



## **Detection of merger and splitting of extra-tropical cyclones**

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Results from the project IMILAST (Intercomparison of mid-latitude storm diagnostics) show that, despite a wide variety in the 15 cyclone identification and tracking techniques considered, a reasonable agreement on tracks of intense cyclones can be reached, at least in the central intensifying stage of the cyclone life cycle. In contrast, diagnostics of cyclone genesis and lysis events show reduced agreement amongst the methods with genesis and lysis density maps exhibiting coherence over smaller spatial scales.

Recent work by Hanley and Caballero claims that multi-centre cyclones occur more frequently as storm intensity increases, with an associated increase in the probability of spurious splittings by single-centre tracking routines.

We investigate whether the methodological differences in handling of cyclone merger and splitting are responsible for the range in genesis/lysis outcomes exhibited in IMILAST results or whether other factors, such as cyclone definition, have more influence over the spread. The study is focussed on a number of selected cases of intense cyclones that undergo a clear merger or splitting.

Of the methods contributing to the IMILAST project, three explicitly handle cyclone merger and splitting. In demonstrating the differences between the techniques, we explore what each approach has to offer.