# The current status of the short-term prediction and future direction

# Toshiyasu Nagao[1]

[1] Earthquake Prediction Res. Center, Tokai Univ.

Before starting the discussion on this issue, we have to consider the definition of 'short-term prediction', especially its precision. Otherwise, often the discussion gets uselessly confused. Here we discuss the following level of prediction. 'Within one week, M7 class EQ is expected to occur in the northern part of Kyushu Island'. If we adopt a more strict definition with very high precision for a successful prediction, e.g., the occurrence time error within 3 hours, the epicenter within 5 km and the magnitude within 0.1 unit, discussion may fall onto non-essential issues such as what kind of magnitude scale is used and what would happen if the magnitude is revised later.

We must recognize that the short-term prediction is quite different from the long-term prediction. The long-term prediction is based on statistical methods, whereas the short-term prediction is based on the observation of some precursory phenomena. Meaningful precursory phenomena to large earthquakes should be, in principle, as rare as the large earthquakes, and through the past 30 years' experiences, we have realized that they are small. Therefore it is important to establish a unified data acquisition system for multiple observational items.   It seems difficult to obtain convincing preseismic signature for practical prediction by one method only.

The author has been engaged with the EQ prediction research based on electromagnetic phenomena during the past 10 years and believes to have succeeded in demonstrating the existence of the electromagnetic precursory phenomena before large EQs. In the presentation, we will introduce not only the recent progress of the electromagnetic study but also the high-frequency seismic noise observation and geochemical approaches, etc. Furthermore, we will discuss the societal problems related with earthquake prediction, such as the proper means to transmit the information to the general public and cancellation of alarms.