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Modelling Tropical Precipitation in the mid-Pliocene Warm Period

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Models from the Pliocene Model Intercomparison Project Phase 2 (PlioMIP2) show that the mid-Pliocene Warm Period (mPWP) was a warmer and wetter world than today. However, there is not strong model agreement as to how tropical precipitation was different in the mPWP. Although PlioMIP2 models agree that there was more precipitation associated with the African Monsoon and the Asian Monsoon, away from these regions models do not show a consistent and robust change in precipitation between the mPWP and the preindustrial.

Here we use the HadGEM2 model to explore changes in tropical precipitation between the mPWP and the preindustrial, particularly those associated with the position and strength of the Intertropical Convergence Zone (ITCZ). Reasons for these changes within HadGEM2 will be discussed. We will also expand our discussion of the ITCZ to the PlioMIP2 ensemble in order to show the differing factors that could influence ITCZ characteristics in a warmer world.