

Paleomagnetic study on Holocene sediments from Upper Toporowy Lake in Tatra Mts, Poland



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Attendance time
 26th April 2023
 10:45 – 12:30



Aim of the Study 1

The first step of creating an age calibrated Holocene paleomagnetic master curve from Central European sediments.

Study Site

- ☐ Toporowy Staw Wyzni (Upper Toporowy lake)
- ☐ Located in Tatra Mts on the Polish side
- ☐ Former mountain lake (moraine)
- ☐ Now infilled lake – peat bog
- ☐ Oldest ¹⁴C > 9190 ± 210 cal. BP (Klapyta et al. 2016)

Cores and Samples

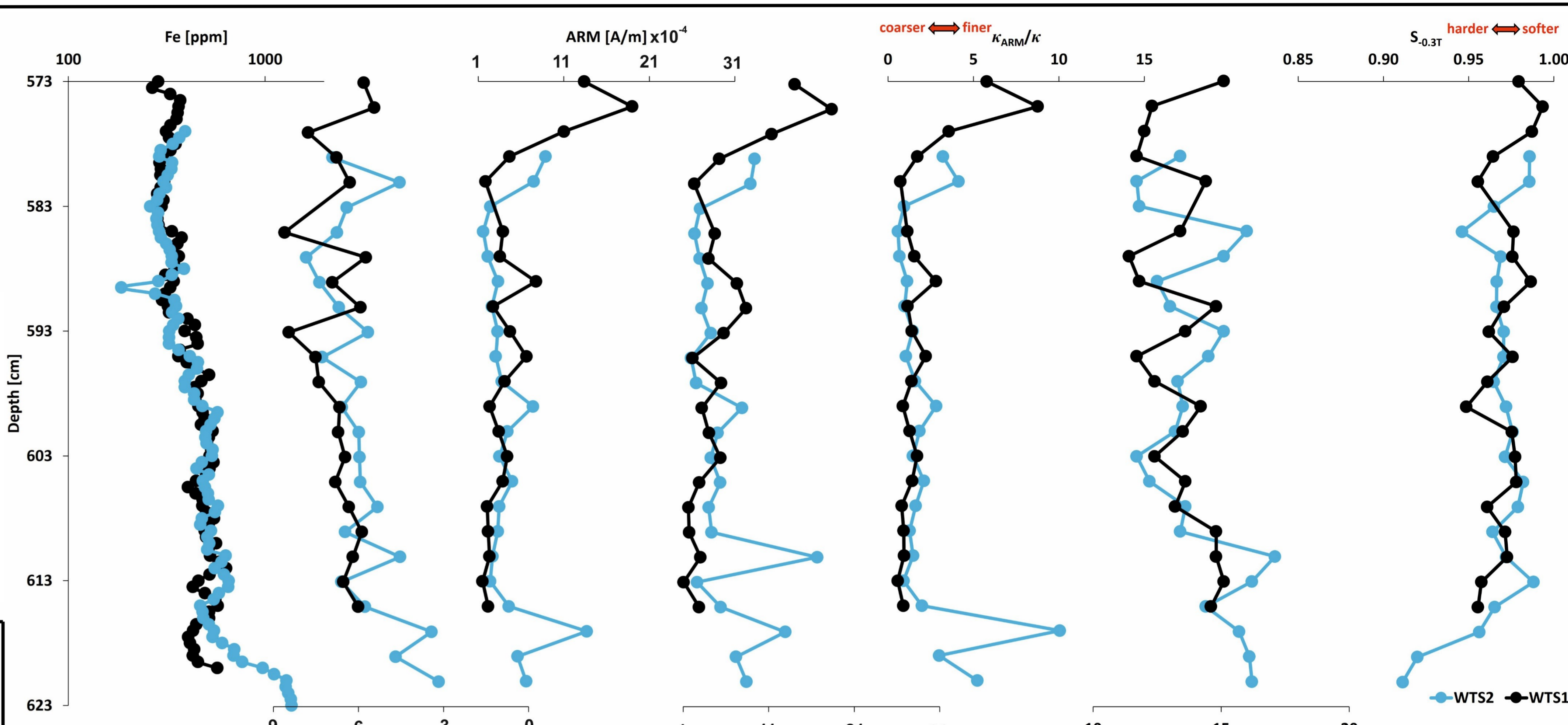
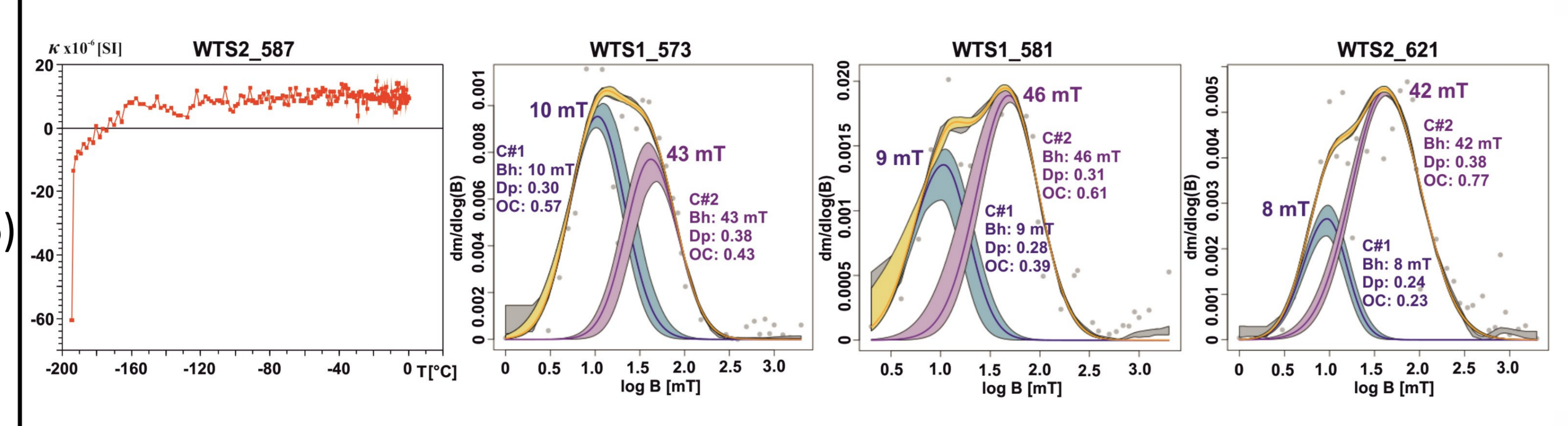
- ☐ Two parallel cores
- ☐ WTS1 – 569-619 cm
- ☐ WTS2 – 575-625 cm
- ☐ 45 discrete samples

Methods

- ☐ XRF
- ☐ κ
- ☐ LT- κ
- ☐ ARM_{100 mT-50μt}
- ☐ IRM_{2T}
- ☐ S_{-0.3T}
- ☐ AF

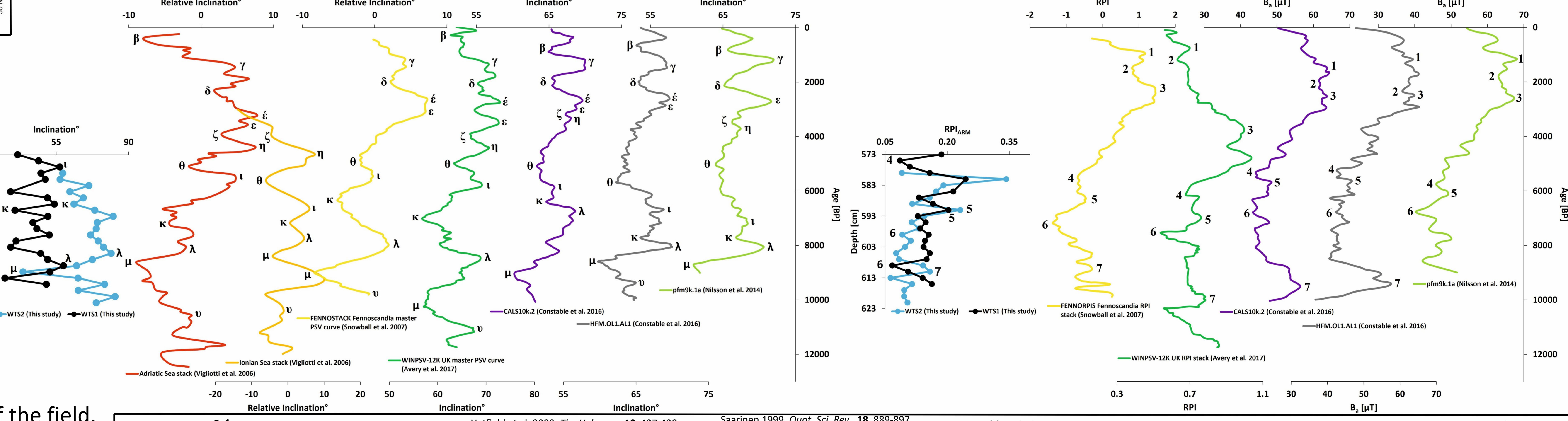
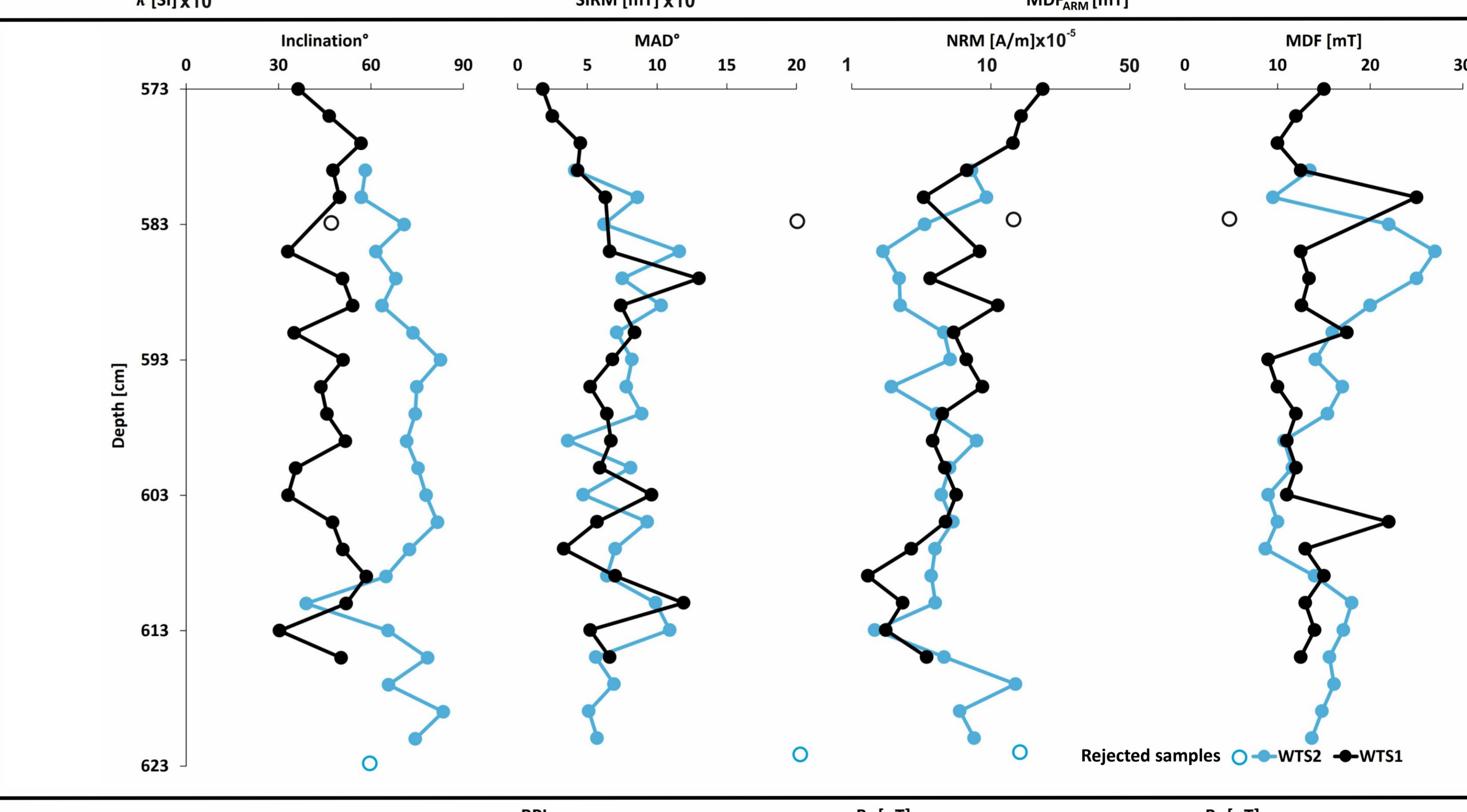
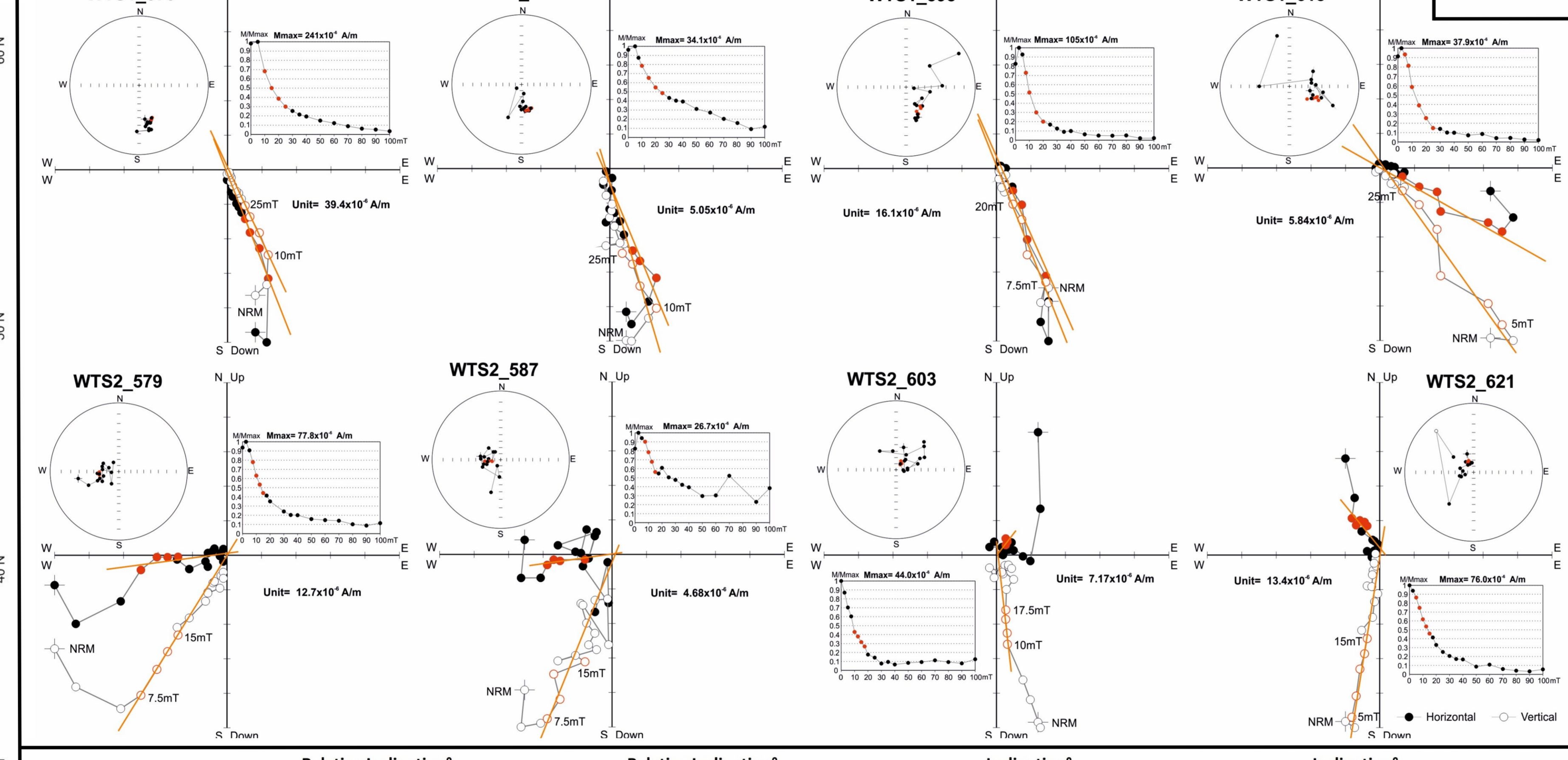
Rock Magnetism Results 2

- ☐ Magnetic carriers > low coercivity Magnetite and a higher coercivity mineral or change in grain size?
- ☐ Finer grains > Top of WTS1
- ☐ Finer grains > Bottom of WTS2



Paleomagnetism Results 3

- ☐ ChRM > between 10 – 25 mT
- ☐ WTS1 > shallower inclinations?



Discussion and Conclusions 4

- ☐ Good correlation with stacks and global models
- ☐ Age after correlation > ~5000 – 10000 BP
- ☐ Fluctuations may represent the local changes of the field.

Future Plans 5

- ☐ ¹⁴C dating > 5 samples
- ☐ SEM, XRD
- ☐ Hysteresis, FORC
- ☐ 5 more locations!!!

Acknowledgments

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- ☐ Tatra National Park

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Abbreviations

- AF > alternative field
- ARM > anhyseretic remanent magnetization
- Bh > coercivity
- Ch > coercivity component
- Dp > dispersion parameter
- FORC > first order reversal curve
- IRM > isothermal remanent magnetization
- κ > low-field volume magnetic susceptibility

- κ_{ARM} > susceptibility of ARM
- LT > low-temperature
- MAD > maximum angular deviation
- MDF > median destructive field
- NRM > natural remanent magnetization
- OC > relative proportion
- RPI > relative paleointensity
- S_{-0.3T} > S ratio at 300mT back-field
- SEM > scanning electron microscopy

SIRM > saturation of IRM
 XRF > x-ray fluorescence
 XRD > x-ray diffraction

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 Scan for abstract info