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## Evolution of the syn-orogenic sediment routing system in the North Pyrenean foreland basin - France

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The North Pyrenean foreland basin evolved from underfilled to overfilled during the Eocene time in mirror of the development of the Pyrenean orogeny. The resulted Eocene syn-orogenic conglomerate series, known as “Poudingues de Palassou”, recorded the evolution of the mountain belt and the draining system. Three units are classically differentiated in the eastern part: the first and third units deposited during the late Ypresian – Lutetian and Priabonian times respectively, contain clasts from the Meso-Cenozoic regional sedimentary cover. A second unit deposited during the Bartonian corresponds to clasts of magmatic and metamorphic origin (including granites). The objective of this study is to identify the sources of the sediments and to reconstruct the drainage evolution during the Eocene. To this end, U/Pb zircon dating was carried out on granite clasts from Unit 2 and on the conglomerate matrix of the three units using laser ablation-ICP-MS. These analyses are coupled with sedimentary characterization of depositional environments, paleocurrent directions measured in the fluvial deposits and Raman analyses performed on black flysch clasts from the Unit 1/Unit 2 transition. The zircon U/Pb results show a dominance of Variscan ages (290-360 Ma) in the upper part of the Unit 1 and for the matrix of Unit 2 conglomerates. Granite clasts of Unit 2 show mostly ages between 324±2 and 335±1 Ma. For Unit 3, the age spectrum is broader, ranging from Variscan to Cadomian (290 – 600 Ma). Sedimentary analysis of units 1 and 2, show an increase of the amount of sediments and a greater alluvial system during the deposition of the unit 2. The Raman analyses on the black flysch show temperature peaks ranging from 495 to 587°C, comparable to those obtained in the eastern part of the North Pyrenean Zone (NPZ) on black flysch deposits. Interpretation of the results shows that the deposits of Unit 1 are mainly derived from the erosion of the Meso-Cenozoic cover of the NPZ in the Late Ypresian and Lutetian, ending with black flysch of the NPZ, followed by erosion of the Variscan massifs. For Unit 2, the deposition is accompanied by a change in the nature of the clasts and a widening of the depositional zone reflecting wider drainage area including the Axial Zone (AZ). For Unit 3, the broad spectrum of ages obtained, as well as the nature of the clasts, suggest a fairly large catchment area drained from the AZ and significant recycling from the actively deformed foreland sedimentary cover during Priabonian. This research work was financed and

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