

Geophysical observation records of Tonga large volcanic eruption by Asia-Pacific network (Pacific21)

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Pacific21 network is one of international geophysical network in Asia-Pacific region.

As for seismological observation, the network operates very broadband (360sec) sensors and most data are distributed to organizations and researchers via telemeters and internet. Some stations have high resolution barometer or geomagnetic sensor at the same location.

Atmospheric pressure variation and meteotsunami excited by large Tonga volcanic eruption are reported globally. Barometer of Pacific21 network also records clear signal with the peak of about 2hPa.

High resolution very broadband seismometers measure the gravity variation and ground tilt. In our research, ground tilt has high coherency with atmospheric pressure variation in longer period greater than 40sec by long-term spectrum stacking analysis. Atmospheric pressures change clearly with more 20min time width. It is expected that the evolution of ground response accurately. The polarity of ground tilting matches the back azimuth of air pressure wave propagation from Tonga volcano.

In the vertical component of very broadband seismograms, the coupling mode between atmosphere and solid earth is characterized in long elapse time. And apparent location dependence also recorded and it will be evaluated. This presentation introduce geophysical data originated by the Tonga eruption in the Pacific21 network and ground response due to atmospheric pressure variation.

Keywords: Pacific21, Broadband seismometer, Atmospheric pressure variation