ACCORD

A Consortium for COnvection-scale modelling Research and Development

# Physics Sessions

Author(s), date, place or video-conference

# Cloud-Aerosol-Radiation

- **The importance of validation of radiation fluxes and clouds**
  - **dealing with existing compensating errors**
- **Aerosols in radiation scheme**
  - First tests with new ecRad that is more modular and more efficient
  - Can use real time aerosols or re-computed Tegen type 'climatology', total column optical depth over LW or SW spectra
    - Tests performed on cases and longer term periods show positive impact
- **Aerosols in microphysics**
  - Number of CCN determined from surface (sea/land) modified or replaced using various sources of aerosols
  - Effects on both precipitation and clouds, little effect on prec scores over one month (CAMs, MEPS and control)
  - First tests bring small improvement and some problems remain unsolved (coastal precipitation)

# Microphysics

- **ALARO lightning based on graupel**
  - Implemented and tested using LINET data
    - Correct diurnal cycle
- **ICE-T**
  - Better representation of the super-cooled liquid water, heavier ice loads, better match with obs
- **Fog tests**
  - Hectometric scale and 156 lev 1m lowest, better life cycle with LIMA and deposition
  - Number of vertical levels important for correct representation of the sea fog
- **Sub-grid precipitation and light precipitation in shallow clouds**
- **Improving consistency by direct use of hydrometeor PDF that provides opportunity for uncertainty assessment and re-tuning**

# Turbulence

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- **CAT**
  - Flight level cloud free turb at VHR study
  - Higher vertical resolution near tropopause is needed
- **TOUCANS**
  - Work on numerics and mixing length
  - Interfacing with SURFEX options and fixing
- **Wind farm parametrisation**
- **Stable boundary layer issues**
  - Diagnostics work
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# General proposals

- **New dawn for MUSC (for testing all physics)**
- **ML and data driven parametrisations**
- **Specific cross-CSC working weeks/days/meetings**
  - Foster direct cross-CSC interactions
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- **topic oriented coordination?**
  - Semi-regular meetings of teams working on particular WP
  - (very) Stable BL
  - 3D radiation and turbulence
  - ML techniques
  - VHR and interoperability