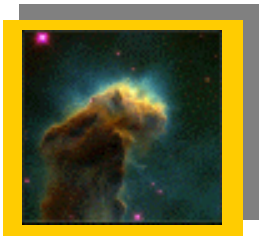
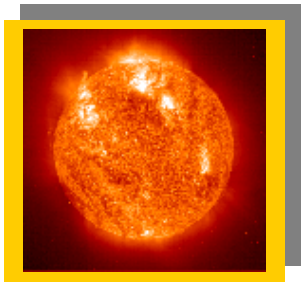
GENESIS SEARCH FOR ORIGINS FACT SHEET

How Does Studying the Solar Wind Tell Us About the Origin of Planets?



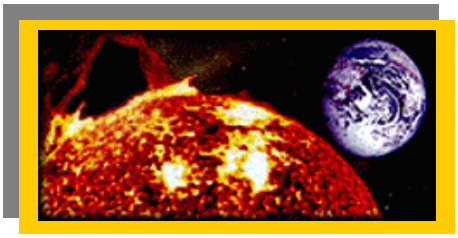
Most scientists believe our solar system was formed 4.6 billion years ago with the gravitational collapse of the solar nebula, a cloud of interstellar gas, dust, and ice created from previous generations of stars. As time went on the grains of ice and dust bumped into and stuck to one another, eventually forming the planets, moons, comets, and asteroids as we know them today.

How this transition from solar nebula to planets took place has both fascinated and mystified scientists. Why did some planets, like Venus, develop thick, poisonous atmospheres, while others, like Earth, become hospitable to life? Partial answers are available from the study of the chemical compositions of the solar system bodies. This information suggests that moons, planets, and even asteroids are significantly different in composition. These differences represent "fossil residues" of the planets' creation and provide invaluable insight into how the solar nebula formed into planets. Scientists can model various processes for planet formation, but they are hampered by one major question. What was the original solar nebula made of?



The Sun, which contains well over 99 percent of all the material in the solar system, may contain the answer. While its interior has been modified by nuclear reactions, the outer layers of the Sun are thought to be composed of the same material as the original solar nebula.

It would be difficult to collect a sample from the hot, turbulent surface of the Sun. Instead, the Genesis scientists will collect material flung out from the Sun. This material is called solar wind. By positioning the Genesis spacecraft outside Earth's magnetic field, researchers will capture this interesting material and return it to Earth. High precision analyses can then be carried out with some of the most sophisticated laboratory instruments in the world. Comparing the Sun's composition to data about planetary composition may provide another piece of the puzzle in our continuing search for knowledge about the origins of the planets.



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