Earth System
Dynamics

Discussions

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Interactive comment on "A wavelet-based-approach to detect climate change on the coherent and turbulent component of the atmospheric circulation" *by* D. Faranda and D. Defrance

Anonymous Referee #2

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The wavelet-based approach is up to my knowledge a novel methodology for analyzing climate models, though it has been used for image or reservoir reconstructions. I, however, have big doubts that this method is suitable for climatology. Climate modeling demands multi-scale modeling as well but the scale separation is often difficult to define and what is more important there is a multi-scale interaction that evolves in time. Therefore, the method should be first rigorously examined for climate models (starting from toy models and propagating towards more complex models) before drawing the conclusions about the climate system itself.

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Authors claim that the integral of the ACF detects the predictability. However, for that not only the correlation should be high but the error should be small, which is not shown.

Authors test the metrics on one resolution model. However, one needs to show that the wavelet-based separation gives satisfactory results by considering models with different resolutions.

Authors claim that the difference between $\Lambda_{2055-2105}$ and $\Lambda_{2005-2055}$ detects the predictability. I am wondering about sensitivity of this metric with respect to the time interval.

Moreover, authors need to describe the wavelet-based approach, define what BIC is, and to explain how the parameters were chosen.