



Identifying CSI release in a numerical simulation of a frontal wave cyclone

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The release of Conditional Symmetric Instability (CSI), also called slantwise convection, is associated with frontal precipitation bands, rapidly developing extra-tropical cyclones and sting jets. Slantwise convection is not parameterized in operational global-scale weather and climate models, but the justification for omitting this process has not been established. In this presentation, a case study of a low pressure system over the north-east Atlantic on 13 November 2009 is analysed to determine the role that CSI played in the organisation and evolution of mesoscale precipitation structures. CSI diagnostics using the operational analysis from version 7.3 of the limited area Met Office weather forecast model (the MetUM, with approximately 12km horizontal grid spacing) in which slantwise convection is permitted are compared with CSI diagnostics using ERA-Interim (approximately 79km horizontal grid spacing) in which slantwise convection is poorly resolved. The fronts contain multiple slantwise circulations associated with CSI diagnostics in the higher resolution MetUM analysis, whereas in ERA-Interim the fronts do not have the multiple slantwise circulation structure due to the lower resolution. The results of the case study will be discussed in the context of a climatology of CSI, obtained from the ERA-Interim reanalyses between 1979-2010.