MONOCULAR ELECTRO-OPTICAL STEREO SCANNER

by

C. Vermillion, H. Maurer (670.1), V.Salomonson (620),
C. Cote (610), J. Catena (501),
H. Rampariyan (636), Dr. J. Smith (623)

The Monocular Electro-Optical Scanner (MEOSS) is an experiment on the Indian Space Research Organization (ISRO), Stretched Rohini Satellite System (SROSS) two satellites were launched by the ISRO Advanced Satellite Launch Vehicle (ASLV) from Shriharikota, India. The MEOSS payload is a Federal Republic of Germany (FDR) project managed by the Deutsche Forschung-und Versuchsanstalt fuer Luft und Raumfahrt (DFVLR) in Oberpfaffenhofen, FDR.

In November 1986, GSFC Space and Earth Sciences Directorate, Code 600, responded to an Announcement of Opportunity (AO) from DFVLR (German Aerospace Research Establishment) for use of the MEOSS to form stereographic images over selected test sites in the Western U.S. Formal approval was received in July 1987 in a letter from F. Lanzl to V. Salomonson. A rescheduled launch is expected for June 1988. The experiment requires the use of the Goldstone Facility for data readouts over the U.S. The Goddard Mission Operation Manager is John Catena. The Principal Investigator is Dr. Vincent Salomonson, and Co-investigators are Charles Cote, Charles Vermillion, Dr. H. Ramapriyan, and Dr. J. Smith.

MEOSS is a single optics and single spectral band camera. Three CCD's working in pushbroom mode are mounted perpendicular to the flight direction on a common focal plate. Their oblique views of plus and minus 23 degrees forwards and backwards as well as nadir

oriented lead to threefold stereoscopic images. In contrast to other stereo scanners like SPOT, this principle allows a nearly simultaneous generation of all three images of a stereo triplet. The time gap between the forward and aft looking images guarantees constant illumination conditions. The ground resolution of MEOSS will be 52 by 80 meters ground pixel size, height resolution of 55 meters and swath width of 255 kilometers. The drifting ground coverage pattern of MEOSS is unique compared to polar orbiting satellites and will allow images of an area to be taken at different times of the day. A scene will consist of 3144 scan lines, with each having 3236 pixels.

The data will be received by the Deep Space Network of JPL Goldstone and mailed to Code 670.1 of Goddard. Level 1 data will be produced by Code 670.1, i.e, raw data on CCT with appended calibration data. Code 636 will receive Level 1 data from Code 670.1 and will register the scenes and produce bi-directional and stereo imagery. Code 630.2 will receive data for storage and distribution from a central archive. The Experimenters, i.e., Code 623 of GSFC, plus the University of Arizona, and the University of California will receive the data from Code 630.2 for scientific analysis. There is an estimated data volume of two/three scenes every 2 to 6 months. This would result in a minimum of 12 scenes and a maximum of 54 scenes. Each scene represents about 2 minutes of data acquisition time by the payload.