Observation of the seismic dynamo effect using a blast

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On October 13, 2006, we observed seismic waves and electromagnetic fields due to the blasting at Asama volcano. Our objective was to verify the existence of the seismic dynamo effect from the observations.

We set up two stations. One is located at 250m west from the shot point, and the other is located at 250m south from the shot point. At the west site, we had one set of AMT equipment and a three component seismometer. The electromagnetic signals (three magnetic and two electric components) were recorded by Phoenix-MTU5A equipment with the sampling rate of 150Hz. The three-component seismic signals were recorded by 24 bit data logger (Hakusan LS700XT) with 100Hz sampling. Since the data logger had spare channels, the two horizontal electric field components were also recorded by the same data logger. Thus the telluric and seismic data were recorded by the same data logger and will have no such problem as different timing of the GPS time stamping of the different loggers. The southern site had only an AMT observation.

Since the site is close to the shot point, we expected that the P wave will be traveling simply in a radial direction. Then, if seismic-dynamo is really working, such radial velocity will induce electromotive force differently to the western and southern stations.

The first arrival of the observed seismogram was not dominated by the radial component as we initially expected.

In the presentation, further investigation and processing of the data will be given.