Coupling Land Surface Model and Circulation Model

1, Understand the mechanism of land surface model, global and regional circulation models:

Model setup, data, structure, parameterization schemes, parameter calibration and validation, model uncertainty.

2, Develop interfaces of the two models.

3, Understand the implications of the simulation results.

4, Design possible future scenarios to direct earth system management.

5, Couple simulation with observations to reach a well-rounded understanding.

Information Theory Applied in Model Evaluation

1, Clarify the concept of information in earth system modelling with precise mathematical language (Shannon information theory and Kolmogorov Complexity Theory).

2, Distill information from the mass produced outputs of land surface models, global and regional circulation models.

The Renewal of Functional Programming Applied in Hydrology and Earth Systems

1, Develop domain specific programming languages and useful tools for hydrology and earth system research.

2, Re-write existed models with a side-effect-absence manner.

My career goal is to become a researcher and make my contribution to the geoscience

community.

I choose MSU because Associate Professor Yadu Pokhrel is holding the program that

fits my academic ambition. I was also deeply impressed by the flourishing academic

atmosphere in the United States and MSU. I hope a favorable consideration given my

statement above.