



Department of
Mathematical Sciences

Master's Thesis Defense

Mr. Andrew Westgate

MS Graduate Student

Under the Supervision of Dr. Sergey Kravtsov

**Friday,
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at 11:00 am**
*Online via
Microsoft Teams*



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Multidecadal Climate Variability in Observed and Simulated Near-Surface Air Temperature and Sea-Level Pressure

Accurate estimates of multidecadal climate variability generated internally within the climate system are required to gauge anthropogenic contribution to warming trends and to develop efficient strategies to mitigate climate change. Previous analyses of historical surface air temperatures (SAT) showed that numerical climate prediction models lack a pronounced global mode of observed internal variability — the stadium wave (SW), — which represents a multidecadal undulation originating in the North Atlantic and propagating to other regions of the globe. The present study extends these analyses by exploring co-variability of SAT and sea-level pressure (SLP) within the SW. Addition of SLP data does not substantially affect the SAT component of SW, which is essentially identical to its SAT-only counterpart. The SW's SLP features point to atmospheric teleconnections and dynamical mechanisms behind its global propagation. Finally, the climate model analogs of SW exhibit quasi-stationary, often smaller-scale patterns relative to observations, and lack of global propagation.

Committee Members:

Prof. Sergey Kravtsov (Advisor); Clark Evans & Paul Roebber



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