

## High Definition TV Observations of Meteor Shower

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During the maximum of meteor showers (1998 Giacobinids, 1999-2002 Leonids), imaging and spectroscopic observations were carried out using High Definition TV Cameras (HDTVs) developed by NHK and our team respectively. The HDTV observations of meteors brought a lot of new information on the meteor science and the ionospheric phenomena.

An Image-Intensified High Definition TV (II-HDTV) cameras was composed of a large diameter image intensifier along with a 1-inch 2M-pixel FIT CCD. HDTV has a longer scanning line (25.86 Fs of visible line time) and a higher video line count (1080 visible lines) with higher sampling frequency (74.25 MHz which get cut in half, 30MHz, because of the Nyquist theorem) that will result in a lot higher resolution than normal digital video. Moreover, HDTV digital can possible to record in 10-bit which is 4 times higher dynamic range than previous video systems. The intensified high definition TV technique increases the number of TV lines from about 525 (NTSC) to 1080, 6 times higher resolution than normal digital video camera, and has higher 10-bit dynamic range, 4 times higher dynamic range than previous video systems.

For a given field of view, the intensified HDTV system is more sensitive than conventional intensified CCD cameras. Meteors as faint as 8th magnitude and stars of 11th magnitude can routinely be observed

even with a wide 37 deg. x 21 deg. field lens. On the other hand, our spectroscopic observations in UV-VIS region were performed by the intensified HDTV camera equipped with a transmission grating with 500

or 600 grooves per mm, blazed at 300-330 nm. From ground-based observation, this system is sensitive in 300 - 700 nm range, with the maximum sensitivity at 390 nm.

In this paper, we will show the technique of HDTV observations and analysis with the amazing meteor storm images and specific science results.

### References:

Ebizuka, N., et al., in Planetary Science Session.

Hiramatsu, M. et al., in Planetary Science Session.