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# Estimates of true Polar wander since 300Ma

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We investigate true polar wander (TPW) since 300Ma. We construct a hotspot reference frame using an updated list of active hotspots with improved criteria aimed at detecting their depth origin, a compilation of terrestrial volcanic data suspected to reveal hotspot activity, and a set of plate reconstructions, based initially on paleomagnetism corrected with respect to hotspots under the assumption of hotspot fixity. The polar motion curves (representing the motion of the mantle taken as a whole) during the periods t=[0 and 150-170] and [150-170 to 280Ma] roughly aligns along two great circles which poles are both located close to the equator, with a longitude differing by some 50°, and positioned close to an axis passing through the Large Low Shear Velocity Provinces (LLSVPs), and close to the maximum degree 2 geoid high under Africa. The TPW rate is slowly decreasing with respect to time but remains close or below the observed 10cm/yr present value.

We compare our TPW data with those obtained from a mantle density heterogeneities model which computes the temporal evolution of the Principal Inertia Axis (PIA). The minimum PIA is shown to be in agreement with the two poles previously determined, while the maximum PIA path (which represents the evolution of the geographic pole) displays strong similarities with the observed TPW (directions, cusps). The sudden changes of TPW direction (i.e., cusps) can be explained by mass reorganizations within the mantle principally linked to changes in subductions, while the domes greatly stabilize the system.