CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY

Name(s)
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Project Number
J1617

Project Title
The Secret of the Sky

Abstract

Objectives/Goals
why the sky has multiple colors at different times and places during the day.

Methods/Materials
fishtank,water,milk,measuring cup,flashcard,flashlight. Pour 3/4 of water into tank and shine the flashlight beam through the tank.Record the light you see. Add 1/2 cup of milk,then stir, shine the flashlight beam through tank and record. add 1/2 cups of milk until no light is seen.I added a total of 3 cups.
same results all 5 days.

Results
when flashlight beam is going through water in the tank, you don't see any color in the tank. as you add 1/2 cup of milk you see blue light on the side and yellow on the card at the end of the tank.as you add more 1/2 cup of milk, blue light fades away. keep adding milk until no color is seen.

Conclusions/Discussion
tank with water is sky.light beam is sunlight,milk is atmosphere.The atmosphere has gas and water molecule, dust particles. Light is a form of energy that travels in waves. These waves have 2 properties: wavelength and frequency. light travels in a straight line in space since there is no air. But sunlight has to travel through the earth's atmosphere. and bump into the particles before it reaches earth. The behavior of light depends on two things. The wavelength of light and size of the particle that light hits. When light hits dust particles or water molecules, gets reflected in diff. directions. The reflected light appears white because it as a whole gets reflected. Gas molecules are smaller than the wavelength of the light. when light bumps into gas molecules, the light with a short wavelegth gets absorbed. light with lower energy will pass through the atmosphere and hit earth. As the sun shines, gas molecules can absorb so much of blue light. once gas molecules gets saturated they will emit blue light to make room for more light. emission of blue light is called light scattering. The scattered blue light is 4 times more than the white light reflected by dust and water molecules. so we see the sky as blue. At the horizon, the sky looks pale blue because scattered blue light has to go thru more particles before it reaches you. At sunset, there is not much light from the sun so not much gets absorbed. Little light gets absorbed by the gas molecules, but not enough to get scattered. But the infrared passes through the gas molecules an hit earth, so we see the sky as red.

Summary Statement
My project is about light scattering.

Help Received
My mother helped me peform the procedure and decorate my board, She also took the pictures.My brother held the card at the other end of the tank during my procedure.