

Hole in the Sky

What Happened to the Ozone?

Name(s) _____ Date _____

Instructor/Class _____

Please answer the following questions.

1. Examine the illustration. How many kilometers (miles) above Earth is the ozone layer?
 - 8 km (5 miles)
 - 32 km (20 miles)
 - 80 km (50 miles)
2. Move the slider from one side to another. How many images are in this stack?
(*Hint: Look in the upper left corner of the WebImage window.*)

3. In the polar projection, which image shows Antarctica? (*Hint: The outlines of the continents are difficult to see, so your best strategy is to determine which projection is North America. The other one will show Antarctica.*)
 - Right
 - Left
4. Where is the lowest level of ozone you can find in this image?
 - Western Canada
 - South America
 - Antarctica
 - Eastern United States
5. Which pair of months shows the lowest (therefore the most dangerous) ozone level?
 - January/February
 - March/April
 - June/July
 - September/October

6. In the September image, what is the ozone level for Maria's town, Punta Arenas? The coordinates are (195, 248).

- 405 DU 93 DU 289 DU

7. What trend do you notice?

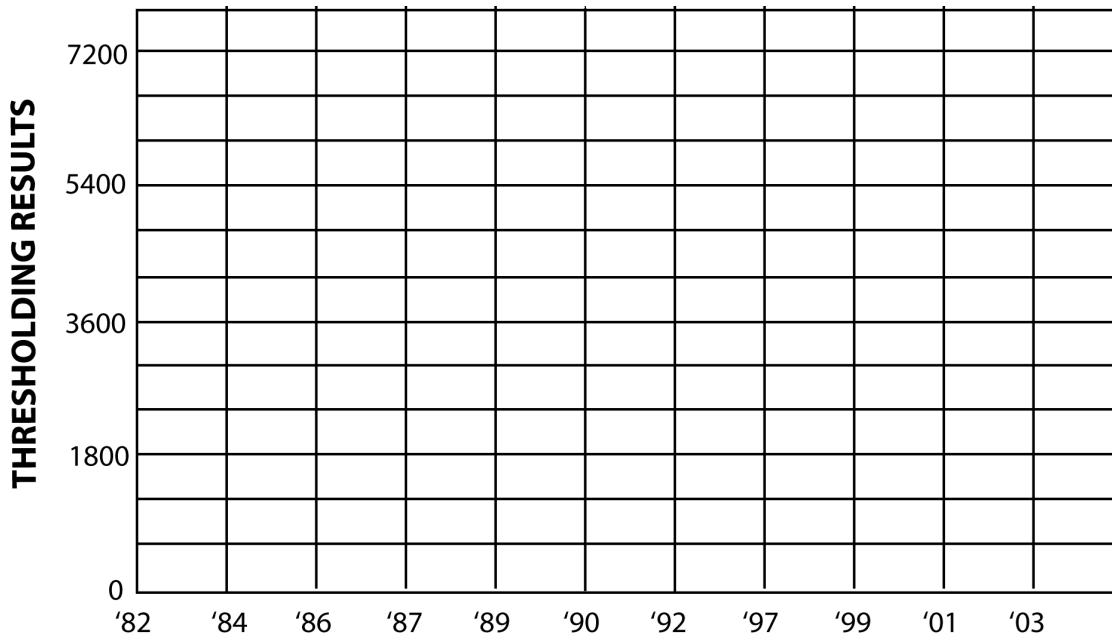
- The ozone hole is shrinking.
- The ozone hole seemed to grow larger until 2001 and then became smaller again.
- The ozone hole seems to be getting larger, but it's really hard to tell without actually measuring the purple blobs.

8. What is the number of pixels that fall between 95-219 DU for the year 2003?

- 6,329
- 7,286
- 5,557

Ozone Sept. 1982 - Sept. 2003	
Sept. 1982	
Sept. 1984	
Sept. 1986	
Sept. 1988	
Sept. 1990	
Sept. 1992	
Sept. 1997	
Sept. 1999	
Sept. 2000	
Sept. 2001	
Sept. 2003	

9. Fill in the table to the right with the thresholded values for all the years from 1982-2003. Then, use the grid below to graph the ozone levels, and answer the questions on the following page.



9. (continued) Now that you have measured the area of the varying ozone levels, you can answer Question 7 more scientifically. What trend do you notice?

- The ozone hole shrank from 1982 to 2003.
- The ozone hole grew steadily from 1982 to 2003.
- The ozone hole grew from 1982 to 1992, shrank for a year, then grew again until it was at its largest in 2003.

10. What has happened since the data you've been examining? (There may be more than one correct answer.)

- The ozone hole has continued to grow.
- Thanks, at least in part, to the Montreal Protocol, the ozone hole has begun to heal.
- Because atmospheric wind conditions are not well-understood yet, scientists say it's very difficult to predict how long the healing process will take.
- Most of the improvement is being seen in the mesosphere.
- It is now much safer for Maria and her friends to play soccer at lunchtime during the spring.