**AIMS AND OBJECTIVES**
Recent climate change is one of the most serious threats to modern societies. Understanding past climate changes is therefore essential in order to better predict the future and to develop adaptation strategies. During the last decades, records from marine sediments, ice cores and speleothems helped to greatly improve our knowledge about climate changes in the past. However, isotopic analyses from loess-paleosol sequences, representing invaluable terrestrial paleoclimate archives, are hitherto still lacking. This has methodological reasons. While compound-specific δ^13C analyses of plant-derived lipid biomarkers were introduced in loess research around 10 years ago (Liu and Huang, 2005), the establishment of a method allowing compound-specific δ^18O analyses of plant-derived biomarkers in loess failed. Within this PhD project, it shall therefore be evaluated whether bulk δ^18O analyses of bulk lipids rather than compound-specific δ^18O analyses of individual biomarkers can overcome this limitation.

**STUDY AREA**
Our study area is located in the Saxon loess region in Germany. This region is part of the European loess belt and covers an area of 675 km² (Wolf and Faust, 2013). During the Weichselian aeolian sediments accumulated as the study area was located between the Scandinavian and the Alpine ice sheet (Fig. 1). Since 2008 a lot of research on loess and paleosols was done in Saxony applying sedimentology (Meszner et al., 2011, 2014; Wolf and Faust, 2013), OSL dating (Meszner et al., 2013), biomarkers (Zech et al., 2013) and rock magnetic analyses (Baumgart et al., 2013). Our study area is located in the Saxon loess region in Germany. This region is part of the European loess belt and covers an area of 675 km² (Wolf and Faust, 2013). During the Weichselian aeolian sediments accumulated as the study area was located between the Scandinavian and the Alpine ice sheet (Fig. 1). Since 2008 a lot of research on loess and paleosols was done in Saxony applying sedimentology (Meszner et al., 2011, 2014; Wolf and Faust, 2013), OSL dating (Meszner et al., 2013), biomarkers (Zech et al., 2013) and rock magnetic analyses (Baumgart et al., 2013).

**METHODOLOGICAL APPROACH & WORK PLAN**
From a methodological aspect, we will...
- Extract bulk lipids from loess layers and paleosols by using Soxhlet-extraction (Fig. 4) and/or ultrasonic extraction, testing and optimizing of isotope analyses
- Establish a method for the isotope analyses
- Quantify the δ^13C and δ^18O exchange of bulk lipids by labelling and incubating loess samples with isotopically enriched water. This will allow us to propose a correction procedure for the isotope curves.
- Apply the δ^18O, δ^13C and δ^18O method on the loess sequence Ostrau
- Expand by δ^14C dating of the bulk lipids

If successful, our methodological developments will finally allow establishing and interpreting paleoclimatically a first bulk lipid δ^13C, δ^18O and δ^18O record from the Saxon loess-paleosol sequence Ostrau.

**REFERENCES**