

Interactive comment on “Seasonal speed-up of two outlet glaciers of Austfonna, Svalbard, inferred from continuous GPS measurements” by T. Dunse et al.

T. Dunse et al.

thorben.dunse@geo.uio.no

Received and published: 1 March 2012

The two figures prepared for the response letter did not show up in previous comment and are added here.

The complete figure captions read:

Fig. 1: Smoothing of synthetic GPS data using a moving average filter with either Gaussian or box (square-) shaped kernel. Two-fold application of a box-shaped kernel, first on the positions, second on the resulting velocities, imposes stronger smoothing to the final velocity timeseries (solid red), and thus smears out the velocity step change more drastic, than application of a Gaussian kernel does (solid green). Histograms
C2048

are based on 100 runs with changing random noise superimposed on a constant pre-summer (100 m a^{-1}) and summer velocity (200 m a^{-1}) and show that the onset date detected from two-fold filtered data using a square kernel precedes the step change in the raw data by 2.3 days on average, while it is delayed by 1.3 days using a gaussian kernel.

Fig. 2: Detection of an artificial winter speed-up event. The event is superimposed on the hourly raw data from stake Basin-3 #2 (a), starts on noon of 15/04/2009 and extends for a random period of exponential acceleration and deceleration of 2–7 days, each. The close-up of the (square-) filtered winter event also indicates the dates of the detected onset and maximum velocity (b). The thicker gridlines indicate the initiation (green), the maximum (magenta) and the fading date (grey) of the event, as introduced in the raw data. The histograms (c and d) show the offset between the set onset date and the detected onset date, according to our onset criterion, for the timing of maximum velocities, respectively.

Interactive comment on The Cryosphere Discuss., 5, 3423, 2011.

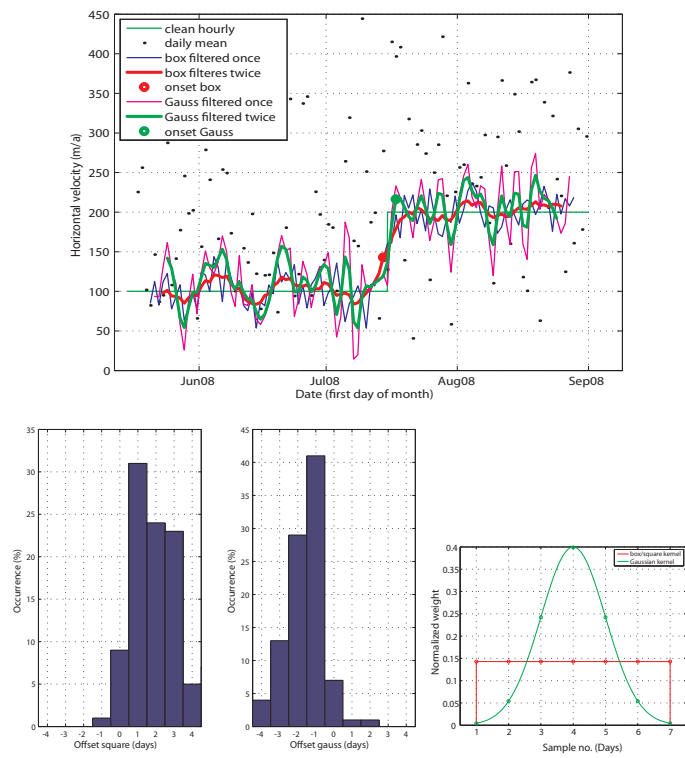


Fig. 1. Performance test of Gaussian versus box (square-) shaped kernel for smoothing synthetic GPS data.

C2050

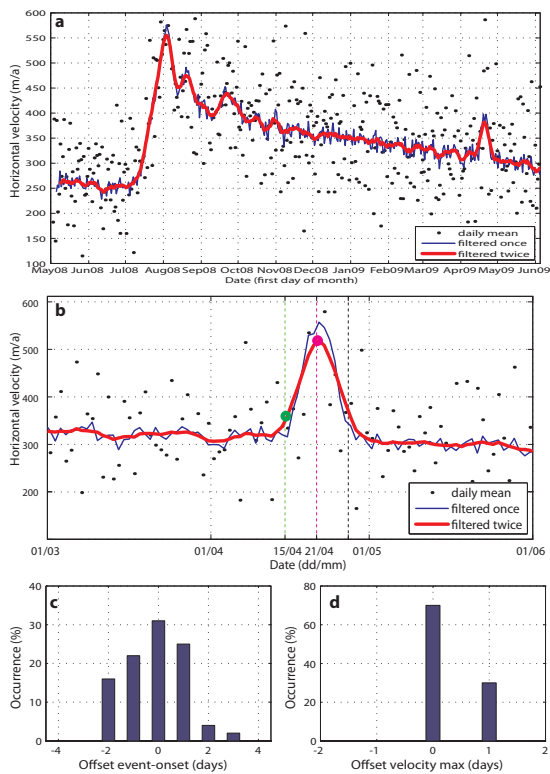


Fig. 2. Detection of an artificial winter speed-up event. The event is superimposed on the hourly raw data from stake Basin-3 #2.

C2051