How does sea surface temperature influence warm conveyor belt ascent and the associated precipitation and cloud structure?

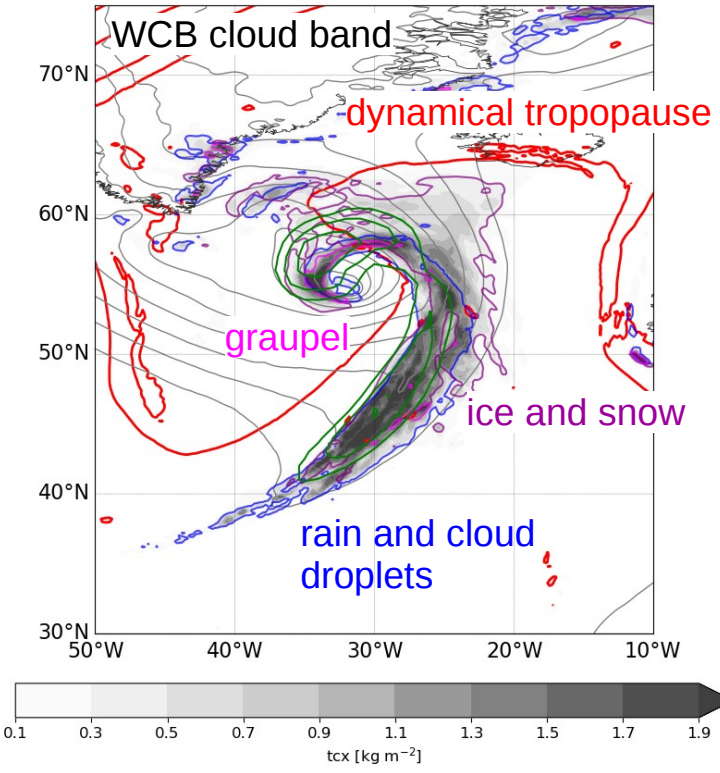
- Warm conveyor belts (WCBs) are coherently ascending airstreams in extratropical cyclones (ETCs) and form large-scale cloud bands
- WCB ascent and associated cloud formation influence the larger-scale flow (e.g. ridge amplification)
  >> link between thermodynamics and dynamics
- Sea surface temperature (SST) influences near-surface temperature (T) and moisture (q_s) which are both important for WCB ascent and cloud formation

Open questions:

- How does SST influence WCB ascent?
- Do differences in SST modify the surface precipitation?
- How does warmer SST change the WCB cloud structure?
- Does SST also matter for larger-scale flow evolution?

Tasks:

- Assess sensitivity of WCB ascent, microphysical processes, and large-scale flow to changes in SST
- Analyse numerical experiments with the ICON model with three different SST scenarios (SST - 2 K, reference, SST + 2 K), considering
  - the Eulerian perspective (e.g., precipitation, hydrometeor contents)
  - the Lagrangian perspective (online WCB trajectories)
- (Perform additional ICON simulations with refined SST perturbations)



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