Japan Geoscience Union Meeting 2015
(May 24th - 28th at Makuhari, Chiba, Japan)

SSS27-P02 Room:Convention Hall Time:May 24 18:15-19:30

Predicting earthquakes just before by observing electric fields

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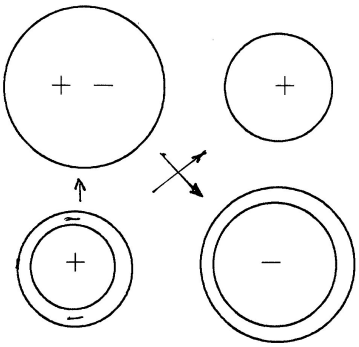
The precursory seismic electric fields will be generated by the mechanism as follows:
(1) Before earthquakes, micro-cracks run in the source regions, and into these cracks pore water pours.
(2) Uranium compounds, radium compounds and radon, which exist in crystal boundaries, dissolve into the pore water.
(3) The cracks connect the pore water and spring water, and the radio active materials appear on the surface of source regions.
(4) The active materials ionize the lower atmosphere above the source regions, and the electric conductivity increases there locally and temporarily.
(5) The increase generates the current along the trace of cosmic shower between the surface and the ionosphere.
(6) As the current is intermitting and pulsating, it radiates wide band radio-waves, which are observed as the precursory waves.
The occurrence of the precursory micro-cracks of the item (1) is indispensable, but is not yet observed, though the radio active materials of (3), the cloud caused by the current of (5) and the wide band radio-waves of (6) are already observed before big earthquakes. So, the above mechanism will be appropriate.

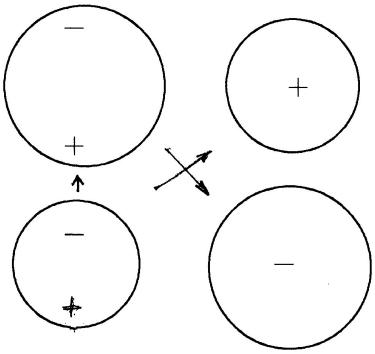
2. Mechanism generating the current of item (5),
The top of thunderclouds has the voltage up to about 100 MV, so the electrons and negative ions flow into the clouds from the ionosphere. As a result, the ionosphere has a few MV. The mechanism, which increases the voltage at the cloud top, will be as follows (Refer to figs):
(I) At middle latitudes, water drops in cumulonimbus change into ice crystals in the area where the temperature is about -10 deg. The melting temperature of a solid is lower on the surface than the inside, so at about -10 deg. the ice crystals are covered with liquid water film. The inside of the crystals there are free electrons and positive holes, and the electrons can move to the surface water, but the holes can't. So the water film is negatively charged, and the solid part of crystals positively charged. In the cloud, the crystals collide with each other, the collision is approximately elastic one where lower than -10 deg., and the change of speed of the smaller crystals is bigger than that of larger ones. Then the negative charge in the surface film on the smaller crystals moves to the larger crystal, and the smaller crystals become smaller and charged positive, are blown up to the cloud top, and make it high voltage. On the other hand, the larger crystals become larger, negative and drop down on the ground.
(II) At low latitude, in the cloud no water crystal will exist, but upward electric fields of about 1 kv/m exist, as at other areas. So, water drops are polarized such as the top is negative and bottom is positive. When they collide, the negative charge in the top of smaller water drops, which have higher speed than the larger ones, neutralizes the positive charge in the bottom of the larger water drops, and the smaller ones become positively charged and are blown up to the cloud top, resulting the high voltage.
(III) In the smoke billowing from volcanos, the lightning is observed, where cinders, ashes and blocks collide with each other, and are charged by frictional electricity. By the same reason shown in (II), the charge is polarized and high voltage in the upper part of the smoke is generated. As this high voltage is observed, the explanation mentioned above will be valid.

3. Earthquake prediction by observing electric fields
The site where the earthquakes occur will be the place where the electric fields are observed, because the fields will be generated at the place where the micro cracks generated. The magnitude will be estimated from the size of the area where the fields generate, because the magnitude is about proportional to the size of the area. About to the occurrence time, about one week before big earthquake occurrence the fields started to be observed.

Keywords: earthquake prediction, precursory seismic slectric fields, mechanism of generating thunder, thunder in middle-latitude, thunder in low-latitude, thunder in smoke of volcano



At middle latitude



At low latitude