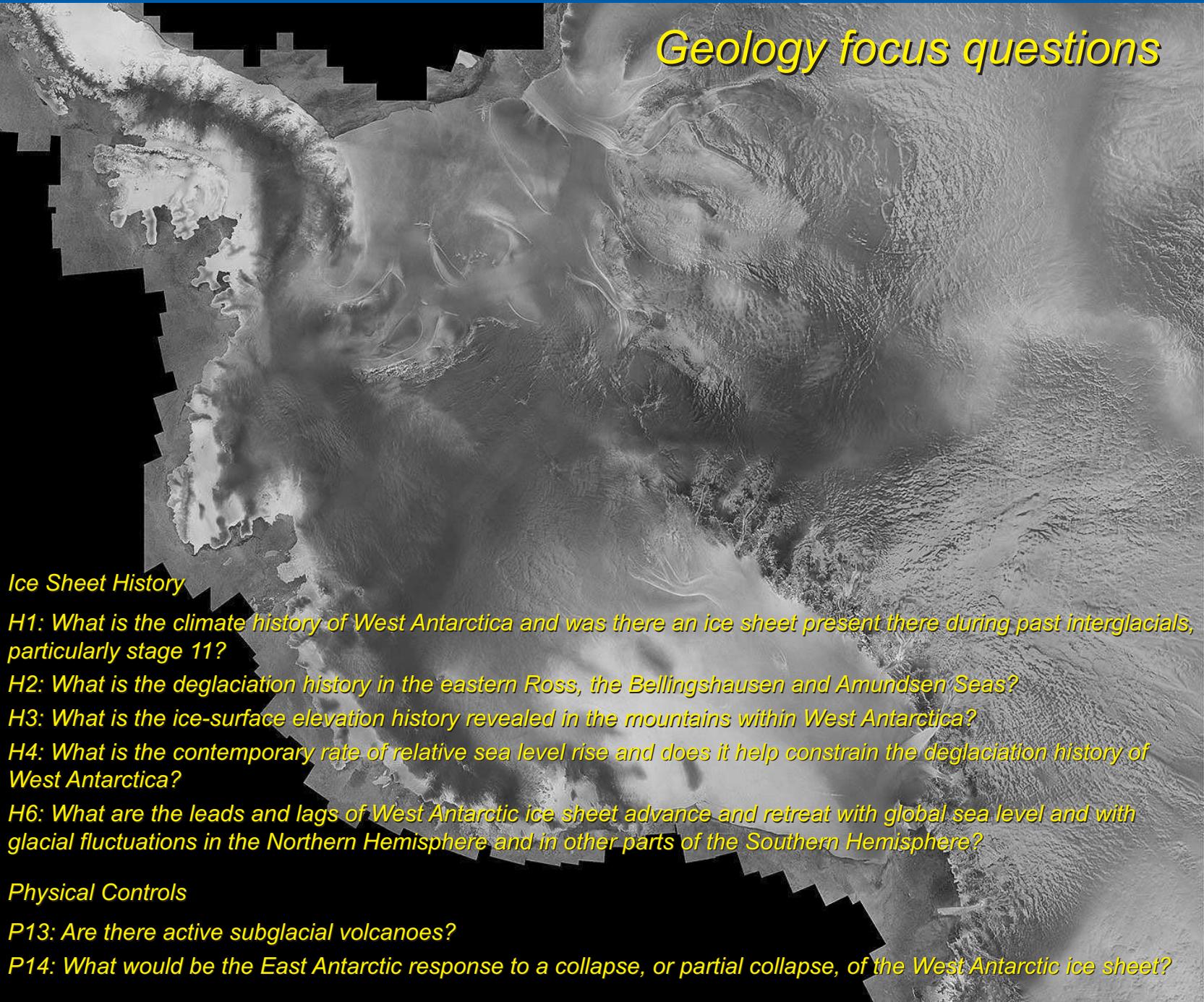
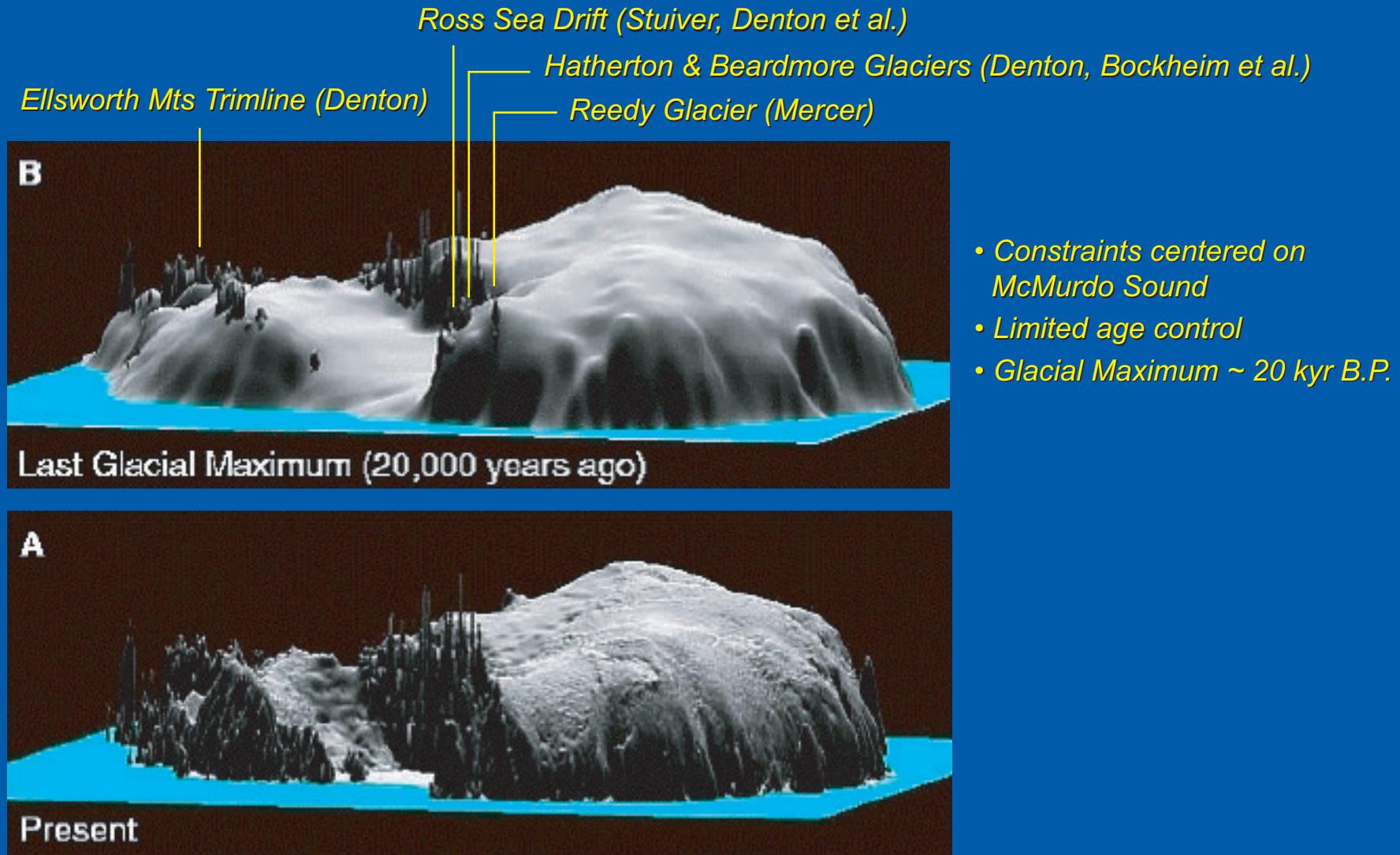


Geologic History of the WAIS Project

Geology focus questions



The paradigm ca. 1990



WAIS paradigms ... the swinging gate

Bockheim et al. (1989)

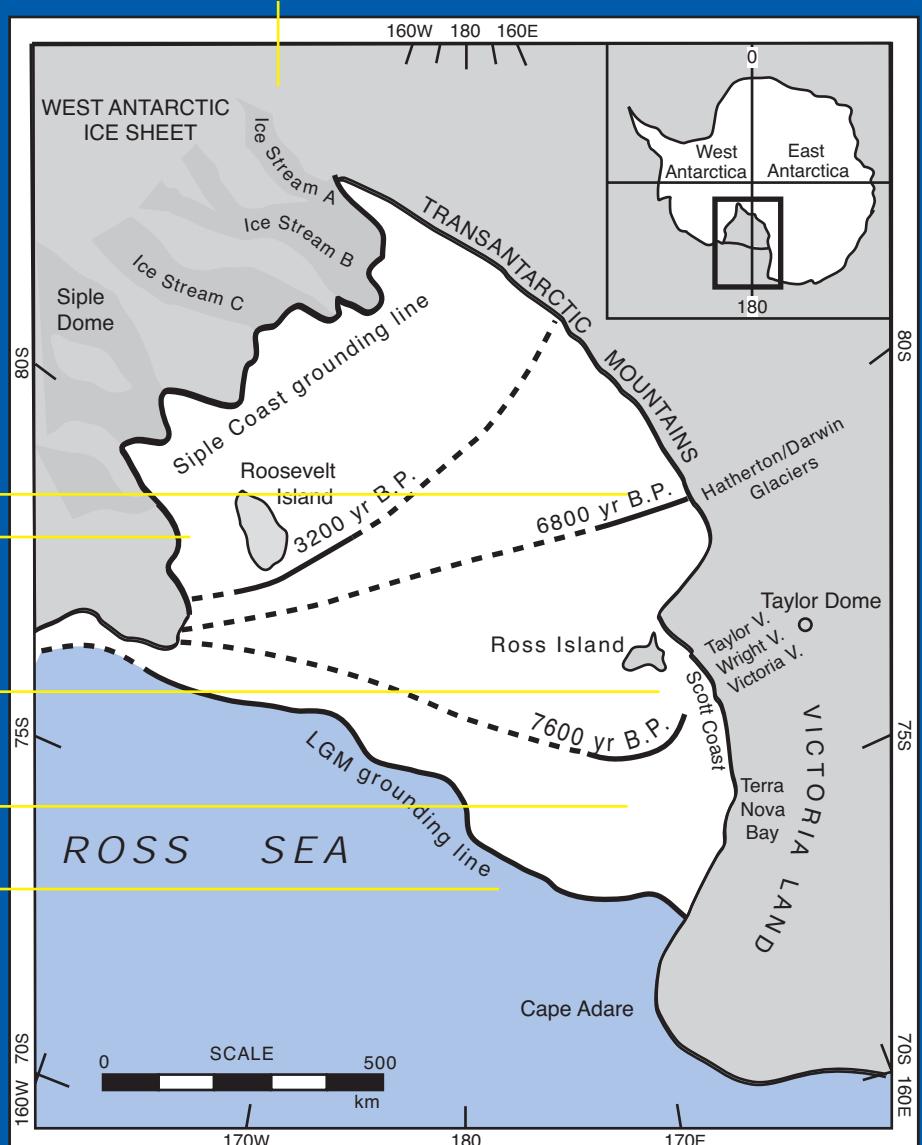
Conway et al. (1999)

Conway et al. (1999)

Hall et al. (2000)

Baroni & Hall (2004)

Licht et al. (1996)



Ice Sheet History

H2: What is the deglaciation history in the eastern Ross, the Bellingshausen and Amundsen Seas?

H4: What is the contemporary rate of relative sea level rise and does it help constrain the deglaciation history of West Antarctica?

H6: What are the leads and lags of West Antarctic ice sheet advance and retreat with global sea level and with glacial fluctuations in the Northern Hemisphere and in other parts of the Southern Hemisphere?

WAIS paradigms ... collapse!

REPORTS

Pleistocene Collapse of the West Antarctic Ice Sheet

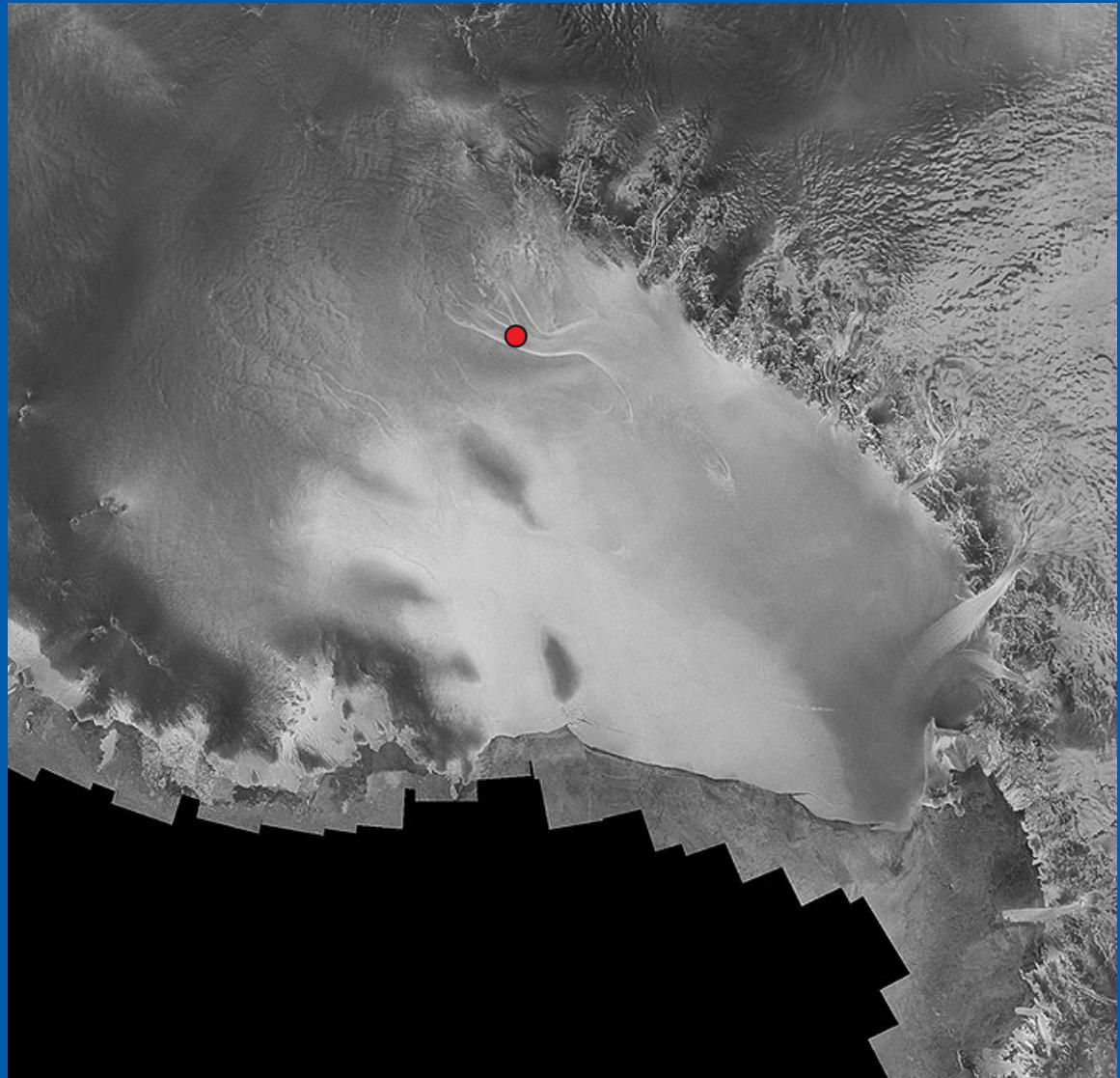
Reed P. Scherer,* Ala Aldahan, Sławek Tulaczyk, Göran Possnert,
Hermann Engelhardt, Barclay Kamb

Some glacial sediment samples recovered from beneath the West Antarctic ice sheet at ice stream B contain Quaternary diatoms and up to 10^8 atoms of beryllium-10 per gram. Other samples contain no Quaternary diatoms and only background levels of beryllium-10 (less than 10^6 atoms per gram). The occurrence of young diatoms and high concentrations of beryllium-10 beneath grounded ice indicates that the Ross Embayment was an open marine environment after a late Pleistocene collapse of the marine ice sheet.

The West Antarctic ice sheet (WAIS) is the world's only large ice sheet that is grounded well below sea level at its margins, making it susceptible to collapse (1). Collapse of the WAIS would result in a rise in eustatic sea level of 5 to 6 m. A sea level higher than at present during the penultimate interglacial [marine oxygen isotope stage 5e (MIS 5e)],

manent ice cover results in little or no diatom or ^{10}Be flux (6). Subsequent grounding generally results in erosion of the basin floor.

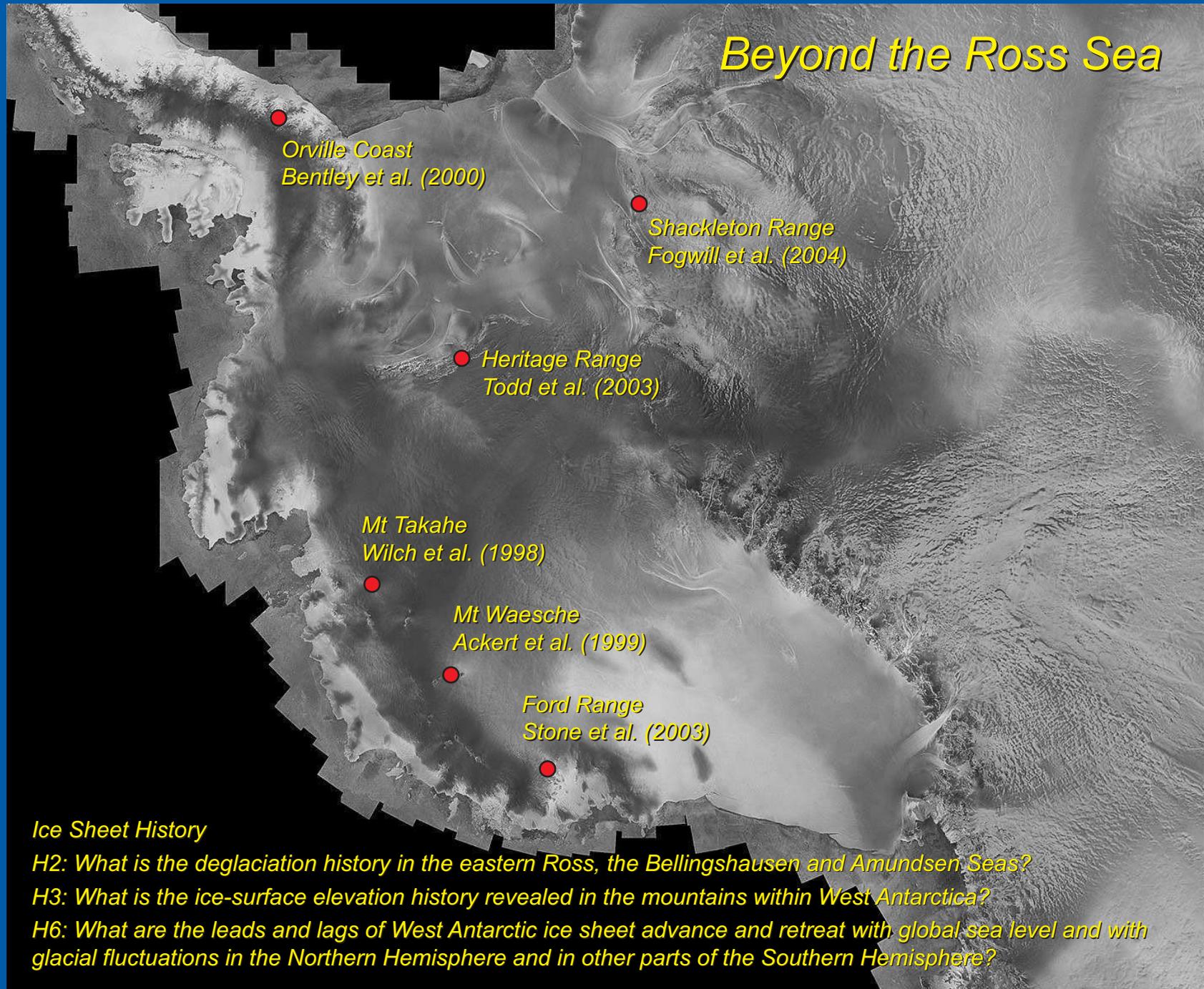
Fast-flowing ice stream B is underlain by a layer of deformable clay-rich diamictite, generally several meters thick. This thin blanket of sediment has been interpreted as mobile drift (till), which is actively deforming with the flow of ice and eroding underlying

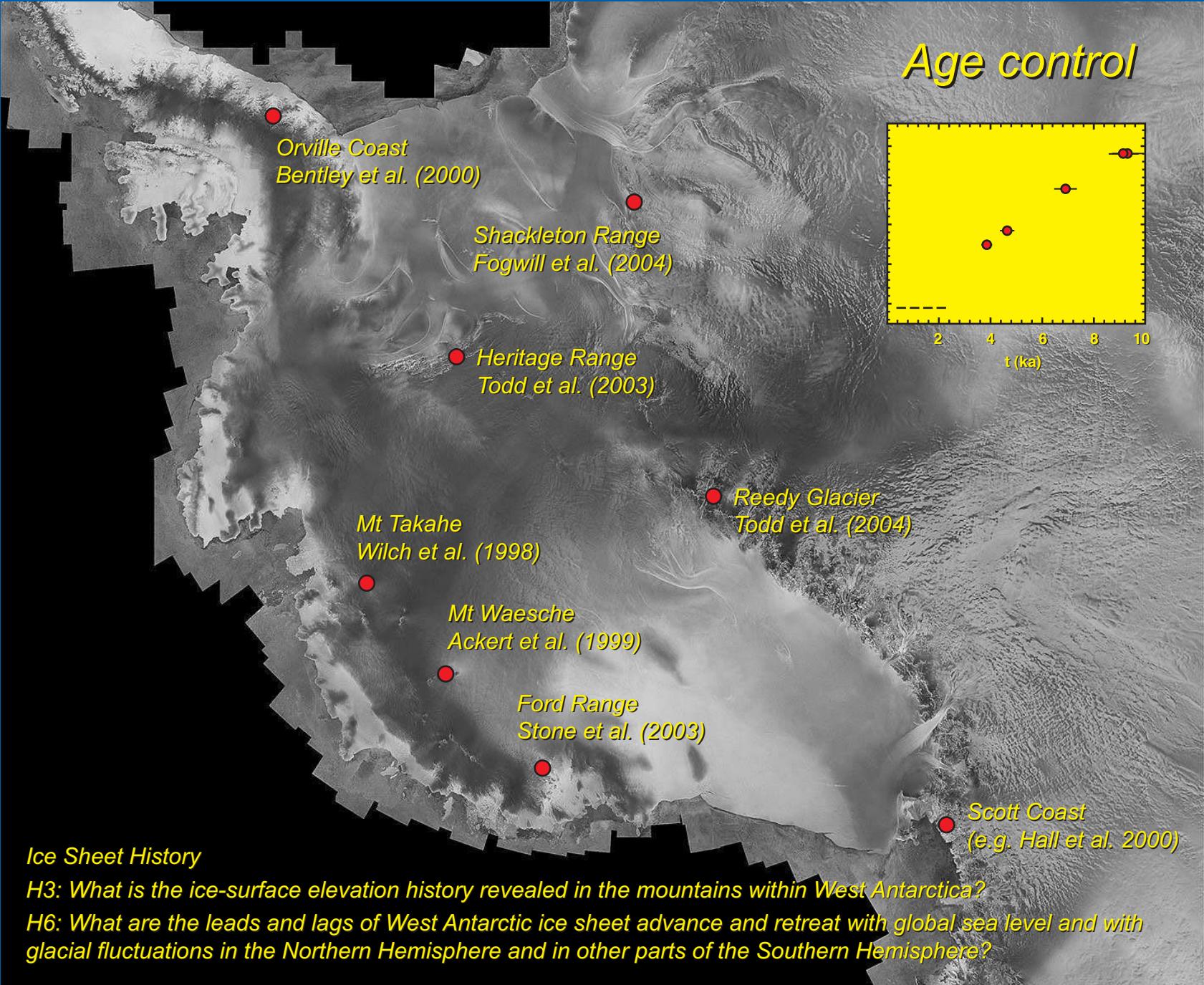


Ice Sheet History

H1: What is the climate history of West Antarctica and was there an ice sheet present there during past interglacials, particularly stage 11?

Beyond the Ross Sea





Prospects and Challenges

