Insights and opportunities with near-real-time global land ice velocities from GoLIVE

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One of the most important questions driving glacier and ice sheet research today is how fast and by how much will sea level rise due to ice loss? Answering this question requires improved process understanding of ice dynamics on seasonal to multi-year timescales and an ability to apply this knowledge at a global scale. Ice motion is one of the fundamental variables supporting many areas of glaciological research including the modelling of ice sheet flow and mass budget studies. Taking advantage of improvements in geolocation, radiometric resolution, and acquisition rates with the Landsat 8 satellite, we are now producing a near-real-time global land ice velocity dataset, GoLIVE. GoLIVE provides free and openly available velocity data for all areas of permanent land ice >5 km2. The data have already been applied to key science objectives including developing new annual ice velocity mosaics, understanding multi-decadal Antarctic ice motion, characterizing glacier surge behaviour, and exploring seasonal to interannual glacier motion across Greenland. Collectively, these projects demonstrate the potential for GoLIVE data to support improved knowledge of current ice dynamics, enhancing our ability to project future ice behaviour and its effects, including sea level rise.