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Treatment of convection- condensation processes in convection permitting models

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WG / MWF

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Scientific questions to be answered

- Required resolution
 - > convection permitting permits for deep convection
 - > shallow convection...
- Role of orography / physics (PBL, surface, μ -physics, radiation)
 - > relative importance for CI
- Convective initiation
 - > what triggers?
 - > large scale vs. local scale?
 - > can we even hope to forecast this?
 - > **predictability**





Scientific questions to be answered

- Role of assimilation
 - > how, how long lasts benefit, scale
 - > 4d-VAR linearized @ hires, other methods with other issues
- Method of ensemble perturbation generation
 - > only initial conditions (and BC)?
 - > stochastic physics
 - > 'stochastic surface description'? [subgrid scale orography, surface type, soil moisture.....]
- Upscaling and downscaling
 - > how do large scale effects trigger convection
 - > how do local effects trigger larger scale phenomena





Activities

- Research!
 - > exploit data sets **like** COPS / D-PHASE
 - > case studies / process studies / verification
- COPS = convective orographically-induced precipitation study
 - > need a truly 'alpine COPS' (*real mountains*)
 - > need a 'semi-arid COPS'?
 - > other climates / areas?





Activities

- A substantial step forward would be a *reference data set*
 - > like (ideal) Klemp-Weisman case
 - > could ask from COPS 'golden day, reanalysis'
 - > must define requirements, data availability
 - > from all the above
- Liaise with the climate community





Scientists / funding

- Make COPS an FDP?
 - > keep momentum
 - > German funding most likely vanishes
 - > THORPEX (are there funding possibilities?)
 - > for D-PHASE it was difficult: no central funding
- An activity like D-PHASE is cheap
 - > MeteoSwiss spent some '2 positions' over 2 years
 - > additionally some cash for the VP plus the position for data archive (COPS)
 - > but requires an institution to go for it
- World wide funding?





Scientists / funding

- How to make it happen?
 - > WWRP endorses world wide project
 - > European funding
 - > US / Ca funding
 - > Asian funding
- Joint application but at different agencies

