Statement from the Japan Meteorological Agency at UNFCCC expert meeting on assessing the risk of loss and damage associated with the adverse effects of climate change - Japan March 2012

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First of all I express my thanks to Dr. Golnaraghi for her very hard work for coordinating and facilitating this important session.

Climate change is more than just an increase in global mean temperature. It is not just a change in the average or the maximum likelihood of weather conditions. But it is also a change in variability and overall probability distribution of weather events. In most cases we see significant loss and damage wreaked by rare and extreme weather events that appear near the tail of the probability distribution. This makes it more relevant for us to keep our eyes on change and variability in extreme weather events associated with climate change, including in historical as well as futuristic perspective.

In order to monitor climate as it warms over time, and detect a sometimes faint signal of change against a backdrop of noisy natural fluctuations in the atmosphere and ocean, we need a long-term sequence of quality-checked, spatially and temporarily high-resolution observation data.

The Japan Meteorological Agency, established in 1875, keeps the weather observation statistics archive that dates back to the 19th century. Adding to that, in the 1970s JMA started to install a network of Automated Meteorological Data Acquisition System, better known as its abbreviation AMeDAS. Since then JMA has around 1000 automated stations kept in operation. The statistical analysis of this

accumulation of huge historical meteorological datasets forms a foundation for us to investigate whether and how the frequency and intensity of extreme weather events have changed over a decade to century-long time scale.

Extreme weather events oftentimes take place in highly localized spatial extent. This is particularly the case with torrential rains or heavy snowfalls over mountainous geography like that in Japan. It is increasingly recognized as well that adaptation measures to climate change need to be designed and carried out considering the localized context. The Japan Meteorological Agency maintains six block observatory headquarters, each of which in turn supervises many local observatory branches. The JMA's six block headquarters, in cooperation with their local branches, have been engaged in monitoring and publishing a report on climatologic changes in their individual jurisdictions, with a view to helping raise public awareness and feeding climate-related information to local administrative agencies.

In assessing possible future changes in weather extremes associated with climate change, we need an instrument that provides a realistic model of the atmospheric, oceanic, and terrestrial conditions. Although there are lots of climate models available around the world for projecting future climate conditions, those models are subject to some constraints with regard to spatial resolution, because practically we cannot afford to mobilize as much computational resource as we think necessary.

Recently the Japan Meteorological Agency has managed to obtain results from a fine-meshed climate model that covers the entire globe with 20km-spaced grids. As far as I know this is one of the world's highest spatial resolution ever. But even this level of spatial resolution does not adequately represent extreme weather events linked to bumpy topography in Japan. We are now trying to achieve projections using a regional climate model that covers the Japanese archipelago with 5km-spaced grids. This level of resolution is expected to allow us for the first time to assess possible future changes in extreme events on

an individual river basin scale.

The accumulation of climate data and its analysis on its own does not enable us to implement climate risk management. Weather and climate events are far from deterministic. Climate information needs to be described in the form of probability distribution. Climate information needs to be provided along with associated uncertainty estimation. On the other hand, it is not an easy task to properly understand and deal with probability and uncertainty, and users or prospective users of climate information are in general not familiar with statistical thinking. Further efforts are required to establish a methodology that facilitates making better use of climate information.

In this statement hitherto I have tried to illuminate the importance of historical as well as future projection dataset. Before conclusion I would like to attract attentions as well to the important role of timely monitoring and prediction as an instrument for climate risk management.

The Japan Meteorological Agency routinely disseminates early warning information when the probability of unusually high or low temperature exceeds a predetermined threshold up to two weeks ahead of time. In an effort to apply this information to climate risk management in the agricultural sector, JMA, in collaboration with agricultural research institutions, has been engaged in a field study for several years. For the benefit of National Meteorological and Hydrological Services abroad, JMA established the Tokyo Climate Center serving as one of the regional climate centers for Asia under the international framework of the World Meteorological Organization. The Tokyo Climate Center provides climate monitoring products, climate prediction data, and capacity building opportunities to National Meteorological and Hydrological Services in the area.

I conclude my statement with thanks to all present here for your attention.