



Petrology and age of the Mésanger magmatism (Armorican massif, France): implications for the deformation history of Carboniferous basins

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In the southern part of the Armorican Massif, a Carboniferous continental sedimentation is preserved in two basins located along a dextral fault (the Nort-sur-Erdre Fault). The first one called the Ancenis Basin is Early Carboniferous in age. The second, Namurian in age (i.e. Early to Late Carboniferous), consists of coal-bearing basins (Basse-Loire Unit) and is supposed to be synchronous with the dextral displacement along the North-sur-Erdre Fault.

The Carboniferous series of the Ancenis Basin presents intrusive rocks (granite, microgranites) and volcanic rocks (rhyolites). Chemical analyses indicate that they all belong to the same magmatic high-K calc-alkaline association of peraluminous composition. For the first time, this magmatic event has been dated using the LA-ICPMS U-Pb method on zircons. The obtained age is of 319.3 ± 3.1 Ma and constrains both the maximum age of end of the sedimentation and the northward tilting of the sediments in the Ancenis Basin. This magmatic event is coeval with the sedimentation of the coal-bearing Namurian basins. These intrusions are interpreted as the feeding conduits of the volcano-sedimentary layers encountered in these basins. The present-day distance between the intrusive rocks in the Ancenis basin and their extrusive products would imply a minimal dextral displacement of nearly 20-25 km along the Nort-sur-Erdre Fault.