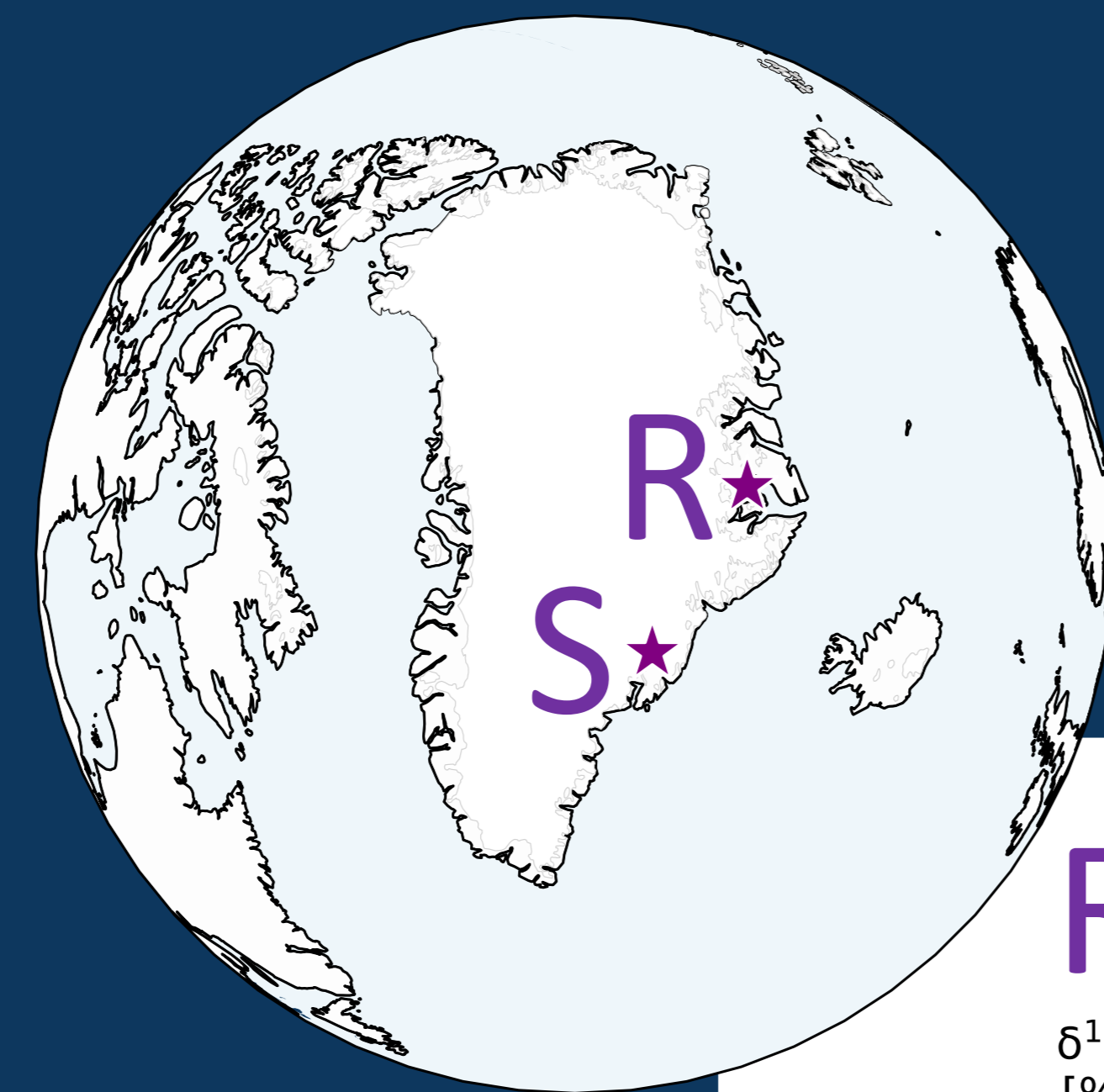


# Imprint of atmospheric rivers on stable-oxygen isotope ratio in Greenland ice cores: an assessment

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# Atmospheric rivers affect the stable oxygen isotope ratios $\delta^{18}\text{O}$ in Greenland ice cores up to 5‰



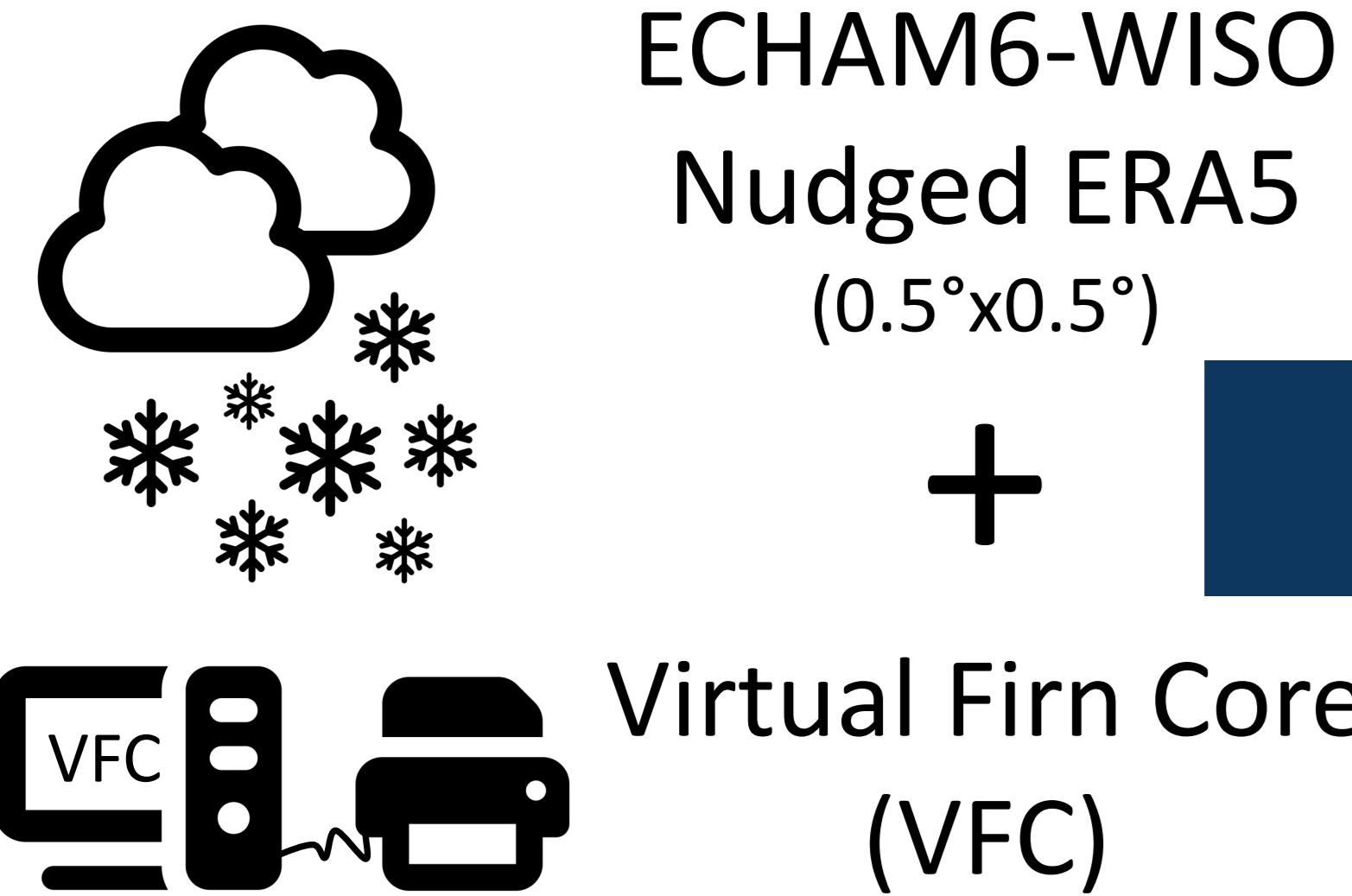
## Motivation

Atmospheric rivers (ARs) drive poleward moisture transport. Do they produce a distinct isotopic signature in  $\delta^{18}\text{O}$  in ice cores?

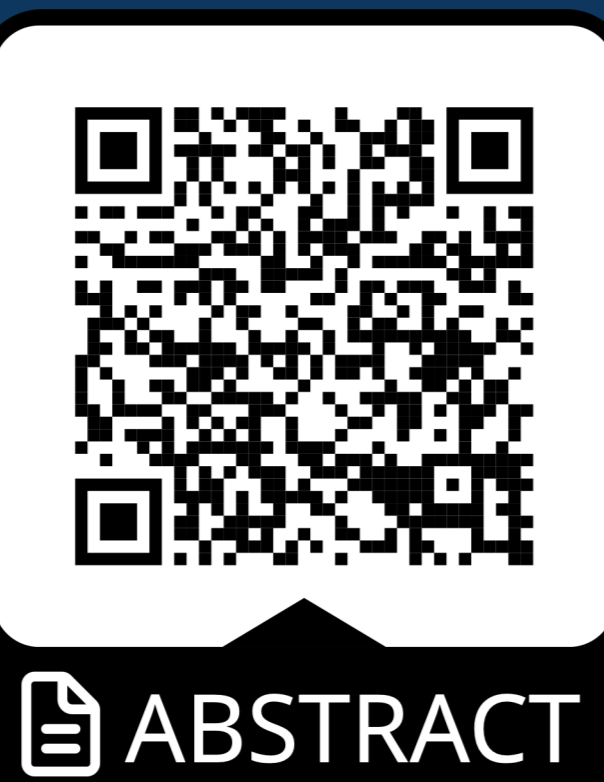
RECAP		SED	
AR occurrence	AR precipitation fraction	AR occurrence	AR precipitation fraction
~2,90%	~6%	~3%	~14,50%

Data from ECAD : stations 8020/8021 (RECAP), station 299 (SED)

## Data & Tracking method

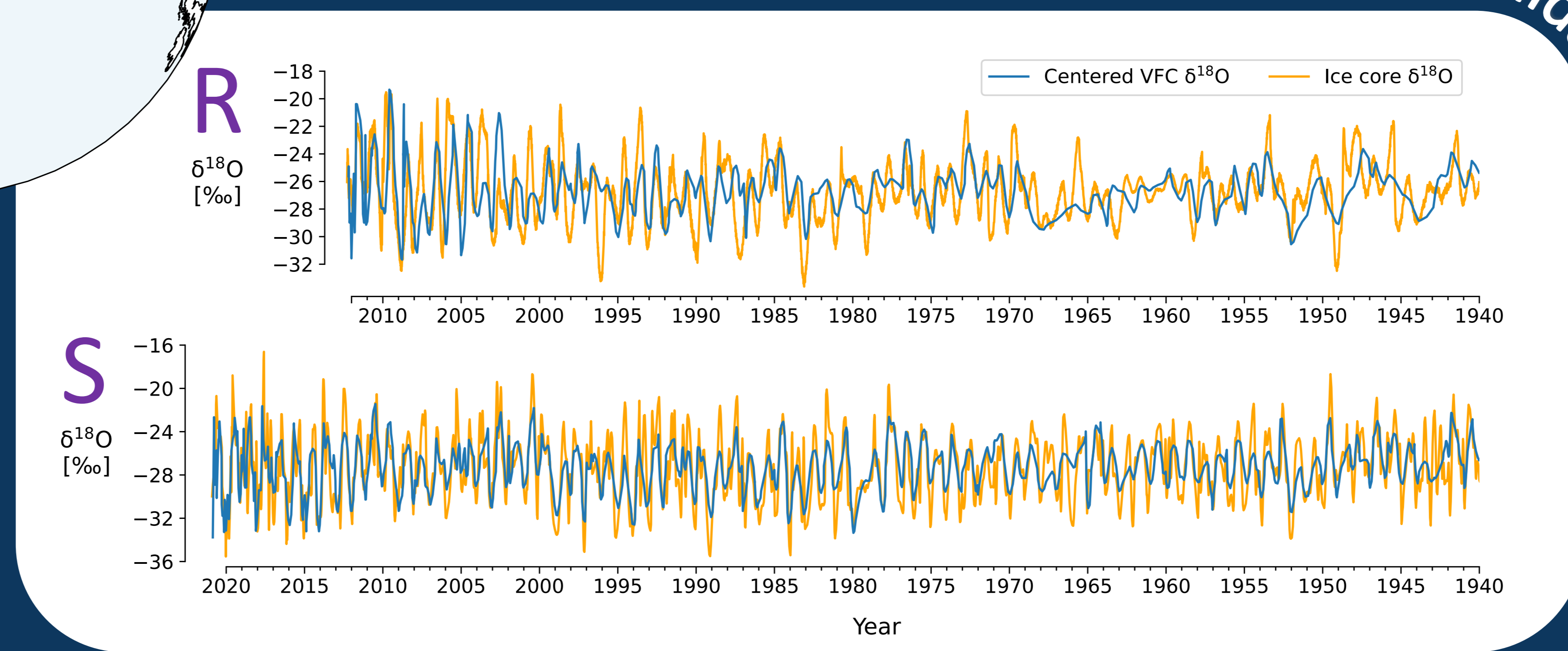


- ECHAM6-WISO nudged ERA5 1940 – 2025 (Cauquoin and Werner, EGU26-15201)
- VFC (Leroy-Dos Santos et al, 2023)
- Atmospheric river tracking method (Wille et al., 2025)
- $\delta^{18}\text{O}$  from RECAP (Vasileios et al., 2024)
- $\delta^{18}\text{O}$  from SED (Hamamoto et al., 2025)
- Setting precipitation off during ARs to quantify in the VFC the change in the  $\delta^{18}\text{O}$

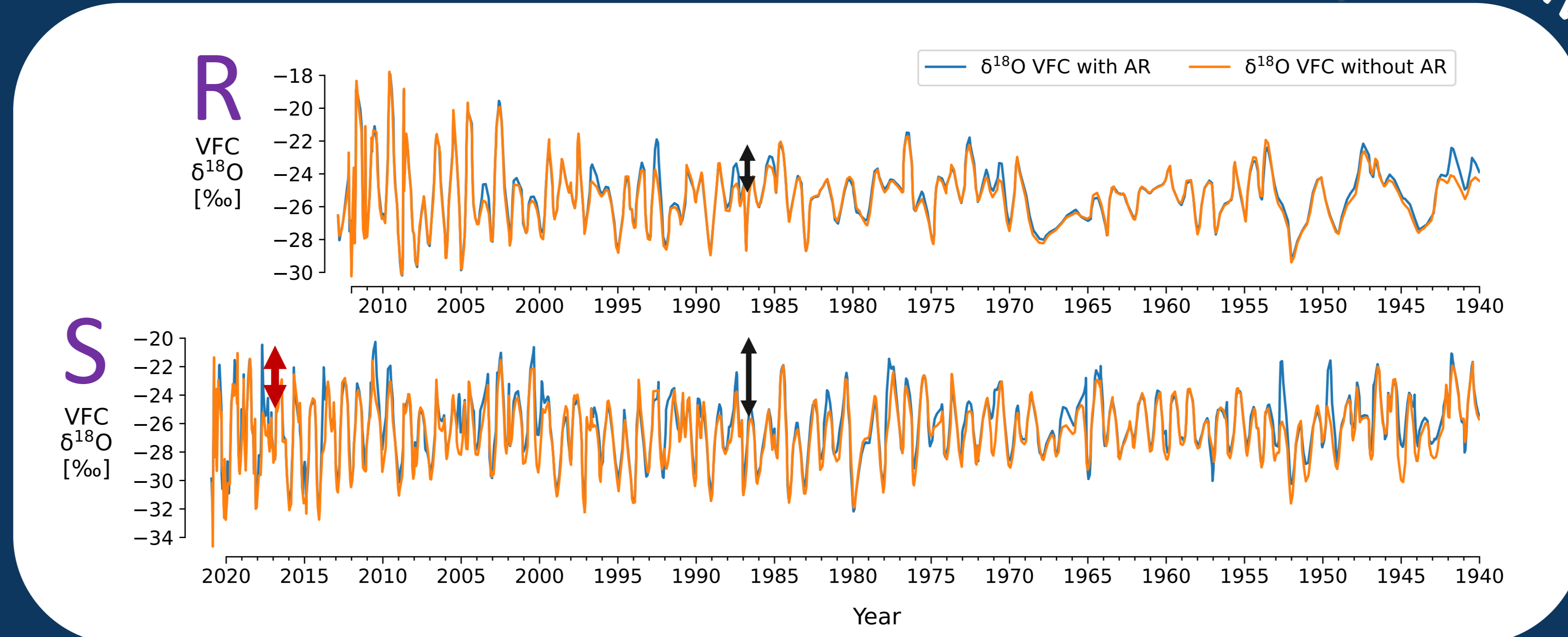


ABSTRACT

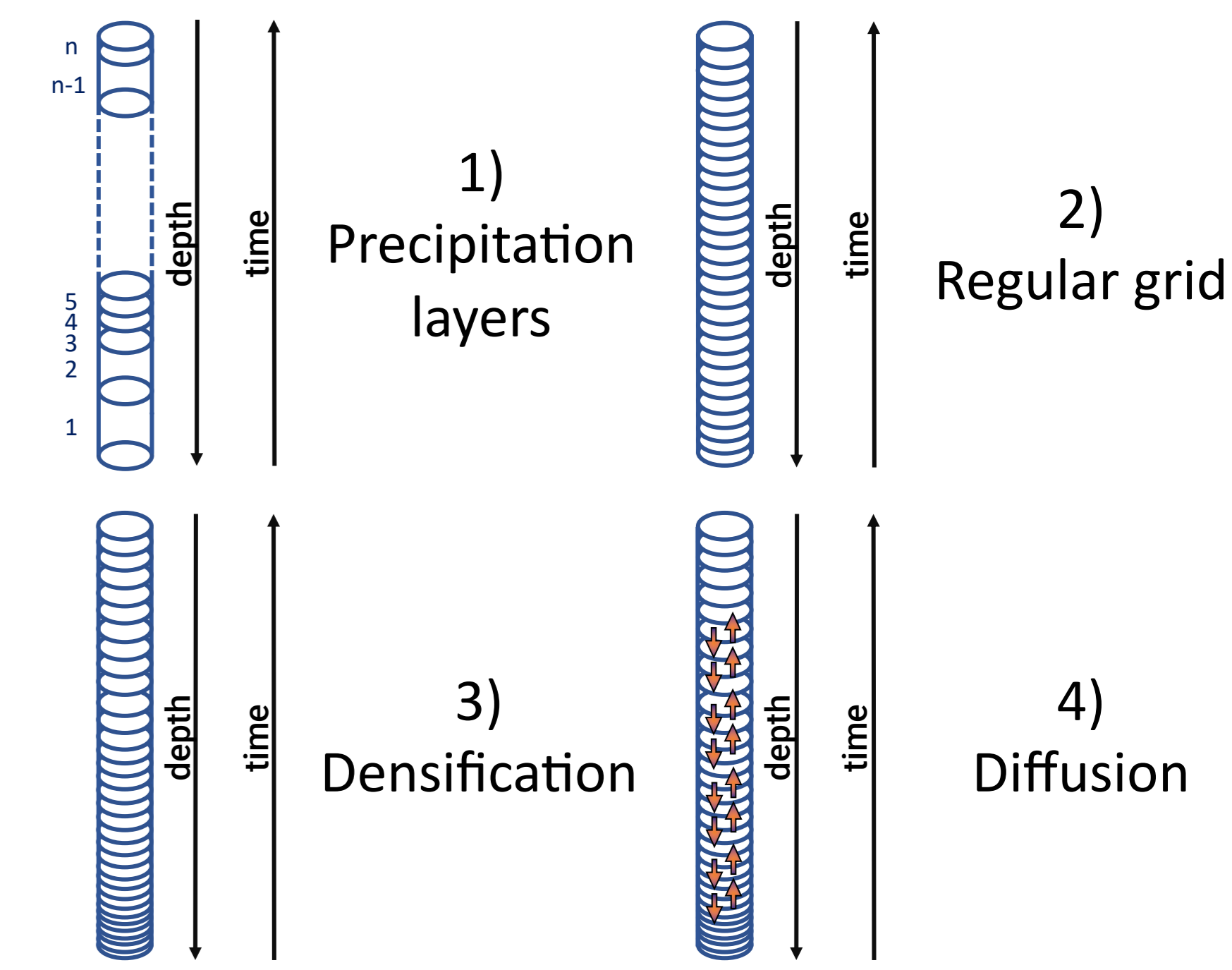
## Validation



## Atmospheric rivers effect



## Virtual Firn Core (VFC)



## Atmospheric rivers effect on $\delta^{18}\text{O}$

