

The Importance of Small Ice Shelves to Inland Ice

*Todd K. Dupont & Richard B. Alley
Department of Geosciences and EMS EESI
The Pennsylvania State University
University Park PA 16802
dupont@geosc.psu.edu*

We find that the weakening of small ice shelves can have as much, if not more, of an impact on inland ice as an equal weakening of big ice shelves. Recent observations show marked acceleration and thinning of several outlet glaciers and ice streams in Antarctica and Greenland (e.g., Rignot et al., 2004; Scambos et al., 2004; Thomas et al., 2004; Joughin et al., 2004, Shepherd et al., 2004). These observations are consistent with changes in small ice shelves. Here we use a simple diagnostic stress-equilibrium model to examine some of the controls on the ability of ice streams to produce buttressing.