Paleomagnetism and Tectonics

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Résumé

Rock magnetism was one of the essential building blocks in the construction of plate tectonics, the major revolution in Earth science. In fact, continental drift was quantified by apparent polar wander path of virtual geomagnetic poles, and records of the reversal of the Earth's magnetic field by oceanic crustal rocks had enabled the quantification of seafloor spreading. During the last three decades of the 20th century, paleomagnetism also made major contributions to the quantification of mountain deformation by measuring tectonic rotations and latitudinal drifts. The work carried out in Rennes on the formation of the Iberian-Armorican arc is a good example (Perroud and Bonhommet, 1981). At that time, it was common to see entire sessions devoted to paleomagnetism and tectonics at international conferences (AGU, IAGA, etc.). However, interest in these topics has waned and is now almost extinct in France. Using our recent study in Myanmar as an example (Westerweel et al., 2020, 2019), we will show that it is still possible to obtain significant results that can fundamentally change the way other geological data are interpreted, even for a recent period such as the Cenozoic, when one might think that everything is known.
Obviously, our precise knowledge of geodynamic conditions is still much less for more ancient times. We won't be able to understand the evolution of our planet and have reliable plate reconstructions without active paleomagnetic research.

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Mots-Clés: Paleomagnetism, Tectonics

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