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A simple model for abrupt millennial climate change in the last glacial period

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We first confirm that the time series of Calcium concentrations in GRIP ice-core data exhibits a significant alpha-stable noise component as previously found by Ditlevsen (GRL 1999).

Building on recent theoretical results from homogenisation theory for deterministic systems, we propose a simple conceptual entirely deterministic multi-scale model of the ocean-atmosphere-ice system which exhibits alpha-stable behaviour.

Unlike in most models employing homogenisation theory we employ here chaotic dynamics exhibiting intermittency. The intermittency is associated with the atmospheric dynamics interacting with sea-ice dynamics.

This is joint work with Nathan Duignan, Cameron Duncan and Eric Huang.