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Potential of previsibility of the West-African intra-seasonal precipitations from TIGGE data.

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This study documents the predictability of precipitation at intra-seasonal timescale over the western Africa by a ensemble of meteorological models (TIGGE : THORPEX Interactive Grand Global Ensemble). We compared the skill of 6 models from 7 operational global climate centres using from 14 to 50 various initial conditions from 1 to 15 days lead-time. The comparison of these runs was led on the rainy season at various scales and on various intra-seasonal events over the 2008-2012 period. The intra-seasonal variability of the summer rainfall was the object of comparison between satellite data (TRMM 3B42 and RFE2) and the TIGGE forecasts at various spatial scales. The onset dates of different rainy seasons were analysed. Various criteria were retained to obtain the onset dates: rainfall, convection (OLR), dynamics and energetics (moist static energy and wind at 200hPa and 925hPa). On the other hand, the years when MJO events have modulated West-African rainfall were examined in the runs. We evaluated if the models reproduced well the amplitude of the modulation of the regional precipitation as well as the timing of the arrival of the MJO events on the studied area. False alarms of typical MJO modulation in the runs of TIGGE are also analysed.
Best results, in terms of bias and of rainfall variability, are obtained for the western part of the Sahel. The most realistic forecasts of onset dates are supplied for the rainfall and energetic criteria. Finally, it seems that an ensemble retaining only the runs of the ECMWF, UKMO and NCEP models gives better results that the TIGGE ensemble.