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First steps towards using scene dependent observation errors for hyper-spectral IR

Currently infrared (IR) sounder data is used in clear scenes only. This includes completely clear scenes, and in addition channels which are considered to be unaffected by the cloud above a cloudy scene. Completely clear scenes represent approximately only 10% of the data. Thus, majority of the hyperspectral data used actively in assimilation are from cloudy situations and potentially affected by residual cloud contamination. Cloud free channels are identified with the cloud detection which needs to be conservative to avoid cloud contamination but at the same time relaxed enough to avoid false detection and allow as good data coverage as possible.

Deriving the inter-channel correlations with the Desroziers method in different scenes indicates that the residual cloud contamination introduces inter-channel correlations to the affected radiances and the increased error correlations are the strongest just above the cloud top. It is not practical to diagnose the error correlations for all possible scenes. Thus, a parametric approach is being investigated and tested. Latest results will be presented in the poster.

Primary author: Dr SALONEN, Kirsti (ECMWF)

Co-author: Dr MCNALLY, Anthony (ECMWF)

Presenter: Dr SALONEN, Kirsti (ECMWF)

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