Channelised melt with CryoSat-2: A case study over Pine Island Glacier

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Supervised by: Pierre Dutrieux, Paul Holland, Anna Hogg and Noel Gourmelen

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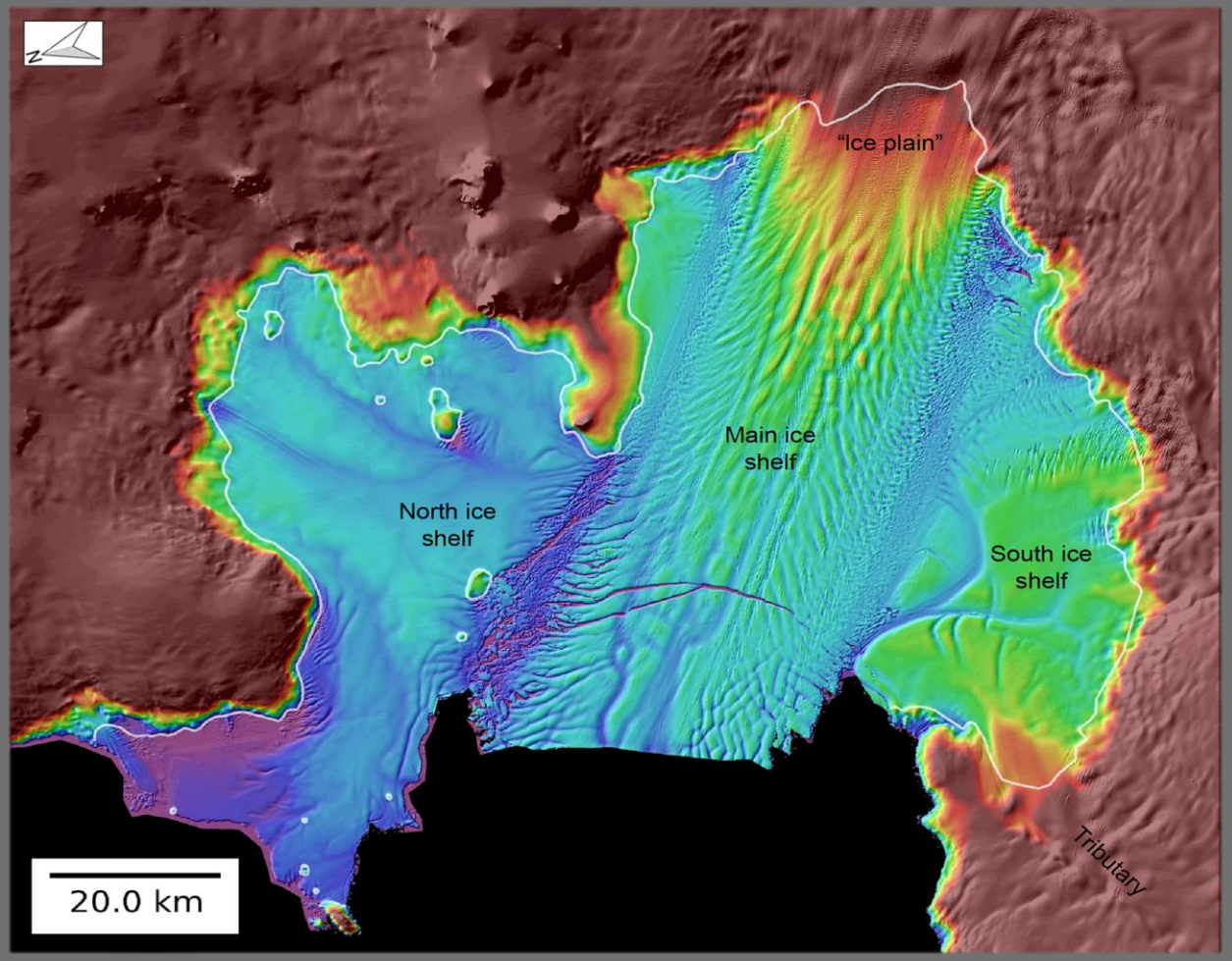

Shean et al., 2019

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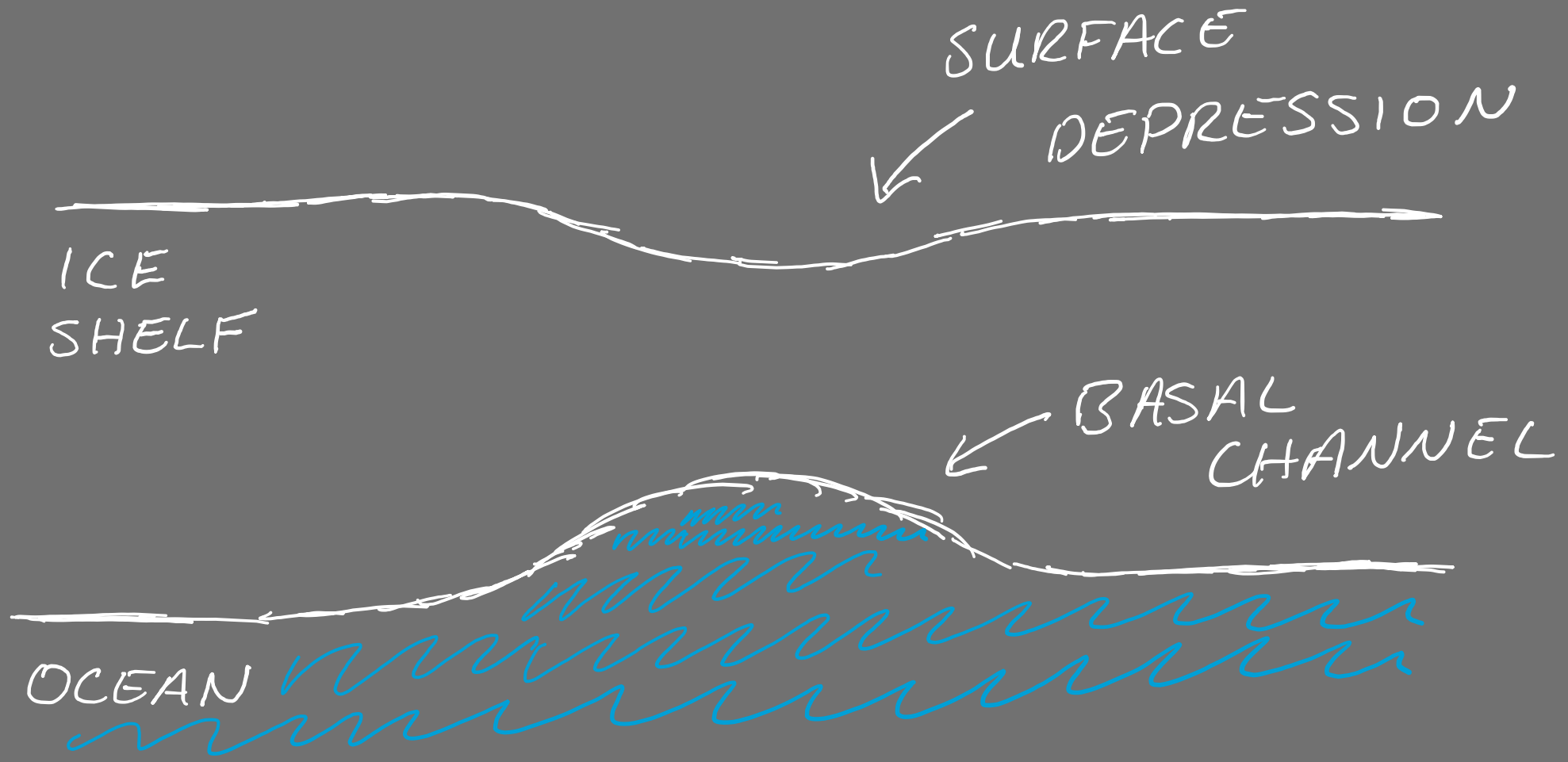

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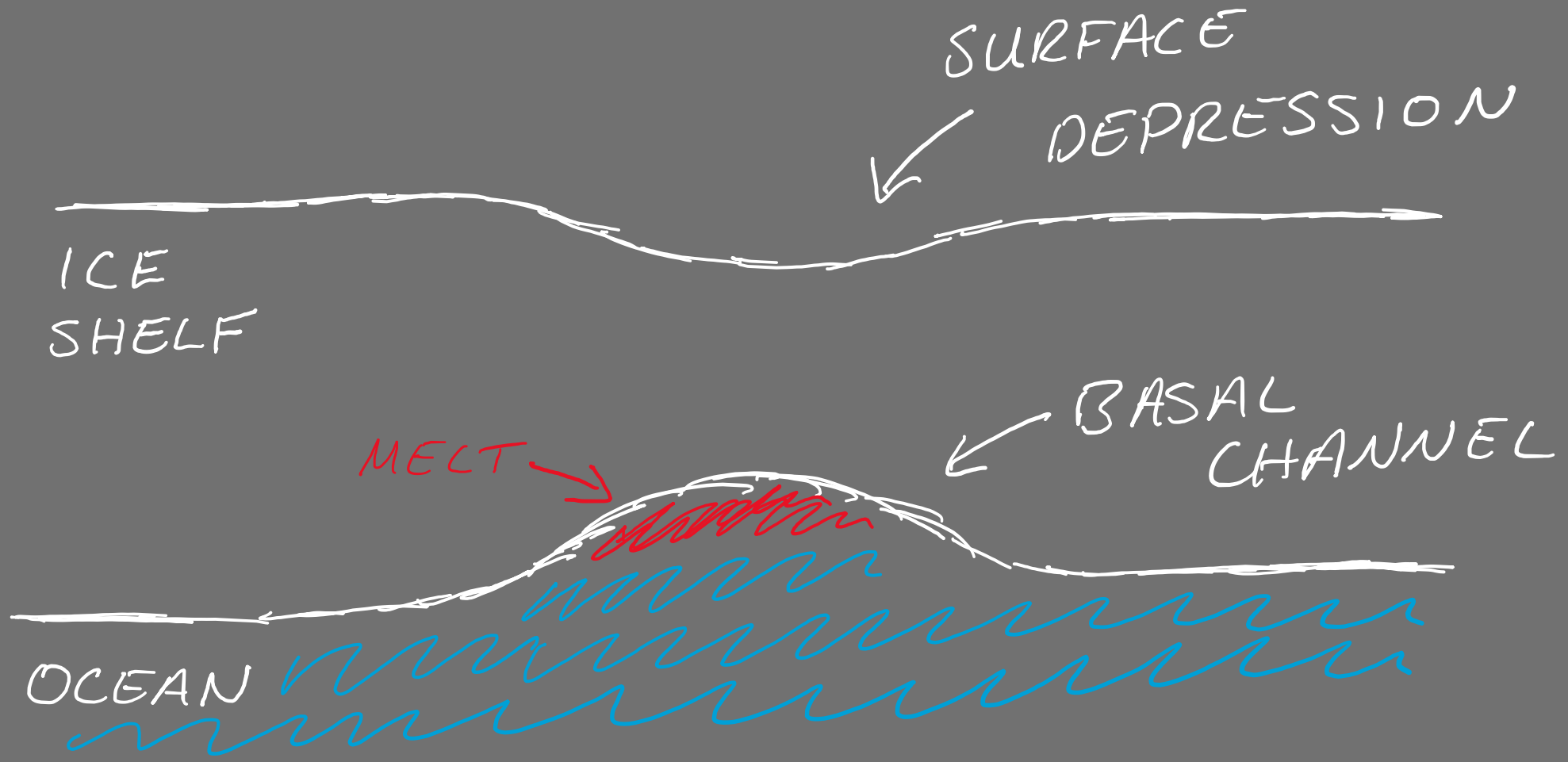

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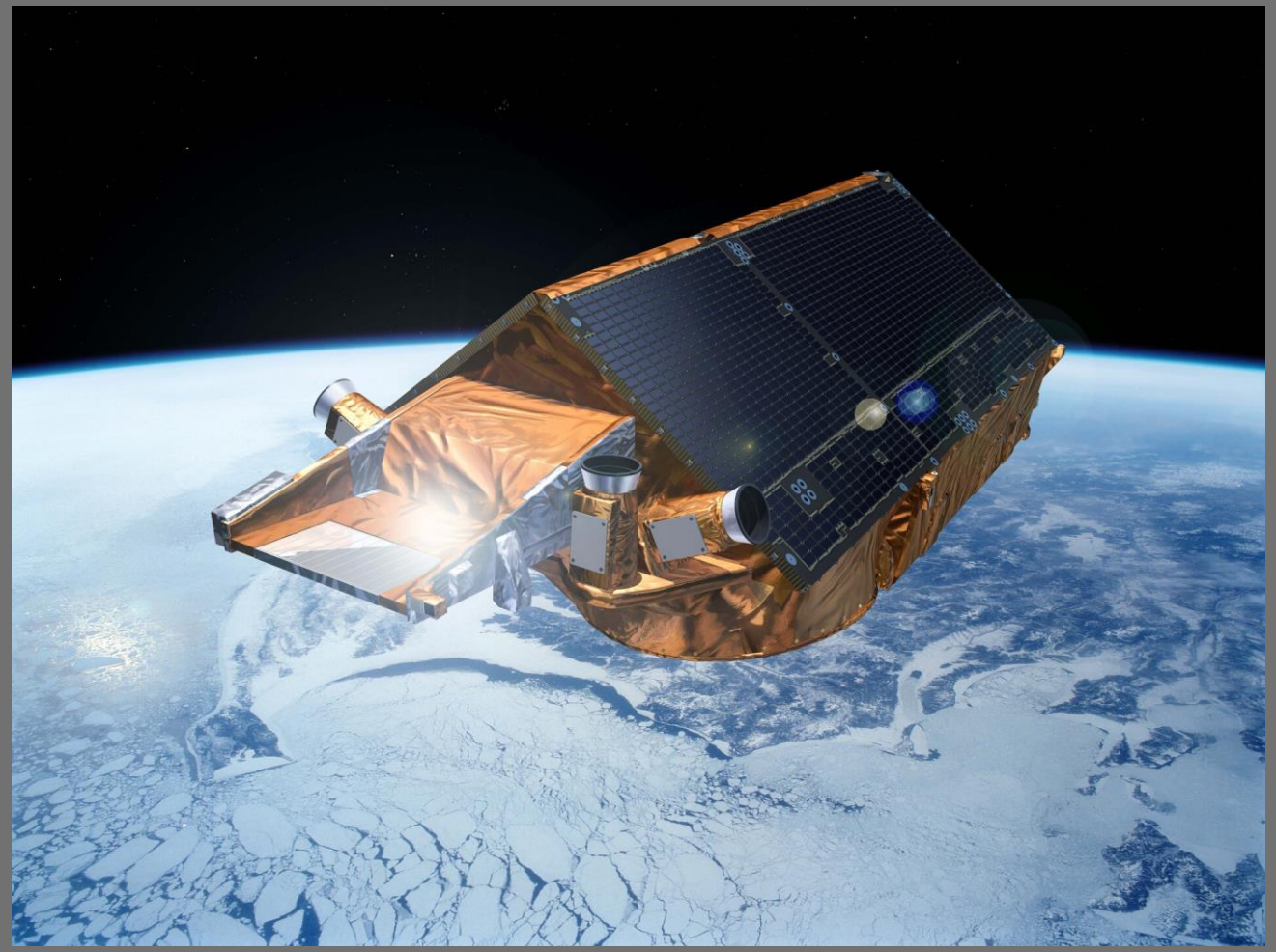

CryoSat-2 SARIn Swath surface elevation data

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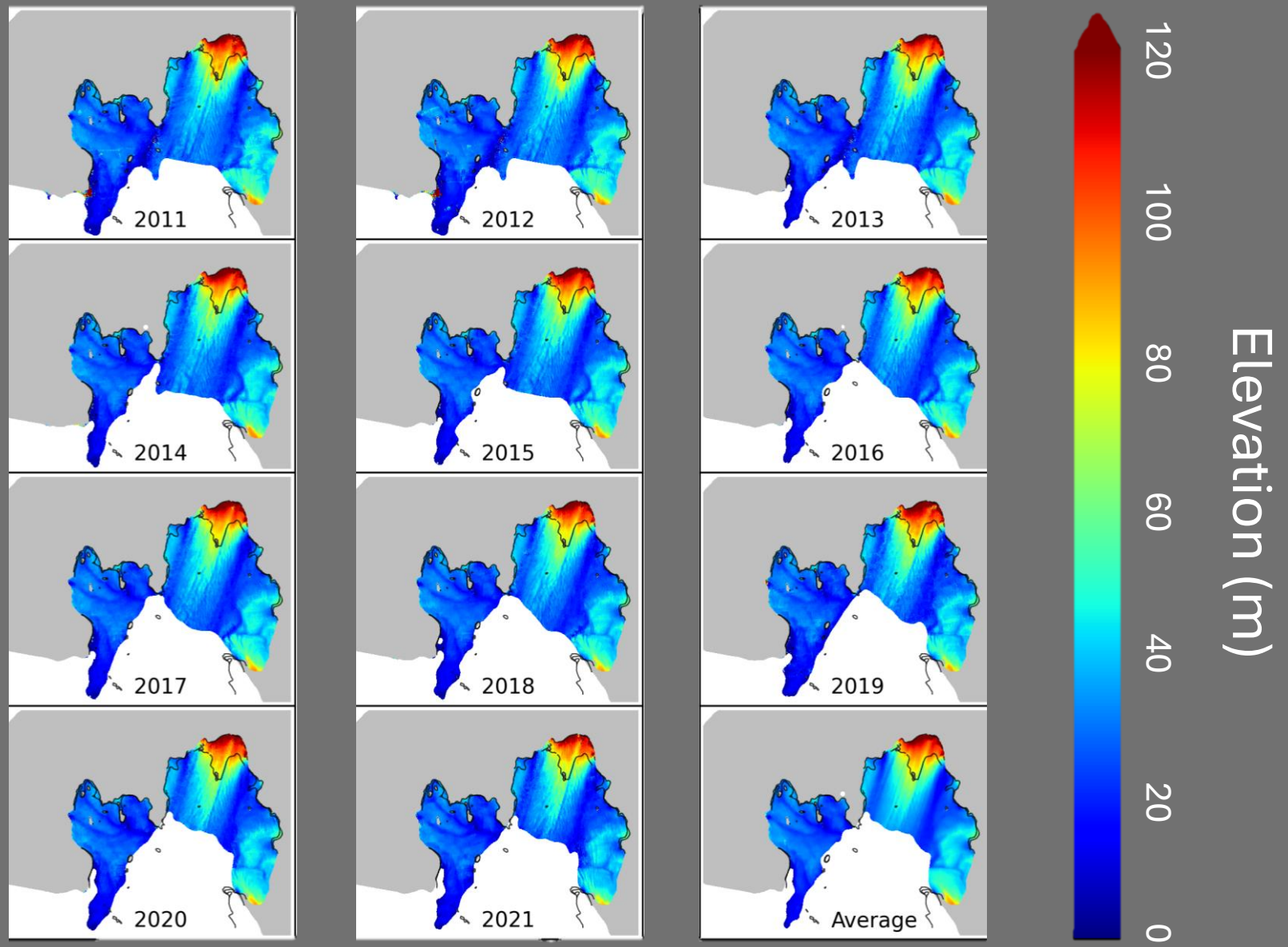

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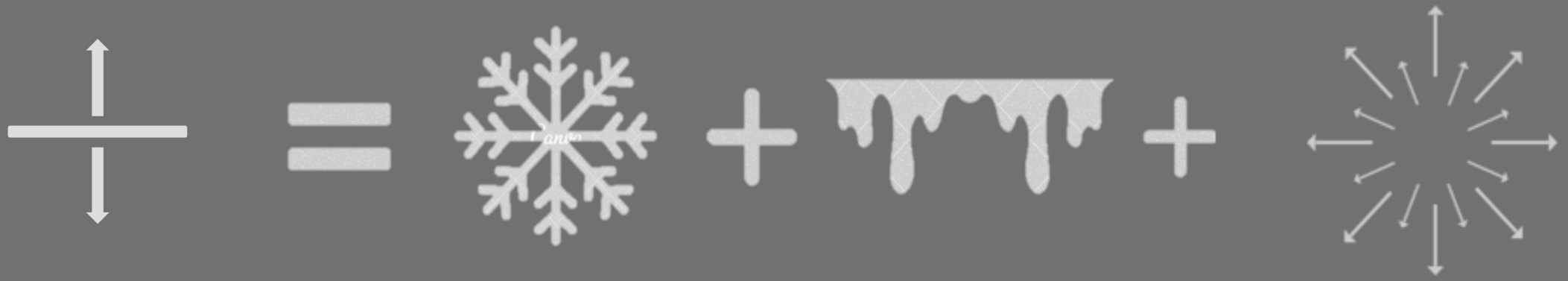

Thickness Change | Surface Accumulation | Melt | Divergence

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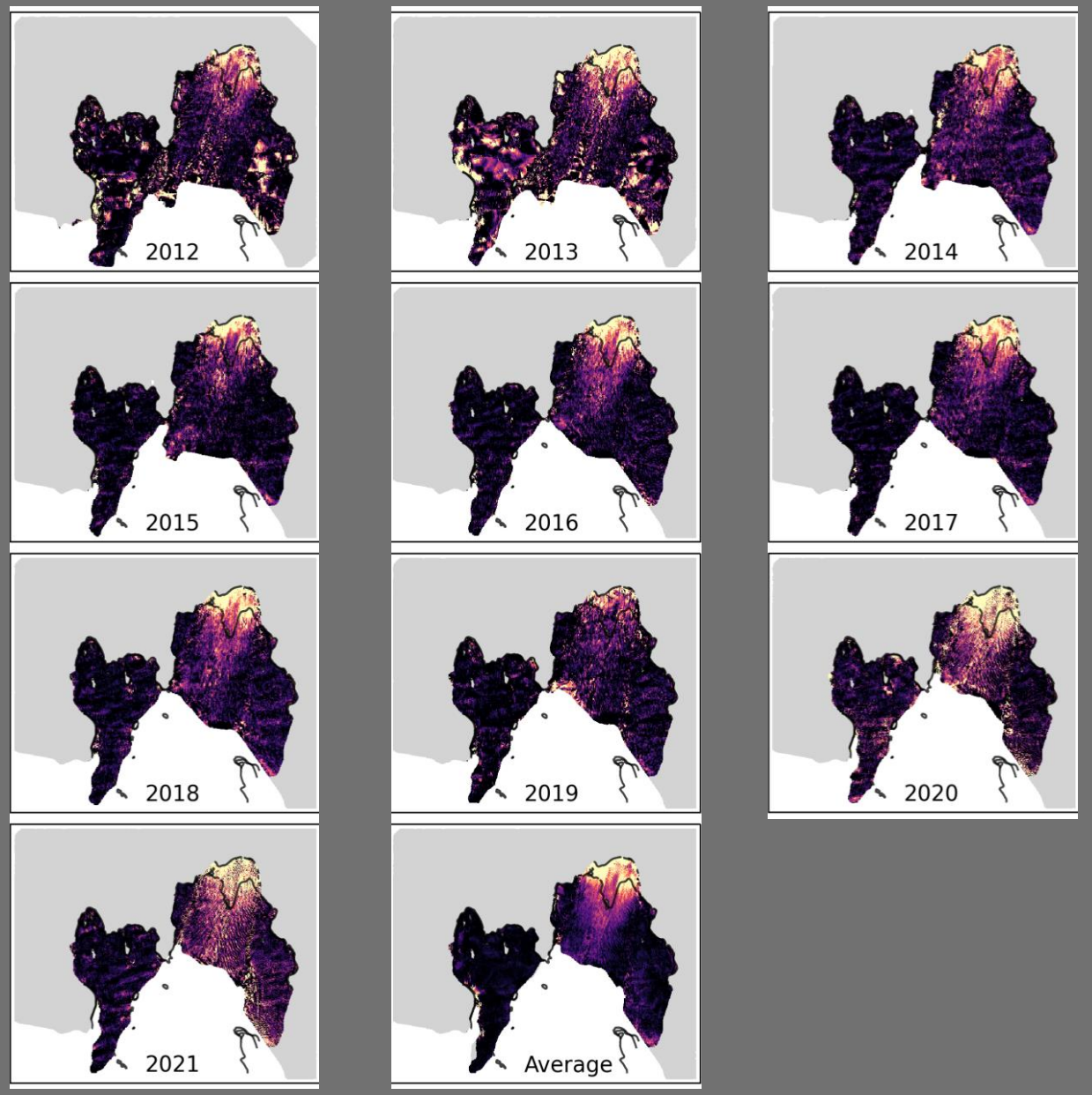

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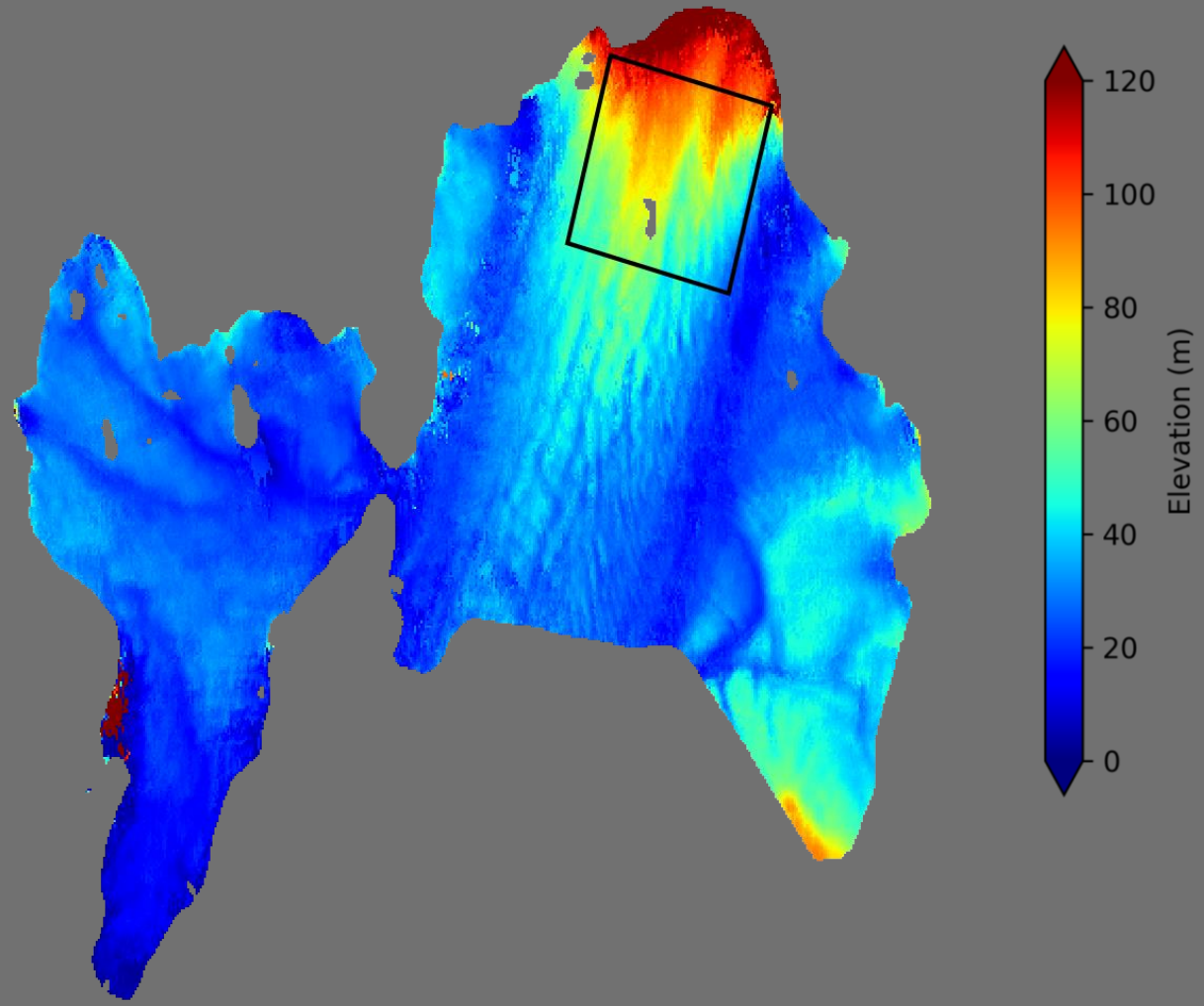

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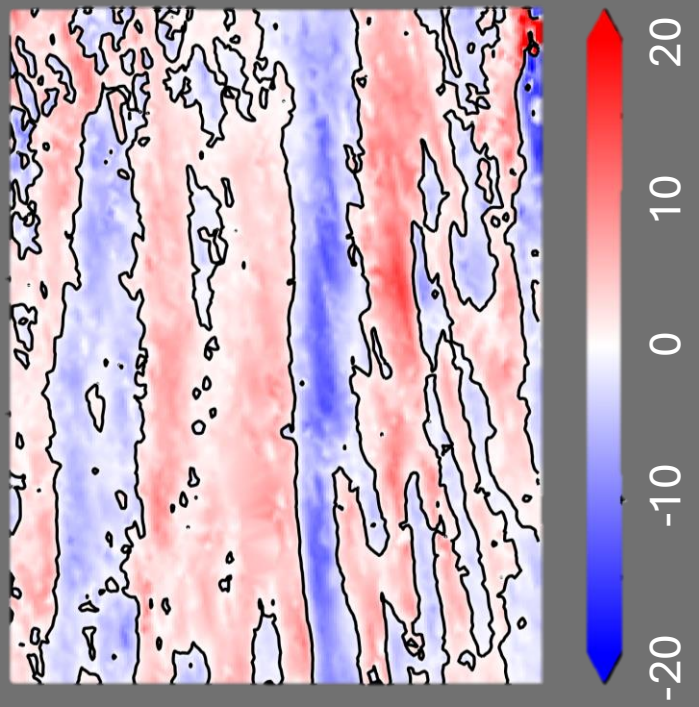
Elevation (m)



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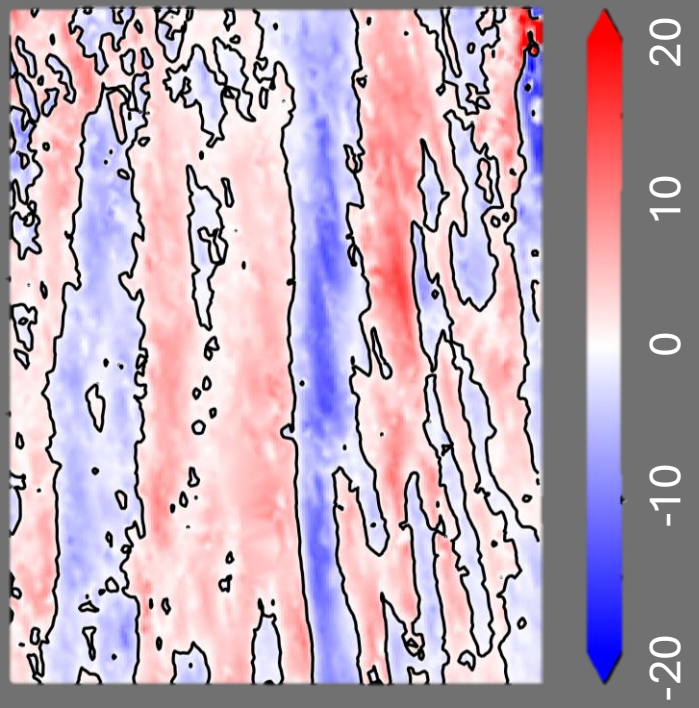
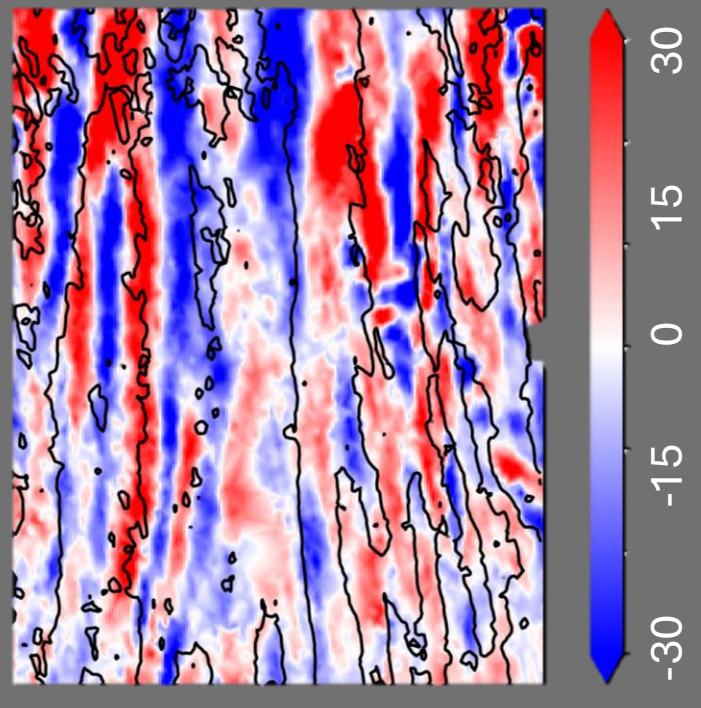


Melt (m/yr)



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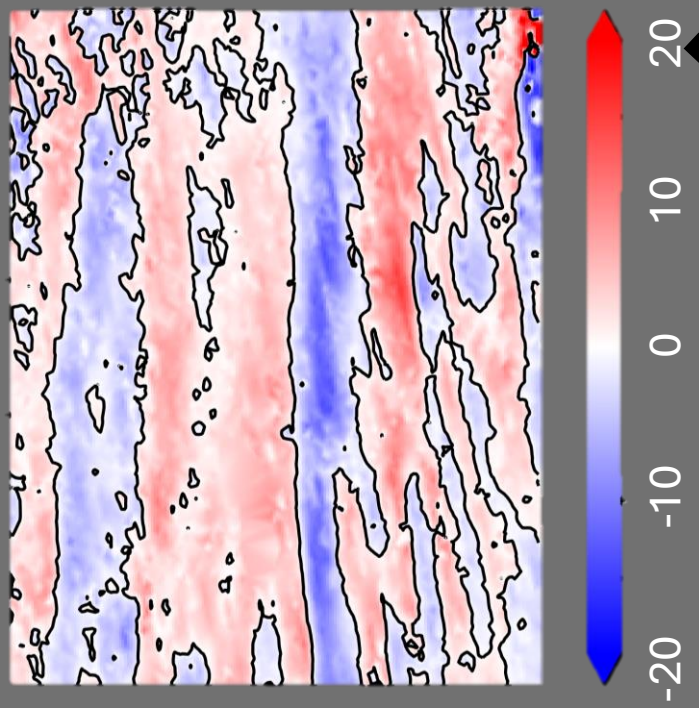
Elevation (m)



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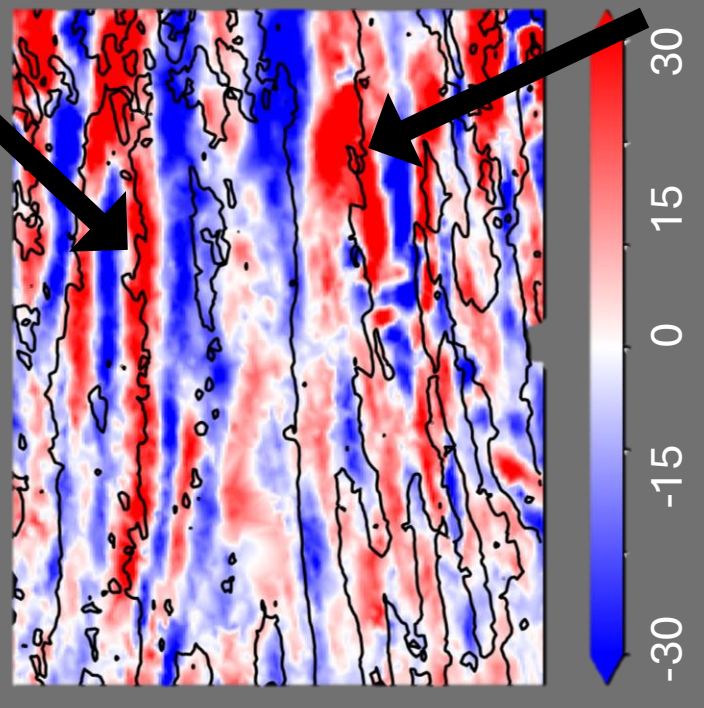

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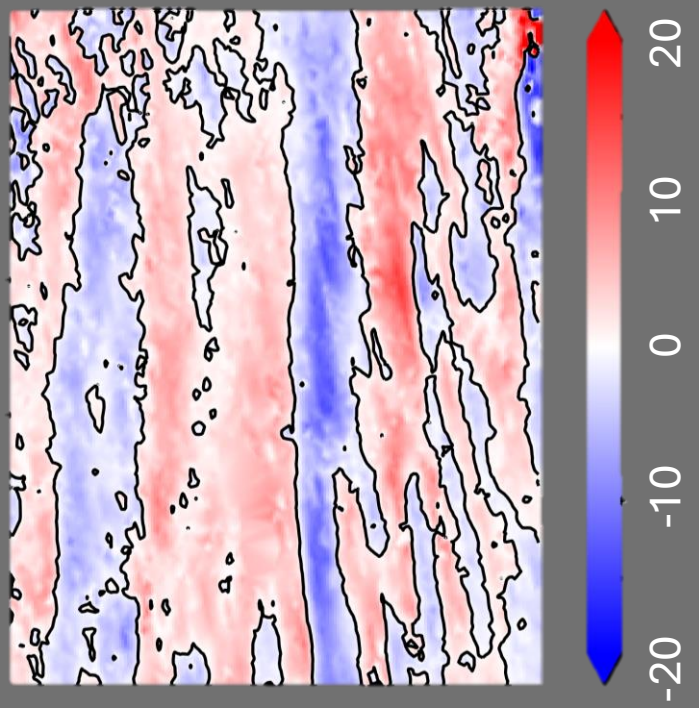
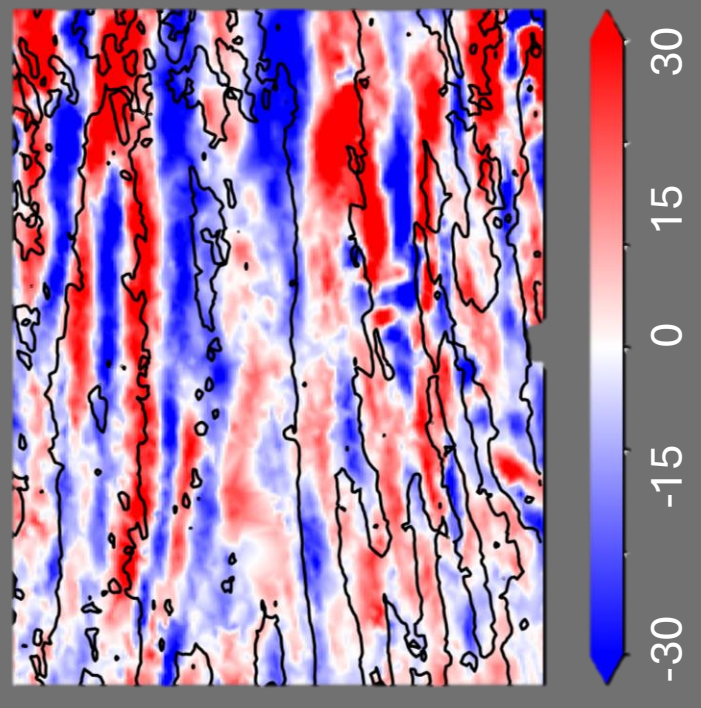
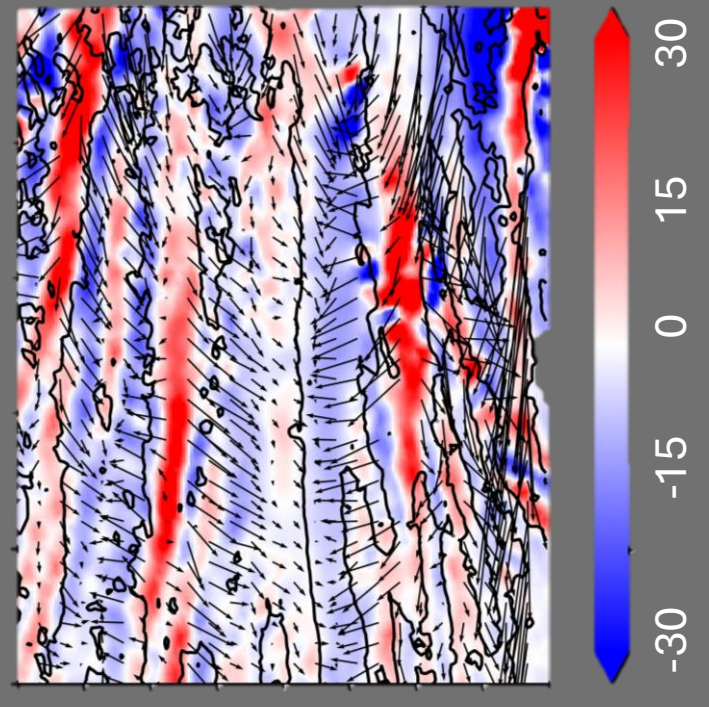


Melt (m/yr)



Divergence (m*/yr)*



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Elevation (m)

Melt (m/yr)

Divergence (m*/yr)*

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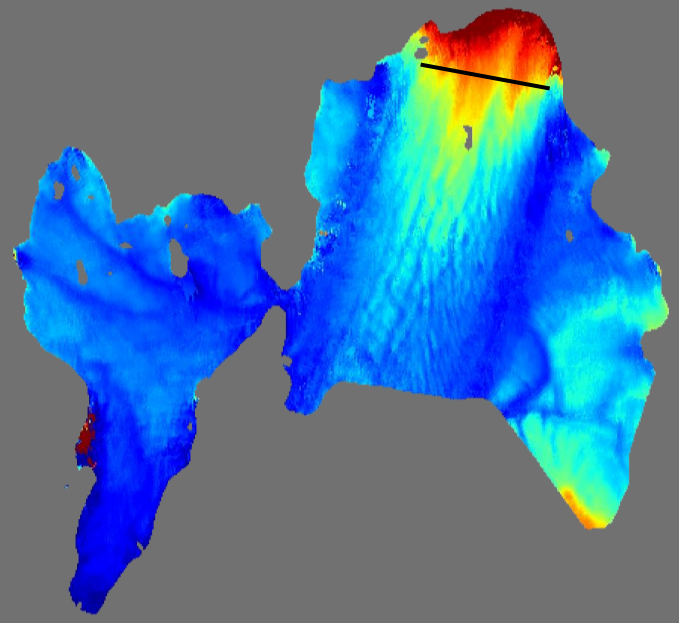

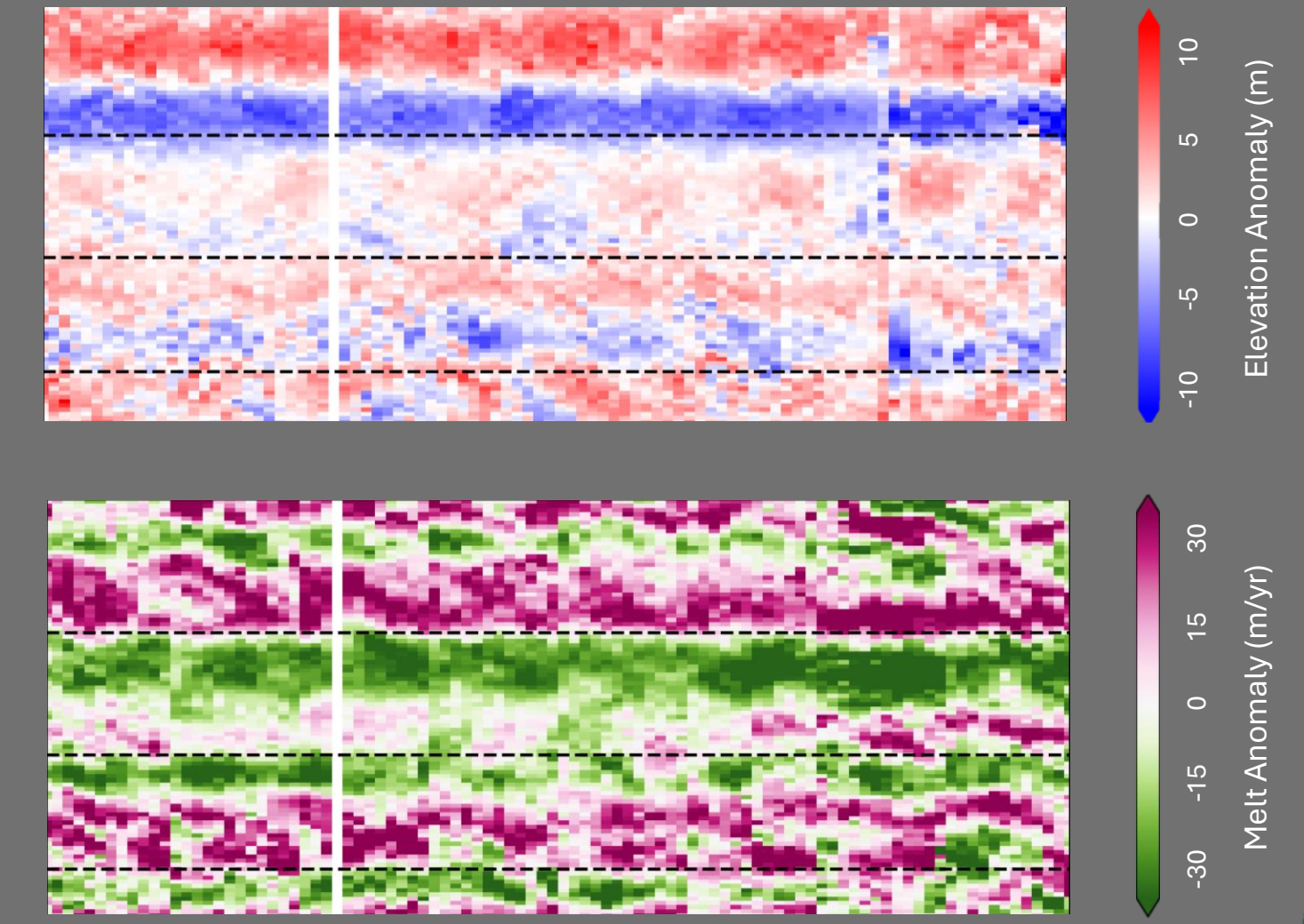

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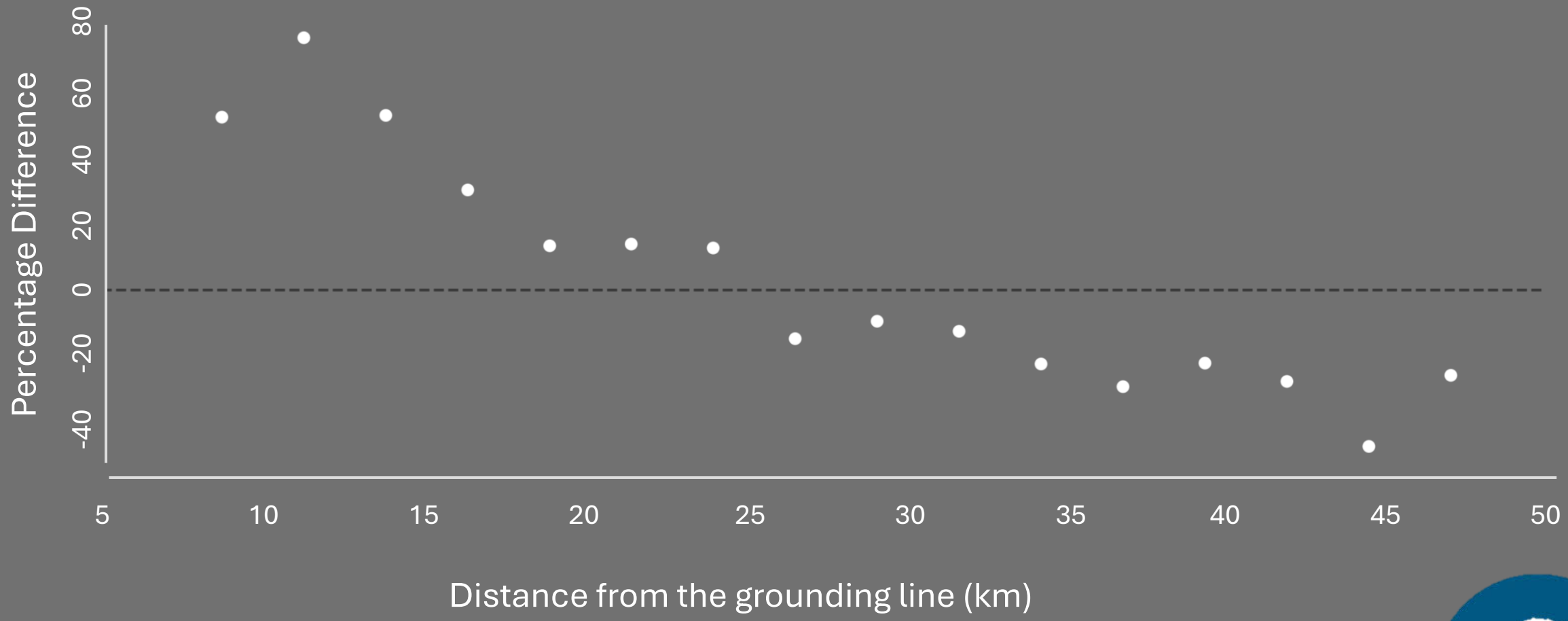

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Conclusions

- We can measure channelised melting using CryoSat-2

- Velocity and velocity divergence fields are crucial when deriving small scale ice shelf melt rates

- Basal Channels can modulate melting by over 50% near the grounding line

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Thanks for listening!

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