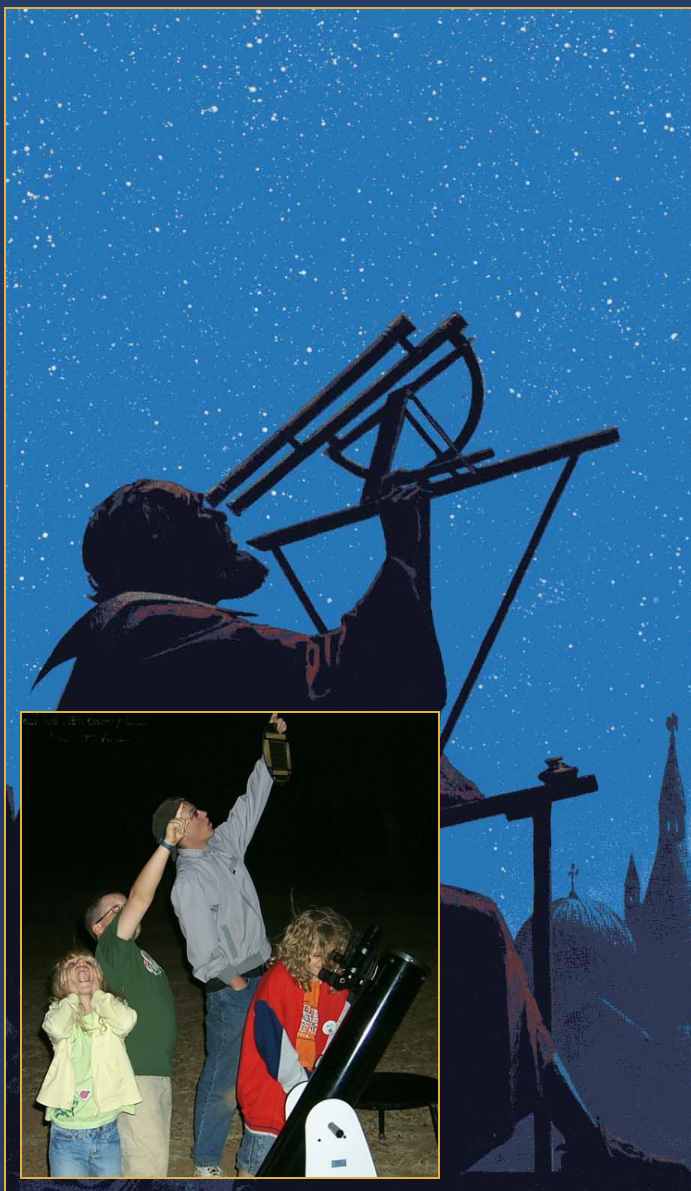


# *The Galileo Teacher Training Program: Connecting Space Grant to Teacher and Student Preparation for the STEM Pipeline*

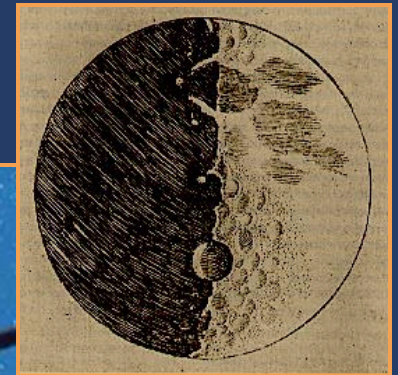
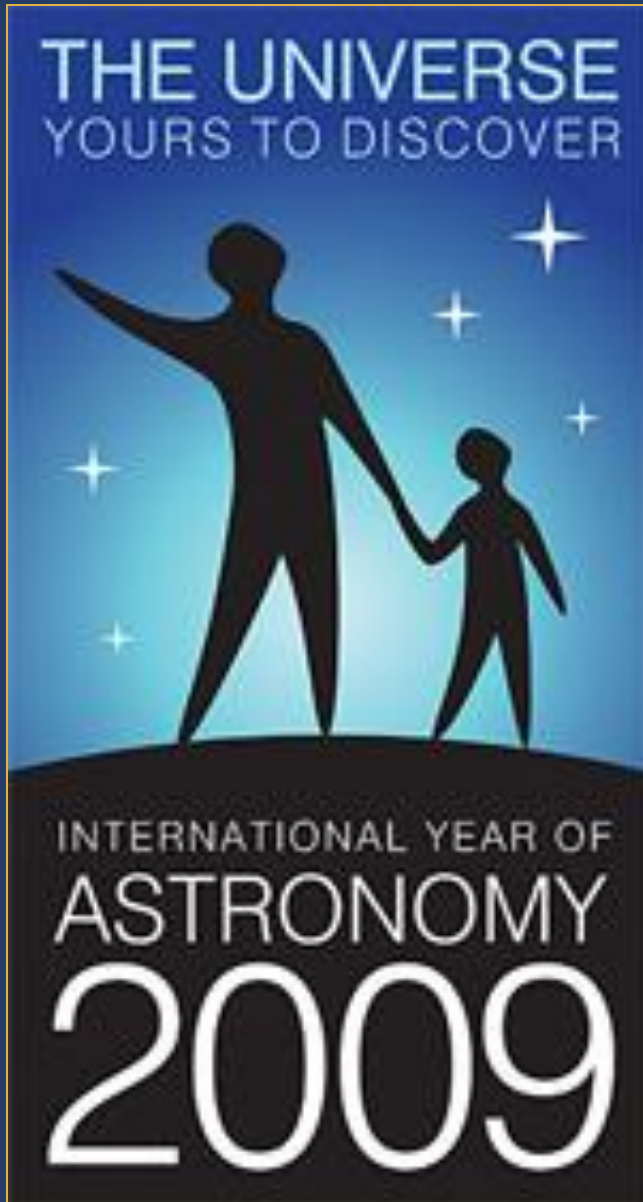


*James Manning  
Astronomical Society of the Pacific*

# 1609: The Year He Looked



*“It is a very beautiful thing, and most gratifying to the sight, to behold the body of the moon so that its diameter appears almost thirty times larger . . .”*





# 1610: The Year He Published



THE UNIVERSE  
YOURS TO DISCOVER



B E Y O N D  
INTERNATIONAL YEAR OF  
ASTRONOMY

*“On the 7th day of January in the present year, 1610, in the first hour of the following night . . . the planet Jupiter presented itself to my view . . .”*

”  
..



S I D E R E V S  
N V N C I V S

MAGNA, LONGEQVE ADMIRABILIA  
Spectacula pandens, suspiciendaque proponens  
vnicuique, præfertim verò

PHILOSOPHIS, atq; ASTRONOMIS, quæ à  
G A L I L E O G A L I L E O  
P A T R I T I O F L O R E N T I N O

Patauini Gymnasij Publico Mathematico

P E R S P I C I L L I

Nuper à se reperi benefici sunt obseruata in LVNÆ, EFACIÆ, FIXIS IN-  
NUMERIS, LACTEO CIRCVLO, STELLIS NEBVLOSIS,

Apprime verò in

Q V A T V O R P L A N E T I S

Circa IOVIS Stellam disparibus interuallis, atque periodis, celesti-  
tate mirabili circumuolatis; quos, nemini in hanc vsq;e  
dicem cognitos, nouissimè Author depra-

hendit primus; atque

M E D I C E A S I D E R A  
N V N C V P A N D O S D E C R E V I T .



VENETIIS, Apud Thomam Baglionum. M. DC. X.

Superiorum Permissu, & Privilegio.



# Galileo Teacher Training Program

Goal: to develop and present workshops using Galileo's iconic observations to teach the process of science, problem-solving, and collaboration in an inquiry-based framework, resulting in a teacher professional development opportunity for modeling science in the classroom.





# Galileo Teacher Training Program



- Incorporates a flexible approach to serve multiple needs.
- Flexible workshop design includes four elements:
  1. Galileo-related content.
  2. Fundamental astronomy concepts.
  3. Adaptable resources for the classroom.
  4. IYA-related resources.

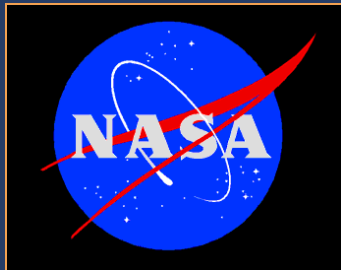


# Galileo Teacher Training Program



•Currently incorporates IYA and NASA-related content and activities:

- 1) Galileoscope.
- 2) Dark Skies Awareness.
- 3) NASA content/materials.
- 4) NLSI content/activities.



**Get Out and Observe the Night Sky!**  
March 3-16, 2010

Engage students worldwide in observing the nighttime sky  
Encourage citizen and family science with a hands-on learning activity outside of the classroom  
Gather light pollution data from an international perspective

**www.globeatnight.org**

Participation is open to everyone!



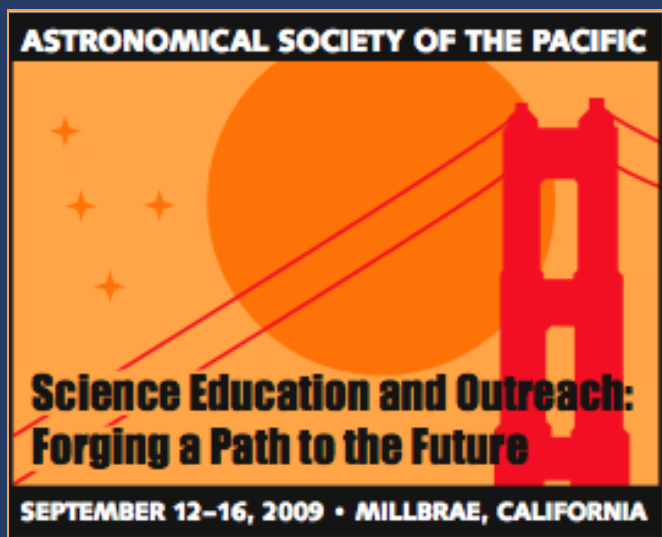




# Galileo Teacher Training Program

•Pilot Workshop at ASP Meeting, Millbrae, CA, Sep., 2009:

- 1) Galileo background/Jupiter moons activity.
- 2) Lunar phases/constellations/size & scale activities.
- 3) Astronomy/hands-on resources/pedagogy.
- 4) Galileoscope/Dark Skies activities.



# Galileo Teacher Training Program

•Workshop at Northrop Grumman Aerospace Systems, Redondo Beach, CA, Mar. 12-13, 2010:

- 1) Galileo/Jupiter moons/Venus phases activities.
- 2) Lunar phases/size & scale activities.
- 3) JWST tour/Astronomy resources.
- 4) Galileoscope activities.



**NORTHROP GRUMMAN**





# Galileo Teacher Training Program



Galileo Teacher Training Program

Sign up | Login

## Galileo Teacher Training Program — USA

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**Galileo Teacher Training Program**

The goal of the Galileo Teacher Training Program (GTP) is to develop and present workshops using Galileo's telescopic investigations to teach the process of science, problem-solving, and collaboration in an inquiry-based education framework, resulting in an ongoing and evolving teacher professional development opportunity for modeling science process in the classroom.



**GALILEO**  
Teacher Training Program

**THE UNIVERSE**  
WANTS TO REUNITE  
US

**INTERNATIONAL YEAR OF ASTRONOMY**  
2009  
USA NATIONAL HOSE

The Galileo Teacher Training Program is a signature program of the U.S. International Year of Astronomy effort. Go to <http://astronomy2009.us/> to learn more about the wide array of IYA programs and events designed to provide astronomy experiences for everyone, in celebration of 400 years of discovery since Galileo's first observations of the heavens through a telescope.

**Watch for More . . .**

Visit periodically and watch this web site grow, as we add more GTP workshops and GTP-related materials and web links. Share the site with teachers and others as we celebrate the International Year of Astronomy.

**Related Website:** <http://www.astrosociety.org>

**MY TOOLBOX**

- Join this Website
- Print
- Contact Us
- SHARE

**NEWEST MEMBERS**

- Leslie Wolber** SEND A MESSAGE
- Andrew Fraknoi** SEND A MESSAGE
- Mary Kay Hemenway** SEND A MESSAGE
- Matthew H Wallace** SEND A MESSAGE
- James Manning** SEND A MESSAGE

**TRUINITY**  
YOUR WORLD. YOUR SITE.

[www.gttpusa.org](http://www.gttpusa.org)

- Web site established and will expand in 2010.
- Will become repository of GTP resources and activities.
- Will include calendar of upcoming GTP workshops.
- Will develop community of practice among graduates.

# Galileo Teacher Training Program



- Developing a web-based directory linking users to educational resources.

- To include links to ASP-developed resources for amateurs, teachers, etc.

A screenshot of the Astronomical Society of the Pacific website. The page is titled "A Sampling of Hands-On Astronomy Activities" and is part of the "Education Topics" section. It features a navigation menu with links for Home, About Us, News, Membership, Publications, Events, Education, Resources, Support, and AstroShop. The main content area lists several activities: "Picture an Astronomer", "Cosmic Calendar", "Testing Astrology", and "Galaxy Sorting". The page also includes a search bar and a "Go" button.



- Links to other directories of formal and informal resources including NASA and IYA—and Space Grant?

# How Does Space Grant Connect?



From the 2010 - 14 Solicitation . . .

*"The goal of the Space Grant Program is to contribute to the nation's science enterprise by funding **education**, research, and **informal education projects** through a national network of university-based Space Grant consortia."*

Objectives include to . . .

*"Promote a strong science, technology, engineering, and mathematics education base from elementary through secondary levels while preparing teachers in these grade levels to become more effective at improving student academic outcomes."*





# How Does Space Grant Connect?

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From the 2010 - 14 Solicitation . . .

Current areas of emphasis include . . .

*“Engage middle school teachers in hands-on curriculum enhancement capabilities through exposure to NASA scientific and technical expertise. (Provide) capabilities for teachers to provide authentic, hands-on middle school student experiences in science and engineering disciplines.”*



# How Does Space Grant Connect?



From the 2010 - 14 Solicitation . . .

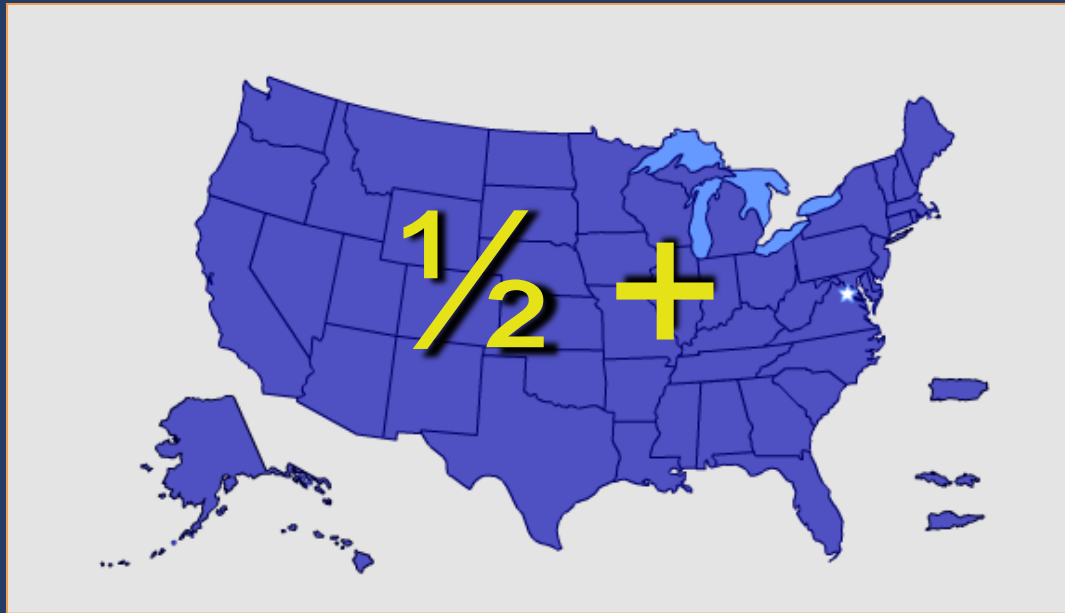
NASA Education Outcome 2 (Secondary): *Attract and retain students in STEM disciplines through a progression of educational opportunities for students, teachers, and faculty (Educate and Engage)*

Precollege Education . . .

*“The emphasis in precollege programs should be placed on teacher preparation and/or development . . . Consortia are encouraged to implement precollege programs in collaboration with other NASA pre-college projects or STEM pipeline projects.”*



# How Does Space Grant Connect?



Based on web site information. . .

At least half of the 52 consortia currently support teacher professional development in some fashion.

At least as many currently support K-12 student initiatives.



# How Does Space Grant Connect?



- 1) GTTP is an opportunity to partner with ASP to support your K-12 teacher professional development and student initiatives.



OHIO – Supports a Project ASTRO™ site, pairing classroom teachers and astronomers to improve science teaching.

[www.astrosociety.org/education](http://www.astrosociety.org/education)



MINNESOTA – Project STEP, modeled on Project ASTRO for science.

# How Does Space Grant Connect?



- 2) GTTP can provide an opportunity to advance your Space Grant Consortium as a resource for your state's teachers and students, and to encourage future SG fellows.



MONTANA – University students provide presentations on astronomy and NASA missions to K-12 schools around the state.



MSGC becomes an adaptable resource for the classroom and provides role models for future space grant fellows entering the STEM pipeline.



# Let's Connect!





# Let's Connect!



- 1) I'll be around to chat.
- 2) Pick up one of the handouts containing contact information.
- 3) Let's talk about how we might partner to meet our common goals.



# Contacts

- Dr. Greg Schultz, ASP Director of Education  
[gschultz@strosociety.org](mailto:gschultz@strosociety.org)
- Brian Kruse, ASP Lead Formal Educator  
[bkruse@astrosociety.org](mailto:bkruse@astrosociety.org)
- Jim Manning, ASP Executive Director  
[jmanning@astrosociety.org](mailto:jmanning@astrosociety.org)





# International Year of Astronomy & Beyond



*Goal: To generate awareness and interest that will lead to the development of sustainable programs and models to serve astronomy and science education for the future.*



# The Stakes . . .



# Astronomical Society of the Pacific



*ASP: Advancing science  
literacy through astronomy.*

[www.astrosociety.org](http://www.astrosociety.org)