

*Marvel at the northern lights and wondrous Arctic landscapes as an intrepid photojournalist meets a group of space weather scientists at work*

# SOLAR POWER

/ words & photos Louise Murray

A thousand kilometres from the North Pole lies an archipelago where polar bears outnumber people. Svalbard, Norway is mountainous and its coastline cut with numerous fjords and valleys, home to a distinct subspecies of reindeer, dark for four months of the year, and lit by the 24-hour midnight sun during the summer months (from late April to late August). It is also one of the best places on the planet to study the northern lights – eerily beautiful manifestations of the impact of space weather on Earth. Recently, I met scientists from the Birkeland Centre for Space Science in Svalbard to learn how colossal storms on the sun can affect us and our technology back on Earth, including massive power outages, GPS errors, and radiation danger to astronauts and pilots. Our increasing global dependence on technology means that accurate forecasting of space weather is ever more important. I also experienced some of the sights and tastes of this surprisingly accessible place, driving a snowmobile through spectacular landscapes, meeting sled dogs and eating the best that the islands can provide, from smoked reindeer heart soup to fresh wild mushrooms.

*The aurora borealis reflecting in the sea near Tromsø, Norway. The aurora borealis occurs when charged and energetic particles from eruptions on the Sun (the solar wind) collide with particles in the Earth's magnetosphere, causing them to emit light. Standing for hours outside in the sub-zero polar night is well worth it when the sky lights up with an amazing display. Frozen feet and hands forgotten, I was overwhelmed by the ephemeral, ever-changing beauty of this light show.*



*Below*  
At the edge of the Longyearbyen settlement, signs warn visitors of the danger of polar bears, about 3,000 of which make Svalbard home.

*Right, top*  
A husky dog sled operation – this is Lotte, who is having a rest day. You can learn to drive a dog team all year round.

*Right, centre*  
A gourmet evening of Arctic delicacies at a remote cabin just outside of Longyearbyen, the largest settlement of Svalbard.

*Right, bottom*  
The EISCAT facility in Svalbard. These receiving radar dishes are part of the European incoherent scatter (EISCAT) facility radar

system. EISCAT studies the interaction between solar winds and magnetic fields of the Earth's upper atmosphere and ionosphere.

BEYOND THIS POINT IT IS A REQUIREMENT  
TO CARRY FIREARMS AND ANTI-BEAR  
DEVICES AS POLAR BEARS OUTNUMBER  
PEOPLE ON THESE REMOTE ISLANDS.



Gjelder hele  
Svalbard



*A cross between a motorbike and a sledge, snowmobiles or skidoos are the best way to explore the snowy landscapes of Svalbard.*



## FIVE COOL THINGS TO DO IN SPITSBERGEN IN THE SUMMER

### 1. GLACIER SAFARI

Travel by boat to the front of the Von Post glacier where it touches the water and hear the “snap, crackle and pop” of thousands-of-years-old air bubbles as they escape the melting ice. Perhaps collect a little ancient ice to take back to have in your whisky later.

### 2. BIRD WATCHING

Every spring, millions of migratory birds head north to have their chicks here in Svalbard where the rich seas provide excellent food for their young. They use the same sea cliffs to nest a short distance from Longyearbyen. If you’re lucky, you will spot the Arctic foxes that den nearby to eat fallen chicks and eggs.

### 3. FOSSIL COLLECTING

About 150 million years ago, Svalbard was at the bottom of an ancient sea. Hike 200 metres above sea level after a boat ride along the Isfjorden and hunt for your own fossils.

### 4. DOG SLEDDING

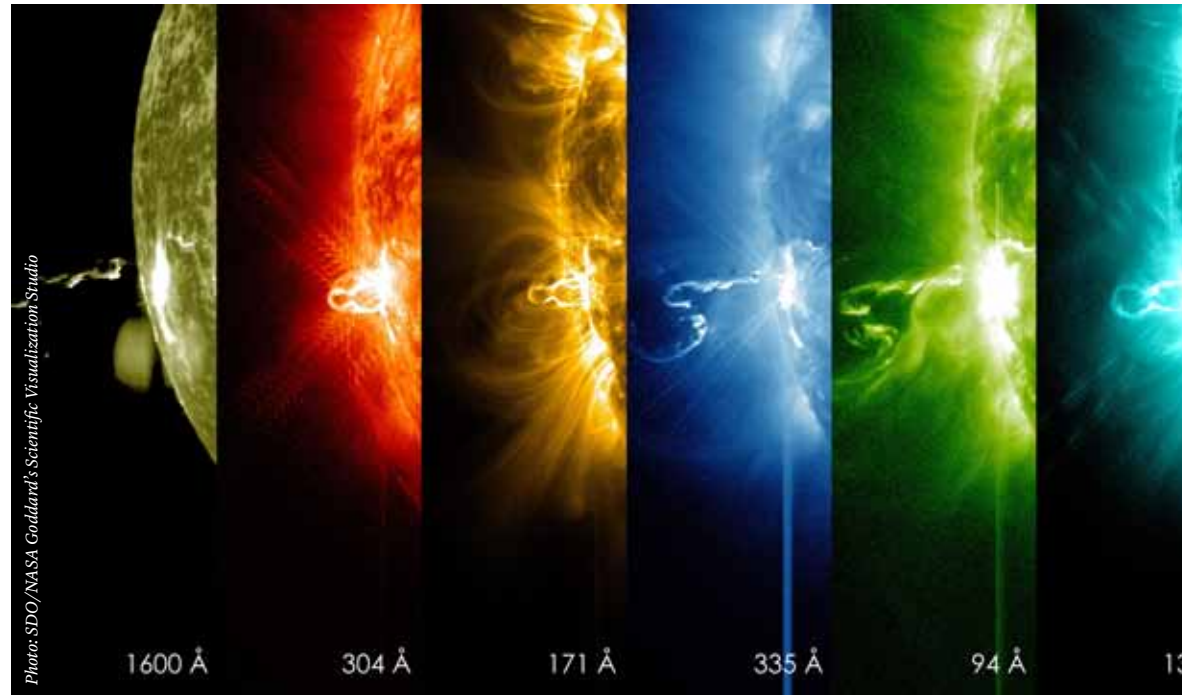
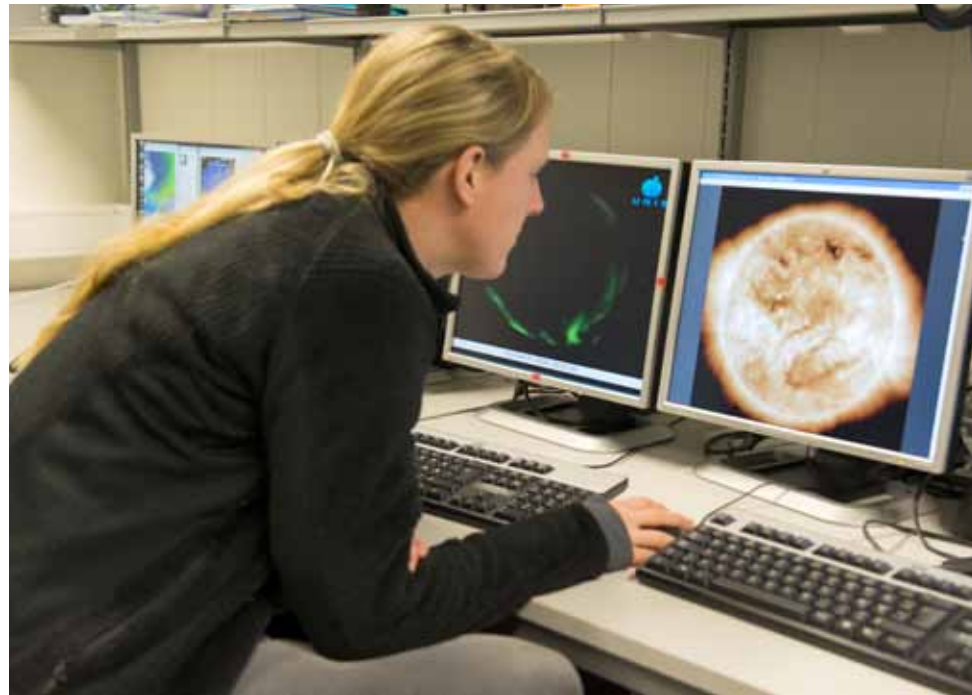
Enjoy the beautiful mountain landscapes while driving your own dog team, pulling specially modified sledges with wheels in the summer.

### 5. KAYAKING

Go paddling amongst ice floes on Adventfjorden while watching out for friendly seals.

Spitsbergen Travel is Svalbard’s most experienced tour operator. Book all these and more at [spitsbergentravel.com](https://spitsbergentravel.com)



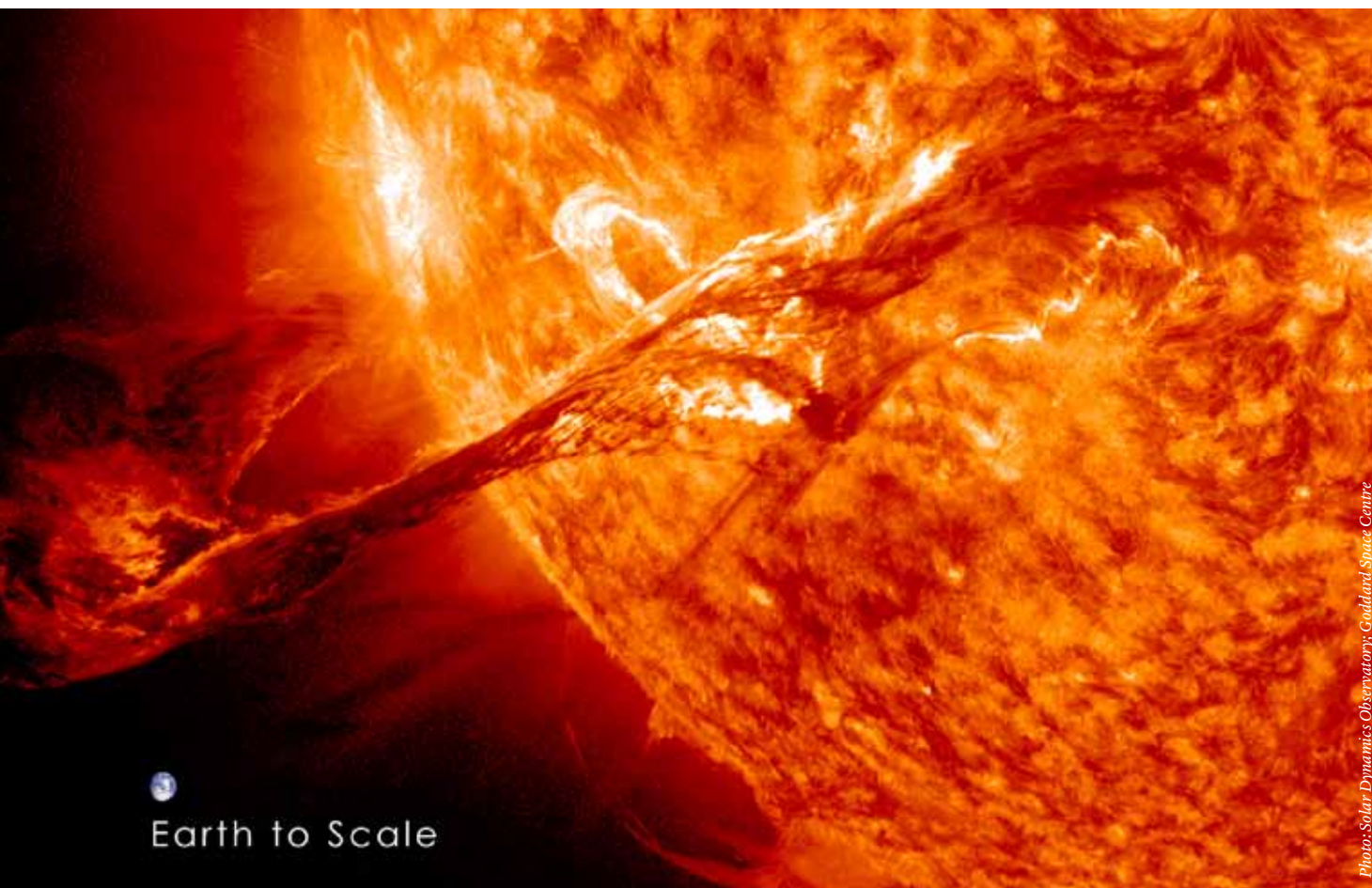


**Far left**  
Scientist and space physicist Lisa Baddeley, who is an associate professor at Birkeland Centre for Space Science, University of Norway in Svalbard, at the Kjell Henriksen Observatory. Here, she is looking at solar activity in an image of the sun.

**Left**  
Solar flares are powerful bursts of radiation, appearing as giant flashes of light in these NASA Solar Dynamic Observatory images. These images show the first moments of an X-class flare in different wavelengths of light – seen as the bright spot that appears on the left limb of the sun. Hot solar material can be seen hovering above the active region in the sun's atmosphere.

**Below, left**  
On 31 August 2012, a long filament of solar material erupted out into space. The coronal mass ejection did not travel directly toward Earth, but it did connect with Earth's magnetic environment in a glancing blow, causing aurora to appear on the night of 3 September. Earth is shown to scale so we can see that these solar ejections can be thousands of times larger than our own planet.

**Below**  
A NASA photograph of the aurora borealis lights over the North Pole, taken from the International Space Station.





**Right**

Interviewing scientists Lisa Baddeley (left) and professor Dag Arne Lorentzen of University Centre in Svalbard at Kjell Henriksen Observatory. At 520 metres altitude on the island of Spitsbergen, 1,000 kilometres from the North Pole, it is considered one of the world's foremost aurora observatories.

**Far right**

Grazing Svalbard reindeer. In winter, they must use their hooves to break the snow and dig for the nutritious lichens and grass below.

**Below**

The starkly beautiful, empty landscape of snow-covered mountains and fjords near Barentsburg, the second largest settlement on Svalbard with 500, mostly Russian, mining inhabitants.

**About the photographer**

Louise Murray is an award-winning freelance photojournalist. For over twenty years, her photographs featuring the natural world – highlighting wildlife conservation, marine and polar issues – have been published around the world. She loves working in the cold and has travelled north to Russia, Svalbard, Greenland and Nunavut, and south to Antarctica for stories. View more of her work at [louisemurray.com](http://louisemurray.com)

THE STARKLY BEAUTIFUL, SNOW-COVERED LANDSCAPE IS THE HIGHLIGHT OF A 3-HOUR SNOWMOBILE DRIVE.



Svalbard can be reached by direct flight from Oslo in about four hours. THAI operates five flights weekly to Oslo. For more information, visit [www.thaiairways.com](http://www.thaiairways.com). 