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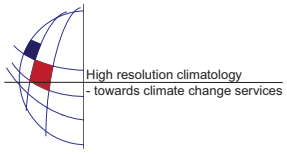


# Adaptation and the Two-Degree Target - Regional Climate Consequences

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In the current debate on climate change, countries are preparing for adaptation to the expected impacts of climate change. For example, Germany has decided its Adaptation Strategy in December 2008. It is the ensuing responsibility of the German Federal States to put this strategy into adaptation measures and specific action. However, to decide on such critical and expensive actions, reliable climate change information is needed. Depending on the relevant sector, this information is required on different scales in time and space.

Furthermore, global policy discusses the two-degree target aiming to contain climate change to a warming of less than two degrees relative to pre-industrial values. It is currently discussed, whether or not this goal can be reached at all. However, as governmental bodies, the Environmental Agencies need to address the political aim of the two-degree target and have to respond to the implied climate change signals.

At the moment no very high resolution ($\sim$10km) climate projections are available for a scenario which stays within the bounds of the two degree target. Therefore, a different approach was taken and will be presented: Global climate simulations with the ECHAM5 model have been evaluated as to the time when the global average warming hits the mark of two degrees above the pre-industrial level. Moreover, this approach is applied for different available SRES scenarios. 30-year time slices were selected centered at these instants in time. The resulting time slices were analyzed in the high resolution RCM simulations of dynamical (CCLM and REMO) as well as statistical (WETTREG) type, driven with the respective GCM scenario run. Thus, a minimum climate change is assessed as the lower bound for which adaptation measures will be definitely necessary.

As it turns out, the relevant time frame assessed from the global climate simulations is 2036–2065 for scenario A1B, 2041–2070 for scenario A2 and 2051–2080 for scenario B1. In addition, the temperature increase for Central Europe is above the global average and this development is going to continue. Yet, a scale-dependence is found: The deviation of the Central Europe temperature from the global mean is different between regional simulations and the global model's relevant grid points from that area. The method and further results will be presented for the German Federal State of Hesse.