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Using climate derivatives for assessment of meteorological parameter relationships in RCM and observations

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In a changing climate it is essential to estimate its impacts on different economic fields. In our study we tried to create a framework for climate change assessment and climate change impact estimation for the territory of Latvia and to create results which are also understandable for non-scientists (stakeholder, media and public). This approach allowed us to more carefully assess the presentation and interpretation of results and their validation, for public viewing.
For the presentation of our work a website was created (www.modlab.lv/klimats) containing two types of documents in a unified framework, meteorological parameter analysis of different easily interpretable derivative values. Both of these include analysis of the current situation as well as illustrate the projection for future time periods.
Derivate values are calculated using two data sources: the bias corrected regional climate data and meteorological observation data. Derivative documents contain description of derived value, some interesting facts and conclusions. Additionally, all results may be viewed in temporal and spatial graphs and maps, for different time periods as well as different seasons.
Bias correction (Sennikovs and Bethers, 2009) for the control period 1961-1990 is applied to RCM data series. Meteorological observation data of the Latvian Environment, Geology, and Meteorology Agency and ENSEMBLES project daily data of 13 RCM runs for the period 1960-2100 are used. All the documents are prepared in python notebooks, which allow for flexible changes.
At the moment following derivative values have been published: forest fire risk index, wind energy, phenology (Degree days), road condition (friction, ice conditions), daily minimal meteorological visibility, headache occurrence rate, firs snow date and meteorological parameter analysis: temperature, precipitation, wind speed, relative humidity, and cloudiness.
While creating these products RCM ability to represent the actual climate was analysed from different perspectives, for example, we found that forest fire index has qualitative differences depending on the data used in calculation either using observed data or RCM data, which could be caused by the differences in precipitation and temperature cross correlation (Bethers, P., Sennikovs, J. and Timuhins, A. 2011)
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