

The USSR space systems for remote sensing of earth resources and the environment (sensor systems, processing techniques, applications)

by

Rolf-Peter Oesberg  
Outer Space Affairs Division, United Nations,  
New York, New York 10017, U.S.A.

Abstract

The two main techniques in present use of sensing multispectral information for different applications are photography or scanning with detector arrays from air- or space-borne platforms. The USSR remote sensing programme has included manned missions on Soyuz spacecraft and Salyut orbital stations, and regular missions of Meteor and Meteor-Priroda (Meteor-Nature) operational satellites carrying multi-spectral sensor systems. Photography from space were acquired in the early and mid-1970s from the short-duration manned missions on Soyuz spacecraft using single-band and multi-band cameras. The MKF-6 multi-band camera, developed jointly by the German Democratic Republic and the USSR, was first flown on Soyuz-22 in 1976 and has subsequently been further developed and flown on many missions, including Salyut-6 and 7. The paper describes the design and technical parameters of this camera and other sensor systems that have been flown on board the USSR spacecraft including the KATE-140 photographic camera on Salyut-6 and 7 and the scanner systems MSU-M, MSU-S, MSU-SK, Fragment -2 and MSU-E on board the spacecraft Meteor and Meteor-Priroda, basic methodologies of image interpretation and processing techniques and examples of different applications. The technical parameters of these sensor systems are compared with those from other photographic and scanner systems launched or planned (Landsat MSS and TM, SPOT, IRS, ERS, JERS, TERS, BRESEX, MOMS, Metric Camera, Large Format Camera).