



## **CLIM Program Transition Workshop**

### **May 14-16, 2018**

**Lecture:** *Tunable Testbed for Detection and Attribution Methods*

**Speaker:** Nathan Lenssen

**Abstract:**

The field of detection and attribution has been growing for a couple of decades and has recently seen an increase in the quantity and sophistication of methods. The difficulty of comparing these methods has motivated the design of a simulation testbed. Such a testbed is difficult to develop as it involves generating spatiotemporal fields with complex and flexible covariance structures that do not inherently favor any of the methods to be tested. The presented testbed has the ability to generate a wide class of isotropic and non-isotropic correlation matrices to simulate the climate variability. The forcing response fields are tunable, spatially correlated fields with adjustable signal-to-noise ratios. The flexibility of the simulation method allows us to replicate a variety of climate model-like output in a testable setting. In addition to the methods used in the testbed, we present synthetic data for a few simulated climate scenarios and demonstrate the intended use of the testbed by comparing the performance of ordinary least squares (OLS) and total least squares (TLS) on the synthetic data. This is joint work with Dorit Hammering, Alexis Hannart, and the SAMSI working group on Detection and Attribution.