

**“Live from McDonald Observatory” Videoconference
Student and small group activity sheet**

Name: _____ Date: _____

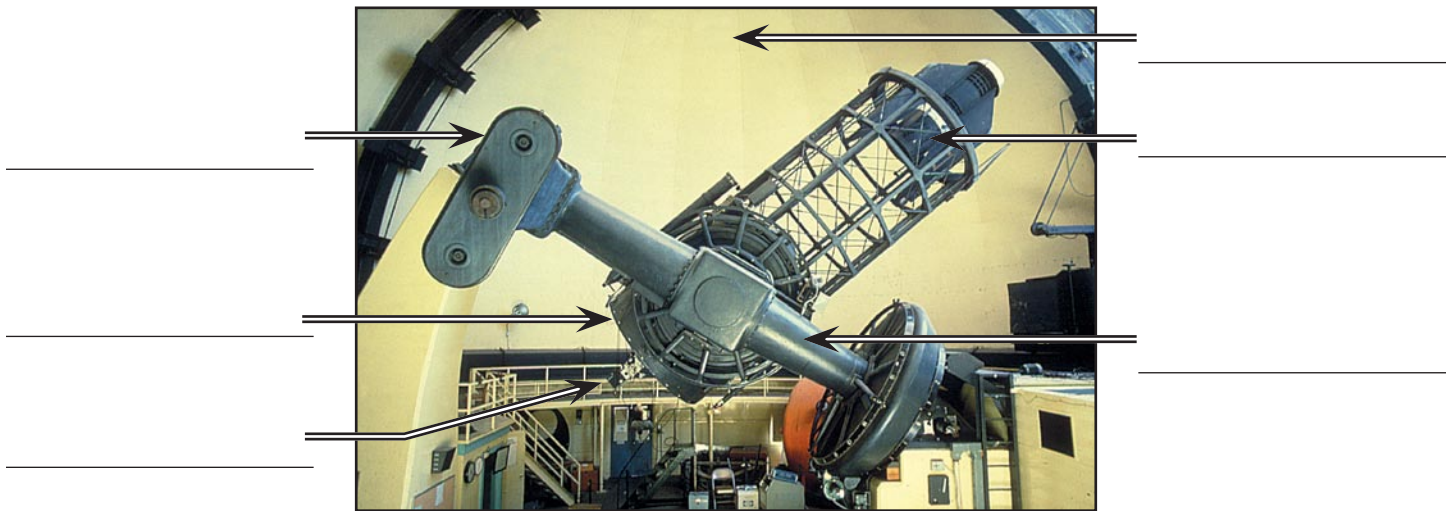
Welcome to the videoconference!

The University of Texas McDonald Observatory is a place where astronomers use state of the art technology, engineering expertise, and the scientific method to answer fundamental questions about the universe we live in. This activity sheet is completed individually and in a small discussion group. We hope you enjoy your videoconference today!

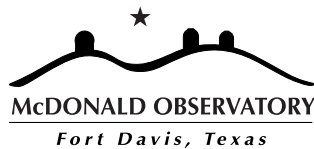
*****Please wait until you are prompted to begin*****

Section 1: Visiting the Otto Struve Telescope: small group discussion

Using the word list below, fill in the labels on the following photograph.



- | | | |
|------------|-------------------|------------------|
| Word list: | Polar axis | Film |
| | Dome exterior | Lens |
| | Counterweight | Primary mirror |
| | Eyepiece | Control Panel |
| | Instrument/Camera | Flat mirror #1 |
| | Dome interior | Secondary mirror |



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Section 2: Investigating our star the Sun: make your own drawing

During this section of the videoconference you will be observing our Sun and its features. Look closely at the images on your screen, and make your own drawing.

Sketch the Sun

Draw a close-up feature you see on the sun, like a sunspot, prominence, or flare:

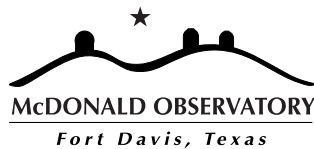
When you complete your drawing, answer the following questions:

1. Choose one answer. Sunspots are:

- Hotter than the photosphere.
- The same temperature as the photosphere.
- Cooler than the photosphere.

Match the three ways that energy can be transferred with the correct definition:

- | | |
|-------------------|---|
| A. ___ Conduction | <u>Definitions:</u>
1. mass movement of a body as a result of density differences produced by whole-scale mixing of gas. |
| B. ___ Radiation | 2. transfer of heat through a body from molecule or atom to molecule or atom without mass movement. |
| C. ___ Convection | 3. energy that is transferred as electromagnetic waves. |



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A roll-off roof observatory building gives an all sky view.

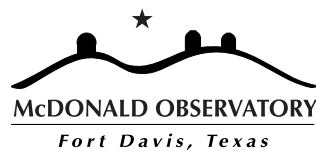


Inside are telescopes, solar filters, cameras, & computers.

Equipment and hardware used in our solar observations today:

- | | |
|----------------|---|
| Telescopes: | Two 76-mm (3-inch) TeleVue refractors.
Celestron 35.56 cm (14-inch) reflector |
| Cameras: | Three Adirondack Video Astronomy Stellacams |
| Solar filters: | DayStar H-Alpha (656-nm) wavelength filter
Neutral Density White Light Filter. |
| Mounting: | Software Bisque ME Robotic Paramount
(Telescopes and cameras are remote operated
from videoconference studio) |
| Computer: | HP Pavilion Windows XP Pro |

Important: *NEVER observe the sun, with or without a telescope, unless you have the proper equipment, and adult supervision. Observing the sun for any length of time, without professional solar observing equipment, can cause permanent eye damage.*



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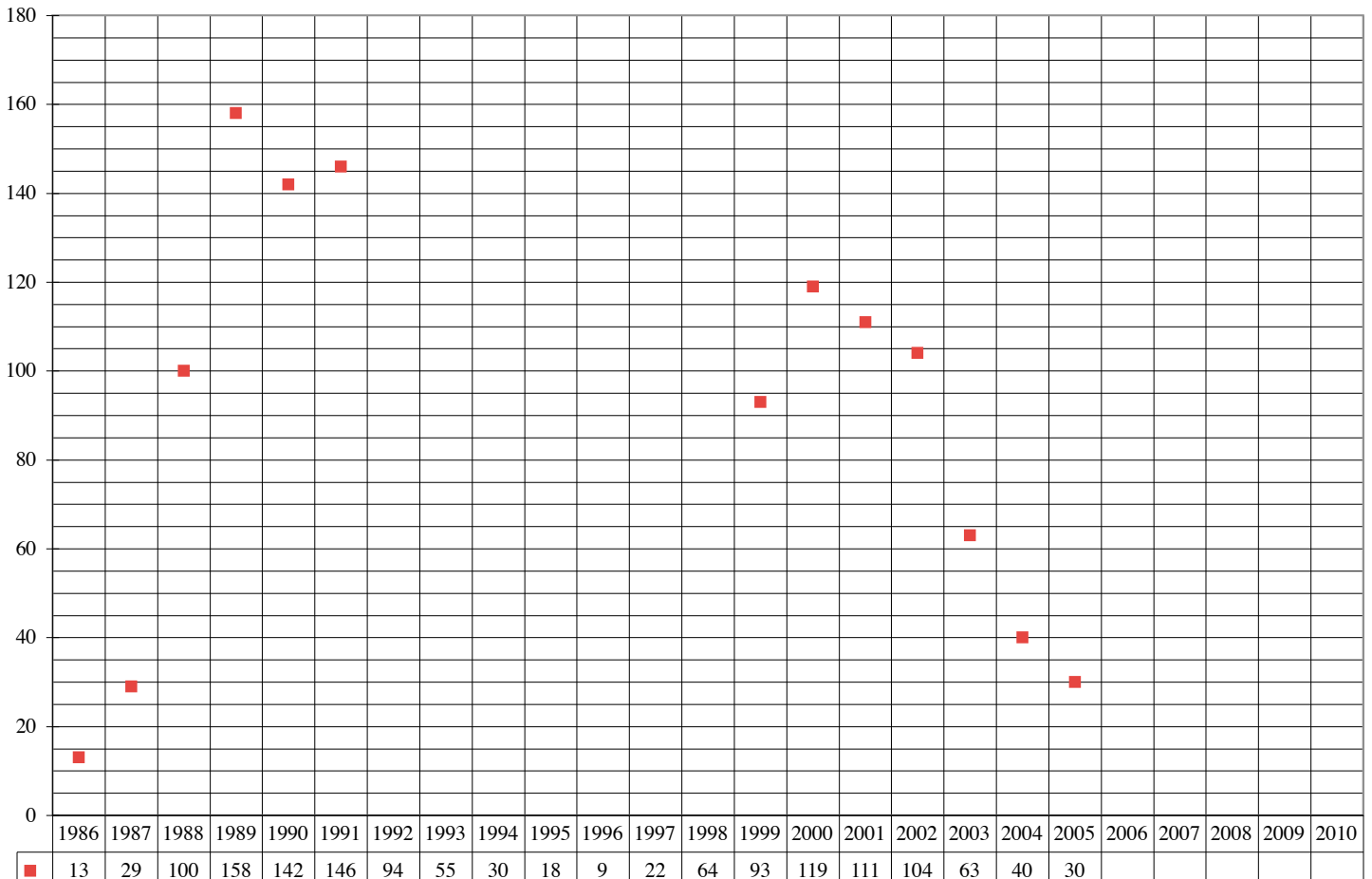
Section 3: Sunspot Challenge: small group discussion

This is an incomplete graph of Yearly Average Sunspot Numbers. Your small group must:

- 1) Use the data table below the chart to plot the missing data points for 1992-1998.
- 2) Analyze the data for a trend, or pattern.
- 3) Predict the Yearly Average Sunspot Number for the next 5 years. Plot your predicted data!

These are Yearly Average Sunspot Numbers from 1986-2010

Use the data table below the graph to enter data points for years 1992-1998, and look for a trend. Then predict the general trend of Yearly Average Sunspot Numbers for the next five years.



This scientific data was collected by the Solar Influences Data Analysis Center, World Data Center for the sunspot index, Royal Observatory of Belgium.

