Heat flow distribution in Aira caldera

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Shallow submarine hydrothermal activities have been confirmed in the Wakamiko Crater in Kagoshima bay, south Kyushu, Japan. It is thought that Wakamiko Crater is one of the craters of the past eruption of Aira volcano, as a result huge Aira caldera was appeared here. In this area, we carried out heat flow investigation during 2005 to 2007 by the research cruises, JAMSTEC.

In these cruises, we got the 155 points of thermal gradient and 4 points of thermal conductivity. The bottom part of Wakamiko Crater has characteristic areas where the big spear type instrument (about 800kg, 4.5m) for heat flow couldn't penetrate the seafloor. By the submersible research, we found complicated structures of small mound and depression. In the western part of the seafloor, there are many white patches and many small depression (about tens of cm) of which figure is like crater. In the central part of Wakamiko Crater, hydrothermal mound figure was changed after last visit at 2005. We assume that the structure concerned about the volcanic activity of Wakamiko Crater. This area has extremely high heat flow higher than $1.0*10^3 mW/m^2$ (21 points). There is a trend that values suddenly decrease to the surrounding area. We show these heat flow distribution in Figure 1. These observed heat flow values may be affected water temperature variations because this area is very shallow.