MCIDAS-eXplorer is a planetary data analysis software system designed for use by scientists, undergraduates and graduate student researchers. Using the software, students can do far more than just display images; they can perform sophisticated science analyses extracting geometric, morphometric and radiometric information, depending on the data sets being analyzed. The system provides software analysis capability for the extensive Mars and Venus data sets available on CD-ROM volumes from Magellan, Viking and Galileo missions as well as for the outer planets and their satellites from the Voyager missions. The compilation of radar observations of the Venus surface from the Magellan mission data has resulted in over 70 gigabytes of radar reflectivity (MIDRs and FMAPs) and radiometry images (GxDR’s) and altimetry profiles (ARCDRs) covering over 98% of the surface of Venus. These data are all available through the Planetary Data System (PDS). To facilitate access, analysis and display of these data, a software environment, MCIDAS-eXplorer is now available. MCIDAS eXplorer incorporates a unique navigation tool that maps each pixel of image and other map data sets into planetary coordinates. This planetary image access, display and analysis environment is based on a mature system that is used for weather operations, research and education at many sites around the world. The eXplorer extensions now allow analysis of most solar system targets for which spacecraft and ground based telescopic data are available in a recognizable format such as the PDS or FITS. Navigation, registration and calibration of the planetary data are an integral part of the environment. Designed to run on most UNIX workstations supporting X-windows, the environment is user extensible allowing addition of user developed applications and includes both a Graphical User Interface and a command line interface, multi-frame display and animation capability (for time sequence data) and tools for most image analysis applications such as digital enhancements, filters, cartographic projections, graphical overlays, and color composites and image classification. New capabilities being planned include new tools for digital filtering of the data. Also in the planning stage are tools for Mars that would allow an investigator to click on an image and pull up the spectra for that area from the Thermal Emission Spectrometer (TES) data sets.