Preface

Fiscal year 2010 is the first year of the third mid-term period (2010-2014) of the National Institute of Advanced Industrial Science and Technology (AIST), as well as the second year from the launch of the Active Fault and Earthquake Research Center (AFERC). AFERC for the third mid-term of AIST is setting up two research themes: 1) Advancement of techniques for active faults evaluations and earthquake hazard assessment, and 2) Advancement of techniques for forecasts of subduction zone earthquakes and tsunami generations. We are planning to conduct specific studies in the research themes as follows:

a) Conduct paleoearthquake surveys over 25 active faults along coastal and inland areas to reveal histories of seismic activities on the fault. We will also upgrade the active fault database that was released in 2005.
b) Construct a prototype of a physical model of earthquake occurrences along the Itoigawa-Shizuoka tectonic line, central Japan, to forecast a timing and magnitude of earthquakes with a physically-based method.
c) Propose survey methods and simulation techniques for near-surface deformation due to faulting. We will also make a hazard map of near-surface deformation along the Fukaya fault zone, central Japan.
d) Construct a comprehensive groundwater observatory network and a short-term prediction system for anticipated Tokai, Tonankai and Nankai earthquakes.
e) Survey traces of past earthquake and tsunami recorded in coastal topography and sediments along the Japan Trench and the Nankai trough in history over the past several thousand years. We will publish a tsunami inundation map in Miyagi prefecture, northeastern Japan.

This volume contains 8 reports based mainly on activities of the AFERC in 2009. Among them, the following studies are supported by external funds: paleoearthquake and related studies on the Kanbayashigawa and the Mitoke faults (central Japan), and on the Kikugawa fault, the Nishiyama fault and the Unzen fault group (western Japan) were results of the projects contracted by MEXT (the Ministry of Education, Culture, Sports, Science and Technology-Japan). Other surveys and researches, that is, stratigraphic survey at a coastline in Fukushima prefecture, ground penetrating radar profiling across the northern Ayasegawa fault (central Japan), crustal stress measurements at Itoigawa-shizuoka tectonic line (central Japan) were supported by internal funds of AIST.

We welcome comments from readers on the contents of this report, and the ways to publicize the results of our surveys and researches. Finally, we would like to express our sincere gratitude to land owners, local communities and municipality that allowed us to work on private properties.

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October 29, 2010