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川东“侏罗山式”褶皱的数值模拟及成因探讨

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摘要：

本文通过采用有限差分法（FLAC）对“侏罗山式”褶皱进行数值模拟发现，层间粘聚力差异和上覆压力是控制隔档式褶皱、隔槽式褶皱样式的主要因素，即层间的能干性差异和埋深的控制。当地层在埋深较浅时，层间能干性差异对褶皱样式起主控作用，能干性差异小时出现隔槽式褶皱，差异大时出现隔档式褶皱。随着埋深加大，压力逐渐起主要作用，这时仅出现隔槽式褶皱。川东东带褶皱地层总体上层间能干性差异小，因而盖层的深部与浅部皆出现隔槽式褶皱，与模拟结果一致。西带褶皱地层总体层间能干性差异大，因而浅部出现隔档式褶皱。而其深部的下古生界地层主要受上覆压力控制，根据模拟推测应为隔槽式褶皱。

关键词：数值模拟 隔档式褶皱 隔槽式褶皱 粘聚力差异 上覆压力

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Abstract:

Numerical modeling of Jura type (detachment) folds by using the finite different code FLAC shows that interlayer cohesion contrasts and overlying confining pressures are key factors for development of comb like and trough like folds, indicating controlling by interlayer competence contrast and burial depth. When folded strata are in shallow levels, interlayer competence contrast plays an important role in fold styles. Lower interlayer competence contrast will produce trough like folds whereas higher interlayer competence contrast will lead to comb like folds. As the depth increases, the pressure gradually plays a major important role and higher overlying pressures will cause trough like folds only. Lower interlayer competence contrast in the folded strata in the eastern part of the eastern Sichuan fold belt results in trough like folds both in shallower and deeper levels of the cover, which are consistent with our numerical modeling results. Higher interlayer competence contrast in the western folded strata causes comb like folds in the shallower levels. However, the fold style in the deeper, lower Paleozoic cover strata in the western belt are mainly controlled by overlying pressures, and the developed fold style should be trough like folds according to the numerical modeling results.

Keywords:Numerical modeling comb like fold trough like fold cohesion contrast overlying pressure

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