

LEM487 – DX-expedition to Lemmenjoki, Finland

December 30, 2023 – January 13, 2024

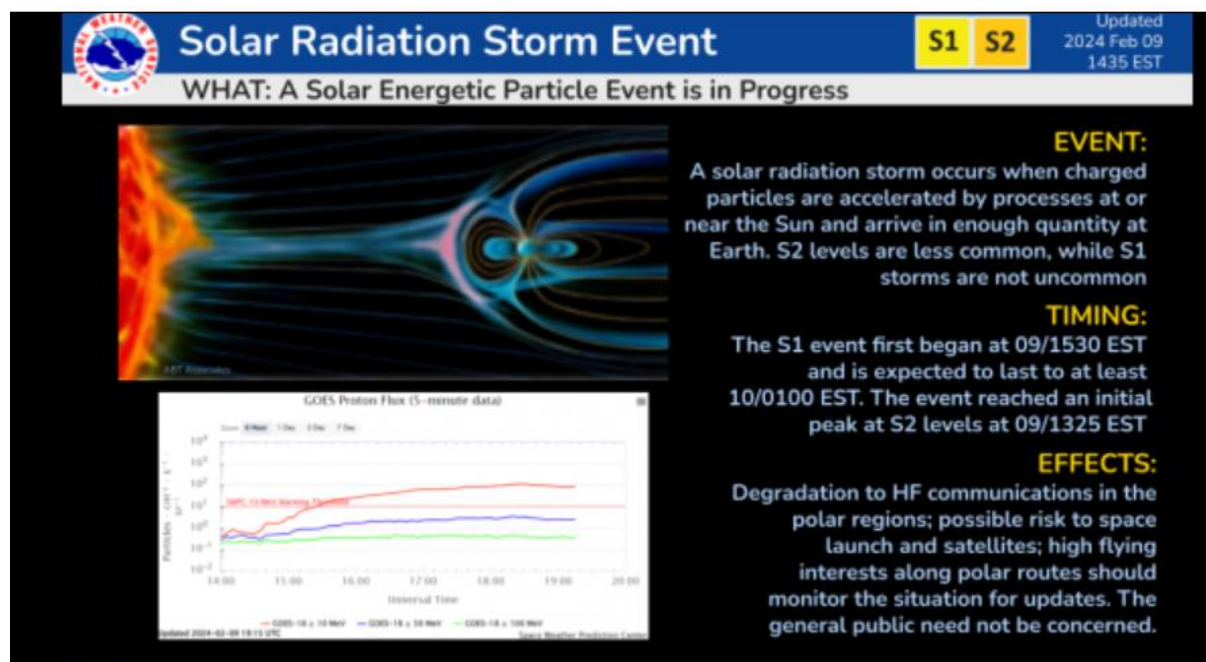
Participants: Hannu Niilekselä (HN)

While LEM482 expedition in October–November 2023 was a success, Lady Luck turned the uglier side of her presence when the new year 2024 started.

As the readers of DXing.info could learn from the [LEM482 report](#), we are on the threshold of the maximum in the solar activity 11-year cycle (expected in the latter part of 2024). This means that at any moment there is a chance for unwanted strong solar flares, some of which can cause a long duration blackout of HF signals. I am by no means a scientist or any level of a professional regarding these phenomena, so I apologise for any major mistakes in my understanding – but what I know from more than 50 years of experience- for us Medium Wave DX'ers any major event in the sun usually is bad...

So, back to business: upon arriving at the [Lemmenjoki DX-base](#) on December 30 everything looked OK. In the afternoon and next morning stations from North America were heard with mediocre signals – nothing terrific and without any specific direction but “as it gets better from here, it will be enjoyable” – so we thought!

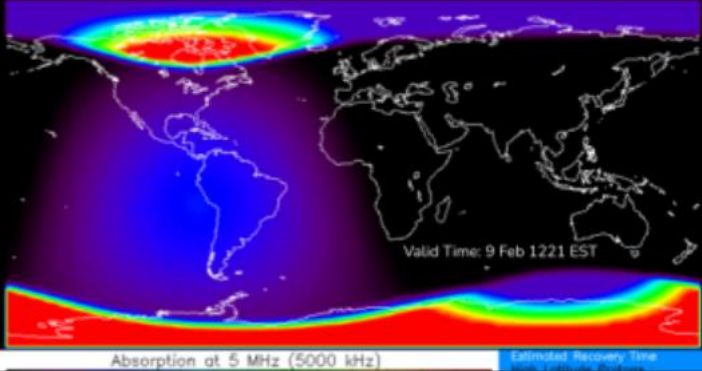
But then it happened: in the evening of New Year's Eve, December 31, a solar flare bursted. Nothing that alarming except that...it was a proton flare. Looking at the NOAA proton chart, the red line started rapidly “climbing”, indicating that a proton event was in progress.



POLAR CAP ABSORPTION (PCA) Event Updated
2024 Feb 09
1219 EST

WHAT: A solar energetic proton event is in progress; resulted in a PCA Event

PCA Primary Area of Impacts: Polar Regions



Impact is more pronounced over southern polar region this time of the year

EVENT:
The solar radiation storm responsible for the PCA began on 09 Feb

TIMING:
The PCA event began at 1210 EST

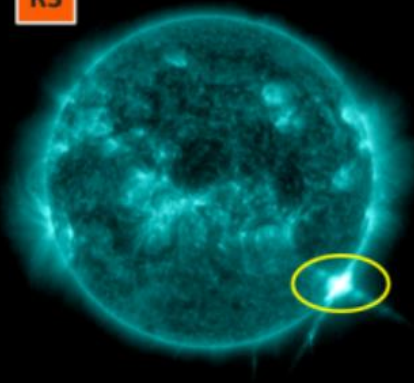
EFFECTS:
Loss of HF communications in the polar regions

And while the solar wind from “normal” coronal holes (CH) and coronal mass ejections (CME) reaches the earth typically in 1-3 days, it only takes 20 minutes to a few hours for protons to arrive. And as the protons hit the ionosphere they typically cause an instant polar cap absorption event. This means that on high latitudes like in Lemmenjoki (around 70 degrees North) during a proton-based event there is usually a total blackout of any HF signals from the Western Hemisphere.

STRONG Flare Event Updated
9 Feb 2024
0945 am EST

WHAT: X3 Flare Occurred from NOAA/SWPC Region 3575

R3

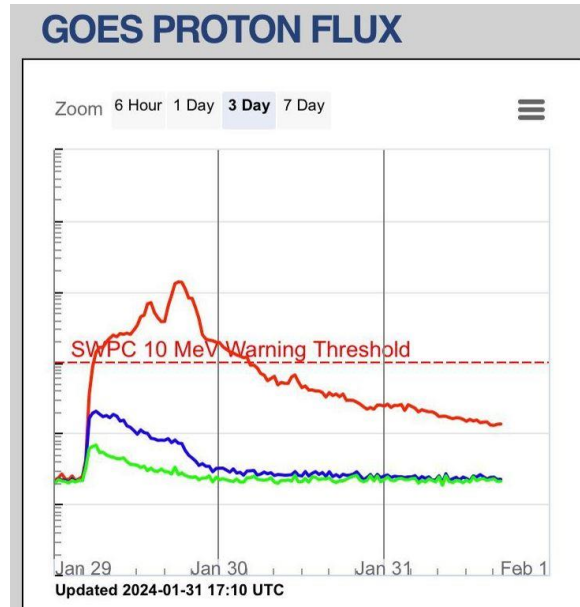
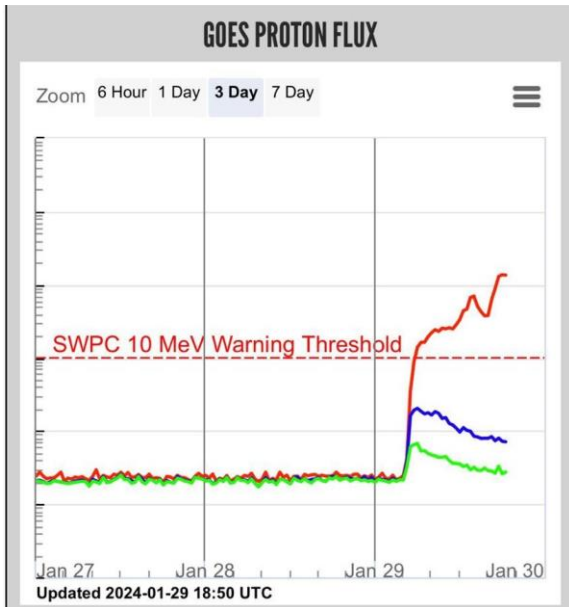


GOES-16 SUVI Composite 131 Angstroms 2024-02-09 13:14:56

EVENT:
A flare is an eruption of energy from the Sun that generally lasts minutes to hours. Flares of this magnitude are not frequent.

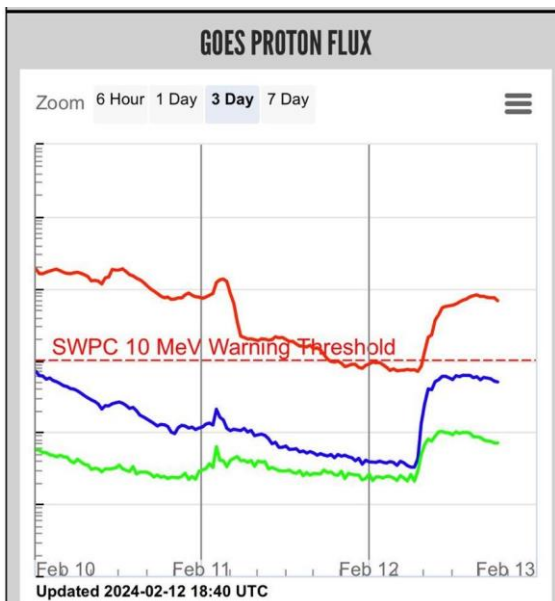
TIMING:
The flare peaked at 09/0814 EST

EFFECTS:
Users of high frequency (HF) radio signals may have experienced temporary degradation or complete loss of signal on much of the sunlit side of Earth. The general public need not be concerned.



But if the proton event is only moderate, already on around the 65th northern parallel, the propagation can be good and the conditions for transatlantic reception can be truly interesting: signals from the more westerly parts of the North American continent are blocked (due to their more northerly route), whereas stations from all along the East Coast can be very interesting with stations which normally are not heard.

And this is exactly what has been going on most of January and February. The “LEM487 proton flare” lasted about 11 days with North American signals beginning to slowly return after the first week of January, becoming better towards the end of the second week. A bit more south in Smøla, approximately on the 63rd parallel in Norway, many unusual North American stations were heard on January 6, with nothing at Lemmenjoki. Also in southern Finland, stations from the US East Coast were heard most of the time.



But this was not the end of the story... After this first proton event since one in September 2023, the third week of January produced nice conditions westwards, but then it began again: another proton event on the fourth week of January. And as that event was over after about one week, another minor event took place on February 6th. And then again, a major proton flare on February 9th. And again a major flare on February 13th, the effect of which has not subsided as of writing this on February 20th...

In all, except for one week in mid-January, basically nothing worthwhile has been heard from North America at Lemmenjoki (nor for that matter also at the Aihkiniemi DX-base) in almost two months. At the same time, stations are being logged on a more or less continuous basis in more southern locations.

It will be exciting to see how this sudden growth in the number of proton events will continue – as the solar maximum is still ahead of us, maybe in six months time – the likelihood of truly disturbed times is unfortunately big.

On LEM487 DXpedition two catches can be mentioned, KGEO Bakersfield CA on 1230 AM and WALG Albany GA on 1590 AM.

STRONG Flare Event
Updated Feb 22 0146 EST/EDT
WHAT: X1.8 and X1.7 Flares Occurred from NOAA/SWPC Region 3590

R3

EVENT:
A flare is an eruption of energy from the Sun that generally lasts minutes to hours. Flares of this magnitude are not frequent.

TIMING:
The latest flare peaked at 22/0632 UTC

EFFECTS:
Users of high frequency (HF) radio signals may experience temporary degradation or complete loss of signal on much of the sunlit side of Earth. The general public need not be concerned.

GOES-16 SUVI Composite 131 Angstroms 2024-02-22 06:31:43

The show goes on – fortunately these very strong February 22nd flares appear not to be flares with a proton component...

[Hannu Niilekselä](#)

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