



HARMONIE-AROME Radiation Experiments and Developments

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This poster contains a summary of current or recently completed work carried out using different versions of the HARMONIE-AROME configuration of the shared ALADIN-HIRLAM Numerical Weather Prediction Modelling System. Topics include the following:

- An evaluation of global horizontal irradiance outputs from 2 recent cycles of HARMONIE-AROME compared to observations. The NWP datasets used were the MERA reanalysis by Met Eireann, Ireland, a 35-year dataset on a 2.5 km grid covering Ireland and the UK (Gleeson & Whelan., 2017), and operational simulations by DMI on a domain over Northeast Europe (7 months of data).
- Use of the clear sky index (Perez et al., 1990) and a variability index (Stein et al., 2012) as a means of evaluating clouds in the HARMONIE-AROME model (Nielsen & Gleeson, 2018).
- A comparison of 3 radiation schemes in HARMONIE-AROME - the multi-band IFS scheme (cy25r) and the ACANEB2 (Masek et al., 2017) and HLRADIA (Rontu et al., 2017) broadband schemes.
- A comparison of the default Tegen aerosol climatology (Tegen et al., 1997) in HARMONIE-AROME with the newer CAMS aerosol climatology (Bozzo et al., 2017).
- Improvements to snow and ice albedos in HARMONIE-AROME.
- Work on the consistency between the number concentration and effective radius of cloud particles in both the radiation and microphysics parametrizations in HARMONIE-AROME.

- [1] Bozzo et al., ECMWF, 2017
- [2] Gleeson & Whelan, ASR, 2017
- [3] Masek et al., QJ., 2017
- [4] Nielsen & Gleeson, Atmosphere, 2018
- [5] Perez et al., Solar Energy, 1990
- [6] Rontu et al., ASR., 2017
- [7] Stein et al., WREF Conference, 2012
- [8] Tegen et al., J. Geophys. Res. Atmos., 1997