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Opening of a new era for the earthquake prediction research

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The Hagiwara symposium on "Monitoring and Modeling of Earthquake and Volcano Processes for Prediction" held at the Sapporo IUGG in 2003, as described in the August, 2004 issue of the Earth, Planets and Space, opened a new era for the earthquake prediction research. Takahiro Hagiwara symbolizes an era of the earthquake prediction research since 1960's in which monitoring was emphasized and a variety of monitoring data have been accumulated throughout the world with the ever increasing quantity and improving quality. We now find, however, a growing recognition among earthquake scientists, especially in Japan, that modeling is as important as monitoring for a healthy development of earthquake prediction research as a branch of Physical Science. The EPS issue review the progress made in the earthquake prediction research in the past and address the promising directions in the future. The earthquake prediction research, however, is different from the traditional science in the following two important aspects. First, unlike the traditional science in which causal relations are sought under conditions controlled or restricted as much as possible, the prediction science must deal with the diverse nature as it is. Thus we need to consider, simultaneously, many models that can be constrained by the monitored data to cope with the complex course of nature. The other aspect is the direct impact of the outcome of research on human society. The scientific community must give a consensus message to the public for an effective communication. It is not a simple problem to reconcile the need for multiple models to deal with nature and the need for a single voice to deal with society. The present paper summarizes a view of the future of the earthquake prediction research as presented at the Hagiwara symposium.