CGU_H_11: Diagnostic, Sensitivity, and Uncertainty Analysis of Earth and Environmental Models

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Session Description

Proper characterization of uncertainty and information remains a major challenge, and is inherent to many aspects of modelling such as structural development, parameter estimation, and adequate characterization of forcing data and initial and boundary conditions. To address this challenge, methods for a) uncertainty analysis (UA) that seek to quantify uncertainty (and how it propagates through a system/model), and b) the closely-related methods for sensitivity analysis (SA) that evaluate the role and significance of uncertain factors (in the functioning of systems/models), have proved to be very helpful.

This session invites contributions on theory and/or application of SA/UA methods applicable to all Earth and Environmental models (e.g. atmospheric or hydrological models). Contributions addressing any or all aspects of sensitivity/uncertainty analysis, including information theory are invited. Particular topics of interest include (but are not limited to):

1) Novel methods for effective characterization of sensitivity and uncertainty
2) Implications of SA/UA for model calibration and validation
3) Impact of input data uncertainty on model learning and performance
4) Multi-criteria SA/UA
5) Improving the computational efficiency of SA/UA (efficient sampling, surrogate modelling, parallel computing, model pre-emption, etc.)
6) Information-theoretical analysis of uncertainty in (the interface between) models and data

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Joint Session Submission: