



## ESEG-2: Tectonoestratigrafía de las cuencas andinas Mesozoicas

### **Tectonostratigraphic evolution of the Atuel depocenter as an oblique rift system during the Late Triassic to Early Jurassic, Neuquén Basin, Argentina**

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The Neuquén basin presents an almost continuous record from the Late Triassic until the Paleocene, making it an excellent case study that registers the most relevant tectonic stages of southern South America during the Mesozoic. It was initiated in the Late Triassic to Early Jurassic as a continental rift basin in the context of a widespread extensional stage that affected western Gondwana and culminated with the break-up of the supercontinent. The Atuel depocenter is located in the northern sector of the basin. Synrift and sag units are represented by Upper Triassic to Lower Jurassic siliciclastic marine and continental sedimentary rocks, and it bears the oldest marine deposits of the basin, of Upper Triassic age. The depocenter infill has been deformed and exhumed during the Andean orogeny, being presently exposed in the northern sector of the Malargüe fold and thrust belt. In order to study the tectono-sedimentary evolution of this depocenter, we integrated a large set of stratigraphic, sedimentologic and structural data into a multidisciplinary approach. We integrated data from facies and thickness distribution of the synrift units, provenance studies on sandstone samples, detrital zircon geochronology data, kinematic data from outcrop scale normal faults, angular and progressive unconformities and subsurface information. The structural architecture of the Atuel depocenter is interpreted as related to an oblique rift system, on the basis of the following characteristics: i) a general NNW orientation of the sub-basin, ii) a bimodal distribution of NNW and WNW normal faults, iii) an oblique NE-directed internal extension obtained from kinematic indicators measured on outcrop-scale faults. It was interpreted as controlled by oblique reactivation of a NNW-oriented lithospheric weakness zone under a regional NNE extension. A paleogeography dominated by active normal faulting controlled marked lateral variations of the depositional systems within the depocenter during the synrift stage. Two NNW-trending major normal faults, La Manga and Alumbre, controlled most of the basin subsidence, the distribution of the sedimentary environments and the drainage patterns. Provenance studies on sandstone samples highlight a major change in the detrital sources that could either be related to the synrift to sag transition, or to a renewed synrift phase by the Toarcian. This major change is also consistent with previous data from detrital zircon analysis.