MARQUETTE UNIVERSITY

HELEN WAY KLINGLER
COLLEGE OF ARTS AND SCIENCES

Department of Mathematics, Statistics and Computer Science

COLLOQUIUM ANNOUNCEMENT

Spatio-temporal modeling of small patches/region of Greenland Ice-sheet(GrIS)

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3:30 PM, Thursday, October 26, 2017

Cudahy Hall, Room 401

Abstract

Different satellite based measuring techniques have been used to observe the present-day changes of the Greenland Ice sheet. The mechanism of ice loss are very different near the coast than they are inland. It is computationally prohibitive to build a single space-time model at high resolution for the entire GrIS. A Spatio-temporal hierarchical model framework is a natural choice here as we have observations from the laser shots and are interested in the process generating them in the data. A hierarchical model allows us to account for spatial and temporal correlation while also being able to separate the observations from the process as sources of uncertainty. We employed Integrated Nested Laplace Approximation (INLA) in representing a Gaussian Function with Matern Covariance function as a Gaussian Markov Random Field (GMRF) through the Stochastic Partial Differential Equations(SPDE) approach to fit our model. We constructed the constrained refined Delaunay triangulation of the spatial region for prediction of surface elevation height. Also, computed the precision matrix given the estimated parameters and studied the sparsity. Finally, analyzing the INLA output shows that the latent field is more uncertain than the response.

POST COLLOQUIUM REFRESHMENTS SERVED IN CUDAHY HALL, ROOM 342 AT 4:30 P.M.