Using Simulated Atmospheric Motion Vector Wind Retrievals from NWP Radiances to Characterize Height Assignment Errors

Peter Lean\textsuperscript{a}, Graeme Kelly\textsuperscript{b}, Stefano Migliorini \textsuperscript{a,c}

\textsuperscript{a}Department of Meteorology, University of Reading, UK, p.w.lean@reading.ac.uk, \textsuperscript{b}Met Office, UK, \textsuperscript{c}ECMWF, UK.

Atmospheric Motion Vectors (AMVs) are wind retrievals produced by tracking coherent features between consecutive satellite images. The apparent motion of the feature provides the wind vector, which is then assigned to a certain height based on the estimated height of the tracked feature. Height assignment errors are widely considered to be one of the primary sources of error in AMV wind retrievals, limiting their impact when assimilated into NWP models.

Simulation studies, whereby synthetic Atmospheric Motion Vector retrievals are generated from high resolution NWP model radiances, provide a useful tool to help understand and characterize these errors.

In this presentation we present results from an investigation of height assignment errors using the Met Office 1.5km grid length UKV model to generate synthetic AMVs using the NWCSAF package. Statistics of cloud top height errors from the NWCSAF cloud products are calculated through a comparison against the model 'truth' cloud condensate profiles during a month long trial period.

Results indicate that biases in the assigned cloud top heights depend strongly on the diagnosed cloud type and cloud height. The feasibility of bias correction of the cloud top height product to reduce systematic height assignment errors in AMVs will be discussed.