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A NEW METHOD FOR QUALITATIVE ESTIMATION OF PRECIPITATION USING FOSSIL AMPHIBIANS AND REPTILES

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Precipitation is an important geodynamic control factor coupled to tectonics, erosion, continental run-off and weathering, and to oceanic circulation. But in practice this climate parameter is difficult to estimate and long term and high resolution continental records are mostly lacking. Here we introduce a new palaeobiological method of quantitative estimation of paleo-precipitation based on indexing of ecophysiological groups within herpetological communities. In recent communities this groups show a highly significant correlation to the annual precipitation. We apply this correlation to a high resolution ~11 million year continental sequence of the Calatayud-Daroca and Teruel-Alfambra sections (Northern Spain) in the western Mediterranean and to several Neogene North-South transects. The results show that the new method will be a powerful tool to reconstruct past temporally and spatially precipitation patterns and will therefore contribute to a better understanding and modelling of geodynamic processes. It complements palaeobotanical methods, because it is applicable on a different set of sedimentary and taphonomic facies.