
Geodynamics of a global plate reorganization from topological data analysis

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Plate graph.

The Supplementary Figure 1 displays the full plate graph calculated over the entire analysis period of the convection model (474 Myr). The graph is represented following the same graphical conventions as in Fig. 3, except for the colours of plates: plates are coloured according to their velocity in a NNR reference frame (in mm.yr^{-1}). The size of vertices is a function of the plate area. Seven present-day Earth plates are given as reference (PA, Pacific; NU, Nubia; AU, Australia; NZ, Nazca; AR, Arabia; CO, Cocos; JF, Juan de Fuca). As in Fig. 3, we make here the distinction between plates having more than 1/3 of their total area formed by continental lithosphere (represented by pentagons) and the others (represented by circles).

Time moves forward from top to bottom. Horizontally, plate positions are arranged to minimize the overlaps between plate trajectories over the entire 474 Myr period, in contrast to Figure 3, where overlaps were minimized over only 58 Myr. These two representations are perfectly equivalent.

Supplementary Figure 1 was generated directly from the raw DOT file¹, available at <https://zenodo.org/records/15863930>, using the open-source graph visualization software Graphviz. A high-resolution version of Supplementary Figure 1 is also available in the same repository¹.

References

1. Janin, A., Coltice, N., Chamot-Rooke, N., and Tierny, J. Geodynamics of a global plate reorganisation from topological data analysis (Supplementary material), July (2025).

