Paleogeographic evolution of Asia in the Cenozoic with the Terra Antiqua software

1. BACKGROUND & METHODS
The ability to reconstruct the geologic evolution of the Earth as a system including the geosphere, atmosphere and biosphere on a regional and global scale is essential to understand the fate of our environment in the context of the Climate, Life and Energy crises of the new Anthropocene era. These constraining models have major implications for geodynamic, biotic evolution of the new Anthropocene era.

1.a. Fierce debates on the India-Asia collision and uplift of the Tibetan-Himalayan orogen
- The user-friendly and open-source Terra Antiqua QGIS plugin is currently specifically developed with new tools including data-driven and web-based applications (see presentation of Jani Ogg, this session).

1.b. Terra Antiqua: Open-source user-friendly QGIS plugin for paleogeography
- Implement drainage network on random topo.
- Implement river drainage networks (Steer, Earth Surf. Dynam 2021)

1.c. Example of a Terra Antiqua tools to create topography
- Databases and paleogeographies on interactive portal:
  - Full manual
  - Tutorials
  - Many other tools to discover!

2. RESULTS & INTERPRETATIONS
3. FUTURE WORK & PERSPECTIVES
3.a. Asian paleogeographic reconstructions
- Reconstruct other collision configurations (Greater Indian basin and Large Greater India).
- Reconstruct other end-member of uplift models (proto-Plateau or Basin and Range).

3.b. Improvements to Terra Antiqua
- Model intercomparison tested on Pondaung Fm (Burma) (Ogg et al., this session)
- Automatic adjustments of crustal and sedimentary cover deformation using geodynamic motion (Cordonnier, PhD 2018)

3.c. Collaboration with the DDE/paleogeographic working group
- Inter-calibration and comparison with other reconstructions (Cordonnier et al., Geol. Soc. London Special Publ).
- Establishing protocols, standards of reconstruction methodology and implementing them on Terra Antiqua as one of the DDE platform.

4. Acknowledgments
- Acknowledgments of data providers and multiple institutions (see presentation of Jim Ogg, this session) and integrating reconstructions into the platform.

https://geolex.org