



## **Mars: one plume... then one wander ?**

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Motions of the entire solid planet with respect to its spin axis have been proposed on Mars. Considering this movement in the mantle reference frame, the drift of the rotational pole is known as True Polar Wander (TPW). According to the conservation of angular momentum, the axis of maximum inertia of a planet is strung together with its rotation axis. On geological timescales, rearrangement of masses within the mantle will disturb the planet's inertia and induce TPW.

The convection pattern on Mars is probably controlled by a single huge plume originating from the core-mantle boundary. Modelling it as a hot sphere rising in the mantle at the Stokes velocity, we demonstrate that a single plume, when it is the only inertial perturbation, can induce dramatically large and swift TWP. Using three mantle profiles, we test the effect of mantle rheology on inertial tensor perturbations caused by the mass anomaly. Influence on the drift rate of the sphere radius and of the proportion of material spreading at the surface are also discussed.