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IMAPS, A MINICOMPUTER ARRAY PROCESSING SYSTEM FOR THE EARTH SCIENCES

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IMAPS (Interactive Minicomputer Array Processing System) is a system of minicomputer software for processing large, two-dimensional arrays of gridded data such as those employed in the earth sciences, particularly remote sensing of the environment. IMPAS was designed to have wide applicability based on the flexibility of the software and its modest hardware requirements.

Written in Fortran and operating in an interactive, single-user mode, the system provides a variety of array processing functions. These functions presently include routines for reading and calibrating LANDSAT and NOAA satellite data tapes, statistically summarizing array regions and transects, generating contrast-enhanced images via line printer or electrostatic plotter, and converting data from contoured to gridded format. Users having specialized needs can add their own functions to the system; this can be done without increasing core requirements inasmuch as each function is organized as a separate overlay. The design of new functions is facilitated by the availability of a library of utility subroutines, which perform tasks commonly required in array processing, such as buffering array data to and from disc. The data buffering subroutines are quite flexible, allowing variable array size, processing of from 2 to 10 arrays in parallel, and sequential or random access to individual array elements.

IMAPS is currently implemented on Coastal Studies Institute's Nova 1220 minicomputer in support of programs in deltaic sedimentation and remote sensing of coastal waters. The basic system requires a 16-bit minicomputer with 32K words of core memory, console, and disc; optional devices include magnetic tape, line printer, digitizer, and electrostatic plotter.