National Institute of Technology Rourkela

Departmental Seminar

Seminar Title	: Recent Two Decades Witness an Uptick in Monsoon Depressions Over the Northern Arabian Sea
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Venue	: ER303 CLASS ROOM
Date and Time	: 13 Aug 2025 (04:00 PM)
Abstract	: The present study, for the first time, reports a significant increase in the frequency of Monsoon depressions (MDs) over the northern Arabian Sea in the past four decades. The analysis reveals that increased frequency of MDs due to the substantial variations in both dynamic and thermodynamic parameters across the observation array. Notably, there has been a noteworthy upswing in the Genesis Potential Parameter (GPP) within the northern Arabian Sea sector of the region, shedding light on the increased likelihood of MDs forming in this area during recent monsoon seasons in contrast to the decreasing MDs in Bay of Bengal. However, this finding strongly underscores the increased risk of the emergence and expansion of MDs in the Arabian Sea region over the past two decades, because of rising mid-tropospheric moisture, dynamical instability, augmented relative vorticity at 850 hPa, and weakened shear between upper and lower tropospheric winds. Therefore, it provides absolute assurance of their occurrence with the increasing dynamical process of its formation seems to be due to a combination of barotropic and dynamical instability. The evidence points to a heightened potential for MDs development in this area. Certainly, this is one of the significant contributors to the increased rainfall over northwestern India (NWI) in recent decades.