

## **JAMES L. FASTOOK**

Department of Computer Science

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### **Education:**

B.S. (Physics) Rensselaer Polytechnic Institute, Troy, NY, 1971

M.S. (Physics) University of Maine, Orono, ME, 1974

Ph.D. (Physics) University of Maine, Orono, ME, 1977

### **Positions:**

Professor of Computer Science, University of Maine (2000-present)

Associate Professor of Computer Science, University of Maine (1994-2000)

Assistant Professor of Computer Science, University of Maine (1988-1994)

### **Recent Publications:**

- 1) J L Fastook, J W Head, D R Marchant, and F Forget. Tropical mountain glaciers on mars: Altitude-dependence of ice accumulation, accumulation conditions, formation times, glacier dynamics, and implications for planetary spin-axis/orbital history. *Icarus*, 198:305-317, 2008.
- 2) J L Fastook, J W Head, and D R Marchant. Dichotomy boundary glaciation models: Implications for timing and glacial processes. *Lunar and Planetary Science* 39, #1109, 2008.
- 3) R L Hooke and J L Fastook. Thermal conditions at the bed of the Laurentide ice sheet in maine during deglaciation: implications for esker formation. *Journal of Glaciology*, 53(183): 646-658, 2007.
- 4) D R Marchant, W M Phillips, J M Schaefer, G Winckler, J L Fastook, D E Shean, D E Kowalewski, J W Head, and A R Lewis. Establishing a chronology for the world's oldest glacier ice. In 10th International Symposium on Antarctic Earth Sciences 10th International Symposium on Antarctic Earth Sciences, USGS OFR-2007, pages 1-4. U.S. Geological Survey and The National Academies, 2007.
- 5) D E Shean, J W Head, J L Fastook, and D R Marchant. Recent glaciations at high elevations on Asia Mons, Mars: Implications for the formation and evolution of large tropical mountain glaciers. *J. Geophys. Res.*, 112:E03004, 2007.
- 6) J L Fastook, D E Shean, J W Head, and D R Marchant. Ice sheet modeling during high-obliquity climates on mars: Application to tharsis montes tropical mountain glaciation. *Lunar and Planetary Science* 37, #1794, 2006.
- 7) D H Bromwich, E R Toracinta, R J Oglesby, J L Fastook, and T J Hughes. LGM summer climate on the southern margin of the Laurentide Ice Sheet: Wet or dry? *Journal of Climate*, 18:3317-3338, 2005.
- 8) J L Fastook, J W Head, D Marchant, and D Shean. Ice sheet modeling: Mass balance relationships for map-plane ice sheet reconstruction: Applications to tharsis montes glaciation. *Lunar and Planetary Science* 36, #1212, 2005.
- 9) J W Head, D R Marchant, and J L Fastook. Regional mid-latitude glaciation on mars: Evidence for marginal glacial deposits adjacent to lineated valley fill. *Lunar and Planetary Science* 36, #1257. 2005.
- 10) J-O Naslund, P Jansson, J L Fastook, J V Johnson, and L Andersson. Detailed spatially distributed geothermal heat flow data for modelling of basal temperatures and melt water production beneath the fennoscandian ice sheet. *Annals of Glaciology*, 40(1):95-101, 2005.
- 11) J K W Staiger, J C Gosse, J V Johnson, J L Fastook, J T Gray, D F Stockli, L Stockli, and R Finkel. Quaternary relief generation by polythermal glacier ice. In Arjun M. Heimsath and Todd A. Ehlers, editors, *Earth Surface Processes and Landforms Special Issue: Quantifying Rates and Timescales of Geomorphic Processes: Part 2.*, volume 30, pages 1145-1159. Online, 2005.

- 12) D H Bromwich, E R Toracinta, H Wei, R J Oglesby, J L Fastook, and T J Hughes. Polar MM5 simulations of the winter climate of the Laurentide Ice Sheet at the LGM. *Journal of Climate*, 17(17):3415-3433, 2004.
- 13) J L Fastook, J W Head, D Marchant, and D Shean. Ice sheet modeling: Terrestrial background and application to Arsia Mons lobate deposit, Mars. Number #1352. *Lunar and Planetary Science XXXV*, 2004.
- 14) J-O Naslund, J L Fastook, and P Holmlund. New ways of studying ice sheet flow directions and glacial erosion by ice sheet modelling - examples from fennoscandia. *Quaternary Science Reviews*, 22(2-4):89-102, 2003.
- 15) J Kleman, J L Fastook, and A P Stroeven. Geologically and geomorphologically constrained numerical model of Laurentide Ice Sheet inception and build-up. *Quaternary International*, 95-96:87-98, 2002.
- 16) J Johnson and J L Fastook. Northern Hemisphere glaciation and its sensitivity to basal melt water. *Quaternary International*, 95- 96:65-74, 2002.
- 17) J-O Naslund, P Jansson, J L Fastook, J V Johnson, and L Andersson. Numerical modelling of the ice sheet in western Dronning Maud Land, East Antarctica; impacts of present, past, and future climates. *Journal of Glaciology*, 46(152):54-66, 2000.
- 18) A J Payne, P Huybrechts, A Abe-Ouchi, R Calov, J L Fastook, R Greve, S J Marshall, I Marsiat, C Ritz, and L Tarasov. Results from the eismint phase 2 simplified geometry experiments: The effects of thermomechanical coupling. *Journal of Glaciology*, 46(153): 227-238, 2000.
- 19) E J Steig, J L Fastook, C Zweck, I D Goodwin, K J Licht, J W C White, and R P Ackert. West Antarctic Ice Sheet elevation changes. In R. B. Alley, editor, *The West Antarctic Ice Sheet: Behavior and environment*, Antarctic Research Series, Volume 77, pages 75-90. American Geophysical Union, 2000.
- 20) R P Ackert, D J Barclay, H W Borns Jr., P E Calkin, M D Kurz, J L Fastook, and E J Steig. Measurements of Past Ice Sheet Elevations in Interior West Antarctica. *Science*, 286:276-280, 1999.

**Synergistic Activities:**

1) Glacial modeling is a topic I teach in COS516, Computer Modeling and Simulation. In this class I also teach the Finite Element Method (the basic solving technique used in the ice sheet model). 2) Interactive maps, based on databases such as BEDMAP, ETOPO2, and others have been developed both by myself and with students. These interactive maps allow users to point-and-click a region that is then extracted from the larger database and made available to the model. 4) I work with the High Performance Computing group on campus who use the icesheet model as a test case for parallel programming

**Recent Collaborators:**

J Johnson - University of Montana, H Borns and T Hughes - University of Maine, J-O Naslund and J Kleman - Stockholm University, D Bromwich - The Ohio State University, Graduate and thesis advisor - Mike Vietti, University of Maine, Postdoctoral advisor - Terry Hughes, University of Maine