

TIMED stands for "Thermosphere, Ionosphere, Mesosphere, Energetics and Dynamics." It is the first mission in the National Aeronautics and Space Administration's (NASA's) Solar Terrestrial Probes (STP) Program. This mission is part of NASA's plan to lower mission costs, providing more access to space for the study of the Sun-Earth system. The TIMED mission is sponsored by NASA's Office of Space Science in Washington, D.C., and is managed by NASA's Goddard Space Flight Center in Greenbelt, Md. The mission was designed, built and will be operated by the Johns Hopkins University Applied Physics Laboratory, in Laurel, Md.

TIMED Spacecraft Model

TIMED is a 2-year mission that will study the effects of the Sun and human activities on the Earth's atmosphere. TIMED will study a section of the atmosphere that is 40-110 miles (60-180 kilometers) above the Earth's surface. The mission will help scientists to learn more about the least explored region of Earth's atmosphere, the MLTI. MLTI stands for "Mesosphere and Lower Thermosphere/Ionosphere," and represents the space between our atmosphere and outer space. This "space" is where the Sun's energy first hits Earth.

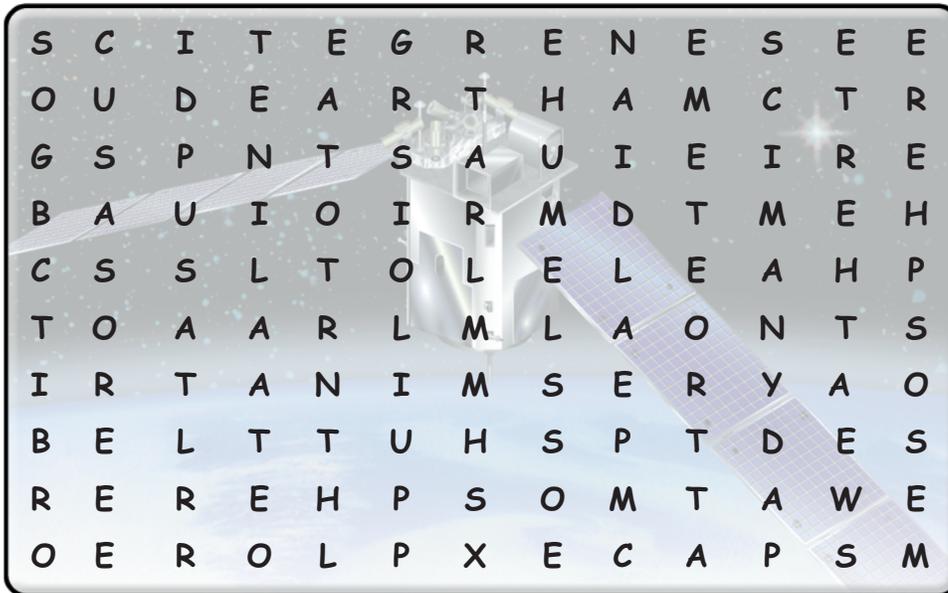
After launch, the TIMED spacecraft will observe the MLTI from its 388 mile (625 kilometers) orbit around the Earth. Using remote-sensing technology, the spacecraft will collect a set of global measurements regarding the MLTI's temperature, pressure, wind and chemical make-up, along with its energy inputs and outputs, that have never been taken before. This is the first mission to collect data that will become a reference for future studies of changes in our atmosphere that can be compared and analyzed.



To learn more about TIMED, visit www.timed.jhuapl.edu and <http://stp.gsfc.nasa.gov>



HIDDEN WORD SEARCH



WORD LIST

- Atmosphere
- Aurora
- Dynamics
- Earth
- Energetics
- Explore
- Gas
- Mesosphere
- Meteor
- MLTI
- TIMED
- Moon
- NASA
- Orbit
- Satellite
- Shuttle
- Solar
- Space
- Sun
- Weather

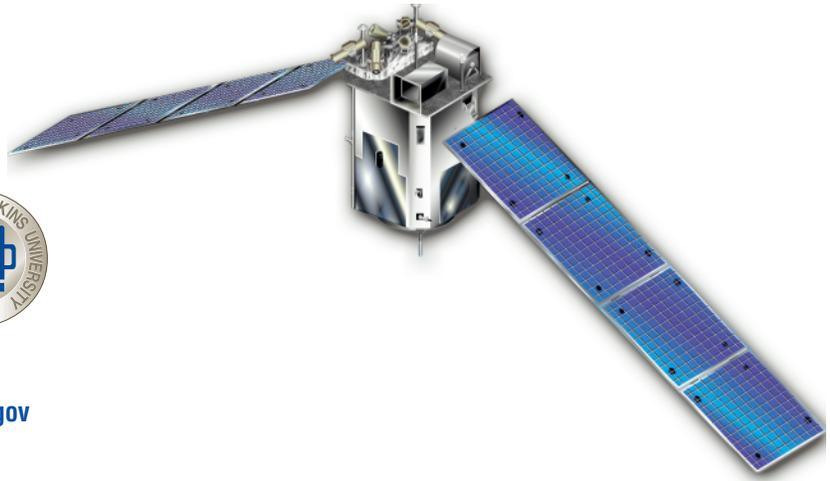
Find 20 words about or related to the TIMED mission hiding across, down, backwards, and diagonally. For a harder puzzle, cover up the word list and see how many you can find on your own. For the answers, visit the education portion of the TIMED website. (www.timed.jhuapl.edu)

WRITING PROMPT: Using the background information and the TIMED spacecraft model, write a brief summary of this groundbreaking mission. Include your opinion on the impact of missions that study the effects of Sun and human activities on Earth. A word list in the hidden word search has been provided to help with your summary. Check for clarity, punctuation, and grammar.



TIMED Model

*A Mission to Explore
One of the Last
Frontiers in Earth's
Atmosphere*



www.timed.jhuapl.edu and <http://stp.gsfc.nasa.gov>

OBJECTIVES

- Students will read to be informed about NASA's first mission in the STP Program.
- Students will create a model of the TIMED spacecraft.
- Students will write a summary of the TIMED mission and its importance to the scientific community.

MATERIALS NEEDED

Scissors Tape

INSTRUCTIONS

Adult supervision suggested. Please read all the instructions before starting. Estimated time: 1 hour.

A TIMED BODY

- Cut the TIMED BODY along the outside lines and follow the directions around it.
- Fold and press all inside black lines. Fold all the flaps down.
- Cut the 2 gray dashed lines located on the vertical panels of the TIMED BODY. The 2 solar panels will be inserted into these and taped down.
- Cut through the 4 thick curved lines around the circle of **A-3**. The 4 RING flaps will be inserted into these holes. (Younger students may want to tape the flaps onto this rather than insert them into the curved lines.)

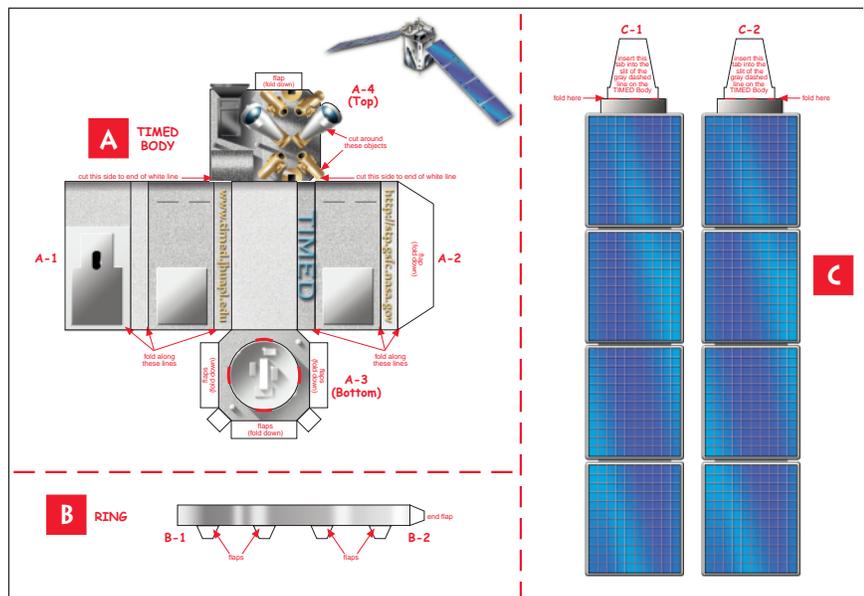
B RING

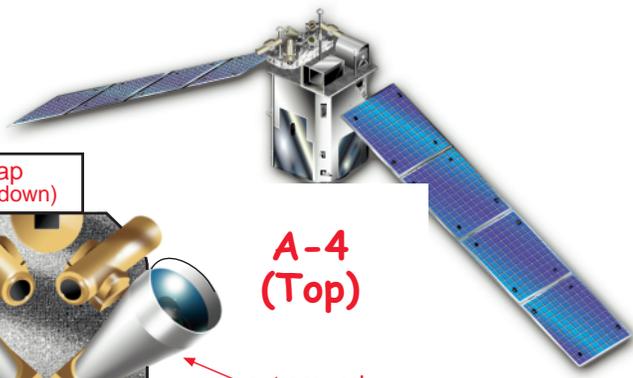
- Cut out the RING including the flaps and end flap.
- Bring together **B-1** and **B-2** ends and glue or tape the end flap to the inside of **B-1**. This will form the base of the TIMED spacecraft.
- Insert the 4 RING flaps into the previously cut lines on **A-3**. (Younger students tape flaps to the bottom.)

C SOLAR PANELS

- Cut out Solar Panels **C-1** and **C-2**. Fold each solar panel at the dashed line. Insert the tabs into the slits of the gray dashed lines on the TIMED BODY. Fold the tabs down and tape them on the inside of the TIMED BODY.
- Fold every panel of the TIMED BODY. Bring **A-1** and **A-2** together. Tape **A-2** flap behind **A-1**. Fold **A-3** (bottom) down and fit the flaps down into the **A-1/A-2** panels. Fold **A-4** (top) down and fit this into the **A-1/A-2** panels.

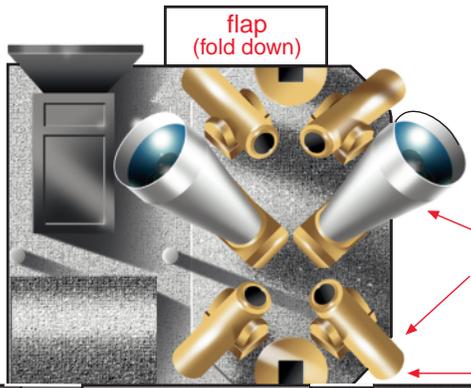
Congratulations! You now have your own model of the TIMED Spacecraft.





A

TIMED BODY



A-4 (Top)

cut around these objects

cut this side to end of white line

cut this side to end of white line

A-1

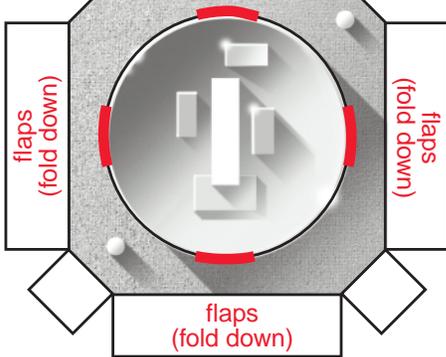


A-2

fold along these lines

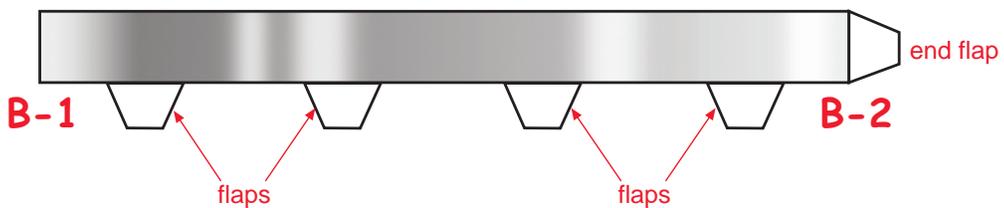
fold along these lines

A-3 (Bottom)



B

RING



B-1

B-2

flaps

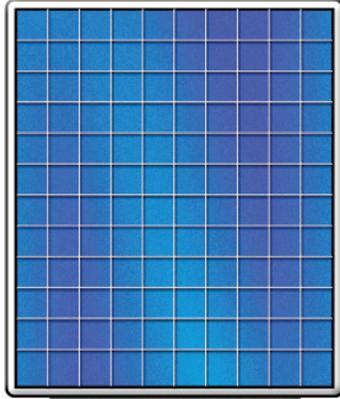
flaps

end flap

C-1

insert this
tab into the
slit of the
gray dashed
line on the
TIMED Body

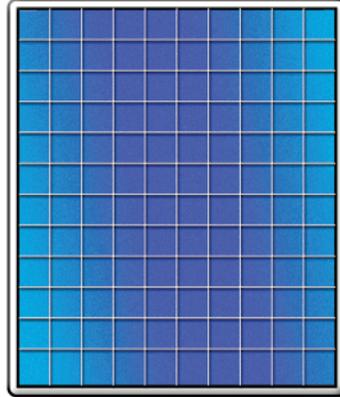
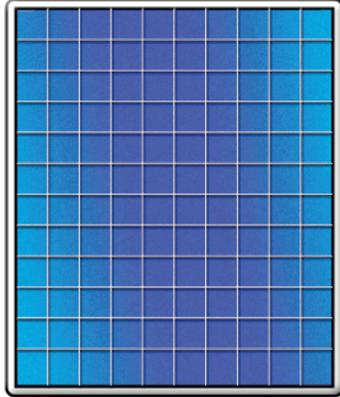
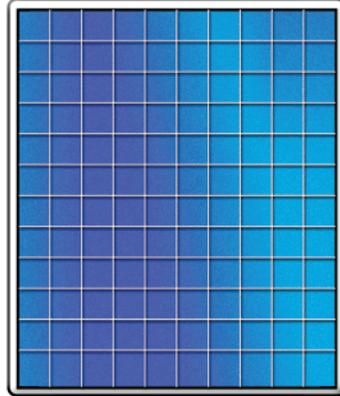
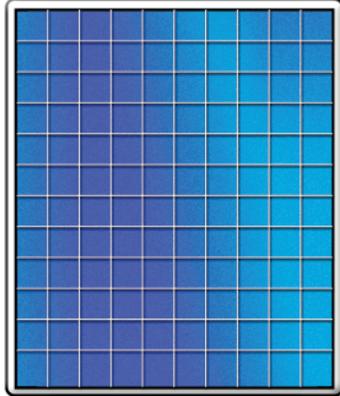
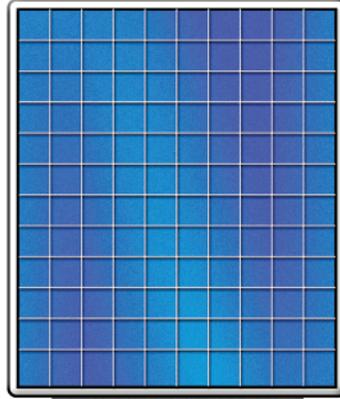
fold here →



C-2

insert this
tab into the
slit of the
gray dashed
line on the
TIMED Body

← fold here



**SOLAR
PANELS**