



Hubbard Glacier, Alaska: another closure of Russell Fjord in the making

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Hubbard Glacier is the largest non-polar temperate tidewater glacier in the world and has been advancing since 1890 AD, currently at a rate of 35 m a^{-1} . Hubbard Glacier has twice closed off Russell Fjord at Gilbert Point, creating a 60-km long glacier dammed lake, once in 1986 and again 2002. Both dams failed catastrophically, releasing two of the world's largest historic outburst floods (5 and 3 km^3). Submarine melting driven by the combination of high tidal currents ($\sim 5 \text{ m/s}$), warm seawater ($5\text{-}11 \text{ }^\circ\text{C}$), and deep channel has thus far inhibited another closure. However, rapid deposition of $\sim 3.3 \times 10^6 \text{ m}^3$ of glaciofluvial sediment near Gilbert Point during August 2007 is now causing concern that a new closure may be eminent. The sediment was delivered by a subglacial stream over a three week period with sediment flux averaging $0.16 \times 10^6 \text{ m}^3/\text{d}$. If the glacier's seasonal readvance this spring comes as far as it did last June (within 120 m of Gilbert Point), it could remobilize the sediment and push it against Gilbert Point as it did in 2002. Such an occurrence is of concern to local inhabitants because sustained damming of Russell Fjord will cause the lake to backflow into the Situk River, dramatically changing the landscape, creating floods, destroying fish habitats, and threatening structures. In this poster we present: 1) photo documentation of the evolution of the August 2007 glaciofluvial moraine; 2) results of our October 2007 bathymetric survey of the region and quantification of the glaciofluvial deposit; 3) remote sensing investigations on the evolution of the ice-marginal deposit; and 4) updates on the potential for another closure of Russell Fjord.