Introduction of DVTS and its application to researches of earth and planetary science

Yuuichi Nakagami[1], Osamu Ohshima[2], Ko-ichiro SUGIYAMA[1], Kiyoshi Kuramoto[1], Masatsugu Odaka[1], Yoshihito Kawabata[3], Koichiro Sato[4], Kazumasa Kobayashi[5], Hirotatsu SASAGAWA[6], Mosir project

[1] Earth and Planetary Sci., Hokkaido Univ., [2] Kamogata Senior Hight School, [3] Kamogata High School, [4] Kamokou, [5] Soft, Kurashiki Univ. Sci & Arts, [6] Nextech Co., Ltd.

http://www.ep.sci.hokudai.ac.jp/~nakagami/

In this presentation, we review the Digital Video Transport System (DVTS) which is able to transmit DV format movie on Internet and discuss its application to researches of earth and planetary science based on results of our case. The video and audio are information media which can reproduce recorded phenomena without significant modification. Therefore, the video-audio media is useful for understanding natural science phenomenon and opening up a new science field. Recent development of Internet enables us to broadcast the various types of video-audio media on Internet owing to its broad bandwidth. Broadcasting video archives in each science field on Internet promote sharing knowledge and interaction between different science communities, which will results in evolution of science. It also promotes to distribution of research products to the human society because the video-audio media is acceptable for many peoples.

We perform a series of interactive remote lectures on October, 2002 connecting the division of earth and planetary science, graduate school of science, Hokkaido university and Kamogata high school, Okayama Prefecture and construct its operation system based on DVTS. The bandwidth required for DV streaming is about 40 Mbps. It is larger than that for MPEG2 format (several Mbps) which is used for DVD, since the quality of DV image is much higher than that of MPEG2. The video and audio are transmitted by using DVTS on Internet as follows. DV format video and audio signals are input to a sender Computer through IEEE1394 interface, and then the signals are transformed to UDP packets and sent to a receiver on Internet. The UDP packets are decoded and the video and audio signals are outputted through IEEE1394 interface of the receiver. When the DV format video and audio signals are outputted to TV monitor, it is necessary to be transformed to NTSC format. The specification required for sender and receiver is similar to that of currently available PC/AT compatible personal computer. DV video camera and DV videoplayer are used for analog-digital transforming of video and audio signals. By using commercial products in the marketplace, the cost of DVTS streaming system can be reduced.