Geophysical Research Abstracts
Vol. 12, EGU2010-3872-2, 2010
EGU General Assembly 2010

Salt Tectonics in the Kuqa Foreland fold and thrust belt, Tarim basin, northwest China

Jianghai LI, Haiyan CHENG, Kai WANG, and Gang DENG

Peking Uinversity, School of Earth and Space Sciences, Department of Geology, Beijing, China (jhli@pku.edu.cn, 86-10-62751153)

Although geoscientists have interpreted thousands of salt sheets in many basins worldwide, there has been little systematic work on salt tectonics at earth surface. Most salt diapirs in the world pierced during extensional events, whereas, salt in regional shortening in collisional orogens have been rarely documented. The Kuqa foreland fold thrust belt represents a well- described fold and thrust belt in Northwest China. A variety of salt structures of Miocene salt sequences have surfaced in the belt, such as salt glacier, salt sheets, salt walls, tank-track folds, diapirs of salt, detached anticlines, growth synclines, box-fold anticlines etc.. They are probably the best-exposed and best-preserved salt mountains in China. It is an excellent area to carry out study of salt tectonics due to the presence of excellent exposures and available seismic profiles. The lessons learned from outcrop study of salt sheets can profitably be applied to the subsurface study of sheets.

A reassessment of available surface and subsurface data of salt sheets leads us to propose a new kinematic sequence and timing for tectonic development of the Kuqa Foreland fold thrust belt. Salt layers form extremely efficient regional decollements and strongly control the style of deformation of the Kuqa foreland fold thrust belt. Two evaporitic levels form the flat segments of the basal thrust as it steps upwards from one detachment level to a higher one. The position, extent, thickness, and lateral facies changes of the evaporitic units constrain the position, geometry and trend of the series of detached anticlines in the area. Above thin salt, structures are dominated by thrusts and narrow box-fold anticlines. More open, larger-amplitude detachment folds are possible where thicker salt can fill the cores of anticlines Additional control on salt tectonic style and location of backthrusting could have been exerted by with basement faults and morphology of the pre-evaporitic basement.

Key words: Tectonic evolution, Salt, Cenozoic, Foreland fold-thrust belt, Tarim Baisn, Northwest China