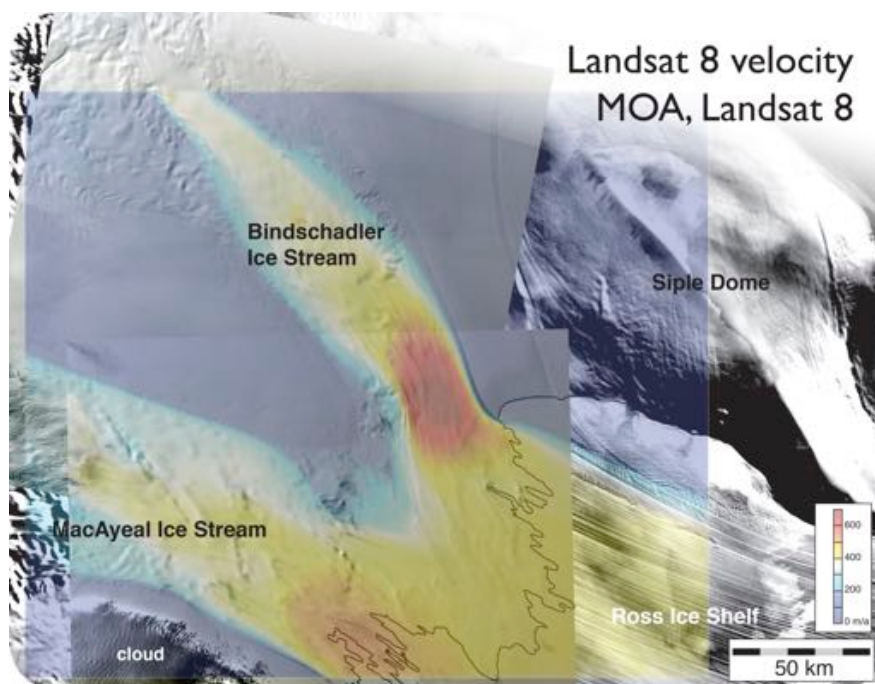


Flow variability and ongoing margin shifts on Bindschadler and MacAyeal Ice Streams, West Antarctica

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Abstract: Ice streams on the Ross Sea side of the West Antarctic Ice Sheet are known to experience flow variability on hourly time scales (tide influence near the grounding line), on annual time scales (basal water system variability) and on multi-century time scales (stagnation and reactivation linked to internal thermomechanical feedbacks). We report here on observations of flow variability at the decade scale on the Bindschadler and MacAyeal Ice Streams (MaIS). Our analysis makes use of archived ice velocity data and new mappings from composited Landsat 7 and Landsat 8 imagery that span the interval from 1985 to 2014. Both ice streams speed up and slow down in a range of about ± 5 m/a/a over our various comparison intervals. The patterns are heterogeneous across and within the two streams but consistent across intervals. Widespread changes are most likely linked to instability in the subglacial till and/or subglacial water flow. The most interesting changes we observe are associated with sticky spots near the confluence of the two ice streams. The relatively young features appear to be forcing shifts in margin position near the outlets of both streams. The margin jumps reduce the effective outlet widths of the streams, 30% and 20% on MaIS and BIS, respectively. Those magnitudes are similar to the outlet reduction experienced by another ice stream prior to its stagnation about 160 years ago.

12:00 noon, Thursday, 30th July 2015

**L1 Lecture Theatre
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310 Castle Street**