Climatology and Surface Impacts of Atmospheric Rivers on West Antarctica

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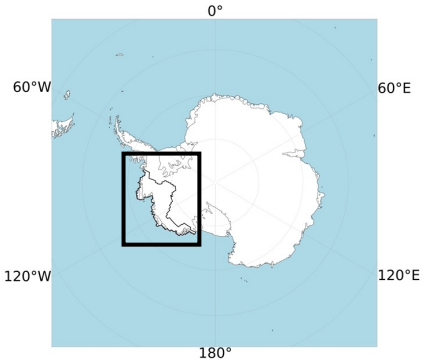
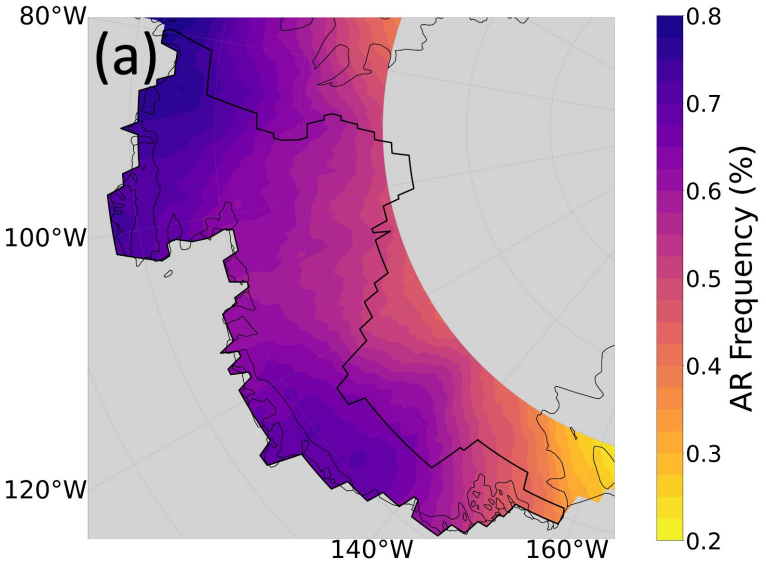
Abstract here

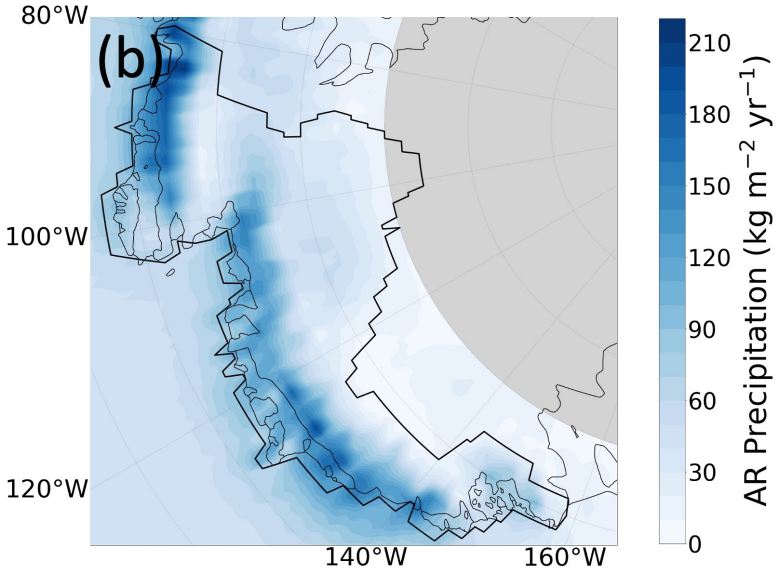
Atmospheric rivers (ARs): long, narrow bands of warm and moist air that propagate poleward from the extratropics



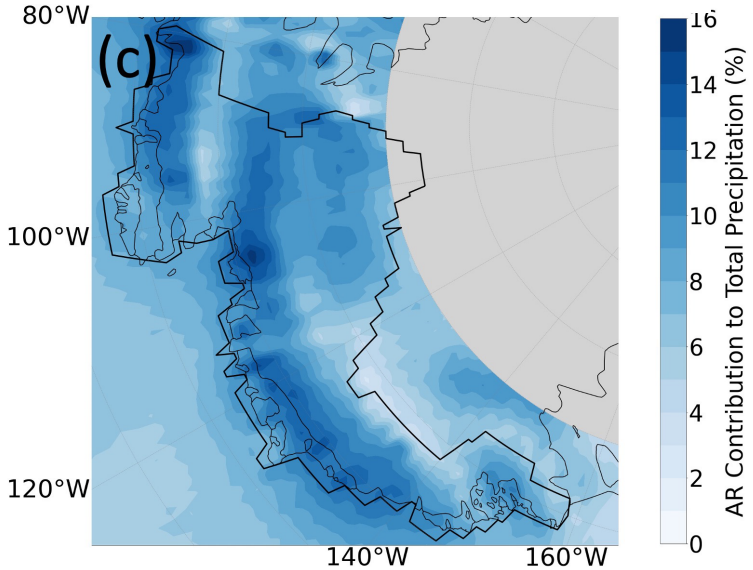


Frequency of AR landfall over West Antarctica (1-3 days per year)

Wille et al., 2021



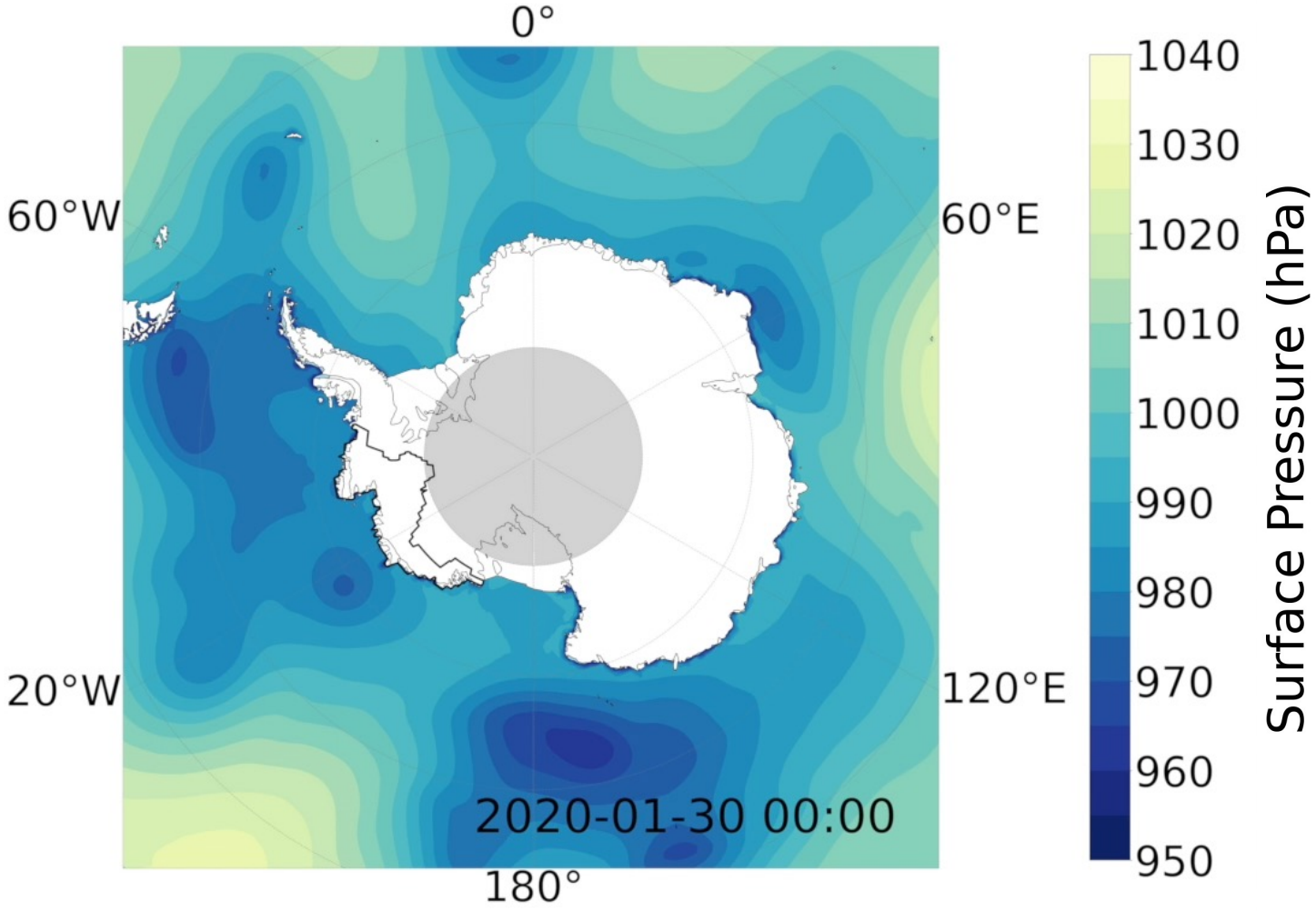
Total annual precipitation attributed to ARs (MERRA-2)



AR precipitation as the percentage of the total annual precipitation (MERRA-2)

Maclennan et al., in prep

AR Family: 3 ARs make landfall in rapid succession from February 1-8, 2020



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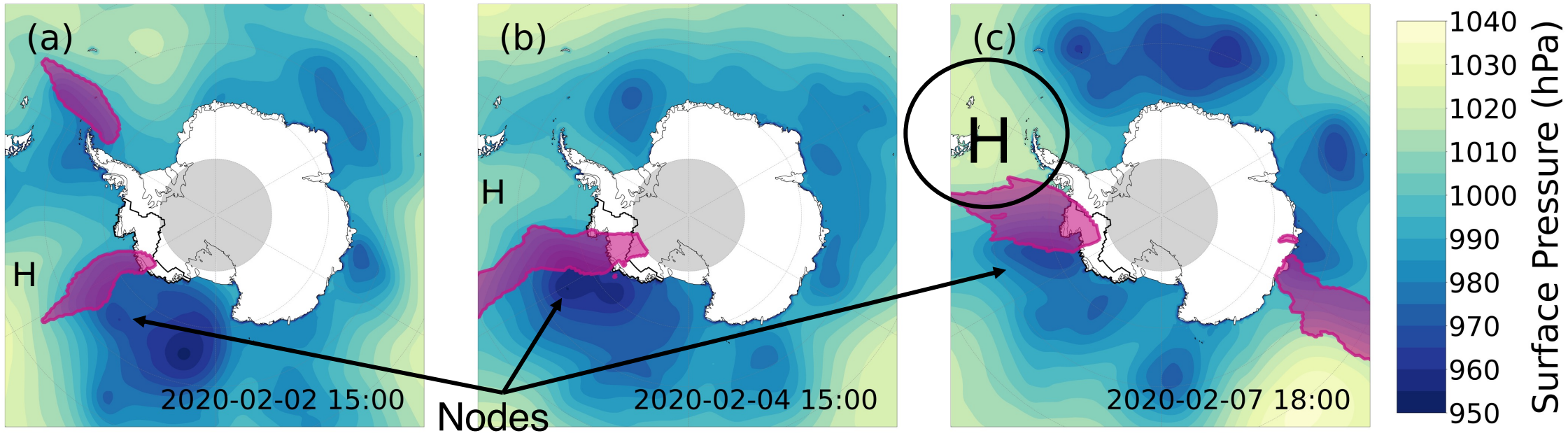
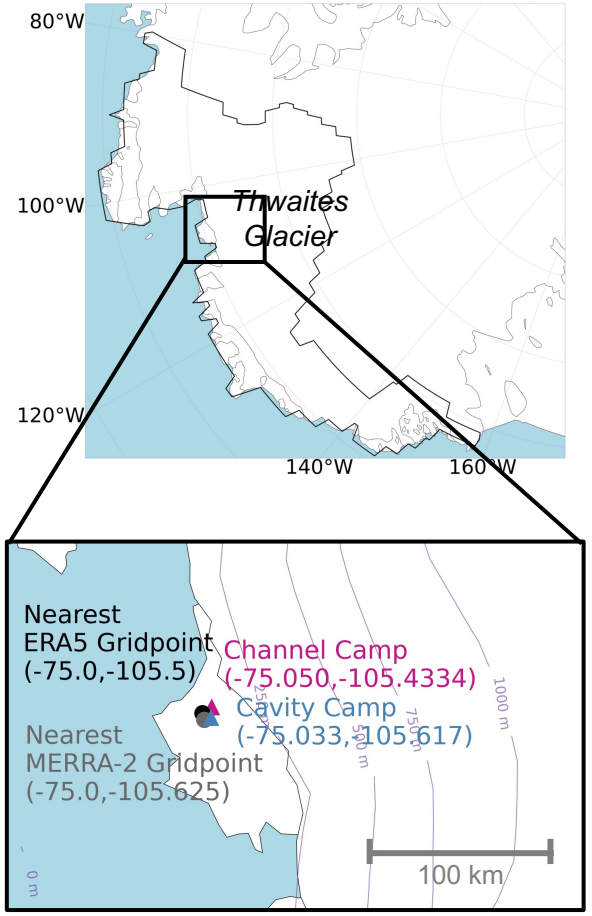
Nodes in the low-pressure system and high-pressure ridge propel the ARs onto West Antarctica

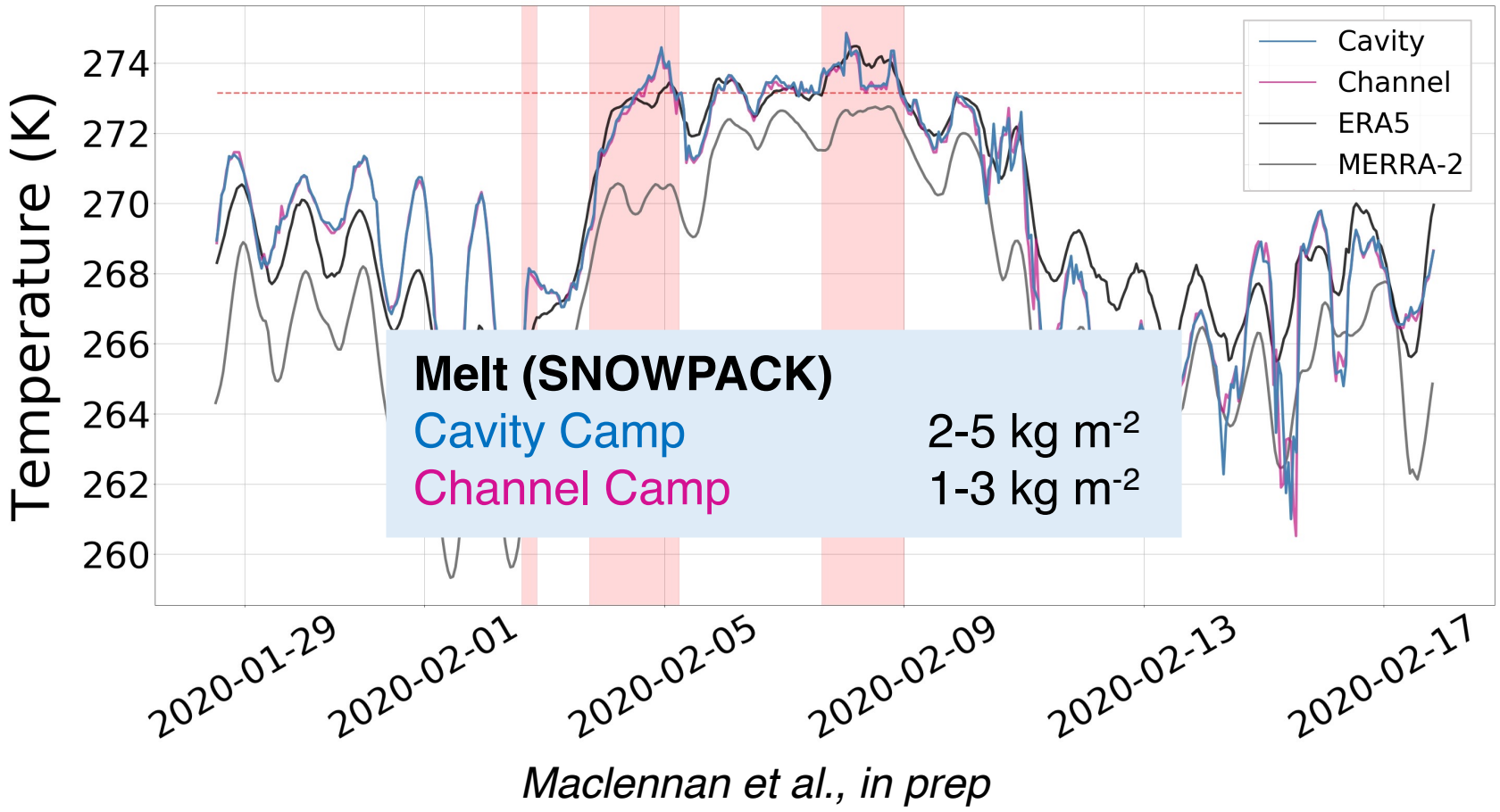
Maclennan et al., in prep



Nodes + high-pressure ridge → AR family event

Observations of AR family event show high accumulation, some surface melt





Maclennan et al., in prep

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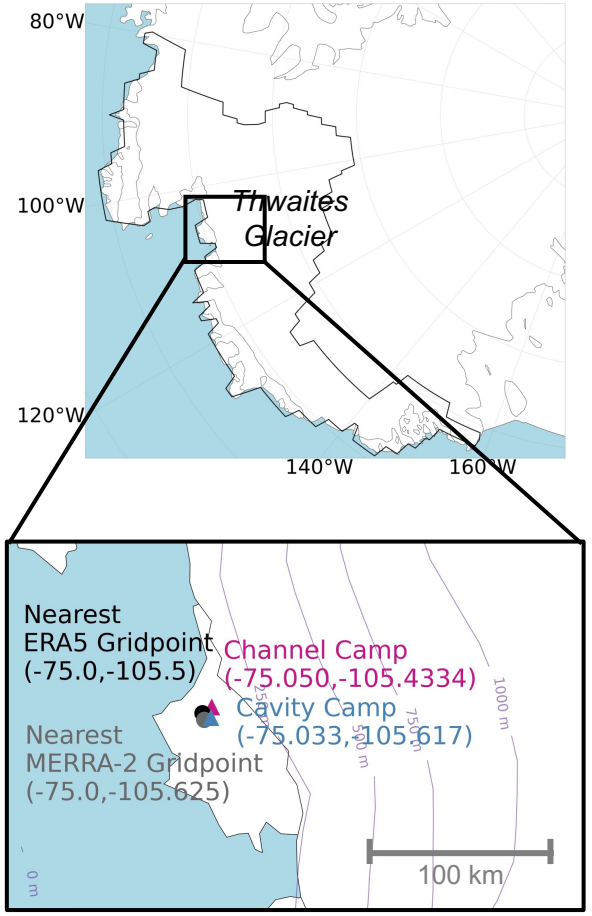

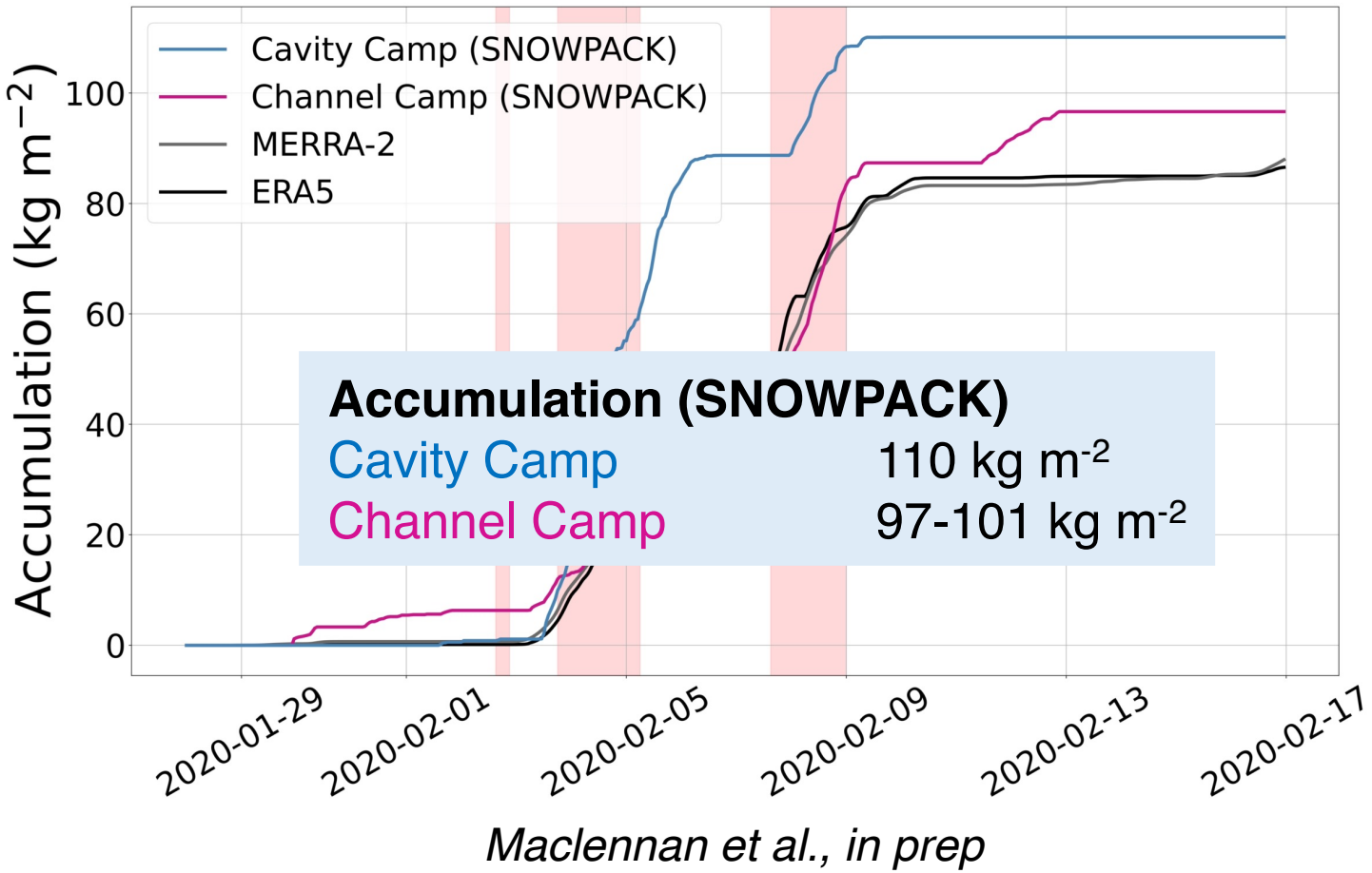

Major Takeaways

Low-pressure nodes + Blocking high → AR family events

- Compounding impacts on surface temperatures and melt
- AR snowfall still dominates melt

Thank you for listening!

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Visiting Université Grenoble Alpes IGE until July 1

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