School of Geosciences

Adding sediment transport to dynamic topography

- 120-80 Ma: dynamic uplift of 400-600 m driven by eastward motion of eastern Australia's margin away from the sinking eastern Gondwana slab,
- ~60 Ma: tectonic quiescence in the south
- 40-0 Ma: renewed uplift of ~700 m in the Snowy Mountains induced by gradual motion of the margin over the edge of the large Pacific mantle upwelling.
- What effect have these processes had on basin formation and evolution

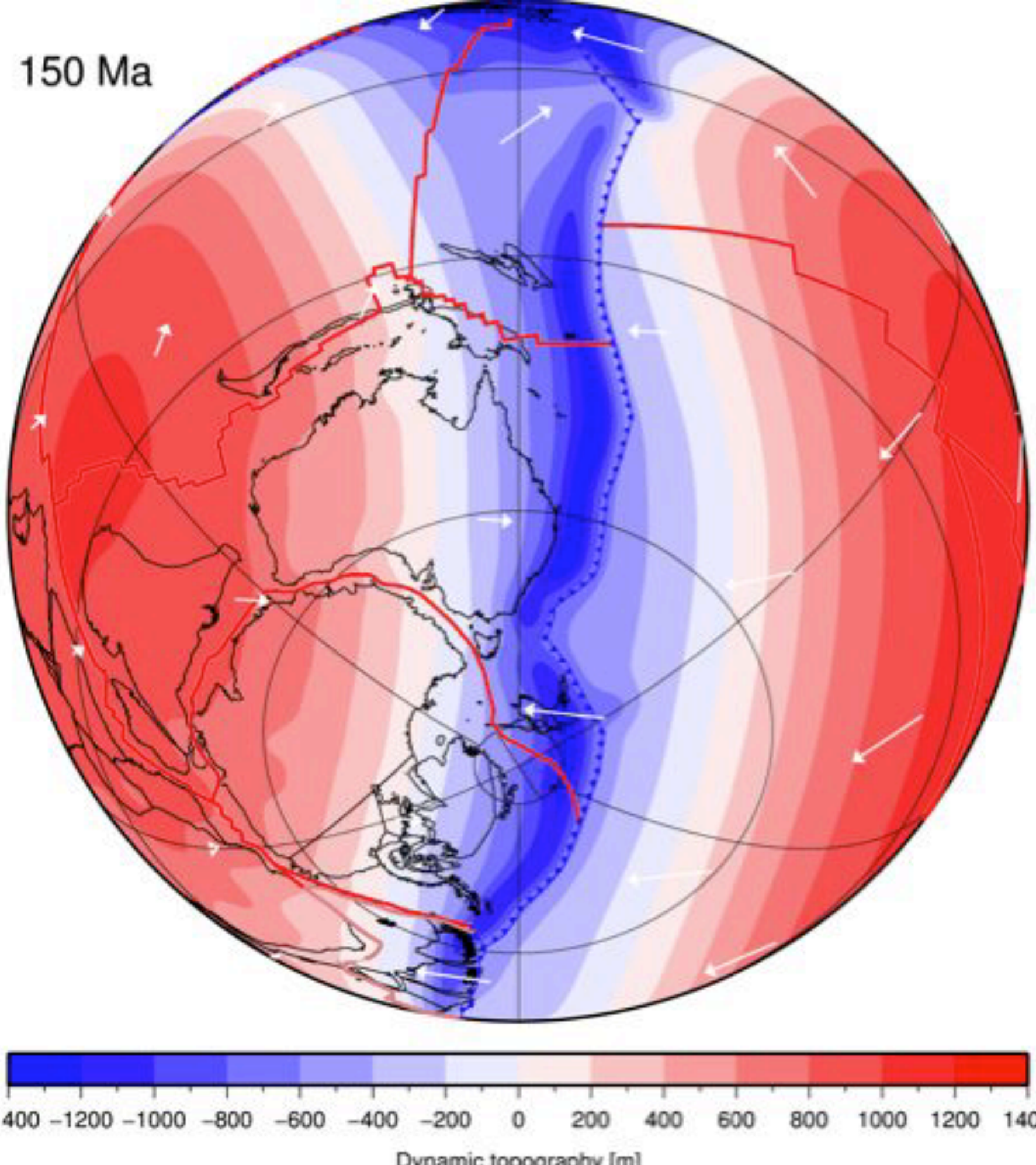
Muller et al. 2016

YouTube AU

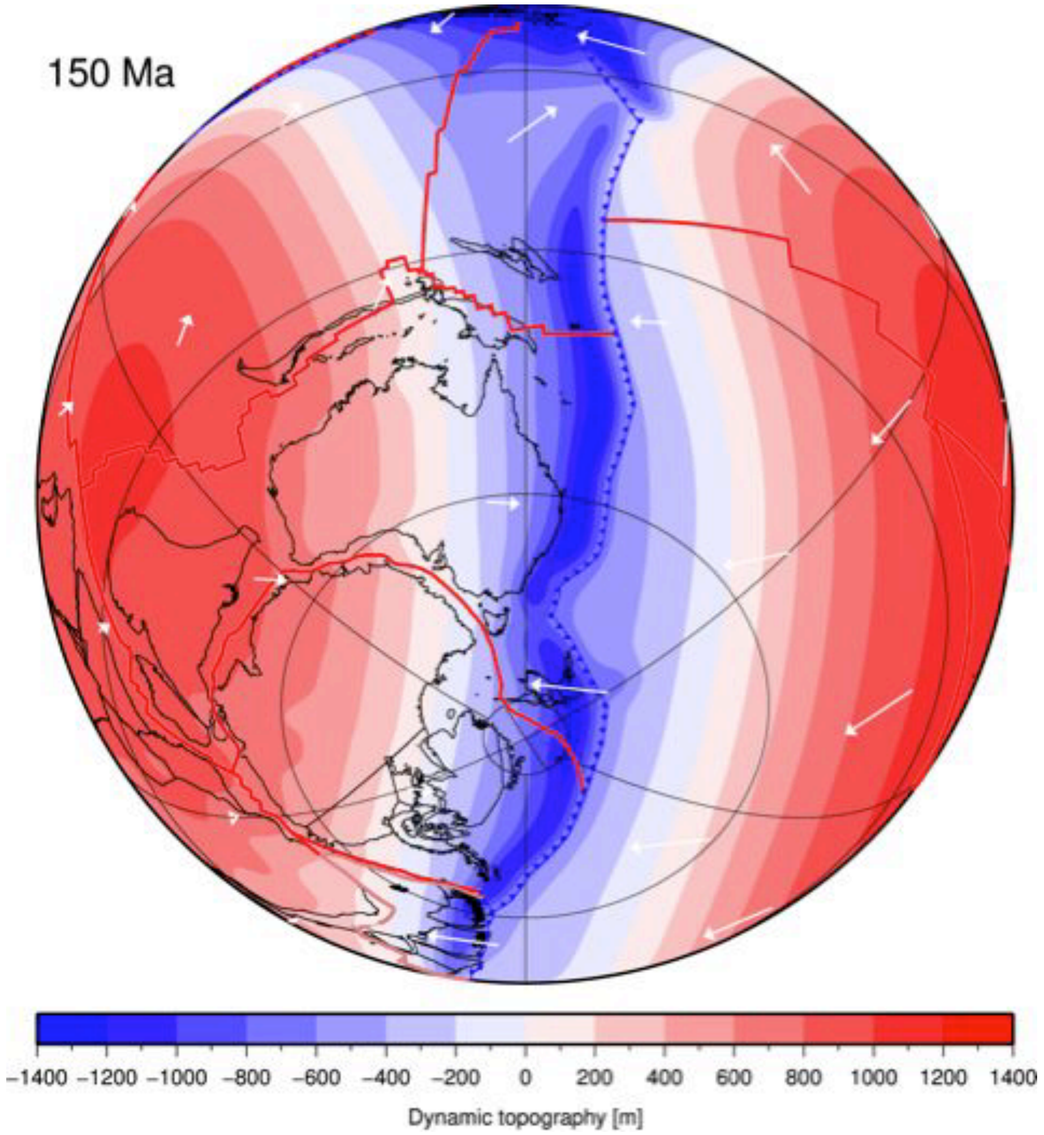
150 Ma

−1400 −1200 −1000 −800 −600 −400 −200 0 200 400 600 800 1000 1200 1400

Dynamic topography [m]


150 Ma
−1400 −1200 −1000 −800 −600 −400 −200 0 200 400 600 800 1000 1200 1400
Dynamic topography [m]

Adding sediment transport to dynamic topography

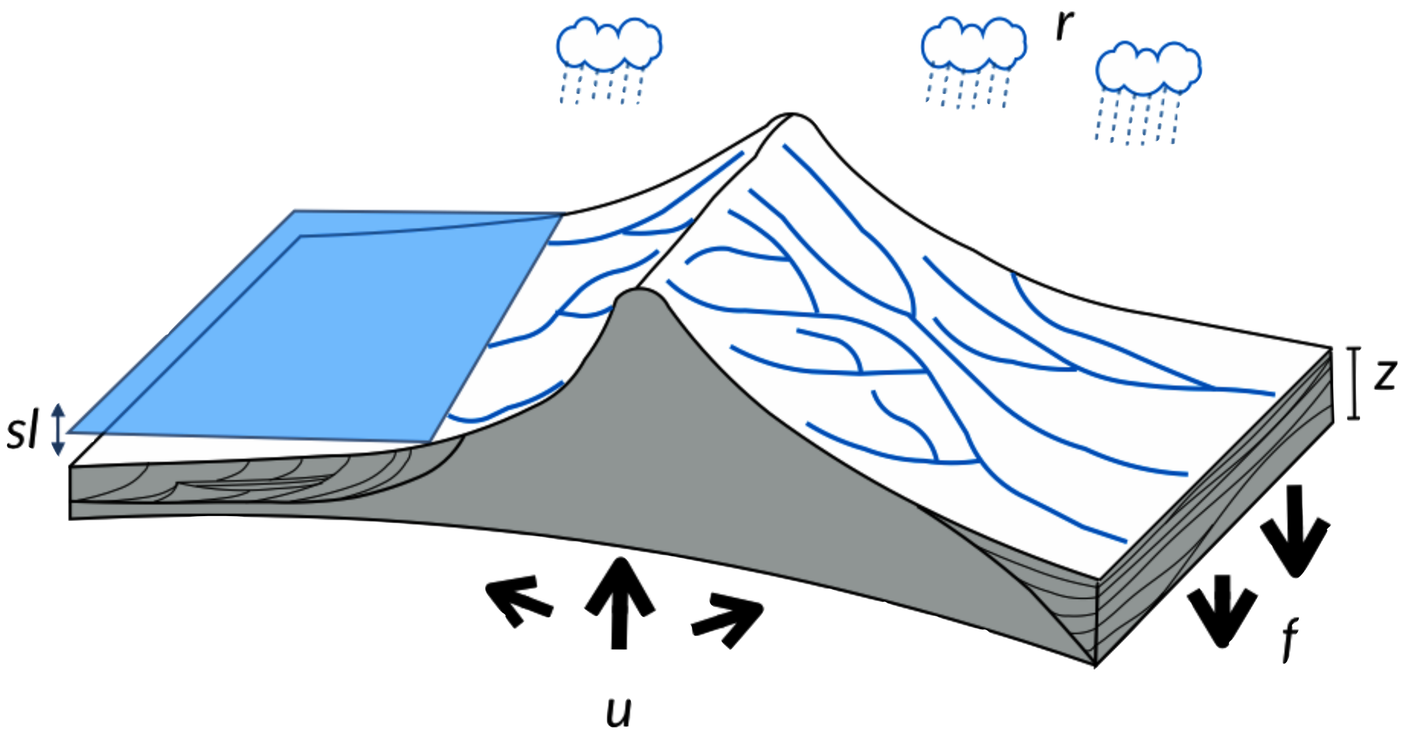


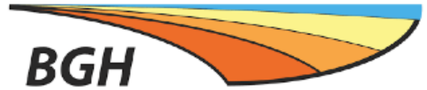
Muller et al. 2016

- 120-80 Ma: dynamic uplift of 400-600 m driven by eastward motion of eastern Australia's margin away from the sinking eastern Gondwana slab,
- ~60 Ma: tectonic quiescence in the south
- 40-0 Ma: renewed uplift of ~700 m in the Snowy Mountains induced by gradual motion of the margin over the edge of the large Pacific mantle upwelling.
- What effect have these processes had on basin formation and evolution

Australian basins evolution since Jurassic period

- Surface process modelling software
- hillslope: simple creep law
- overland flows: stream power law
- flexural isostasy
- sediment compaction





Badlands