Geophysical Research Abstracts
Vol. 21, EGU2019-13949, 2019
EGU General Assembly 2019


# Simultaneous recalibration of decadal predictions for multiple lead-times with an extension of DeFoReSt

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Decadal climate predictions aim at characterizing climatic conditions over the coming years. In this context, international and national projects like the German initiative Mittelfristige Klimaprognosen (MiKlip) have developed model systems to produce a skillful decadal climate prediction. However, these forecasts still suffer from considerable systematic errors like lead-time dependent uncondtional (drift), conditional biases and ensemble dispersion.

With DeFoReSt, we proposed a Decadal Climate Forecast Recalibration Strategy, a parametric post-processing approach to tackle these problems. The original approach of DeFoReSt assumes third order polynomial expansion in lead year to capture conditional and unconditional biases and second order to capture dispersion. The coefficients of the polynomial expansion for lead years are themselfs modelled as start year dependent with a first order polynomial. However, since DeFoReSt is based on yearly aggregated values, the underlying statistical model must be extended to account for systematic errors on shorter time-scales. Here, we propose an approach for a recalibration strategy which simultaneously addresses monthly and yearly features of decadal predictions by using non-homogeneous boosting.