

Structural geometry at the Niitsu hill Niigata prefecture

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Introduction

Niigata basin is that Neogene-Quaternary sediments which is several 1000m thick covers basement rock, and that many folds have been extended N-S direction by W-E compression is observed. This region is known as Niigata oil field and has been interpreted to several 1000m depth. However, a part of surface and shallow underground do not understand in detail. Therefore, if we consider to structure of Niigata basin, it is important that we understand a chain of structure from depth to surface. There, we refer to underground structural geometry about the Niigata prefecture Niitsu hill.

Depth geometry at Niitsu anticline

About make factor of the Niitsu anticline, Collaborative Reserch Group for the Niitsu anticline(1977) and Tomita and Yamaji(2001) suggested by micro fault analysis that basement elevation was made by reverse fault. Because of edge fault geometry, Iwamura and Iwata(2004) suggested that depth structure under the Niitsu anticline changed by inversion.

Geological Survey

The purposes of the geological survey is lithofacies distribution and fault analysis. About lithofacies distribution, this region is characterized that the western section of Niitsu hill is several volcanic rocks and the eastern section of that is sedimentary rocks. We thought elevation at the western section by stratigraphy and geological profile. We observed repeated small folds which wavelength is several 100m or less within the Taira formation locates at the eastern part of Niitsu anticline.

We thought kinematics by fault rocks analis at field and laboratory. Therefore, almost all faults are normal fault or right-lateral normal fault, and the distribution locates southwest section on the survey area.

Examination

About kinematics, we suggest that 2 pattern geometrical models are thought by a result of geological survey.

First model is positive flower structure of the strike slip duplex, because lateral faults observed by the kinematical analysis of fault rock. However, it is expected that the kinematical direction had been changed from right-lateral to left-lateral by inversion.

Another model is the dendritical geometry. The edge fault geometry consist of main thrust and backthrust, and this is made by inversion. Because faults displacement is more little than main thrust and backthrust branch off from backthrust.