

## Preface

The Geological Survey of Japan (GSJ), AIST conducts earthquake-related geological and geophysical surveys and researches mainly in line with the comprehensive and basic policies of the Headquarters for Earthquake Research Promotion (HERP) of the Japanese government, which was established in 2019. This national policy insists on promoting the greater utilization of research results in the society than ever before, which is consistent with the AIST's charter "*Full Research in Society, for Society*". We will keep enhancing the content of this report series as one of our missions.

Fortunately, there were no major earthquakes in Japan that warranted urgent investigation in 2021, but large ones occurred in a row near the hypothetical source area for the Nankai Trough megathrust earthquake. On December 3, 2021, an earthquake of magnitude 5.4 occurred with its epicenter in the Kii Channel, with a maximum intensity of lower 5. On January 22, 2022, a magnitude 6.6 earthquake centered in Hyuga-nada occurred, with a maximum seismic intensity of upper 5 in Kyushu. The Japan Meteorological Agency (JMA) announced that neither of them will directly lead to a great Nankai Trough earthquake. According to the long-term assessment by HERP, there is a 70-80% probability that a M8 to M9 class earthquake will occur somewhere in the Nankai Trough within 30 years. Disaster prevention efforts in normal times are becoming increasingly important. Paleo-earthquake and tsunami researches are essential to improve the accuracy of assessing the probability and magnitude of future seismic events and to reduce the damage caused by them.

This issue contains the following five research reports on active faults and tsunami deposits conducted up to FY2020: 1) Analysis of long-term displacement rate of the Shizukuishi–Bonchi–Seien fault zone in Iwate Prefecture, inferred from topographic and geological features (a part of "Research Project for Advanced and Efficient Long-term Evaluation of Active Faults" commissioned by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) in 2020 FY), 2) Characteristics of surface ruptures associated with the 1896 Riku-u earthquake and a review of its past activities based on the displacement of river terraces, 3) Introduction of new data on the investigation of surface ruptures conducted immediately after the 1930 Kita-Izu earthquake, 4) A study on the activity of the Shiroko-Noma fault in the central part of the Ise Bay, and 5) Report on the Paleo-tsunami study in Hyuga City, Miyazaki Prefecture (a part of "Research project for compound disaster mitigation on the great earthquakes and tsunamis around the Nankai Trough region" commissioned by MEXT).

The contents of the reports are peer-reviewed by the editorial committee, which consists of the group leaders of IEVG, to maintain a certain level of quality. We welcome frank opinions and comments from readers on the contents of this report and the way research results on active faults and earthquakes should be disclosed.

Last but certainly not least, we would like to express our gratitude for the understanding and cooperation of the relevant local governments, boards of education, local community associations, landowners, government offices, fishery cooperatives, and cooperating companies in our research.

Itoh Jun'ichi

Director, Research Institute of Earthquake and Volcano Geology

Fujiwara Osamu

Deputy Director, Research Institute of Earthquake and Volcano Geology

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