



The Eocene South-Pyrenean carbonate gravity flow deposits in the Jaca-Pamplona Basin: Internal structure variability and interpretation

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During Uppermost Ypresian and Lutetian times several catastrophic collapses happened in the foreland carbonate margin of the South Pyrenean Jaca - Pamplona Basin. These events originated up to eleven major carbonate sheet-like beds (megabeds) interlayered with siliciclastic turbidites in the basin trough. They were described as a carbonate resedimented deposits in the early sixties but their origin, internal structure variability and interpretation remain controversial. In this work we document the lateral variability of their internal structure (including all the existing sediment gravity flow types ranging from slices to turbidites) and discuss the triggering mechanisms for their deposition. These carbonate megabeds are build essentially by two parts. The lower one consists of a debris flow deposit ranging or including slices, slumps, clast supported and mud supported megabreccias. The upper one is made up of a huge turbidite sequence. The thickness of these carbonate megabeds reach up to 250 m and their lateral extension attain up to 140 km along the carbonate margin (E-W) and a minimum of 10 km basinward (S-N). These internal structure and bed geometry inform us about a complex depositional mechanism. It consists of a lineal source along the foreland carbonate margin due to their catastrophic collapse. The carbonate platform collapse was triggered by their flexural bending correlative to the orogenic wedge growth due to the thrust staking. The subsequent turbidite sequence could be related to the resedimentation of shallow water carbonate components as a consequence of a tsunami triggered by the margin collapse.