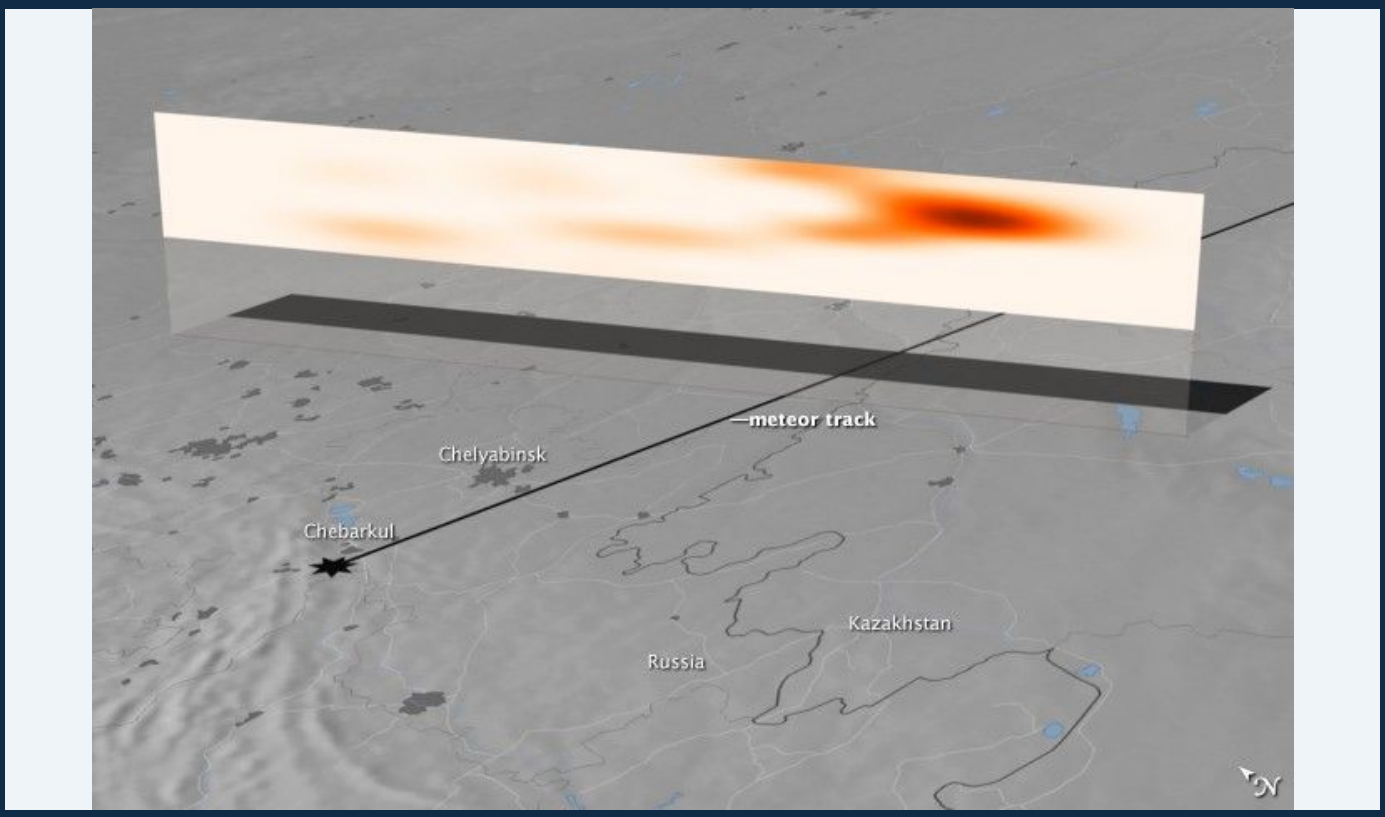
Meteors & fireballs

From a flash in the sky to a record someone else can use.



OMPS plume visualization of the Chelyabinsk event, 15 February 2013. Credit: NASA Earth Observatory/Jesse Allen, using Suomi NPP OMPS data.

Historical evidence. Better questions. Useful records.

Two documented fireballs, a historical shower forecast and a reporting method show why timing and viewing geometry matter as much as brightness.

What the records reveal

SCOPE AND METHOD

Selected examples, not a ranking or complete event catalog. Dates describe the event or the published method. Forecasts are explicitly separated from observations; historical energy estimates retain their source date.

A COMPARISON WORTH MAKING

A shower count, a single fireball report and a satellite plume image answer different questions. Keep their methods separate before making comparisons.

IMAGES AND UNCERTAINTY

Photographs and satellite views carry their original credits. Quantitative charts use cited values; conceptual diagrams are explicitly labeled and contain no invented measurements. AI assisted research and drafting; references were checked and limitations retained. 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 This is a historical reference, not a live warning service.

IN THIS COLLECTION

01 Chelyabinsk: following the plume 3

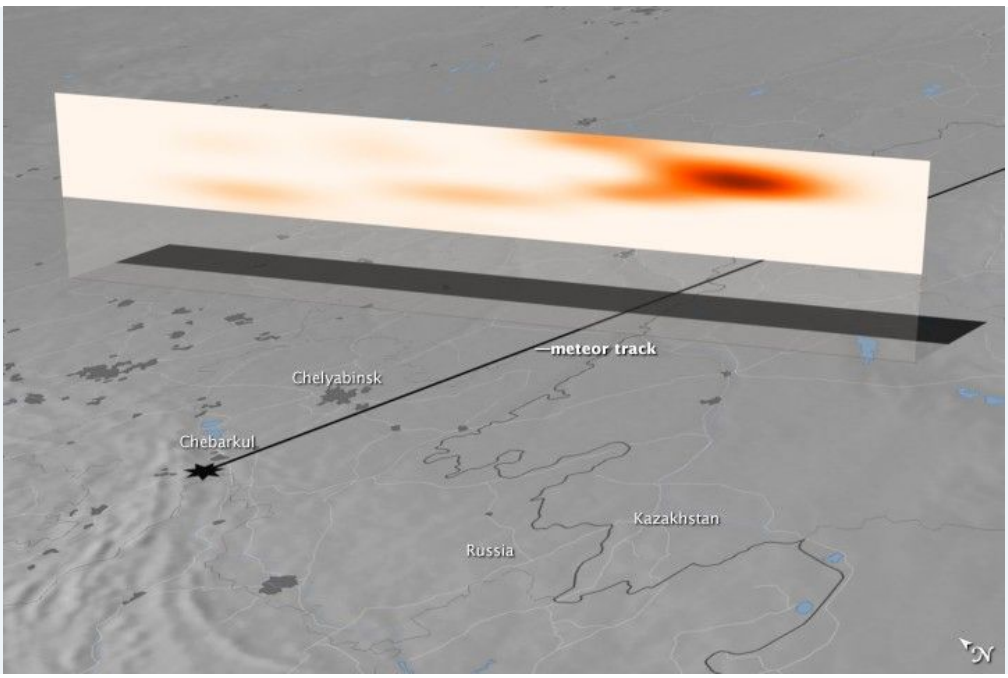
02 Bering Sea: a fireball above the clouds 4

03 Perseids 2021: forecast versus your count 5

04 A flash remembered well: the reporting record 6

Chelyabinsk: following the plume

15 February 2013 | Chelyabinsk region, Russia



OMPS plume visualization of the Chelyabinsk event, 15 February 2013. Credit: NASA Earth Observatory/Jesse Allen, using Suomi NPP OMPS data.

Event
Atmospheric meteor explosion

Evidence
Satellite observations and modeling

Observation target
High-altitude dust plume

Source published
August 2013

WHAT HAPPENED

NASA followed dust from the Chelyabinsk meteor after its atmospheric explosion. Different instruments and a transport model helped connect the local event to the spreading plume.

WHAT THE DATA REVEALS

Record both event time and image time. An image taken later can reveal transport, but it is not a picture of the explosion itself.

READ WITH CARE

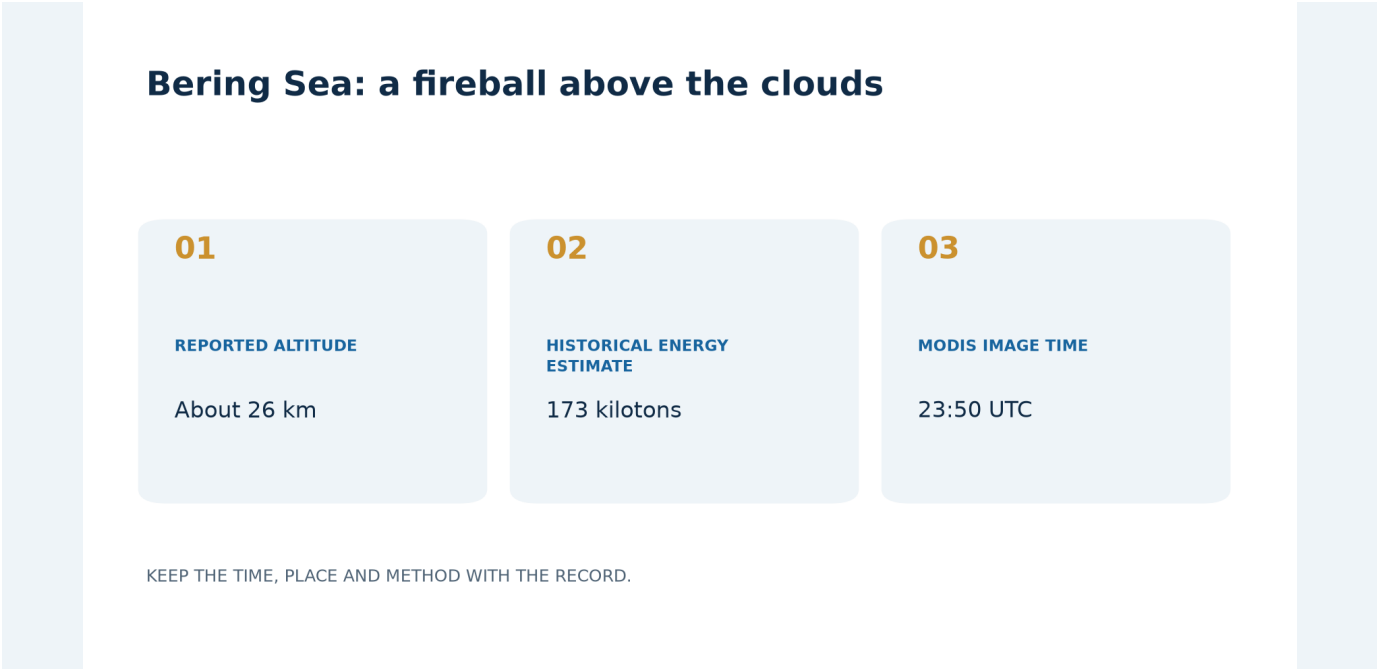
This example concerns plume tracking. It does not estimate local injuries, building damage or an observer's personal exposure.

Source 1 >

Visual / data >

Bering Sea: a fireball above the clouds

18 December 2018 | Bering Sea



Dattle reference diagram; labels summarize the cited source. Not an event photograph or measured time series. Credit: Dattle; original graphic from the cited reference.

Reported altitude
About 26 km

Historical energy estimate
173 kilotons

MODIS image time
23:50 UTC

MISR sequence time
23:55 UTC

WHAT HAPPENED

Terra’s MODIS and MISR instruments imaged remnants of a fireball over the Bering Sea. NASA’s March 2019 report estimated an explosion altitude of 26 km and energy of 173 kilotons.

WHAT THE DATA REVEALS

The trail and its shadow provide different evidence. Preserve instrument, acquisition time and whether a feature is material or a shadow.

READ WITH CARE

Energy is the estimate in the 2019 report, not a claim about the latest catalog value. The satellite views show aftermath, not the instant of explosion.

Source 1 > **Visual / data >**

Perseids 2021: forecast versus your count

11-13 August 2021 forecast window | Northern Hemisphere viewing



Dattle reference diagram; labels summarize the cited source. Not an event photograph or measured time series. Credit: Dattle; original graphic from the cited reference.

Record type
Historical observing forecast

Shower
Perseids

Count depends on
Darkness and viewing conditions

Time reference
UTC in NASA's activity graphic

WHAT HAPPENED

NASA's 2021 observing guide anticipated the Perseid peak around August 11-13. It distinguished favorable dark-sky viewing from the much lower counts possible in cities.

WHAT THE DATA REVEALS

A useful log records observing duration, cloud cover and light pollution beside the meteor count. A forecast curve cannot substitute for a measured hourly count.

READ WITH CARE

These are historical forecast conditions, not a forecast for 2026. No actual meteor count has been invented for this record.

Source 1 >

Visual / data >

A flash remembered well: the reporting record

Monitoring method; checked 12 November 2026 | Observer's location



Dattle reference diagram; labels summarize the cited source. Not an event photograph or measured time series. Credit: Dattle; original graphic from the cited reference.

Official reporting route
American Meteor Society

Keep
Time and viewing direction

Attach
Original photo/video if available

Record type
Method, not a new sighting

WHAT HAPPENED

The American Meteor Society provides a dedicated fireball-reporting route. A structured account preserves the timing, viewing geometry and appearance while the memory is fresh.

WHAT THE DATA REVEALS

Keep the official report identifier in your journal so later investigation can connect your notes with other witnesses.

READ WITH CARE

A Dattle is a companion notebook, not a submission to AMS. Uncertain times or directions should remain estimates rather than invented precision.

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

- UTC timestamp and time uncertainty
- Observer location and viewing direction
- Start/end elevation; duration estimate
- Brightness, color and fragmentation
- Photo or video with original metadata
- Shower or fireball classification; source/report ID

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 meteors & fireballs. Include UTC timestamp and time uncertainty, Observer location and viewing direction, Start/end elevation; duration estimate, Brightness, color and fragmentation, Photo or video with original metadata, Shower or fireball classification; source/report ID. Start with an empty collection. Separate observations, estimates and interpretations. Do not invent measurements, dates, locations or sources. Retain units, uncertainty and source links; flag missing information for review.

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

Sources and image credits

Primary references checked November 12, 2026. Records and estimates can be revised. Every case page links to its evidence; full addresses are retained here for reuse.

01. Chelyabinsk: following the plume - primary reference
https://science.nasa.gov/earth/earth-observatory/tracking-the-chelyabinsk-meteor-plume-81844/

02. Bering Sea: a fireball above the clouds - primary reference
https://www.jpl.nasa.gov/news/nasa-instruments-image-fireball-over-bering-sea/

03. Perseids 2021: forecast versus your count - primary reference
https://www.nasa.gov/blogs/watch-the-skies/2021/07/30/the-perseids-are-on-the-rise/

04. A flash remembered well: the reporting record - primary reference
https://www.amsmeteors.org/contact/