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RECENT BEHAVIOR OF GLACIERS ON NORTHEASTERN ANTARCTIC PENINSULA IN RESPONSE TO CLIMATE

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Behaviour of glaciers terminating on land and tidewater calving glaciers which fed formerly the northernmost sections of the Larsen Ice Shelf will be presented and discussed in the light of the regional climatic warming. Measurements carried out on northeastern Antarctic Peninsula during the last two decades reveal an accelerated glacier retreat, ice thinning and disintegration of ice shelves. Glacier thinning-retreat and collapse of large ice-shelf sections is coincident with the two warmest decades recorded during the 20th century in this region. Surface elevation changes measured in these decades on two glaciers of Vega Island (63° 50' S; 57° 25' W) with te rminus on land indicate significant ice-thinning. For instance, Glaciar Bahía del Diablo has lowered 20.5 m, at a rate of 1.0 m a^{-1}. During the same period Glaciar Cabo Lamb, with different orientation, lowered at a similar rate. Surveys carried out on this glacier after two decades yielded an average ice-thinning of 23.7 m, at a rate of 1.17 m a^{-1}. The available dataset suggest that mass-balance of both glaciers has been clearly negative in the past 20 years, most probably in response to the regional atmospheric warming. Five decades of temperature series recorded at a nearby station reveal the year 1999 as the warmest of the record on northeastern part of Antarctic Peninsula, and according to the 100 year temperature record of Orcadas station, the summer 2001-02 was the warmest of the 20th century. Furthermore, recent satellite images reveal continuation of ice-loss due to intense calving activity at most glacier fronts along the peninsula eastern coastline, which calve presently into the Prince Gustav Channel, Larsen A and Larsen B embayments. As an example, by early November 2005 the Sjögren and Boydell glacier complex retreated as much as 54.6 km^2 beyond their grounding lines, contributing thus to the increase in sea-level rise.