

METEOROLOGICAL EXPERIMENTS

Meteorological experiments in the 1970's will be extensions of the experiments carried out in the 1969 missions. There are two basic purposes for the continued research and development in meteorology. One is the basic scientific pursuit to explore and understand the nature and behavior of the atmosphere. The second results from the impact of the weather on daily operations, private and public, and upon the economy of nations.

NATURAL RESOURCES EXPERIMENTS

The Natural Resources experiments cover specific applications to agriculture/forestry, geology/hydrology, oceanography/marine technology and geography.

The following principal fields associated with agriculture/forestry will be explored in order to determine if useful data is obtainable from space for identification and management of available resources.

- (1) a better understanding of the emission and reflectance properties of biological and physical materials through spectrophotometric analysis in the laboratory, on the ground, and from low altitudes.
- (2) Identifying the single or combined wavelengths in the electromagnetic spectrum that will yield unique and consistent imagery as it is acquired from progressively higher altitudes.
- (3) Specifying the minimum accuracy standards and quality requirements of data for the various agriculture and forestry application areas.
- (4) Identification and analyses of economic benefits of the application of space technology to agriculture and forestry.

The objective of applying space technology to the field of geology/hydrology will be to improve the utilization of the earth's land, mineral, and water resources through the use of repetitive global surveys. The principal fields of interest to be analyzed in formulating the manned earth-orbital experiment program are:

- (1) Geology: Field mapping, economic geology, petrology and mineralogy, geomorphology and tectonophysics.
- (2) Hydrology: Basins, streams and rivers, percolation and runoff, rainfall and, evapo-transpiration.

The objective of applying space technology to oceanographic purposes will be to improve utilization of the world's oceans through the use of repetitive global surveys. Repetitive surveys will include the following:

- (1) Physical phenomena of the sea which vary markedly with time.
- (2) Physical phenomena of the sea which are relatively invariant with time.
- (3) Economic geography of the sea.
- (4) Improved displays of global oceanographic information suitable for direct utilization by technical, commercial, and scientific communities.

The application of space technology to the field of geography will be used for repetitive global surveys. These surveys will provide the following:

- (1) Compete multisensor coverage of the earth's surface, thus eliminating reliance on incomplete coverage of major portions of the earth.
- (2) Current information of natural and cultural phenomena, thus eliminating reliance on old, incorrect and outmoded data.
- (3) Seasonal coverage of the earth's surface which will enable analysis of the extent and rate of seasonal changes in the earth's geography.
- (4) Comparative coverage which will be acquired from time to time to understand the extent and frequency of long term changes in the earth's geography.

LAND LANDING CAPABILITY

The Apollo Applications land landing capability, as planned, will present a major step in the advancement of a technology which will reduce the possibilities of crew injury and equipment damage during landings. It will provide flexibility in the accomplishment of Apollo Applications and future manned space flight missions. In addition, the land landing capability will facilitate reuse of Command Modules returned from space, with attendant cost savings. The system will be available for first flight tests in 1971. Follow-on Apollo Applications mission planning involves full use of the land landing system on all flights.