

Panama Canal / Southern Caribbean

# Cosmic Trails™

December 13th – 23rd, 2010



[www.InSightCruises.com/Sky](http://www.InSightCruises.com/Sky)

**CURIOS ABOUT THE BEAUTY OF THE NIGHT SKY AT SEA?** Game to explore facets of the moon, then take in a total lunar eclipse in the company of kindred spirits? Gather astronomy knowledge on a new wavelength aboard Cosmic Trails, December 13–23, 2010, on Holland America Line's m.s. Zuiderdam.

Journey with Sky & Telescope into the Panama Canal, whose engineering is the product of an historic struggle against Nature and skepticism. You'll get a behind-the-scenes look at the Apollo program; explore the road less traveled in the winter sky; see beyond the obvious, into the mysteries of the Moon; bring home an insider's techniques, tips, and tricks for getting the most out of lunar observation; and learn astrophotography details from basic to cutting edge.

While you're in balmy tropical climes, kayak with your companion through crystal blue Aruban waters and venture into Costa Rica's rainforests, surrounded by the sounds of birds and the colors of flora and fauna. Indulge your thirst for knowledge.

Sail with Sky & Telescope and indulge your thirst for knowledge. Relax with a friend; enjoy fun and camaraderie with fellow astronomers; rekindle a long-dormant fascination with the cosmos. Visit [InSightCruises.com](http://InSightCruises.com) or call Neil or Theresa at 650-787-5665 to get all the details, and then enrich your astronomy routine with an intellectual adventure with the Sky & Telescope community.

## VIEWING THE COSMOS

### Exploring the Night Sky with Binoculars

Speaker: Gary Seronik

Just about every one associates stargazing with telescopes — but even the most experienced backyard astronomer owns binoculars. Why? Simply because when it comes to instant observing and being able to enjoy wide fields of view, nothing beats binoculars. But not all binoculars are created equal. Some are stellar performers, while others are strictly for the birds. In this talk Gary tell you how to choose and use binoculars specifically for viewing the night sky. He also describes in detail various tips and tricks to help you get the most out of your viewing experiences. Finally, Gary lists the Top 10 binocular sights you can view while on our cruise.

### Naked-Eye Astronomy

Speaker: Sue French

Contrary to popular opinion, you can enjoy a lifetime of astronomy with little or no equipment other than your unaided eye. Learn to explore the constellations and see colors in the stars. Find out how to spot the International Space Station passing across your sky or watch the brilliant flash of an Iridium satellite. See the Northern Lights dance and catch the swift streak of a "shooting star" as space debris zips through our atmosphere. Know when to look for pretty gatherings of the Moon and planets. Look for Sun dogs, Sun pillars, and radiant crepuscular rays. Enjoy softly glowing lunar halos and coronae. These and many more celestial wonders can be viewed by those who know where and when to look.

### Winter-Sky Wonders

Speaker: Sue French

For many of us, this is the coldest time of the year — but it also harbors the most brilliant stars and some of the most spectacular wonders of the deep-sky. They include nebulae, clouds of gas, and dust either glowing by their own light or reflecting the light of nearby stars; clusters of stars, both old and young; galaxies far beyond our own Milky Way; multiple stars of surprising beauty; and variable stars that challenge our notion of a constant sky. And if that's not enough, we also have intricate Jupiter in our evening sky and awe-inspiring Saturn in the morning! We will tour the brightest and best telescopic delights of the winter sky, and each object will be paired with a nearby but less-known wonder to tempt the observer with more experience.

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### Telescopes for Stargazing

Speaker: Sue French

A backyard telescope is a wonderful thing. But with the bewildering variety of equipment available today, it's difficult for the budding astronomer to know what best suits his or her needs. A lot can be done at modest expense, while some fairly expensive telescopes can be quite frustrating. Learn about the different types of telescopes, and what they are best suited for. Find out what accessories are essential, and which can wait. Discover how you can test drive telescopes and some of the equipment that goes along with them, as well as how to look for help when you need it.

### The Road Less Traveled

Speaker: Sue French

There comes a time when those who love the night sky become familiar with its well-known denizens and think, "What next?". The celestial vault holds countless unsung telescopic treasures waiting to be explored. They may rest in obscurity because they are listed in some little-known catalog, too large to have been noticed in old narrow-field surveys, or too faint for observers with little experience. We will visit some of the celestial incognita in the winter sky as well as resources for discovering more of these objects and digging up data about them.



## THE KENNEDY SPACE CENTER: AN INSIDER'S VIEW

NASA's launch headquarters, on the Space Coast, is the only place on Earth where you can tour launch areas, meet a veteran astronaut, and grasp the true enormity of the Space Program. Experience fun and wonder with Cosmic Trail companions in this private pre-cruise, custom, full-day tour. Get ready to walk among and beneath giant rockets, discover what it takes to launch the Space Shuttle from preparation to liftoff, and soak in Kennedy Space Center's "The Right Stuff" vibe.

We'll have an intense day with our expert guides, integrating the touchstones and experiences every visitor wants with behind-the-scenes sites seldom accessible to the public. The LC 39 Observation

Gantry, International Space Station Center, Apollo/Saturn V Center, and Astronaut Hall of Fame are on the agenda. We will not only view but visit the Vehicle Assembly Building, the shuttle landing strip, and the 6-million-pound crawler that transports the shuttle. Do lunch with an astronaut, view IMAX films with footage shot during NASA missions, and enjoy the products of mankind's inspiration.

The Kennedy Space Center excursion is \$225; it includes all of the above plus dinner, and transportation from the Kennedy Space Center to our pre-cruise hotel in Ft. Lauderdale. For details/questions, please contact Neil or Theresa, or give us a call at (650) 787-5667.



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## PHOTOGRAPHY

### America the Beautiful at Night

Speaker: Wally Pacholka

It's truly amazing the results one can achieve with Landscape Astro-Photography using just a tripod and 35mm camera with a standard lens. Whether you are a novice astro-photographer or an advanced imager, you will be amazed at the simplicity and beauty that you can obtain using basic equipment and a little know-how. *Wally's stunning single image photographs of the night sky as seen over America's great parks and landmarks will be presented (for example, see above).*

### Cutting Edge Landscape Astro-Photography

Speaker: Wally Pacholka

Knowing the night sky and knowing planet Earth so you know what to shoot, when to shoot, where to shoot is what this session is all about. We'll also cover advanced imaging like bird's-eye-view panoramics that cover 180 degrees of horizon and sky, as well as some basic image processing and how to avoid doing too much image editing by taking good images to begin with!

## EXPLORING OUR SOLAR SYSTEM

### Origin of Earth

Speaker: David Stevenson, Ph.D.

Our own solar system began as a disk of gas and dust four and one half billion years ago. From this, emerged our Sun and a set of planets, one of which is our home planet. I will describe our current understanding of this process and how it allowed for the development of an atmosphere, an ocean, plate tectonics, a magnetic field, and conditions for life.

### Planetary Diversity

Speaker: David Stevenson, Ph.D.

We now know that planets are common. In this session Dr. Stevenson will describe the evidence and explain why this is a natural consequence of how stars form. I will also describe how robotic exploration of our own solar system has led to a view of planets that emphasizes diversity rather than similarity and what this suggests for planets elsewhere. Although there are surely so many planets that some must be like Earth, perhaps the most exciting prospects are for planets and life forms very different from our home.

### Capturing the Light — The Night Sky

Speaker: Wally Pacholka

Given the evolving advances in imaging technology we'll examine how today's generation of amateur astronomers can take stunning images thought impossible just a few years ago. We'll cover *all* the basic techniques in capturing the night sky: cameras, lenses, exposure times, and camera setting as well as Landscape Astro-Photography equipment that is good, better, and best for the budget imager or cutting-edge imager. By then end of this session you'll understand the difference between what the eye sees and what the camera sees — and how to use this knowledge to make great photos.

### Capturing the Dark — Illuminating the Landscape

Speaker: Walter Pacholka

Let's face it, astronomers want dark locations to photograph sky events, but if the sky is dark, how does one get the landscape bright enough to show up in the photograph? In this session you'll learn the tricks to illuminating the scenery you are photographing under the dark night sky by using artificial light, crescent moonlight, or ambient city lights.

### Apollo Astronaut Experience

Speaker: Andrew Chaikin

Only 24 men have been to the moon. While researching his landmark book, *A Man on the Moon*, Andrew Chaikin spent more than 150 hours interviewing 23 of the 24 Apollo lunar astronauts about every aspect of their incredible journeys. Chaikin will share anecdotes and insights from this extraordinary handful of men, the only humans to visit another world.

### The Quest for Mars

Speaker: Andrew Chaikin

Dreamers and space scientists, engineers and biologists, backyard astronomers and artists have devoted their lives — sometimes at the expense of their careers — to the quest for Mars. Andrew Chaikin, who covered Mars exploration as a science journalist and took part in the first Mars landing, chronicled this epic quest and the enduring dream of going there in his book, *A Passion for Mars*. Chaikin will share the story of Earthbound explorers and their robotic surrogates caught in the irresistible pull of the Red Planet.

## LUNAR STUDIES

### Origin of the Moon

Speaker: David Stevenson, Ph.D.

Although there are many ideas for how our Moon came to exist, only one makes sense chemically and physically: The Moon came from a Big Splash, the molten and vaporized rock that is ejected during a giant impact on Earth by a body about the size of Mars. I will describe how this not only explains the Moon but also sets the stage for all of subsequent Earth evolution. For indeed, the nature of our planet is inextricably linked to the existence and nature of our satellite companion.

### Mysteries of the Moon

Speaker: David Stevenson, Ph.D.

In many ways our Moon is better understood than any planetary body aside from our home. We have rocks returned by the Apollo astronauts, dated in our labs, and numerous other sources of information about this near neighbor. Nonetheless, there are many mysteries about lunar history and structure . . . how the Moon got to the orbit it is now in, how lunar rocks acquired some evidence of an ancient magnetic field, why the inside of the Moon contains small amounts of water, how the Moon is layered and why the Moon may have a small iron core. Despite its rather special and remarkable origin (though a Giant Impact) the Moon has much to tell us about planets in general and we need to continue with robotic exploration.

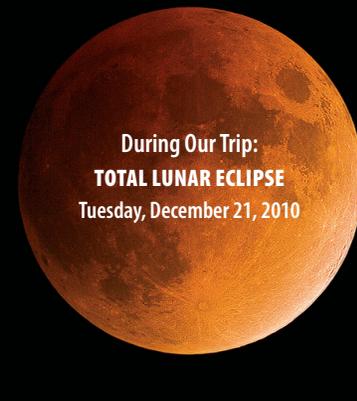
### Gearing Up for a Moon Shot

Speaker: Gary Seronik

The Moon is also one of a handful of astronomical sights that can be enjoyed with just your eyes, but if you really want to explore the lunar surface, some gear is necessary. With the right stuff, you can inspect the Moon as if you were on your own private spaceship a mere 2,000 kilometers from its surface. As an experienced equipment reviewer and builder, Gary discusses in detail what kinds of optics are best for viewing the Moon. Binoculars, telescopes (small, medium, and large), eyepieces, filters, and other accessories are covered along with their respective pros and cons.

Cruise prices start at \$999, per person, for an Inside Stateroom. For those attending our seminars, there is a \$1,275 fee. Taxes are \$244.23 per person. Port Charges and an InSight Cruises service fee are \$245.

For more info contact Neil at 650-787-5665 or [neil@InSightCruises.com](mailto:neil@InSightCruises.com)



During Our Trip:  
**TOTAL LUNAR ECLIPSE**  
Tuesday, December 21, 2010

### From Galileo to Apollo: A History of Lunar Exploration

Speaker: Gary Seronik

From the first moment when humans looked skyward, to that historic July day in 1969 when Neil Armstrong set foot on the lunar surface, the Moon has been the object of fascination, fantasy, and wonder. Science's struggle to understand, map, and explore Earth's nearest neighbor is a rich story full of intrigue and colorful characters. Join Gary as he retraces this journey of discovery from Galileo's initial telescopic inspection of the Moon's "rough and unequal surface" to the "magnificent desolation" seen by Apollo astronauts.

### Viewing and Understanding the Moon

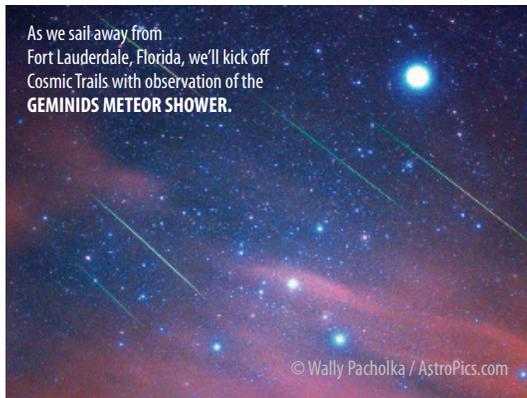
Speaker: Gary Seronik

When is the best time to view the Moon? Why do eclipses occur? What kinds of features can I see? Where is the best place to look? These are just some of the questions answered in this talk. But perhaps most rewarding is developing an understanding of what it is you're seeing in your telescope. How did this crater form? Why does it look this way? Why are some parts of the Moon bright, and others dull? Why are some smooth, while other regions a jumble of craters? Equipped with a telescope and armed with the information presented in this talk, you can explore the Moon like a lunar geologist.

### Exploring Lunar Landscapes

Speaker: Andrew Chaikin

Tour the Apollo landing sites, and many other lunar wonders, with Andrew Chaikin, author of *A Man on the Moon*. Learn how the moon's countless craters were formed, how the moon itself came to be. Find out what the Apollo astronauts discovered when they became the only humans to visit this magnificent alien world, and why Chaikin believes our satellite is the solar system's "jewel in the crown."



As we sail away from Fort Lauderdale, Florida, we'll kick off Cosmic Trails with observation of the GEMINIDS METEOR SHOWER.

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