One hundred parallel worlds in seasonal prediction

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This study explores impacts of the ensemble size on the skill of seasonal climate prediction. We have evaluated differences in deterministic and probabilistic skill scores between two extremes (12 and 106) of ensemble outputs derived from a dynamical seasonal prediction system. A 100-ensemble retrospective seasonal forecast experiment has never been tried so far. One good news is that the prediction skill of El Niño/Southern Oscillation (ENSO) does not change significantly in the larger ensemble, indicating that the ensemble size of 10-members, used in most of the operational systems, is adequate for maintaining present level of ENSO prediction. Another good news is that some improvement is seen in the probabilistic prediction skills of extreme climate events in the extratropics. Even if running a 100-ensemble prediction system is quite costly, improved probabilistic prediction of disastrous extreme events may be useful for minimizing risks of possible human and economic losses.

Keywords: Seasonal Prediction, Extreme Climate Event, Large Ensemble

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