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Liquefaction and lateral spreading structures in Upper Jurassic sedimentary sequence: Río Damas Fm., Central Chile.

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Sedimentary sucession within Upper-Jurassic rocks from Río Damas Formation show dramatic examples of soft sediment deformation structures (e.g. normal faulting, extension, and liquefaction ejecta) that must have formed when the sediments were still unconsolidated. These beds were studied using various methods. Spatial distribution, grain size and structural characterisation was undertaken both at the outcrops and in thin sections. Through a full characterisation of these rocks, including the sedimentology, stratigraphy, and then deformation pre-lithification, we can better understand the role played by the sedimentological and seismic settings in this terrestrial sedimentary basin. Early results show a number of distinct events that occurred post deposition, which suggest constant influence of strong ground motions (i.e. earthquakes) during the deposition of the Rio Damas Fm. Importantly, these styles of deformation observed at the outcrop and thin section scale are current not well-defined from modern examples, so the results of this work can provide insight into what to expect from more recent events in modern sediments and into magnitude-frequency distribution from other more recent (e.g. Quaternary or Holocene) events. Finally, we believe that these deformation structures may be some of the oldest evidence of paleo-earthquakes (paleoseismology) in Chile and Southern South America.