



U. graduate student Scott Hunter and Dr. Kuo-Nan Liou check cold chamber.

Scientist makes own clouds for atmosphere radiation tests

A Utah scientist is creating clouds in his laboratory in an effort to discover the effects of high-altitude clouds on atmospheric radiation.

Dr. Kuo-Nan Liou, associate professor of meteorology at the University of Utah, said little is known about the effects of cirrus clouds on the earth's radiation and climate patterns.

The delicate wispy clouds are found at altitudes as high as 35,000 feet and contain ice crystals which reflect, absorb and transmit radiation both from the sun and from the earth's crust.

Unlike lower-level clouds which contain water droplets, the cirrus clouds defy easy examination because their radiation patterns are affected by the different shapes of ice crystals.

If high cirrus clouds were to increase because of environmental problems, more solar radiation might be reflected back into space.

"This might have a cooling effect on the weather," Dr. Liou said.

On the other hand, the increased clouds might trap outgoing radiation from the earth's crust and produce a greenhouse warming effect, he said.

"The net effect of cirrus clouds on the earth's atmosphere is unclear," he admitted.

Dr. Liou creates his clouds by boiling water in a thermos housed in the base of a cold chamber. The steam is then released into the sub-zero chamber, thus forming mist-like droplets.

The cold chamber is then seeded with dry ice, which generates ice crystals like those found in the clouds.

Dr. Liou then bombards his homemade clouds with a laser beam to simulate the action of the sun and records the way the light scatters off the crystals.

He began his laboratory cloud project because of the immense cost of flying an instrument-equipped aircraft through the cirrus clouds.

The U. of U. research team is in the second year of its program and has received grants totaling \$160,000 from the National Science Foundation.

Dr. Liou's work also has attracted the attention of space scientists studying the cloud-covered atmospheres of Venus and Jupiter.