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Cenozoic plate motion history

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The present-day difference of plate motions between the assumed fixed hotspot and no-net-rotation reference frames presents a westward rotation in the direction of the Pacific plate. Here, we computed plate motions employing a new set of reconstructions based on the Indo-Atlantic hotspots and the lithosphere is now characterized by a northward drift in the Pacific region. This new plate motion reconstruction provides a new vision of Earth's history during the last 60 Myr. Three new aspects distinguish this history from the one previously established by Gordon & Jurdy in 1986. First, this history does not predict the Hawaiian-Emperor bend as supposed by a fixed Hawaiian hotspot. Second, the new Cenozoic plate history does not yield any global reorganisation or abrupt change in plate motions in the time interval from 60 to 40 Ma before present. Third, the difference between plate motions in the Indo-Atlantic reference frame and one in which there is no net rotation of the lithosphere is minimal and the latter therefore constitutes an appropriate reference for mantle dynamic models of thermal convection.