National Aeronautics and Space Administration

Students' Cloud Observations On-Line

Scientists use instruments on satellites orbiting high above the Earth's surface to measure clouds all over the globe. Their goal is to understand the Earth's climate and the part clouds play in regulating climate.

The CERES (Clouds and the Earth's Radiant Energy System) instruments are one tool scientists use to learn about how clouds affect energy transfer in the atmosphere.

CERES is a PASSIVE REMOTE SENSING instrument, which means it obtains information about clouds without being in contact with them. CERES collects data from many orbits around the Earth each day. In order to handle the amount of data CERES provides, automatic methods of analysis (algorithms) must be developed. Validation work is then necessary to make certain that the satellite data are reasonable and the algorithms are working correctly. Scientists use instruments on satellites orbiting high above the Earth's surface to measure clouds all over the globe. Their goal is to understand the Earth's climate and the part clouds play in regulating climate.

In order to determine when to make your observations you will need to know what time the satellite passes over your school. You can determine this from the S'COOL website or request it via e-mail or fax.

Base above 6 km:
cirrus
cirrocumulus
cirrostratus
contrails

6 km

2 km - 6 km:
altostratus
altocumulus

5 km

4 km

3 km

2 km

Base below 2 km:
stratocumulus
cumulus
stratus
cumulonimbus
nimbostratus
fog

1 km

S'COOL

The S'COOL project supports research on Earth's climate by engaging students around the world in collecting GROUND TRUTH measurements to provide NASA with validation data for the CERES instruments. Students observe clouds and record basic weather information at the same time a satellite passes over their school, then transmit those observations to NASA. The satellite's results are compared to the ground truth measurements, so any problems with the data or the algorithms can be identified.

Satellite data corresponding to the students' observations are made available over the Internet, so that the students can participate in the validation process.

www.nasa.gov