The GreenDrill Project

Exploring the Basal Zone as an archive for Greenland Ice Sheet Vulnerability

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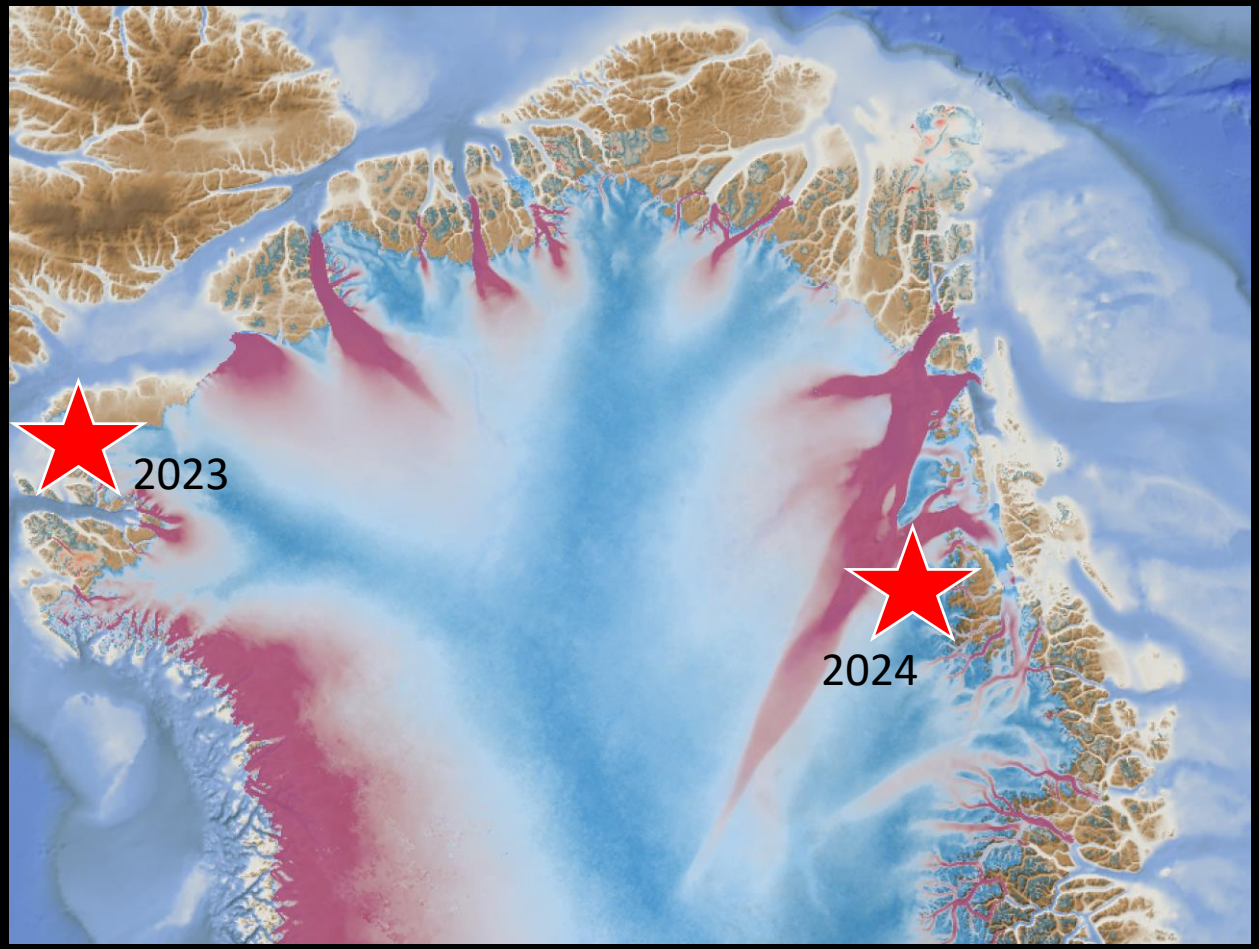
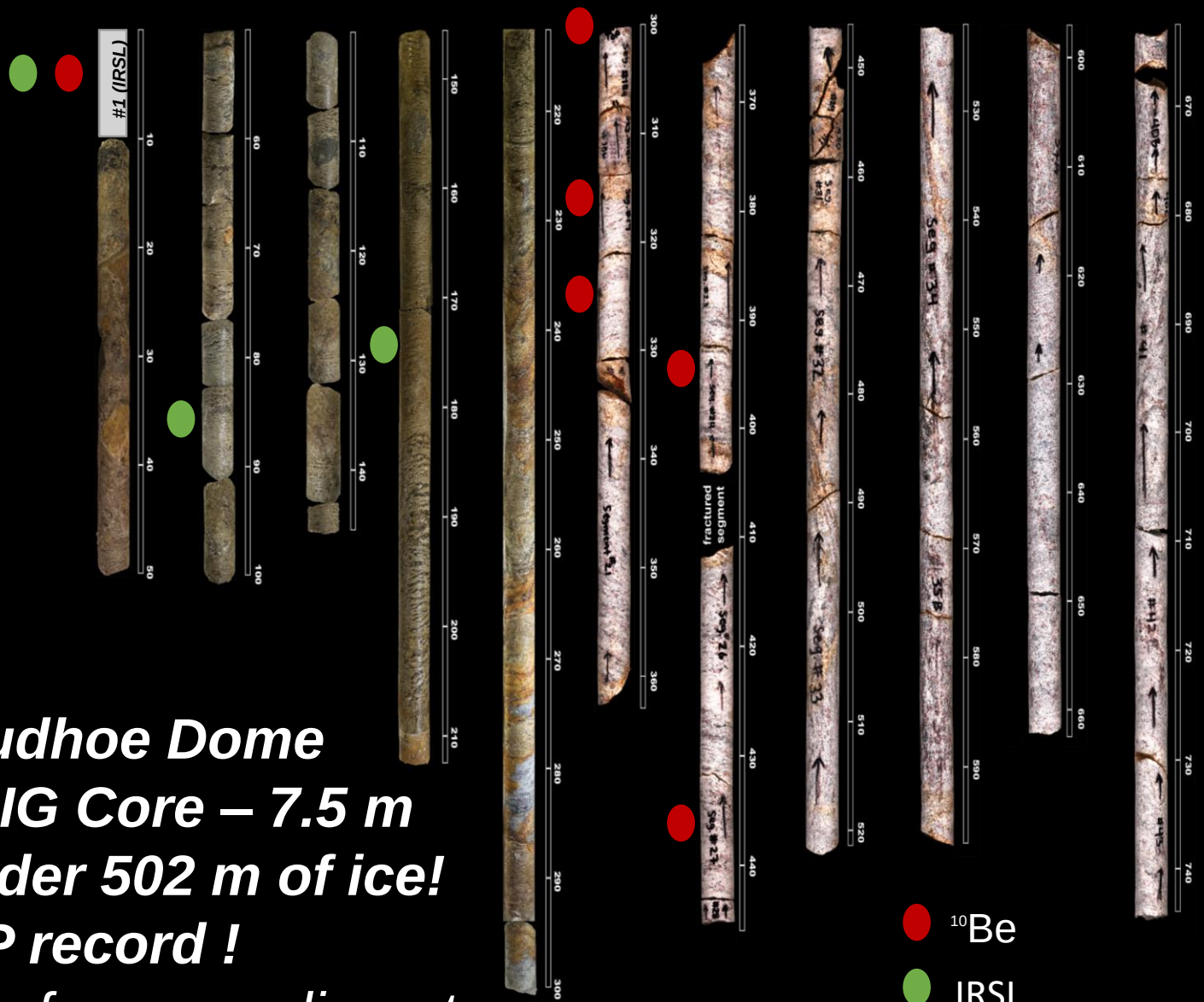
Geochronology, geophysical surveys, ice drilling, ice-sheet modeling, sea-level modeling, education & outreach



NSF IDP



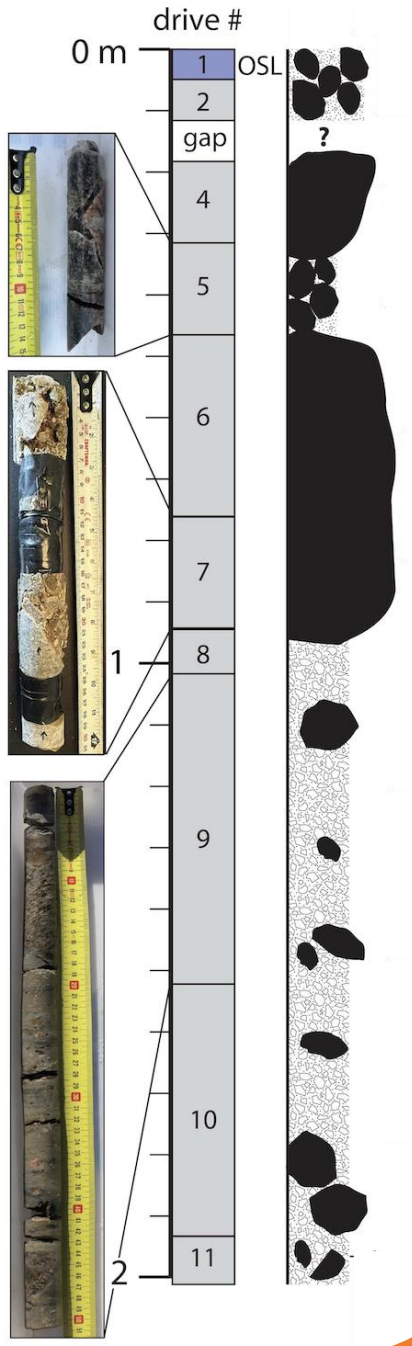
Prudhoe Dome
ASIG Core – 7.5 m
Under 502 m of ice!
IDP record !
3 m frozen sediment
4.5 m bedrock

Winkie 2023
Prudhoe:
Under 96 m:
2.0 m
Sediment

Winkie 2024
NEGIS (NE)

Under 50m ice: 0.8 m sed & 5 m rock

Under 20m ice:
6.3 m rock



Results/Highlights to date/go IDP team!

1. ASIG sediments buried during Holocene!
   Prudhoe Dome $\delta^{18}O$ → no glacial ice (Caleb's talk C53D-06; fri 3pm)

2. ASIG seds contain highest cosmo nuclide concentrations of any sub-GrIS sample to date → rich archive of exposure & burial history

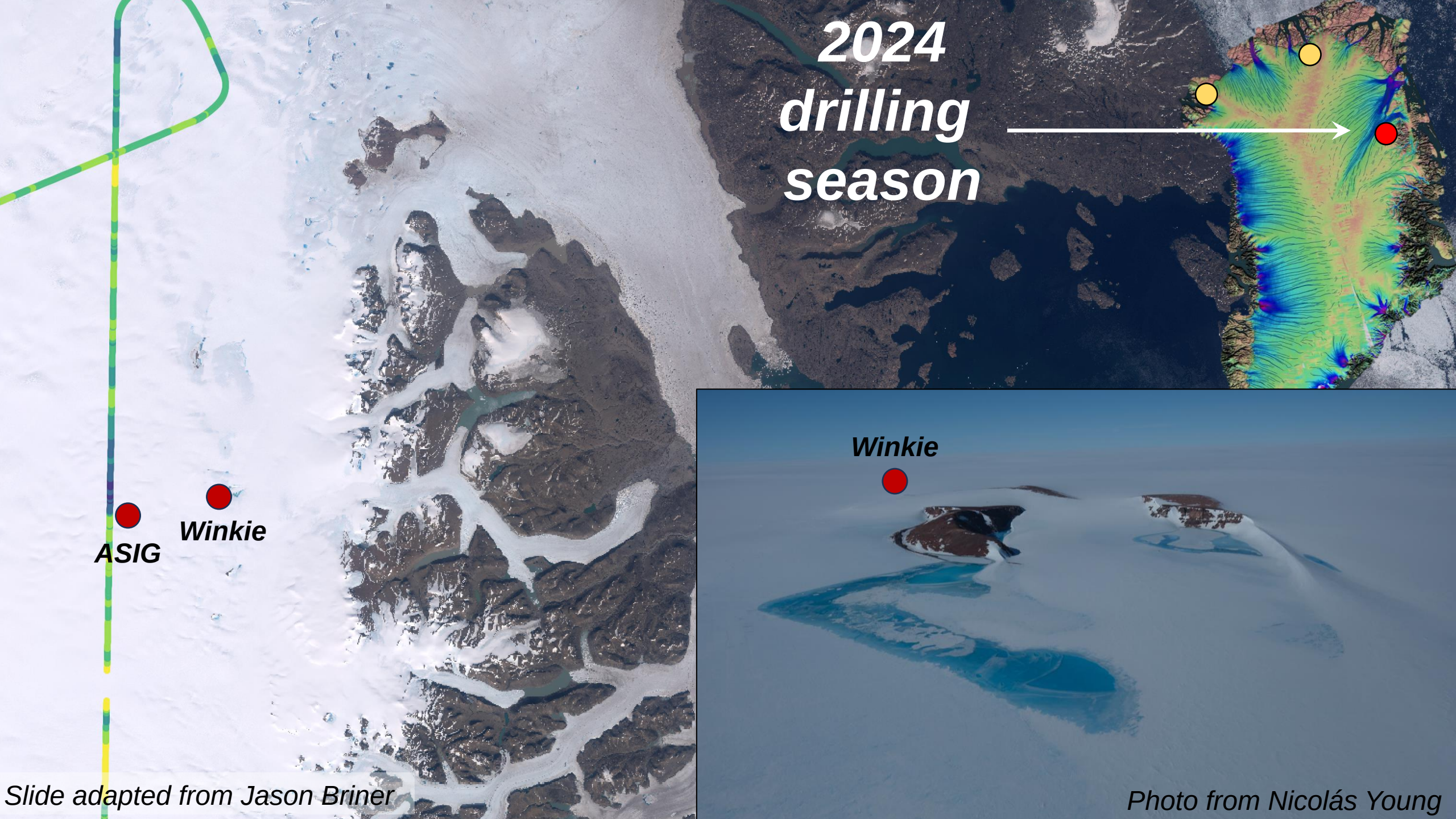
3. ^{10}Be, ^{26}Al, ^{36}Cl, ^{41}Ca, potentially ^{21}Ne at work

4. ASIG sediment-rock core ^{10}Be depth profile!

   → Allie's lightning talk C44B-06 (Thur 16-17:30)

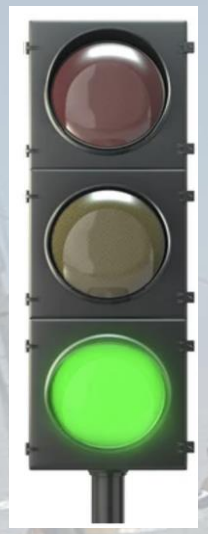
   → GreenDrill Poster C51E-0477 (Friday 8:30—12)

5. Winkie: 1 Prudhoe Dome, 2 NE (another IDP Record!)

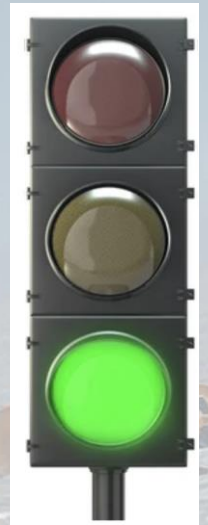

2024
drilling
season
ASIG
Winkie
Winkie
Slide adapted from Jason Briner
Photo from Nicolás Young

Where are we? What's Next?

Science



Technology



Logistics

2023

2024

- The Basal Zone holds fundamental information about ice-sheet stability, climate, ecology ...
  → Science Community & NSF & IDP work together to explore this novel archive (AFAP!)

- Borehole as natural archive: Huge potential to do science with the boreholes! We just scratch the surface, much more to come → Community workshops!

Let's Go! TOGETHER!