Solar Observing in Schools

Teacher Professional Development Day

WELCOME!

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http://physics.clas.wayne.edu/astronomy/sos.php

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Why?

• We all understand the importance of recruiting and maintaining a science-educated workforce

• Astronomy plays an important role in getting students interested in STEM fields

• Often a lack of training in astronomy

• Hard (logistically) to do night-time observing in schools - easier to do solar observing!
Goals for today

• Learn about observing the Sun, and be trained how to use the Coronado Personal Solar Telescope

• Get a refresher on material in the curriculum, including:
  ➡ Planets
  ➡ Stars
  ➡ Galaxies and cosmology

• *Have a chance to ask questions!*
Middle school (8th grade)

Unit question: What systems are at work in our Universe?
Focus question: What is Beyond Earth?

(Some of the) Teaching objectives:
• Explain the formation of the Universe
• Describe different types of galaxies including the Milky Way
• Identify the objects that make up our solar system

Michigan High School Content Expectation
Earth Science

STANDARD E5: THE EARTH IN SPACE AND TIME
Students explain theories about how the Earth and universe formed and evolved over a long period of time. Students predict how human activities may influence the climate of the future.
Today’s topics

The Sun & Stars

Star and planet formation

Formation and evolution of the Universe

E5.2A, B, C, D, e, f, g, h

E5.3A

E5.1A, b, c, d
<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
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<tbody>
<tr>
<td>9:00 - 9:30</td>
<td>Introduction and entrance survey</td>
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<tr>
<td>9:30 - 10:30</td>
<td>The Sun and the lifecycle of stars</td>
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<td>10:30 - 10:45</td>
<td><strong>Break</strong></td>
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<tr>
<td>10:45 - 11:00</td>
<td>In-class solar activities and exercises</td>
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<tr>
<td>11:00 - 12:00</td>
<td>Observing with solar telescopes</td>
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<td>12:00 - 1:00</td>
<td><strong>Lunch</strong></td>
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<td>1:00 - 1:30</td>
<td>Formation and evolution of solar systems</td>
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<tr>
<td>1:30 - 2:00</td>
<td>Formation and evolution of the Universe</td>
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<td>2:00 - 3:00</td>
<td>Introduction to the Zooniverse</td>
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<td>3:00 - 3:15</td>
<td><strong>Break</strong></td>
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<td>3:15 - 3:45</td>
<td>Wonders of the Universe</td>
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<td>3:45 - 4:15</td>
<td>Stellar death: white dwarfs, neutron stars and black holes</td>
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<td>4:15 - 4:45</td>
<td>Black Holes: the other side of infinity</td>
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<td>4:45 - 5:00</td>
<td>Exit survey</td>
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Entrance survey

- To measure the effectiveness of today, there is an entrance and exit survey.

- It is **anonymous**, but to match the surveys from the beginning and end of the day please use the randomly assigned ID in your folder.