



## **Attractor radius, a new determination criterion of predictability limit**

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Firstly, the definition of the attractor radius was given and then the property of that the attractor radius (AR) in a given n-dimensional attractor A is a constant was proved in theory. Secondly, the SV of the square of the RMS difference was separated into two components - the systematic error and the attractor radius, and it was proved that the observed global climatological RMS (OCR) difference is not equal to 71% of the SV of the RMS difference when the systematic error is existed, however, it is always equal to 71% of the AR. Then the physical understanding of the AR and also the predictability limit determined by it were discussed. Finally, the spatial distributions of the predictability limit calculated from CFSv2 data by different criterions were compared.