

About the tide oscillations and icebergs motion recorded at Jakobshavn isbrae during summer 2007 using high resolution digital camera Icefjord, West Greenland.



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We present results on the Jakobshavn tide water glacier flow, motion of icebergs and tide extracted from a set of of over 300 high definition images obtained over 60 days during the summer 2007 in Greendland A 10 Mpixels automated digital camera was located near the shore of Ilulissat and captured images every two hours, 11 times every day. Various image cross-correlation techniques were applied to this data set to quantitatively quantitatively analyze the motion of the glacier and the oscillation associated with tidal sea level variations. Such effects are spectacularly observed on fast-motion movies resulting from the aggregation of the still pictures. We observe a constant average drift of the glacier and periodic vertical oscillations of amplitude correlated with tide magnitude. The velocity is observed to be 2 m/day, i.e. 14 km/year.

We emphasize here on the acceleration of the drift rate of Greenland glaciers (doubling velocity for Jakobshavn glacier) as observed on radar images and GPS positioning for the last few years, related to the fast retreat of the glacier front for the last 15 years (10 km). Lubrication by thaw water reaching the base of the glacier through moulins (glacier mill) appears to be the major cause of these accelerated ice losses. These were explored during the last 20 years in West Greenland.







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Evolution of the glacier front between 1851 and 2006



and evolution as a function of distance

