

TECTONOSTRATIGRAPHY AND INFLUENCE OF BASIN TECTONICS ON SEDIMENTATION IN A RIFTED AND INVERTED BASIN ALONG A MICROPLATE BOUNDARY, CENTRAL JAP

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Sequence stratigraphy has brought a new concept on sedimentary basin analysis in terms of genetic and dynamic stratigraphy. But in an active tectonic setting, tectonostratigraphic analyses, such as subsidence pattern, sediment supply potential and basin physiography, are needed in addition to the conventional sequence stratigraphic analysis, because tectonics can be a main factor controlling cyclicity and constituent depositional systems. This paper presents an example of tectonostratigraphic analysis and examination of tectonic influences on sedimentation in a rifted and inverted basin along a microplate boundary.

The Neogene Niigata-Shin'etsu basin is a failed rift basin generated around 16Ma with relation to the backarc opening of the Japan Arc. The basin experienced a basin inversion around 6.5Ma from tensional to compressional in response to the shifting of the microplate boundary.

The basin history is divided into four tectonostratigraphic stages. Stage I (16Ma-13.5Ma) is a syn-rift to early post rift stage, showing a rapid subsidence pattern in basin subsidence. The main depositional system is a slope to basin floor system and depositional sequences show a retrogradational stacking pattern. Stage II (13.5Ma – 6.5Ma) is a post rift stage, showing exponential decrease of subsidence rate. The main depositional system is a submarine fan system and depositional sequences show an aggradational stacking pattern. Stage III and IV (6.5Ma – Present) are a compressional stress field stage, after basin inversion. The main depositional systems are shelf, delta and fluvial systems, and depositional sequences show a progradational stacking pattern. The most of depositional body were affected by