GALILEO'S NEAR INFRARED MAPPING SPECTROMETER (NIMS) SCIENCE OBSERVATION PLAN FOR EUROPA. A. Ocampo and D. Matson, (Jet Propulsion Laboratory, California Institute of Technology, Pasadena, California) and the NIMS team.

On December of 1995 Galileo's Near Infrared Mapping Spectrometer (NIMS) will observe Europa's South pole. This will be the first in a two year series of planned observations for this satellite in the 0.7 to 5.2 microns wavelengths range. NIMS's Europa observation plan will include global (27 km), medium resolution (48-57 km) and high resolution (9-12 km) mosaics. Special attention will be given to leading and trailing sides spectral differences and the Tyre Macula region.

On October 18, 1989 the Galileo spacecraft was launched on its journey to Jupiter. The Near Infrared Mapping Spectrometer (NIMS) is the first instrument of its type (0.7-5.2 microns) to be flown on a planetary mission. NIMS observations will provide unique information on the mineralogical composition and distribution of surface units and features on Europa. This objective is achieved through the collection of an optimum combination of spatial and spectral data. NIMS scientific observation strategy will be presented for the two years nominal mission.

Planned NIMS's observations of Europa are shown for the eleven orbits of the Galileo tour (92-14a) starting December, 1995 . The Jupiter approach orbit provides the only opportunity to observe Europa's South Pole region. The eleventh orbit of the tour provides an excellent, and the only, opportunity to observe the North polar region of the satellite. Both are unique opportunities for NIMS to detect frozen volatile species other than water. Each of the orbits in the tour presents unique opportunities for the NIMS observations needed to address the composition and distribution of surface materials.

Europa's "global" coverage will include all longitudes (except 0-90 degrees) at a spatial resolution of 27 kilometers or better. The "global" coverage will also address the unusually young surface of Europa, such as whether resurfacing occurred in one event or in multiple "flooding" events, and whether there is evidence that indicates these resurfacing processes are still occurring. Global tectonic issues include those of possible plate motion, compositional differences between plates, and the origin, evolution, and chemistry of the liquids that emerged from/near lineaments, craters, and, perhaps palimpsests. Mid-spatial resolution (48-57 km) observations are also planned to study resurfacing, exogenic (e.g. implantation of material from the magnetosphere) and tectonic processes.

A few opportunities are planned for high spatial resolution (9-12 km) spectroscopy of specific areas on Europa, such as Tyre Macula. These observations aim to define compositional units, characterize their boundaries and relationships to tectonic features, and identify species or minerals present in or on the ice.

NIMS has the capability to select wavelengths within the range of 0.7 to 5.2 microns. Most of the observations will be made using 51 wavelengths for discrimination of compositional differences. Higher spectral resolution (more wavelengths) will be performed for selected areas. These observations will be the first spatially resolved spectra to be obtained in this wavelength range and we expect to use them to open a new era in the study of Europa.