

The IMILAST project: Characteristics of the cyclone life cycle over the Northern Hemisphere

Urs Neu[†]; Irina Rudeva; Sergey Gulev; the IMILAST team

[†] Swiss Academy of Sciences, Switzerland

Leading author: urs.neu@scnat.ch

Characteristics of cyclone life cycle have been analyzed using outputs of 10 tracking schemes participating in the IMILAST project for the 20-yr period from 1989 till 2008. Rough comparison of cyclone climatologies shows that total number of cyclones may vary 3-fold across the schemes. On the other hand, geographical distribution of tracks is in good agreement especially in the regions of major storm tracks. Our aim is to analyse more sophisticated characteristics of cyclones to find the differences between the schemes as well similarities. We analyzed such parameters of cyclones as their life time, propagating velocity, deepening rates, intensity, and migration distance. Presumably, such parameters as intensity, deepening rates or propagation velocity should not change a lot from one scheme to another, at the same time cyclone life time and migration distance may vary considerably. Our analysis shows that the deepening rate is the most consistent parameter and other parameters are more sensitive to a tracking algorithm. The highest number of intense cyclones can be found in method no. 13 (M13) and M10 and in M12, M09, M20 more than 50 % of cyclones do not reach 1000 hPa. In terms of propagation velocity there is a group of schemes where one can find more slow moving features (M02, M09, M10, M12) and a group with faster moving features (M13, M22). When considering those parameters which were supposed to depend more on the tracking algorithm we found that three tracking schemes (M09, M10, M12) give very similar results though two of them are based identification SLP minima and the third one - on the identification and tracking vorticity extrema.