

The study investigates the impact of climate change on Tropical cyclone Vayu-June under future warming scenario. Most research on the impact of climate change on cyclones has focused on the Atlantic and Pacific Oceans. The study uses the CESM data simulated with GPU based WRF-ARW (single 9 km domain) model to understand the track, intensity, and related synoptic parameters of the storm. Under the RCP 8.5 scenario, Vayu would have made landfall on the west coast of India with a sustained wind speed of ~ 15 m/s, unlike the present-day Vayu, which weakened over the ocean. The study indicates that changes in large-scale thermodynamics in future warming scenarios can influence the track and intensity of severe cyclonic storms like Vayu, highlighting the importance of monitoring Arabian Sea cyclones to understand disaster mitigation under possible warming scenarios.







At the matured VSCS stage VAYU(in RCP 8.5) would have sustained wind speed of ~33 m/s

Tropical cyclone Vayu under climate change scenario RCP 8.5 Pubali Mukherjee, Balaji Ramakrishnan Civil engineering Department, Indian Institute of Technology Mumbai



Underestimation at the matured stage of the cyclone, indicates need of improved forcing data for the model Longitude (°E)

At the matured VSCS stage VAYU(in RCP 8.5) has anomalously high ~90% RH at the mid troposphere



Variation of simulated SST with the simulated track at various stages of Vayu in RCP 8.5

High low level
vorticity at the
matured stage

Relative vorticity (×10 ⁻⁵ s ⁻¹) 850 hPa WRF-present	Relative vorticity (×10 ⁻⁵ s ⁻¹) 850 hPa WRF-CESM
86.86	86.54
76.69	76.00
171.20	167.46
221.49	216.00
359.93	356.00
213.23	213
186.75	185



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