

Investigator's Notebook: Hole-y Moly!

The ozone hole over the Antarctic is most noticeable in the Antarctic or austral spring, which occurs in October. During this season, increasing sunlight and frigid temperatures combine to convert chlorine into active forms that break down ozone. Later in the spring, the area of low ozone, sometimes called a hole, begins to break up. Higher ozone air from the mid latitudes moves toward the poles and "fills in" the hole. The low-ozone air moves into lower latitudes, and the atmosphere over the Antarctic becomes more normal. However, the hole has reappeared every year since it was first detected in the mid 1980s.

From space, scientists measure concentrations of ozone and other gases in the atmosphere. With surveys made over a long period of time, they assess changes in Earth's essential atmosphere.

To visualize decreases in the amount of ozone over the Antarctic, try this activity.

Procedure

Following the numbers, color the numbered areas within the heavy black lines. The yellow indicates areas of heaviest ozone concentration, and purple indicates areas where the ozone is thinnest. Carefully cut out the printed squares. Place the blocks in order, stacking with the earliest year at the bottom. Staple the block at the top left and right. Use your thumb to fan the papers, creating the illusion of a moving picture.

Questions

What has happened to the areas rich in ozone?

What advantages are there to viewing the atmosphere from space?

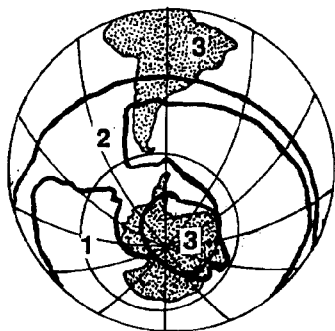
Relating science to . . .

Creative Thinking: List 10 ideas for packaging that use only natural, recyclable materials.

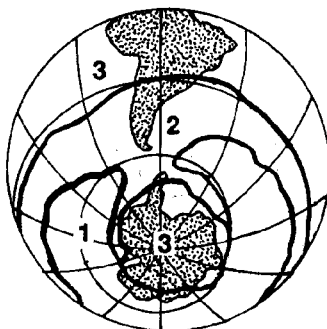
Helping Mother Earth

Plastic can be recycled, too. Recycling saves energy and preserves natural resources, so make sure that the plastic jugs used in any experiments are taken to a recycling area.

OCTOBER 1979



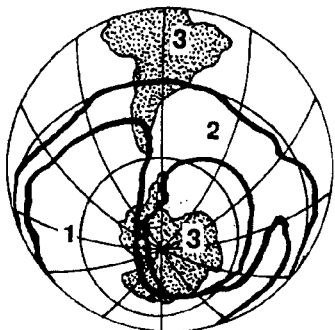
OCTOBER 1980



OCTOBER 1981



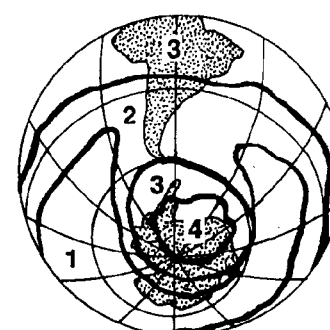
OCTOBER 1982



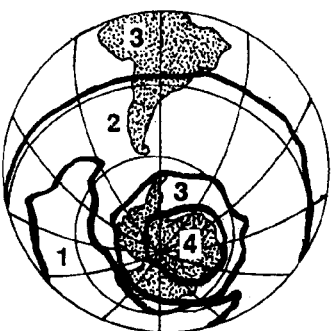
OCTOBER 1983



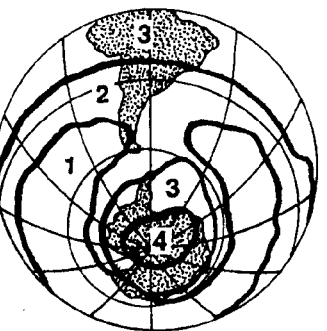
OCTOBER 1984



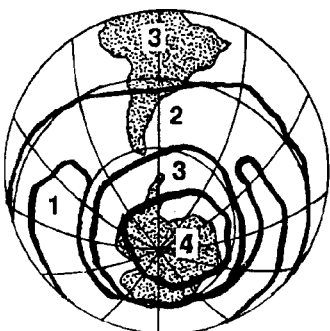
OCTOBER 1985



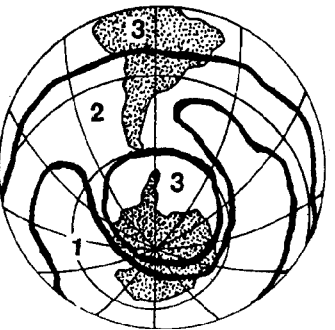
OCTOBER 1986



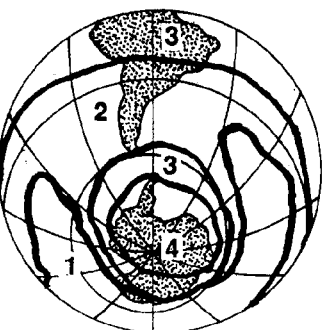
OCTOBER 1987



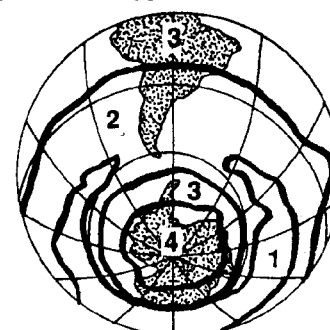
OCTOBER 1988



OCTOBER 1989



OCTOBER 1990



Yellow 1=Thickest Layer Green 2=Thick Layer Blue 3=Thin Layer Purple 4=Thinnest Layer

Investigator's Notebook

1. The size of the areas rich in ozone appears to be decreasing.
2. From space, scientists can measure the atmosphere in a number of places; they can also take measurements high above Earth. If measurements are performed over a long period of time comparisons can be made, and potential problems and changes can be identified.