

Teacher guide for "It's About TIMED" Video Activity

In order to make the viewing of The Johns Hopkins' APL video "It's About TIMED" meaningful, we are suggesting an activity that follows the **Discovery Channel School Online's** format for using videotape effectively in the classroom. The emphasis is on making the use of video an interactive event and not just a passive experience.

The format requires teacher preparation and a division of the viewing cycle into a:

- **Pre-viewing interactivity**
- **Viewing interactivity**
- **Post-viewing interactivity**

In this activity the teacher will need to access information about the TIMED Mission by downloading a copy of "**TIMED Mission Guide**" at the following Web site:

<http://www.timed.jhuapl.edu/education2/index.html>

This guide will provide you with all of the definitions for the acronyms listed in **Part 1 – ACRONYMS** on the worksheet. Provide the students with these definitions prior to viewing the video. The students are responsible for describing what the acronyms mean while watching the video.

Prior to watching the video point out to your students the requirements for **PART 3 - COLLABORATIVE DISCUSSION QUESTIONS** on the worksheet. Organize the groups required for this part of the activity and assign each group a question to research while they watch the video.

Also prior to watching the video it would be helpful if the students were familiar with new terms used in the program. Encourage the students to find definitions for the terms listed in **PART 2 – VOCABULARY**. If definitions can not be found, have students define the terms from the context in which they are used in the program while viewing the program.

While watching the video students will be encouraged to stay involved in the viewing process as they look for answers to the factual recall questions listed in **PART 3 - VIDEO FOCUS QUESTIONS**. Be prepared to interact with the video by using the pause button, rewind and fast forward button as students suggest they need to hear or see information again for clarity.



"It's About TIMED" Video Activity

OBJECTIVE: To become familiar with the mission goals of the TIMED program and the instruments and scientific endeavor that will help to satisfy these goals.

MATERIALS:

- 26 minute videotape titled "It's About TIMED" (produced by The Johns Hopkins University Applied Physics Laboratory)

This video is located in the video gallery section of the Space Academy Web site at:

www.spaceacademy.jhuapl.edu

TEACHER/STUDENT REFERENCES:

- TIMED: A Guide to the Mission, the Spacecraft and the Mission Team
- TIMED Mission Web Site at www.timed.jhuapl.edu
- TIMED Posters, Guides, Lesson Plans, Fact Sheets at <http://www.timed.jhuapl.edu/education2/index.html>

1. ACRONYMS: Like any good scientific endeavor, the TIMED program is rich with acronyms that need to be defined. To help you more efficiently follow along with the "TIMED" video narration, your teacher will help you to define the following acronyms. When the acronym is mentioned in the video, make a note of the acronym's description where space is provided.

a. TIMED -

DESCRIPTION: A space mission that...

b. MLTI -

DESCRIPTION: A region of the atmosphere.....

c. GUVI -

DESCRIPTION: An instrument that...

d. SABER -

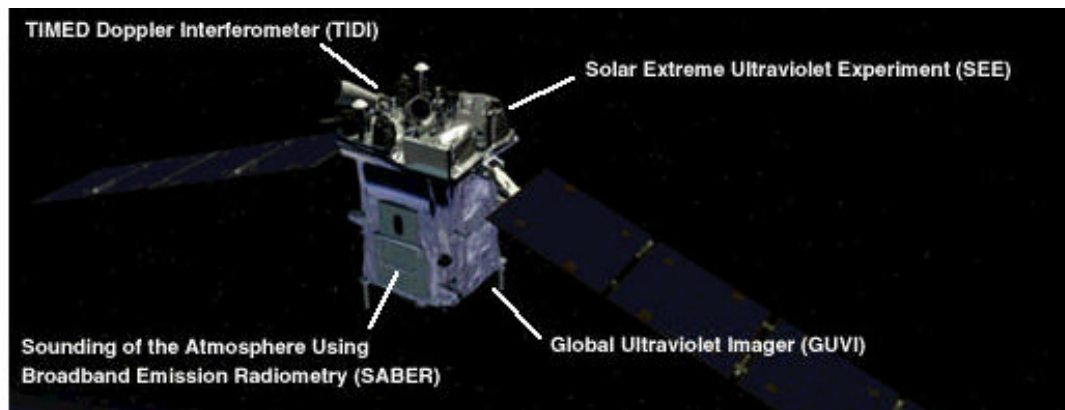
DESCRIPTION: An instrument that...

e. SEE -

DESCRIPTION: An instrument that...

f. TIDI -

DESCRIPTION: An instrument that...



g. IEM -

DESCRIPTION: An integrated computer module that...

h. GPS -

DESCRIPTION: A system that...

2. VOCABULARY: Prior to viewing the TIMED video you will find it useful to have defined and discussed the meaning of the following terms used in the video.

a. THERMOSPHERE -

b. IONOSPHERE -

c. MESOSPHERE -

d. SOUNDING ROCKET -

e. SOUNDING BALLOON -

f. ORBITING SATELLITE -

g. BASELINE DATA -

h. NOCTILUCENT CLOUD -

i. REMOTE SENSING -

j. INTERDISCIPLINARY SCIENTIFIC COLLABORATION -

3. VIDEO FOCUS QUESTIONS: While viewing the video “It’s About TIMED” listen carefully for answers to the following factual recall questions. When you hear the fact, record the answer in the space provided.

- a. What body in the solar system is the single most important contributor of energy to the earth?
- b. What is the range of altitudes of those parts of the earth’s atmosphere known as the MLTI (for Mesosphere-Lower Thermosphere-and Ionosphere) located?
- c. An increase in the observation of “noctilucent clouds” found in the MTLI region of the atmosphere indirectly suggests an increase in concentration of what chemical compound most uniquely generated by human activity?
- d. For how many years is it expected that the TIMED satellite will be collecting MLTI data?
- e. In what way will the MLTI data be disseminated to scientists and the general public all around the world?

4. COLLABORATIVE DISCUSSION QUESTIONS: Divide the class into enough groups so that each group will focus on only one discussion question listed below. As individuals in that group see and hear information in the “It’s About TIMED” video that is relevant to their question they should make notes. After viewing the video the group will have an appropriate amount of time to prepare a short report that a spokesperson for that group will give to the rest of the class.

- a. Explain why it is difficult to collect data with sounding balloons, sounding rockets and with satellites placed in orbits within the MLTI range of altitudes.
- b. Discuss why it is important to the TIMED satellite mission to have an international ground based network of atmospheric instruments being delivered by sounding rockets into the MLTI to collect the same data that is being collected by the satellite above the MLTI.
- c. Explain what is meant by a state of the art “autonomously operated TIMED satellite,” and what is the purpose of solar panels, sensors, actuators, miniature integrated computers, and a GPS navigation module to such a system.
- d. Once the data is collected during the TIMED program mission, how will the data be used? What cosmic type questions will the scientists ask of the data? How important do you think it is to collect such data and ask these questions?
- e. An interdisciplinary group of scientists will analyze the data collected during the TIMED mission. What is an interdisciplinary group of scientists and why is it important to have such a group analyze this data? Why do you think the scientists are sharing this data with all scientists and even the general public?

