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CRCM simulations over the GAME domain for ICTS project – internal variability for different model configurations.

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The Canadian Regional Climate Model (CRCM) developed and operated by the Climate Simulations team of the Consortium Ouranos (Montréal, Québec, Canada) is a participating model in the GEWEX Inter-CSE (Continental Scale Experiment) Transferability Study (ICTS).

In addition to the requested simulations over 7 domains, supplementary simulations with the CRCM over the GAME domain (Asia) were generated with the aim of estimating the internal variability of the model. This estimation is needed to assess how much of the inter-model variance observed in this domain can be explained simply by model internal variability (sensitivity to initial conditions), rather than model configuration differences.

Two different configurations were used: a) the standard configuration of the model that includes spectral nudging of the horizontal wind in the higher levels of the atmosphere, and b) a configuration without spectral nudging. Each configuration was run twice with different initial dates (twin simulations).

The internal variability responses of the two configurations are evaluated for temperature and precipitation over observation points. Time series and diurnal cycle are studied. Results show that at some locations internal variability for simulations without spectral nudging can be as large as are the differences between different model configurations or other models.