Blog

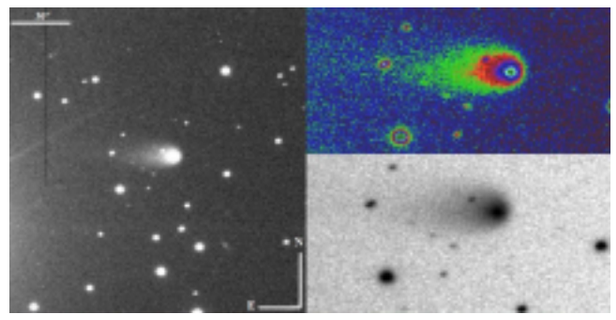
Celebrating the Uncertainty of Science

Posted by admin on August 11, 2013

As the curtain goes up on Comet ISON, I'm glad I live in a community that is willing to embrace the uncertainty of science. Visually, Comet ISON may become anything from a pleasant spectacle in the sky to a disappointing puff. For astronomers, a boatload of discovery awaits. Regardles of the comet's outcome, a celebration of its uncertain future is charging ahead with the Comet Festival in South Bend, IN...

Science

For the uninitiated, *C/2012 S1 (ISON)* as the comet is officially known is a chunk of ice maybe a couple miles across that will have a close encounter with the sun on November 28, 2013. Discovered by a pair of Russian observers when the comet was beyond the orbit of Jupiter (a distance record in its own right for sungrazer discoveries), ISON quickly intrigued the astronomy community.



For a few months, high-end telescopes and spacecraft captured a flurry of images before earth headed around the opposite side of the sun in summer 2013. A NASA CIOC page on Facebook had been the leading medium for distributing the most recent imagery. The intervening sun, however, forced a temporary observing hiatus.

In the ensuing downtime, astronomers practiced and prepared for the big show (scientifically speaking), including a NASA CIOC workshop that covered more technical aspects. Comments circulated in the media about the comet's expected brightness, and a previously observed slowdown in activity has caused some doubts, but voices of reason hopefully prevailed, and optimism is a viable commodity.

In late August 2013 the comet will re-emerge on the other side of the sun. Early images will ignite a new round of brightness predictions considering how the comet has changed over the summer. That's when the curtain will go up on Comet ISON; media and the public will become engaged. It's then a race to perihelion on Thanksgiving Day.

Concurrently, the inbound comet is reaching the "frost line" near the orbit of Mars. There the comet is heating up enough to release water that has been locked frozen in the comet for millions of years since the icy core left the Oort Cloud. The Oort Cloud is a reservoir of virgin comet nuclei that are like petri dishes of the early solar system. No wonder astronomers are geeked.

Up to this point, more volatile molecules like CO and CO2 have been putting on the modest pre-show, with the comet sprouting a nub of a tail. If the outgassing from water ice goes into high gear, the comet would likely be visibile to the naked eye in early November 2013. But nobody knows for sure.

Comet ISON's "sungrazer" status gives it the dubious distinction of being a candidate for either spectacle or annhiliation. The illustration by Dacota Schrader shows a turkey (comet nucleus) rounding the campfire (sun) on Thanksgiving Day, with a trail of feathers (comet dust tail) in its wake. The illustrated turkey has a blue left wing (comet ion tail) that weathervanes straight out from the solar wind. With Comet ISON, at perihelion we may see a great trail of feathers, or the turkey may be unsatisfactory leftovers after a Thanksgiving scorching. We don't know.

To throw more fire onto the hype, NASA recently reported the sun's magnetic poles should flip anytime soon. It's a regular occurrence, but how it affects a comet--if at all--has not been observed before. It's one more timely twist to a plot that will hopefully be kept in perspective by media and the public alike.

And then there's always serendipity. Maybe a new comet will suddenly steal the show (recall the Russian meteorite surprise), or maybe a coronal mass

ejection from the sun will zap the comet before it even reaches perihelion, that closest approach on Thanksgiving Day. Regardless, Comet ISON has much to reveal about the sun as well as about comets.

Uncertainty

With so much speculation about what will happen to Comet ISON when it rounds the sun, there's only one thing to do--have a party! In South Bend, IN, we are celebrating with the Comet Festival not because science has all the answers, but because it doesn't. "Embrace the uncertainty," I like to say. But the reasons go a little deeper.

If we as a community want to be capable scientific thinkers, we need to practice it. Practice science. Don't leave it up to the schools alone. Don't leave it up to the folks who already are into the sciences. We need to get out there with our kids and watch science unfold. Live it, together.

Comet ISON is clearly headed for a close encounter with the sun. That much we do know. But the media's penchant for visual spectacle cannot be the same standard by which we judge Comet ISON's tenure in the inner solar system. Look at this celestial apparition in terms of what we can learn from it.

There are lots of comets that we do not see with the naked eye. There are even lots of sungrazing comets as a percentage of the comet population. But ISON is different, on the cusp of being so many things to so many people. For example, NASA is turning over a dozen space-borne assets toward ISON in a collective gaze through multiple wavelenghts and mediums. They're using extant landers, orbiters, space telescopes, a rocket, a balloon, and more to eek out insight on comets and the sun alike. This is cause for celebration.

Unfortunately, with recent arbitrary budget cuts, NASA is no longer in the education business. It seems incongruous with our national assertions to advocate for education and to grow our econonomy through new science applications. Yet one of the most effective realms in the entire U.S. government for motivating science exploration--NASA's education component--has been defunded. We're on our own, and we have to learn science on our own, as a community.

Celebrating

Just like we can't wait for the schools to teach science, we can't wait for political morass to advance a scientific mindset. Again, if we want our kids to value scientific thought, we need to prove it in our own actions. We value what we celebrate, and we celebrate what we value. Hence, let's step up together and show we value the scientific process.

The Comet Festival is November 28 through December 8--that's Thanksgiving Day through the end of the following weekend. Let's do something. Bring value to businesses, too. Put as much energy and priority into a significant science happening as you would a major sporting event. Grass Roots is more than just a great South Bend business, it's how we need to initiate community education. You may not like any perceived political overtones of this next comment, but it does indeed take a village to raise a science-minded child. Now is one such chance.

Go out on a limb and vote your expectations of Comet ISON's outcome. Have dialogue with someone about Comet ISON; ask them if they've heard about the Thanksgiving encounter. Start a murmur, build a groundswell of interest, be a voice for a new experience. Ask to be a destination site for the Comet Quest treasure hunt; talk it up in the workplace. Thank a restaurant that serves a food or beverage item with a comet-themed twist. Donate an unused telescope (right) to the Telescope Clinic on December 7, 2013, hosted by the Michiana Astronomical Society. Submit your artistic comet interpretation to the Comet Festival Art Exhibit. Make up some more bullet items like this. *Be proactive and start something comet-y.*

Let's not dither with opportunities like Comet ISON. How often can we celebrate the potential for failure--that is, the physical demise of ISON or it's poor appearance--juxtaposed against the opportunity for new discoveries? Contact me. Ask what you can do, or propose a new idea. Maybe we can discuss it over a Comet Ice coffee or a Sungrazer beer. Cheers.

« Previous

Next »

Comments:

Leave a Reply

Name:

Email:

(Your email will not be publicly displayed.)

Please type the letters and numbers shown in the image.

Click the image to see another captcha.

Post Comment

- 2014
- 2013
  - December
  - November
  - September
  - August

    Sponsor the Comet Festival

    Celebrating the Uncertainty of Science
  - July
  - May
  - April
  - March
  - February
  - January
- 2012

Tags