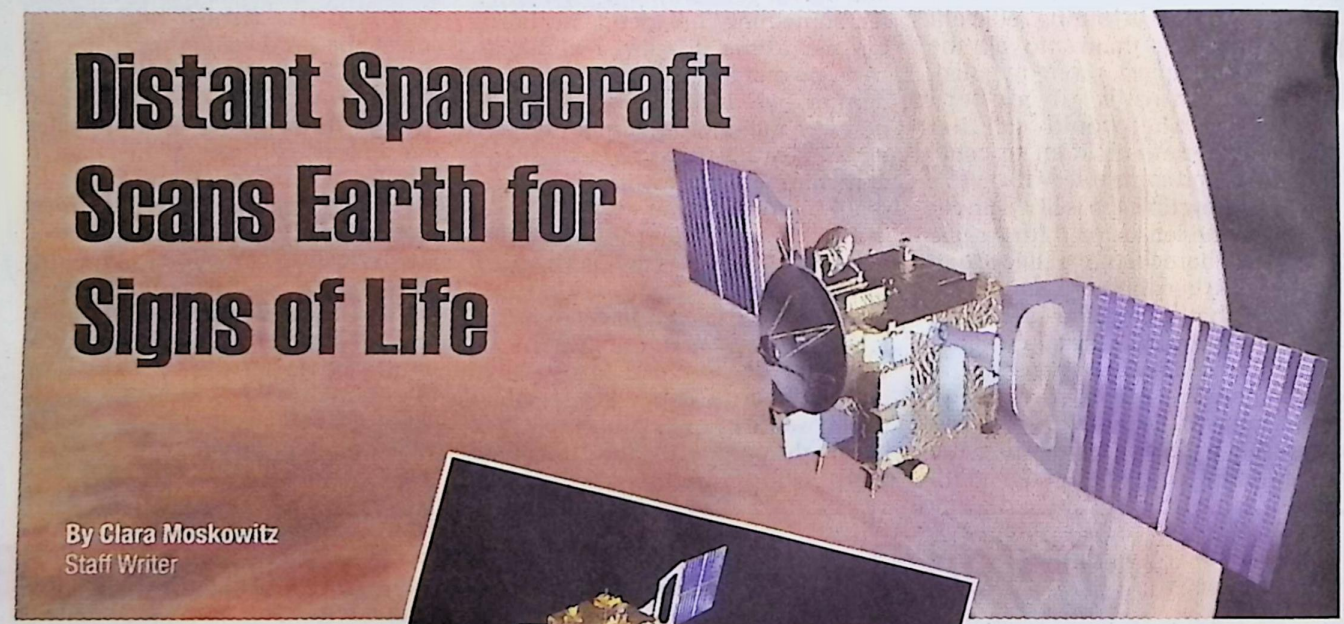
Distant Spacecraft Scans Earth for Signs of Life



By Clara Moskowitz
Staff Writer

A new study is underway to search for signs of habitability ... on Earth.

If that sounds like the ultimate waste of science funding, take a closer look. The project is designed to scan Earth from a distance and note the evidence for habitability, so that we can better detect that evidence on distant worlds. In essence, if we want to find life on alien planets, we have to study a planet known to host life to determine what clues to look for, scientists say.

The researchers are using the European Space Agency's Venus Express satellite, in orbit around our neighbor planet, to study Earth from afar, where it appears smaller than a pixel in the spacecraft's cameras, with no surface details visible.

"We have initiated the first sustained program of Earth observation from a distant platform," said David Grinspoon, a Venus Express interdisciplinary scientist from the Denver Museum of Nature & Science in Colorado. "We want to know what can we discern about the Earth's habitability based on such observations. Whatever we learn about Earth, we can then apply to the study of other worlds."

Since its launch in November 2005, Venus Express has been photographing Earth from more than 2 million miles (3.5 million kilometers) away with its Visible and Infrared Thermal Imaging Spectrometer (VIRTIS).

"When the Earth is in a good position, we observe it two or three times per month," said Giuseppe Piccioni, VIRTIS co-principal investigator, at the Instituto di Astrofisica Spaziale e Fisica Cosmica in Rome, Italy. The satellite has taken about 40 images of Earth over the past two years.

So far, the project has learned that tracking down signs of life and livability is not as easy as it sounds.

"We see water and molecular oxygen in Earth's atmosphere, but Venus also shows these signatures," Piccioni said. "So looking at these molecules is not enough."

A more subtle signal that could differentiate the two types of worlds is the so-called red edge the infrared signal caused by photosynthetic life. "Green plants are bright in the near infrared," Grinspoon said.

The Venus Express team is only beginning to analyze the Earth data to see if our planet's red edge is detectable from a distance. The researchers also plan to study the signature of Earth when the ocean-sides of our planet are facing Venus, compared to when the continents are face-on.

The study could prove vital in scientists' ongoing quest to learn more about the ever-growing catalog of distant worlds we've found in the galaxy.

Since 1995, astronomers have discovered more than 300 extrasolar planets. And two new satellite missions the ESA/French Space Agency COROT satellite currently in orbit and NASA's Kepler Mission spacecraft set to launch in March 2009 bring us closer to the holy grail of exoplanet research: finding Earth-sized worlds around other stars.

"We are now on the verge of finding Earth-like planets," Grinspoon said. **(Space.com)**