



## Ocean Observation Instrument

For development of imaging satellites, NASA employs aircraft-based multispectral imagers to simulate the characteristics of a next-generation satellite's advanced instruments; flight testing enables developers to assess the capabilities of their instruments and make design changes early if they are required. One such program involved use of

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A BOON TO COMMERCIAL FISHING FLEETS EMERGED FROM NASA DEVELOPMENT OF A RESEARCH INSTRUMENT

an Airborne Ocean Color Imager (AOCI) as a simulator for an advanced oceanographic satellite instrument.

The AOCI (*above*) was developed under a NASA Small Business Innovation Research contract by Daedalus Enterprises, Inc., Ann Arbor, Michigan in the mid-1980s. The AOCI measures water temperature and detects water color in nine wavelengths. Water color is an indication of the water's chlorophyll content, or the presence of phytoplankton. In 1986, the prototype AOCI was delivered to Ames Research Center and used for flight investigations over ocean, coastal and fresh-water sites, compiling data for scientists studying the effects of changing coastal landscapes on phytoplankton production.

Since there is a distinct correlation between chlorophyll content and fish concentration, AOCI had obvious commercial potential as a real-time means of providing fishing fleets information about fish locations. A commercialization effort was begun in 1988 under the auspices of NASA's Earth Observations Commercial Applications Program. The

project was co-funded by NASA, Daedalus, National Marine Fisheries Services, Zapata Haynie Corporation, Hammond, Louisiana, one of the largest U.S. commercial fishing companies, and SpectroScan Inc., Coral Gables, Florida. The latter company planned to use AOCI to offer airborne multispectral remote sensing services on a commercial basis.

The commercialization program included a number of technical improvements to the AOCI, development of new

data processing procedures to permit near-real-time processing, and new data dissemination techniques to get the information to fishermen on a timely basis. A series of demonstration flights was conducted in 1990/91 over the Gulf of Mexico (the drawing *below* illustrates the type of coverage provided by the AOCI mounted in the high altitude aircraft used for the tests). The tests demonstrated conclusively that AOCI could provide beneficial assistance to commercial fishing operations.

AOCI was successfully commercialized in 1992 with delivery of the first unit to an Italian company. Daedalus Enterprises continues to market the system worldwide in two versions, one for commercial fishing uses and one for oceanographic research conducted primarily by government agencies. ●

