Resolution of the Twelfth Joint Meeting of the U.S.-Japan Panel on Earthquake Research (UJNR)

October, 2018

The UJNR Panel on Earthquake Research promotes advanced research toward a more fundamental understanding of the earthquake process and hazard estimation. The Twelfth Joint meeting was extremely beneficial in furthering cooperation and deepening understanding of problems common to both Japan and the U.S.

The meeting included very productive exchanges of information on approaches to systematic observation and modeling of earthquake processes. Regarding the Earthquake and tsunami of March 2011 off the Pacific coast of Tohoku and the 2016 Kumamoto earthquake sequence, the Panel recognizes that further efforts are necessary to achieve our common goal of reducing earthquake risk through close collaboration and focused discussions at the 13th UJNR meeting. We look forward to continued cooperation on issues involving the densification of observation networks and the open exchange of data among scientific communities. We recognize the importance of making information publicly available in a timely manner. We also recognize the importance of information exchange on research policy and strategies, including the frameworks of research organizations.

Areas of Cooperation

Specific areas of earthquake research where cooperative research between Japan and the U.S. may lead to significant advancement include, but are not limited to:

- Probabilistic earthquake and tsunami hazard estimation, including extraordinarily large earthquakes, both in our respective countries and worldwide, incorporating knowledge of current and past behavior, and physics based computational models;

- Real-time information from seismic, geodetic and strain measurements, including borehole strainmeters and seafloor observations using offshore cabled networks;

- Technologies for measuring crustal deformation including GNSS, GNSS-acoustic, InSAR, LiDAR, VLBI and SLR;

- Early warning technologies for earthquakes and tsunamis;

- Studies of recurrence of large and extraordinary large earthquakes using paleoseismic, paleotsunami, geodetic and seismic methods;

- Studies of earthquake sources and fault-zone processes using observational, experimental, theoretical, and in situ methods;

- Studies of episodic tremor and slow slip events using seismic, geodetic, borehole strain measurements, and simulation techniques;

- Systematic studies of earthquake predictability through rigorously evaluated scientific prediction experiments and robust databases;

- Studies of strong ground motions, geological effects such as lateral spreading, ground failure and the response of engineered structures;

- Observations and research on the causes and effects of earthquakes induced by fluid injection;

- Explore opportunities and exchange information for comparative studies of subduction zones and the instrumentation/measurements required to advance subduction zone science;

- Explore the use of artificial intelligence/machine learning techniques for earthquake research;

- Techniques and experience from seismology and social science to effectively communicate results from the above collaborations, to promote broad understanding of earthquake hazards and to facilitate risk reduction;

The Panel strongly urges that the appropriate agencies in Japan and the U.S. that are represented on this panel work together with the academic sector to support and coordinate scientific work in these areas of cooperation.

The Panel recognizes the importance of promoting the exchange of scientific personnel, exchange of data, and fundamental studies to advance progress in earthquake research. Japan and the U.S. should promote these exchanges throughout the world. The Panel endorses continuation of these activities.

Next Meeting

The next meeting will be held in the U.S. in the autumn of 2020.