Crust textures and growth process of South China continent

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South China continent can be divided into two parts--Yangtze Craton and Wuyi Plates. The former fundamental rocks consist of Archean TTG grey gneisses (29.5 Ga), Paleo- and Meso-Proterozoic komatiitic to picrite's greenstones (22 Ga), and Neo-Proterozoic ophiolite suites (10 Ga). It's crust thickness (H) is 45 Km. End members of the mantle are EM1, EM2, DMM, respectively. Vp of the lower crust is 6.5-7.0 Km/s, H 18Km; that of the middle and upper crust is 6.0-6.4 Km/s, H 17 Km. Vp of the top part of the upper mantle is 8.1 Km/s. Study reveals that there are old residual mantle plumes (20 Ga and 10 Ga) under South China subcontinent, their thermal textures are –0.6 %.

Wuyi plate consists of Archean-Paleo-Proterozoic amphibolites (26-23 Ga), Meso- and Neo- Proterozoic intermediate-basic granulitites (21-14 Ga) (lower crust) and actinolite amphibolites, tuff silicalites (upper crust). Crust thickness is 34 Km. End members of the mantle are from HIMU to EM2. Vp of the lower crust is 6.84-7.21 Km/s, H 11 Km. There is a 7 Km high-speed zone (Vp: 7.21 Km/s) in the bottom of the lower crust. Vp of the middle and upper crust is 5.50-5.90 Km/s, H 18 Km. The crust has three-layer structure in West Wuyi Plate, and changes to two-layer structure in the East. The top speed of the upper mantle is 7.9 Km/s.

Four periods of crust growths (30, 20, 10, 1 Ga) can be distinguished in South China. The continent accreted from west to east, and the crust thickness is progressively thinned.