# The role of Cretaceous tectonics in the present-day architecture of the Nice arc (Western Subalpine foreland, France) evidenced by structural analysis and U/Pb dating on calcite

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**Résumé**

The Nice arc is part of the outer domain of the Western Alps. Located at the southern tip of the belt, its architecture is very singular, with a strong and narrow curvature. This particular shape could be the result of inherited structures that guided subsequent deformations during compressional events, as has been demonstrated in other parts of the belt. To achieve test this hypothesis, we adopted a multidisciplinary approach to characterise the geometry, kinematics, and timing of deformations associated with the various tectonic episodes that structured the arc. A special focus on the Cretaceous formations has revealed that the Cenomanian deposits show significant thickness variations and strong disturbances associated with fault activity. At this time, the formation of narrow, elongated basins was controlled by a system of NNE-SSW trending left-lateral strike-slip faults associated with NW-SE trending oblique and normal faults, dated at 81 ± 13 Ma on calcite recrystallised on the fault planes. During the Cenozoic, two phases of shortening reactivated the faults bounding these basins. An Oligocene phase corresponds to a NE-SW compression, expressed by NW-SE trending folds and thrusts and reactivation of first phase faults, dated at 28.7 ± 6.1 Ma, 28.8 ± 8.4 Ma and 27.3 ± 6.3 Ma. The Mio-Pliocene phase is characterised by N-S compression with E-W folds that interfere with the Oligocene folds and reactivate the earlier faults. A Lower Miocene age of 18.2 ± 1.1 Ma and a Pliocene age of 3.16 ± 0.47 Ma pinpoint the timing of these last deformation phases. These new data highlight the significance of strike-slip tectonics in the formation of the Nice Arc. This study highlights the adaptation of the Nice arc to successive regional stress fields, recording each deformation step and tracing its evolution. In particular, the structures of the pre-orogenic Cretaceous basins controlled the style of deformation during the compressional episode by inverting inherited releasing bends into restraining bends.

**Mots-Clés:** Western Alps, Cretaceous rifting, U, Pb on calcite, strike, slip tectonics, Nice arc.

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