



Humidity precursors of cyclone development

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Coherent structures are considered as the major features for extratropical cyclone development but it is recognized that they can also trigger the organization of deep convection. They may be related to the paradigm of edge Rossby waves within strong gradients of Potential Vorticity/Potential Temperature either at the tropopause or just above the planetary boundary layer. A systematic survey of satellite pictures (essentially IR and water vapour channels) suggests that the upper-level coherent structures possess typical humidity signatures with high-level clouds downstream to the vorticity maximums and dry areas collocated with stratospheric intrusions toward the troposphere.

The areas of large scale upper-level clouds are also likely areas of initial condition errors since the assimilation of satellite radiances remains hard even with the more advanced data assimilation systems.

The presentation aims at showing the sensitivity of extratropical cyclone development and also Mediterranean convective systems to initial conditions perturbations in terms of humidity versus Potential Vorticity in order to demonstrate the need for additive moisture observations.