

The linearity of geographical features and a planation surface along the seashore around the fast breeder reactor Monju

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We have not only conducted a survey of crush zones near the reactor building in the fast breeder prototype reactor Monju site but also carried out geographical investigations such as terrace classification and lineament investigation around the site. This presentation reports the results of the geographical and geological survey on the linearity of geographical features and a planation surface along the seashore around the site.

1. An investigation into the linearity of the mountain/terrace boundary

It is estimated that the lineament of the NW-NNW direction, also called the L-2 lineament, exists to the south of the Monju site. Geographical and geological surveys by JAEA suggest that this lineament is highly likely to be a structural landform. The mountain/terrace boundary to the north of this lineament extends in a straight line-like form in the NW direction. During an expert meeting of the Nuclear Regulation Authority, it was suggested that an active fault might exist along this boundary. It was in response to this suggestion that we carried out the geographical and geological survey.

Geographical investigation: We carried out a terrace classification, field survey, and analysis of the survey data for regions around the mountain/terrace boundary. The mountain slope directly faces the sea; the slope of the present stream bed and terrace surfaces is comparatively steep in the investigation area. In the topographical map before artificial change, we can recognize that the stream makes the loosely curved dissected topography without winding greatly and that the mountain/terrace boundary is loosely curved similarly.

Geological survey: Outcrop investigation was conducted on the mountain/terrace boundary by paying attention to the existence of crush zones and the development style of the joints. In addition, we also estimated the age of the sedimentary layers.

The results clearly indicate that the joints are progressing mainly in the NW or the NE direction, and the comparatively hard granite is also distributed. Moreover, although crush zones were observed in some outcrops near the mountain/terrace boundary, we could not detect crush zones that continue in the same direction as the mountain/terrace boundary. In the outcrop near the northwestern end of the mountain/terrace boundary, it was observed that the covering layer, which was deposited after about 40,000-50,000 years ago and covers a crush zone, is not displaced.

The results of the above-mentioned geographical and geological survey suggest that the linearity of the mountain/terrace boundary has not originated from fault displacement.

2. An investigation into the linear coastline and planation surface along the seashore

A linear coastline extending in the NE direction can be seen around the Monju site. In addition, a planation surface is observed in parts along the seashore. We performed a geographical and geological survey to determine the origin of such a geographical feature and whether such a planation surface could exist elsewhere.

Geographical investigation: While carrying out the air photograph interpretation, the contour line maps and topographic profiles were created using a digital elevation map created from aviation laser survey data. As a result, except for one place which is present at an altitude of about 5 m, a geographical feature that can be recognized as a comparatively flat field was not observed.

Geological survey: We carried out an outcrop investigation that paid attention to the development of joints and searched for evidence that suggested the upheaval of land. The results suggest that the direction of the coastline and the direction of developing joints are similar. Moreover, we could not observe the remains of living things which suggest the possible upheaval of land.

Keywords: fast breeder reactor Monju, survey of crush zone, lineament