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# Uncertainty of the climate model projections based on the Poland's territory example.

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Climate changes noticeable today are projected to intensify in the future. We want to know "what will they be like?" or "what will they influence?". If only we try to answer questions like these, we start/try to use climate projection models. The very moment we do this, a subsequent question comes to mind. What kind of model should be used? It is difficult to evaluate the credibility of individual climate scenarios and projections. It seems that, in the case of the changes in the temperature condition over Europe the climate models are generally compatible, while the changes in precipitation are rather different. Additionally, the degree of consistency between models is location-specific. For example, the territory of Poland is such an "in-between area" because for the northern part of Europe, most often the average precipitation is projected to increase while for the southern part, considerable decreases are projected.

This study will analyze the uncertainty of different climate models for the territory of Poland based on the multi-model projections from ENSEMBLES EU Project. The ENSEMBLES Project generated climate simulations by several regional models of high resolution. The models will be validated based on monthly observations data of temperature and precipitation for the reference period 1961-1990 and values predicted by six ENSEMBLES models for the same period. Such characteristics like: sum of absolute differences between real and predicted values or standard deviation of real and predicted values, etc., will be analyzed and discussed.

Generally, agreement between climate models for the control period is not satisfactory. Yet, a lesson learnt from the ENSEMBLES Project is that we know better (based on multiple model simulation) that we know little (models largely disagree on precipitation projections). Different studies on climate change suggests that e.g. adaptive planning should not be based on only one or a few models, since there is no guarantee that the range of simulations represents the full possible range. However, for a national scale, like Poland, there may be used for some applications a preferred model that performs better than the other models on reconstructing the control period situation.