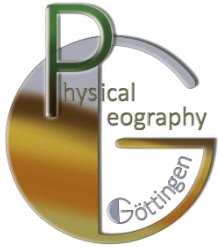




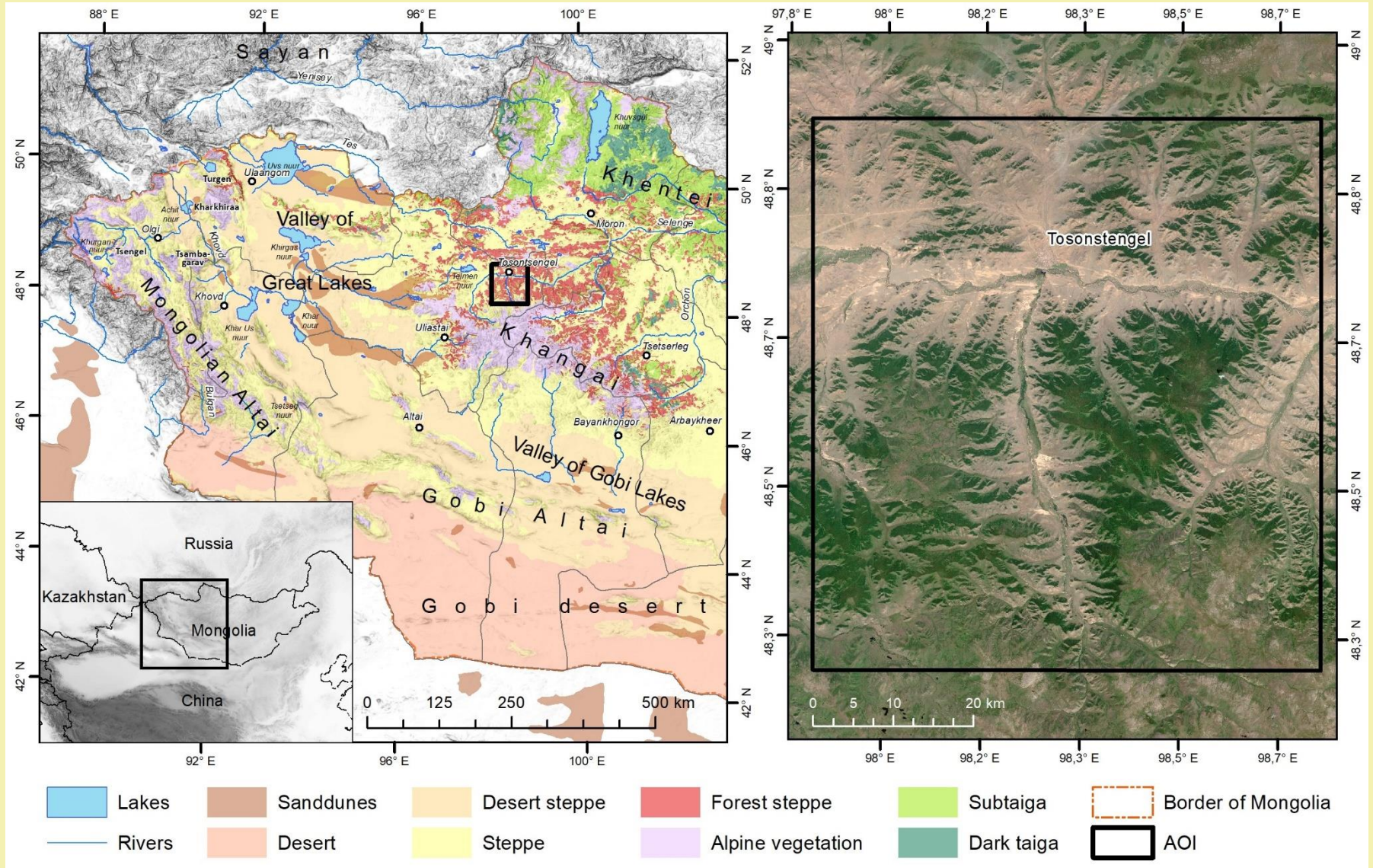
GEORG-AUGUST-UNIVERSITÄT
GÖTTINGEN



Archives of Holocene geomorphological development in the Khangai Mountains, Mongolia



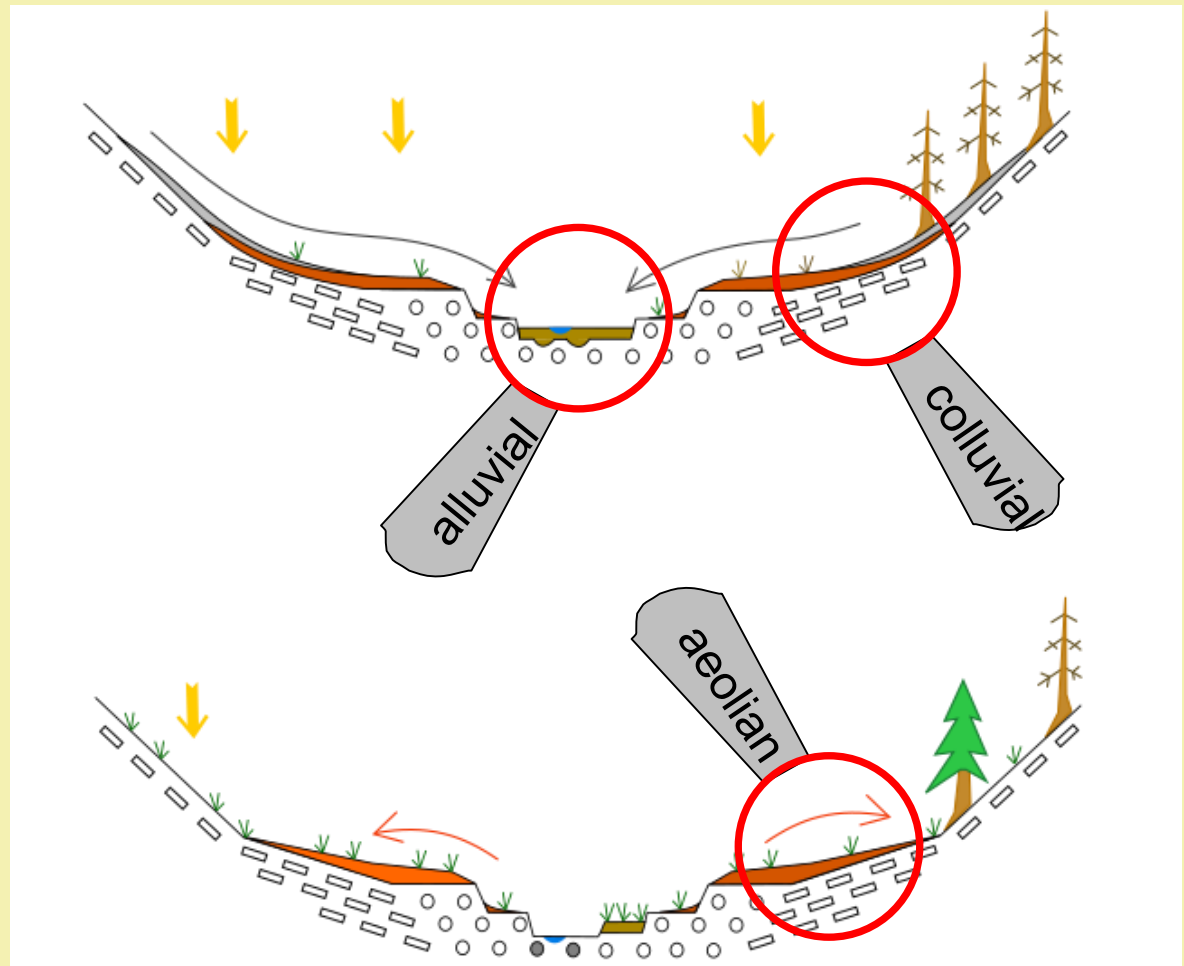
Daniela Sauer, Michael Klinge (University of Göttingen, Germany),
Manfred Frechen and Yan Li (LIAG, Hanover, Germany)



Study area → Located in the forest-steppe, on the northern edge of Khangai Mountains.

Questions

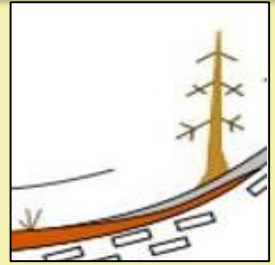
- 1) During which periods over the Holocene did the landscape experience
 - aeolian activity,
 - erosion and colluvial deposition,
 - fluvial incision and sedimentation,
 - landscape stability and soil formation?
- 2) In which way and when was the geomorphological development affected by
 - climate changes
 - fires
 - human influence



Approach Archives used for reconstructing landscape dynamics over time. → Sedimentological and pedological analysis, dating by OSL and ^{14}C .

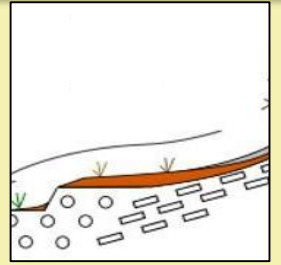
Colluvial deposits on toe slopes, with dark layers rich in organic matter

*Periods of forest fires (ages of charcoal)? Periods of slope wash?
Periods of soil formation? Periods of peat development?*



Sediments on pediments:

→ Aeolian and colluvial deposits, embedded palaeosols



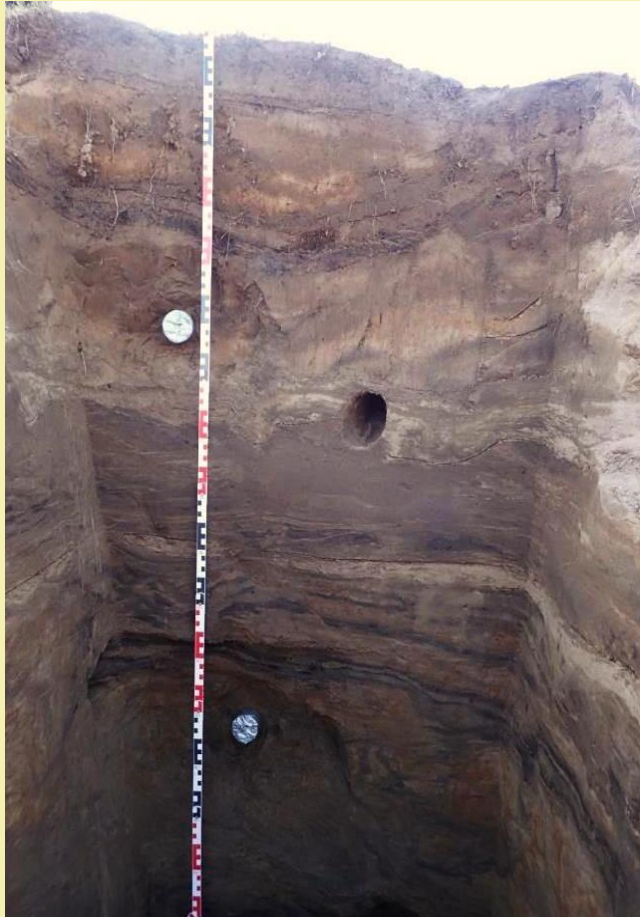
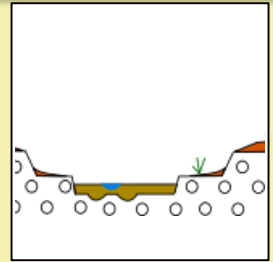
Periods of geomorphological activity?

Periods of stability and soil formation?



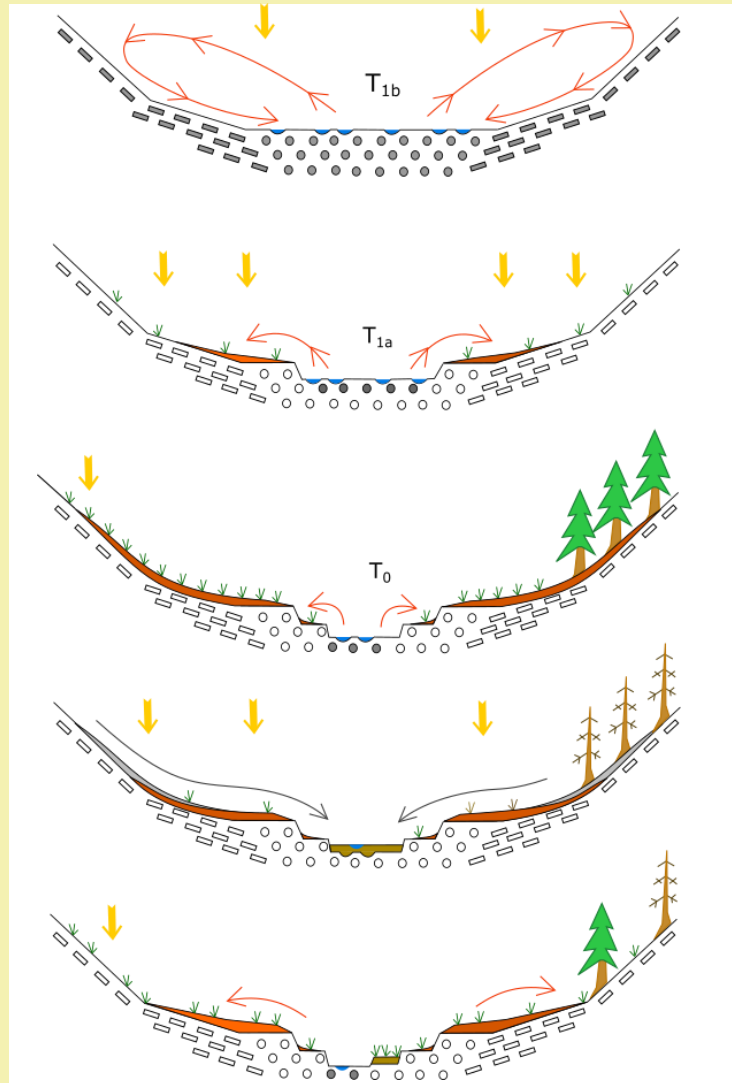
Stratified alluvial sediments:

→ Sandy and silty sediments, including dark OM-rich layers and charcoal



When were the periods of sedimentation / incision?

Is there a relation between sedimentation and fire events?



Preliminary scheme of landscape development in the northern Khangai Mountains.

Last Glacial Maximum, around 20 ka

Accumulation of terrace T_{1b} , formation of alluvial fans, extensive aeolian processes

Late Glacial, 17-10 ka

Incision of terrace T_{1a} and aeolian deposition

Early to Mid-Holocene, 10-3 ka

Incision of terrace T_0 , soil formation

Late Holocene, 3-2 ka

Alluvial sedimentation, erosion, slope wash

(Sub-)recent

Fluvial incision, deflation

Sediment

- ● Gravel
- ▧ Fanglomerate
- Aeolian sediment
- Alluvial sediment
- Eroded soil

Process

- Sand relocation
- ↓ Dust supply
- ↘ Soil erosion
- fluvial

Vegetation

- Trees vital ; dead
- Steppe