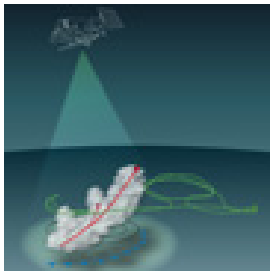

Contribution ID: **3** Type: **Oral presentation**

Development of a logistic model to study warm conveyor belts on subseasonal time-scales

Thursday, 12 March 2020 08:30 (20 minutes)

The physical and dynamical processes associated with warm conveyor belts (WCBs) have a major impact on the large-scale midlatitude dynamics and are important sources and magnifiers of forecast uncertainty. Most often, WCBs are defined as trajectories that ascend in a time interval of two days from the lower troposphere into the upper troposphere. Although this Lagrangian approach has been proven to advance our understanding of the involved processes significantly, the calculation of trajectories is computationally expensive and requires data at a high spatial and temporal resolution. In this study, we present a statistical framework that aims to derive the inflow, ascent, and outflow phases of WCBs from instantaneous fields. To this regard, a global multivariate logistic model is developed based on a combination of meteorological parameters from ERA-Interim reanalysis. Validation against a Lagrangian-based dataset confirms that the logistic model is reliable in replicating the climatological frequency of WCBs as well as the footprints of WCBs at instantaneous time steps. This allows to analyse relationships between the onset of Atlantic/European weather regimes and the frequency of WCBs not only in reanalysis data but also in forecast of the subseasonal prediction project database. The overall goal is to apply the logistic model to forecast of this database to identify processes related to WCBs that dilute the forecast skill on subseasonal time-scales.

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Session Classification: Session 10

Track Classification: Workshop: Warm Conveyor Belts –a challenge to forecasting