

## **New Gravity and Magnetic Anomaly Maps in the Taiwan-Luzon Region and Their Preliminary Interpretation**

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### **ABSTRACT**

We have compiled new free-air gravity anomaly (FAA) and magnetic anomaly maps, shedding light on the tectonics in the Taiwan-Luzon region. To have a suitable datum level for both the available gravity and magnetic anomaly data, the set of data from an ACT cruise, conducted during May 27 to June 21, 1996, was chosen as a reference. Based on the cross-over error analysis, all the other data were adjusted accordingly. Some satellite-derived, airborne or land data were also added to the compilation to obtain better coverage.

Several major new insights into the Taiwan-Luzon region are revealed by the new maps. (1) A prominent NE-SW trending belt of gravity and magnetic anomalies is present in the onshore and offshore areas of southwestern Taiwan. The Peikang High is located on this belt. (2) Located in the offshore region west of Taiwan and to the north of the belt described above, the Taishi Basin, in contrast, occupies a relatively low FAA area. It could be regarded as a flexural basin on account of the loading of a thrust-and-fold belt in western Taiwan. (3) A probable NW-SE trending old transform fault is well imaged off southwestern Taiwan, which separates the lithosphere (plate) of the South China Sea from a trapped piece of the Philippine Sea plate. (4) Located east of the Luzon Arc, the Huatung Basin contains several E-W trending magnetic reversals and two N-S trending old fracture zones. The Huatung Basin is separated from the West Philippine Basin by the "123E Fracture Zone". Accordingly, the Gagua Ridge corresponds to a transverse ridge bounding the 123E Fracture Zone. (5) The Luzon Arc is abnormally concave toward the Manila Trench and becomes

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