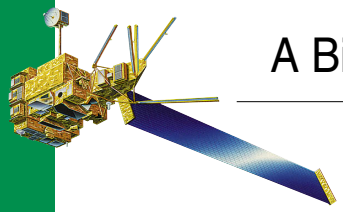
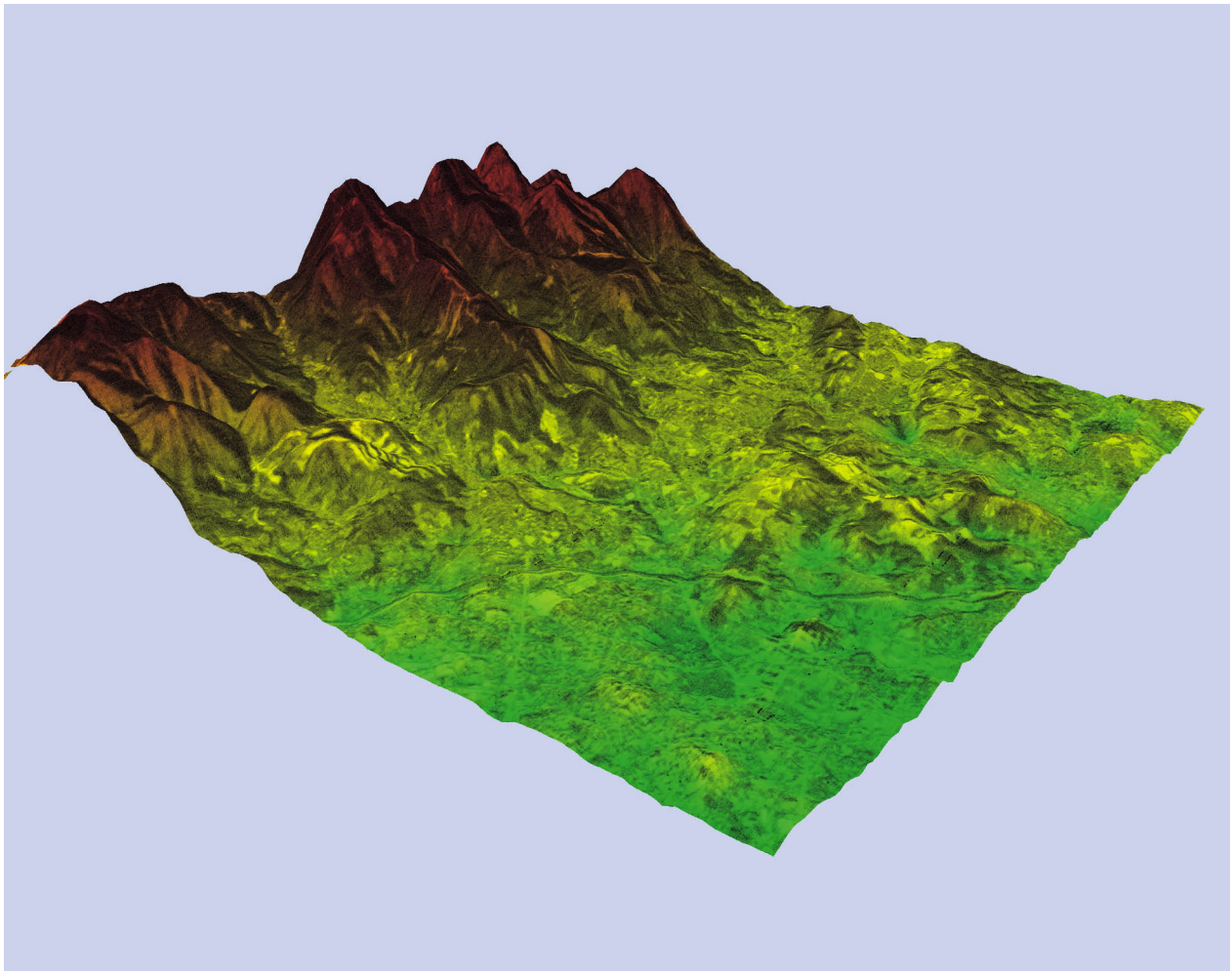
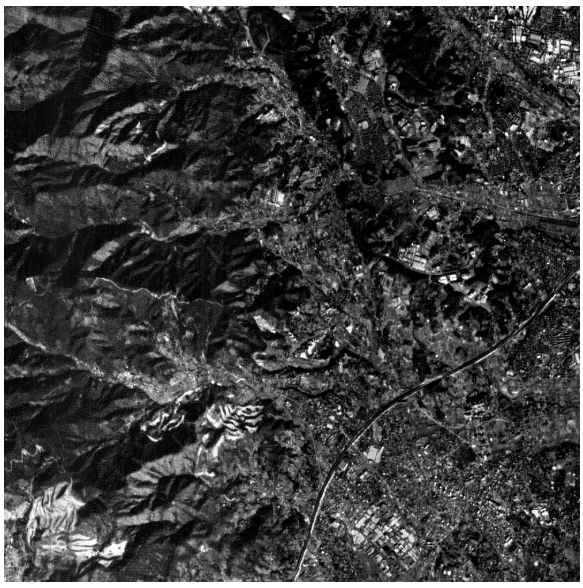
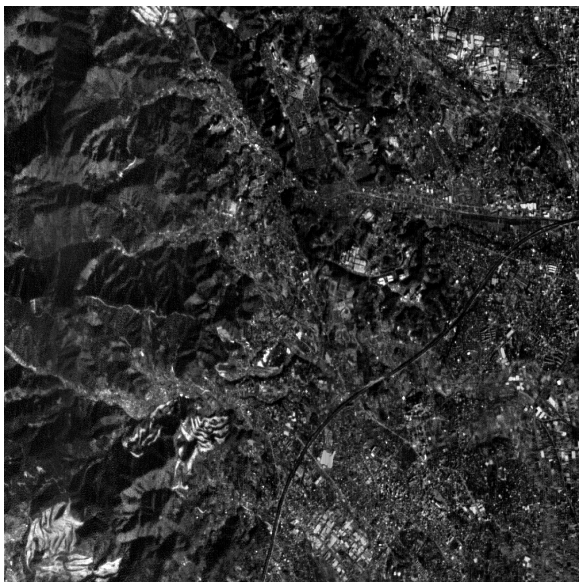


A Bird's Eye View Image Utilizing Stereo AVNIR Images







Provided by NASDA

A Bird's Eye View Image Utilizing Stereo AVNIR Images

This image is a bird's eye view image based on the DEM (*1) generated from stereo AVNIR images. The image covers the city of Isehara, Kanagawa Prefecture, Japan and its surroundings. The vertical scale is bigger than the horizontal one to enhance the relief.

ADEOS AVNIR has a pointing function in the cross-track direction, and stereo images can be acquired from a different orbit. Three-dimensional information can be extracted by looking at the left image with the left eye and the right image with the right eye. This principle is called stereoscopy.

An actual way to extract elevation data from stereo images is to perform the stereoscopy with a computer. The stereo matching technique is applied to determine the conjugate points which are identified to observe the same objects on the lower both images. The elevation data are calculated geometrically with the conjugate points and the satellite position/attitude data. Through such processes, a DEM will be generated. In general, a DEM divides the ground surface into regular grids and has height values on each grid.

The accuracy of extracted elevation data was evaluated by comparing with existing topo maps. It was found that the accuracy in the region with high contrast is good but not so good with low-contrast areas like mountainous regions. The image was acquired in the normal gain mode, and some conjugate points are very difficult to identify.

Unfortunately, few stereo pairs with little cloud coverage were acquired before the functions of ADEOS terminated. They were all images made in the normal gain mode. As a result, we can generate DEMs for only limited areas with moderate accuracy.

*1 DEM: Digital Elevation Model