

**Insight into glacier evolution, proglacial  
lake dynamics, and paleoclimate from Lago  
Argentino, Patagonia**

Maximillian Van Wyk de Vries, Emi Ito, Mark Shapley,  
Guido Brignone, Matias Romero, Andrew Wickert



# Lakes

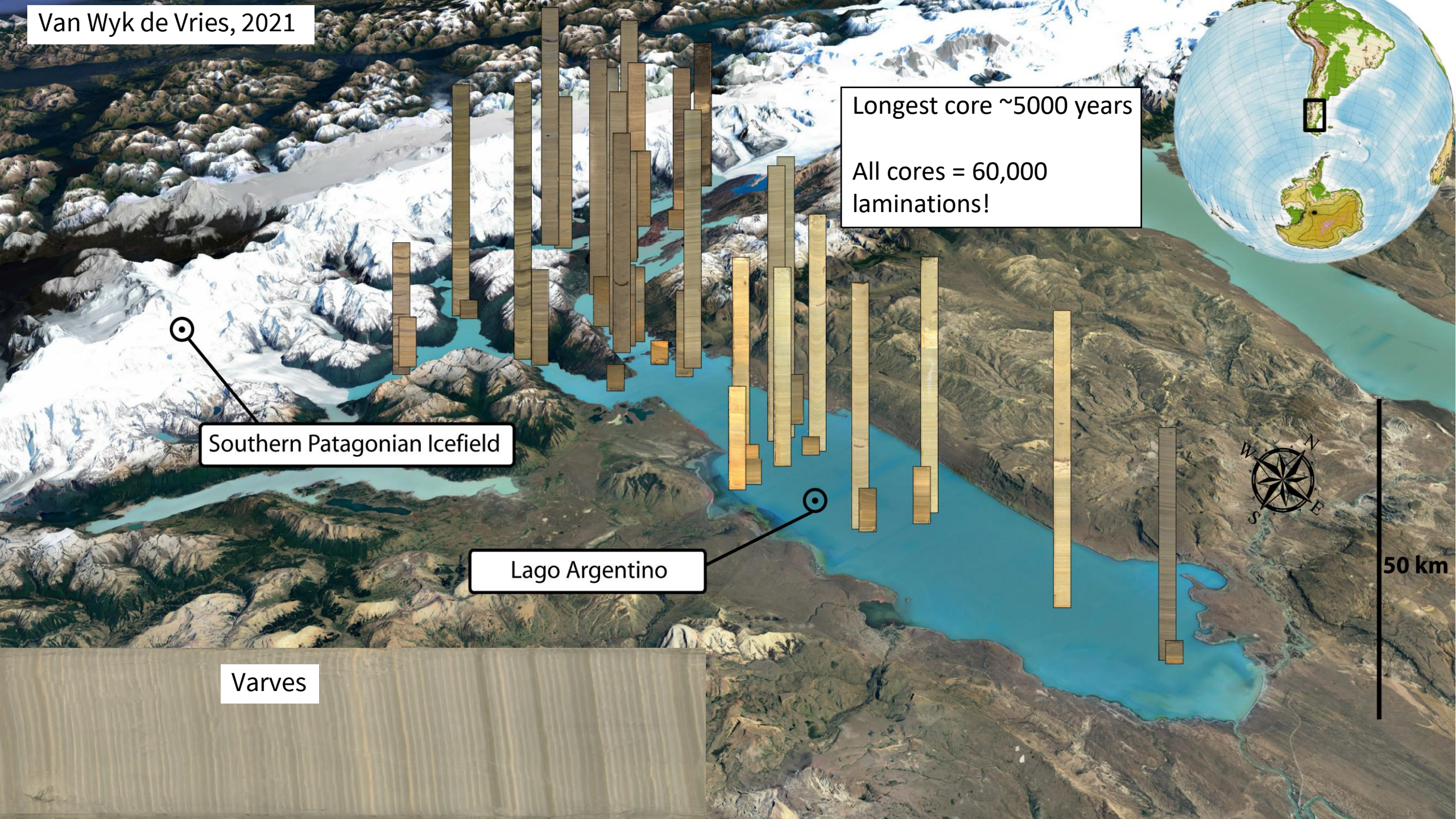
No lake: little sediment conserved in the system



Lake: most sediment conserved in the system  
=information about the system preserved!







Longest core ~5000 years

All cores = 60,000 laminations!

Southern Patagonian Icefield

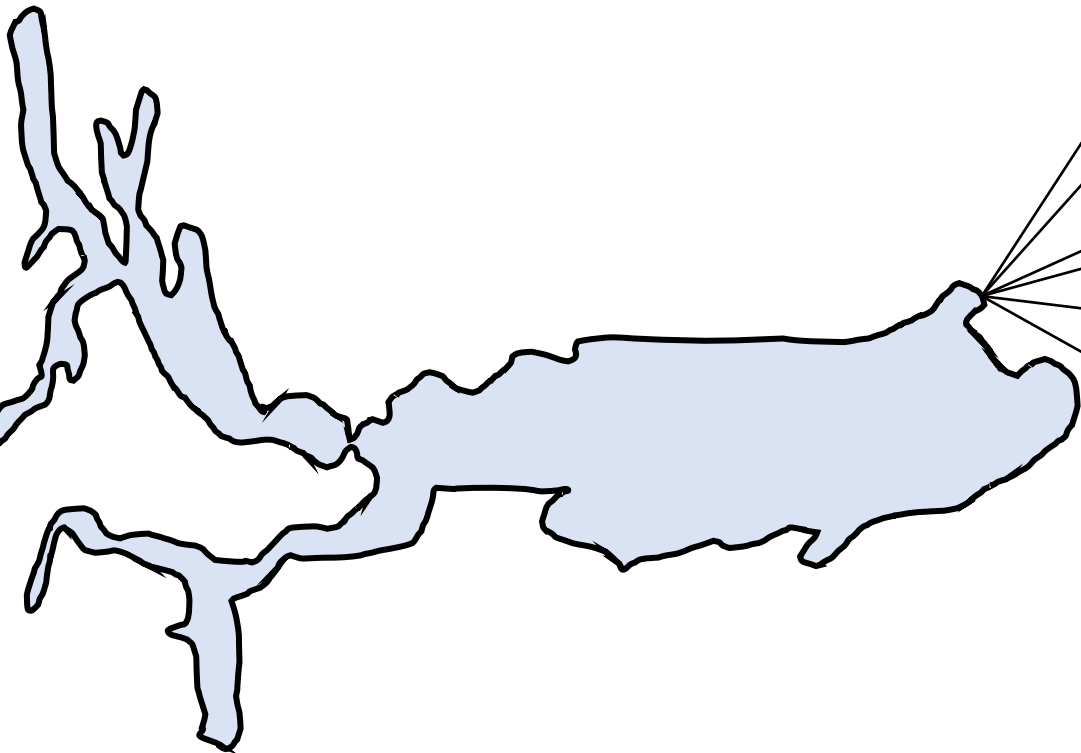
Lago Argentino

Varves

50 km



# What did we do?



- 1. Automated varve counting
- 2. Dynamics of large proglacial lakes
- 3. Location and timing of glacier advance
- 4. Paleoclimate potential of varves
- 5. Eruptive potential of Southern Patagonian volcanoes
- 6. Spectral analysis and Southern Annular mode periodicity



## Semi-automated counting of complex varves through image autocorrelation

Published online by Cambridge University Press: 14 April 2021

Maximillian Van Wyk de Vries , Emi Ito, Mark Shapley and Guido Brignone

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Figures

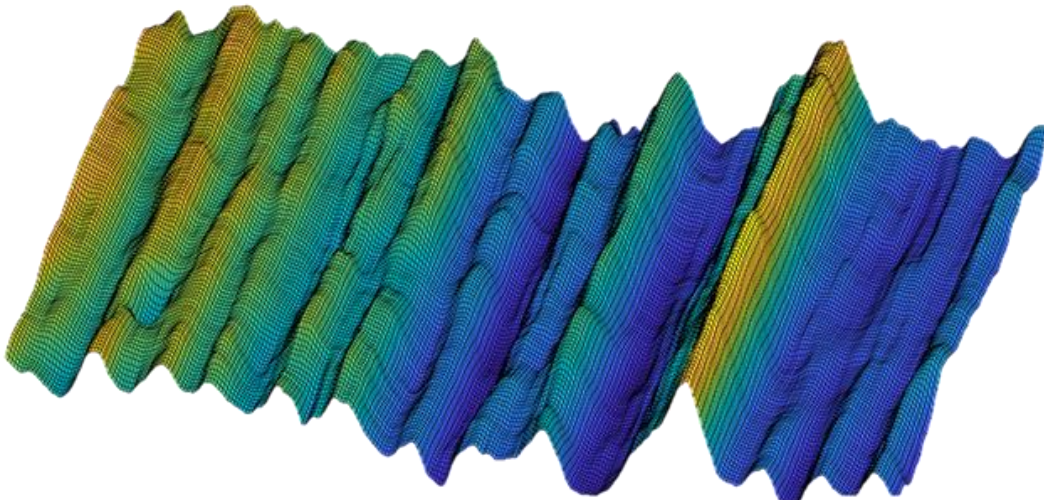
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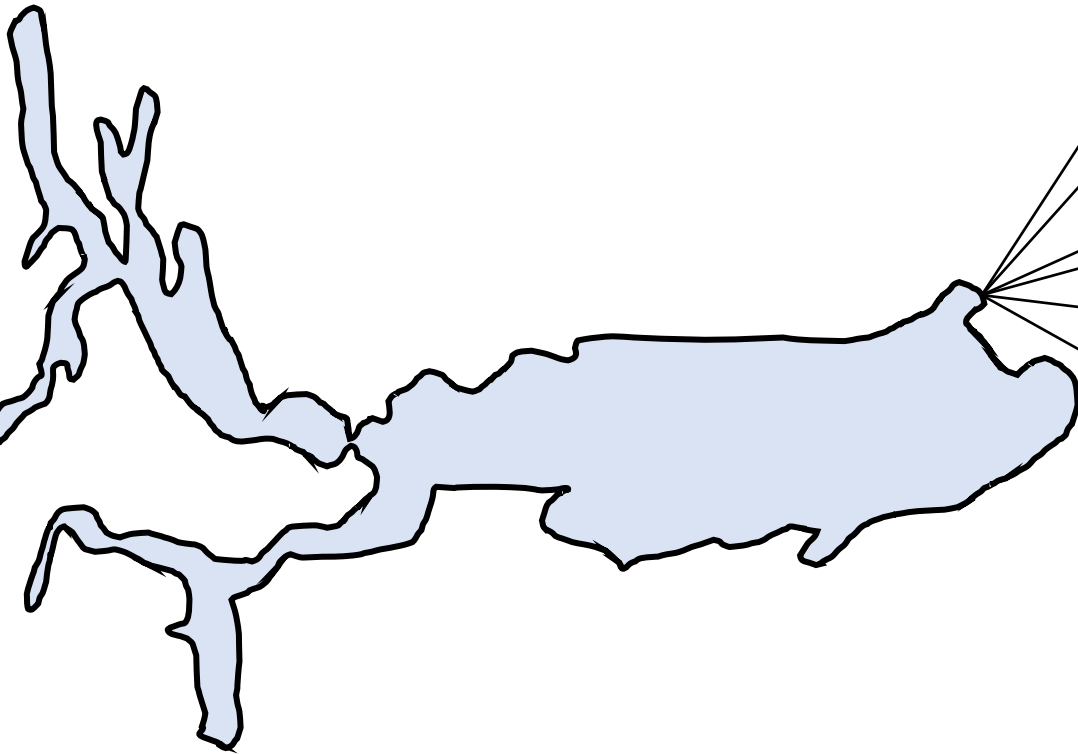
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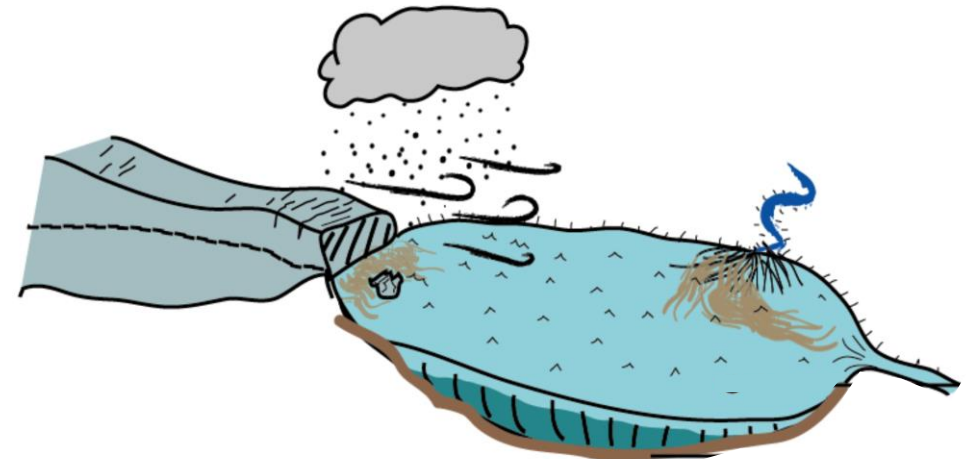
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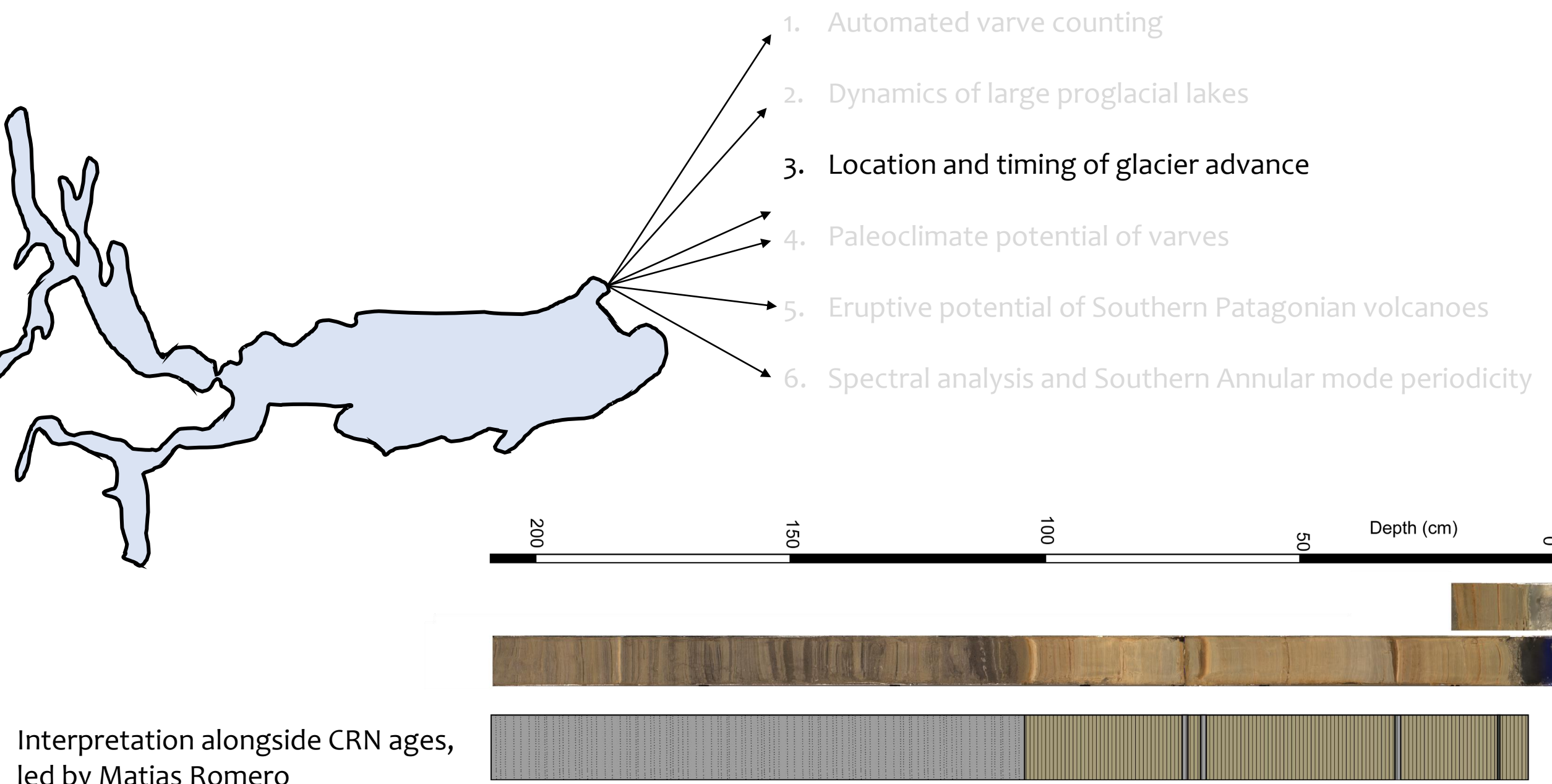
## JGR Earth Surface

Research Article | [Open Access](#) |

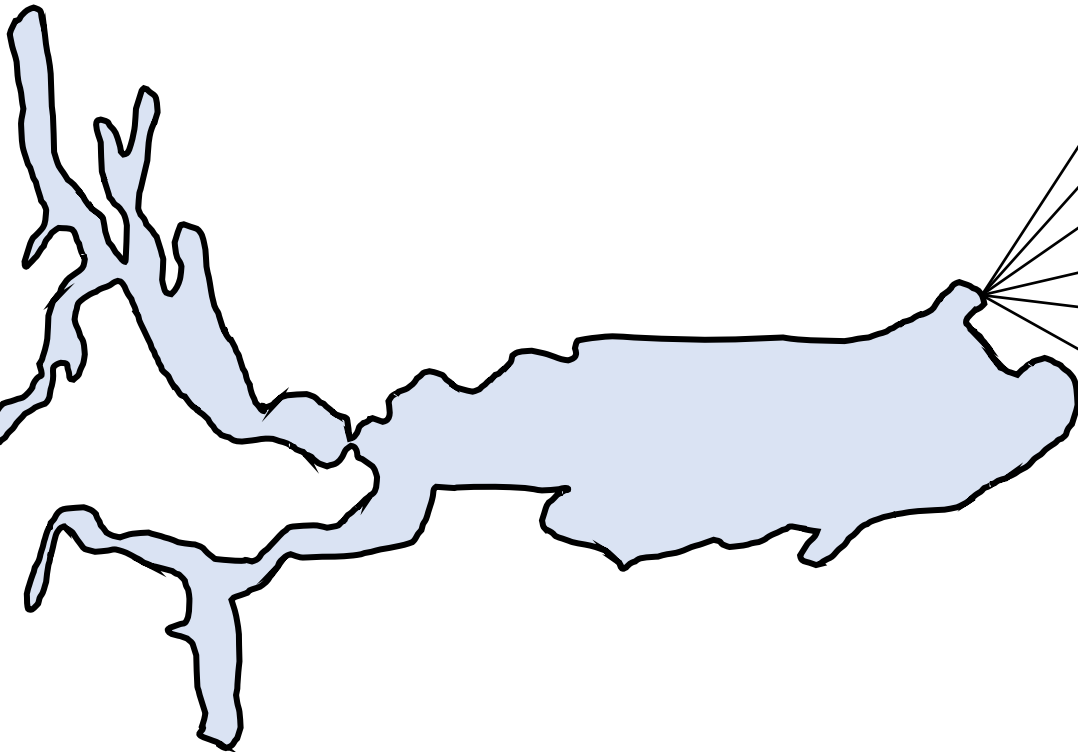
### Physical Limnology and Sediment Dynamics of Lago Argentino, the World's Largest Ice-Contact Lake

Maximillian Van Wyk de Vries Emi Ito, Mark Shapley, Guido Brignone, Matias Romero, Andrew D. Wickert, Louis H. Miller, Kelly R. MacGregor ... [See fewer authors](#) ^

What did we do?



## What did we do?



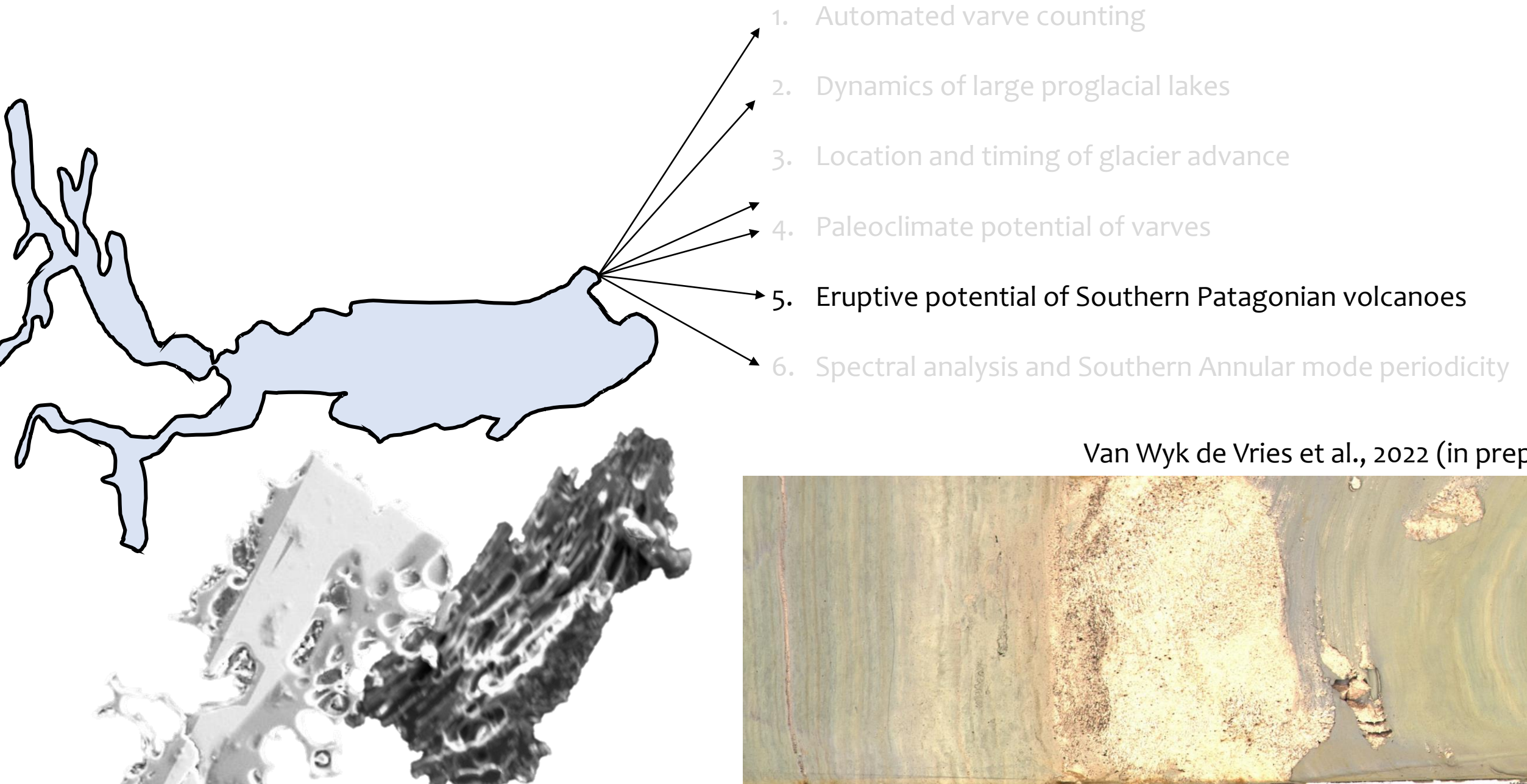
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## Paleoclimatic value of sediment pixel intensity time series from Lago Argentino, Patagonia

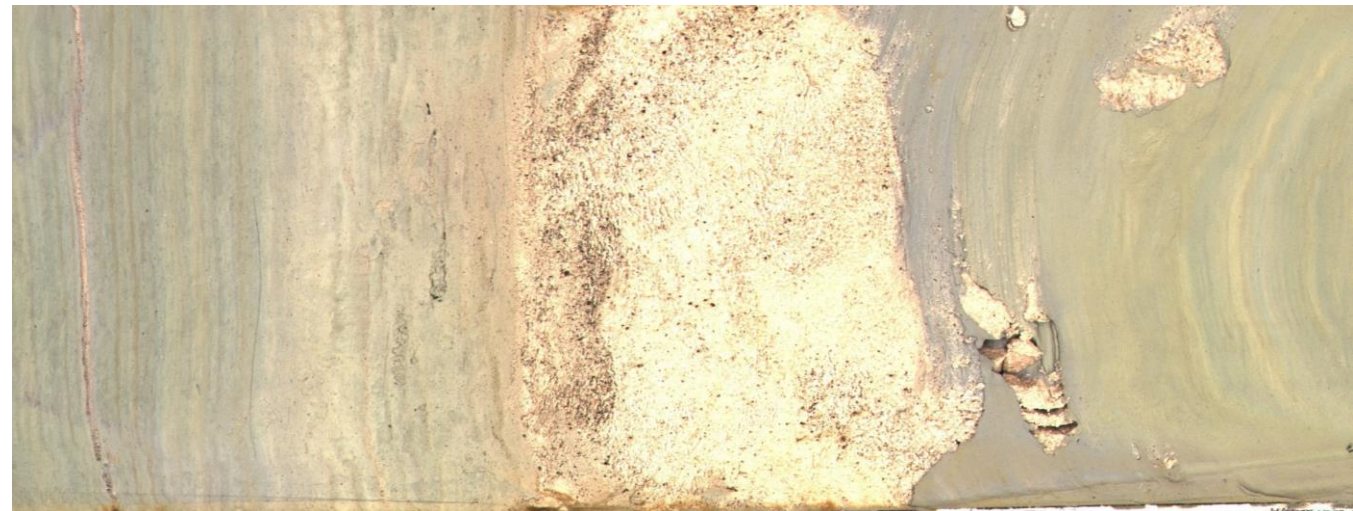
Maximillian Van Wyk de Vries<sup>1,2</sup>, Emi Ito<sup>1,3</sup>, Mark Shapley<sup>3</sup>, Matias Romero<sup>4,5</sup>, and Guido Brignone<sup>4</sup>



## What did we do?

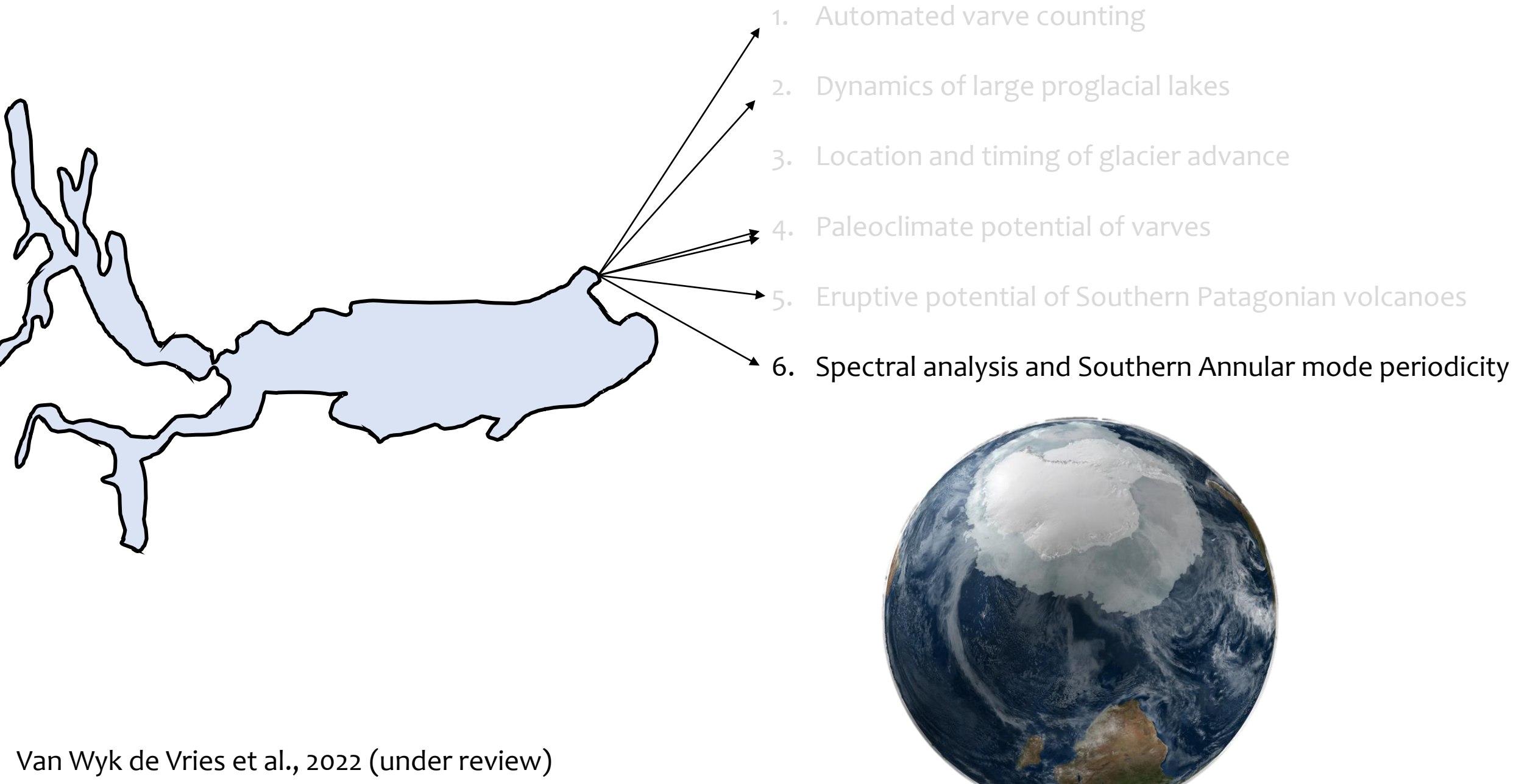


Van Wyk de Vries et al., 2022 (in prep)





## What did we do?



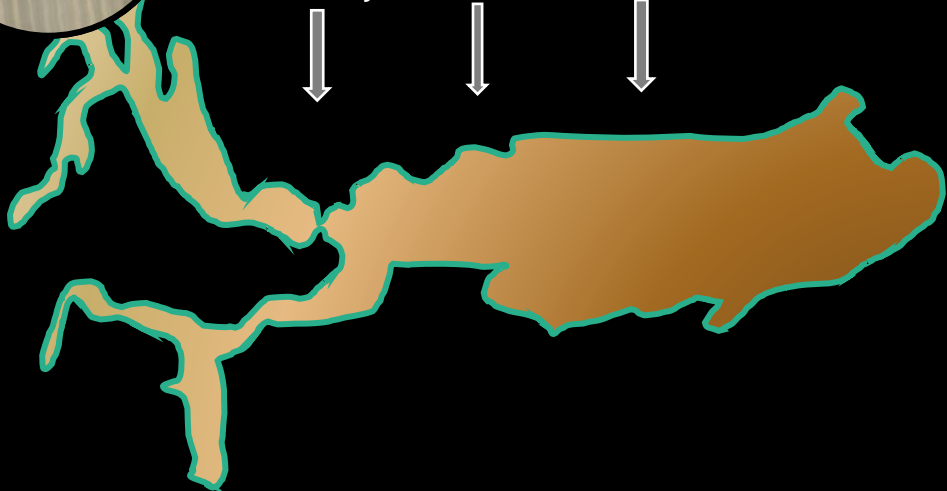
Lakes

Significant periodicities in  
sedimentation rate and reflectance

$200 \pm 20$  yr

$150 \pm 16$  yr

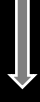
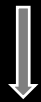
$85 \pm 9$  yr



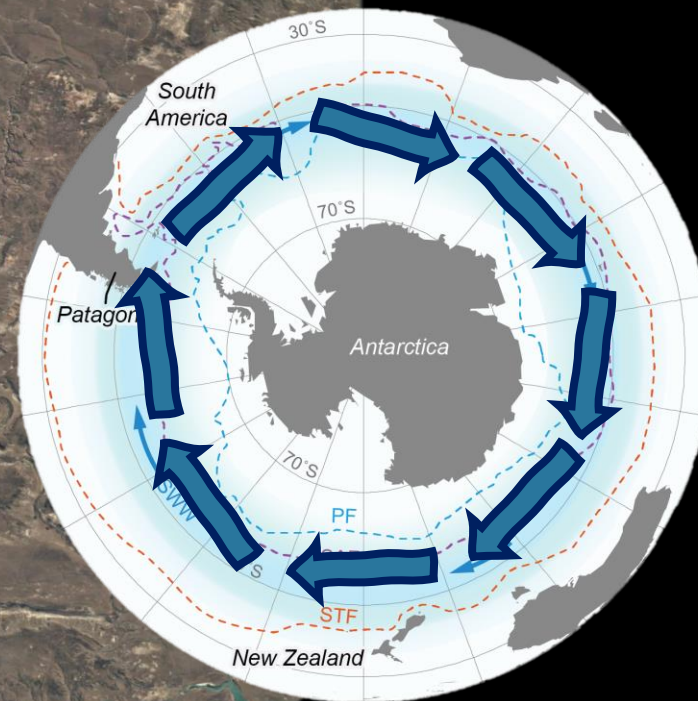
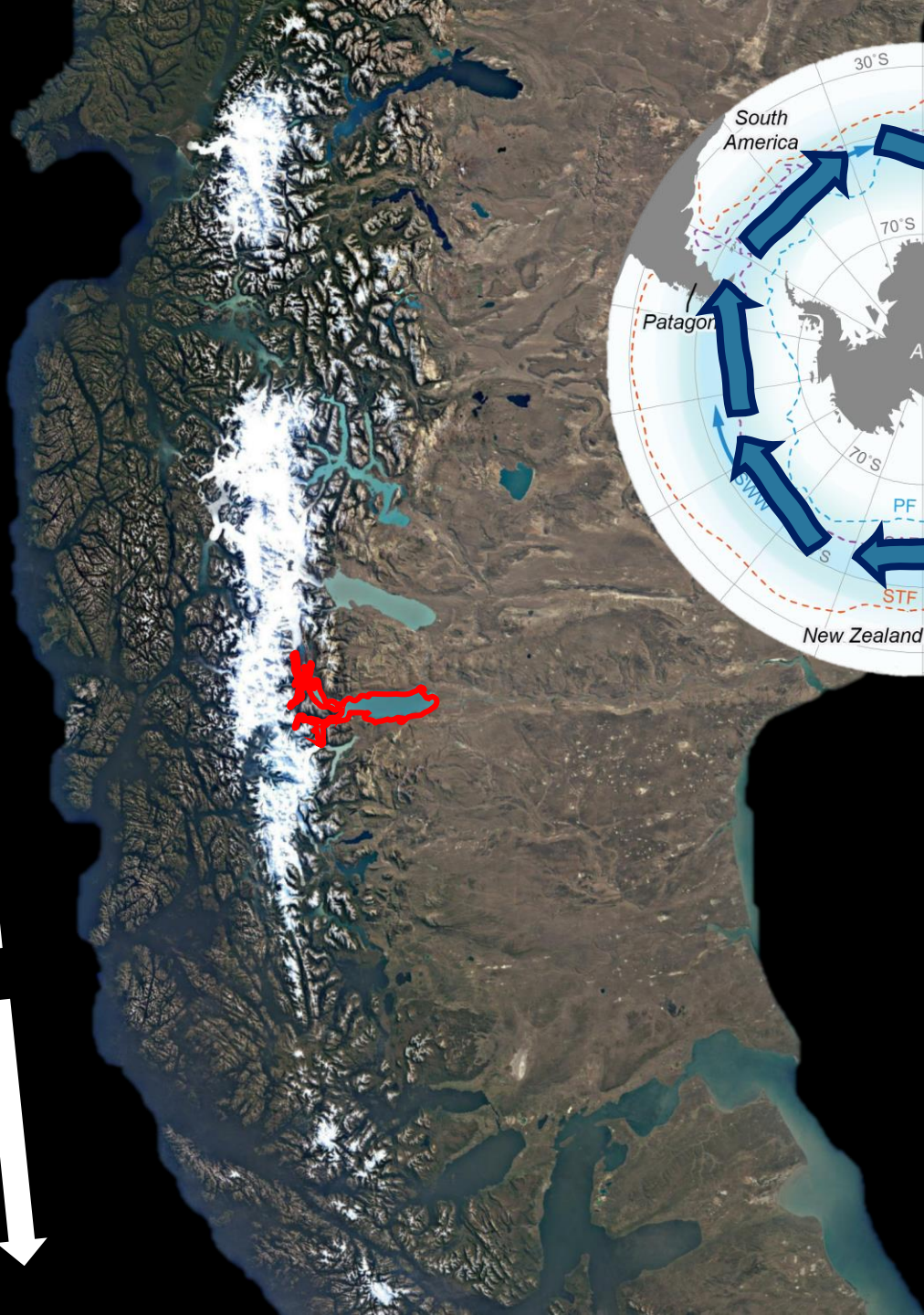
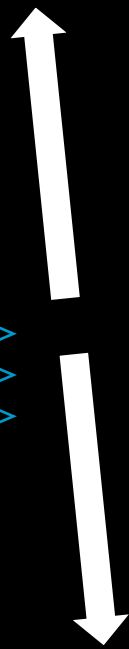
$200 \pm 20$  yr

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$85 \pm 9$  yr



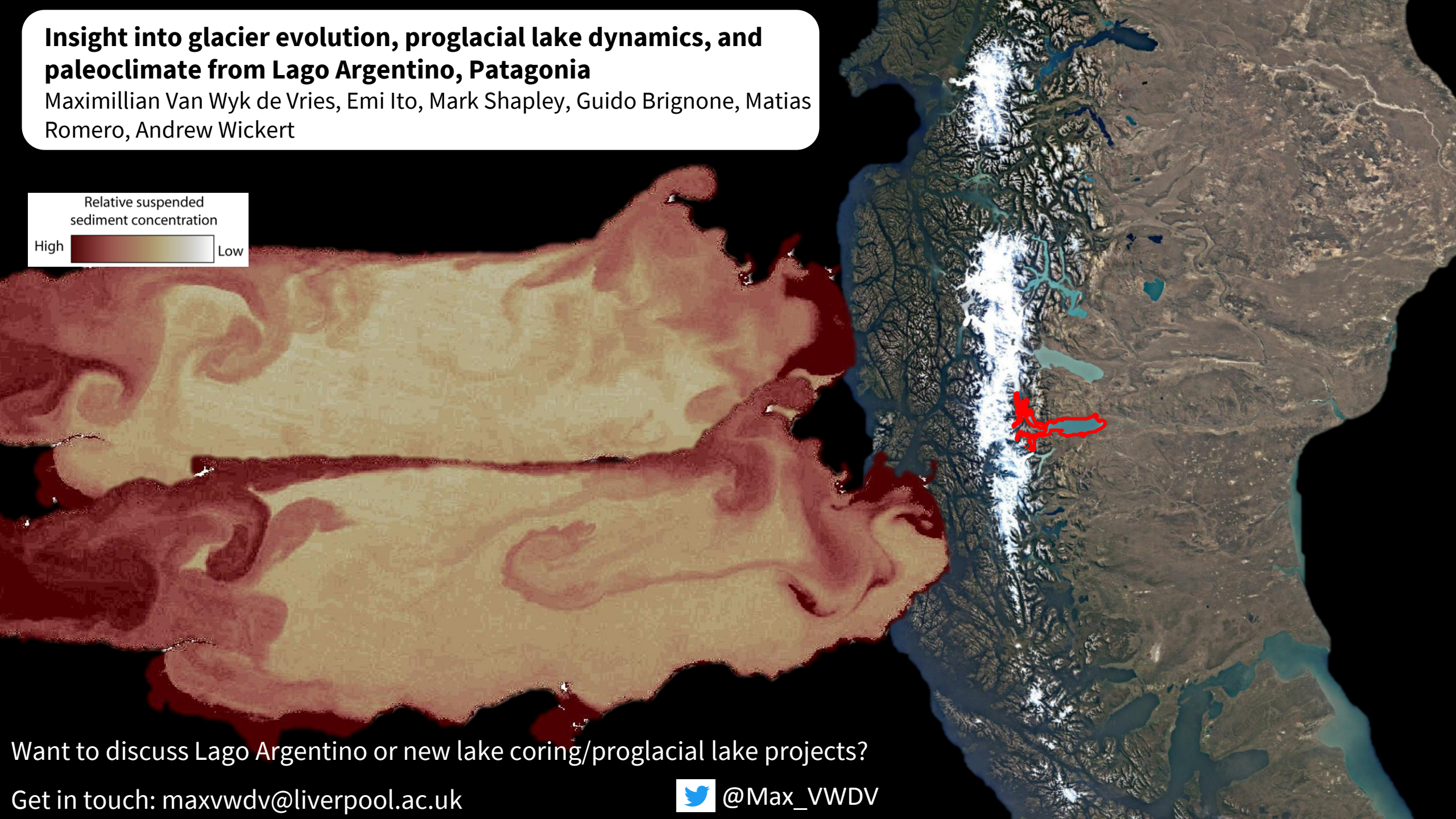
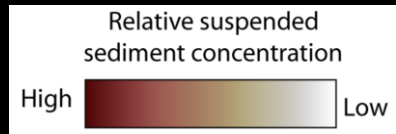
“Southern Westerly Winds”





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Want to discuss Lago Argentino or new lake coring/proglacial lake projects?

Get in touch: [maxvwdv@liverpool.ac.uk](mailto:maxvwdv@liverpool.ac.uk)



@Max\_VWDV