

## **Statistical Methods for Complex Computer Models for the West Antarctic Ice Sheet**

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The melting of the West Antarctic ice sheet (WAIS) is likely to cause a significant rise in sea levels. Predicting the future behaviour of WAIS involves the use of computer models of ice sheet dynamics as well as ice sheet observational data. It is challenging to develop statistical methods for such data because both the data and the computer model output are in the form of non-Gaussian spatial fields. I will describe an approach that combines Gaussian processes, generalized linear models, and dimension-reduction approaches for spatial data. This approach allows for efficient Markov chain Monte Carlo-based inference. This is joint work with Won Chang (U. of Cincinnati), Patrick Applegate and David Pollard (Penn State).