Development of seismic waveform monitor application by JAVA

*Masayoshi Ichiyanagi[1], Hiroaki Takahashi[1]

1. Institute of Seismology and Volcanology, Graduate School of Science, Hokkaido University

Aftershock activity, earthquake swarm and volcanic earthquakes occur continuously. Easy waveform monitoring system is required for real time monitoring everywhere during field work. We have developed an application system that can display continuous seismic waveforms in real time. This system was developed in JAVA language and does not depend on the operating system of computer system. It can run, therefore, on any laptop computers (Windows, Mac OS, etc.).
Waveform data recorded at seismic station are sent every second to data center at universityby WIN binary format (Urabe, 1994). Next, every minute binary data file is created using every second data packet. Finally, every minute binary data is converted to text format and stored to file server system. Our system can read simple text data because it can be applicable for any binary format.
By starting this system on the client personal computer, data is automatically downloaded from the file server and a continuous seismic waveform is displayed on screen.Data is updated automatically every minute by accessing to data file server. Waveforms of two stations can be displayed simultaneously on one JAVA window screen. Seismic station can be selected with the mouse from the selection screen. It is also possible to change the amplitude of the seismic waveform, and to display re-scaled waveform for the previous 30 minutes.
This system can also display long term data, e.g. crustal deformation data such as strain, tilt meter and tide gauges. Display time can be extended up to 48 hours. Simultaneous display of seismic and crustal deformation data on a screen is easily realized. In addition, any text format time series data can be applicable to this system.
Our new system provides easy real-time monitor tool in seismic activity, volcano activity, tsunami waveform, etc. Real-time earthquake monitoring is very important and necessary for risk management in the dangerous field work of earthquake and volcano observation. Our system is in operation stably in field observation and daily earthquake monitoring in Hokkaido University.

Keywords: Seismic waveform, Monitor, JAVA

