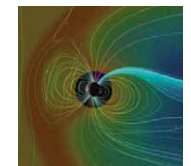
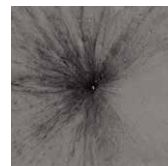
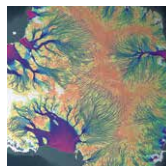
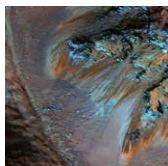
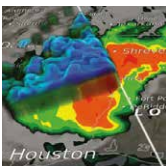
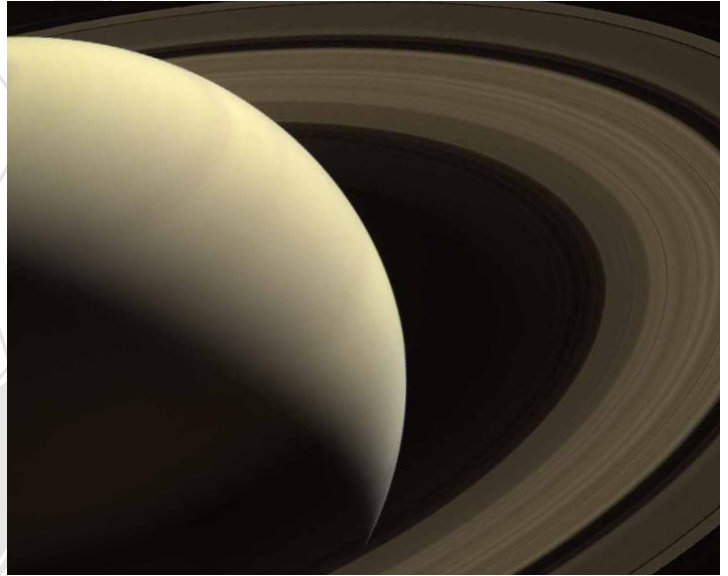
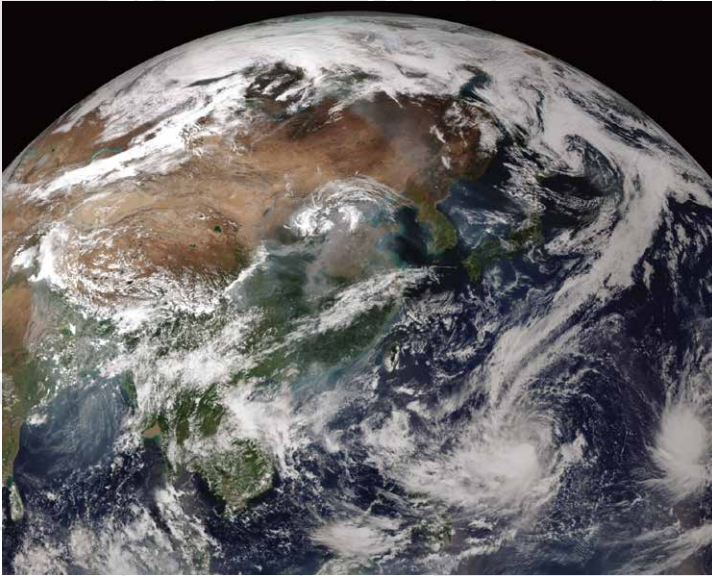




NASA Hyperwall Science Stories



This brochure represents some of the stories available on NASA's Hyperwall. For a complete list of Hyperwall stories, and to download content, visit:

svs.gsfc.nasa.gov/hw

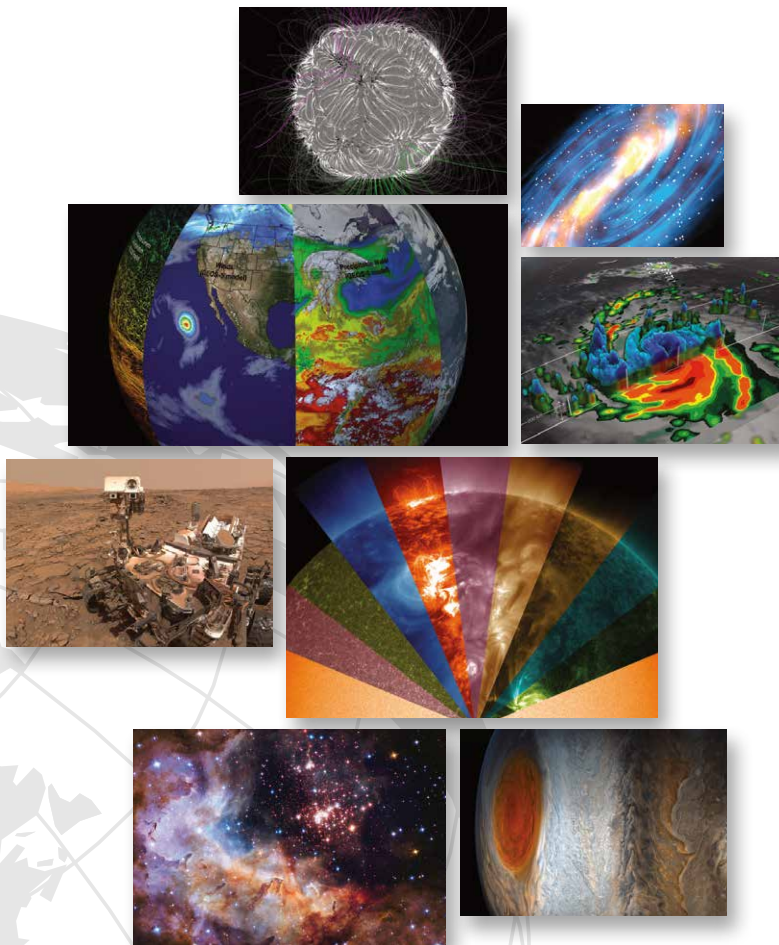
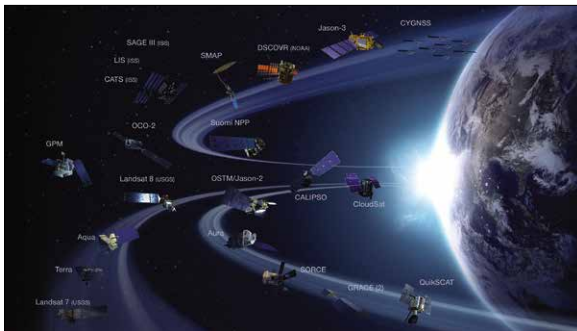


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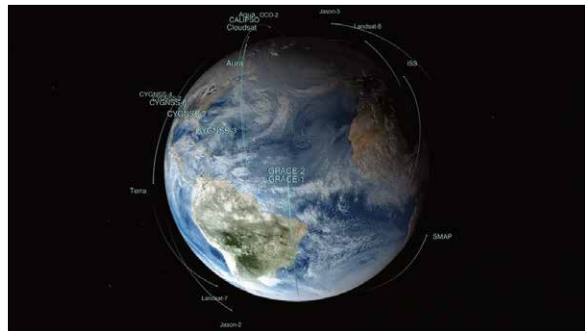
Current Earth Science Satellite Missions



This graphic shows NASA's current fleet of Earth-observing satellite missions.

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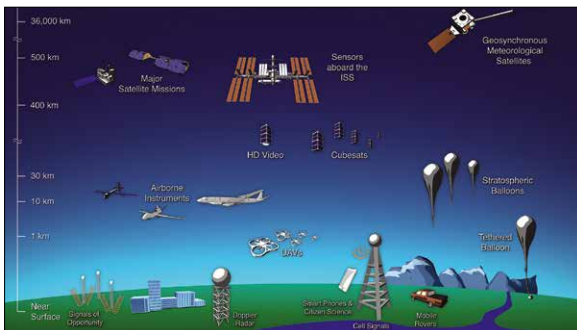
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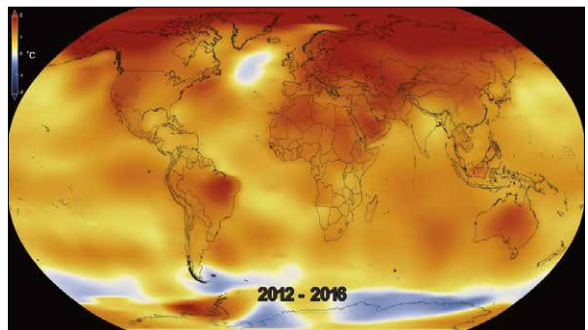
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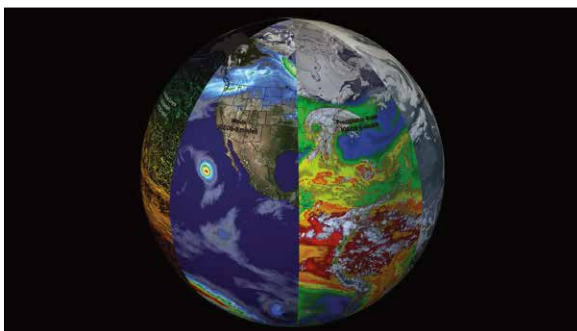
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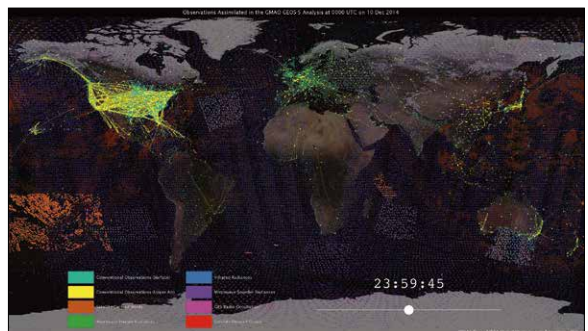
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This visualization reveals that the Earth system, like the human body, comprises diverse components that interact in complex ways.

svs.gsfc.nasa.gov/30701

From Observations to Models



This visualization shows how models ingest different observation types. Scientists study how these observations are alike, how they differ, and how they interact with each other.

svs.gsfc.nasa.gov/cgi-bin/details.cgi?aid=30590

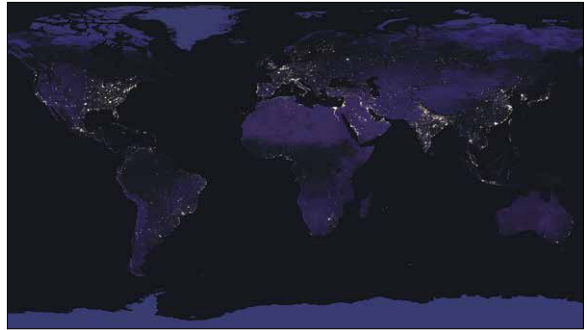
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2015**



This composite image, captured by Suomi NPP's Visible Infrared Imaging Radiometer Suite, shows how Earth looked from space on October 14, 2015.

svs.gsfc.nasa.gov/30763

**Black Marble
2016**



This image of Earth at night in 2016 was created with data from the Suomi NPP satellite.

<http://svs.gsfc.nasa.gov/30876>

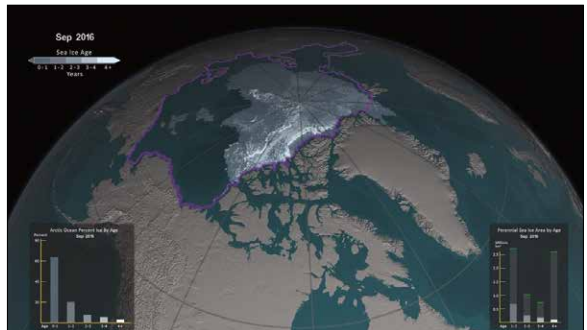
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This image series shows the far side of the Moon, illuminated by the Sun, as it crossed between DSCOVR and Earth.

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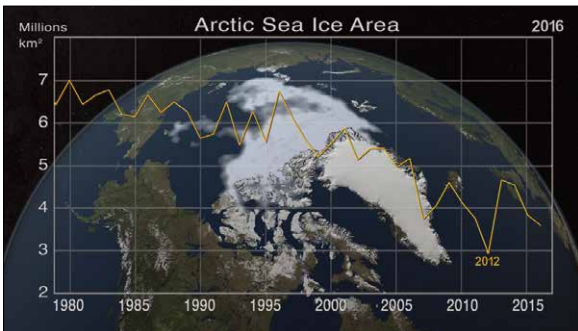
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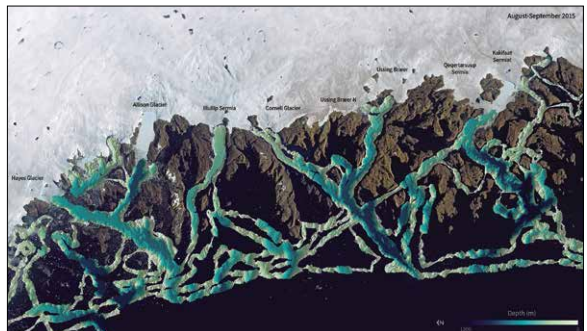
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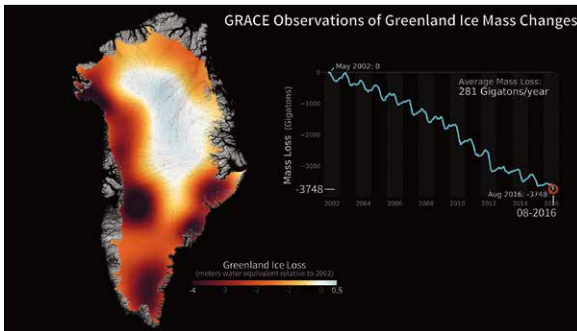
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This image shows a region off the coast of northwest Greenland mapped as part of the fall 2015 campaign of NASA's Oceans Melting Greenland mission.

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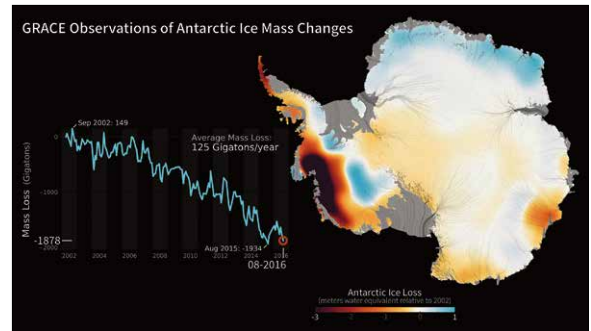
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These images, created with GRACE data, show changes in Greenland ice mass between 2002 and 2016.

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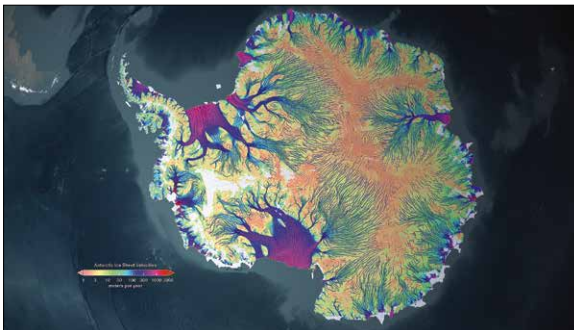
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These images, created with GRACE data, show changes in Antarctic ice mass between 2002 and 2016.

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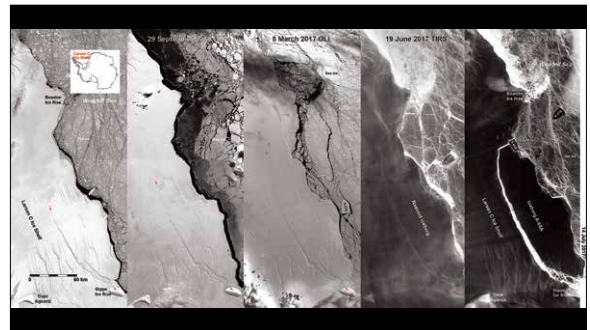
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This visualization shows the velocity of ice on Antarctica representing hundreds to thousands of years of motion.

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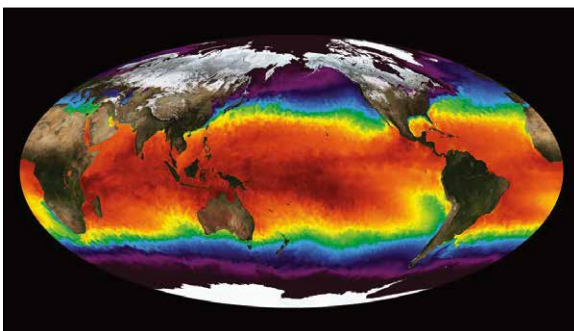
Landsat "Sees in the Dark" the Evolution of Antarctica's Delaware-Size Iceberg



The Thermal Infrared Sensor on Landsat 8 captured this snap of the 2,240-square-mile iceberg that calved from the Antarctic Peninsula's Larsen C ice shelf on July 10-12, 2017.

<http://svs.gsfc.nasa.gov/30890>

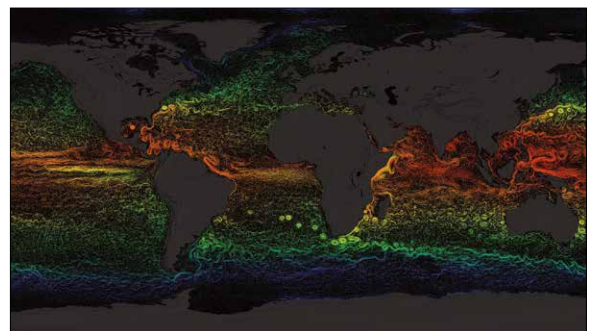
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This animation from January 1, 2010 to December 31, 2011, shows global sea surface temperatures at 1-kilometer (~0.6 mile) resolution.

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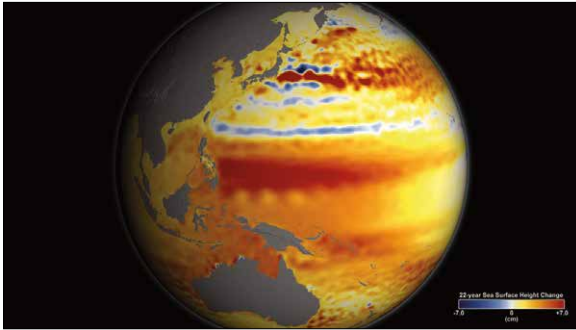
The Motions of the Ocean



Scientists use model simulations like this one from March 25, 2007 to March 3, 2008 to help resolve ocean eddies and other narrow-current systems that transport heat in Earth's ocean.

svs.gsfc.nasa.gov/goto?3912

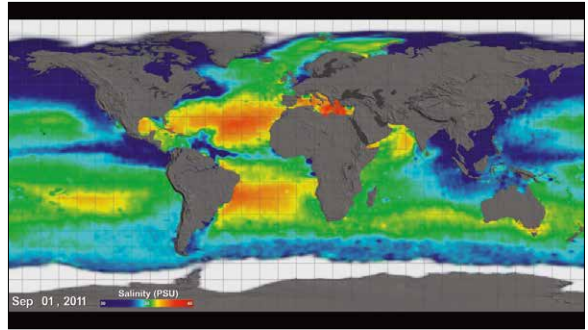
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This visualization shows total sea level change between 1992 and 2014, based on data collected from the TOPEX/Poisedon, Jason-1, and Jason-2 satellites.

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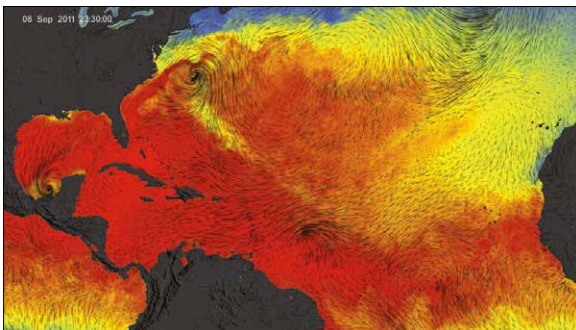
Aquarius Sea Surface Salinity 2011-2014



This visualization celebrates over three years of successful Aquarius sea surface salinity observations.

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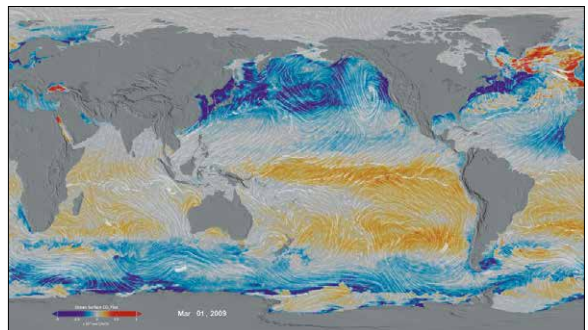
Global Sea Surface Temperature and Winds



This visualization shows the directional flow and magnitude of surface wind-vector data (calibrated to a 10 meter reference height) from June 1, 2011 to October 31, 2011.

svs.gsfc.nasa.gov/cgi-bin/details.cgi?aid=4240

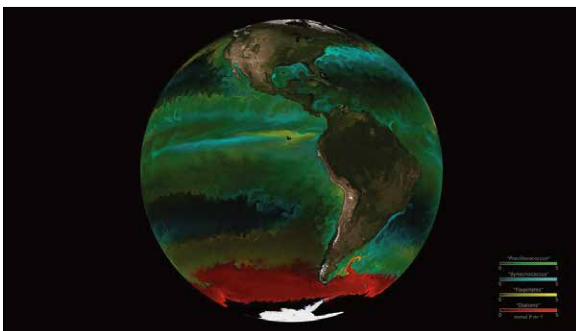
Ocean Surface Carbon Dioxide Flux with Wind Stress



This animation shows results from the ECCO2- Darwin ocean carbon cycle model, which was developed as part of the NASA Carbon Monitoring System (CMS) Flux Project.

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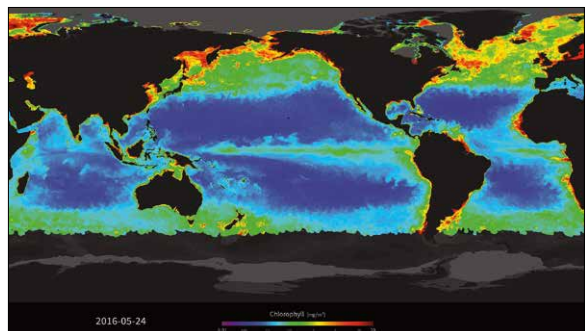
Modeled Phytoplankton Communities in the Global Ocean



This visualization shows dominant phytoplankton types from 1994-1998 generated by the Darwin Project using a high-resolution ocean and ecosystem model.

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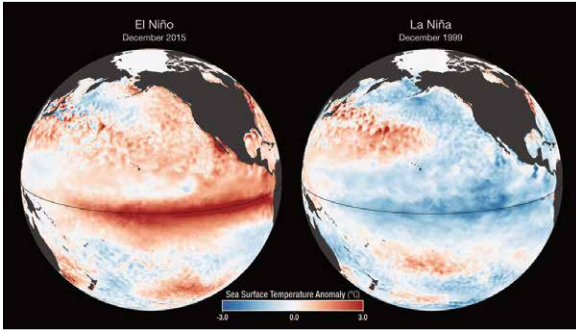
MODIS Ocean Bioproductivity



This visualization, derived using data from NASA's MODIS instrument, shows a daily running weighted 31-day average of sea surface chlorophyll from January 2010 through May 2016.

svs.gsfc.nasa.gov/30786

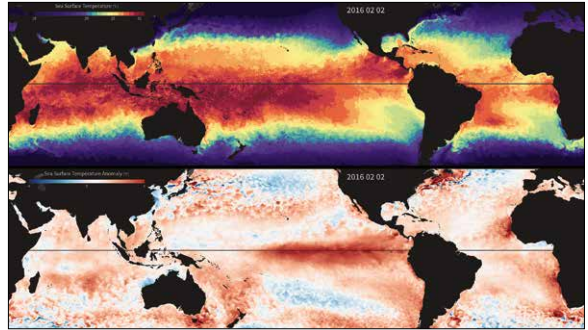
2015 El Niño Disrupts Ocean Chlorophyll



These images compare monthly sea surface temperature anomalies (SSTA) and surface chlorophyll concentrations during El Niño (December 2015) and La Niña (December 1999).

svs.gsfc.nasa.gov/30747

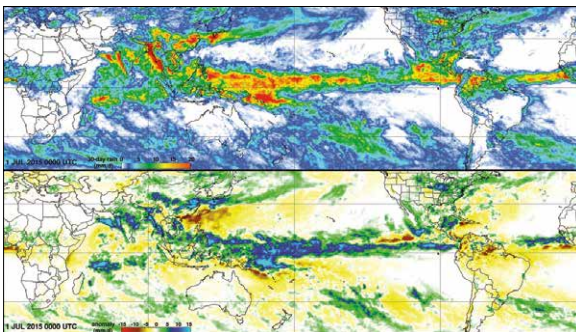
Sea Surface Temperature and Anomalies During the 2015-16 El Niño



These maps, showing sea surface temperature and sea surface temperature anomalies, reveal the progression of the strong 2015-16 El Niño event from January 1, 2015 to January 2, 2016.

svs.gsfc.nasa.gov/goto?30748

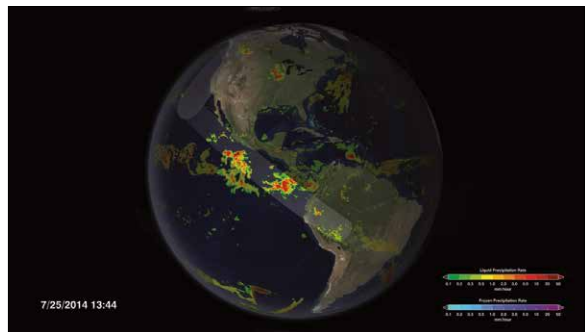
El Niño Precipitation Anomaly



The top visualization shows rainfall amounts, while the bottom visualization shows rainfall anomalies during El Niño.

svs.gsfc.nasa.gov/30766

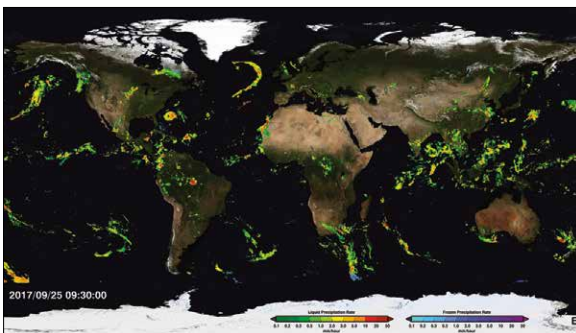
Painting the World with Water



This visualization shows the GPM constellation in action, revealing precipitation measurements underneath each satellite orbit.

svs.gsfc.nasa.gov/cgi-bin/details.cgi?aid=4283

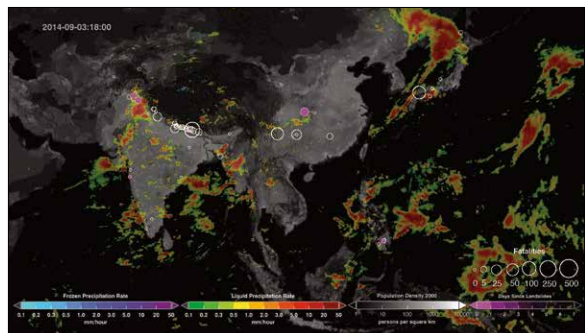
Near-Real-Time Global Precipitation



Shown here, the global IMERG precipitation dataset (generated using data from the GPM mission) provides rainfall rates for the entire world every 30 minutes.

svs.gsfc.nasa.gov/cgi-bin/details.cgi?aid=4285

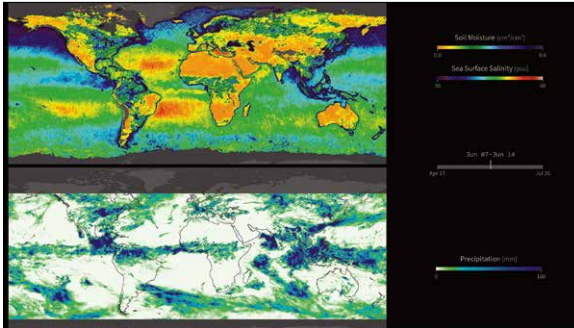
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This visualization shows rainfall-triggered landslides and precipitation from August and September of 2014.

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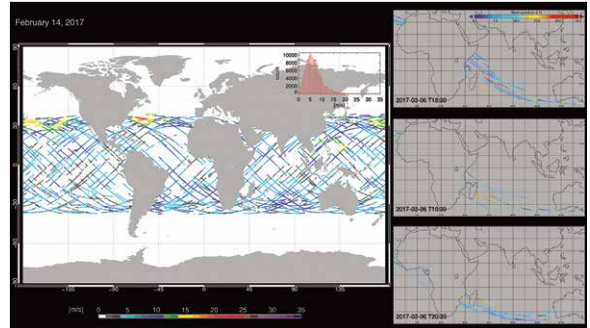
SMAP Sees Soil Moisture and Sea Surface Salinity



This visualization compares weekly (8-day average) soil moisture and sea surface salinity data from NASA's SMAP mission from April 18-25 through November 15-22, 2015.

svs.gsfc.nasa.gov/goto?30698

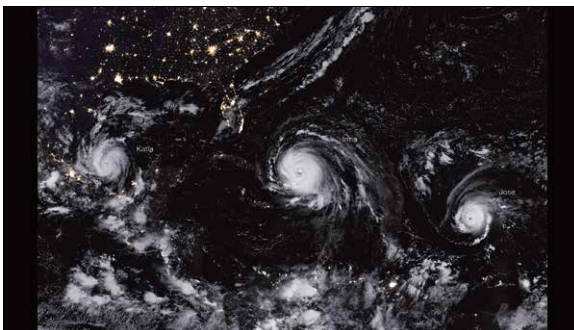
CYGNSS First Light



Three maps show a single pass of the CYGNSS constellation, while a larger image shows the full day's data combined into one image.

<http://svs.gsfc.nasa.gov/30884>

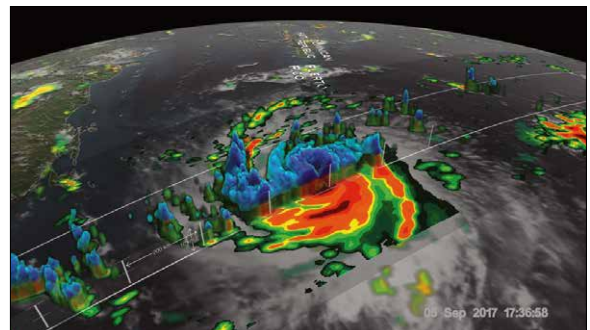
A Menacing Line of Hurricanes



The Visible Infrared Imaging Radiometer Suite on the Suomi NPP satellite captured the data for a mosaic of Katia, Irma, and Jose as they appeared in the early hours of September 8, 2017.

<http://svs.gsfc.nasa.gov/30898>

GPM Examines Hurricane Irma



Shown here, the GPM Core Observatory satellite had an exceptional view of hurricane Irma's eye when it flew above it on September 5, 2017.

<http://svs.gsfc.nasa.gov/4584>

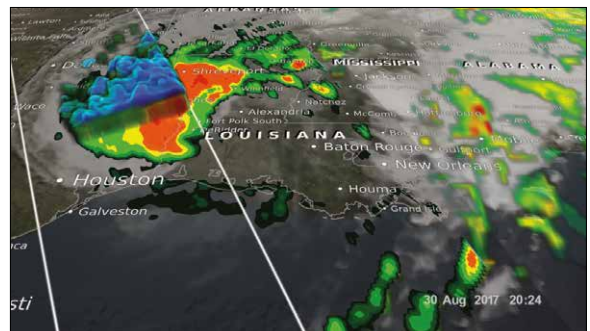
Three Consecutive Swaths of Data, Three Different Hurricanes



Shown here, on September 7, 2017, hurricanes Katia (Category 1), Irma (Category 5), and Jose (Category 3) lined up across the Atlantic basin.

<http://svs.gsfc.nasa.gov/30897>

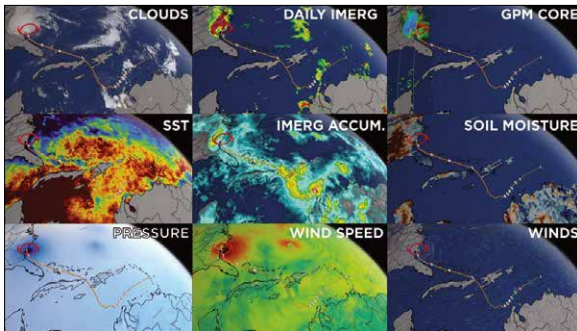
Harvey Floods Texas and Threatens Louisiana



The GPM Core Observatory captured these images of hurricane Harvey, August 27-30, 2017.

<http://svs.gsfc.nasa.gov/4458>

Monitoring Hurricane Matthew



This visualization shows various ways NASA observes hurricanes.

<http://svs.gsfc.nasa.gov/4543>

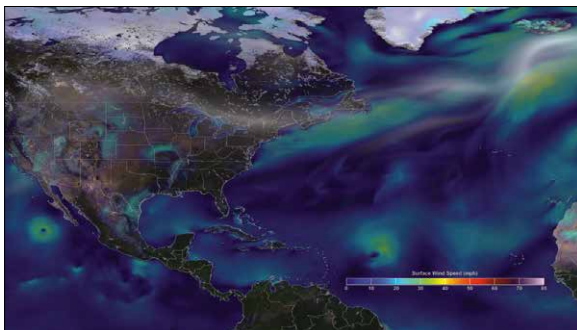
Hurricane Matthew Rainfall Totals



This visualization shows the amount of rainfall dropped by Hurricane Matthew over the life and track of the storm from September 28 – October 10, 2016, using IMERG data.

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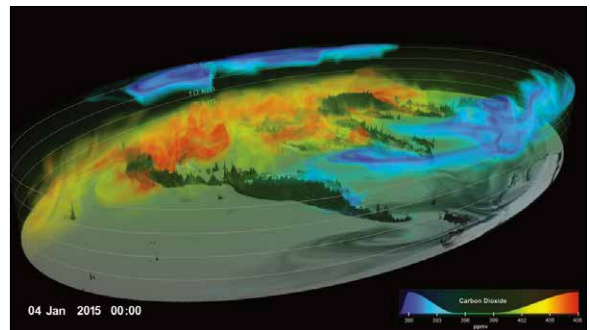
Hurricane Sandy Surface Winds



This animation shows hurricane Sandy surface wind speeds from the GEOS-5 beginning September 1, 2012.

svs.gsfc.nasa.gov/goto?30019

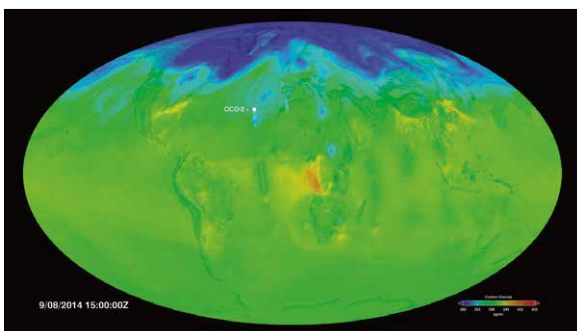
Carbon Dioxide from GMAO using Assimilated OCO-2 Data



This visualization provides a high-resolution, three-dimensional view of global atmospheric carbon dioxide concentrations from September 1, 2014 to August 31, 2015.

<http://svs.gsfc.nasa.gov/4514>

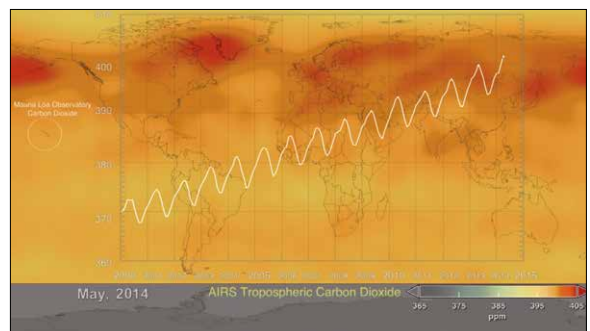
Assimilation of OCO-2 Carbon Dioxide into the GEOS Simulation



This visualization starts by showing carbon dioxide values being measured by the OCO-2 sensor. Then the total carbon dioxide from the GEOS simulation is shown under the OCO-2 data.

<http://svs.gsfc.nasa.gov/4519>

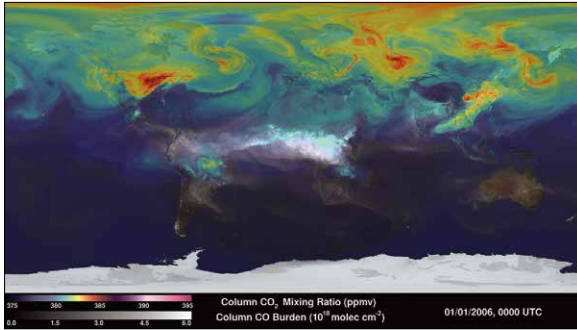
Atmospheric Carbon Dioxide with Mauna Loa Overlay



This visualization shows monthly average concentrations of mid-tropospheric carbon dioxide from 2000 to 2014 based on data collected by the Aqua/AIRS instrument.

svs.gsfc.nasa.gov/goto?4184

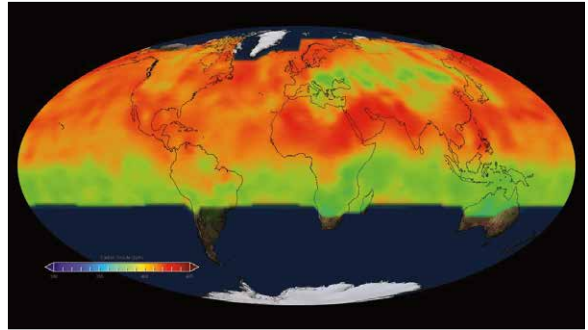
Simulated Atmospheric Carbon Concentrations



This visualization, created using data from the 7-km GEOS-5 Nature Run model, shows average column concentrations of atmospheric carbon dioxide and carbon monoxide in 2006.

svs.gsfc.nasa.gov/goto?30515

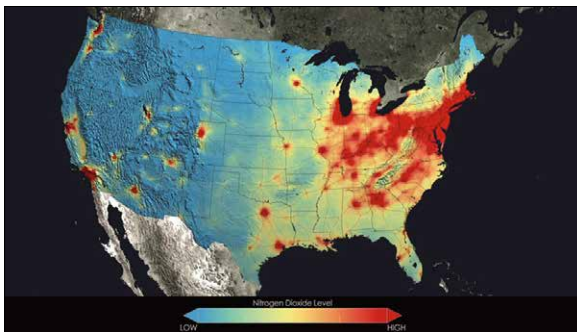
A Year of Global Carbon Dioxide Measurements



This animation shows column-averaged atmospheric carbon dioxide concentrations, from September 2014 to August 2015, observed by OCO-2.

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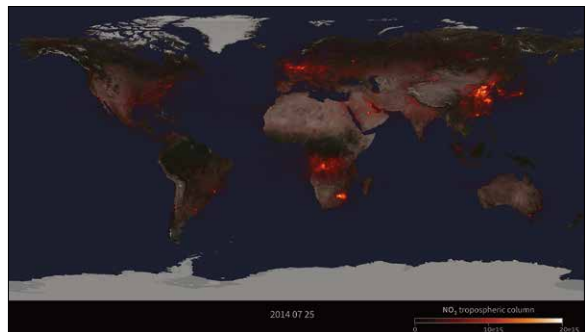
U.S. Air Quality Improvement



This visualization shows tropospheric column concentrations of nitrogen dioxide across the U.S. as detected by the Aura/OMI instrument, averaged yearly from 2005-2011.

svs.gsfc.nasa.gov/goto?11579

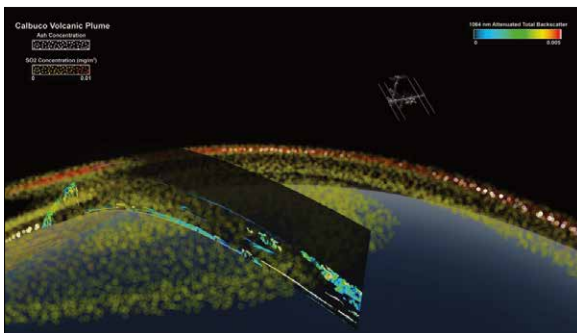
The Air We Breathe



This sequence of daily images from September 1, 2009 to August 31, 2010, shows the global perspective of tropospheric nitrogen dioxide as measured by the Aqua/OMI instrument.

svs.gsfc.nasa.gov/goto?30014

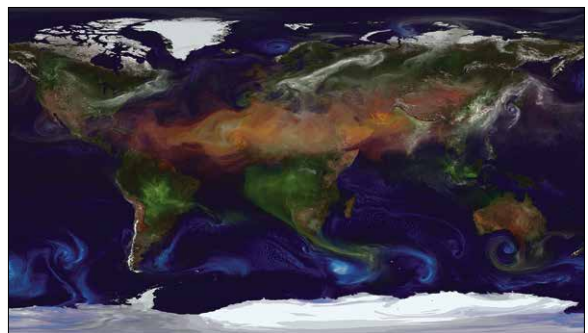
CATS Studies Volcanic Plumes, Wildfires, and Hurricanes



NASA's Cloud-Aerosol Transport System, or CATS, is a lidar remote-sensing instrument taking measurements of atmospheric aerosols and clouds from the International Space Station.

<http://svs.gsfc.nasa.gov/4542>

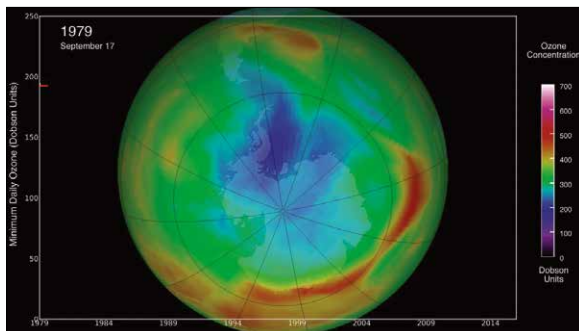
Around the World with Aerosols



This simulation shows how sea salt and dust swirl inside cyclones, sulfates stream from volcanoes, and carbon burst from fires from May 2005 to May 2007, produced by the GEOS-5 model.

svs.gsfc.nasa.gov/goto?30017

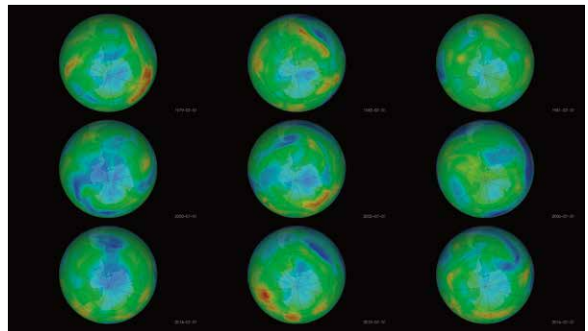
Ozone Minimum Concentrations, 1979-2016



Here, the globes show ozone data on the day that the minimum ozone concentration was reached over Antarctica, each year from 1979 and 2016.

<http://svs.gsfc.nasa.gov/30889>

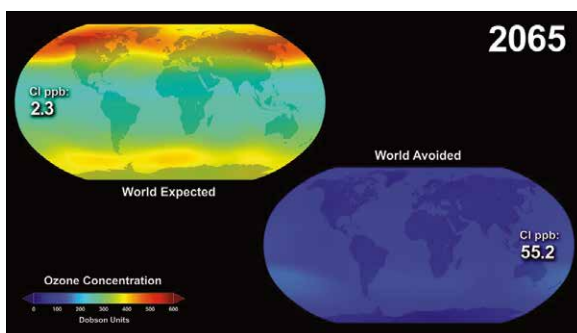
Ozonewatch 2016



This Hyperwall series shows the recent status of the ozone layer over the Antarctic, with a focus on the ozone hole.

<http://svs.gsfc.nasa.gov/30844>

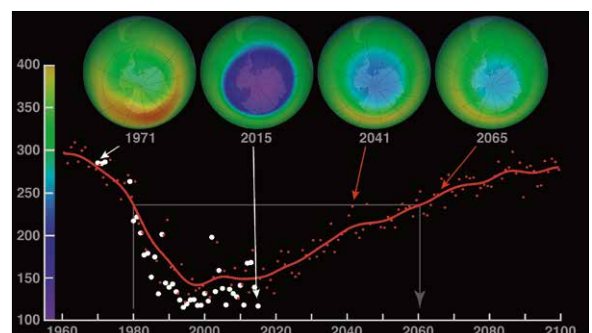
World Avoided



Shown here, a team of atmospheric chemists simulated what might have been if CFCs and similar ozone-depleting chemicals were not banned through the Montreal Protocol.

svs.gsfc.nasa.gov/goto?4272

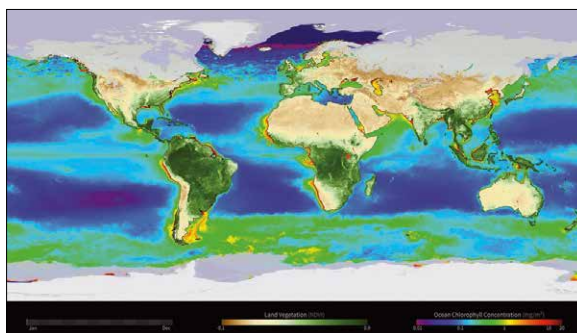
The Antarctic Ozone Hole Will Recover



Since the mid-1990s, global ozone levels have become relatively stable. Here, the four globes show monthly-averaged total ozone over Antarctica in October.

svs.gsfc.nasa.gov/goto?30602

Yearly Cycle of Earth's Biosphere



Satellite instruments reveal the yearly cycle of plant life on the land and in the water. Rather than showing a specific year, the animation shows an average yearly cycle.

svs.gsfc.nasa.gov/30709

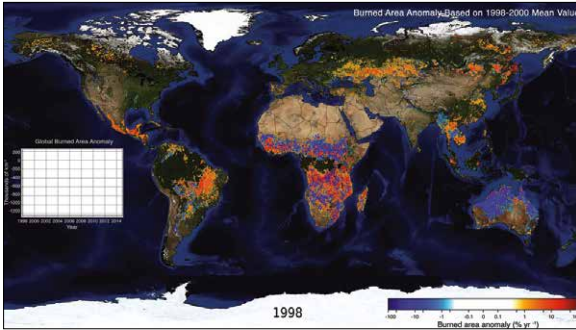
Using Satellite and Ground-Based Data to Develop Malaria Risk Maps



Using NASA data (precipitation, soil moisture, air temperature, and humidity), scientists are better able to predict where malaria-spreading mosquitoes are breeding.

<http://svs.gsfc.nasa.gov/4581>

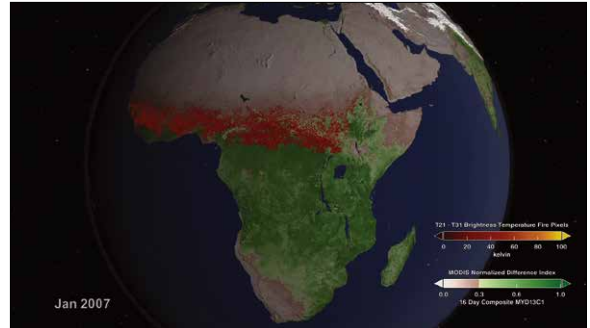
A Human-Driven Decline in Global Burned Area



During 1998-2015, global burned area declined by nearly 25%. The trend map shows strong declines in burned area across Africa, the Eurasian Steppe, and South America.

<http://svs.gsfc.nasa.gov/30888>

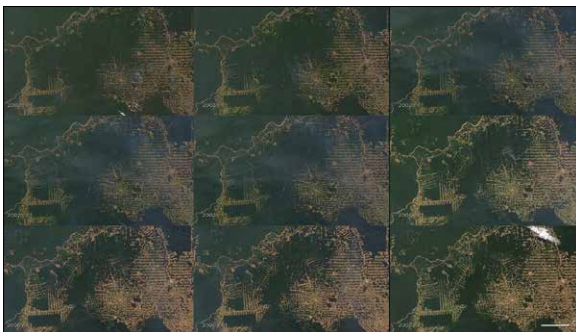
Forests and Biodiversity Global Fire Map



This visualization shows fires across the globe between July 2002 and July 2011, and includes vegetation and snow cover data to show how fires respond to seasonal change.

svs.gsfc.nasa.gov/goto?3868

Amazon Deforestation



This image series, created with data from the MODIS instrument onboard NASA's Terra satellite, shows deforestation in the state of Rondônia in western Brazil from 2000 to 2010.

svs.gsfc.nasa.gov/cgi-bin/details.cgi?aid=30166

Sprawling Shanghai



Landsat satellites have collected images of Shanghai. These composite images show how cities in the Yangtze River Delta have expanded from 1984 to 2016.

<http://svs.gsfc.nasa.gov/30874>

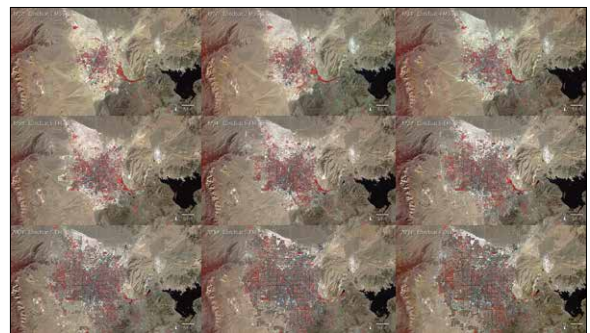
Cape Canaveral and Orlando Landsat Timeseries



These pairs of false-color images show Kennedy Space Center and the adjacent Cape Canaveral Air Force Station, as well as the Orlando region in 1972 and 2016.

<http://svs.gsfc.nasa.gov/30761>

Urban Growth in Las Vegas



These false-color images show the rapid urbanization of Las Vegas between 1984 and 2014.

svs.gsfc.nasa.gov/goto?30215

Planetary Science

NASA's Planetary Fleet



Through five decades of planetary exploration, NASA has developed the capacity to explore all of the objects in our solar system.

<http://svs.gsfc.nasa.gov/30835>

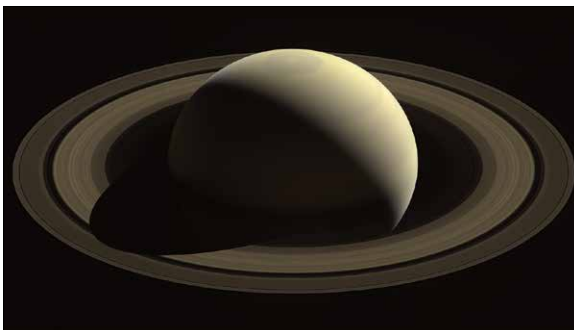
Our Solar System



Our solar system is made up of a star—the Sun—eight planets, 146 moons, a bunch of comets, asteroids and space rocks, ice, and several dwarf planets, such as Pluto.

<http://svs.gsfc.nasa.gov/30710>

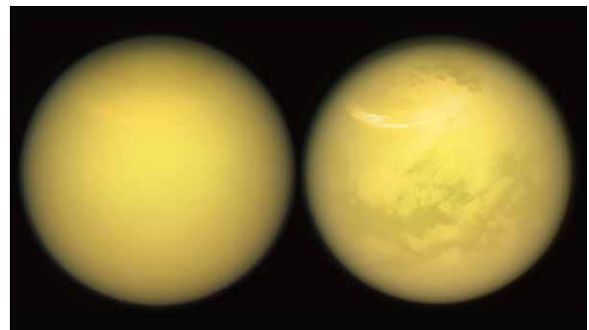
Cassini, So Far from Home



Cassini captured one of its last looks at Saturn and its main rings on October 28, 2016, at a distance of ~870,000 miles from Saturn.

<https://svs.gsfc.nasa.gov/30902>

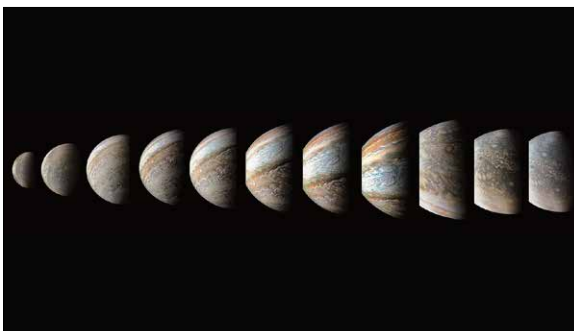
Two Titans



These two views of Saturn's moon Titan exemplify how NASA's Cassini spacecraft has revealed the surface of this fascinating world.

<https://svs.gsfc.nasa.gov/30903>

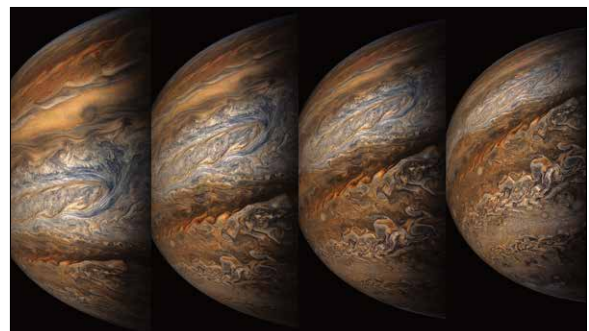
95 Minutes Over Jupiter



This sequence of color-enhanced images shows how quickly the viewing geometry changes for NASA's Juno spacecraft as it swoops by Jupiter.

<https://svs.gsfc.nasa.gov/30904>

Juno's Eighth Close Approach to Jupiter



This series of enhanced-color images shows Jupiter up close and personal, as NASA's Juno spacecraft performed its eighth flyby of the gas giant planet.

<https://svs.gsfc.nasa.gov/30905>

Jupiter: A New Point of View



This striking Jovian vista was created by citizen scientists Gerald Eichstädt and Seán Doran using data from the JunoCam imager on NASA's Juno spacecraft.

<https://svs.gsfc.nasa.gov/30906>

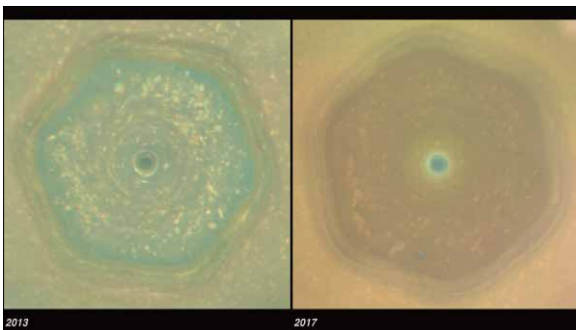
Jupiter Storm of the High North



A dynamic storm at the southern edge of Jupiter's northern polar region dominates this Jovian cloudscape, courtesy of NASA's Juno spacecraft.

<https://svs.gsfc.nasa.gov/30907>

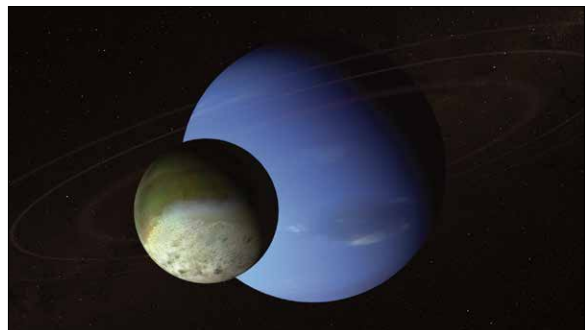
Saturn's Hexagon as Summer Solstice Approaches



These natural color views from NASA's Cassini spacecraft compare the appearance of Saturn's north-polar region in June 2013 and April 2017.

<http://svs.gsfc.nasa.gov/30883>

Kepler Stares at Neptune



In late 2014 and early 2015, NASA's Kepler telescope observed the eighth planet in our solar system, Neptune.

<http://svs.gsfc.nasa.gov/4559>

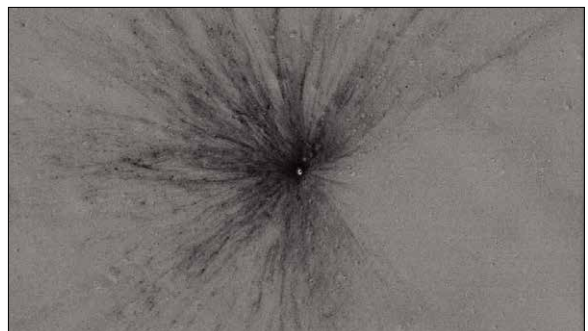
Moon Phase and Libration, 2017



This animation shows the geocentric phase, libration, position angle of the axis, and apparent diameter of the Moon throughout the year 2017, at hourly intervals.

<http://svs.gsfc.nasa.gov/4537>

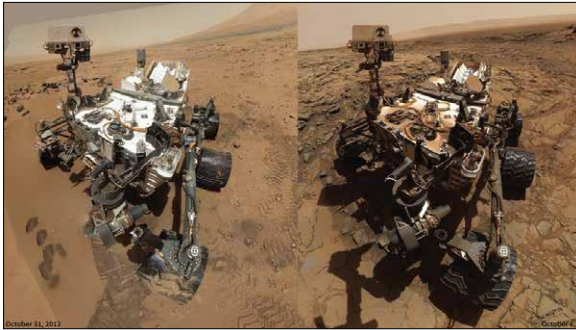
Gardening Rates on the Moon



Gardening on the Moon refers to the mixing and disturbance of the top layers of lunar regolith when impacts form new craters. This visualization simulates the formation of a lunar crater.

<http://svs.gsfc.nasa.gov/4505>

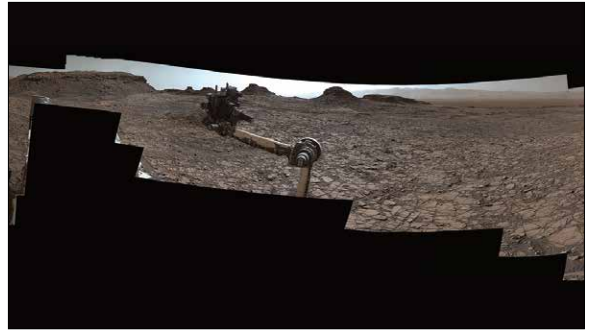
Curiosity Selfies



This image comparison shows Curiosity on October 31, 2012 and October 5, 2015. Selfies like this allow mission engineers to track changes over time such as dust accumulation.

<http://svs.gsfc.nasa.gov/30707>

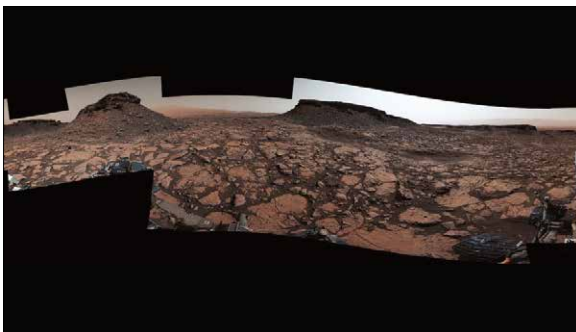
Rover's Panorama of Entrance to "Murray Buttes" on Mars



This 360-degree panorama was acquired by the Mast Camera (Mastcam) on NASA's Curiosity Mars rover as the rover neared features called "Murray Buttes" on lower Mount Sharp.

<http://svs.gsfc.nasa.gov/30811>

Rover's Panorama Taken Amid "Murray Buttes" on Mars, 2016



This 360-degree panorama was acquired by the Mast Camera (Mastcam) on NASA's Curiosity Mars rover while the rover was in an area called "Murray Buttes" on lower Mount Sharp.

<http://svs.gsfc.nasa.gov/30819>

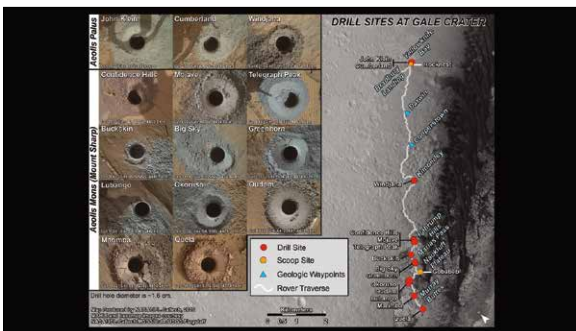
Farewell to "Murray Buttes"



This view from the Mast Camera (Mastcam) on NASA's Curiosity Mars rover shows an outcrop with finely layered rocks within the "Murray Buttes" region on lower Mount Sharp.

<http://svs.gsfc.nasa.gov/30812>

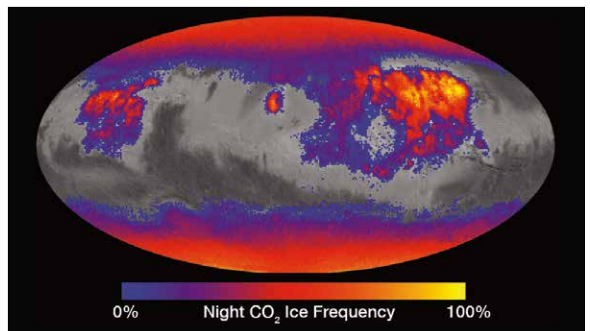
Curiosity's First 16 Rock or Soil Sampling Sites on Mars



This maps shows the site locations where NASA's Curiosity Mars rover collected its first 16 rock or soil samples for analysis by laboratory instruments inside the vehicle.

<http://svs.gsfc.nasa.gov/30818>

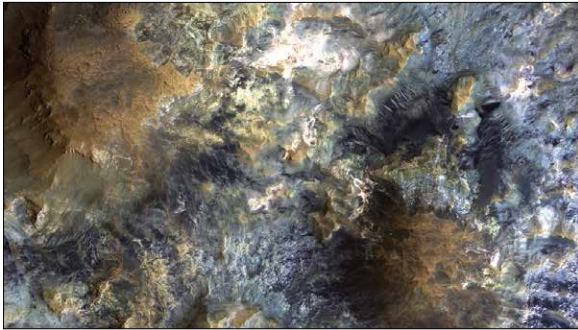
Where on Mars Does Carbon Dioxide Frost Form Often?



This map shows the frequency of carbon dioxide frost's presence at sunrise on Mars, as a percentage of days year-round.

<http://svs.gsfc.nasa.gov/30813>

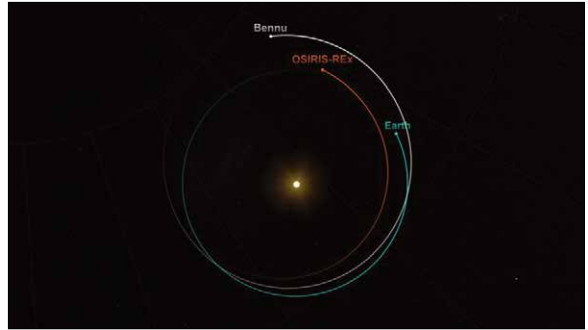
The Color Wonderland of Mawrth Vallis



Mawrth Vallis has some of the most spectacular color variations seen anywhere on Mars. HiRISE captured this image of the colorful landscape.

<http://svs.gsfc.nasa.gov/30814>

OSIRIS-REx Orbits, Maneuvers, and Mapping



OSIRIS-REx launched on September 8, 2016, at 7:05 PM EDT. As planned, the spacecraft will reach a target asteroid in 2018 and return a sample to Earth in 2023.

<http://svs.gsfc.nasa.gov/4482>

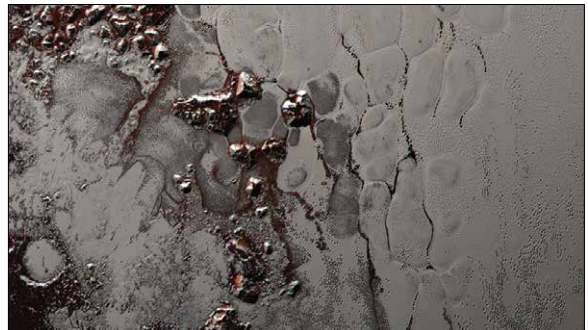
Jupiter's North Pole Unlike Anything Encountered in Our Solar System



NASA's Juno spacecraft sent back this image of Jupiter's north pole taken on August 27, 2016.

<http://svs.gsfc.nasa.gov/30807>

Pluto's Heart: A Cosmic 'Lava Lamp'



Like a cosmic lava lamp, a large section of Pluto's icy surface is being constantly renewed by a process called convection, replacing older surface ices with fresher material.

<http://svs.gsfc.nasa.gov/30806>

Rosetta Images of Comet 67P



Rosetta is a spacecraft on a ten-year mission to catch the comet "67P/Churyumov-Gerasimenko" (C-G) and answer some of our questions about comets.

<http://svs.gsfc.nasa.gov/30765>

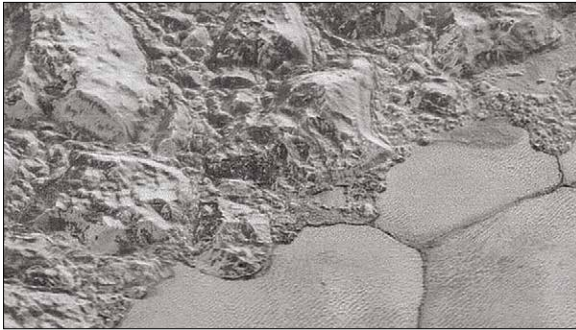
Rima Prinz and Vera



The visualization uses Lunar Reconnaissance Orbiter Camera (LROC) imagery at multiple resolutions to show Rima Prinz—the lava-flooded remains of a crater on the Moon.

<http://svs.gsfc.nasa.gov/4444>

The Mountainous Shoreline of Sputnik Planum



In this highest-resolution image from NASA's New Horizons spacecraft, great blocks of Pluto's water-ice crust appear jammed together in the informally named al-Idrisi mountains.

<http://svs.gsfc.nasa.gov/30736>

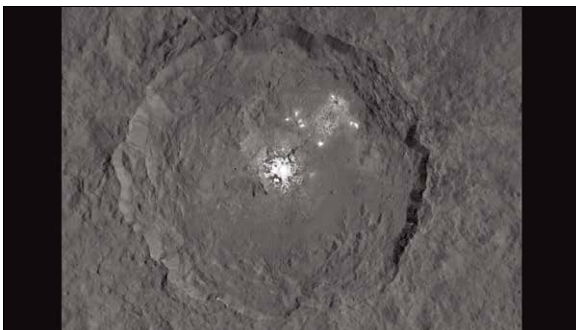
Pluto's 'Badlands'



This highest-resolution image from NASA's New Horizons spacecraft shows how erosion and faulting has sculpted this portion of Pluto's icy crust into rugged badlands.

<http://svs.gsfc.nasa.gov/30737>

Dawn Takes a Closer Look at Occator



This image taken by NASA's Dawn spacecraft, shows Occator crater on Ceres, home to a collection of intriguing bright spots.

<http://svs.gsfc.nasa.gov/30738>

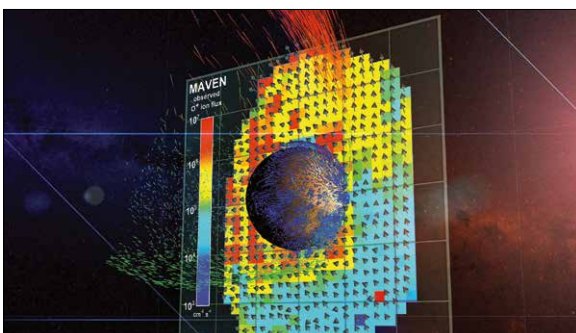
Apollo 17 Landing Site



These images help tell the story of Apollo 17's exploration of the Taurus-Littrow site using data and imaging from Lunar Reconnaissance Orbiter and astronaut photographs.

<http://svs.gsfc.nasa.gov/4302>

Solar Wind Strips the Martian Atmosphere



Scientists have long suspected the solar wind of stripping the Martian upper atmosphere into space, turning Mars from a blue world to a red one.

<http://svs.gsfc.nasa.gov/4370>

Io in Motion



Io is the most volcanically active body in the Solar System. This new basemap of Jupiter's moon Io was produced by combining the best images from both the Voyager 1 and Galileo Missions.

<http://svs.gsfc.nasa.gov/30706>

Hubble Maps Jupiter in 4k Ultra HD



These new maps and spinning globes of Jupiter were made from observations performed with NASA's Hubble Space Telescope.

<http://svs.gsfc.nasa.gov/12021>

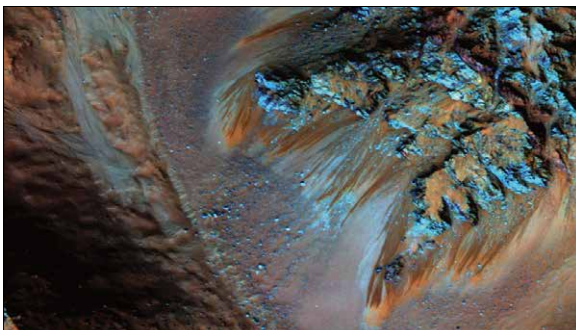
The Rich Color Variations of Pluto



An enhanced view of Pluto shows color variations across the surface, captured by NASA's New Horizons spacecraft.

<http://svs.gsfc.nasa.gov/30695>

Seasonal Water on Mars



Dark, narrow streaks on Martian slopes such as these at Hale Crater are inferred to be formed by seasonal flow of water on contemporary Mars.

<http://svs.gsfc.nasa.gov/30696>

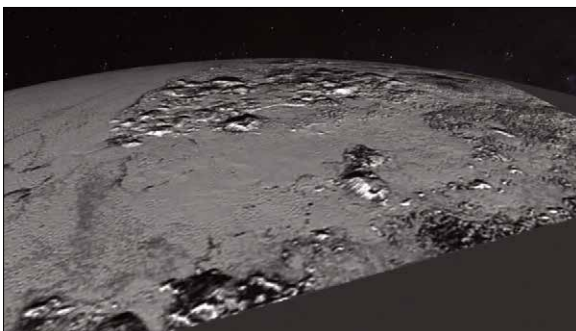
Charon in Enhanced Color



NASA's New Horizons captured this high-resolution enhanced color view of Charon just before closest approach on July 14, 2015.

<http://svs.gsfc.nasa.gov/30694>

Fly Through Pluto's Mountains



This simulated flyover of Pluto's Norgay Montes (Norgay Mountains) and Sputnik Planum (Sputnik Plain) was created from New Horizons closest-approach images.

<http://svs.gsfc.nasa.gov/30612>

Moon Phases Loop



This looping animation shows a complete cycle of lunar phases.

<http://svs.gsfc.nasa.gov/4310>

Astrophysics

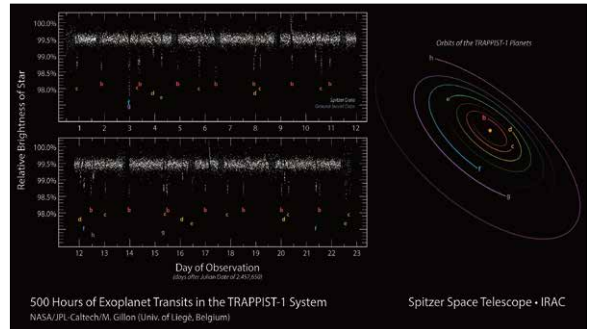
NASA's Astrophysics Fleet



This graphic shows NASA's current fleet of astrophysics satellite missions.

<https://svs.gsfc.nasa.gov/30834>

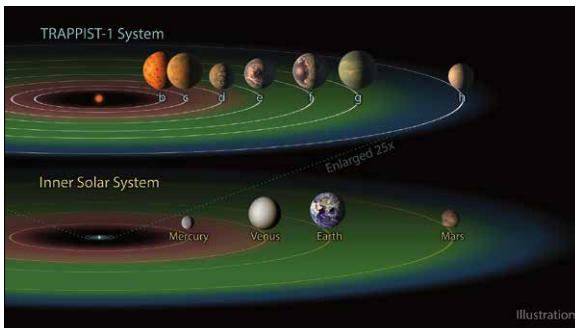
TRAPPIST-1 Exoplanets Infrared Observations



This data plot shows infrared observations of a system of seven planets orbiting TRAPPIST-1—an ultracool dwarf star—observed by NASA's Spitzer Space Telescope.

<https://svs.gsfc.nasa.gov/30868>

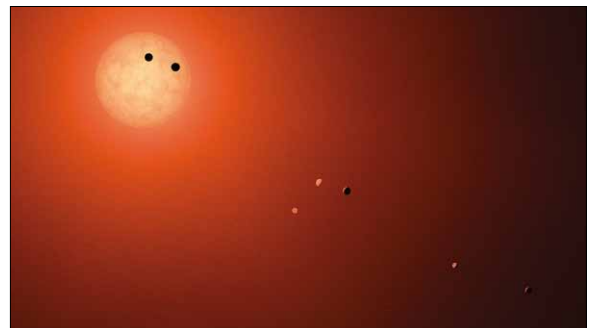
TRAPPIST-1 Exoplanets and the Habitable Zone



The TRAPPIST-1 system contains a total of seven planets, all around the size of Earth. Three of them dwell in their star's so-called "habitable zone."

<https://svs.gsfc.nasa.gov/30871>

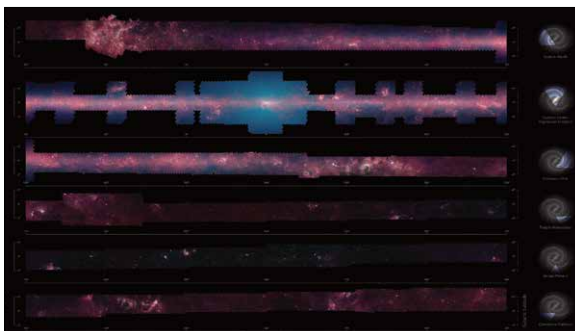
TRAPPIST-1 Exoplanets Illustration



This illustration shows the seven TRAPPIST-1 planets to scale as they might look as viewed from Earth using a fictional, incredibly powerful telescope.

<https://svs.gsfc.nasa.gov/30867>

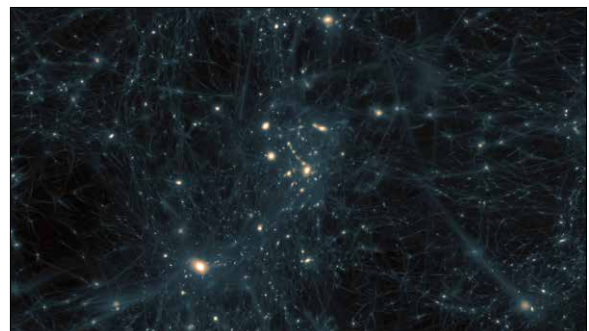
NASA's Spitzer Telescope Brings 360-Degree View of Galaxy to Our Fingertips



A new, zoomable panorama from NASA's Spitzer Space Telescope shows us our galaxy's plane all the way around us in infrared light.

<https://svs.gsfc.nasa.gov/30560>

Fermi Observations of Dwarf Galaxies Provide New Insights on Dark Matter



Scientists working with data from NASA's Fermi Gamma-ray Space Telescope look for signals of hypothetical dark matter particles.

<https://svs.gsfc.nasa.gov/10943>

The Bubble Nebula from Hubble



For the 26th birthday of NASA's Hubble Space Telescope, astronomers are highlighting a Hubble image of an enormous bubble being blown into space by a super-hot, massive star.

<https://svs.gsfc.nasa.gov/30773>

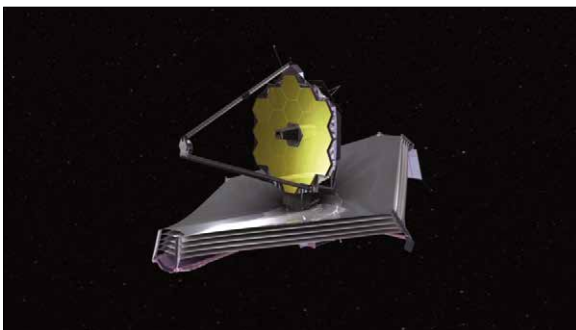
Alignment of the Primary Mirror Segments of the James Webb Space Telescope



Engineers used light waves to align the James Webb Space Telescope's mirror segments to each other, so they act like a single, monolithic mirror.

<https://svs.gsfc.nasa.gov/12721>

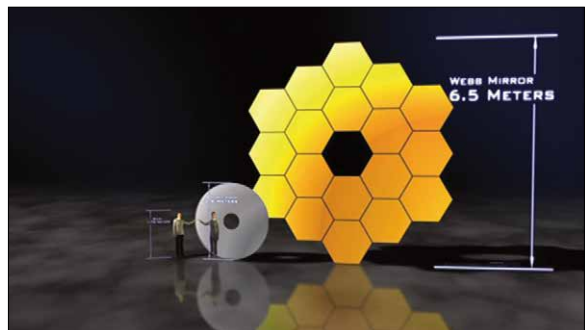
JWST Spacecraft Deploy Animation



Animation of the Webb Telescope deploying as it travels toward its orbit location.

<https://svs.gsfc.nasa.gov/10660>

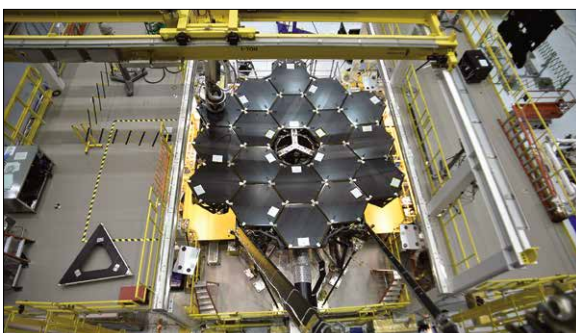
Webb Mirror Size Comparison with Hubble Animation



Animation comparing the relative sizes of James Webb's primary mirror to Hubble's primary mirror.

<https://svs.gsfc.nasa.gov/10776>

Webb Primary Mirror Installation Time Lapse



A time-lapse video showing the installation of the 18 mirror segments of James Webb Space Telescope's primary mirror.

<https://svs.gsfc.nasa.gov/12145>

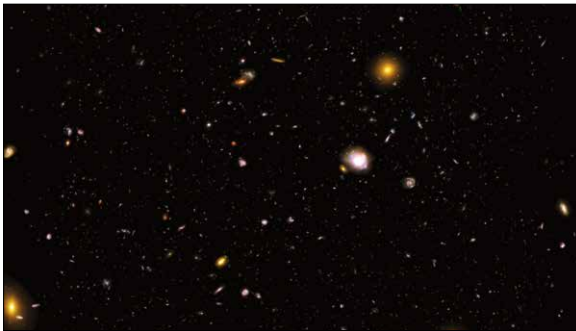
JWST Science Simulation: Galaxy Collision



The James Webb Space Telescope (JWST) will provide data to test theories behind events such as the galaxy mergers seen in this simulation.

<https://svs.gsfc.nasa.gov/10687>

Across the Universe: The Hubble Ultra Deep Field



The Hubble Ultra Deep Field (HUDF) peers deeper into the universe than any previous visible-light image.

<https://svs.gsfc.nasa.gov/30687>

Interacting Galaxies Arp 273 from Hubble



The galaxies of Arp 273 have recently interacted via gravity to make a shape resembling a cosmic rose.

<https://svs.gsfc.nasa.gov/30857>

The Sombrero Galaxy from Hubble



As seen from Earth, the Sombrero galaxy (Messier 104) is tilted nearly edge-on.

<https://svs.gsfc.nasa.gov/30855>

The Helix Nebula from Hubble



This Hubble Space Telescope image showcases the details of the Helix Nebula, one of the nearest planetary nebulae to Earth.

<https://svs.gsfc.nasa.gov/30792>

The Whirlpool Galaxy from Hubble



This NASA Hubble Space Telescope image provides a strikingly detailed view of the Whirlpool Galaxy, also known as Messier 51 and as NGC 5194.

<https://svs.gsfc.nasa.gov/30852>

Galaxy Collisions: Simulation versus Observations



This visualization of a galaxy collision supercomputer simulation compares different stages of the collision to different interacting galaxy pairs observed by Hubble.

<https://svs.gsfc.nasa.gov/30686>

A Flight into the Bubble Nebula



This visualization allows you to experience a three-dimensional flight inside the Bubble Nebula.

<https://svs.gsfc.nasa.gov/30782>

The Horsehead Nebula in Infrared Light



This video presents a scientific visualization of the Horsehead Nebula as seen in infrared light.

<https://svs.gsfc.nasa.gov/30679>

Blast Wave from Supernova 1987A



This scientific visualization shows the development of Supernova 1987A, from the initial explosion observed three decades ago to the luminous ring of material we see today.

<https://svs.gsfc.nasa.gov/30863>

Spiral Galaxy Messier 106 from Hubble



This portrait of M106 was created from a combination of Hubble images and ground-based observations.

<https://svs.gsfc.nasa.gov/30864>

Star Cluster Westerlund 2 in Nebula Gum 29 from Hubble



This giant star cluster is only about 2 million years old and contains some of our galaxy's hottest, brightest, and most massive stars.

<https://svs.gsfc.nasa.gov/30858>

Starburst Galaxy Messier 82 from Hubble



The NASA Hubble Space Telescope captured this richly detailed view of the magnificent starburst galaxy, Messier 82.

<https://svs.gsfc.nasa.gov/30856>

**Central Region of Spiral Galaxy M83
from Hubble**



The full beauty of nearby spiral galaxy Messier 83 is unveiled in all of its glory in this NASA Hubble Space Telescope mosaic image.

<https://svs.gsfc.nasa.gov/30853>

**Spiral Galaxy Messier 101
in High-Definition from Hubble**



This Hubble Space Telescope image of the face-on spiral galaxy Messier 101 is one of the largest and most detailed views of a spiral galaxy that has ever been released from Hubble.

<https://svs.gsfc.nasa.gov/30793>

**Mystic Mountain:
Pillars in the Carina Nebula from Hubble**



A collection of pillars in the Carina Nebula creates a gaseous landscape nicknamed "Mystic Mountain."

<https://svs.gsfc.nasa.gov/30860>

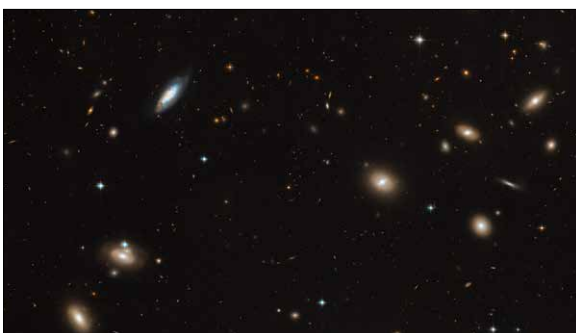
**Hubble's Panoramic View
of the Tarantula Nebula**



The Tarantula nebula is close enough to Earth that Hubble can resolve individual stars, giving astronomers important information about the stars' birth and evolution.

<https://svs.gsfc.nasa.gov/30796>

**Hubble's Sweeping View of the
Coma Cluster of Galaxies**



NASA's Hubble Space Telescope captures the magnificent starry population of the Coma Cluster of galaxies, one of the densest known galaxy collections in the universe.

<https://svs.gsfc.nasa.gov/30865>

**Andromeda Galaxy
PHAT Mosaic**



This sweeping view of the Andromeda Galaxy covers a 61,000-light-year-long stretch over more than 2 billion pixels, the largest Hubble image ever assembled.

<https://svs.gsfc.nasa.gov/30561>

Hubble Sees Rare Stellar Light Echo



This movie, created using eight images from the Hubble Space Telescope, reveals the dramatic changes observed in a red supergiant star named V838 Monocerotis between 2002 and 2006.

<https://svs.gsfc.nasa.gov/30513>

Bright Pillars in the Carina Nebula



The Carina Nebula is a vast, star-forming region in our Milky Way Galaxy.

<https://svs.gsfc.nasa.gov/30683>

Star-Forming Region Sharpless 2-106



The star-forming region Sharpless 2-106 has a bi-polar shape that was likened to a “celestial snow angel.”

<https://svs.gsfc.nasa.gov/30682>

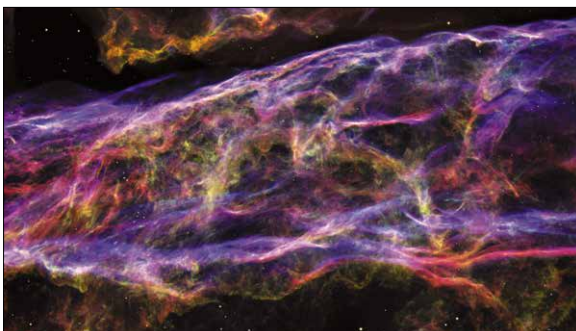
Pillars in the Eagle Nebula from Hubble



NASA's Hubble Space Telescope has revisited the famous Pillars of Creation, revealing a sharper and wider view of the structures in this visible-light image.

<https://svs.gsfc.nasa.gov/30774>

Visualization of the Veil Supernova Remnant



This 3-D visualization flies across a small portion of the Veil Nebula as photographed by the Hubble Space Telescope.

<https://svs.gsfc.nasa.gov/30667>

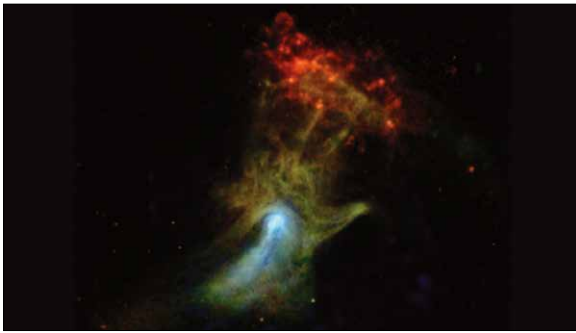
Flight to Star Cluster Westerlund 2



This visualization provides a three-dimensional perspective on Hubble's 25th anniversary image of the nebula Gum 29 with the star cluster Westerlund 2 at its core.

<https://svs.gsfc.nasa.gov/30666>

Hand of God



Nicknamed the “Hand of God,” this object is called a pulsar wind nebula.

<https://svs.gsfc.nasa.gov/30505>

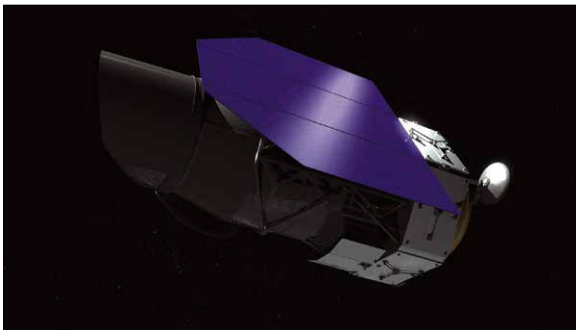
The Milky Way Galaxy’s Circumnuclear Ring



These images capture the infrared emission from stars, ionized gas, and warm dust within the central 10 light-years of the Milky Way.

<https://svs.gsfc.nasa.gov/30497>

WFIRST Spacecraft Beauty Pass Animations



Animation video and stills based off the Mission Concept Review design of the WFIRST spacecraft.

<https://svs.gsfc.nasa.gov/20232>

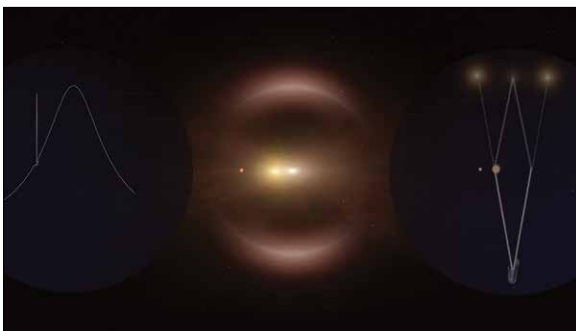
WFIRST versus Hubble Image Size Comparisons



The Wide Field Instrument on WFIRST will have a field of view that is 100 times greater than the Hubble infrared instrument, capturing more of the sky with less observing time.

<https://svs.gsfc.nasa.gov/12308>

Gravitational Microlensing Animation



This animation illustrates gravitational lensing, which will be used by the WFIRST microlensing survey.

<https://svs.gsfc.nasa.gov/20242>

WFIRST Coronagraph Animation



Animation illustrating how a planet can disappear in a star's bright light, and how a coronagraph can reveal it.

<https://svs.gsfc.nasa.gov/20243>

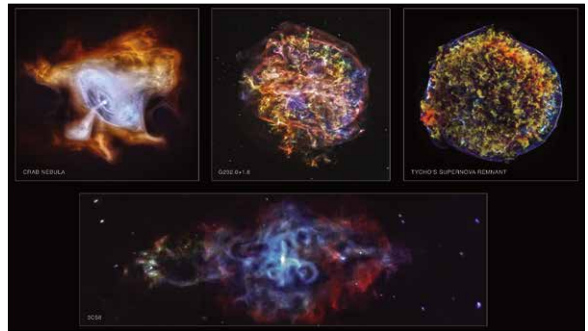
Gigantic Wave Discovered in Perseus Galaxy Cluster



A wave spanning 200,000 light-years is rolling through the Perseus galaxy cluster, according to observations from NASA's Chandra X-ray Observatory, coupled with a computer simulation.

<https://svs.gsfc.nasa.gov/12587>

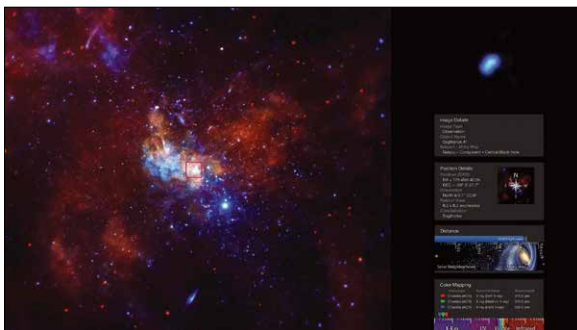
Chandra X-Ray Observatory Celebrates 15th Anniversary



Four newly processed images of supernova remnants dramatically illustrate Chandra's unique ability to explore high-energy processes in the cosmos.

<https://svs.gsfc.nasa.gov/30575>

X-Ray Telescopes Find Black Hole May Be a Neutrino Factory



The supermassive black hole at the center of the Milky Way, seen in this image from NASA's Chandra X-ray Observatory, may be producing neutrinos.

<https://svs.gsfc.nasa.gov/30576>

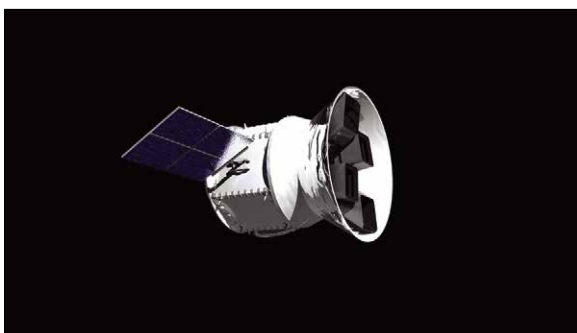
Dwarf Galaxy Caught Ramming into a Large Spiral



Observations from NASA's Chandra X-ray telescope reveal a massive cloud of multimillion-degree gas in a galaxy about 60 million light-years from Earth.

<https://svs.gsfc.nasa.gov/30472>

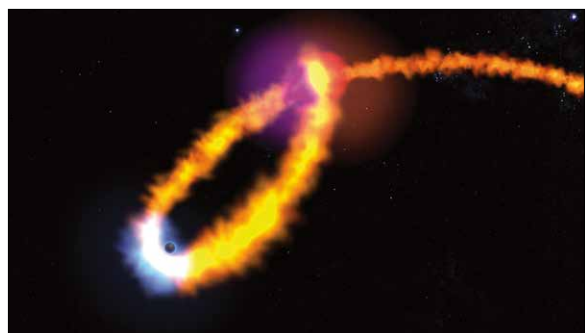
TESS Beauty Pass Animation



Artist's concept of the Transiting Exoplanet Survey Satellite, an Explorer-class planet finder.

<https://svs.gsfc.nasa.gov/20260>

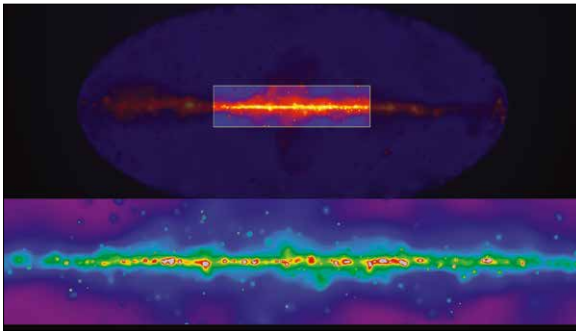
Swift Charts a Star's 'Death Spiral' into Black Hole



Scientists used data from NASA's Swift satellite to map how and where different wavelengths were produced when a star wandered too close to the central black hole of its galaxy.

<https://svs.gsfc.nasa.gov/12499>

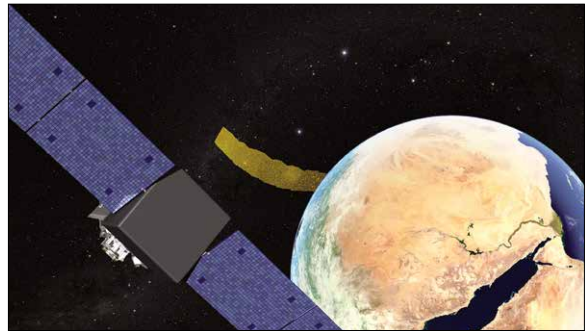
NASA's Fermi Mission Sharpens its High-Energy View



Major improvements to methods used to process observations from NASA's Fermi Gamma-ray Space Telescope have allowed astronomers to produce detailed maps of the sky.

<https://svs.gsfc.nasa.gov/12019>

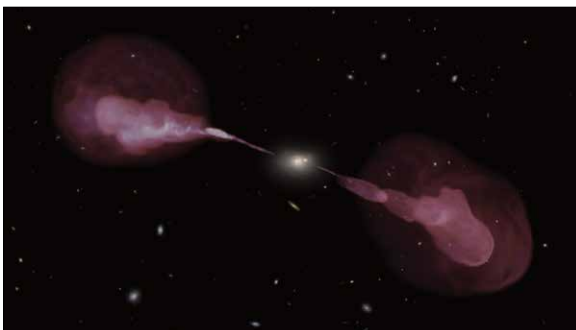
NASA's Fermi Preps to Narrow Down Gravitational Wave Sources



Fermi's GBM saw a fading X-ray flash at nearly the same moment LIGO detected gravitational waves from a black hole merger in 2015.

<https://svs.gsfc.nasa.gov/12216>

Active Galaxy Hercules A: Visible & Radio Comparison



The active galaxy Hercules A was given that name because it is the brightest radio source in the constellation of Hercules.

<https://svs.gsfc.nasa.gov/30680>

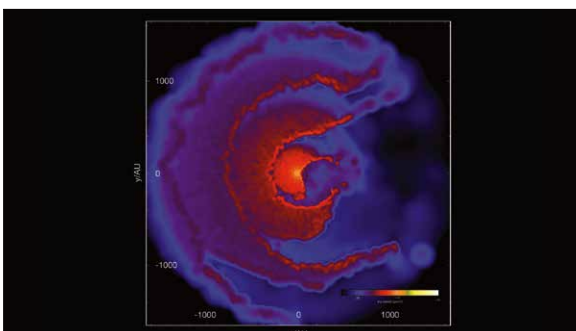
A Black Hole Visits Baltimore



This scientific visualization demonstrates the visual distortion known as gravitational lensing.

<https://svs.gsfc.nasa.gov/30688>

Supercomputer Simulations of Eta Carinae



These movies show supercomputer simulations of the interactive stellar winds of Eta Carinae, a binary system that includes the most luminous and massive star within 10,000 light-years.

<https://svs.gsfc.nasa.gov/11722>

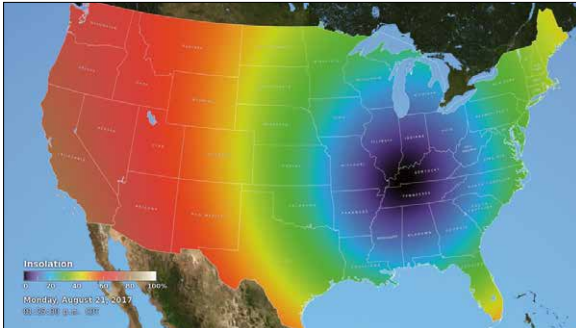
AGN Feedback in Markarian 573



This animation illustrates the active galactic nuclei feedback process occurring in the galaxy Markarian 573.

<https://svs.gsfc.nasa.gov/12657>

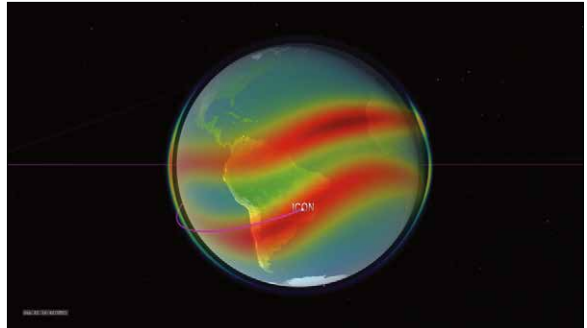
Insolation During the 2017 Eclipse



This animation shows how the Moon's shadow dramatically affects insolation across the continental United States during the total solar eclipse of August 2017.

<http://svs.gsfc.nasa.gov/4466>

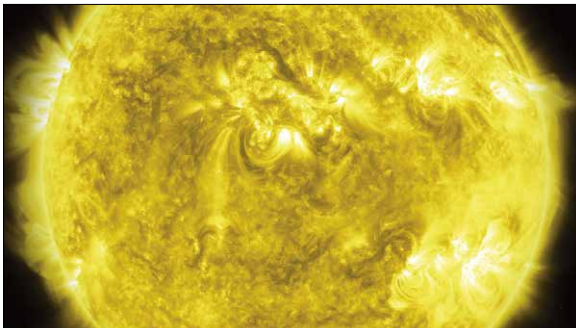
Exploring the Ionosphere: The View from GOLD



The GOLD mission will conduct measurements of ionospheric composition to better understand the connection between space weather and its terrestrial impacts.

<http://svs.gsfc.nasa.gov/4503>

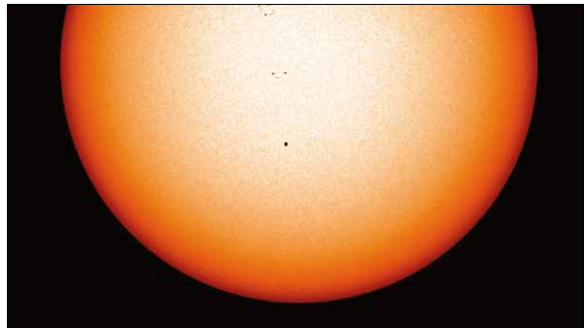
Dynamic Earth: A New Beginning



This visualization illustrates the connections between the Earth and the Sun, as well as the power of computer simulation in understanding those connections.

<http://svs.gsfc.nasa.gov/4469>

Mercury Transit, May 2016



On May 9, 2016, Mercury passed directly between the Sun and Earth. NASA's Solar Dynamics Observatory studies the Sun 24/7 and captured the entire event.

<http://svs.gsfc.nasa.gov/30780>

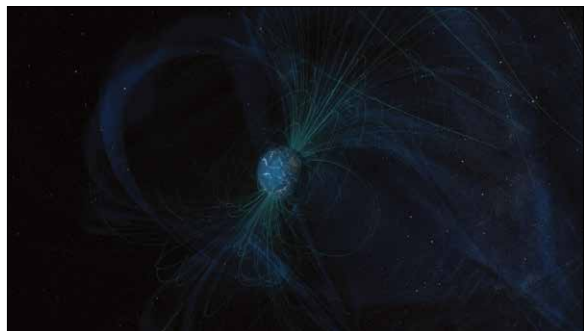
Zoom in to MMS and Magnetopause Connection



For the first time ever, on October 16, 2015, MMS traveled straight through a magnetic reconnection event.

<http://svs.gsfc.nasa.gov/4453>

MMS Front Side Reconnection



This animation shows the MMS spacecraft transiting through a reconnection event on the front side of Earth.

<http://svs.gsfc.nasa.gov/20224>

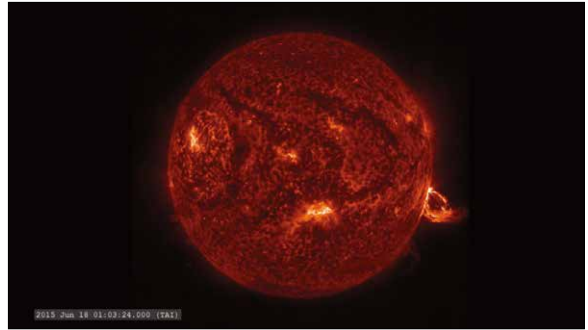
Beyond Earth: Earth's Geomagnetic Activity



This animation shows the busyness of near-Earth space, where the magnetic environment around Earth can trap electrons and charged particles.

<http://svs.gsfc.nasa.gov/20237>

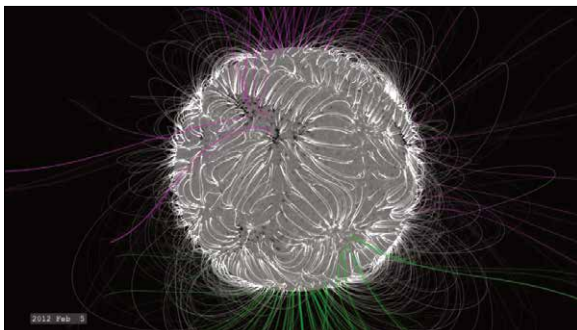
Summer Sun from SDO: Eruption and Coronal Loops on the Solar Limb



A prominent eruption off the lower right limb of the Sun, June 18, 2015, followed by some complex coronal loop evolution.

<http://svs.gsfc.nasa.gov/4323>

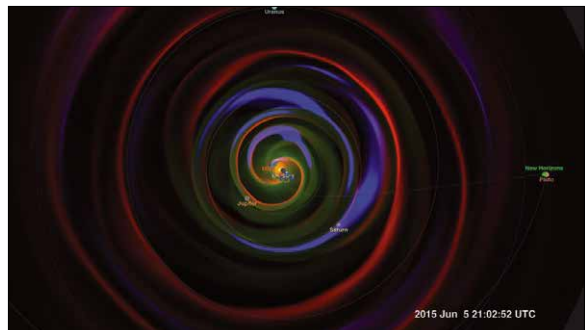
The Dynamic Solar Magnetic Field



A visualization of the slow changes of the solar magnetic field over the course of four years.

<http://svs.gsfc.nasa.gov/4391>

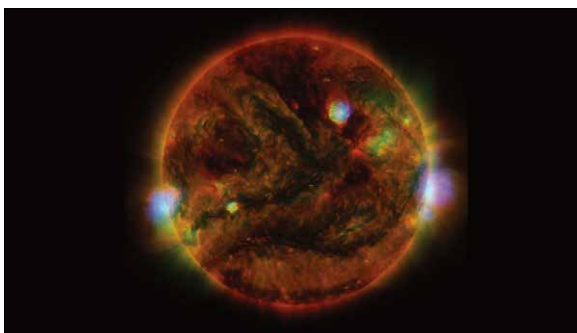
Space Weather to the Edge of the Solar System



To predict how the Sun's radiation will impact spacecraft, scientists rely on computer models. Scientists use the Enlil model to simulate the space environment further than ever before.

<http://svs.gsfc.nasa.gov/4392>

NuSTAR Stares at the Sun



Flaring, active regions of our Sun are highlighted in this image from April 29, 2015, combining observations from several telescopes.

<http://svs.gsfc.nasa.gov/30726>

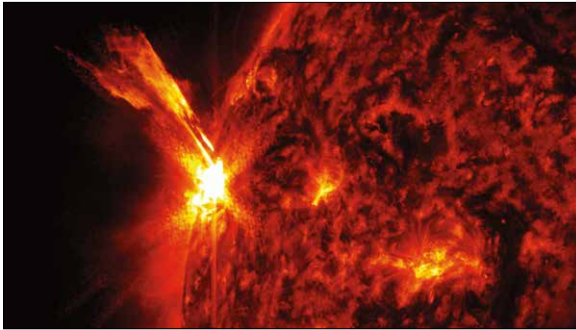
NASA Observes Auroras Across Canada



These aurora images were taken from the ground looking up with a network of all-sky cameras spread across Canada, studying auroras.

<http://svs.gsfc.nasa.gov/12040>

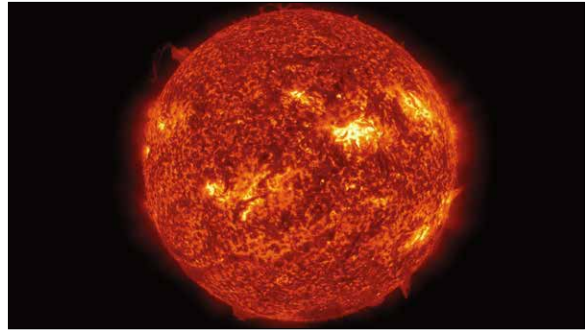
NASA's SDO Observes a Cinco de Mayo Solar Flare



The Sun emitted a significant solar flare on May 5, 2015. NASA's Solar Dynamics Observatory, which watches the Sun constantly, captured the event.

<http://svs.gsfc.nasa.gov/11868>

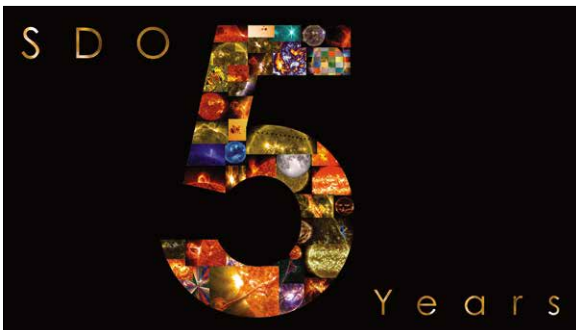
Solar Exposures



As kids, we're taught to not look directly into the Sun. This SDO time-lapse video provides an opportunity to catch up on what we've been missing.

<http://svs.gsfc.nasa.gov/11755>

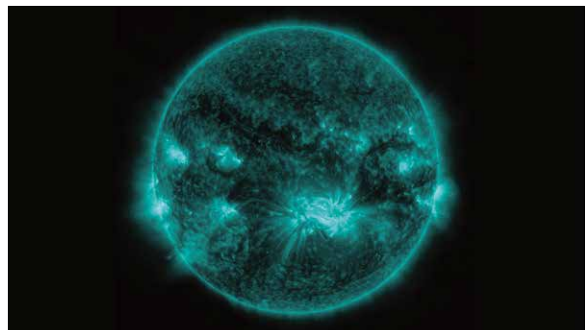
SDO: Year 5



Highlights from the Solar Dynamics Observatory's five years of watching the Sun.

<http://svs.gsfc.nasa.gov/11742>

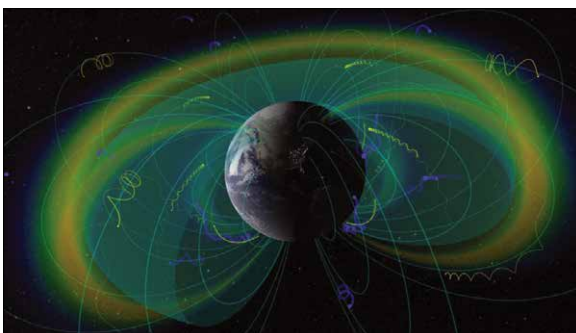
Twelve Days of AR12192 from SDO and GOES



The large active region AR12192 is carried across the solar disk by the Sun's rotation. Shown in this visualization, the region erupted with a large number of flares.

<http://svs.gsfc.nasa.gov/4232>

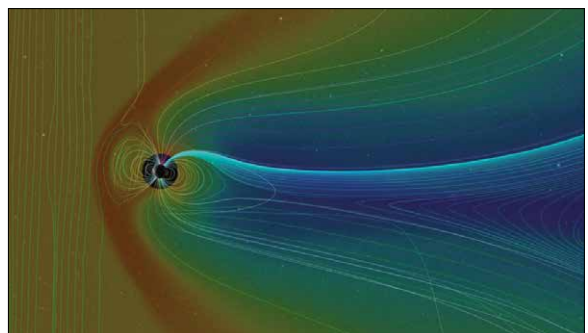
Radiation Belts and Plasmopause



This visualization depicts Earth's radiation belts with confined charged particles and plasmopause boundary.

<http://svs.gsfc.nasa.gov/4241>

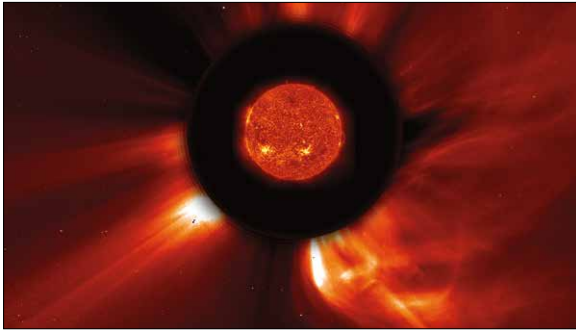
Comparative Magnetospheres: A Noteworthy Coronal Mass Ejection



In mid-December of 2006, the Sun erupted with a bright flare and coronal mass ejection that launched particles Earthward. This visualization was used to simulate the impact of the event.

<http://svs.gsfc.nasa.gov/4188>

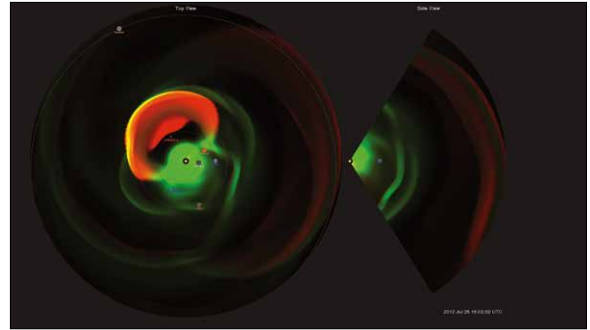
NASA's Many Views of a Massive CME



Three NASA observatories work together to help scientists track the journey of a massive coronal mass ejection, or CME, in July 2012.

<http://svs.gsfc.nasa.gov/11558>

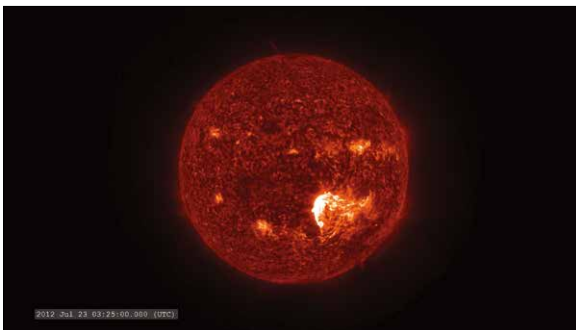
The Big CME that Missed Earth



Results from the Enlil model run of the July 23, 2012 CME and events leading up to it.

<http://svs.gsfc.nasa.gov/4167>

The Carrington-Class CME of 2012



STEREO-A, at a position along Earth's orbit where it has an unobstructed view of the far side of the Sun, observed a powerful coronal mass ejection on July 23, 2012.

<http://svs.gsfc.nasa.gov/4177>

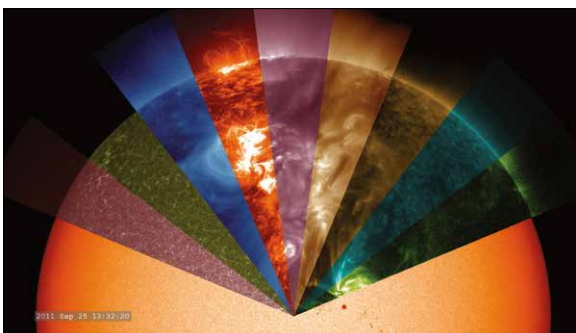
MMS Spacecraft



MMS beauty pass showing four observatories on the dayside.

<http://svs.gsfc.nasa.gov/20210>

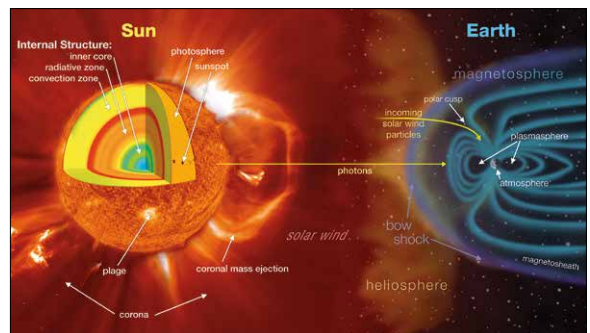
SDO: Argo View



Argos was the 100-eyed giant in Greek mythology. While SDO has significantly less than 100 eyes, SDO sees the Sun through many filters.

<http://svs.gsfc.nasa.gov/4117>

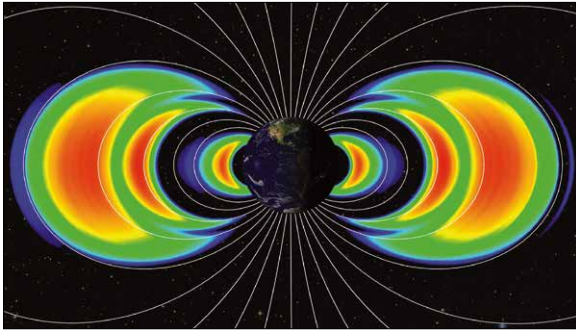
Heliophysics and Space Weather



This illustration depicts Sun-Earth interactions that influence space weather.

<http://svs.gsfc.nasa.gov/30481>

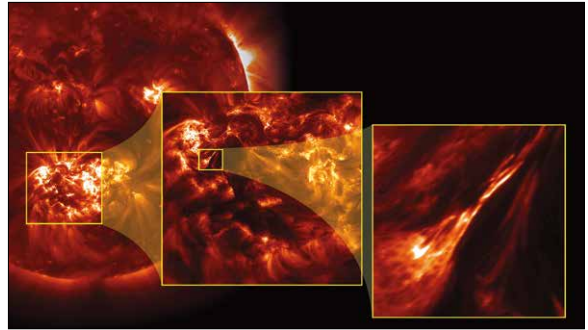
Van Allen Probes Discover New Radiation Belt



This Van Allen Probes image shows three radiation belts around Earth in 2012.

<http://svs.gsfc.nasa.gov/30470>

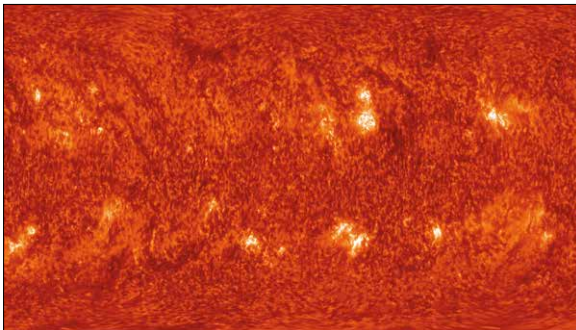
Sharpest-Ever Image of the Sun's Corona



High-resolution images of the Sun's corona from the Hi-C telescope, July 2012.

<http://svs.gsfc.nasa.gov/30466>

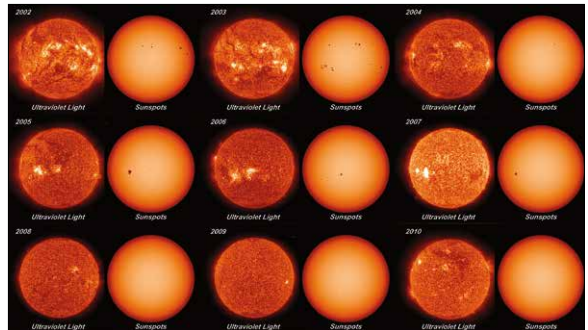
Full Map of the Sun's Surface



This movie shows the evolution of the Sun's entire surface as seen in extreme ultraviolet light for the time period January 1 - September 27, 2012.

<http://svs.gsfc.nasa.gov/30362>

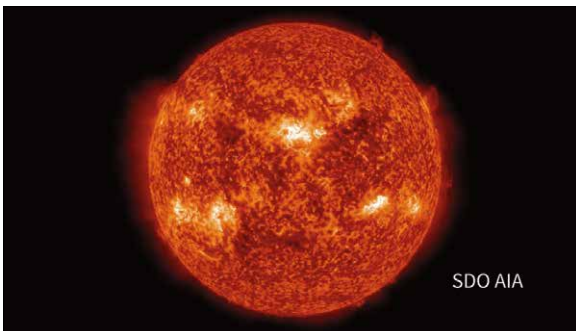
World of Change: Solar Activity



This series of images shows ultraviolet light and sunspots each spring from 1999-2010.

<http://svs.gsfc.nasa.gov/30315>

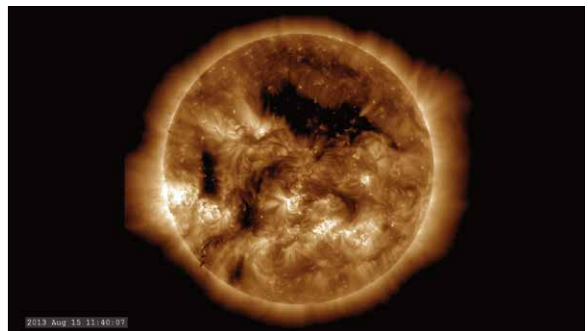
Heliophysics Fleet Captures Eruption and CME



Prominence eruption and CME captured by SDO and SOHO on May 1, 2013.

<http://svs.gsfc.nasa.gov/30072>

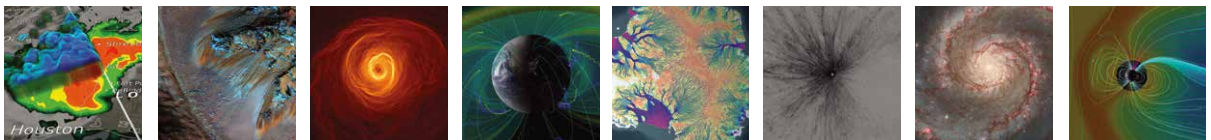
SDO Observes Large Coronal Hole



This visualization shows a coronal hole over the course of 24 hours, sampled about once per minute.

<http://svs.gsfc.nasa.gov/4101>

NASA Hyperwall Science Stories



[*svs.gsfc.nasa.gov/hw*](https://svs.gsfc.nasa.gov/hw)

