

The IMILAST project: cyclone lifecycle in the Southern Hemisphere

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In order to establish more truth in understanding the uncertainties of cyclone tracking schemes and following the concept of the "IMILAST intercomparison" project, we present the analysis of cyclone lifecycle characteristics from different schemes in the Southern Hemisphere. We considered cyclone lifetime, intensity, travelling distance, migration, deepening rate and velocity as the major parameters quantifying cyclone life cycle. These were intercompared for the eight different tracking schemes of the IMILAST database. Schemes tested were M22, M22a - Akperov and Mokhov, M20 - Wernli and Sprenger, M13 - Hanley and Caballero, M12 - Gulev, Rudeva and Tilinina, M11 - Leckebusch and Ulbrich, M10 - Keay and Simmonds, M09a, M09 - Wang and Serreze, M02 - Pinto and Ulbrich. The comparison was performed for the period 1989-2008 using ERA Interim reanalysis as the source for cyclone tracking. Most cyclone lifecycle characteristics are not significantly different in different schemes. Major differences occur between the schemes using sea level pressure and geostrophic vorticity for cyclone identifications. We also performed comparison for the identification of variability patterns derived from cyclone climatologies performed with different schemes. Although most of schemes show consistent results (growing number of cyclones during 20-yr period superimposed with decadal variability), there are few outliers which demonstrate significant deviations from this commonly shared signal.