

Results for Geological Applications of Japan's Earth Resources Satellite "JERS-1" SAR Data

TAKASHI NISHIDAI JGI, Inc., Otsuka, Bunkyo-ku, Tokyo, Japan

Japan's Earth Resources Satellite-1 (JERS-1) with microwave (SAR) and optical (OPS) imaging sensors terminated observation on 12 October 1998 after 6 years and 8 months of operation since the launch on 11 February 1992. During this period a total of 388,500 scenes of SAR image and 178,700 scenes of OPS image were acquired including multiple observations. It has covered all onshore and coastal areas and most of the marine continental shelf areas.

Despite the image quality problems recognized during the early inspections of the data, such as ghosting, the effect of automatic gain control, and a limited availability of ascending mode images, the global coverage of the L band SAR image provides a variety of information for applications both directly and indirectly related to geology. Structural mapping in heavily vegetated tropical rainforest areas, such as Amazon areas of Andean foothill, Papua New Guinea, Southeast Asian countries has been improved. Even though the SAR system was not originally designed for interferometric applications, several good results came out from trial analytical processing of the data. Change detection for crustal deformation caused by seismic activity using SAR interferometry was tried in several areas in Japan. Digital elevation data was tried to generate from a photogrammetric method using pairs of stereoscopic images. The data also has been tried for use in oil slick mapping in several offshore sedimentary basins.

As a result of operational uses and research activities of the JERS-1 SAR data, a huge amount of valuable data archives are available for future geological remote sensing activities.