

## Appendix:

[1] Refers to the data set of residuals that Kravtsov et al. derived from linear subtraction of multi-model ensemble-mean from simulations *within an individual-model ensemble*. They used 18 individual-model ensembles (total of 116 twentieth-century simulations). Derivation of this data set adapts the Steinman et al. methodology in the following ways: one, a multi-model ensemble-mean of climate variability is identified as the forced signal; and two, this forced signal is separated out of each simulation, across *all* models. But in contrast with the Steinman et al. method, Kravtsov et al. do not evaluate independence of the residuals in-bulk; rather, they consider the resulting residuals in context of individual-model ensembles. Limiting analysis to single-model-residuals reveals that these residuals are, indeed, significantly correlated, and therefore not statistically independent. This method produces a biased signal.

[2] Refers to the data set Kravtsov et al. derived from differencing each individual-model ensemble-mean of climate variability (the forced signal) from each individual climate simulation within the simulation's associated individual-model ensemble. They used 18 single-model ensembles. Residuals within each individual-model ensemble are uncorrelated (independent). This method produces a naturally unbiased signal.

[3] These residuals are biased. Their "skew" is dominated by the difference between the naturally unbiased forced signal (individual-model ensemble-mean) and the Steinman et al. forced signal (multi-model ensemble-mean).