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No slowing down of Jakobshavn Isbræ in 2014: Results from feature-tracking five Greenland outlet glaciers using Landsat-8 data and the ImGRAFT toolbox

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Data from the Landsat-8, panchromatic band, spanning the period (August) 2013 - (September) 2014 have been feature-tracked to construct ice velocities and flux estimates for five major Greenland outlet glaciers: Jakobshavn Isbræ, Nioghalvfjerdsbræ, Kangerdlugssuaq, Helheim and Petermann glaciers. The outlet glaciers are responsible for draining more than 20% of the Greenland Ice Sheet, and thus have a significant impact on its mass balance.

The feature-tracking is performed with the newly developed ImGRAFT toolbox, a Matlab-based, freely available software (http://imgraft.glaciology.net). Overall, the resulting velocity fields and fluxes agree with the findings of existing studies. Notably, we find that Jakobshavn Isbræ has reached an unprecedented speed of over 50m/day, and exhibit large, seasonal fluctuations. In contrast, on the east coast of Greenland, Helheim and Kangerdlugssuaq Glaciers have returned to pre-speed up velocities, following a peak in ice flux about a decade ago. Petermann and Nigohalvfjerdsbræ show little variability in speeds with typical flow speeds of less than 5m/day.