Sun-Earth Day 2005
A Special Day in Your Classroom
Grades 4-9
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We would like to welcome you to Sun-Earth Day, an annual opportunity to learn about the Sun and the NASA missions and scientists that study the dynamics of the Sun today. Our Sun and Our Earth are uniquely connected in a system that sustains life here on Earth. Ancient people also understood the value of studying that connection and as a result learned how to predict seasonal change with astonishing accuracy. Predicting the time of the spring Equinox is one such example.

Teacher's Notes:
This is an opportunity to explore observations of the Sun in the past and present. Within the hour you will be introduced to a variety of images, ideas and the new NASA Connect program, "Ancient Observatories, Timeless Knowledge". This particular NASA Connect program is not just about math! It also includes Science, Geography, History, Cross-Cultural Connections and Technology.

Section 1 through 4 of this guide will walk you through a series of suggested resources that you will want to experience with your students prior to viewing the new NASA Connect program, "*Ancient Observatories, Timeless Knowledge*" and/or the webcast, "*Live From Chichen Itza*".

Sections 5 and 6 of this guide will ensure a successful experience with the premieres of the above mentioned NASA Connect show and the Live Webcast from Chichen Itza. The activities in these sections can only be completed on or after the broadcast dates of their associated shows. However, the script for the webcast will be made available prior to the air date.

The guide is divided into 3 main sections:

- **Content:** This section is written in script format and contains key concepts and basic background information.
- **Teacher's Notes:** Here you will find suggested resources and activities to foster stronger student understanding
- **Links:** This section gives you a quick and easy look at all associated URLs for the suggested on-line resources.

	Content **Script containing key concepts and basic background information**	Teacher Notes **Suggested resources and activities to foster stronger student understanding**	Links **Quick view of all suggested on-line resources.**
1	Today we need to learn and study the Sun to understand its dynamic nature in order to prevent disasters that could cripple communications, defense and future space travel. It takes many instruments aboard different satellites all observing the sun at the same time to predict solar weather.	The **SUN-EARTH VIEWER** contains several images of the Sun viewed through satellite instruments. Explanations for each of the images appear in a text box in the bottom left hand corner of the main page. Images 1-6 are from 6 different instruments aboard the SOHO spacecraft. While in the **VIEWER**, click on the tab called '**Visualizations'**. Pay particular attention to the animation called '*Multi-Mission View of a Solar Flare'*	The **SUN-EARTH VIEWER** can be found at: http://sunearth.gsfc.nasa.gov/sunearthday/media_viewer/flash.html The **SUN-EARTH VIEWER** can also be found in the *Tracking a Solar Storm* module of the *Student Observation Network* at: http://son.nasa.gov (Top of the page)
2	For thousands of years humankind's curiosity about our nearest star has been immense. Throughout time sites have been built specifically to help understand this dynamic giant in our sky, our star the Sun.	The **Technology Through Time** section of the Sun-Earth Day site contains several articles that can be read to gain a deeper understanding of these ancient sites. This section also contains an **Image Gallery** with further information.	The link to **Technology Through Time** is located on the home page of http://sunearthday.nasa.gov. (Each week features a new ancient, modern or future solar related location!)
		You can also visit our new experiential Web site: **Traditions of the Sun!** This site lets you explore Chaco Canyon while learning more about NASA research on the Sun and Native American solar practices within a larger historical and cultural context.	The link to **Traditions of the Sun** can be found on the home page of http://sunearthday.nasa.gov or go directly to: http://www.traditionsofthesun.org/

3	Even today, people travel from all over the world just to see the sun being totally eclipsed by the moon. Today's scientists can learn so much about the Sun's corona during an eclipse. However, from Earth we can only view eclipses occasionally. So scientist place instruments aboard satellites that are designed to create an artificial eclipse so that they can study the Sun's corona 24 hours a day.	In the **SUN-EARTH VIEWER** you can show your students an image of an artificial eclipse taken by the LASCO instrument aboard the SOHO spacecraft. (Because the Sun is so bright, an occulting disk is used to block the direct light thus exposing the Sun's Corona.)	The **LASCO** image showing an artificial eclipse caused by an occulting disc can be found in the **SUN-EARTH VIEWER** at: http://sunearth.gsfc.nasa.gov/sunearthday/media_viewer/flash.html (see images 5 and 6) The **SUN-EARTH VIEWER** can also be found in the *Tracking a Solar Storm* module of the *Student Observation Network* at: http://son.nasa.gov (Top of the page)
		The site, **Our Star the Sun**, contains a series of activities that can be used if students need hands-on explanations for how eclipses occur.	Activities from **Our Star the Sun** can be found at: http://www.eyeonthesky.org/ourstarsun.html
4	Our Sun and our Earth are uniquely connected in a system that sustains life here on Earth. Ancient people also understood the value of studying that connection and as a result learned how to predict seasonal change with astonishing accuracy. Predicting the time of the spring Equinox is one such example.	On the inside cover of this year's Sun-Earth Day folder you will find, **Ancient Observatories: Timeless Knowledge Activities**. These activities are designed to help you make connections between events in your life and the seasons of the year.	If you do not have the Sun-Earth Day folder, visit the Sun-Earth Day website and register to receive your free folder and packet. **Ancient Observatories: Timeless Knowledge Activities** can also be found in the Educators section of http://sunearthday.nasa.gov under **Lesson Plans.** While in the **Educators** section you will find additional activities to support the grade level you teach. *NOTE: Look for the new Equinox animation in the **Multimedia Center** of the Sun-Earth Day site!*

NOTE: Complete sections 5 and 6 on or after March 17, 2005			
5	Ancient sites like Chaco Canyon 850 AD and Hovenweep, New Mexico, have been explored to learn more about the people who lived there and to better understand their highly developed methods of solar observation.	On March 17, 2005, our new NASA Connect show will air, Ancient Observatories: Timeless Knowledge. This cross-curricular show will demonstrate how NASA scientists and astronomers make use of technology (ancient, modern, and future) to investigate how ancient civilizations worked to unlock the secrets of the Sun.	After March 17, 2005, the new NASA Connect show can be viewed or obtained in the following ways: -View as streaming video by clicking on the **Mulimedia Center** within the Sun-Earth Day site at http://sunearthday.nasa.gov -Order your own copy of the video directly from NASA CORE at http://core.nasa.gov/index.html
6	Dating as far back as 800 AD, the ancient Mayan ruins of Chichen Itza, Mexico, demonstrate evidence of highly developed methods of solar observation.	If you haven't already done so, now would be a great time to download and complete the NASA Connect Activity with your class!	To download a copy of the NASA Connect activity, keep checking the NASA Connect website for the Educator's Guide associated with the show, **Ancient Observatories: Timeless Knowledge** at: http://connect.larc.nasa.gov/episodes.html
		On March 20, 2005, you'll have to opportunity to see our live webcast from Chichen Itza, Mexico. On that day thousands of people will gather in Chichen Itza, to witness one of these alignments: the appearance of a shadow, in the form of a serpent, that will descend the main staircase of the great pyramid. We will provide a live feed from this site and talk to local scientists about the significance of this incredible event.	For the latest information on how to view this webcast, visit the **Sun-Earth Day** website and click on **Event Dates and Times** at: http://sunearthday.nasa.gov/2005/events/events.htm You can also check the above site for a sneak preview of the webcast script!