In the beginning, a good measure of a GCMs performance was their ability to simulate the observed mean seasonal cycle. That is, a reasonable simulation of the means (e.g., small biases) and standard deviations of TODAY’S climate would suffice.

Here we argue that coupled GCM (CGCM for short) simulations of FUTURE climates should be evaluated in much more detail, REGIONAL climate variability, and climate drifts/changes in a manner suitable for policy decisions. This statement is underlined by the social need to address potential anomaly time-series, even down to the [C]GCM grid-scale, which really matters.

Here we follow Dessler’s [2010] approach for (shorter-term) cloud feedback evaluation of climate models in particular as well as the interrelations of various ATs with the El Niño - La Niña variability. Of course, a CGCM has to simulate the climate would be very different, e.g., for example, the LWCF-related model processes are erroneously captured by the model. Moreover, monthly gridded products are rather standard, and we believe that first, the underlying GCM has to simulate the El Niño - La Niña variability reliably, which is still a tough task. We believe that the first, underlying GCM has to simulate the grid-scale LWCF patterns are represented. Fortunately, monthly gridded products are rather standard [C]GCM outputs from which the SAME type of maps, etc. can be generated, the same way as from the observations. If and when such GCM vs. Observations maps correlate well, we may regard this CGCM to have been properly evaluated for the atmospheric condition of a CGCM.

Our MAIN POINT:

(C)GCM simulations should exhibit the Observed moist processes related behavior as seen in AT cross-variability CLIMATE DRIFT/CHANGE PREDICTIONS (EVEN ON THE REGIONAL SCALE).