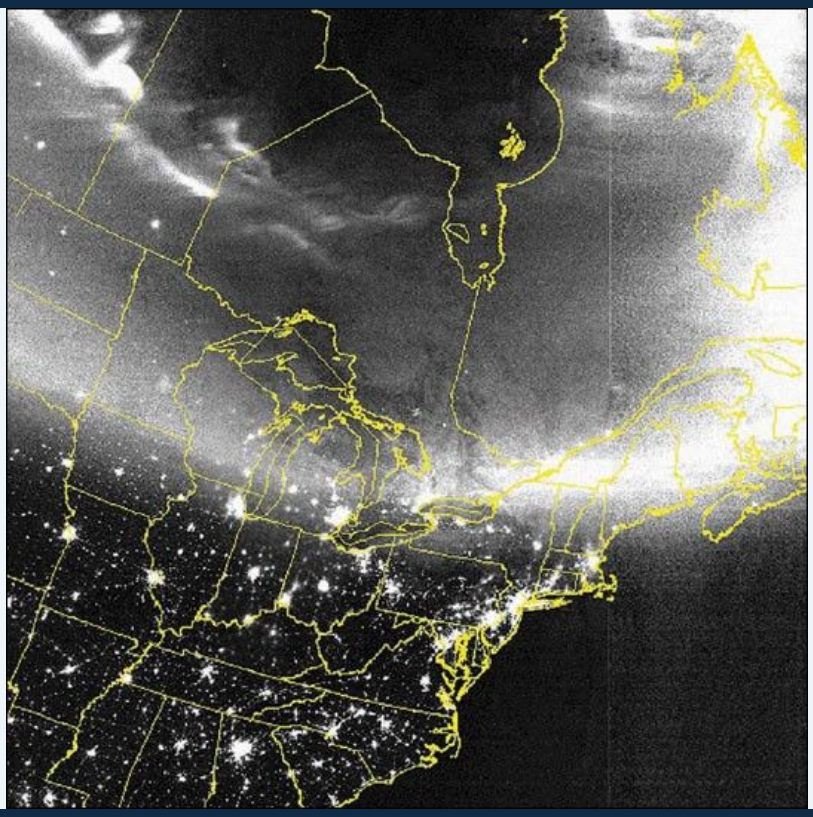
When the Night Sky Changed Color

Six aurora events seen from space, 2003-2024



DMSP nighttime satellite image of eastern North America, October 29, 2003. The broad white veil is auroral light, not a map of confirmed ground sightings. Credit: Defense Meteorological Satellite Program; provided through the Air Force Link website, via NASA Earth Observatory.

Historical evidence. Better questions. Useful records.

A bright band in a satellite image and an aurora seen from a backyard describe different views of the same event. These six cases connect the time, observing instrument and reported geomagnetic conditions so the spectacle becomes a useful record.

Prepared November 11, 2026 | A collection by Dattle

What the records reveal

SCOPE AND METHOD

Selected historical examples from NASA Earth Observatory, reviewed November 11, 2026; not a complete event inventory or a ranking. The images are nighttime satellite observations, not natural-color ground photographs. NOAA storm categories are included only where the cited source explicitly states them; a missing category means not supplied in that case source. Satellite overpass times describe one snapshot, not the start or maximum extent of the storm. Ground visibility also depends on darkness, weather and viewing direction.

A COMPARISON WORTH MAKING

March 2015, April 2023 and October 2024 each reached the reported G4 category; May 2024 reached G5. Those labels describe geomagnetic disturbance, not how bright the sky looked at one location. The 2003 and 2012 images remain useful without filling their category gaps by inference. A stronger field record pairs a timestamped image with viewing conditions and an explicit distinction between satellite coverage and an eyewitness sighting.

IMAGES AND UNCERTAINTY

Photographs and satellite views are historical agency imagery. Charts are drawn from cited observations or estimates, with units and dates preserved. A picture shows a place and moment; it does not prove an entire event boundary, impact or cause. This is a historical reference, not a live warning service.

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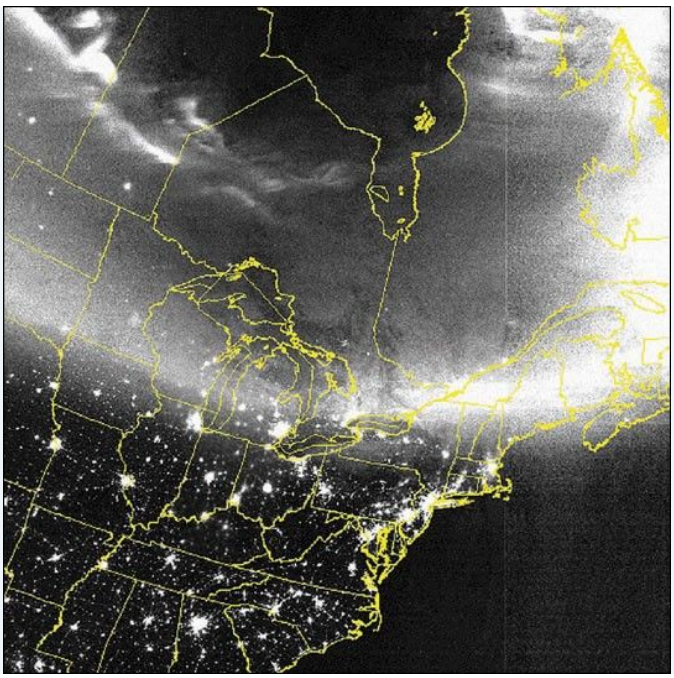
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Halloween-season aurora crosses North America

October 29, 2003 | Southern Canada and the northern United States; eastern North America satellite view



DMSP nighttime satellite image of eastern North America, October 29, 2003. The broad white veil is auroral light, not a map of confirmed ground sightings. Credit: Defense Meteorological Satellite Program; provided through the Air Force Link website, via NASA Earth Observatory.

Observation

Night of October 29, 2003

Instrument

Defense Meteorological Satellite Program

Visible coverage

Southern Canada and northern U.S. in this scene

G category

Not stated in this case source

WHAT HAPPENED

A nighttime satellite view captured a broad luminous veil across eastern North America during the late-October solar storms. City lights appear underneath the auroral emission, making the contrast between fixed lights and a large atmospheric feature especially clear. NASA describes auroras extending farther from the poles during this period of strong solar activity.

WHAT THE DATA REVEALS

Keep city lights and aurora as separate observations. The stable urban pattern provides orientation, while the broad veil shows an atmospheric feature that can change quickly.

READ WITH CARE

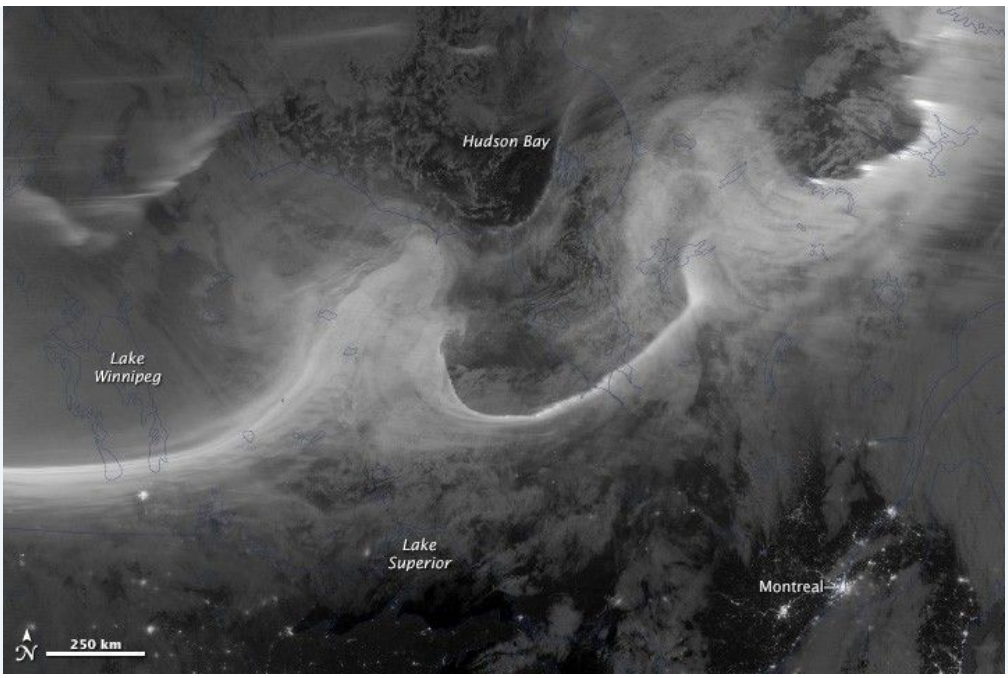
This is one satellite snapshot. It does not establish where a person could see color from the ground, nor does the cited image page provide a numerical storm category or local damage estimate.

Source 1 >

Visual / data >

An expanded auroral oval above Quebec and Ontario

October 8, 2012 | Quebec and Ontario, Canada



Suomi NPP VIIRS day-night band, October 8, 2012. Bright auroral structures cross Quebec and Ontario; grayscale represents detected light. Credit: NASA Earth Observatory / Jesse Allen and Robert Simmon; VIIRS data from Suomi NPP and the University of Wisconsin Community Satellite Processing Package.

Satellite image

Early morning, October 8, 2012

Instrument

Suomi NPP / VIIRS day-night band

Solar eruption

Overnight October 4-5, 2012

G category

Not stated in this case source

WHAT HAPPENED

A coronal mass ejection left the Sun overnight October 4-5; several days later, a geomagnetic storm expanded the auroral oval toward middle latitudes. Suomi NPP observed northern lights over Quebec and Ontario early on October 8. Its sensitive day-night band also detects city lights, moonlight and other faint nighttime signals.

WHAT THE DATA REVEALS

A good record separates the solar event from the Earth observation. The dates are linked, but they are not interchangeable: a photograph belongs to the time and place where it was acquired.

READ WITH CARE

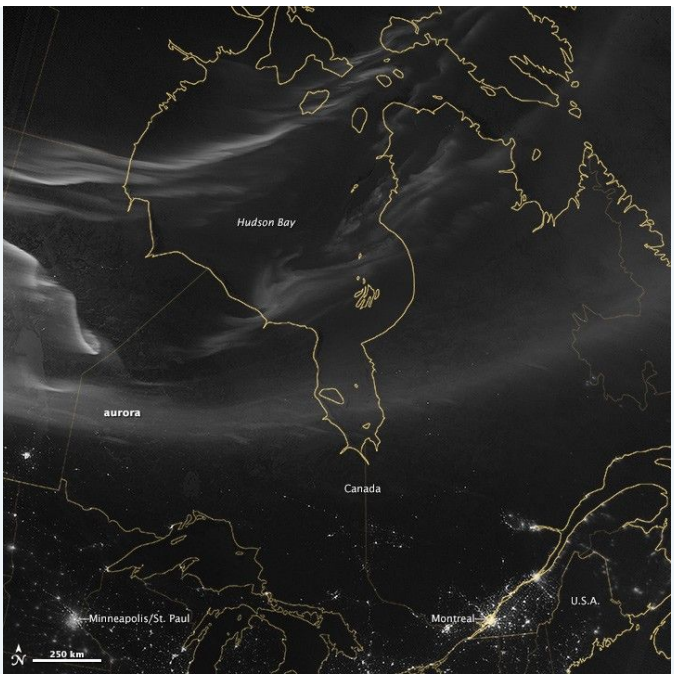
The grayscale image does not recover the colors a ground observer saw. One orbital pass cannot describe the full night or prove continuous visibility throughout the pictured provinces.

Source 1 >

Visual / data >

St. Patrick’s Day: a storm and a viewing window

March 17-18, 2015 | Hudson Bay, southern Canada and northern United States in the satellite image



Suomi NPP VIIRS day-night band around 1:30 a.m. EDT, March 18, 2015. White streaks are auroral emissions rather than natural-color sky photography. Credit: NASA Earth Observatory / Jesse Allen; VIIRS day-night band data from Suomi NPP.

Reported NOAA level

G4 - severe

Reported Kp range

6-8 during the event

Satellite image

March 18, approximately 1:30 a.m. EDT

Instrument

Suomi NPP / VIIRS day-night band

WHAT HAPPENED

A March 15 solar eruption reached Earth by March 17 and produced a severe geomagnetic storm. The source reports Kp values between 6 and 8 and a G4 classification. Early on March 18, VIIRS recorded white auroral streaks over Hudson Bay and across southern Canada into the northern United States. Ground observers supplied complementary images through Aurorasaurus.

WHAT THE DATA REVEALS

A storm’s peak and a viewer’s best opportunity can occur at different times. NASA notes that the peak fell in Western Hemisphere daylight, making darkness an essential field in any local observing log.

READ WITH CARE

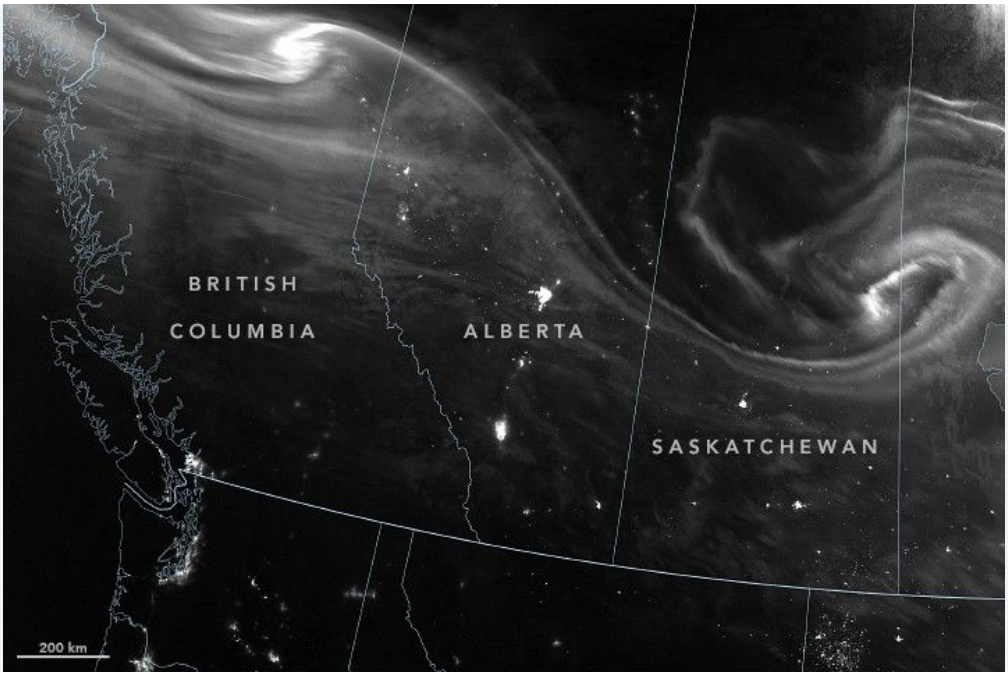
The Kp range describes global geomagnetic activity, not a local brightness measurement. Satellite emissions, submitted photographs and verified ground sightings are distinct evidence types.

Source 1 >

Visual / data >

April’s aurora reaches beyond the usual polar view

April 23-24, 2023 | Western Canada and parts of the United States in the satellite view



Suomi NPP VIIRS day-night band at 06:15 UTC on April 24, 2023, showing western Canada and adjacent United States. Credit: NASA Earth Observatory / Lauren Dauphin; VIIRS day-night band data from Suomi NPP.

Reported NOAA level

G4 - severe on April 23

Solar eruption

April 21, 2023

Satellite image

April 24, 2023, 06:15 UTC

Instrument

Suomi NPP / VIIRS day-night band

WHAT HAPPENED

A coronal mass ejection on April 21 preceded a G4 geomagnetic storm on April 23. VIIRS captured auroral light over western Canada and dipping into the United States at 06:15 UTC on April 24. NASA also describes northern and southern hemisphere displays during this event, illustrating how a single solar disturbance can be observed from widely separated places.

WHAT THE DATA REVEALS

Use UTC alongside local time when comparing reports across regions. That avoids treating observations on opposite sides of midnight as different events, or combining unrelated nights simply because their local dates match.

READ WITH CARE

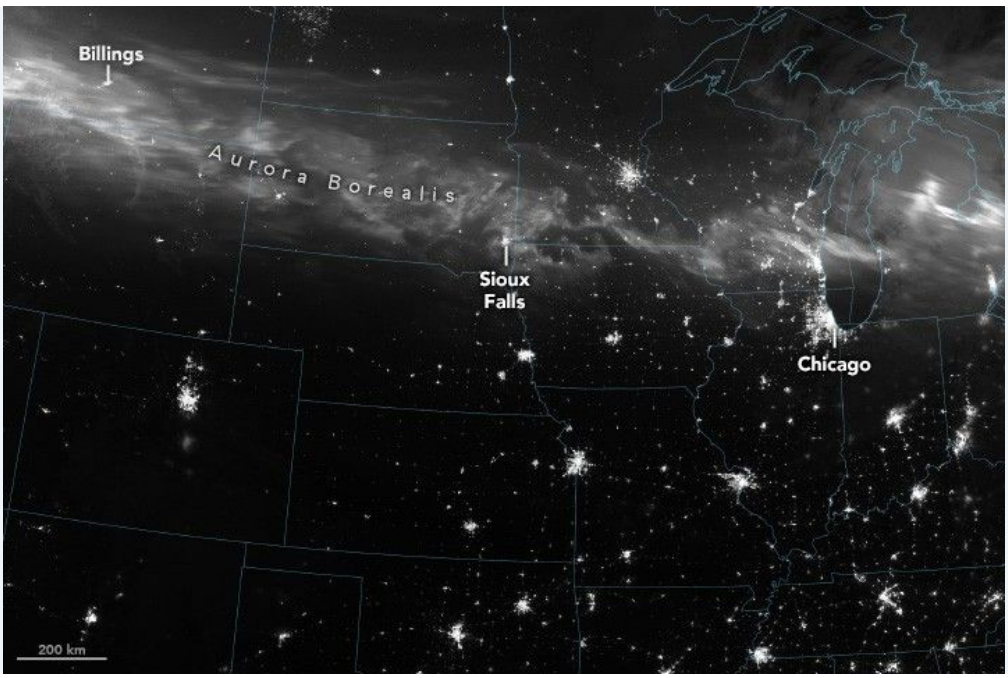
The image is a grayscale observation at one instant, not the storm’s maximum footprint. The date is April 24, 2023; regional reports need their own timestamps and should not be assumed simultaneous with this overpass.

Source 1 >

Visual / data >

May 2024: an extreme storm, many different views

May 10-11, 2024 | North-central United States in the satellite image; a worldwide aurora event



Suomi NPP VIIRS day-night band at 08:20 UTC, May 11, 2024. This grayscale light measurement is separate from the colorful ground photographs discussed by NASA. Credit: NASA Earth Observatory / Wanmei Liang; VIIRS day-night band data from Suomi NPP.

Reported NOAA level

G5 - extreme

Satellite image

May 11, 2024, 08:20 UTC

Local image time

3:20 a.m. Central Time

Instrument

Suomi NPP / VIIRS day-night band

WHAT HAPPENED

The May event reached G5, the most extreme NOAA geomagnetic category. At 08:20 UTC on May 11, VIIRS recorded a bright strip across portions of Montana, Wyoming, the Dakotas, Minnesota, Wisconsin, Iowa and Michigan. Ground observers photographed a range of colors, while the satellite product rendered detected nighttime light in grayscale.

WHAT THE DATA REVEALS

One image can answer “what was detectable here at this time?” It cannot replace a sequence. Repeated, timestamped observations reveal movement and changing structure that a single dramatic photograph conceals.

READ WITH CARE

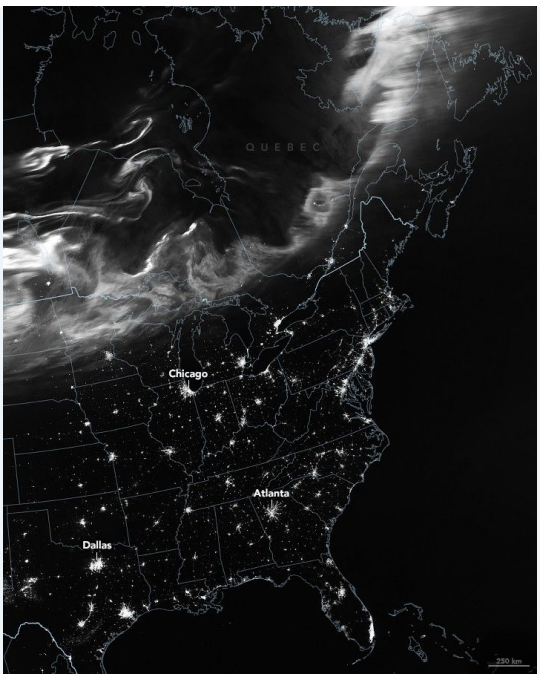
The bright satellite band is not a boundary beyond which ground viewing was impossible. Aurora occurs high in the atmosphere and can be visible from distant locations; local clouds and light pollution still matter.

Source 1 >

Visual / data >

October’s ribbons of light over the Great Lakes

October 10-11, 2024 | Minnesota, Wisconsin, Michigan and Canadian provinces in the satellite view



NOAA-20 VIIRS day-night band at 05:55 UTC, October 11, 2024. White ribbons show detected auroral light over the Great Lakes region and Canada. Credit: NASA Earth Observatory / Michala Garrison; VIIRS data from NASA EOSDIS LANCE, GIBS/Worldview and the Joint Polar Satellite System.

Reported NOAA level

G4 - severe

Solar eruption

October 8, 2024

Satellite image

October 11, 2024, 05:55 UTC

Instrument

NOAA-20 / VIIRS day-night band

WHAT HAPPENED

A coronal mass ejection associated with an October 8 solar flare preceded the October 10-11 display. The storm reached G4. NOAA-20 observed auroral ribbons over the north-central United States and Canada at 05:55 UTC on October 11, while people on the ground reported colorful displays from locations much farther south.

WHAT THE DATA REVEALS

Pair satellite records with the source and type of each ground report. A photograph, a naked-eye description and an orbiting sensor offer complementary evidence, but none should silently stand in for the others.

READ WITH CARE

The source describes a severe geomagnetic event, not a measurement of conditions at every viewing site. Satellite coverage at 05:55 UTC does not represent the whole night or the full range of visible colors.

Source 1 >

Visual / data >

From examples to observations

A USEFUL RECORD KEEPS ITS EVIDENCE

Keep the time, place, measurement method, unit, source and uncertainty with every observation. Separate what you saw from an estimate or interpretation. Repeat observations consistently, and retain the original evidence when updating a record.

SUGGESTED DATTLE FIELDS

- Observation timestamp and time zone
- Observer location and viewing direction
- Source or observer name; image credit
- Naked-eye visibility versus camera-only detection
- Cloud cover, moonlight and local light pollution
- Reported NOAA G category and source timestamp
- Satellite, sensor and overpass time if applicable
- Photograph settings and original unedited image
- Observed color and structure, separate from interpretation
- Source URL and uncertainty notes

AI AS AN ACCELERATOR

Use this prompt to draft a collection structure, then review it. AI can organize the questions and fields; it cannot supply missing observations or replace source verification.

> Create a Dattle for aurora observations. Include date and time zone, location, viewing direction, image, image credit, naked-eye or camera-only visibility, cloud cover, moonlight, reported NOAA G category with source, satellite overpass if applicable, and notes. Keep observed details separate from forecasts and do not infer visibility from a storm category.

Explore Dattle at dattle.com. Availability, features and plan limits are described on the website.

Sources and image credits

Primary references checked November 11, 2026. Records and estimates can be revised. Every case page links to its evidence; full addresses are retained here for reuse.

01. NASA Earth Observatory - Northern Lights Dip Southward
https://science.nasa.gov/earth/earth-observatory/northern-lights-dip-southward-3935/

02. Visual / source data for Halloween-season aurora crosses North America
https://assets.science.nasa.gov/dynamicimage/assets/science/esd/eo/images/imagerecords/3000/3935/aurora_NA.jpg?w=540&h=540&fit=clip&crop=faces%2Cfocalpoint

03. NASA Earth Observatory - Auroras over North America
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04. Visual / source data for An expanded auroral oval above Quebec and Ontario
https://assets.science.nasa.gov/dynamicimage/assets/science/esd/eo/images/imagerecords/79000/79373/ontario_vir_2012282.jpg?w=720&h=480&fit=clip&crop=faces%2Cfocalpoint

05. NASA Earth Observatory - Looking Down and Up at the Aurora
https://science.nasa.gov/earth/earth-observatory/looking-down-and-up-at-the-aurora-85556/

06. Visual / source data for St. Patrick's Day: a storm and a viewing window
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07. NASA Earth Observatory - An Awesome Aurora
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08. Visual / source data for April's aurora reaches beyond the usual polar view
https://assets.science.nasa.gov/dynamicimage/assets/science/esd/eo/images/imagerecords/151000/151254/aurora_vir_2023114.jpg?w=720&h=480&fit=clip&crop=faces%2Cfocalpoint

09. NASA Earth Observatory - Historic Geomagnetic Storm Dazzles
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10. Visual / source data for May 2024: an extreme storm, many different views
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11. NASA Earth Observatory - A Colorful Aurora Paints the Night Sky
https://science.nasa.gov/earth/earth-observatory/a-colorful-aurora-paints-the-night-sky-153463/

12. Visual / source data for October's ribbons of light over the Great Lakes
https://assets.science.nasa.gov/dynamicimage/assets/science/esd/eo/images/imagerecords/153000/153463/aurora_vir2_20241011.jpg?w=720&h=900&fit=clip&crop=faces%2Cfocalpoint