

Changes in mountain valley widening, river incision and sediment transport in North-West Africa over the last 180 ka

OSL/IRSL dating applied to strath terraces in the High Atlas Mountains



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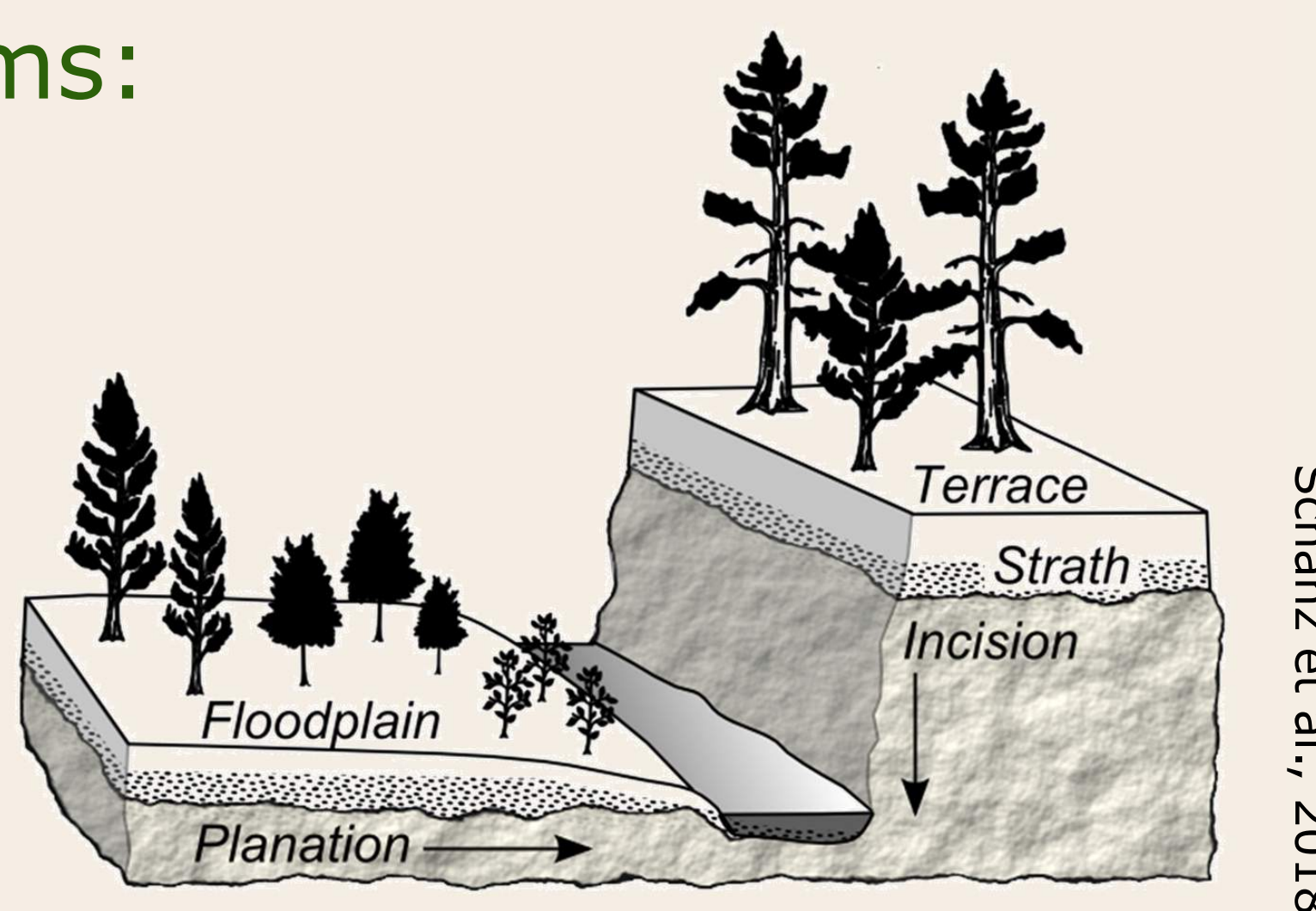
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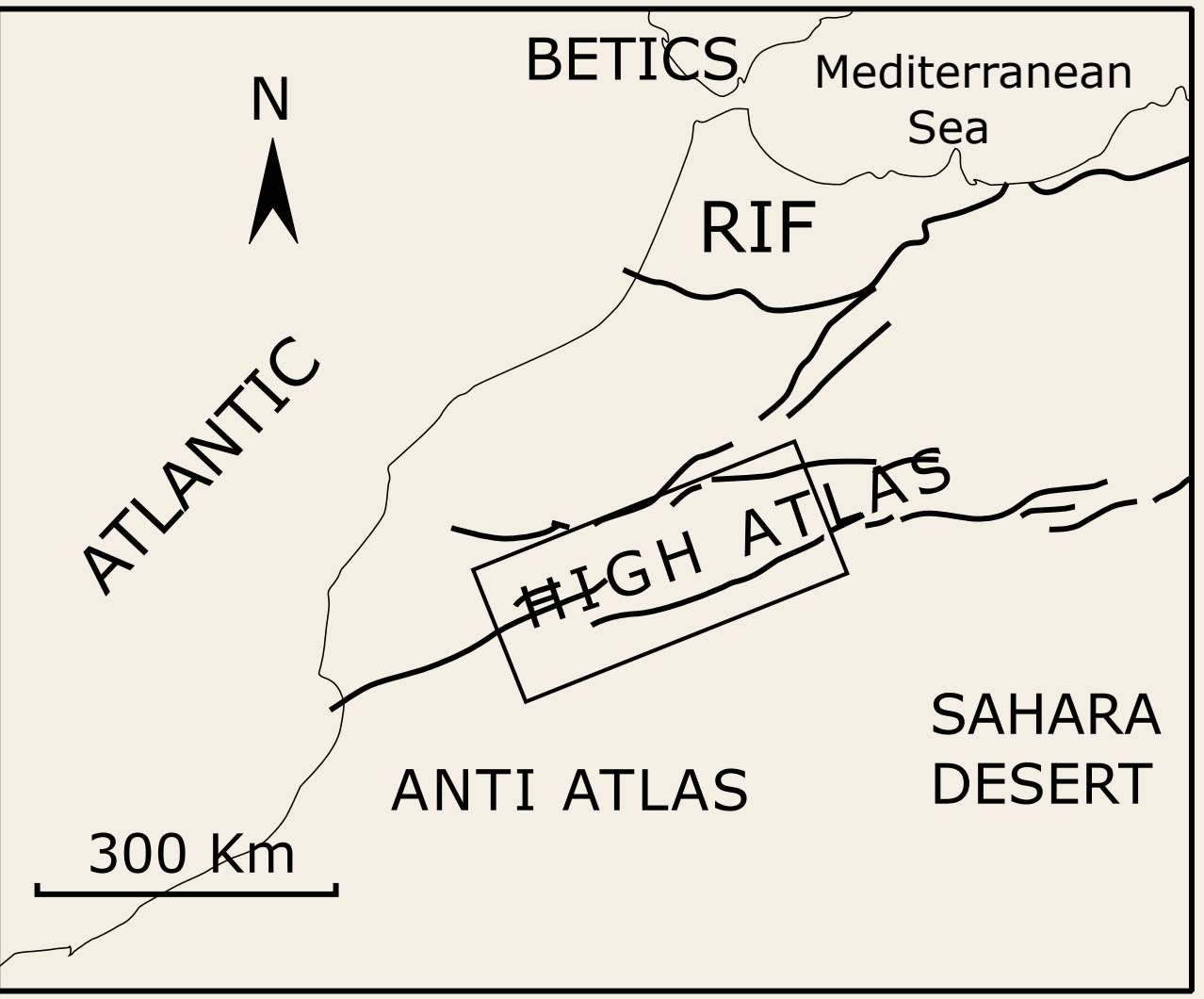
1. Motivation and Aims:

Strath terraces form as rivers switch between planation and incision, which depends on the sediment to water discharge ratio. At high latitudes, this connects to glacial activity and eccentricity cycles.



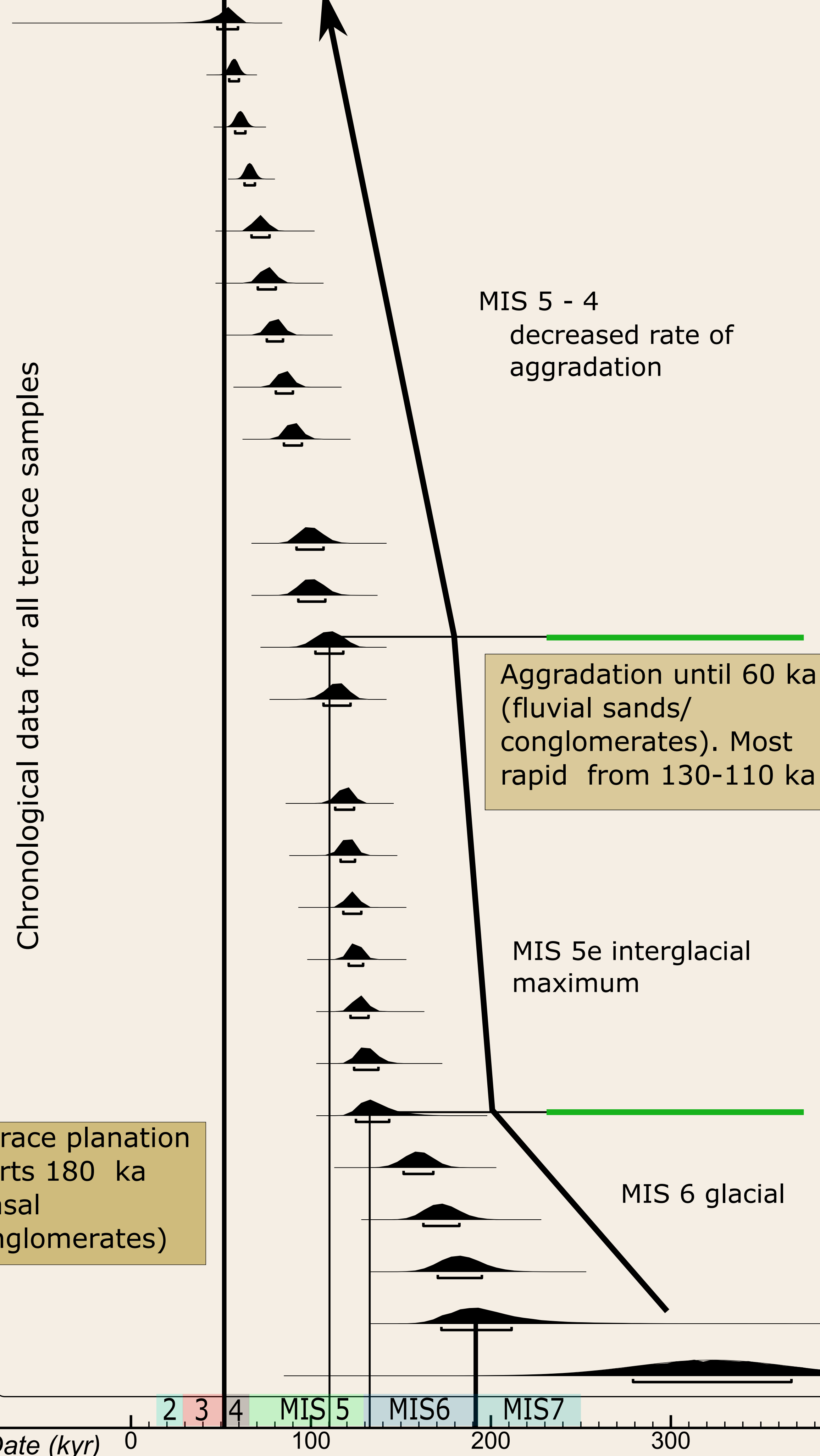
But...

- When do rivers form terraces in the High Atlas?
- How does this timing reflect Quaternary climate change?
- What are possible mechanisms of switching between incision and aggradation?

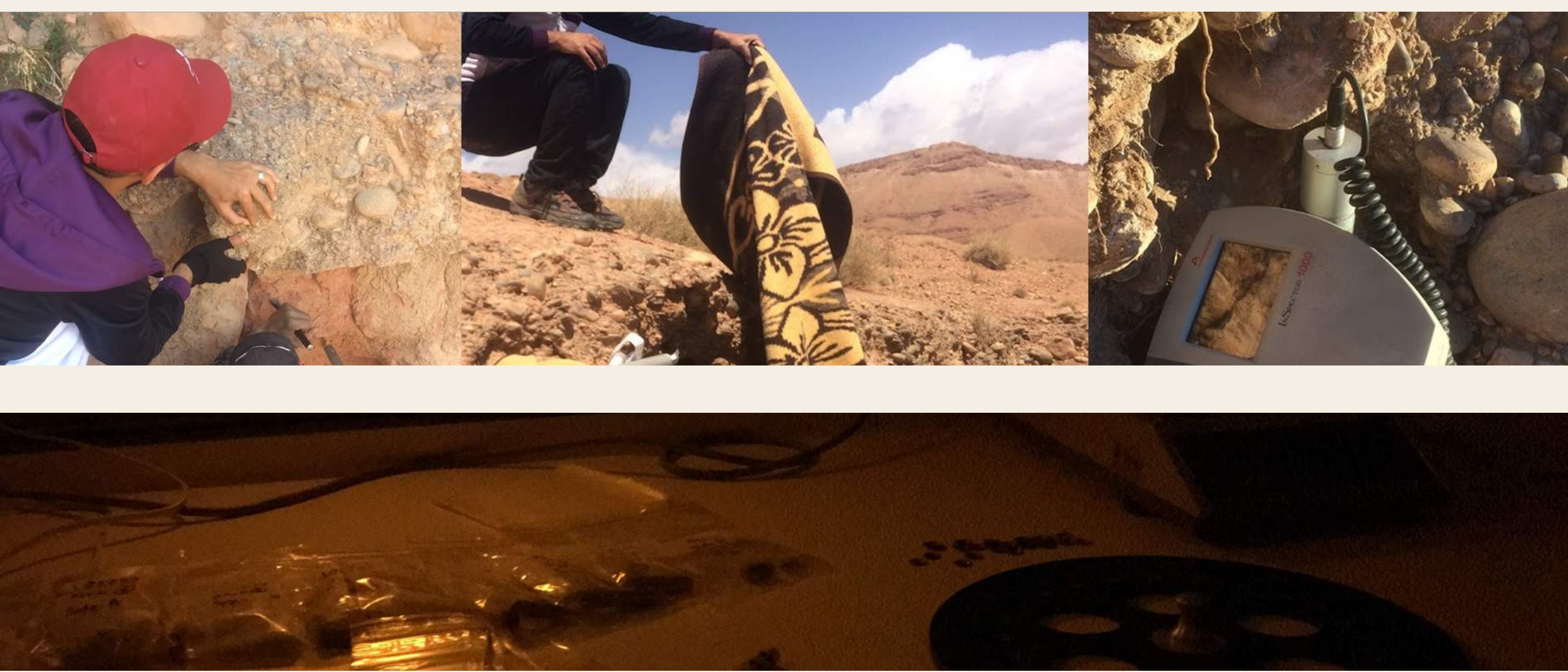


Terrace burial ages in chronological order

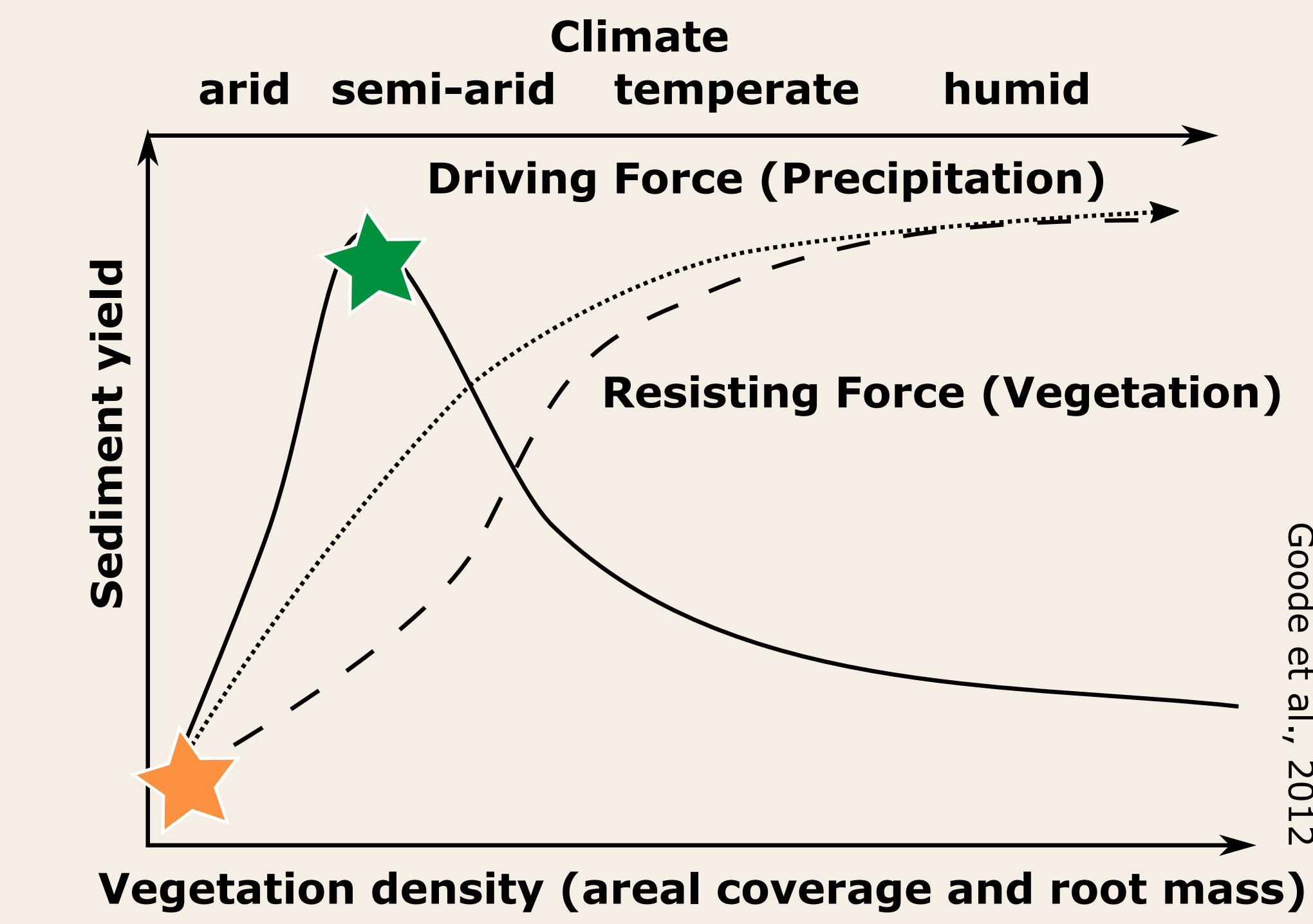
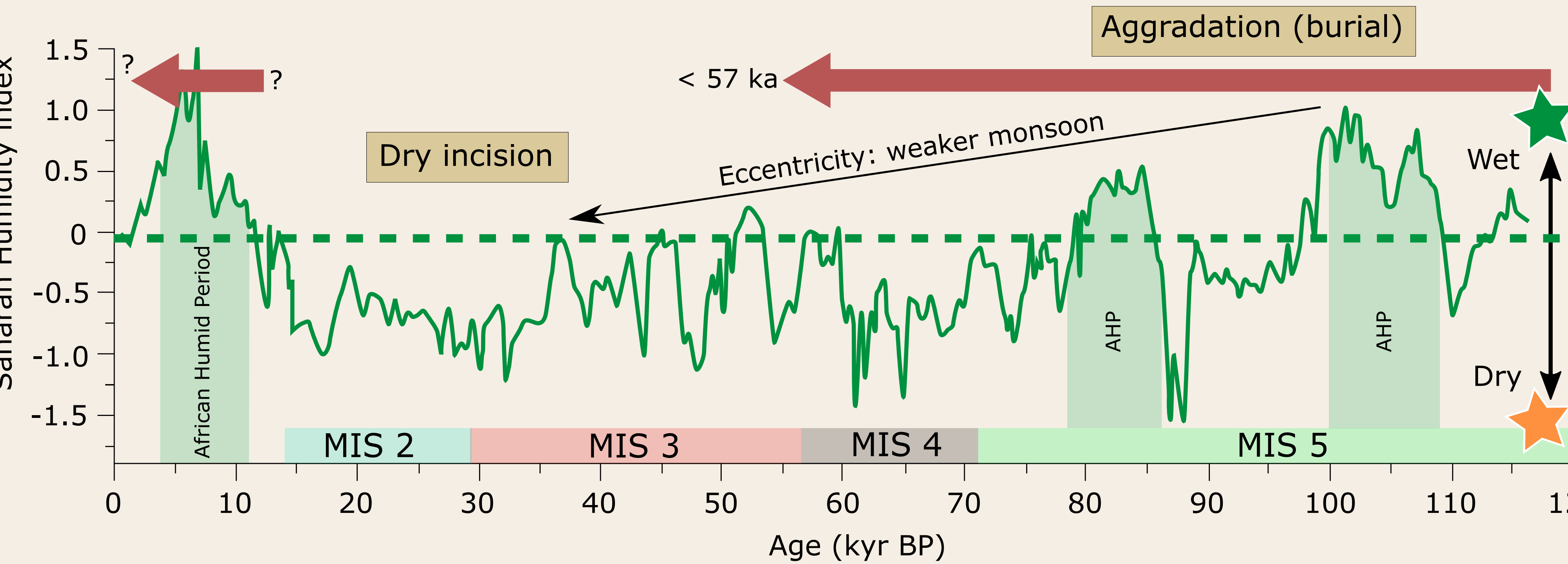
incision and abandonment of youngest strath terrace level



4. Discussion - Saharan climate & aggradation



We compare the distribution of burial ages of overlying sediments with an Atlantic record of humidity in the Northern Sahara over the last 120 ka. Aggradation occurs over a 100 kyr + time period with humid peaks every precessional cycle. Incision occurs during an extended dry period in the eccentricity cycle.

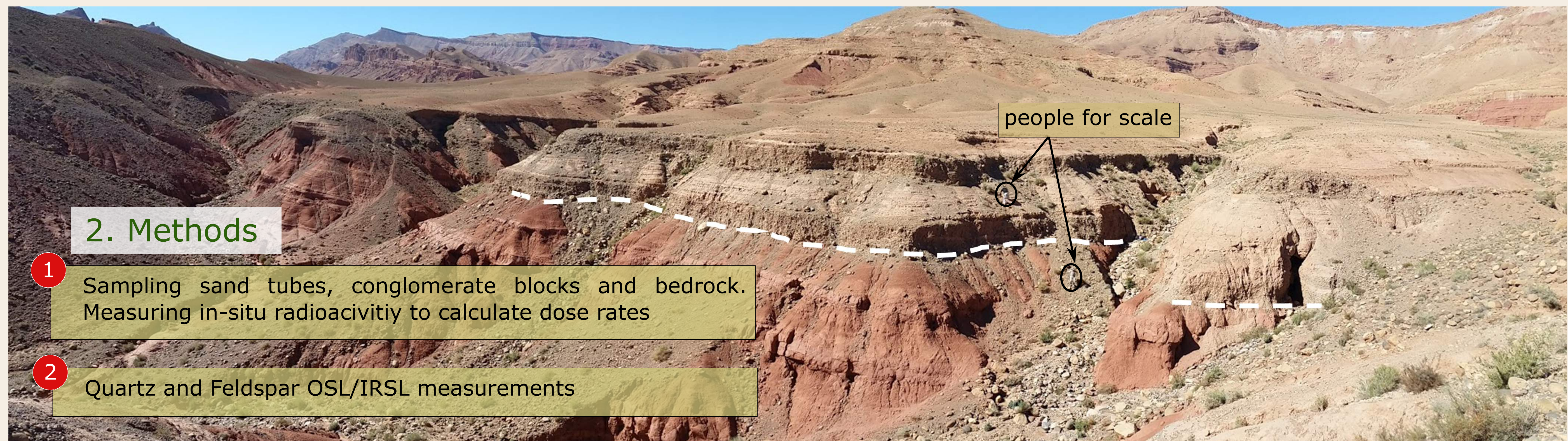


5. Conclusions

- Most recent and extensive terrace level aggraded since 200 ka and abandoned post 60 ka
- Coincides with low amplitude in precessional African humid period penetration
- Lower sediment yield during extended dry period could explain terrace incision

2. Methods

- Sampling sand tubes, conglomerate blocks and bedrock. Measuring in-situ radioactivity to calculate dose rates
- Quartz and Feldspar OSL/IRSL measurements



3. Results - Age Data

