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GEO 548.01: Topics in the Cryosphere

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Topics in the Cryosphere (Geosciences 548) – Fall 2014

Meeting

Tuesdays 3-5 PM & Thursdays 3:4 PM, ISB Room 406

Instructor information

Joel Harper

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Course objective

The primary goal of this course is to gain in-depth understanding of processes, research methods, and recent scientific breakthroughs related to ice sheet flow. In contrast to a survey course, we will go deep into a few specific topics. This course is only appropriate for graduate students conducting advanced research related to the broad field of glaciology.

Course Design and Student Responsibilities

There will be four course activities and we will divide our time between them. We will look for opportunities for overlap between the focus areas.

1) Review and discussion of student/faculty research related to ice sheet dynamics.

All students have research projects that have some component related to ice sheet flow processes. This is an opportunity to have the entire group spend some time reading and discussing a key topic related to your work.

2) Review and assess recent scientific advances in ice sheet motion.

We will perform peer review of recently published works on ice sheet flow dynamics. The review will consist of a written evaluation and a panel discussion. Each week we will address a different topic and set of associated publications. The entire group will read a common paper and perform a scientific peer review of the article. One group member will take the lead on conducting the group review. This will involve facilitating the discussion and most likely, reading and presenting other related publications which aid the discussion. The facilitator will write a group summary of the main conclusions of the panel review.

3) Conduct an in-depth review of seasonal snow distribution literature.

We will review all important literature related to ice sheet flow dynamics. Our goal will be to gain a comprehensive understanding of key published works addressing this topic. We will then perform a synthesis of the entire body of observations.

4) Group Research project.

We will design and execute three group research projects. The topics and research plans will stem from brainstorming sessions. Possible ideas firm densification under wet conditions, vertical flow in ice sheets, and water pressure/sliding speed relationships.

Grading

Letter grades will be assigned. Grades are based on level and quality of participation. Equal weight will be given to performance in the different course focus areas.

All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. All students need to be familiar with the Student Conduct Code. The Code is available for review online via the UM office of Student Affairs website.