LLJ level to the surface caused an increase in wind speed and wave height over the PG which sank the Behbahan cargo vessel at early morning of 5th June. The LLJ at some regions like Kuwait formed at lower heights (under 950 hPa) and at the other points LLJ formed at levels upper than 950 hPa .during nighttime of 4th Jun to afternoon of 5th Jun

کلمات کلیدی:

Low Level Jet, Persian Gulf, speed, Behbahan cargo vessel, WRF-ARW model, wind vertical profile

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