Project: **955**
Project title: **Climate change in central Europe using higher order numerics**
Project leader: **Andreas Will**
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Today multi-model ensembles are considered state of the art for global climate models (IPCC, 2014) as well as for medium resolution regional climate models (Kotlarski et al., 2014). On the convection permitting scale a systematic evaluation of the advantages of multi-model ensembles for one region has not yet been performed (Prein et al., 2015). The Jülich Supercomputing Center (JSC) performed runs covering Central Europe at a resolution of 3 km converting Central Europe with the Weather Research and Forecasting (WRF) model. We have decided to setup the COSMO-CLM model in a way to cover a sub-set of the grid-points of the runs done by JSC. This allows us to build up a multi-model ensemble at the convection permitting scale for a region covering the German states of Rhineland-Palatinate and Saarland, as well as Luxembourg and parts of northern France and eastern Belgium (see Figure 1).

This setup will allow us to better quantify uncertainties related to extreme events which are expected to have a stronger impact on society and ecosystems than changes in the mean climate. One example are heat waves, which are considered to increase in frequency and intensity under climate change in the Greater Region (Junk et al., 2014) and are known to cause severe health problems, but also have large impact on agricultural yields.

For these impact studies, the soil properties are of importance as they have a direct influence on the near surface temperature. After investigating both the Digital Soil Map of the World (DSMW) provided by the Food and Agriculture Organization (FAO) and the Harmonized World Soil Database (HWSD) provided by International Institute for Applied Systems Analysis (IIASA), we decided that the later provided more realistic data for the region of interest.

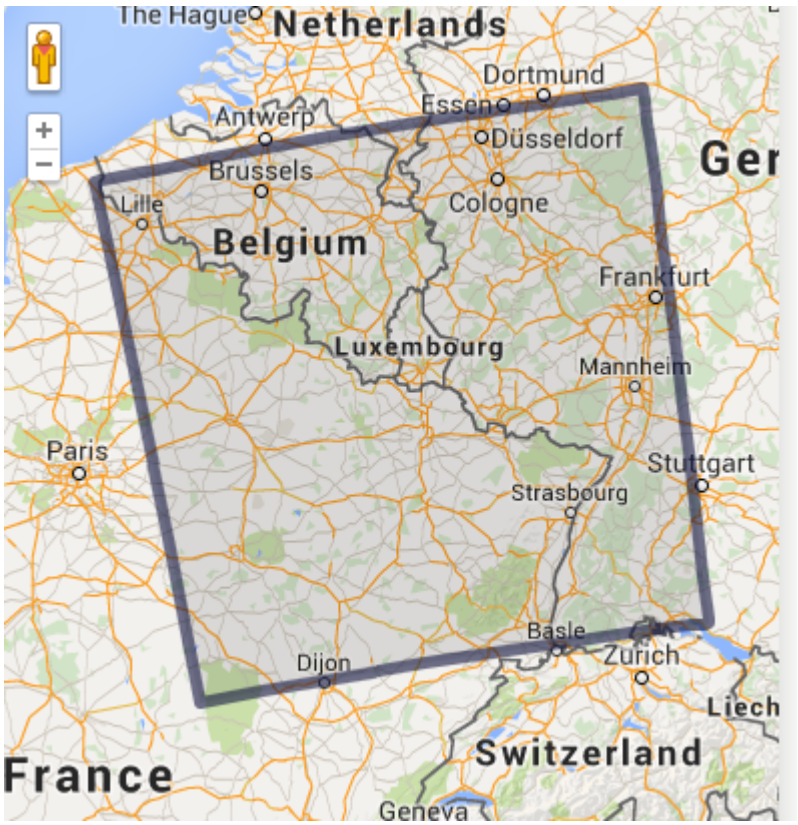


**Figure 1:** Model domain for convection permitting regional climate simulation at a resolution of 3 km

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