Introduction
SE Asia comprises a heterogenous assemblage of fragments derived from Cathaysia (Eurasia) in the north and Gondwana in the south. The Sundaland core was formed by accretion of Gondwana-derived fragments in the Late Triassic. More fragments accreted to Sundaland in the Cretaceous and Neogene. SE Asia now hosts two strongly curved subduction zones: the Sunda trench with a 90° curvature and the Banda Arc with a 180° curvature (Figure 1). We restore these subduction zones to their original geometry at the timing of subduction initiation to study what mechanisms were responsible for orocline formation.

Approach
Hierarchical reconstruction protocol:
1. marine magnetic anomalies
2. continental deformation
   a. extension
   b. strike-slip motion
   c. shortening
3. Geometric consistency
4. Paleomagnetically determined rotations
5. Paleomagnetically determined latitudes
6. Seismic tomography of the mantle

Datasets
Plate circuit: Sekor et al. (2012, ESR) with modifications of DeMets et al. (2015, GJI)
Reference frames:
Paleomagnetic: Torsvik et al. (2012, ESR)
Moving hotspot: Douvrinove et al. (2012, GJR)
Regional reconstructions:
Tibet (van Hinsbergen et al. 2011, Tectonics; 2018, tectonophys)
South China (Replumaz & Tapponnier 2003, JGR)
Indochina (Li et al. 2017, ESR)
Sundaland and Borneo (Advokaat et al. 2018, Tectonics)

Reconstruction
A) Present day (0 Ma)
Texture map of SE Asia showing active structures

B) Base Zanclean (3.5 Ma)
Collision of Tukung-Besi with Sulawesi, start opening Weber Deep

C) Base Langhian (16.0 Ma)
Closure of Proto-South China Sea, subduction initiation at Banda Arc

D) Base Aquitanian (23.0 Ma)
Collision of Tukang-Besi with Sulawesi, second rotation of Borneo

E) Base Rupelian (33.9 Ma)
End first Borneo rotation, Celebes Sea and Makassar Straits fully open

F) mid-Lutetian (C21; 45.72 Ma)
Subduction rotation  of Sunda trench and Sulawesi North Arm

Test against paleomagnetic data
We reconstruct two stages of counterclockwise rotation of Borneo, consistent with paleomagnetic data (figure 3).

Conclusions
1. The Sunda and Banda subduction zones had a straight geometry when they formed
2. Two mechanisms of orocline formation:
   • The Sunda trench became curved through compression in the overriding plate.
   • The Banda arc became curved through eastward rollback of the Banda slab.
3. Most back-arc basins in eastern Indonesia formed above stationary trenches when the overriding plate moved away.