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Late Eocene-Oligocene history of tectonic strain on the NE Tibetan plateau inferred from the anisotropy of magnetic susceptibility of the fluvio-lacustrine sediments in the Lanzhou Basin

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The anisotropy of magnetic susceptibility (AMS) is sensitive to tectonic strain, which has been widely used to investigate the structural geology. Here we present rock magnetism results from the Lanzhou Basin in NE Tibetan plateau, to discuss the relationship between the tectonic strain recorded in the foreland basin and mountain building. The χ-T curves and IRM component analysis indicate the presence of both magnetite and hematite in the fluvio-lacustrine sediments in the Lanzhou Basin. Hematite is the main magnetic mineral dominating the AMS fabric. The AMS fabric indicates a W-E direction strain, in agreement with the current movement direction of the Lanzhou Basin in global positioning system (GPS) measurements. The significant changes in distribution of kmin and shape parameter T at ca 30 Ma may imply increasing tectonic strain related to the mountain building of the NE Tibetan Plateau, in line with the evidence from the Qaidam basin.