

Penn Staters Use Satellite for Flood Study

The "high-water mark" of the Great Flood of '72 may be known sooner than expected, if the NASA Earth Resources Technology Satellite (ERTS) launched recently from Vandenberg Air Force Base does its job.

Obtaining data on the flood was not programmed into the NASA package, but a group of Penn State scientists and engineers have been planning for two years to use the sensor-satellite to get information on a particular portion of Pennsylvania.

That portion happens to coincide with the heart of the flood-ravaged region: the

Susquehanna River Basin.

The polar orbit of the satellite will bring the payload—optical and electronic sensing cameras—over the Basin once every eighteen days.

"If we're lucky with the weather," says Dr. George McMurtry, associate professor of electrical engineering, "we should be able to map the extent of the flood-plain from data obtained on one pass of ERTS. This knowledge, along with data on ruined crops, sediment deposits, etc., should be extremely valuable to Pennsylvania and other affected states as they begin to plan for recovery."

McMurtry and Dr. Gary Petersen head a group of more than twenty Penn State scientists and engineers ready to begin interpreting data transmitted by the satellite, which is the first to be flown with the exclusive mission of collecting data on earth resources. The Penn State project is funded by a grant from NASA.

"The areas that were flooded," says Petersen, associate professor of soils, "are expected to be visible in terms of altered reflectance: sediments left by flood waters will yield a different response than unaffected soils. Also, vegetation killed by the flood will likely reflect at different levels than living, healthy plants"

The intent of the NASA experiment, in which several other universities and government agencies are participating, is to obtain a resource survey of the United States. Flights by photographic planes, some of which have already taken place, are included in the massive project

Its purpose is to identify resources—and resource deterioration—by remote sensing Lakes and rivers, strip-mine terrain, acid-mine drainage, soil types, forests, oil slicks, fish migration, and ocean current behavior are some of the features to be studied.

In effect, the project represents

the first stage in the compilation of a "whole-earth catalogue," a basic reference manual showing the pattern each known resource yields when viewed from space.

Information obtained from the remotely sensed data will be made available to state agencies such as the Department of Environmental Resources and the Department of Transportation, and to Federal agencies such as the U.S. Army Corps of Engineers and U.S. Department of the Interior. This information can then be used for resource inventory, land use analysis, and planning purposes.

The Penn State team awaiting data from ERTS is one of the largest and most diverse groups ever assembled at the University for a single research project; it includes geophysicists, hydrologists, foresters, meteorologists, agricultural economists, planning experts, geologists, civil and electrical engineers, plant pathologists and several experts in photo-interpretation. This group is called the Office for Remote Sensing of Earth Resources (ORSER) a division of the University's Space Science and Engineering Laboratory, headed by Paul Ebaugh, associate dean of engineering.

The Penn State group will be sent data from NASA receiving stations in the form of both optical and digital read-out. The data will be processed at the Penn State Computation Center

and the scientists will then begin studying it in an effort to extend their understanding of how the

earth's resources, and one of its greatest disasters, look when remotely sensed.

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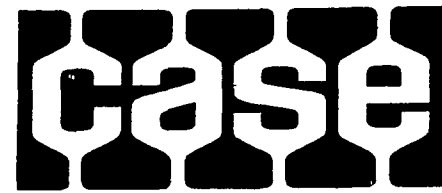
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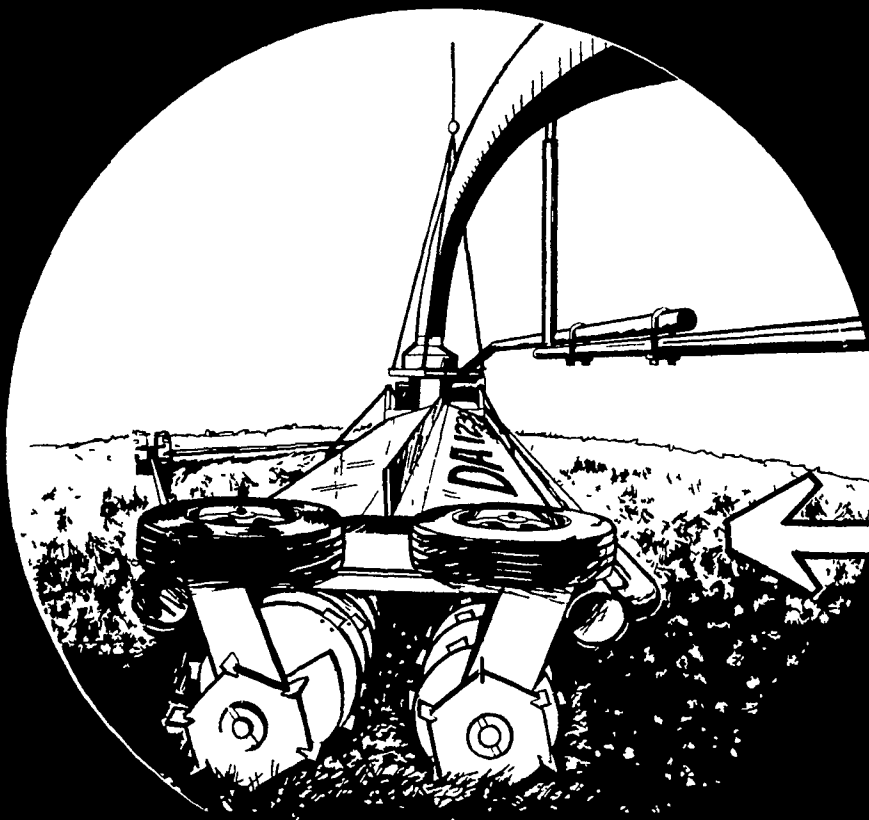
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