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 Science Mission Directorate in Washington, D.C., and is managed by NASA’s Goddard Space Flight Center in Greenbelt, Md. The mission was designed, built and is operated by the Johns Hopkins University Applied Physics Laboratory, in Laurel, Md.

TIMED is studying the effects of the Sun and human activities on Earth’s atmosphere. TIMED is studying a section of the atmosphere that is 40-110 miles (60-180 kilometers) above the Earth’s surface. This mission helps scientists learn more about the least explored region of the Earth’s atmosphere—the Mesosphere and Lower Thermosphere/Ionosphere (MLTI). This region is between our atmosphere and outer space where the Sun’s energy first hits Earth.

Since its launch on December 7, 2001, the TIMED spacecraft is observing the MLTI from its 388-mile (625-kilometer) orbit around Earth. Using remote-sensing technology, the spacecraft is collecting a set of global measurements regarding the MLTI’s temperature, pressure, wind and chemical makeup, 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 http://www.timed.jhuapl.edu and http://stp.gsfc.nasa.gov

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)

WRITEING 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.
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 as 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 slit of the gray dashed line on the TIMED BODY. Fold the tabs down and tape them on the inside of the TIMED BODY.

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

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