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Features and development of fault structures nearshore northeastern Taiwan

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The collapsed orogenic belt in northern Taiwan experienced stress changes from a compressional to an extensional environment, showing a series of normal fault structures offshore northern Taiwan. However, most of the onshore faults are in reserve sense and show the varying fault offsets along the northern coast of Taiwan. For example, the Oligocene hanging wall and Miocene foot wall rocks of the Longdong Fault indicate there is an enormous offset, whereas both hanging and foot wall rocks of the Wentzukeng Fault are Miocene Mushan Formation, implying a relatively minor offset. Apparently, the spatial relationship and possible connection between offshore and onshore structures need further clarification. To delineate fault structures and possible connection of faults between offshore and onshore areas northeast Taiwan, we take advantage of new and reprocessed nearshore marine multi-channel seismic reflection surveys data. A seismic sequence boundary (Pliocene regional sequence boundary, PRSB) and a series of normal faults are distinctly recognized, especially in nearshore area. The offsets of these normal faults seem to gradually decrease towards the onshore region, where the sense of the fault are mainly reverse. Toward the offshore, however, we found that the offsets of these faults appear to gradually decreases as well and seem to disappears. In the future, we will continue to delineate the features of these fault structures by analyzing the inception of fault activities and the cumulative displacement of these faults. These will allow us to validate the connectivity between offshore faults and to infer the relationship between onshore reverse faults and offshore normal faults. We aim to gain a better understanding about how these faults developed during periods of tectonic collapse of the Taiwan orogenic belt.

Keywords: Offshore Northeastern Taiwan, Post-collisional collapse, Fault feature, Multi-channel seismic, Seismic Stratigraphy, Geological structure