EXTRACTION OF INFORMATION FROM A GLOBAL CLIMATE MODEL PERTURBED PHYSICS ENSEMBLE.

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We analyze sets of runs of the climateprediction.net project, the largest perturbed physics climate model ensemble available to date. This ensemble is specifically designed to sample climate-model uncertainty in HadCM3 and has stored different climate variables as global and regional monthly means between 1920 and 2080.

We explore different methodologies to obtain empirical probability distributions of climate variables and/or ranges of potential impacts of climate change. A set of model runs within the perturbed physics ensemble is selected by checking their ability to reproduce detectable correlations in climate observations and their forecasting skill. This first selection of model runs is performed by checking (i) distance to climatology and (ii) natural model variability. The model runs that had passed THESE checks are combined to produce a forecasting probability density function whose predictability skill is evaluated using the Ignorance Skill Score.

The final goal is to investigate whether the Perturbed Physics ensemble can provide information potentially useful to assess impacts of climate change, with some quantifiable predictability skill.