Study on the seismicity- and non-seismicity-triggered Soft-sediment Deformation Structures in Northern Ordos Basin

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In recent years, it is shown that there are many multi-scale, multi-types, multi-geneses, multi-stages, multi-periods and multi-sites soft sediment deformation structures (SSDS) developed in the Jurassic and Lower Cretaceous sedimentary rocks, in the northern part of the Ordos Basin. Because of the good exposure and easy inspection, it is the ideal place for research. According to preliminary statistics, there are more than 10 species: dish structure, deformation bedding, soft deformation fold, sand dike, ball sand pillow structure, pudding, liquefied diaper and convolute bedding et al. However, so far, no research has been conducted on these distinctive structures, and its geometric characteristics, combination relations, formation mechanism and formation environment are still unknown. The purpose of this study is to describe the geological features of SSDS in the northern part of Ordos Basin, to reconstruct the geometric features, to explore the formation dynamics, mechanism and environment，and to do further research on characteristics and discriminations of seismically induced SSDS from non-seismically (basin effect; tectonic movement or gas emission et al.).

Accordingly, seismicity- triggered SSDS can be recognized using the following criteria：(1) in general, most associated with ancient fault; (2) seismically induced SSDS repeatedly occurring in the column of strata, reflecting the periodic paleoearthquakes; (3) combination of many types of SSDS together; (4) similar rocks and sedimentary environments of the deformed and the related undeformed layers; (5) comparability with structures known to have been triggered by modern seismic activity; (6) Correlation between the intensity or abundance of seismicity-triggered SSDS with seismic parameters(epicentral distance and earthquake magnitude et al.).