New $\delta^{18}O_{atm}$, $\delta^{18}O_{ice}$ and δD_{ice} profiles from deep ice of the TALDICE core

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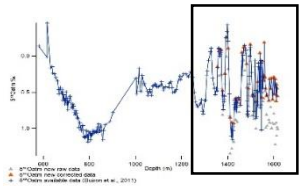
FROM THE DEEP - new HR $\delta^{18}O_{atm}$, $\delta^{18}O_{ice}$ and δD_{ice} profiles

EGU General Assembly 2020

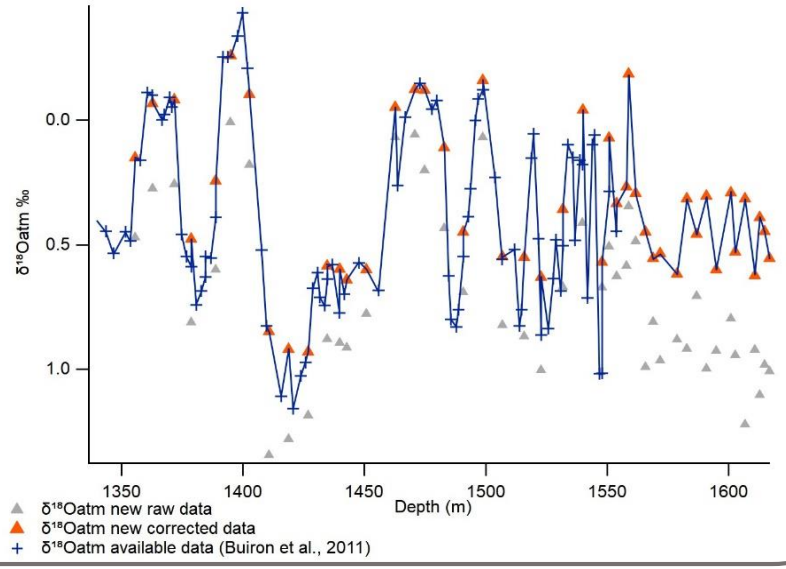
FACTS

- TALDICE is a 1620 m depth ice core from East Antarctica
- AICC 2012 official dating (Bazin et al. 2013) until 1548 m (~150 ky BP)
- Subglacial hill close to the core at 1550 m depth

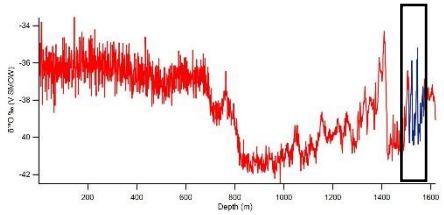
New $\delta^{18}O_{atm}$ data



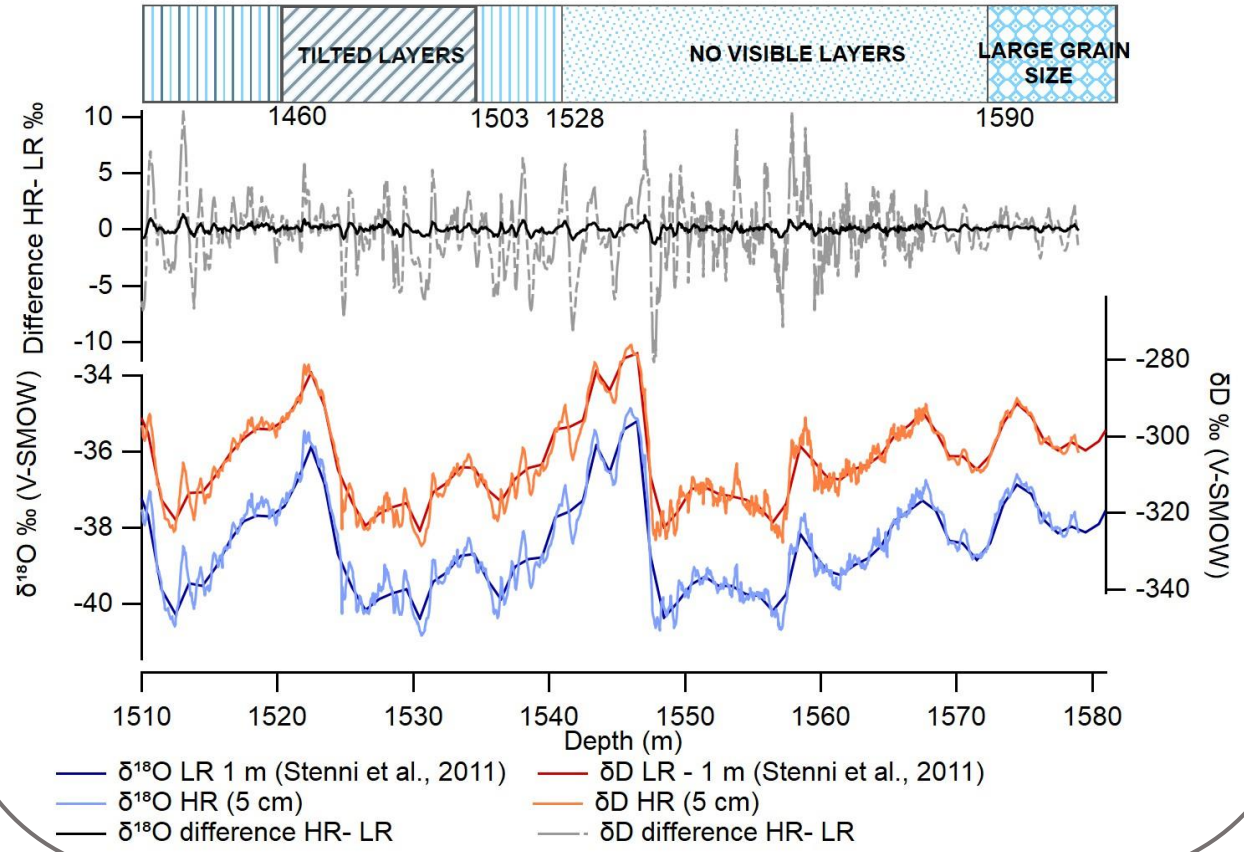
New 46 samples measured
1357 - 1617 m depth



New HR $\delta^{18}O_{ice}$ and δD data



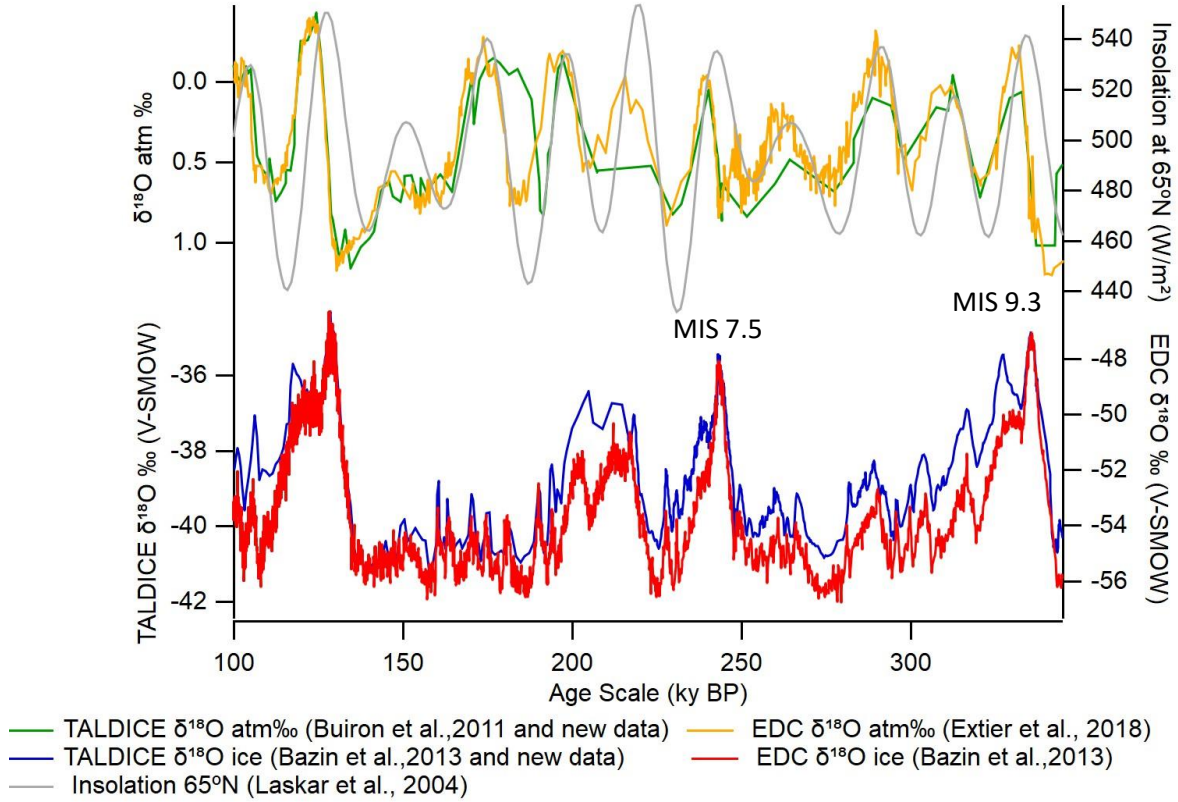
New HR resolution (5 cm)
$\delta^{18}O$ and δD measurements
1510-1579 m depth



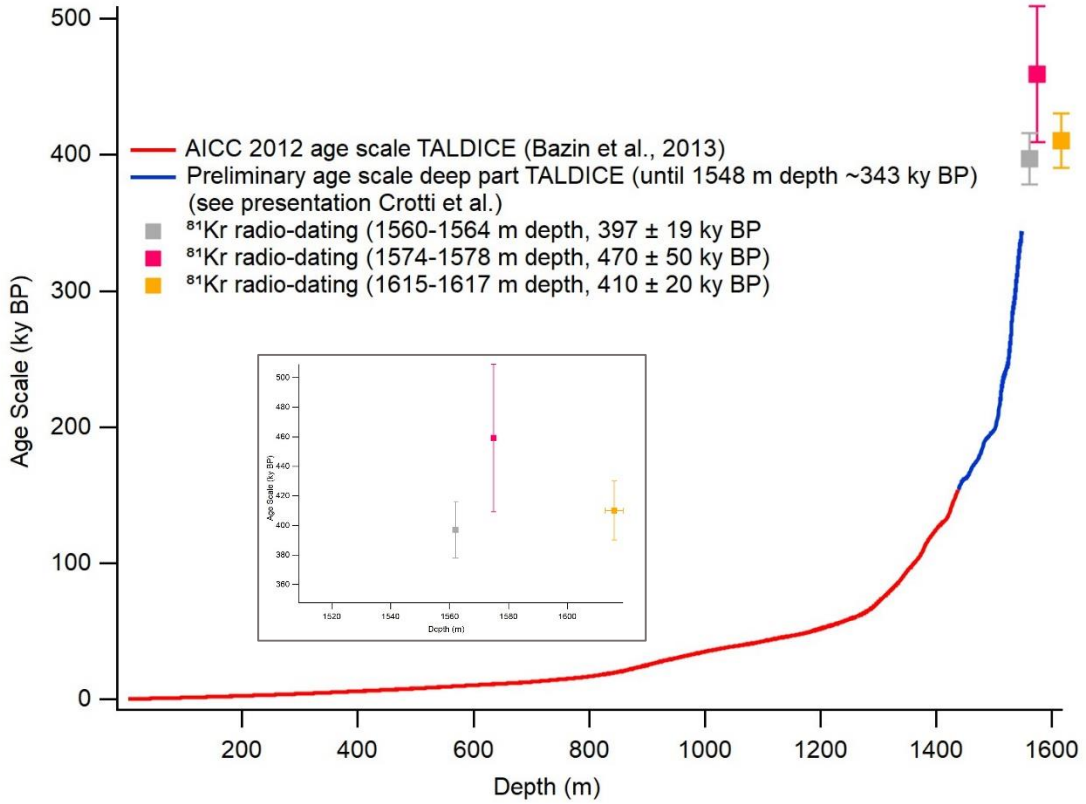
Towards a dating for TALDICE deep part?

- **Preliminary dating obtained** by the **comparison** between:

1. TALDICE **HR $\delta^{18}O$ record** (5cm) and EPICA Dome C $\delta^{18}O$ record on the AICC 2012 Age Scale (Bazin et al., 2013)
2. TALDICE new **$\delta^{18}O_{atm}$ record** with EPICA Dome C $\delta^{18}O_{atm}$ record on the AICC 2012 Age Scale (Exteir et al.,2018)



- The **preliminary dating** was obtained **until the depth of 1548 m depth ~ 343 ky BP using both $\delta^{18}O$ and $\delta 18O_{atm}$**
- **Below this depth** the **climatic signal** appears **not** being **preserved**
- **^{81}Kr radio-dating** helps in dating the core below 1548 m (for details see the presentation by Ritterbusch et al.)



Conclusions and future perspectives

CONCLUSIONS

- New $\delta^{18}O_{ice}$ and δD_{ice} high resolution data (5cm) helped in **extending back in time the climatic record until MIS 9.3** (343 ~ ky BP)
- New $\delta^{18}O_{atm}$ record seems also to be preserved up to 1548 m depth
- TALDICE core is characterized by **extreme thinning conditions between MIS 7.5 and 9.3**
- The **average resolution** is estimated equal to **1.38 ky/m** (0.069 ky/5cm) for **MIS 7.5** and **3.20 ky/m** (0.160 ky/5cm) for **MIS 9.3**
- **Below 1548 m** the **climatic record** seems **not** to be entirely **preserved** due to lack of stratigraphic order

FUTURE PERSPECTIVES

- **New $\delta^{18}O_{atm}$ measurements** will be performed to **improve the record resolution** and the determination of gas age