

Veil Nebula
(NGC6960)

Cosmology/Astrophysics News

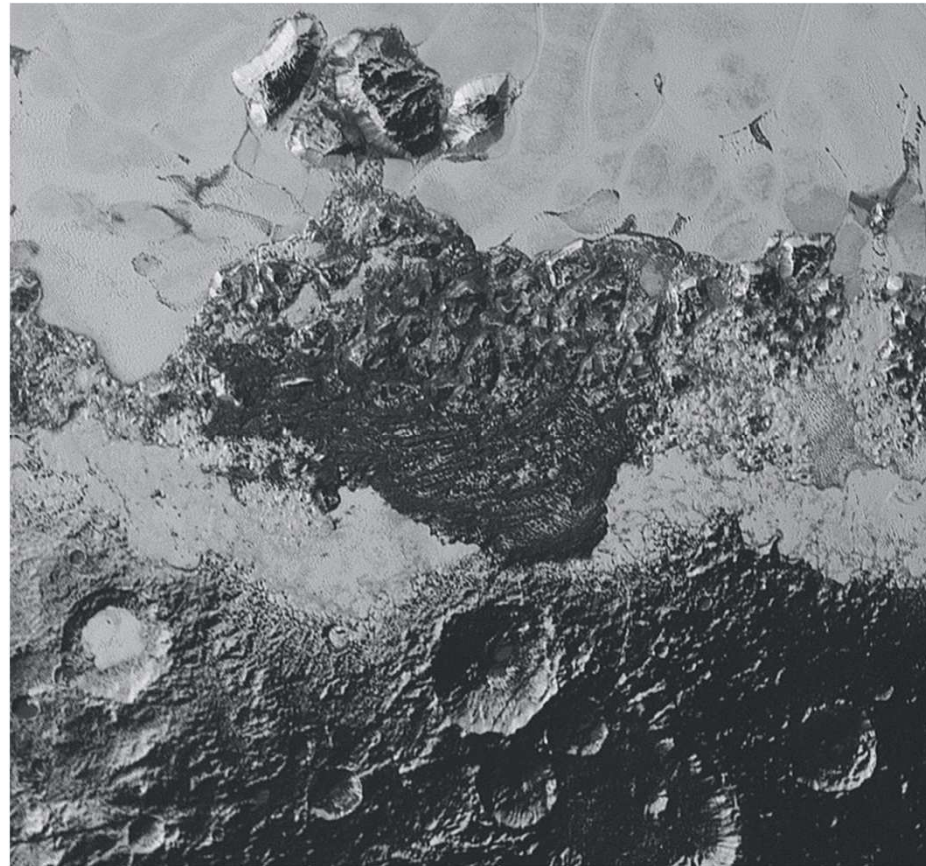
October 21, 2015

for Rose City Astronomers SIG

<http://101iq.com/RCA>

Science – September 18, 2015

- **Dark ridges at the bottom of bright Sputnik Planum may be dunes; old, cratered terrain is visible below that.**



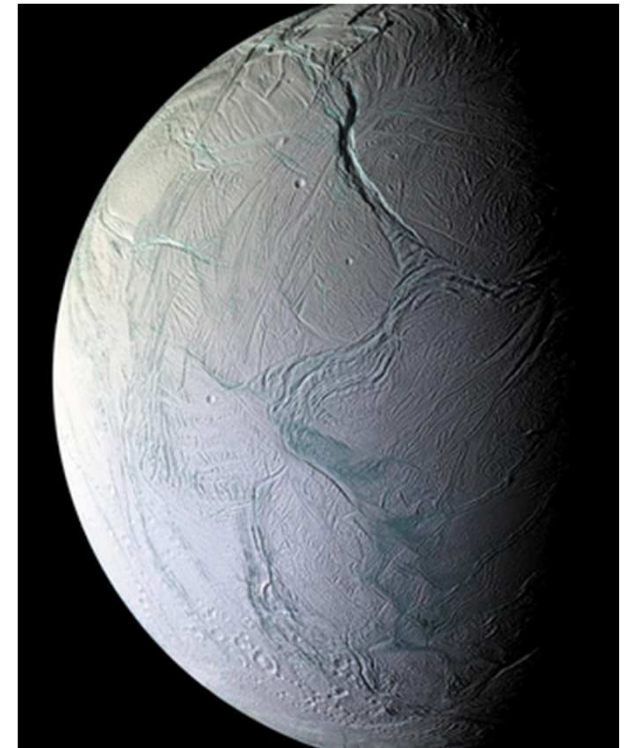
Science – September 18, 2015

- **India to put observatory in orbit**
 - Astrosat's multiwavelength capability could pay special dividends with sources that flare up rapidly, such as x-ray binaries. These pairs, which harbor a dense object such as a black hole and an ordinary star, are undetectable—except when they suddenly flare, or outburst. Observing in wavelengths longer than x-rays can help researchers get a handle on the size and shape of the accretion disks responsible for emissions.



Nature – September 24, 2015

- Global ocean on Enceladus
 - NASA's Cassini spacecraft measured wobbles in Enceladus's rotation over more than seven years. The data confirm that the crust is moving separately from the rocky core, meaning that there must be a widespread layer of liquid between them, says a team led by Peter Thomas of Cornell University in Ithaca, New York.
 - Cassini had previously spotted jets of liquid spewing from the moon's surface, and other studies have suggested that Enceladus has an underground sea only near its south pole. This latest finding further highlights how Enceladus could be one of the most likely places for extraterrestrial life.



Nature – September 24, 2015

- Monstrous galaxies unmasked
 - Narayanan *et al.*² simulate how the Universe's most luminous galaxies, which look extremely bright in the submillimetre part of the spectrum, may have formed when the Universe was 3 billion years old. This snapshot, taken from a supercomputer simulation, depicts the distribution of gas and light in a small region of the field: it contains a bright central galaxy (white) that is accreting gas along a filamentary structure (pink), a large spiral galaxy (left of centre), and numerous smaller galaxies that contribute to the total luminosity of the SMG. Ambient gas (blue-green), much of which was expelled by the galaxies at earlier epochs, gravitates towards the centre of the proto-SMG. This fuels the prodigious star-formation activity of the system, which is unlike anything seen in the present-day Universe.
 - <http://www.nature.com/nature/journal/v525/n7570/full/nature15383.html>
- The diurnal cycle of water ice on comet 67P/Churyumov-Gerasimenko
 - <http://www.nature.com/nature/journal/v525/n7570/full/nature14869.html>



Science – September 25, 2015

- Gravitational waves form binary supermassive black holes missing in pulsar observations
 - <http://arxiv.org/abs/1509.07320>

Nature – October 1, 2015

- India's ASTROSAT launched Sept 28
 - <http://go.nature.com/ago5tf>
- Brine on Mars
 - <http://doi.org/7xw>
- Primordial stars brought to light
 - <http://www.nature.com/nature/journal/v526/n7571/full/526046a.html>
 - The earliest stars are of huge importance to the chemical history of the cosmos, but have previously existed only in theory. There is now strong evidence that such population III stars exist in the brightest galaxy yet found in the early Universe.

Science – October 2, 2015

- Have physicists seen the dying flash of dark matter?
 - <http://news.sciencemag.org/space/2015/10/have-physicists-seen-dying-flash-dark-matter>
 - Dark matter, by definition, can't be seen directly—except perhaps when it dies. For years, scientists have scanned the skies for signals given off by the decay or mutual annihilation of these elusive particles, which make up fully 80% of the matter in the universe. They've seen nothing definitive, but physicists are now reporting a new candidate: a peak in x-ray emission at an energy of 3.5 thousand electron volts (keV). After many inconclusive claims, this one may be testable, they and other researchers say, by an upcoming satellite mission. "The 3.5-keV x-ray signal has a real chance of being definitively confirmed as dark matter in a few years, unlike other putative signals currently on the market," says Jonathan Feng, a particle theorist at the University of California, Irvine.
- Eyeing up a Jupiter-like exoplanet
 - <http://www.sciencemag.org/content/350/6256/39.summary>
 - They present the discovery of a young giant exoplanet with the Gemini Planet Imager (GPI) and a technique called high-contrast imaging.
 - <http://arxiv.org/abs/1508.03084>
- Gamma Ray Bursts not fatal for life in early universe
 - <http://www.sciencemag.org/content/350/6256/53.3.full?rss=1>

Scientific American – October 2015

- Neutrinos at the Ends of the Earth

- <http://www.nature.com/scientificamerican/journal/v313/n4/full/scientificamerican1015-58.html>
- IceCube is a neutrino-hunting particle detector buried in ice at the South Pole. Neutrinos usually fly straight through matter but occasionally smash into atoms in the ice to create signals IceCube can detect.
- The project has discovered dozens of neutrinos with higher energies than any found before, many of which most likely originated in extreme cosmic events taking place in the far-off universe.
- These cosmic neutrinos can be used as tracers to study the nature of the mysterious distant events and should help explain the strange sources of the cosmic rays that bombard Earth from deep space.

Nature – October 8, 2015

- NASA eyes Venus, asteroids, near-Earth objects as future missions
 - <http://go.nature.com/pw723q>
 - <http://spacenews.com/nasa-picks-finalists-for-small-astrophysics-missions/>
- CERN to test revolutionary mini-accelerator
 - <https://www.youtube.com/watch?v=bbvNgqxugTg>
- Fast-moving features in the debris disk around star AU Microscopii
 - <http://www.nature.com/nature/journal/v526/n7572/full/nature15705.html>

Science – October 9, 2015

- The martian lake chronicles
 - Curiosity reveals evidence for ancient lakes on Mars
 - <http://www.sciencemag.org/content/350/6257/167.short>

Nature – October 15, 2015

- Two independent and primitive envelopes of the bilobate nucleus of comet 67P
 - <http://www.nature.com/nature/journal/v526/n7573/full/nature15511.html>