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Introducing salt tectonics as key element for the sedimentation and deformation of the Northern Calcareous Alps fold-and-thrust belt (NCA), Austria.

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The NCA are a 700km-long EW-striking fold-and-thrust belt in the northern part of the Austroalpine orogenic wedge. One of the most relevant characteristics of the NCA is the presence of Triassic carbonate platforms deposited onto the northern Neo-Tethys margin over an aerially-extensive layered evaporitic sequence (i.e. the Permian Haselgebirge Fm.). Typically, these platforms show strong changes in sedimentary facies and thickness, through space and time. This complex arrangement of carbonate platforms constitute the structural framework of the NCA fold-and-thrust belt, which is unconformable overlaid by Cretaceous syn-orogenetic deposits. Remnants of the Permian evaporites are found today associated with major faults along the whole length of the fold-and-thrust belt.

Structural and stratigraphic data collected in recent field campaigns have allowed constructing and sequentially restoring a series of cross sections. Our work has revealed the existence of salt withdrawal mini-basins bound by deformed salt welds (i.e. remnants of former salt walls and diapirs). Salt evacuation and inflation can explain the otherwise poorly understood distribution of thickness and facies of these Triassic platforms. Inflated salt between these mini-basins has been one of the main controlling factors for the poorly-understood structural styles of this fold-and-thrust belt. The structures documented by our fieldwork are comparable in terms of geometry, dimensions and aspect ratios to published structures from the offshore South Atlantic salt basins and the Spanish Pyrenees.

Based on the evidence found, we propose that salt tectonics has been a primary architectural element in the NCA, from its continental margin stage until the subsequent deformation phases of the Austroalpine wedge. Introducing salt tectonics to the NCA will provide a new perspective that can explain many unresolved issues regarding its tectono-stratigraphic evolution.