

The IMILAST project: The variability of cyclogenesis, cyclolysis, system and track density in the Southern Hemisphere associated with different tracking methods

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Introduction

We consider the area-weighted averages of some key cyclone parameters for the SH sectors of Atlantic, Indian and Pacific Ocean basins (30-70°S, land included). Only the winter (JJA) case is presented.

- 20 winter seasons (JJA) of ERA-Interim 1.5° data (1989-2008) of 12 identification and tracking products (11 groups) performed by the IMILAST-Team were analysed.
- M02, M10 and M11 are based on the University of Melbourne (MU) cyclone tracking algorithm.

Methods

M02 J. Pinto, Cologne
 M08 M. Liberato, Lisbon M16 A. Coccozza, Lecce
 M09 X. Wang, Toronto
 M10 I. Simmonds, Melbourne
 M11 U. Ulbrich, Berlin; M20 H. Wernli, Mainz
 G.C. Leckebusch, Birmingham*
 M12 S. Gulev, Moscow M20h H. Wernli, Mainz**
 M13 J. Hanley, Dublin
 M14 S. Kew, Zurich*** M22 M. Akperov, Moscow

*Highly comparable to M02 – shown together as M02/M11 in figures
 A variation of M20 *Based on 850 hPa fields

Results

- System density (SD): The Pacific basin has highest density; MU methods have higher SD than others.
- System flux (FS) (related to track density): Closer agreement over basins between methods than SD but overall profile similar to SD.
- Cyclogenesis (CG) and cyclolysis (CL): The Atlantic and Pacific are strong source regions of cyclones while the Indian basin is a large region of decay.
- Central pressure (PC): The Indian basin has the deepest systems on average; MU methods give similar PC; M13 PC is much deeper than other methods.

Summary

Although the absolute values from the various methods may differ, the basin average statistics are generally consistent in profile.

