Seismic electromagnetic study in China

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Seismo-electromagnetism is becoming a hot interdisciplinary study in both geosciences and electromagnetism. Numerous electromagnetic changes at a broad range of frequencies associated with earthquakes have been reported independently. There are some attempts of applying such electromagnetic data to short-term earthquake prediction. Although due to the complexity of seismogenic process and underground structure, the seismic electromagnetic phenomena cannot be fully understood, the seismic electromagnetic study plays a key role in the mitigation of seismic hazard.

China is one of the countries which have the earliest reports on seismo-electromagnetic phenomena. The seismic electromagnetic study in China started in late 1960's. There are almost 50 years continuous observation data up to now, which provides a unique database for seismo-electromagnetic study not only in China, but also in the world. Therefore, seismo-electromagnetic study in China is interested broadly by international communities of geosciences and electromagnetism.

I present here a brief review on seismic electromagnetic study in China, especially focusing on geo-electromagnetic observation and empirical prediction based on the observation data. After summarizing various electromagnetic observations such as apparent resistivity, geoelectric potential, geomagnetic field, electromagnetic disturbance, and so on, I show the cases of the empirical prediction based on the observed electromagnetic data associated with some earthquakes in China. Finally, based on the above review, I propose an integrated research scheme of earthquake-related electromagnetic phenomena, which includes the interaction between appropriate observations, robust methodology of data processing, and theoretical model analysis.