Hektoria Glacier's Unprecedented Rapid Retreat

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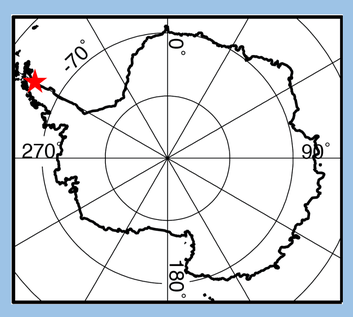
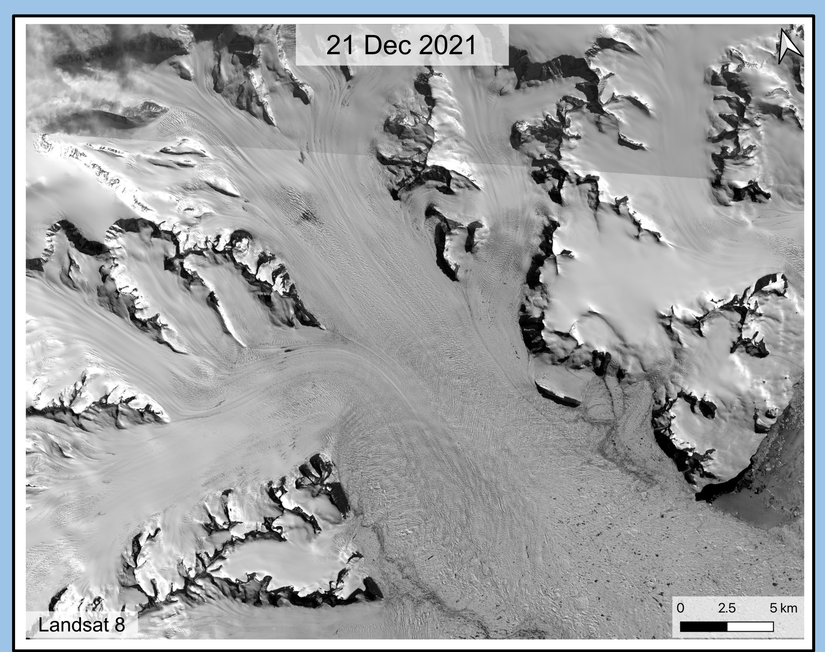
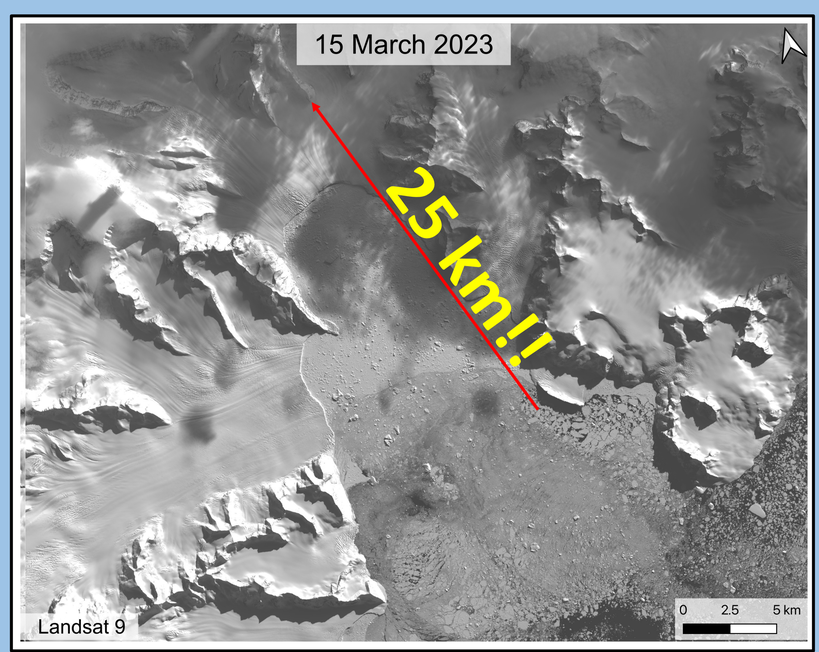
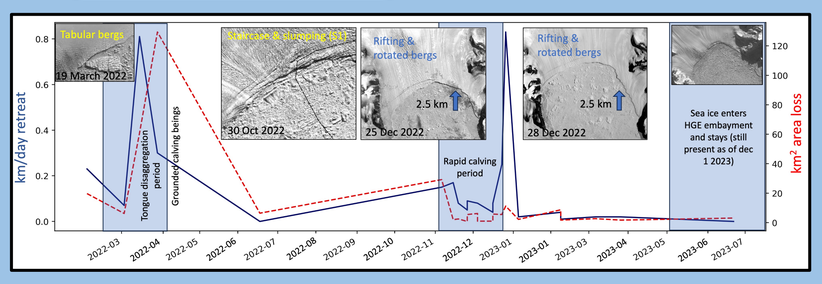
What Happened?

After the loss of the decade old fast-ice in the **Larsen B** embayment in January 2022, Hektoria and Green Glacier retreated **25 km** over the period of **14 months** (Ochwat et al., 2024). This is **faster** than any **known** tidewater **glacier retreat**.

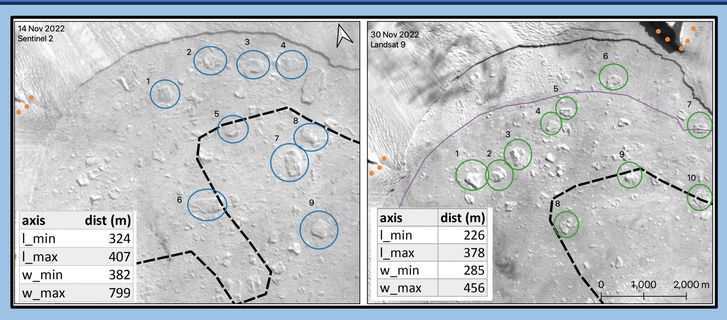






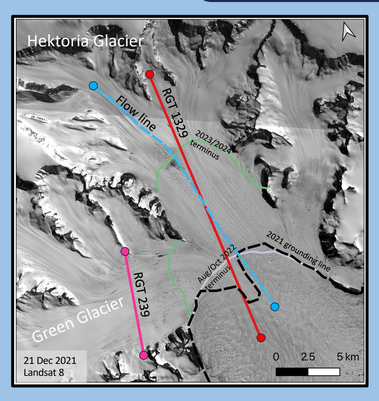


The retreat occurred in several phases. The key period of rapid retreat was from **November-December 2022**, where **9 km** of grounded ice was **lost**.

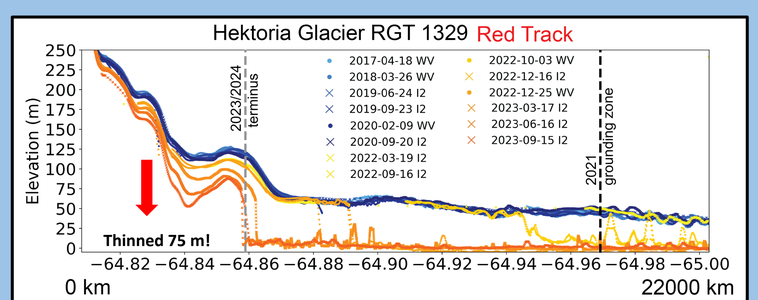


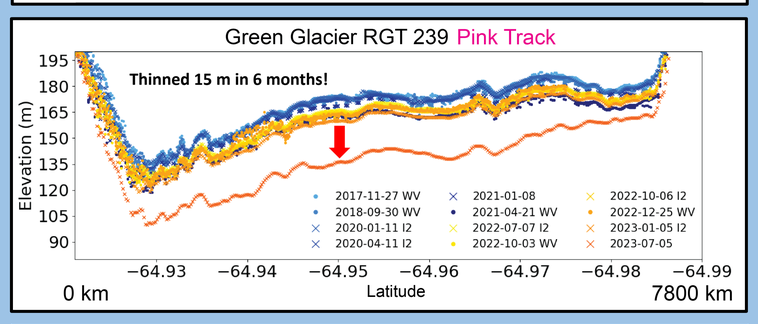
We can infer **ice thickness minimum** through analyzing the size of the tabular and toppled icebergs. Hektoria's grounded ice **was** at least **~380 m** thick.

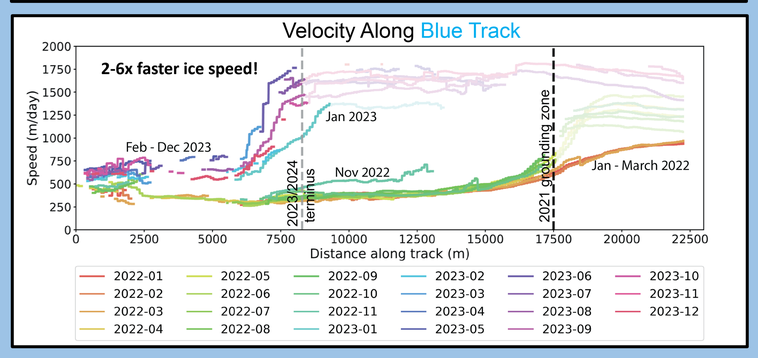
So What?

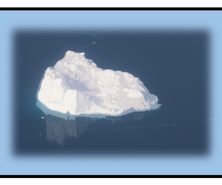


Since the fast ice broke-out Hektoria is **~6 times faster** in speed (~300 to ~1700 m/yr and has **thinned over 75 m** at a thinning rate **40 times faster** than before.

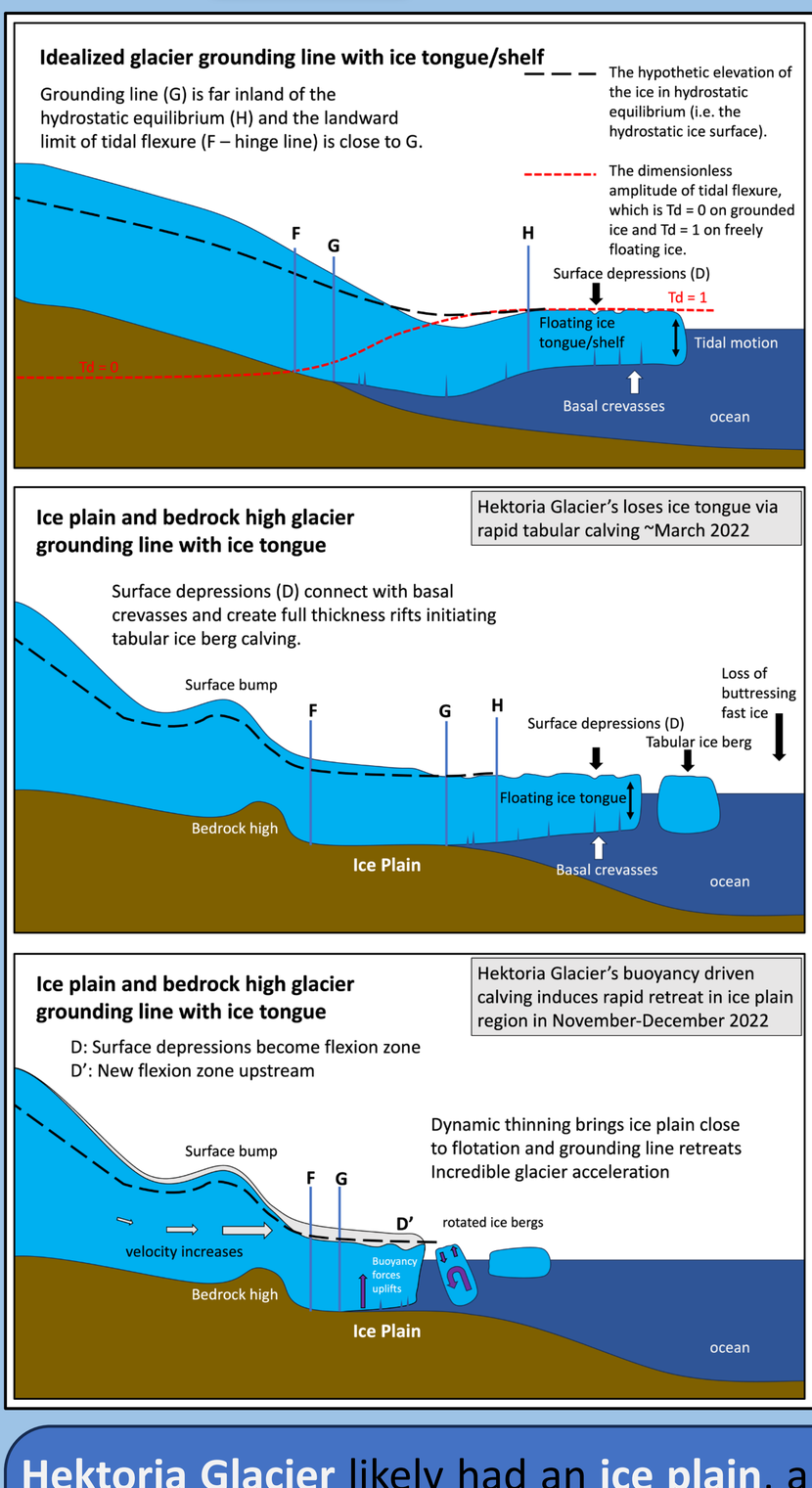








Why?



Hektoria Glacier likely had an **ice plain**, a region where the bedrock is flat and the glacier ice is **close to flotation**. With the loss of the fast ice and subsequent disintegration of it's 300m thick ice tongue, dynamic thinning initiated a near **instantaneous retreat** of the grounding line and rapid **buoyancy-driven calving**.

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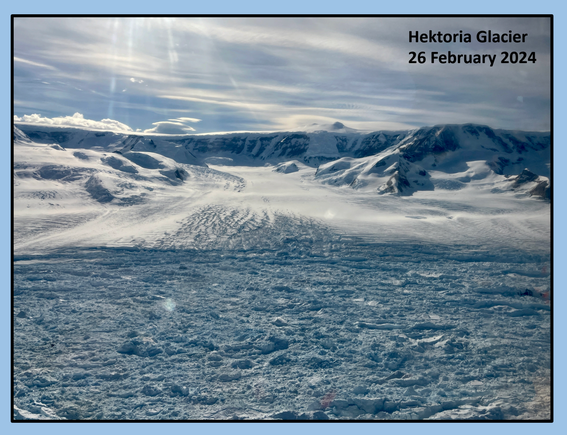
Reference:
Ochwat, N. E., Scambos, T. A., Banwell, A. F., Anderson, R. S., Maclennan, M. L., Picard, G., Shates, J. A., Marinsek, S., Margonari, L., Truffer, M., and Pettit, E. C.: Triggers of the 2022 Larsen B multi-year landfast sea ice breakout and initial glacier response, The Cryosphere, 18, 1709–1731, https://doi.org/10.5194/tc-18-1709-2024, 2024



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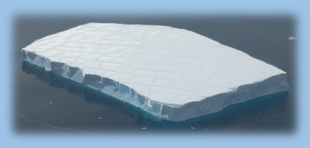

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