Multi-decadal reduction of WSBW volume forced by wind-driven sea ice condition

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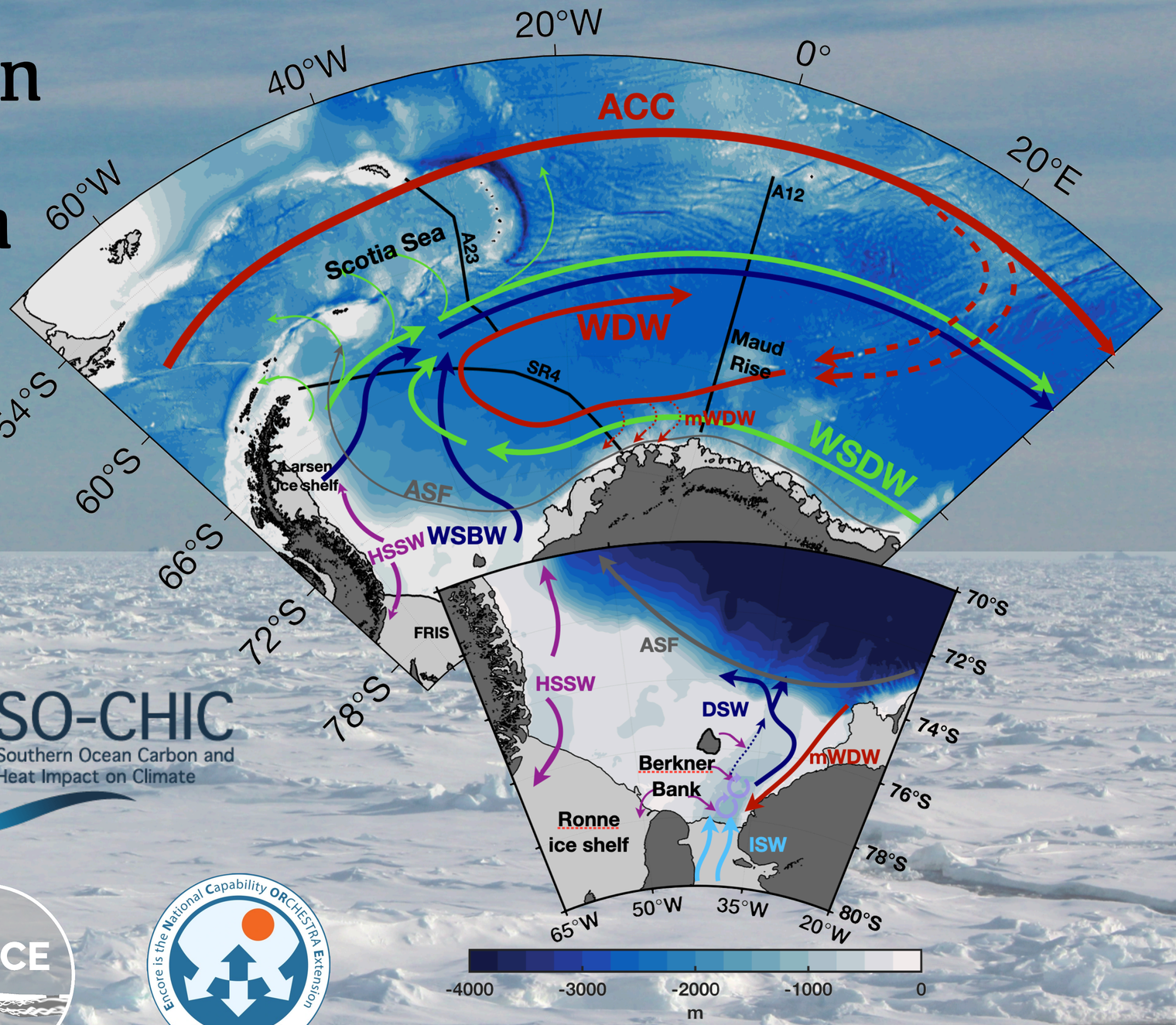

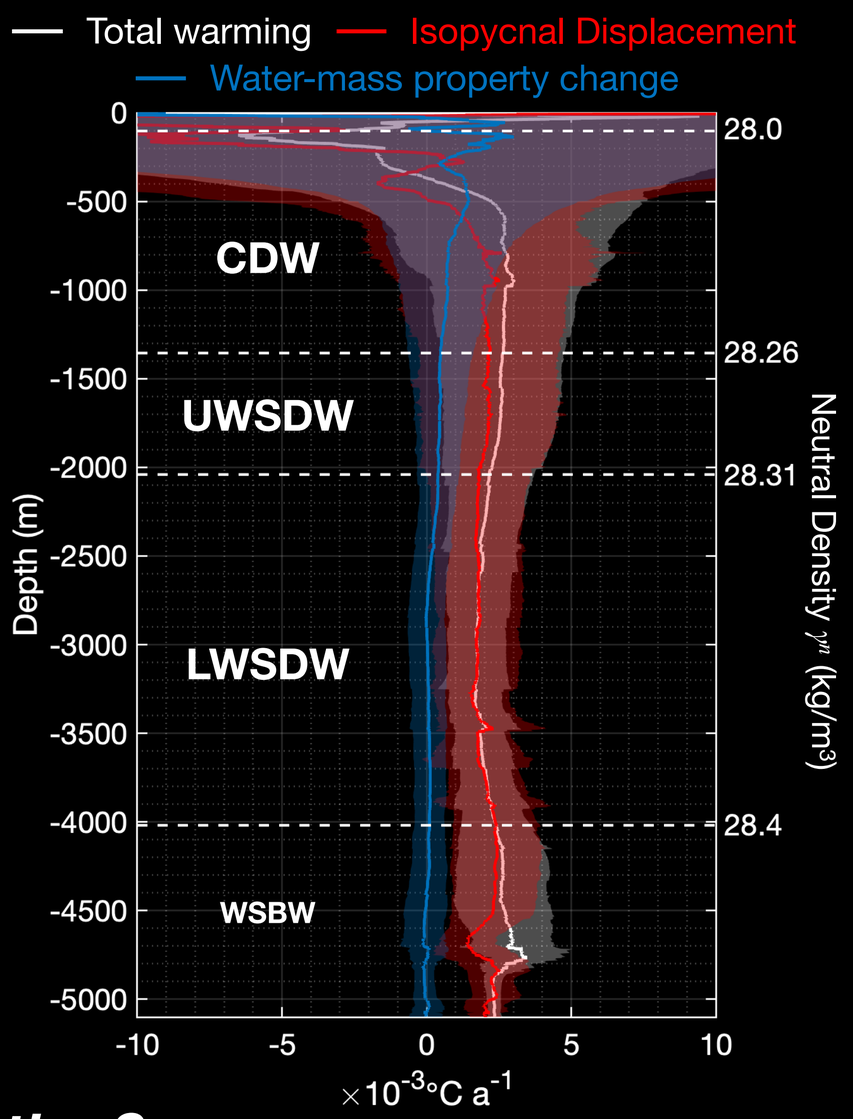

- Bottom Water volume reduced by ~ 30% over 30 yrs

➡ This reduction causes deep-Weddell-Sea warming of about 2 m°C / year

What is causing this reduction?

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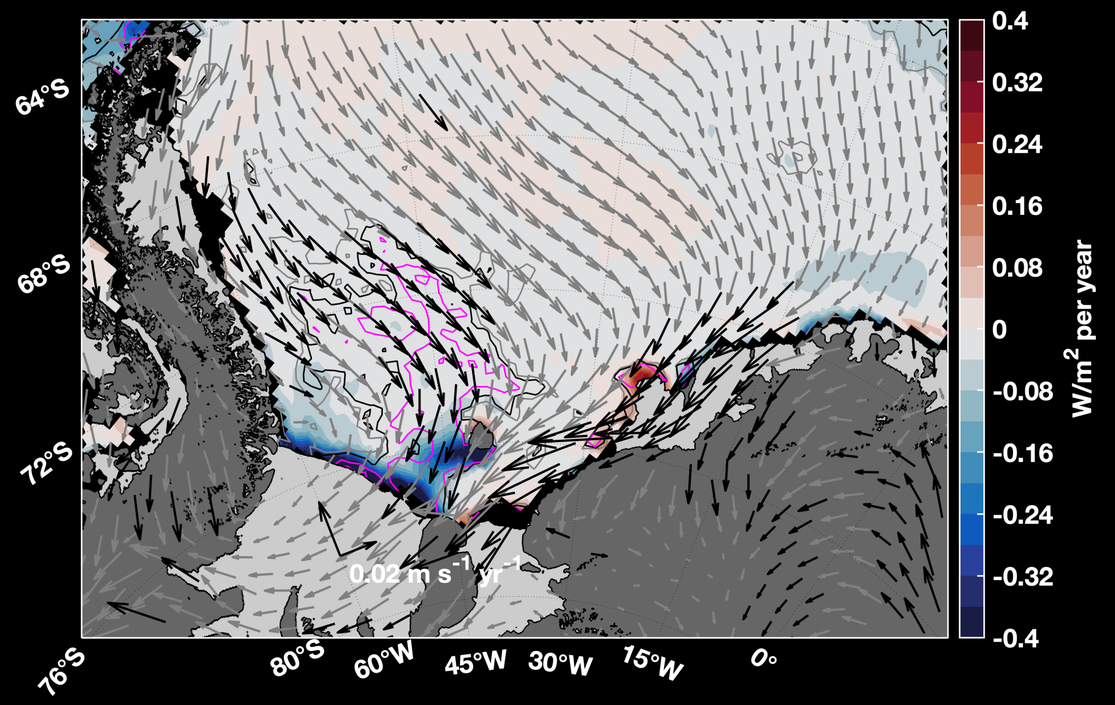

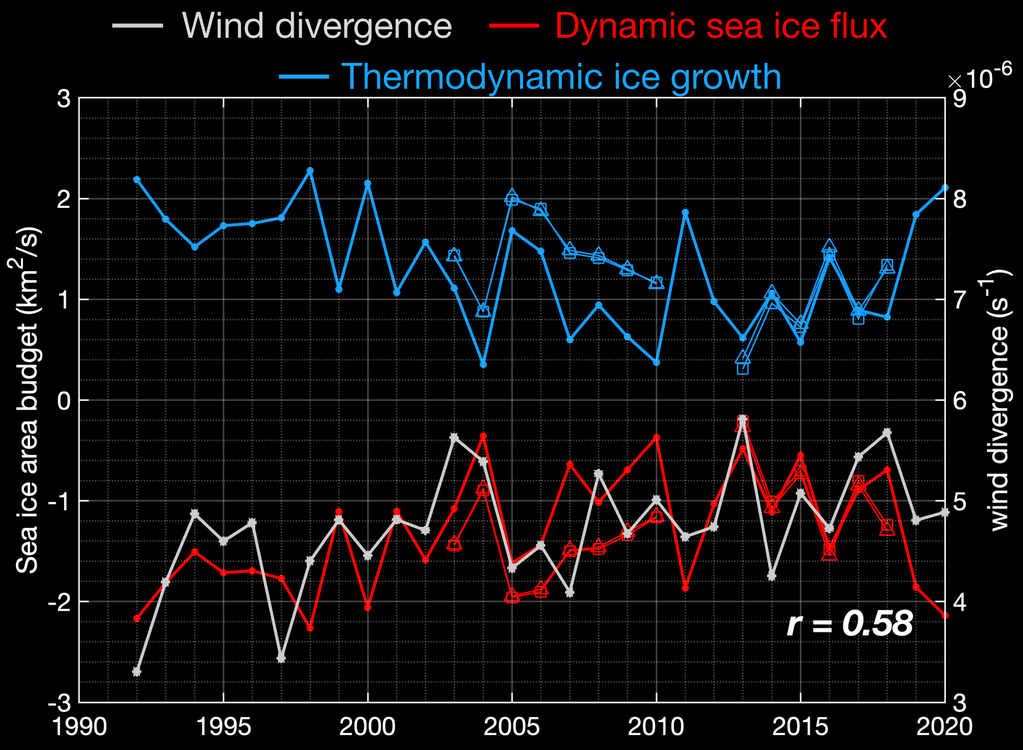

- Sea ice formation rate ***slowdown*** in Ronne and Berkner Bank
- Wind-drive sea ice flux ***less divergence***
- Thermodynamic ice growth ***reduced***

What is causing this wind trend?

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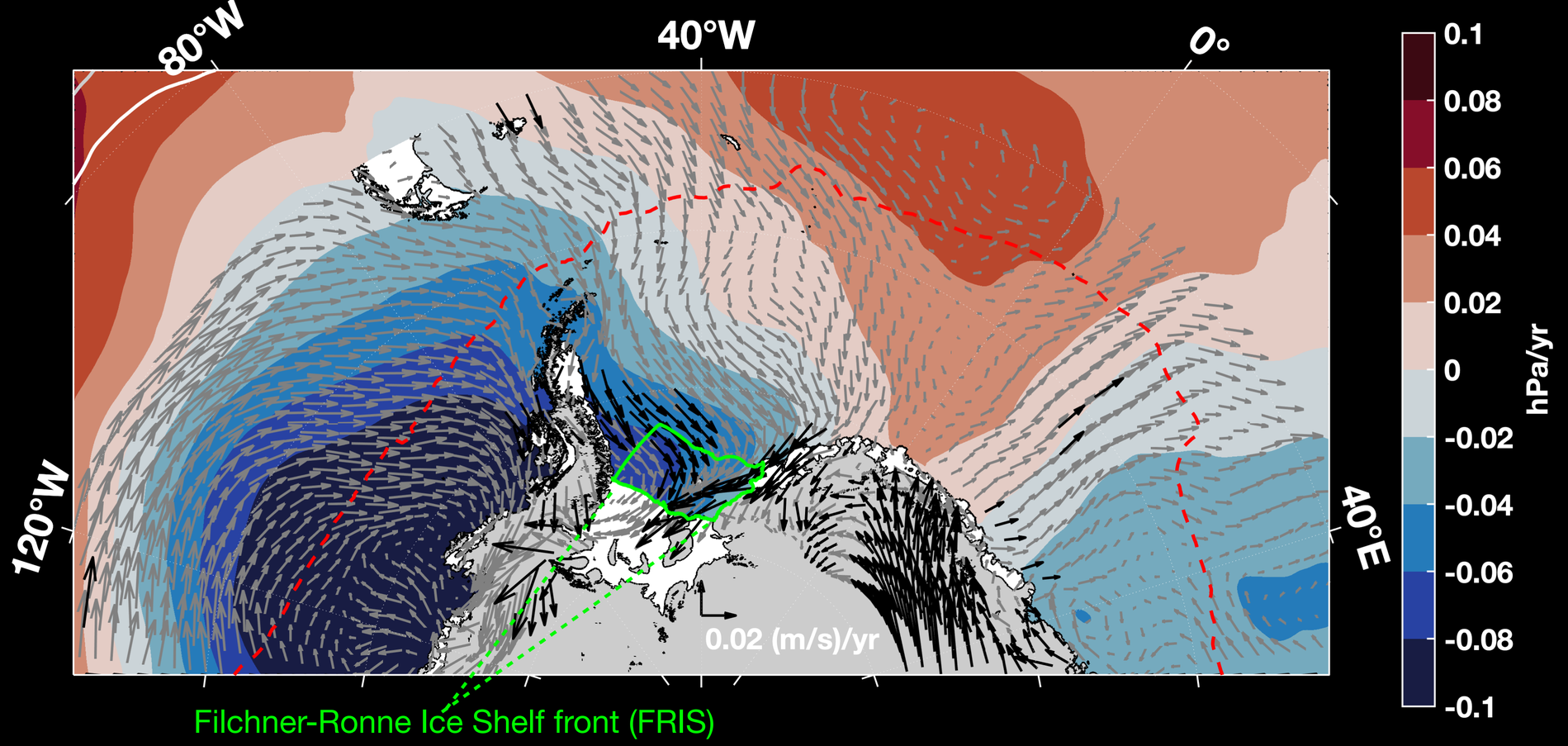

Reanalysis wind vector and mean sea level pressure trend between 1992 and 2020

- ➡ Wide spread **Amundsen Sea Low deepening** since 1990
- ➡ Resultant **northernly wind trend** in southern Weddell Sea continental shelf

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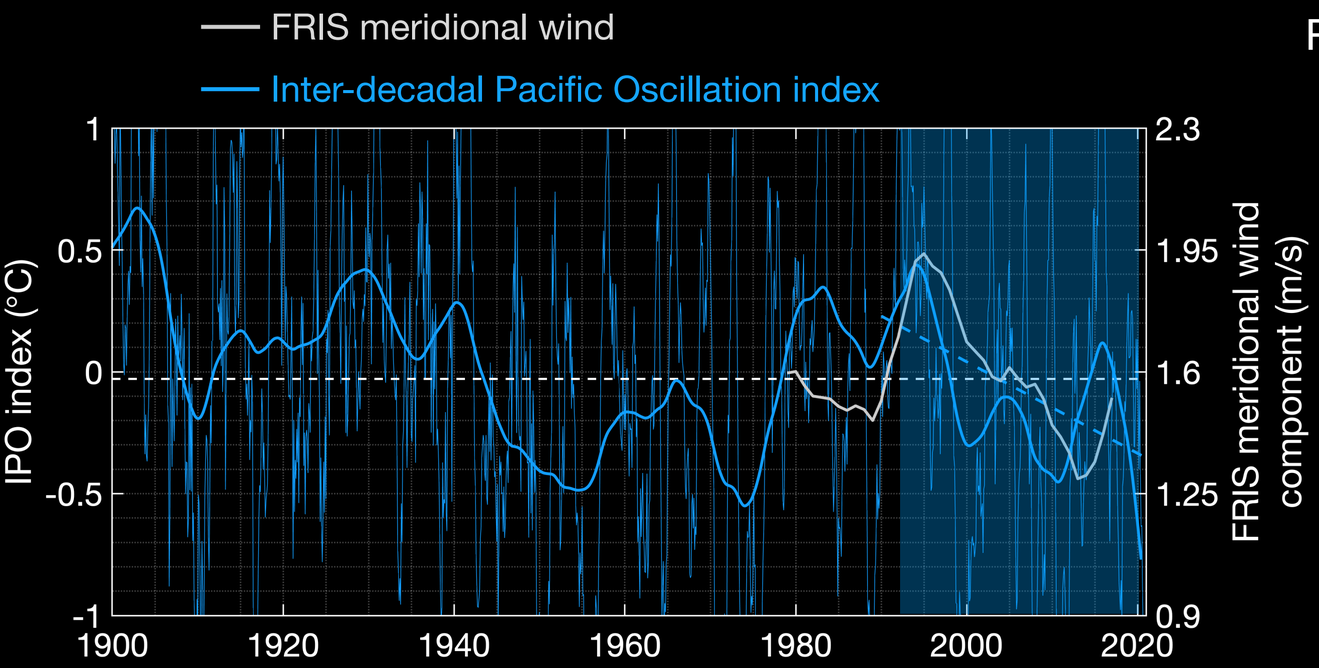

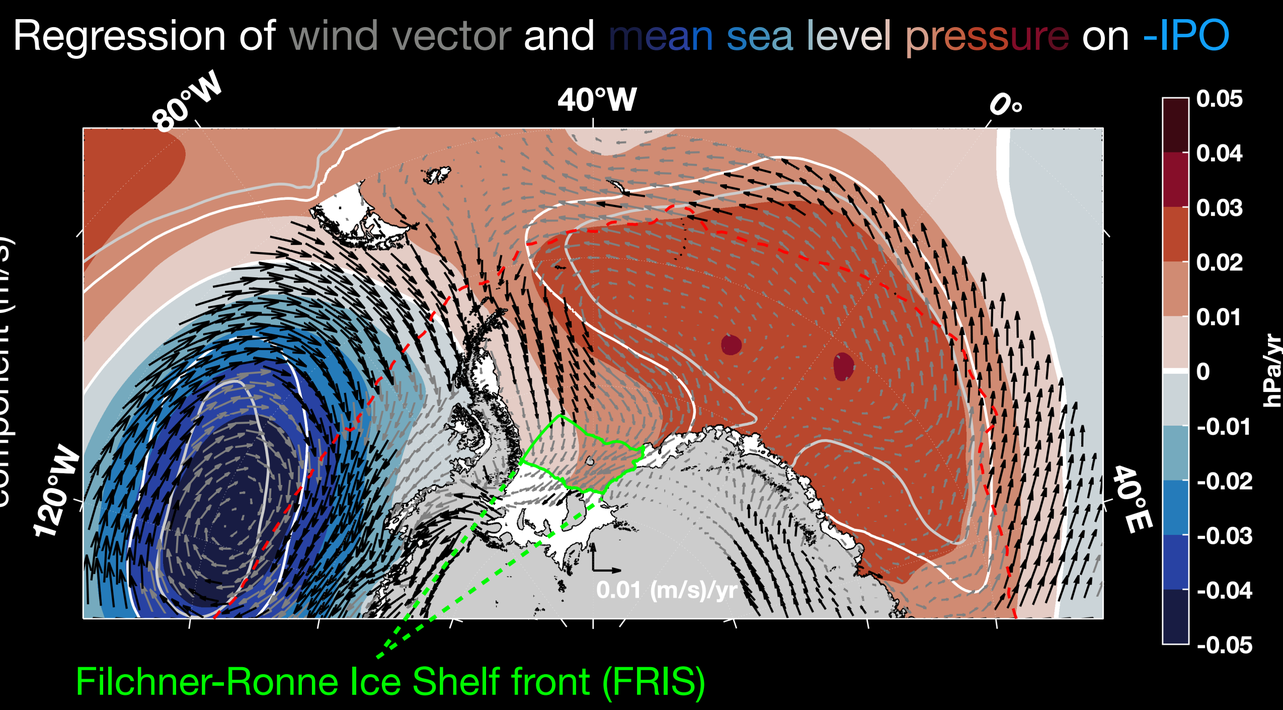

- ***High correlation*** between **IPO** and **FRIS wind**
- Regression of atmospheric fields on **-IPO** ***resembles*** the reanalysis trend

  ➡A **new teleconnection** between ***tropical SST*** variability and ***southern Weddell sea ice/WSBW*** on multi-decadal scale?

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Thanks for listening
Questions are welcome!

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