Objective Analysis Of Japanese Typhoon Intensity Data
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The accurate estimation of typhoon intensity is clearly essential in the determination of both the physical nature of a given storm, and its socio-economic impact. In the present study, we compare JMA & JTWC typhoon intensity data, in terms of Vmax and central pressure, against surface SYNOP observations. Our data set spans historical storms which either made landfall or by-passed Japan in the period 2000-2008.

We objectively compare agency Vmax estimates with optimal values obtained by assimilating hourly SYNOP surface gust observations using a particle smoother in conjunction with the RMS typhoon parametric wind-field model. In order to minimise model uncertainty arising from surface effects, data were assimilated from stations limited to coastal Kyushu and the southern islands, as in these regions roughness is well modelled, and local topographic impacts are minimal. Uncertainty due to extra-tropical transitioning effects were minimised by only including those track points where the wind field was estimated to be essentially tropical in nature. Our results suggest that, in terms of Vmax, JMA is more tightly clustered around the optimal value, and hence, more reliable than JTWC.

In the case of central pressure, we evaluate the JMA and JTWC estimates with respect to SYNOP observations throughout Japan, in the period 2001-2008. As a storm moves across Japan or by-passes, agency estimates are compared with pressures recorded within a given space and time distance from the storm center. We find that in some cases the JTWC values are higher than the records at surrounding stations. In general, visual assessment of the evolution of pressure from the storm center outwards is more consistent with the JMA estimates of central pressure and track location.

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