

December 11, 2008

International Year of Astronomy NASA Science Mission Directorate Planning Calendar

We are creating a list of **feature topics**, **celestial objects**¹ that can be observed by the public (via the unaided eye, via binoculars, or via amateur telescopes), space science **mission milestones**, and **signature E/PO events** that will engage the public during each month of the International Year of Astronomy (IYA). These topics, objects, milestones, and events will be featured on NASA's International Year of Astronomy website (astronomy2009.nasa.gov).

The intent is to provide a "framework" that helps NASA space science mission E/PO programs, national IYA programs, and intermediate audiences such as amateur astronomy clubs, science centers, museums, community-based organizations, etc. to connect with each other and their audiences to achieve a bigger "splash," e.g. by offering related resources and events for the public in conjunction with mission milestones and celestial events. The topics themselves are based on mission, celestial, historical, and/or IYA events that are likely to garner public attention in a given month, with attention to balance across disciplines and timing of the school year.

¹ The celestial objects on the "NASA list" are featured on the NASA SMD IYA website (astronomy2009.nasa.gov). Rick Fienberg has prepared a more extensive master list of celestial objects for public observing for each month of 2009.

January 2009	
NASA Hot Topic	Telescopes and Space Probes: Today's Starry Messengers: We celebrate the ongoing contributions of NASA's telescopes and space probes to the scientific legacy that Galileo initiated 400 years ago with his celestial observations and the publication of <i>Siderius Nuncius</i> – " <i>The Starry Messenger</i> ".
Go Observe with NASA	Venus: By observing the phases of Venus, Galileo concluded Venus orbits the Sun - and not the Earth. The planet Venus is the brightest celestial object in the sky after the Sun and the Moon, and appears brighter to us than the star Sirius. January is the best time to view Venus in the evening sky in 2009.
NASA Mission Milestones	<ul style="list-style-type: none"> American Astronomical Society (AAS) meeting press releases from NASA missions, Long Beach, CA, January 4-8, 2009.
International IYA Events	<ul style="list-style-type: none"> Opening ceremony at UNESCO HQ, Paris, France, January 15-16, 2009
US IYA Events	<ul style="list-style-type: none"> Joint US-NASA IYA opening ceremony at AAS and special sessions, January 6-7, 2009 Local IYA opening events, January 10, 2009
NASA IYA Events	<ul style="list-style-type: none"> Joint US-NASA IYA opening ceremony at AAS and special sessions, January 6-7, 2009 Visions of the Universe: Four Centuries of Discovery, a traveling exhibit for libraries begins national tour January 21, 2009.
NASA Facts	<ul style="list-style-type: none"> 5th anniversary of Mars Exploration Rover landings (January 4 and January 25)
Galileo Facts	<ul style="list-style-type: none"> Galileo first observed three "stars" near Jupiter on January 7, 1610. By January 15, 1610, he concluded that four objects were orbiting Jupiter.

February 2009	
NASA Hot Topic	Our Solar System: Galileo's observations of the Moon, Jupiter, Venus, and the Sun revolutionized our understanding of the solar system and our place in it. NASA's explorations of our solar system - and observations of planets around other stars - continue the revolution, sparking the imagination of learners of all ages.
Go Observe with NASA	The Moon: The Moon is the closest astronomical object to the Earth. Galileo was the first to observe craters and mountains on the Moon. NASA spacecraft scheduled to launch in 2009 will map the Moon in amazing detail and search for evidence of ancient ice to help prepare for future human exploration.
NASA Mission Milestones	•
International IYA Events	•
US IYA Events	• 6-day old moon with Venus nearby offers opportunities for local star parties, February 1, 2009.
NASA IYA Events	• NASA's Great Observatories – the Hubble Space Telescope, Spitzer Space Telescope, and Chandra X-ray Observatory – and U.S.-based science centers, museums, planetaria, and other informal education venues will unveil spectacular images to celebrate the International Year of Astronomy and Galileo's birthday. Local unveiling events will occur February 14-28, 2009.
NASA Facts	•
Galileo Facts	• Galileo was born on February 15, 1564

March 2009	
NASA Hot Topic	Observing at Night...and in the Day: For centuries, observers enjoyed spectacular celestial views afforded by naturally dark skies, but were limited to observing light that we can detect with our eyes. Today's observers face challenges associated with excess artificial lighting, while benefiting from technology that allows us to detect the full range of the electromagnetic spectrum and to carry out observations day and night.
Go Observe with NASA	Saturn: Galileo's observations of Saturn revealed objects that looked like two handles around Saturn. Later observations showed these objects to be rings, composed of billions of ice particles. Modern spacecraft and telescopes have provided us with spectacular views of Saturn, its rings, and its moons.
NASA Mission Milestones	<ul style="list-style-type: none"> • NASA's Dawn mission carries out a Mars flyby. • Anticipated launch of NASA's Kepler mission - the first mission capable of detecting Earth-sized planets - will mark a new era in our understanding of our place in the universe. (Launch is currently scheduled for March 6, 2009.)
International IYA Events	•
US IYA Events	<ul style="list-style-type: none"> • GLOBE at Night Dark Skies Awareness Events, March 16-28 • Earth Hour, March 28
NASA IYA Events	<ul style="list-style-type: none"> • Sun-Earth Day 2009: Discover the Sun, March 20 • Saturn Observing Campaign, March 8-28
NASA Facts	•
Galileo Facts	• <i>Sidereus Nuncius</i> was published in March 1610

April 2009	
NASA Hot Topic	Galaxies and the Distant Universe: In turning his telescope to the hazy band of light that marks our Milky Way galaxy, Galileo discovered countless faint stars. Four centuries later, NASA's telescopes allow us to peer through the dust that obscures the center of the Milky Way, to study galaxies beyond our own in exquisite detail, and to explore the most distant reaches of the observable universe.
Go Observe with NASA	Whirlpool Galaxy: The Whirlpool Galaxy was the first galaxy recognized to have a spiral shape, as observed by Lord Rosse in 1845. Today, we know that our own Milky Way is also a spiral galaxy. The Whirlpool Galaxy is located in the constellation Canes Venatici, and can be observed with a small telescope.
NASA Mission Milestones	<ul style="list-style-type: none"> • Celebration of 19th anniversary of the launch of the Hubble Space Telescope on April 24, 1990 • Launch of the ESA-NASA Planck mission is currently scheduled for the week of April 12, 2009. Planck is designed to study how the Universe began, how it evolved to the state we observe today, and how it will continue to evolve in the future. • The target launch date for the Lunar Reconnaissance Orbiter (LRO) is April 24, 2009. LRO will provide the most detailed maps of the Moon to date, helping to prepare for and support future human exploration of the Moon. The launch vehicle will also carry a companion payload called the Lunar Crater Observation and Sensing Satellite (LCROSS). LCROSS will send a rocket crashing into the Moon in search of water; the impact plume is expected to be visible in medium-sized telescopes.
International IYA Events	<ul style="list-style-type: none"> • 100 Hours of Astronomy, April 2 - April 5 • International Sidewalk Astronomy Night, April 4
US IYA Events	<ul style="list-style-type: none"> • 100 Hours of Astronomy, April 2 - April 5 • Spring IYA Star Party, April 4 <p>Annual events present opportunities to convey IYA themes:</p> <ul style="list-style-type: none"> • Earth Day, April 22 • Astronomy Week, April 27 - May 3
NASA IYA Events	<ul style="list-style-type: none"> • 100 Hours of Astronomy, April 2 - April 5 • A microchip containing more than one million names will travel into space with LRO through the Send Your Name to the Moon program.
NASA Facts	<ul style="list-style-type: none"> • 19th anniversary of the launch of the Hubble Space Telescope on April 24, 1990 • The Galaxy Evolution Explorer (GALEX) launched on April 28, 2003.
Galileo Facts	<ul style="list-style-type: none"> • Upon the request of Cardinal Ballarmine, in 1615, the Jesuit Mathematicians of the Collegio Romano certify Galileo's celestial discoveries, without agreeing with his interpretation.

May 2009	
NASA Hot Topic	Our Sun: Observations of sunspots made by Galileo and his contemporaries challenged prevailing ideas that stated that the Heavens were perfect and unchanging. Today, we use modern technology to collect all forms of light from our nearest star, and to determine how solar weather affects our home planet.
Go Observe with NASA	The Sun: The Sun is our closest star, and the source of energy that supports life on Earth. Galileo wrote his first letter on sunspots in May 1612. Modern telescopes and spacecraft help us explore how weather on the Sun affects our home planet Earth.
NASA Mission Milestones	<ul style="list-style-type: none"> • Hubble Space Telescope Servicing Mission 4: Space shuttle Atlantis' STS-125 mission to service the Hubble Space Telescope is targeted to launch May 12, 2009.
International IYA Events	Annual events present opportunities to convey IYA themes: <ul style="list-style-type: none"> • International Astronomy Day, May 2
US IYA Events	Annual events present opportunities for star parties or other events to convey IYA themes: <ul style="list-style-type: none"> • Space Day, May 1 • International Astronomy Day, May 2
NASA IYA Events	•
NASA Facts	<ul style="list-style-type: none"> • Phoenix landed on Mars on May 25, 2008.
Galileo Facts	<ul style="list-style-type: none"> • Galileo's first letter on sunspots in May 1612

June 2009	
NASA Hot Topic	Clusters of Stars: Galileo viewed the Pleiades star cluster through his telescope, discovering stars too faint to be seen with the unaided eye. Today, NASA's telescopes help us to decipher the ages and distances of clusters of stars – both young and old – throughout our galaxy and beyond.
Go Observe with NASA	The Hercules Globular Cluster: A globular cluster is a collection of hundreds of thousands of ancient stars held together by gravity. Discovered in 1714, the Hercules Globular Cluster is one of the brightest, closest, and most beautiful globular clusters that can be observed from the northern hemisphere.
NASA Mission Milestones	<ul style="list-style-type: none"> American Astronomical Society meeting press releases from NASA missions, Pasadena, CA, June 7-11, 2009.
International IYA Events	<ul style="list-style-type: none">
US IYA Events	Annual events present opportunities for star parties or other events to convey IYA themes: <ul style="list-style-type: none"> Summer solstice, June 20
NASA IYA Events	<ul style="list-style-type: none"> "Black Holes: Space Warps and Time Twists," a traveling exhibition created by the Harvard-Smithsonian, opens at the Boston Museum of Science June 20, 2009.
NASA Facts	<ul style="list-style-type: none"> First anniversary of the launch of the Fermi Gamma-ray Space Telescope (formerly GLAST), on June 11, 2008.
Galileo Facts	<ul style="list-style-type: none"> Galileo attacks the problem of determining longitude at sea by means of eclipses of the satellites of Jupiter in 1616.

July 2009

NASA Hot Topic	Black Holes: The gravitational fields of black holes are so strong that nothing, not even light, can escape. While the idea that such an object could exist arose in the 18th century, finding evidence required modern technology. NASA's space-based telescopes identify and study these enigmatic objects by the effects that they have on their surroundings.
Go Observe with NASA	The Milky Way: Our solar system is located in the Milky Way galaxy. On a dark summer night, the Milky Way looks like a faint hazy band of light stretching across the night sky. Galileo discovered that the Milky Way is made of a countless number of stars. Modern telescopes allow us to explore the vast expanse of our home galaxy as never before.
NASA Mission Milestones	<ul style="list-style-type: none"> • Celebration of the 10th anniversary of the launch of the Chandra X-ray Observatory on July 23, 1999.
International IYA Events	<ul style="list-style-type: none"> • Total solar eclipse, visible from eastern Asia, offers opportunities for international events
US IYA Events	<ul style="list-style-type: none"> • 3-day old moon offers opportunities for local star parties, July 25
NASA IYA Events	<ul style="list-style-type: none"> •
NASA Facts	<ul style="list-style-type: none"> • 10th anniversary of the launch of the Chandra X-ray Observatory (July 23, 1999). • Suzaku launched on July 10, 2005. • Cassini-Huygens arrived at Saturn on July 1, 2004.
Galileo Facts	<ul style="list-style-type: none"> •

August 2009

NASA Hot Topic	Rocks and Ice in the Solar System: For hundreds of years, much of our knowledge about the smaller rocks and icy bodies in our solar system came from meteors and comets passing by Earth. Modern telescopes and space missions have allowed us to identify vast numbers of small objects in our solar system, and to study them as never before. Scientists reclassified Pluto as a dwarf planet in August 2006 as a result.
Go Observe with NASA	The Perseids: The Perseids is typically the most visible meteor shower for northern observers, although hampered by moonlight in 2009. Named because its streaks of light appear to originate near the constellation Perseus, the Perseids meteor shower occurs when Earth's orbit crosses the tail of debris from Comet Swift-Tuttle.
NASA Mission Milestones	•
International IYA Events	• Events in conjunction with the International Astronomical Union 27th General Assembly in Rio de Janeiro, Brazil, August 3-14, 2009.
US IYA Events	• Summer IYA Star Party – Lunar Star Party with LCROSS, August 1
NASA IYA Events	• Summer IYA Star Party – Lunar Star Party with LCROSS, August 1
NASA Facts	• The Spitzer Space Telescope was launched on August 25, 2003.
Galileo Facts	• On 25 August 1609, Galileo demonstrated his first telescope to Venetian lawmakers.

September 2009	
NASA Hot Topic	Planets and Moons: Galileo observed craters and mountains on the Moon, four of Jupiter's moons, the phases of Venus, and Saturn's rings. NASA's missions send us spectacular images of planets and moons throughout our solar system, showing us evidence for past water on Mars, volcanic activity on Jupiter's moon Io, and never-seen-before views of the planet Mercury.
Go Observe with NASA	Jupiter: Jupiter is the largest planet in our solar system. Galileo's discovery of four of Jupiter's moons challenged the ideas of his time about our solar system. Modern telescopes and space probes continue Galileo's legacy, with dramatic observations of Jupiter and its moons, and detections of giant planets around other stars.
NASA Mission Milestones	<ul style="list-style-type: none"> • MESSENGER will carry out its 3rd flyby of Mercury in September 2009.
International IYA Events	<ul style="list-style-type: none"> •
US IYA Events	<ul style="list-style-type: none"> • Autumnal equinox (September 22) offers opportunities for local star parties (suggested date is September 19)
NASA IYA Events	<ul style="list-style-type: none"> •
NASA Facts	<ul style="list-style-type: none"> • Ten Years of Science with Chandra conference, September 22-25, 2009
Galileo Facts	<ul style="list-style-type: none"> •

October 2009	
NASA Hot Topic	What is the Fate of the Universe?: We have contemplated the origins and fate of the universe for centuries. Scientists using modern telescopes have measured the afterglow of the Big Bang, determined the age of the universe, and discovered that an unexplained force we call "dark energy" is changing our universe, causing it to expand at an increasing rate. What is dark energy, and how will it influence the fate of the universe?
Go Observe with NASA	Andromeda: Visible in dark skies with the unaided eye or binoculars, Andromeda is the closest large spiral galaxy to our own. Scientists use telescopes in space and on the ground to study the stars, gas, and dust in this enormous galaxy, predicted to collide with our Milky Way galaxy billions of years from now.
NASA Mission Milestones	<ul style="list-style-type: none"> American Astronomical Society Division for Planetary Sciences meeting press releases, San Juan, Puerto Rico, October 4-9, 2009
International IYA Events	Annual events present opportunities to convey IYA themes: <ul style="list-style-type: none"> World Space Week, October 4-10 Great World Wide Star Count, October 9-23
US IYA Events	<ul style="list-style-type: none"> Suggested date for local star parties is October 17, near new moon
NASA IYA Events	<ul style="list-style-type: none">
NASA Facts	<ul style="list-style-type: none">
Galileo Facts	<ul style="list-style-type: none">

November 2009	
NASA Hot Topic	The Lives of Stars: A glimpse at the night sky on a clear dark night told the earliest observers that all stars are not the same. Modern telescopes allow us to explore the life cycles of stars in a profound way. We have observed newborn stars emerging from pillars of gas and dust, and captured stunning images of structures formed by dying stars.
Go Observe with NASA	The Crab Nebula: Native Americans and Chinese astronomers recorded the appearance of a “star” in 1054 A.D. that was so bright that it could be seen during the day. This event was associated with the death of a star, and resulted in the creation of the Crab Nebula. The Crab Nebula can be seen with a modest telescope under dark skies.
NASA Mission Milestones	<ul style="list-style-type: none"> The launch of the Wide-field Infrared Survey Explorer (WISE) is planned for November 2, 2009. WISE will provide a complete inventory of nearby young stars and their dusty disks. November 2009 also marks the 5th anniversary of the launch of the Swift mission, designed to study the most powerful explosions in the cosmos - gamma ray bursts - now associated with the end stages of massive stars.
International IYA Events	•
US IYA Events	• Suggested date for local star parties, November 21, for dark sky viewing of the Crab Nebula
NASA IYA Events	•
NASA Facts	• Swift launched on November 20, 2004.
Galileo Facts	• Galileo made a series of Moon observations from November 30 to December 19, 1609.

December 2009	
NASA Hot Topic	Discovering New Worlds: The work of Galileo, Johannes Kepler, and other scientists of the time had a dramatic impact on science and culture. Today's telescopes, space missions, and research place us on the brink of another revolution, as they reveal that the worlds of our solar system differ dramatically from Earth, that hundreds of planets orbit other stars, and that life can exist in a wide range of environments.
Go Observe with NASA	The Orion Nebula: The Orion Nebula, now known to be home to disks of material that could be the building blocks of future solar systems, can be easily seen on a dark night in the Orion constellation. Galileo recorded many more stars than he could see with his eyes alone when he viewed the Orion constellation through his telescope.
NASA Mission Milestones	•
International IYA Events	• Plans for a closing event for the International Year of Astronomy are under discussion.
US IYA Events	• "Once in a Blue Moon" IYA Closing Events: star parties in conjunction with community First Night events, December 31
NASA IYA Events	•
NASA Facts	•
Galileo Facts	• Galileo made a series of Moon observations from November 30 to December 19, 1609.