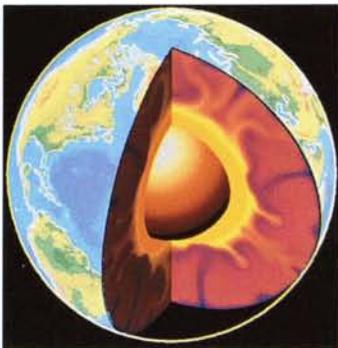




**R**esearch Systems, Inc. (RSI), Boulder, Colorado develops and markets software for analysis and visualization of scientific and engineering data. The company's flagship product is IDL® (Interactive Data Language), developed for use with a broad spectrum of computing hardware. More than 20,000 scientists and engineers in laboratories, universities and commercial organizations employ IDL's comprehensive mathematical analysis and graphical display capabilities for research in physics, remote sensing, astronomy, test and measurement, financial visualization and medical imaging.



IDL traces its lineage to a predecessor software package known as the Mariner Mars spectral Editor (MMED), developed for NASA's series of Mars flyby

## SCIENTIFIC SOFTWARE



spacecraft flown in the late 1960s and early 1970s. The concept embedded in MMED — and the essential element of IDL — was that scientists could test their hypotheses without having to write a custom program every time new data were collected. It provided scientists a general tool that allowed them to investigate their data directly, without the need for programmers or for extensive programming knowledge.

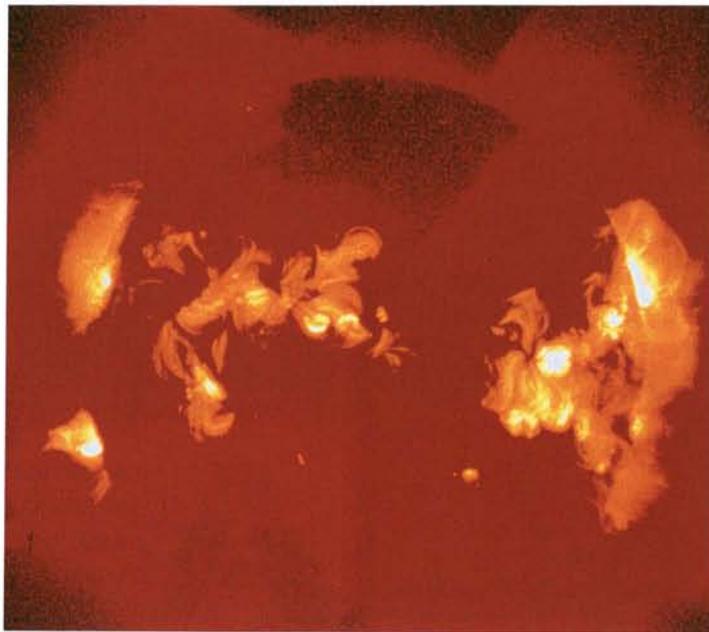
Founded in 1977, RSI began developing IDL that year, using the MMED technology as a departure point. IDL was introduced commercially — for use on a VAX system — in 1982. It has since progressed through four technology generations and the current version runs on all popular workstations and personal computers. NASA, one of RSI's first customers, sponsored development of a Convex version of

IDL designed specifically for Goddard Space Flight Center.

The accompanying photos illustrate some IDL applications. **At left** is an IDL 3D rendering showing the magma flow that drives continental plate movements. IDL's use as a mapping tool is shown **above**; this is a stereographic projection in which great circles pass through two user-defined points of interest. **At top right** is an image of the Sun in the x-ray wavelength acquired by a CCD camera/soft x-ray telescope combination built by Lockheed Solar & Astrophysics Laboratory and flown aboard the Japanese Yohkoh spacecraft. **At center right** is a Magnetic Resonance Imaging slice of a human head displayed by IDL's slicer tool, which allows users to investigate and display 3D volumes of data. **At right** is a screen shot of the surface of Venus displaying two sets of radar

mapping data collected by NASA's Magellan spacecraft; a special IDL capability — known as Show3 — allows researchers to view a single dataset as an image, a contour and a surface.

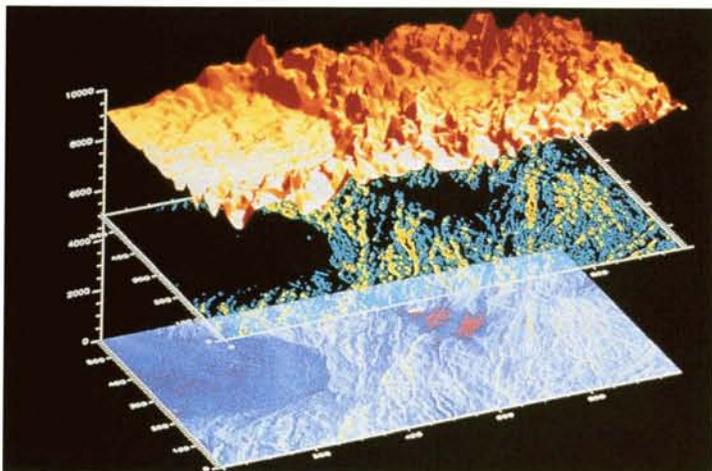
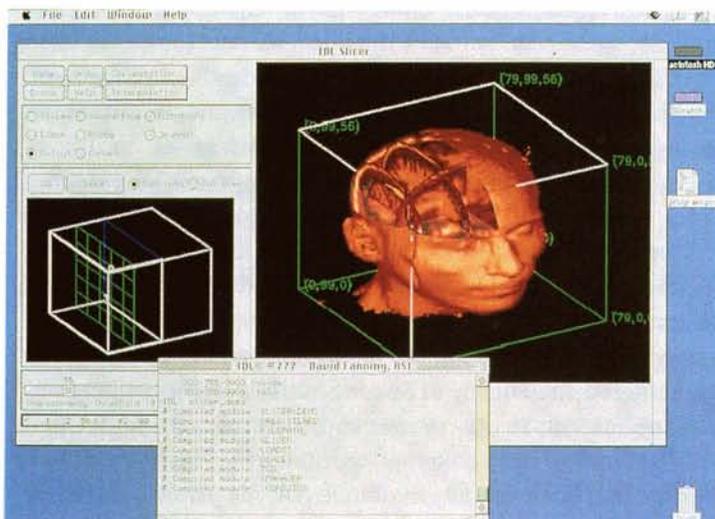
A recent addition to the RSI software family is ENVI™ (Environment for Visualizing Images), an advanced image processing system for Earth scientists who analyze remotely sensed data. Writ-



ten in IDL, ENVI allows a user to easily read, display, analyze and output any space-acquired or aircraft digital imagery, and to import, manipulate and analyze ground-based and laboratory spectral measurements.

The newest RSI product, released in 1995, is the Visible Human CD, described by the company as “the world’s first complete digital reference of photographic images for exploring human anatomy.” The body reference product draws on RSI’s extensive experience in medical imaging, which dates back to the company’s early work in reconstructing multi-dimensional images of the human heart, part of a project that helped scientists build the first practical tomography imaging system.

Developed in cooperation with the National Library of Medicine, the Visible Human CD offers ready access to more than 7,800 physical slices of an anatomical male human, enabling medical professionals, researchers and educators to “navigate” an entire human body on a desktop computer. For efficient storage and retrieval, the image slices are compressed on a single CD ROM.



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