

**EAST ANTARCTIC ICE SHELVES: STATUS QUO OR DECLINE?**

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The collapse of the Larsen A and B and other ice shelves fringing the Antarctic Peninsula coastline raises questions about the status of ice shelves in other parts of the continent. Are the large ice shelves along the East Antarctic coast also in danger of permanent collapse, or are they undergoing multi-decadal-scale cycles of expansion and calving?

Here we analyse the spatial extent of the Shackleton, West and Publications Ice Shelves (East Antarctica) to determine the extent of the shelves, long-term (decadal-century) changes, and factors influencing rates of advance and calving. Data were obtained from early expedition reports, Operation Highjump photos, post-IGY literature, and, from 1963 onwards, satellite imagery. In general the historical records show that sections of the shelves have undergone repetitive phases of advance followed by major calving events. But there is also evidence of significant decline in the total area of floating continental ice and of the overall extent of the shelves. Since the late-1960s the Publications Ice Shelf has re-advanced, while elsewhere there has been an on-going reduction to the point where the eastern Shackleton Ice Shelf has almost disappeared. Bowman Island and other smaller ice rises may soon become separate islands. The cause of this contraction is not immediately apparent. Surface temperatures have been stable in the region over the last 50 years, and there is as yet no evidence of significant thinning of the shelf ice. While there are periods of surface melt in some summers, the dramatic widespread ponding thought to have been an important process in the break-up of sections of the Larsen Ice Shelf in the Antarctic Peninsula has not been observed. The conclusion drawn from this study – cycles of advance and decline overlaying a generally negative long-term trend – is similar to that deduced previously for ice shelves further to the east, and suggests that similar influences are occurring over the sector from at least Adélie Land (140 E) round to Mac Robertson Land (60 E).