



## **Local energetics of the North Atlantic storm track lifecycle**

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Kinetic and available potential energies, their eddy and mean parts, and the conversions between them have been recognised as a useful tool in classical work of numerical eddy lifecycles. However, the methods used to analyse these energies commonly rely on global integrations, meaning that only one value per time step is recovered. While this may not be an issue in idealised lifecycle experiments, when analysing the complex variability of the real atmosphere, global values obscure much of the internal dynamics. This study aims to use a local energy framework, which was initially proposed in the 1980s but largely neglected since. The locally defined energy equations are analysed in the context of the storm track lifecycle to reveal a three-dimensional evolution of the most active North Atlantic storm events in the last 35 years. It is also found that the most active events in one hemisphere are associated with an inter-hemispheric exchange, causing jet shifts in the other hemisphere. Mechanisms for such inter-hemispheric communication are suggested.