

Research Project, 2010.

Impact of horizontal on climate extremes in Ireland

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This project involves a study of the impact of the horizontal resolution in global atmosphere simulations on the representation of the mean climate and climate extremes in Ireland.

The student will investigate the differences in the mean circulation and in extreme events between our EC-EARTH T159L62 AMIP and our 511L62 AMIP simulations. While the T159L62 AMIP simulation is completed (1978-2008), the T511L62 AMIP simulation will still take about 3 months to finish. It has completed 1978-1980 so far. Thus, the student can already get familiar with the GRIB format in the meantime and start evaluating the T159L62 AMIP simulation.

- Mean sea level pressure, 500 hPa temperature and geopotential heights should be compared with ERA-40 / ERA-INTERIM data globally to investigate how well the mean circulation is represented in both resolutions.
- The variability of these parameters in different time scales (days, months, decades) should be evaluated.
- Percentiles of rainfall and temperature should be calculated for Ireland and Europe.
- As a reference the ENSEMBLES observation dataset (E-OBS) should be used. In addition, station observation data over Ireland should be used for the comparison.
- Percentile values of rainfall, temperature and wind speed are to be calculated.

It is to be investigated if it makes a difference to use gridded observation data or station observation data for the comparison (gridded observation data are easier to compare to model results but have the disadvantage that they might pretend accuracy over data sparse areas while station observation data are raw observation data but are only valid for a point while the model produces area averages).