A Comparison of Maritime Cyclone Climatologies Derived from Manual and Automated Detection and Tracking Methods

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Two contemporaneous 10 year North Pacific cyclone datasets, one obtained from manual tracking and the second from an automated cyclone detection and tracking scheme developed for the NCEP-NCAR Reanalysis, were compared. Both methods perform well in the detection and tracking of mature cyclones and in documenting their dissipation, but the automated method exhibits a serious underdetection bias relative to the manual method owing to a failure to capture weakly developing cyclones and cyclones during their early stages of development. Two cyclone events that have previously been well documented in the literature were examined to explore limitations of the automated method. The most significant deficiency appears to be the production of discontinuous cyclone histories, which led to a shortened storm track in the downstream development case and missed the rapid development in the second case. Since automated detection and tracking methods used in conjunction with digital datasets can greatly increase the scope of research, some recommendations for their use in future studies are provided.