

Name _____

Date _____

The White Glove Test

Discovering Dust in the Solar System: Student Worksheet

For this activity, you will need to go to the Student Dust Counter web site:

<http://lasp.colorado.edu/sdc/>

With your group, read over the information on this page. Then use the table below to find the distance range that your group will be analyzing.

What is an AU? An “astronomical unit” is a unit of distance equal to the average distance between the Earth and the Sun--about 150 million kilometers (93 million miles). For comparison, Jupiter is about 5 AU from the Sun, and Pluto averages a distance of about 40 AU.

Group Number	Distance range
1	1 - 1.5 AU
2	1.5 - 2.0 AU
3	2.0 AU - 2.5 AU
4	2.5 AU - 3.5 AU
5	3.5 AU - 4.5 AU
6	4.5 AU - 5.0 AU

Circle or highlight your group’s distance range on the table. Now find the “Low AU” and “High AU” boxes on the data interface and enter your group’s data values.

Part I: Decoding Hits

On the left side of the interface, you will find four buttons. Click the “# of Hits” button to display the number of dust events recorded by the SDC at each step along its journey.

Total number of hits between ____ and ____ AU: _____

In the space below, describe the distribution of hits. Did the SDC record significantly more dust in one area than it did in another? Or, do you find that the dust is evenly distributed throughout the area?

Part II: Hit Mass

Now click the “Hit Mass” button on the left side of the screen. The data display will change to show the average mass of the impacting dust recorded over each step of the SDC’s trip. As you did in Part I, use the display to find the following information about dust mass.

Total dust mass between _____ and _____ AU: _____

Do you see any correlation between dust mass and distance from the sun? Describe your results.

Part III: Geography of the Solar System

Now click the “Geography” button to bring up a map of the solar system. Note that the maximum range the data windows can display is 1.75 AU, so you will need to scroll to view the entire geography. In the area below, sketch the portion of the solar system between 1 AU and 5 AU.

Now, label your sketch to reflect the observations you made in Parts I and II.

You might note:

- Areas experiencing a very high or low number of dust hits
- Any directional trend relating to dust mass

Part IV: Local Conclusions

Referring to your sketch from Part III, can you draw any conclusions about where in the solar system you are likely to find a high concentration of dust? Do you see a correlation between the number of dust hits recorded and the mass of those hits? Why do you think this is the case?

Part V: Global Conclusions

Compare your results with those of the other groups. As a class, identify trends in the dust concentration and dust mass. How do they change with distance from the Sun? Is there any correlation between these two quantities?

Now try to answer the questions from Part IV again. Are your conclusions the same?
