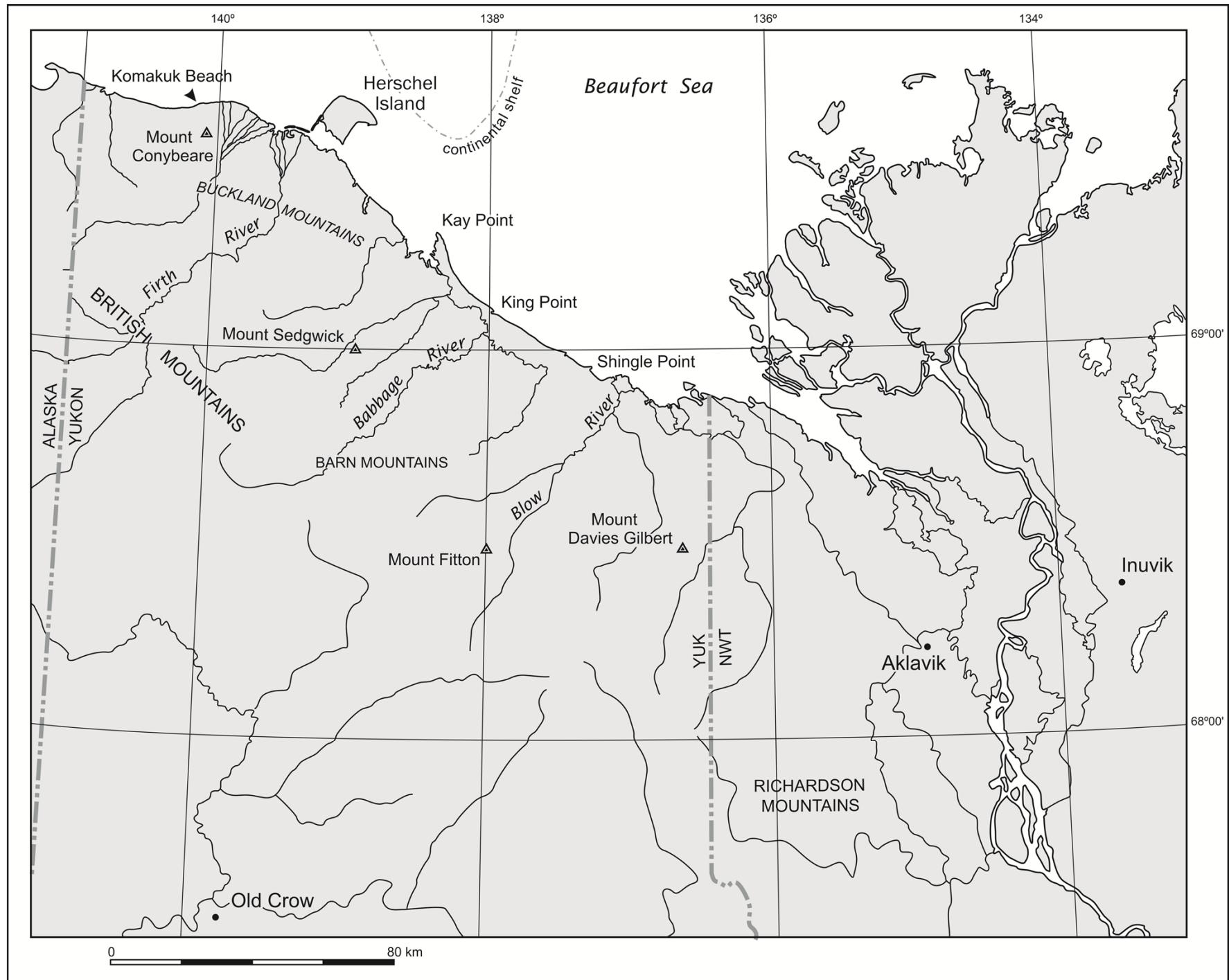


Landscape and adaptation

Doug Esagok and Chris Burn





Near Herschel Island, 2009



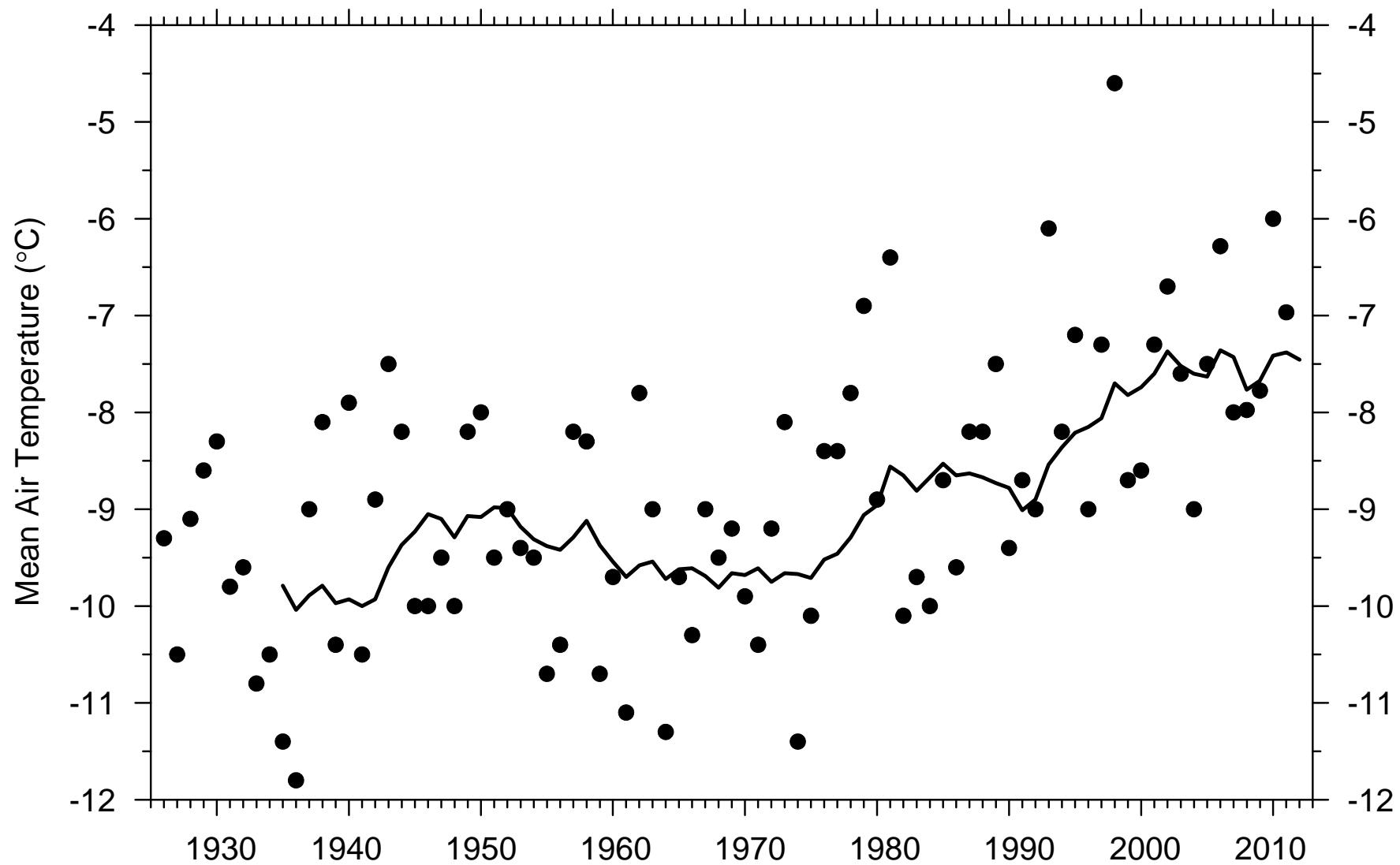
Three themes

Landscape hazards

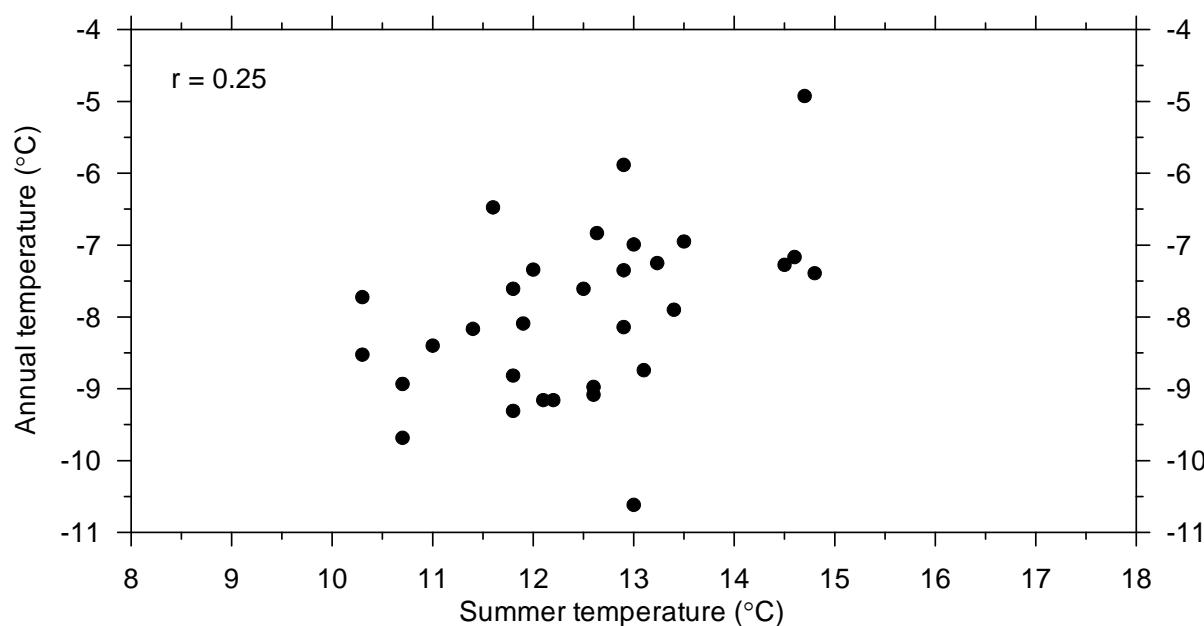
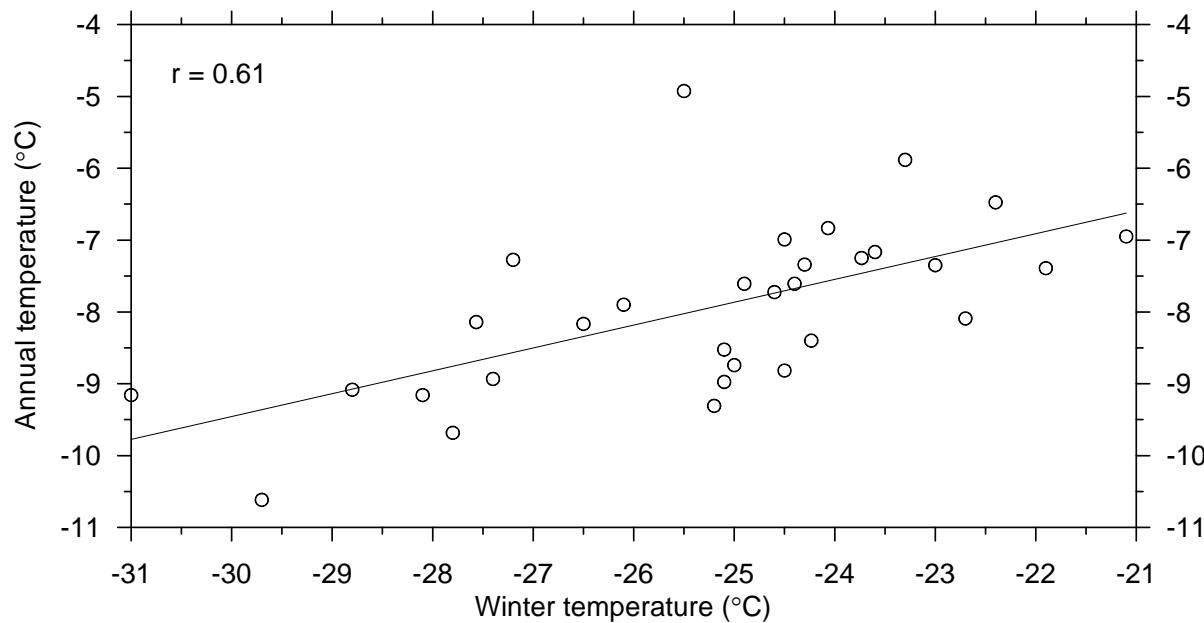
Permafrost temperature

The active layer

Delta air temperature, 1926-2012



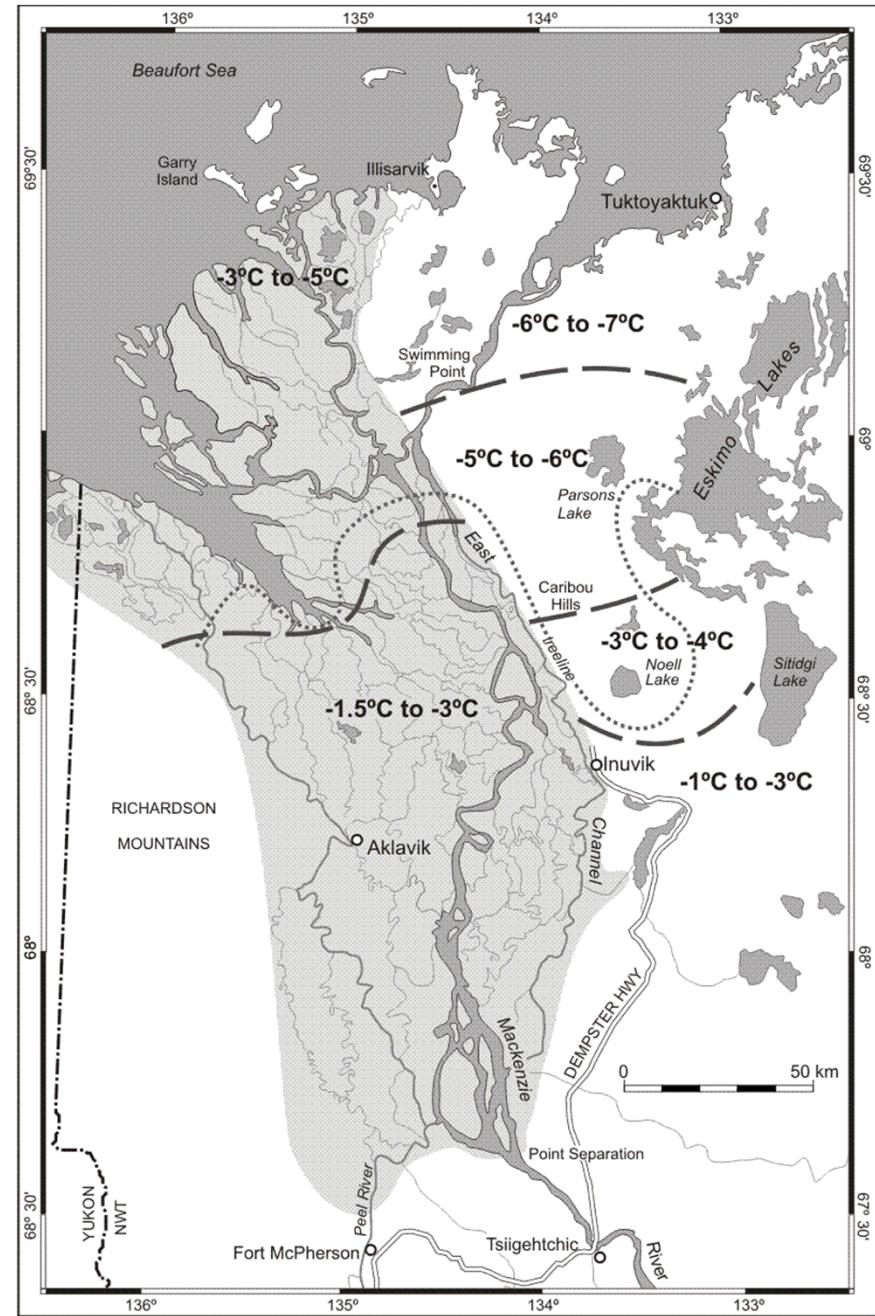
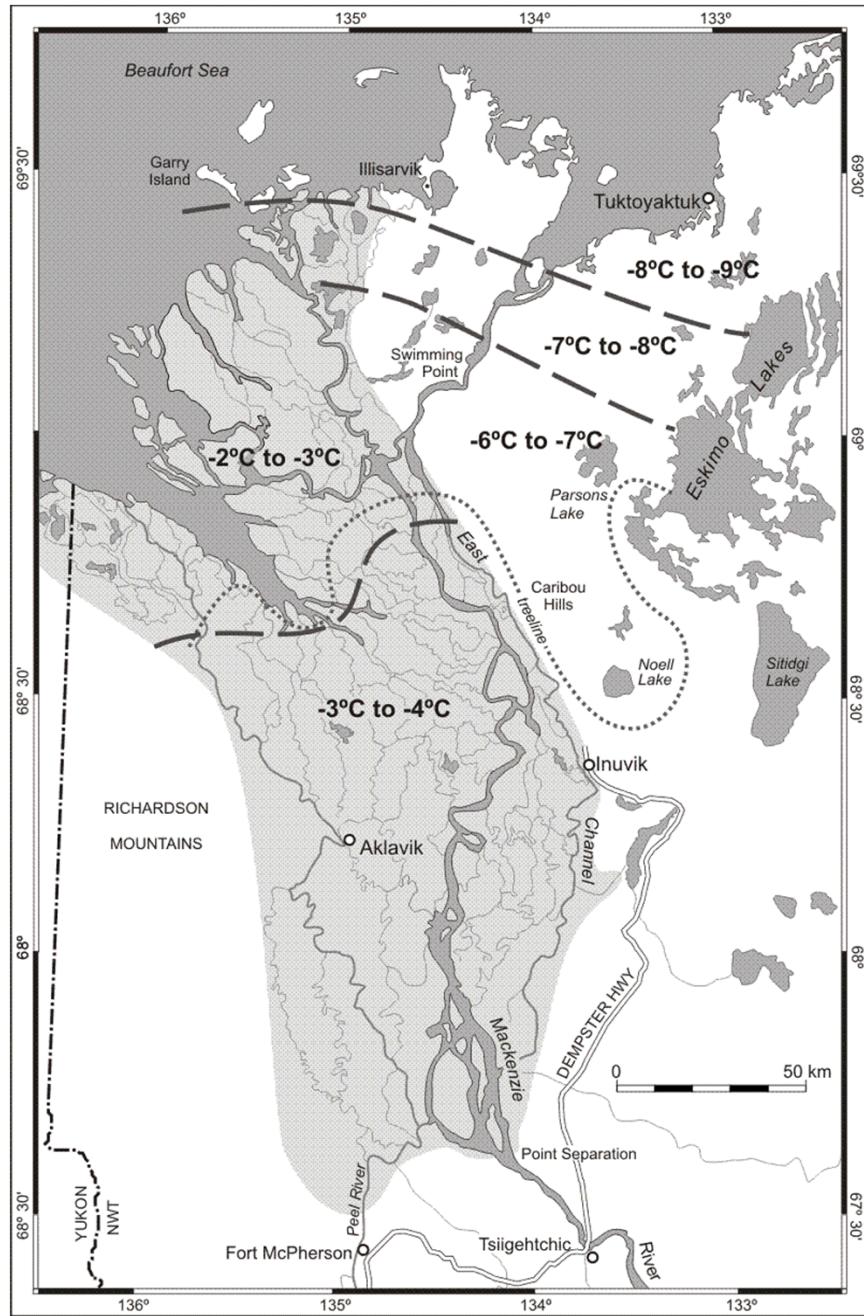
Climate variation



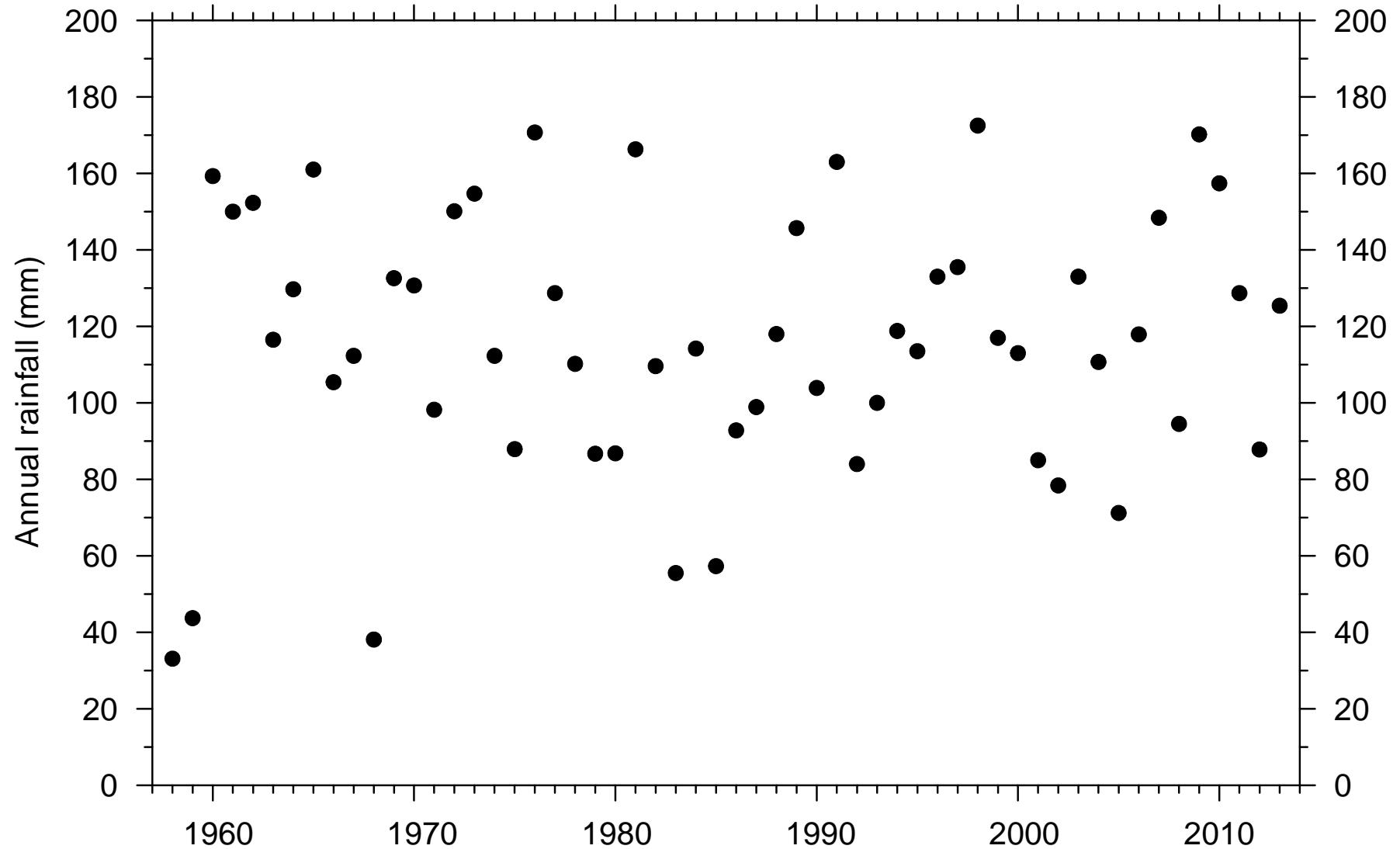
1970

Regional change

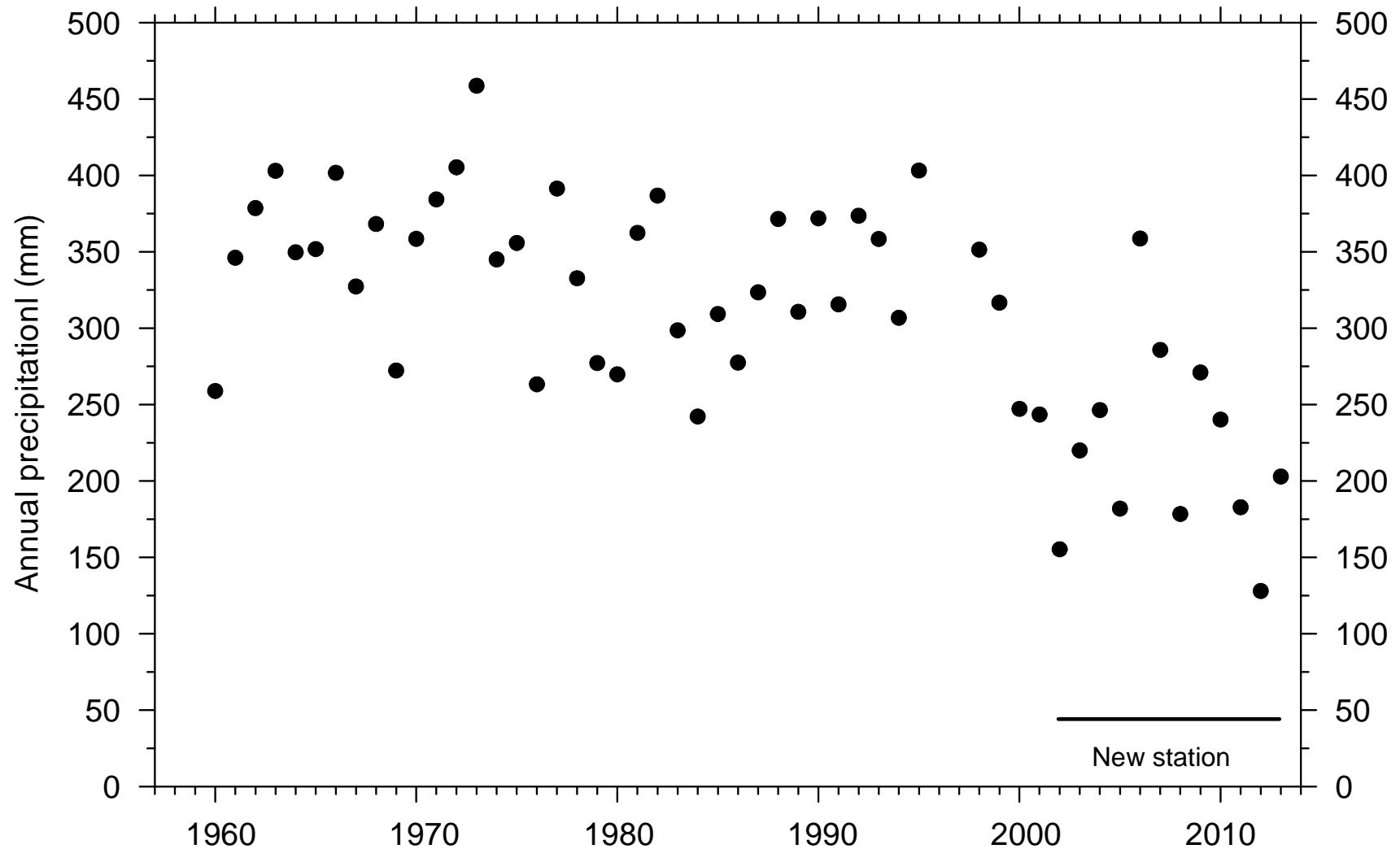
2008



Inuvik rainfall, 1958-2013



Total precipitation measured at Inuvik



Landslides in the Caribou Hills, September 2009



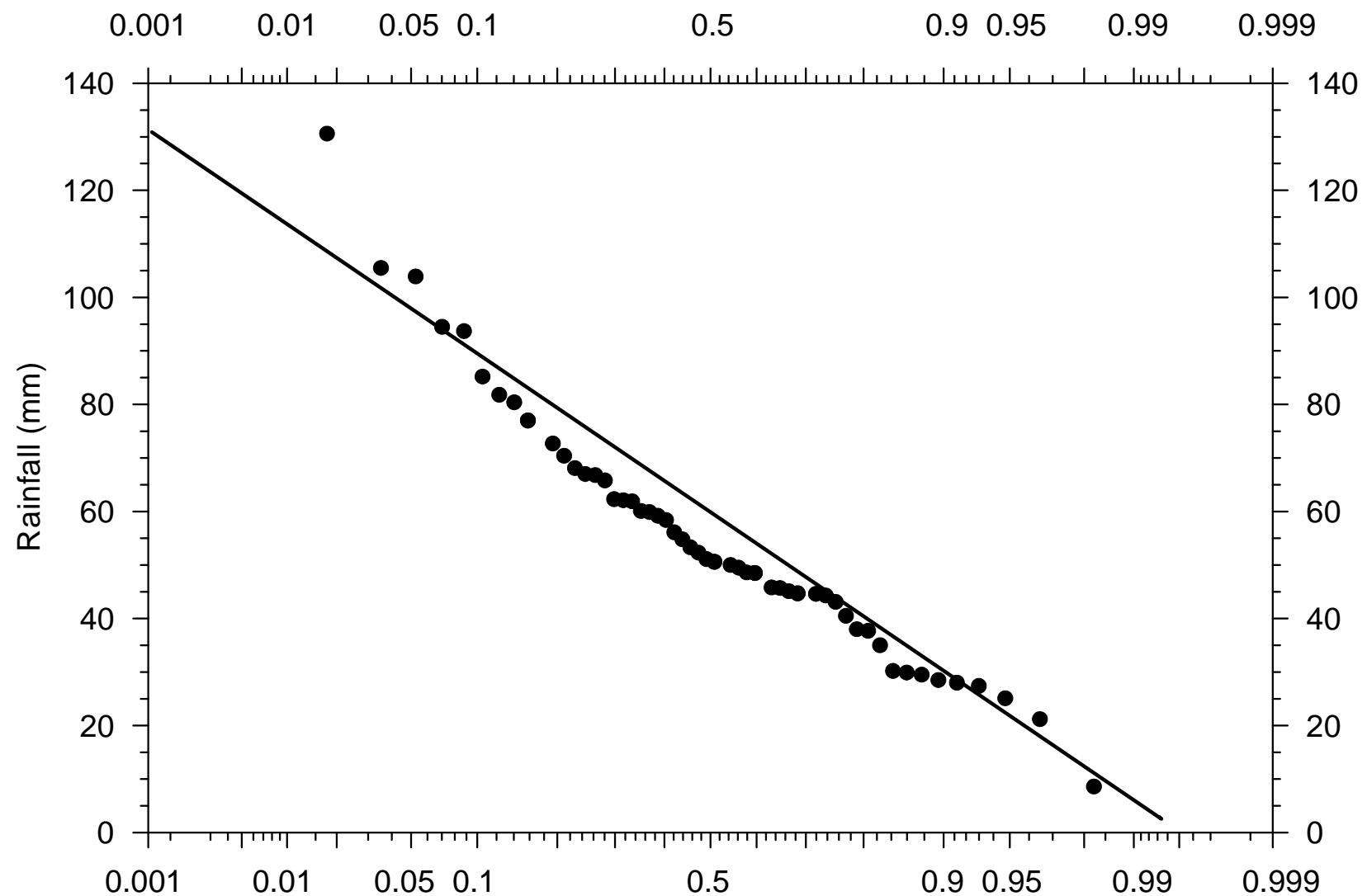
Mostly along East Channel



Over 25 distinct features



Excedence probability, Aug + Sept rainfall, 1958-2013



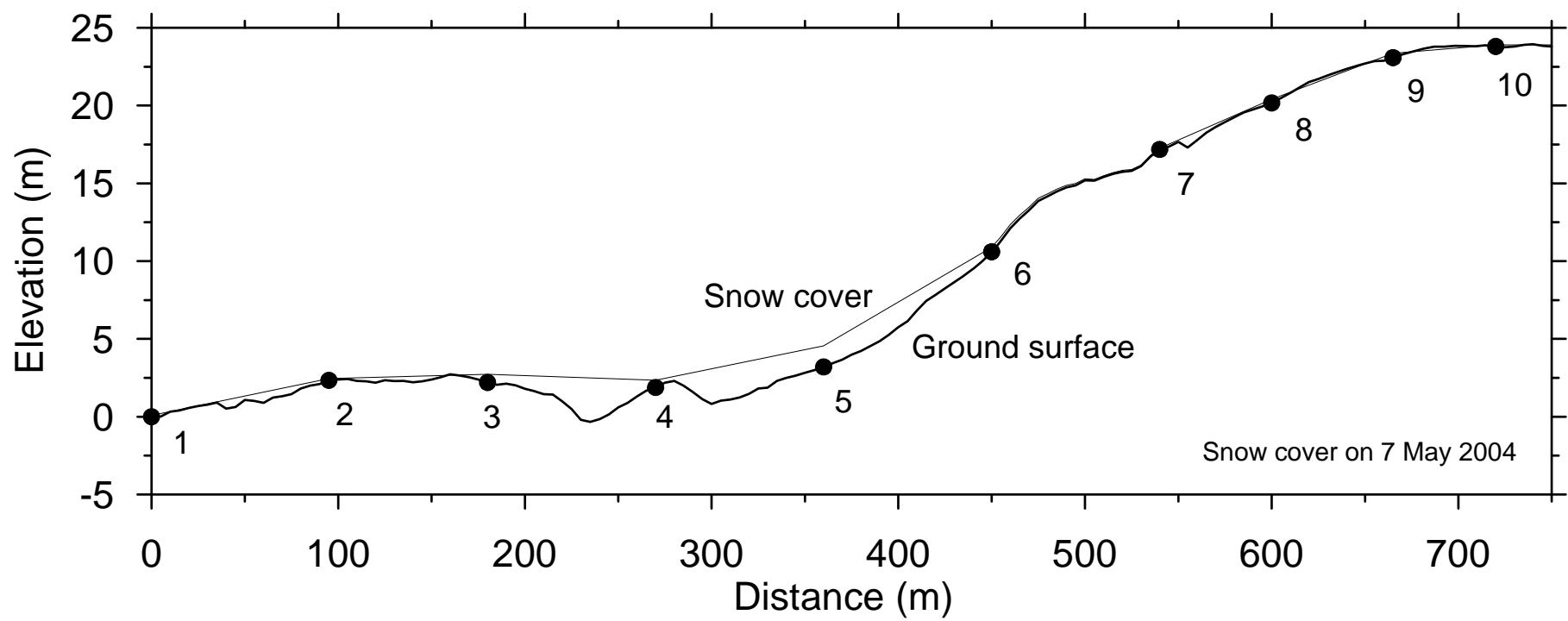
Dempster Highway, 2011



Herschel Island, April 2005



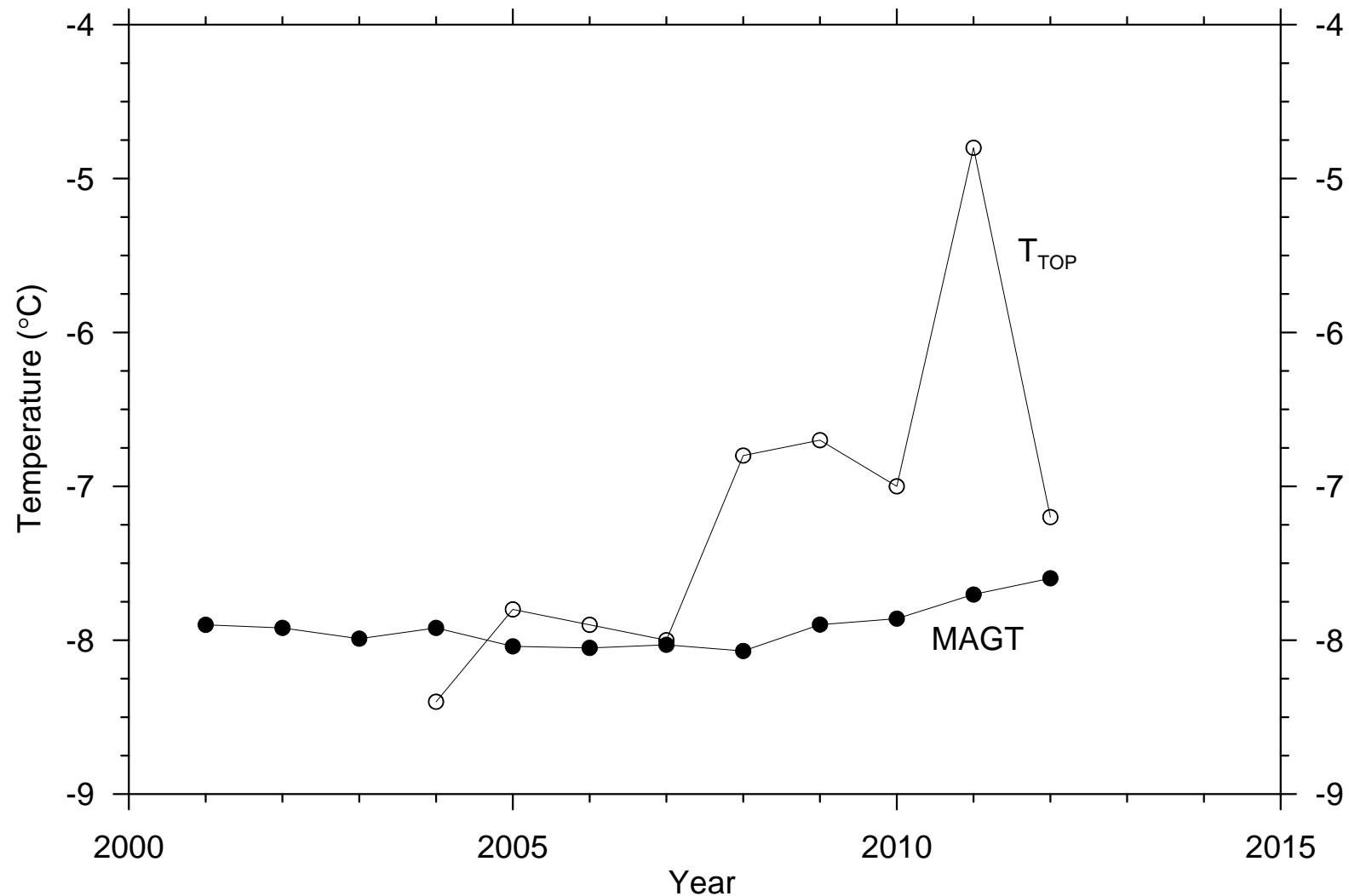
Hillslope profile at Collinson Head



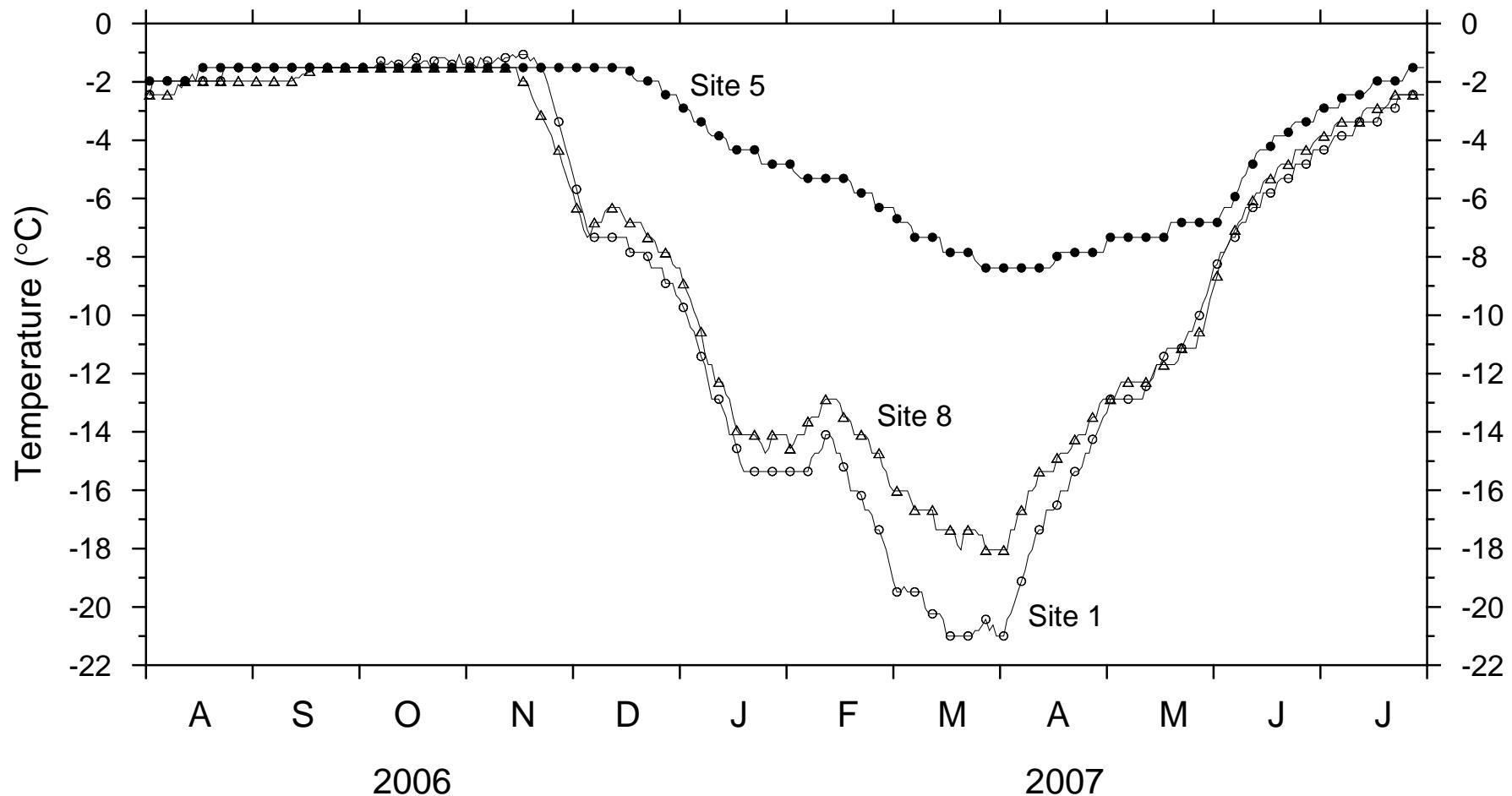
Mud hummocks at site 8



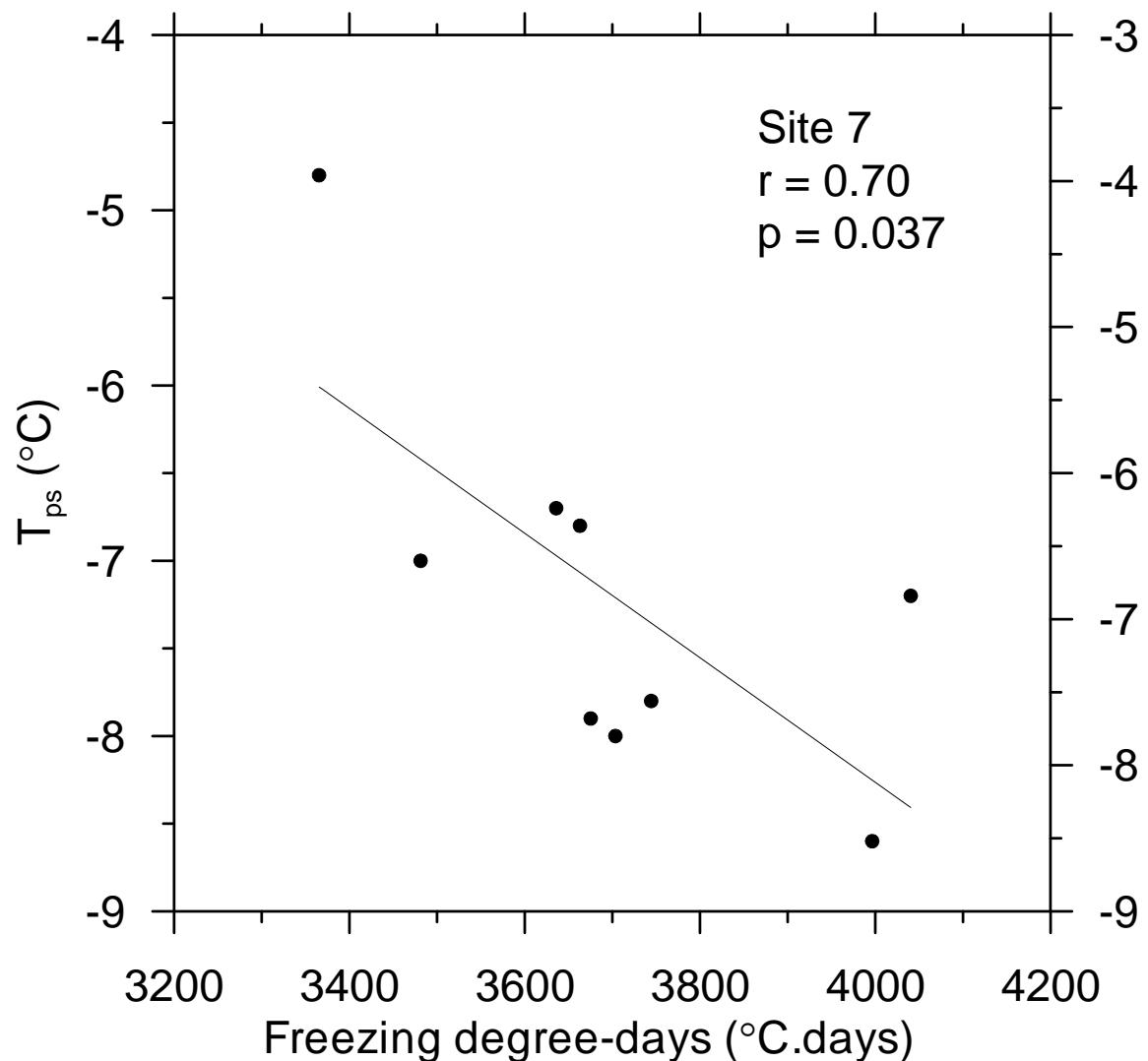
Permafrost at Collinson Head, 2001-2012



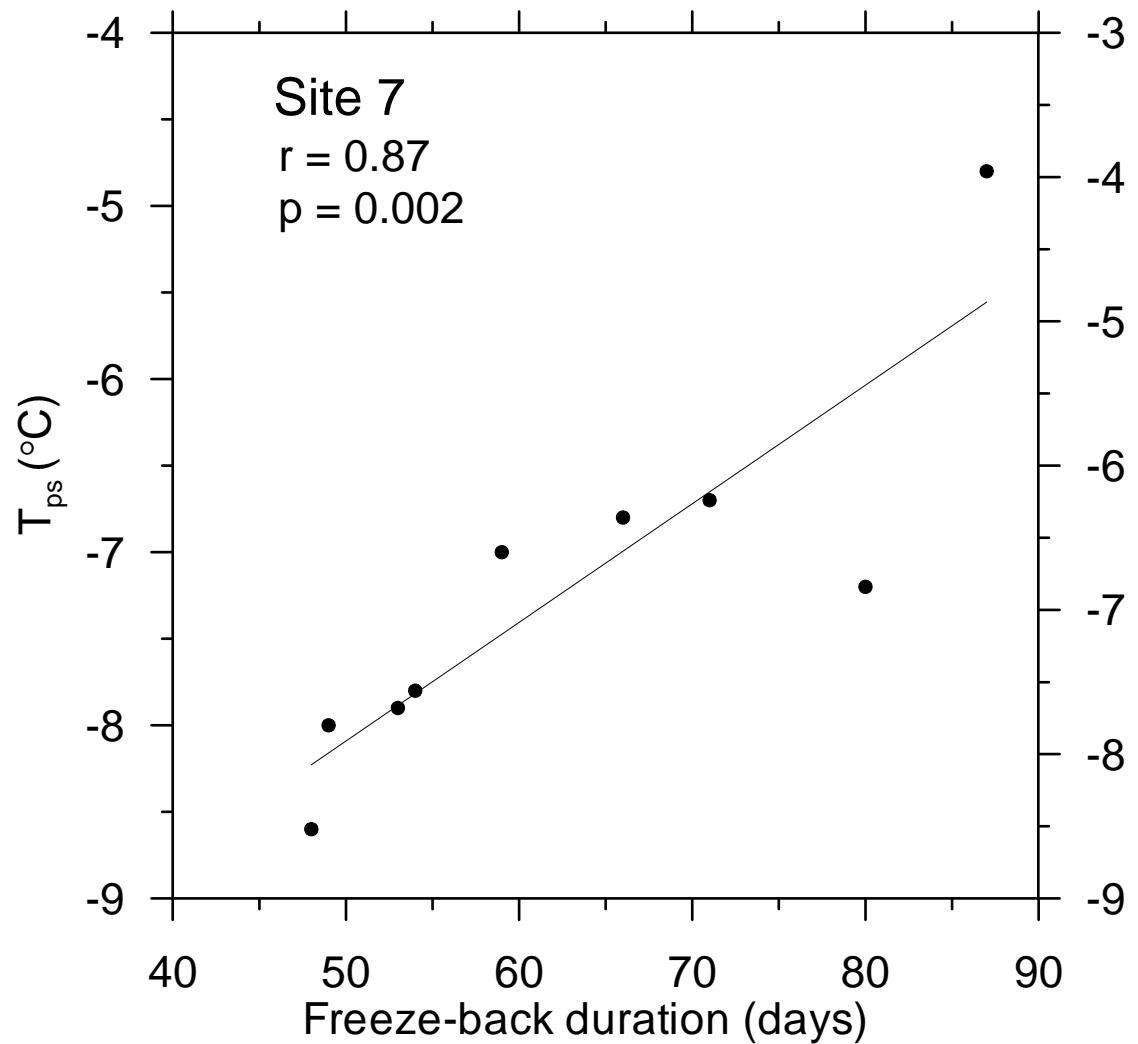
Ground temperatures and snow depth, 2006-2007



Freezing degree-days and T_{ps} , 2003-2012



Freeze-back duration and T_{ps} , 2002-2012



Freeze-back duration and T_{ps} , 2003-2013

- Site 1 $n = 9, r = 0.92, p = 0.001$
- Site 3 $n = 8, r = 0.89, p = 0.003$
- Site 6 $n = 9, r = 0.85, p = 0.003$
- Site 7 $n = 9, r = 0.87, p = 0.002$
- Site 8 $n = 7, r = 0.88, p = 0.009$

Illisarvik 2013



Illisarvik active-layer course



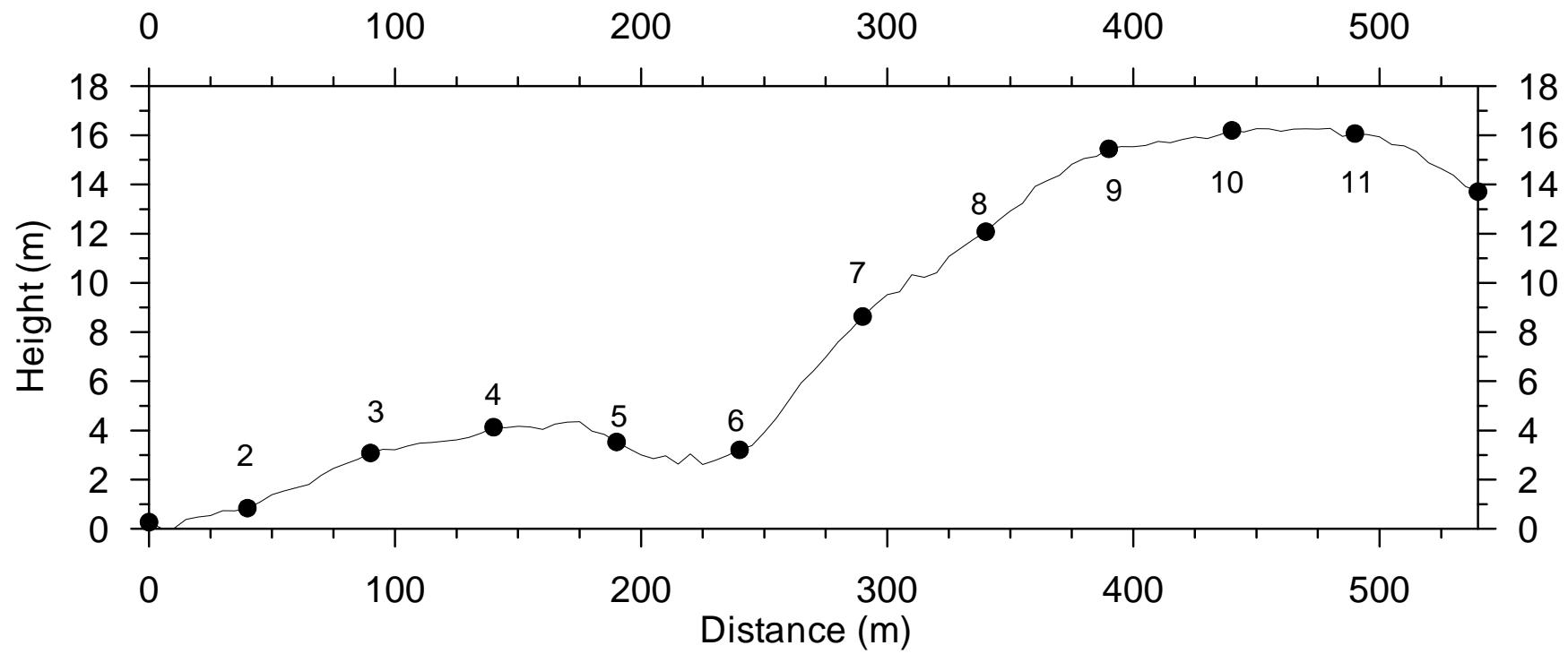
Established by Dr Mackay, 1983



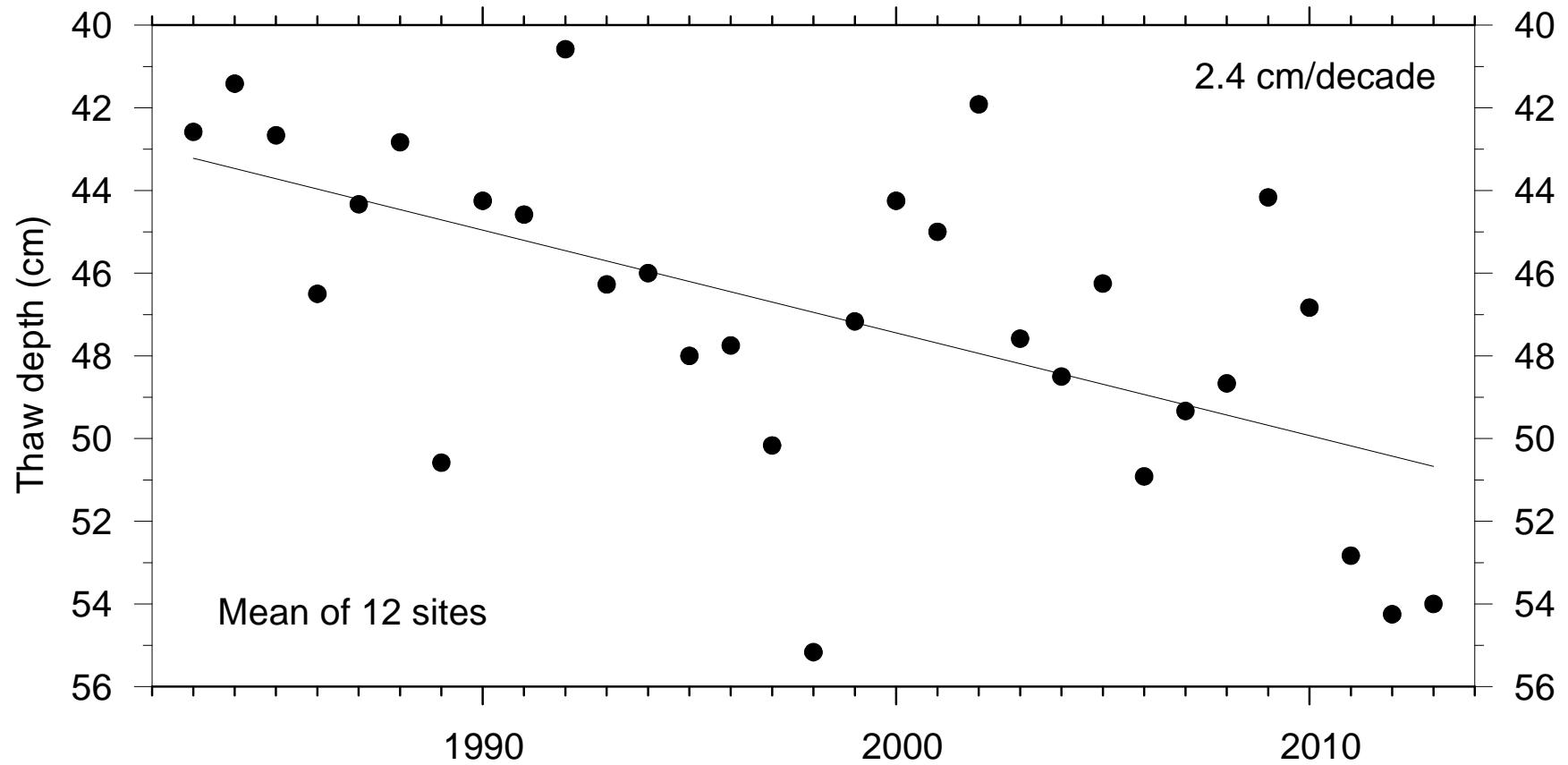
Irregular ground on hill slope

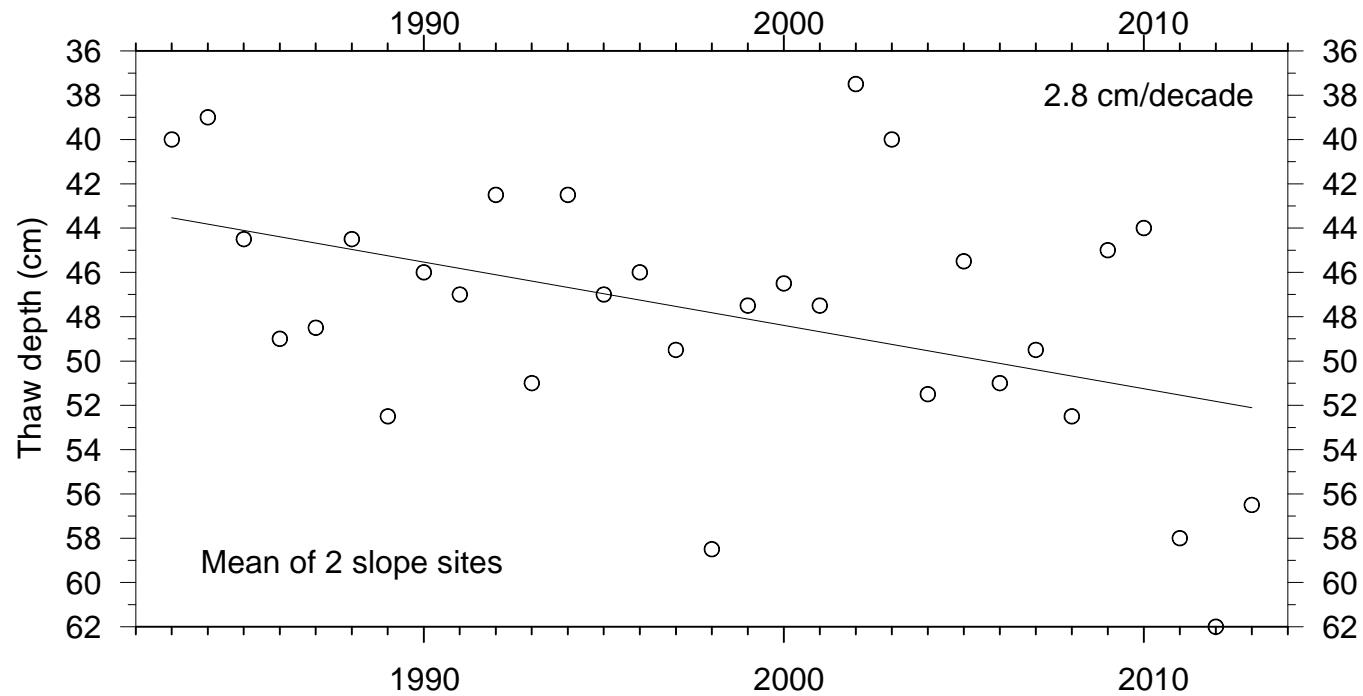
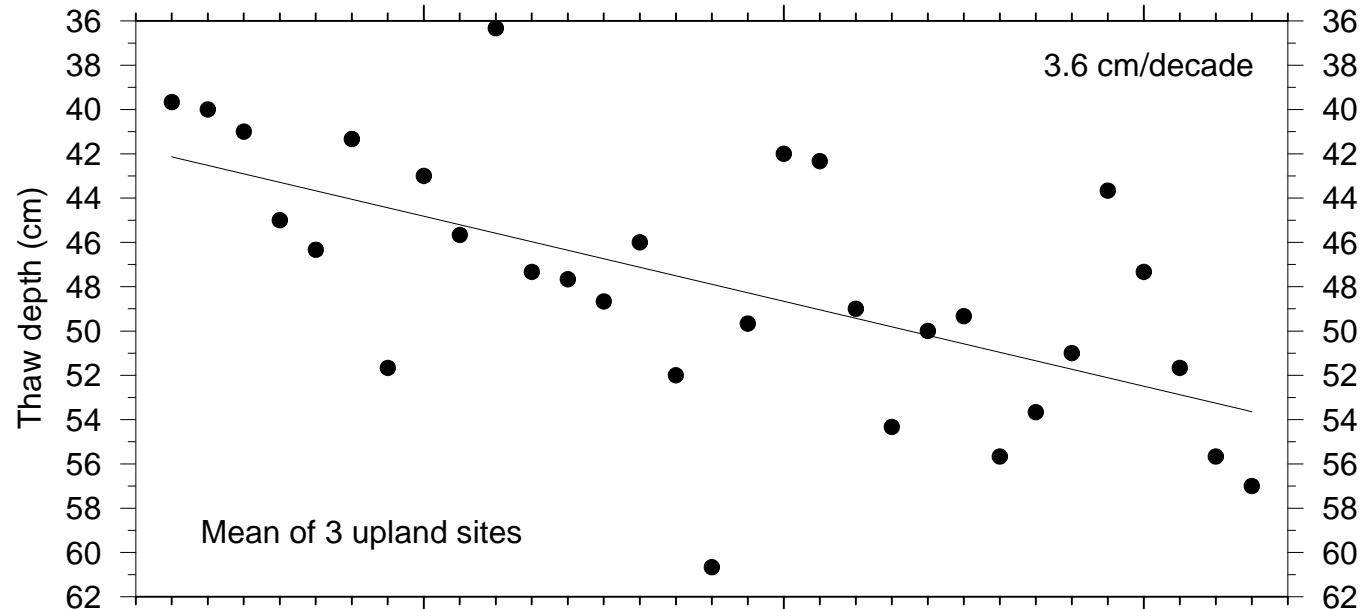


Topographic section



Late summer thaw depth, 1983-2013



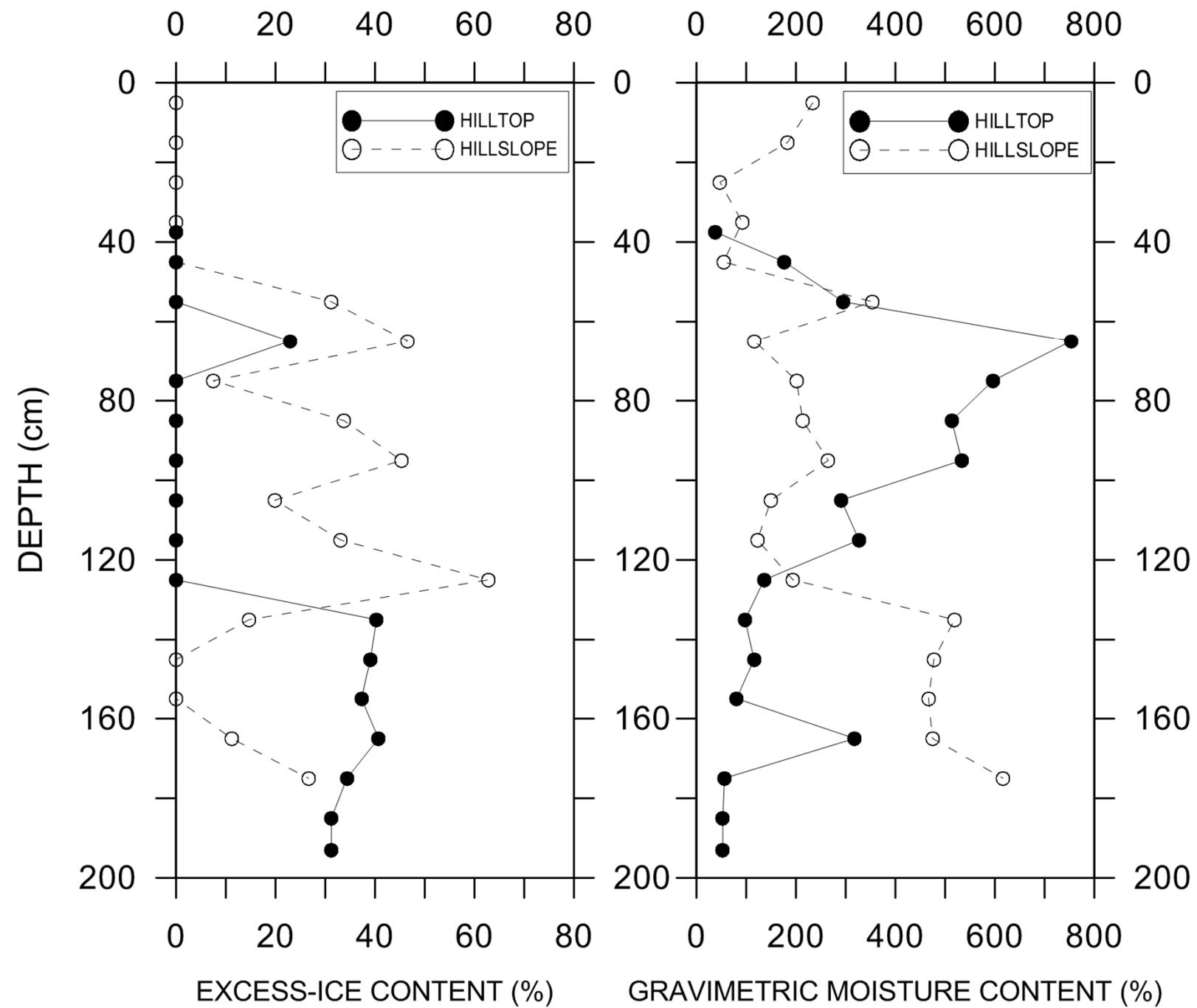


Seasonal effects and topography

	Fall	Win	Spr	Sum	Yr
Upland	X	X	-	X	X
Slope	-	-	-	X	X
Lowland	X	-	-	-	X

Near-surface ground ice





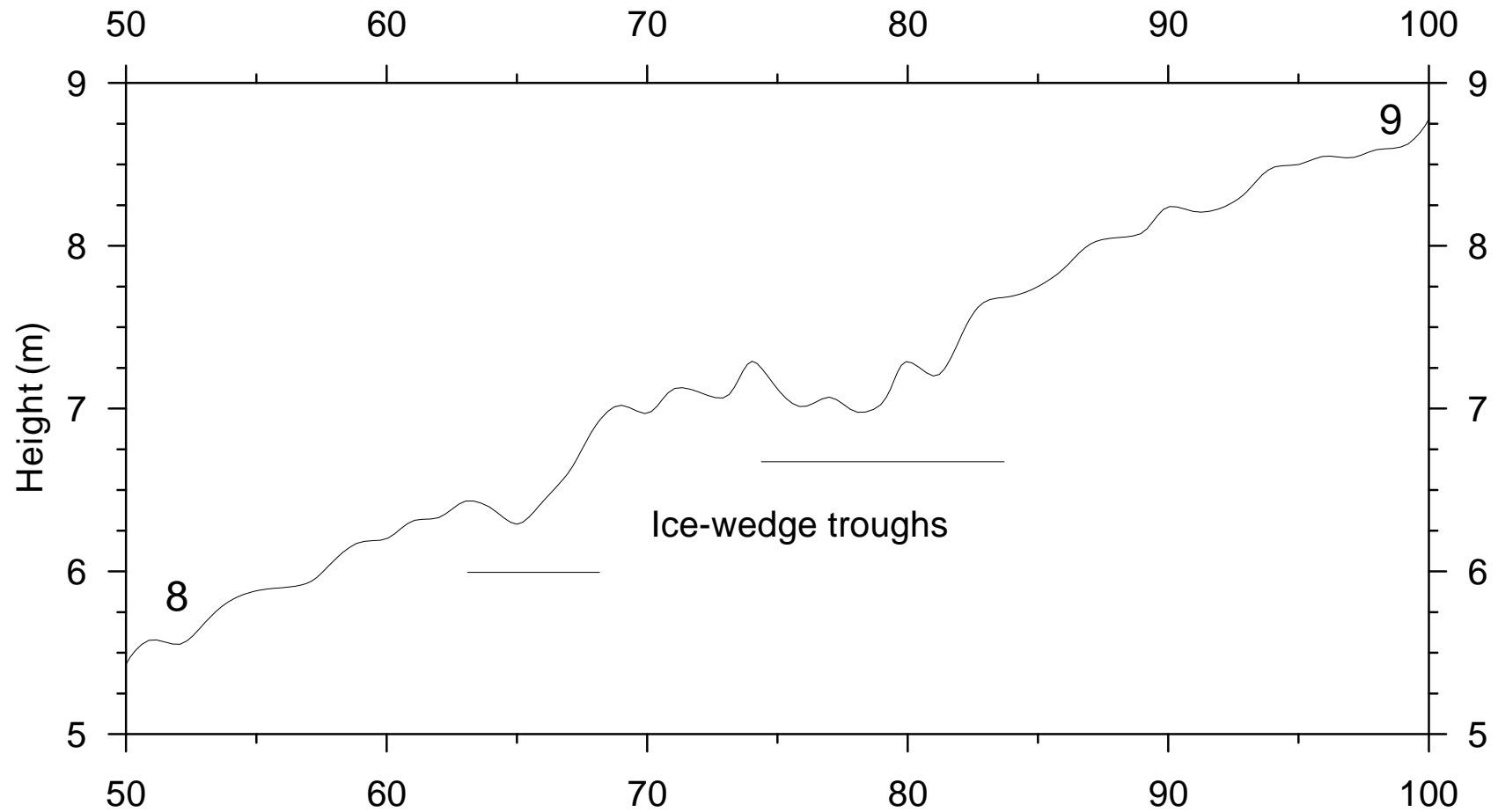
An aerial photograph of a wetland landscape. A large body of water is visible in the foreground and middle ground, with several small, irregularly shaped white patches of ice floating on its surface. The land is covered in dense green vegetation, likely grass or low shrubs. In the upper portion of the image, there are more white patches of ice, some of which appear to be ice wedges protruding from the ground. The terrain shows signs of erosion and sedimentation, particularly along the edges of the water bodies.

Hill slope ice wedges

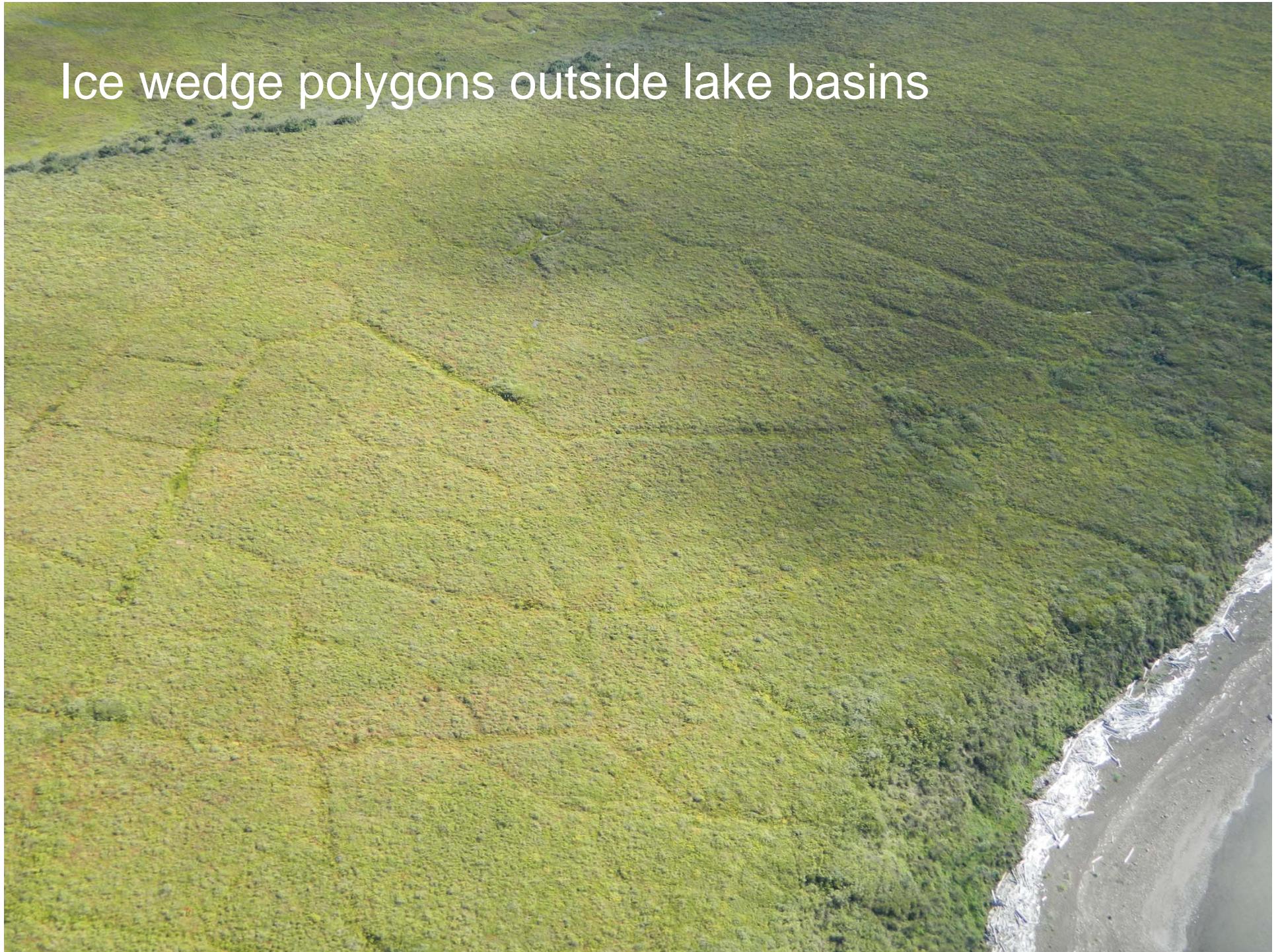
Hill slope ice-wedge trough



Subsidence at ice-wedge troughs



Ice wedge polygons outside lake basins



Thank you!

