Science & Education Report

MS Spitsbergen

17 – 24 January 2026

Ultimate Norway – Arctic Expedition under the Northern Lights

Science & Education Programme

Our Science and Education Team accompanied you during your voyage along the European Atlantic coast.

Together, we had the opportunity to explore our destinations' rich history, culture, natural beauty and exceptional wildlife. We organised lectures and interactive activities on board and explored our destinations on land and from the water.

History

Our voyage through Northern Norway followed a coastline shaped by exploration, fishing, and resilience. We began in Tromsø, the historic 'Gateway to the Arctic', which from the 19th century served as a base for Arctic hunting, scientific research, and famous expeditions, including those of Roald Amundsen.

Passing Tranøya on Senja, we sailed through landscapes long inhabited by fishing communities who balanced life between sheltered fjords and the exposed Norwegian Sea. Senja's dramatic coast reflects centuries of adaptation to both abundance and harsh conditions.

In Svolvær, at the heart of the Lofoten Islands, we encountered the legacy of the winter cod fisheries. For hundreds of years, migrating Arctic cod drew fishermen north, producing stockfish that became a vital export across Europe.

Through Løkanfjord, we travelled waters traditionally used by coastal traders and fishermen, before ending in Stokmarknes, the birthplace of the Hurtigruten route in 1893 – an innovation that connected remote northern communities year-round and transformed life along the coast.

The Historic Church on Tranøya

Culture

Over this seven-day voyage, we immersed ourselves in nature through what Norwegians call *'friluftsliv'*. More than simply spending time outdoors, friluftsliv is about actively engaging with nature and recognising our place within it. Throughout the journey, we embraced this philosophy firsthand.

In Lofoten, we explored both landscape and history, learning about the famous winter cod fishery that takes place from January to April. First practiced by the Vikings over a thousand years ago, this fishery continues today, drawing fishermen from across Norway and remaining a cornerstone of coastal life.

Guest Researcher – Dr. Rebecca Robinson

On this voyage we were joined by a Heliophysicist, also known as a 'Sun Physicist'. She specializes in researching the nuances of the magnetic connection between the Earth and the Sun. She got her Bachelor's degrees in Physics and Astrophysics from Michigan State University, her Master of Science in Geophysics from the University of Iceland in Reykjavík, and her PhD in Theoretical Astrophysics from the University of Oslo. She is currently working as the Outreach Director for NASA's Multi-slit Solar Explorer (MUSE) mission, scheduled to launch in 2027, but was able to take a small break to share the wonders of the aurora with all of us!

NASA SETI INSTITUTE

MUSE MULTISLIT SOLAR EXPLORER

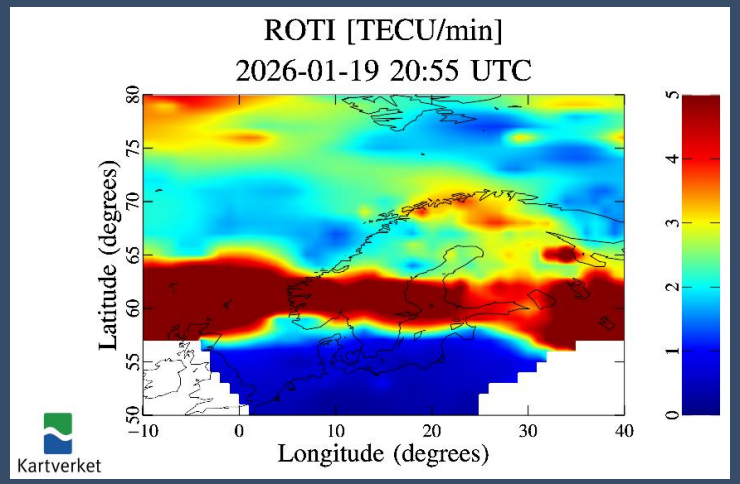
SOLAR AND ASTROPHYSICS LAB

What a Solar Storm!

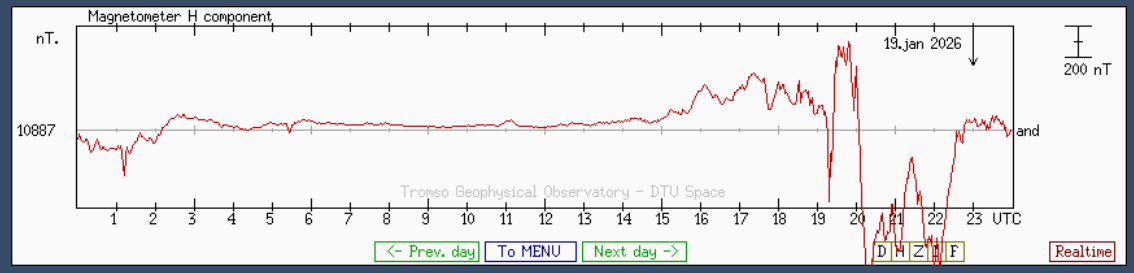
During this trip, the Earth was slammed by a giant plasma shockwave called a Coronal Mass Ejection (CME). CMEs result from magnetic explosions on the Sun, and they're often associated with solar flares. A bright, X-class solar flare and enormous CME on the evening of January 18th resulted in a level-4 radio blackout, level-4 solar radiation storm, and a level-4 geomagnetic storm – during which we witnessed several auroral substorms.

The geomagnetic storm lasted several days and, including the daylight hours, we were treated to 55 consecutive hours of perpetual auroral activity in the atmosphere! This event was not only captured on film, but by Norway's network of magnetometers (instruments that measure local magnetic disturbances) and radars (instruments that measure changes in atmospheric electrons.) Check out this data we collected!

This image shows bright green and red aurorae caused by the CME impact. Red comes from electrons interacting with high-altitude oxygen, and green comes from electrons interacting with mid-altitude nitrogen and oxygen.



This plot from SeSolstorm shows the change in atmospheric electrons at the picture below was taken. Notice a deep red belt across lower Scandinavia? These electrons disturbed the atmosphere in Southern Norway, so we observed the Northern Lights in the southern sky!



This magnetometer readout shows the disturbances in the local magnetic field in Andenes, Norway – close to where we were sailing. Notice the deep disturbance in the highlighted area? This corresponds to the time the picture to the left was taken and illustrates an intense magnetic disturbance!

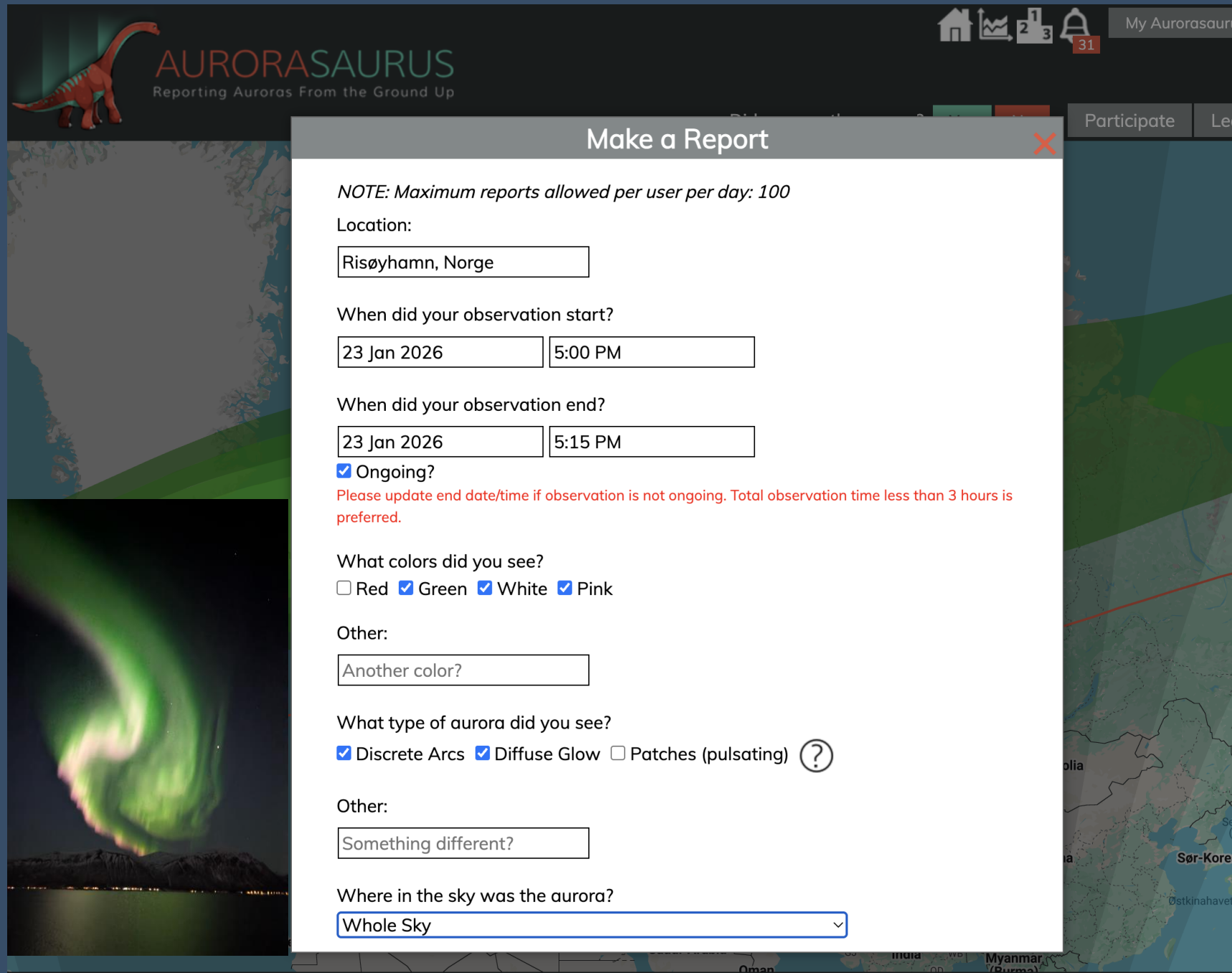
What a Solar Storm!

Fast facts:

- Radio blackouts impact High Frequency (HF) radio signals on the day side of Earth when solar flares occur.
- Solar radiation storms impact HF radio signals in the polar regions, can degrade satellite communications, and can be very dangerous for astronauts doing space walks.
- Geomagnetic storms are intense disturbances in the Earth system, caused by magnetic interactions between solar plasma and Earth's magnetic field.
- Auroral substorms are short-lived disturbances in the Earth system that result in powerful displays of aurorae.

Aurorasaurus

We contributed to aurora science by providing 20+ boots-on-the-ground observations of aurorae – both during and around the geomagnetic storm! This will help Aurorasaurus scientists collect auroral substorm and geomagnetic storm data from Northern Norway, a place where not many people live. If you still want to contribute your observations, it's not too late! Head to aurorasaurus.org or scan the QR code below to submit your photos any time.



Geology

Here you can see our Geologist explaining that Northern Norway has an ancient and complex geological history. Mountains in this part of the country are composed of Precambrian rocks. These rocks are exposed in geological basement windows, where erosion and tectonic processes have revealed the deeply buried crystalline basement. The basement mainly consists of granitic gneisses as well as mangerite and charnockite that are about 1.8 billion years old. Later, during the Caledonian Orogeny 400 million years ago, a continental collision between two paleo-continents caused significant mountain building and uplifted these two geological terrains. Subsequent erosion erased much of the Caledonian cover. During glacial/interglacial times over the past two million years, a combination of sea level, isostatic rebound, and erosion enhanced the relief, forming today's landscape: jagged mountains, fjords, and sounds.

Return of the Sun

This voyage was marked by a much anticipated and celebrated event – the Polar Dawn!

Together, we saw the Sun rise above the horizon for the first time since November. This marks the beginning of the end of the long, dark winters that define Northern Norway.

iNaturalist

Throughout our expedition, we documented the flora and fauna of Northern Norway and uploaded all our findings to the biodiversity platform iNaturalist.

Though much of the plant life was covered in snow and frost, we collected 25 observations of 22 species!

This effort contributes to the creation of a more comprehensive understanding of biodiversity and can aid researchers in their ongoing studies and conservation efforts to protect these species.

You can view the data submitted on our voyage by scanning the QR code.

Wildlife List — Birds

White-tailed Eagle, Geraldine Prince/HX

Grey heron, Geraldine Prince/HX

Black guillemot, Geraldine Prince/HX

Purple sandpiper, Geraldine Prince/HX

White-tailed eagle, Geraldine Prince/HX

Wildlife List – Seabirds

SCIENTIFIC NAME	ENGLISH	DEUTSCH	FRANÇAIS	NORSK
Phalacrocorax carbo	**great cormorant**	Kormoran	Grand Cormoran	storskarv
Larus marinus	**great black-backed gull**	Mantelmöwe	Goéland marin	svartbak
Larus argentatus	**European Herring gull**	Silbermöwe	Goéland argenté	gråmåke
Rissa tridactyla	**black-legged kittiwake**	Dreizehenmöwe	Mouette tridactyle	krykkje
Cepphus grylle	**black guillemot**	Grylllteiste	Guillemot à miroir	teist

Wildlife List – Water birds

SCIENTIFIC NAME	ENGLISH	DEUTSCH	FRANÇAIS	NORSK
Ardea cinerea	**grey heron**	Graureiher	héron cendré	gråhegre
Anas platyrhynchos	**mallard**	Stockente	vanard colvert	stokkand
Somateria mollissima	**common eider**	Eiderente	rider à duvet	ærfugl
Mergus serrator	**red-breasted merganser**	Mittelsäger	harle huppé	siland
Calidris maritima	**purple sandpiper**	Meerstrandläufer	bécasseau violet	fjæreplytt

Wildlife List – Land birds

SCIENTIFIC NAME	ENGLISH	DEUTSCH	FRANÇAIS	NORSK
Corvus corax	**northern (common) raven**	Kolkrabe	grand corbeau	ravn
Corvus cornix	**hooded crow**	Nebelkrähe	corneille mantelée	kråke
Pica pica	**Eurasian magpie**	Elster	pie bavarde	skjære
Parus major	**great tit**	Kohlmeise	mésange charbonnière	kjøttmeis
Cyanistes caeruleus	**Eurasian blue tit**	Blaumeise	mésange bleue	blåmeis
Haliaeetus albicilla	**white-tailed eagle**	Seeadler	pygargue à queue blanche	havørn

Species in the Spotlight: the White-Tailed Eagle

We were hoping to see one of Norway's most iconic birds, the white-tailed eagle!

Once classified as endangered throughout Norway and becoming locally extinct throughout parts of their range, conservation actions in Norway have aided in bringing this species back from the brink on an international scale.

Whether it was from surprise sightings during our time on land or in our expedition boats, or on the eagle safari in Svolvær, we hope you managed to catch a glimpse of this true master of the skies.

Geraldine Prince/HX

Wildlife List – Mammals

Harbour seal (common seal), Geraldine Prince/HX

Wildlife List – Mammals

Marine Mammals

SCIENTIFIC NAME	ENGLISH	DEUTSCH	FRANÇAIS
Phocoena phocoena	harbour porpoise	Schweinswal	marsouin commun
Phoca vitulina	harbour seal	Seehund	phoque veau-marin

Scat of a moose *(Alces alces)*, Tranøya

Tracing Tracks

We do not always have to see the wildlife to know it has been around. Taking note of the tracks and signs left behind by fauna can give us valuable insights into what species have been roaming around the wilderness.

Taking the opportunity to slow down and absorb nature reminds us that if we take the time, there is often more to see than meets the eye.

We hope you enjoyed exploring the more subtle signs of nature with us, and continue to embrace this spirit wherever you may explore next on your travels.

Ptargmigan scat

Ermine (*Mustela ermineal*) hole in the snow

HX

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inner scientist