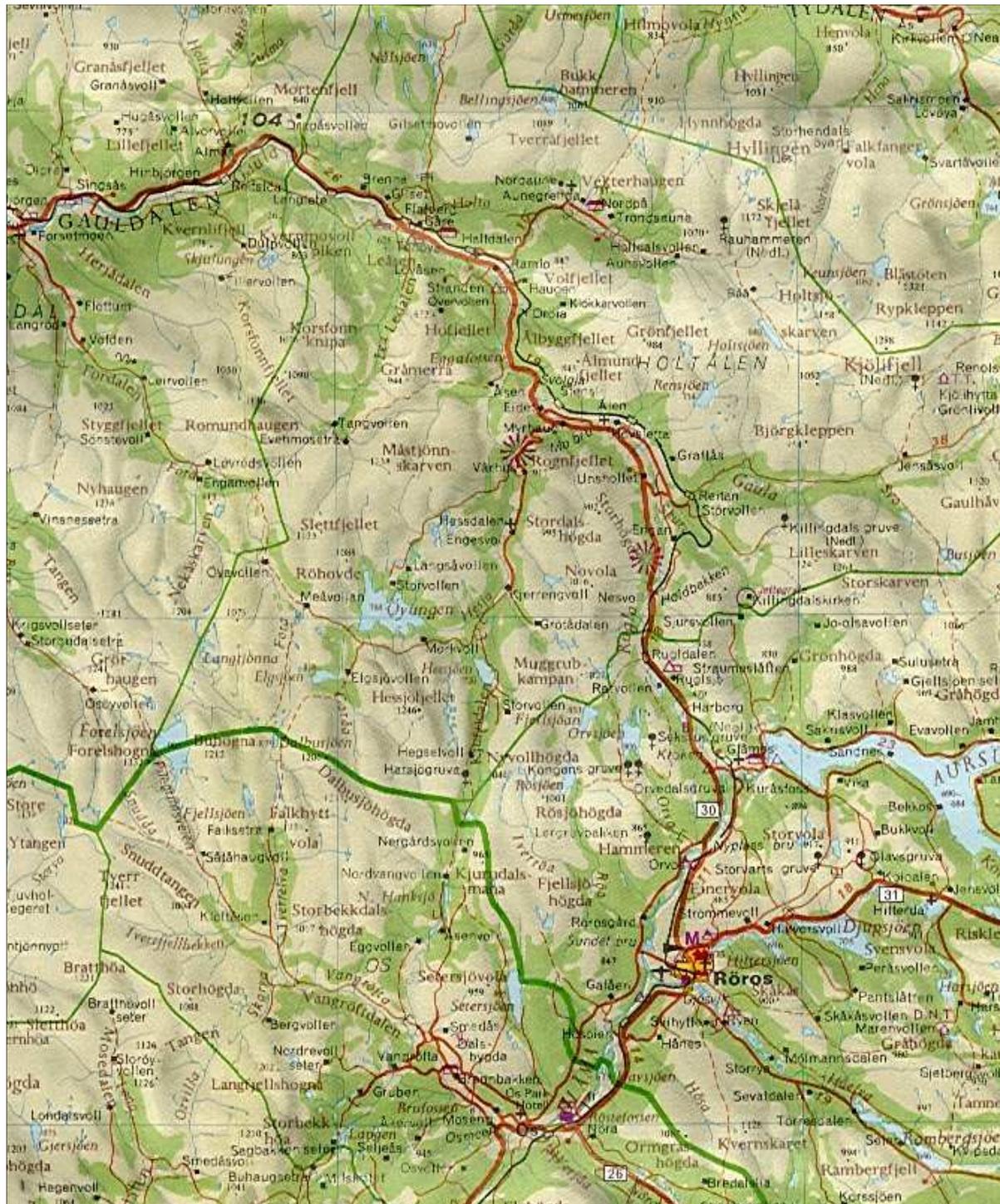


# The Hessdalen Phenomena, 30 years of research

Instrumentation, results, witness stories, challenges and  
difficulties

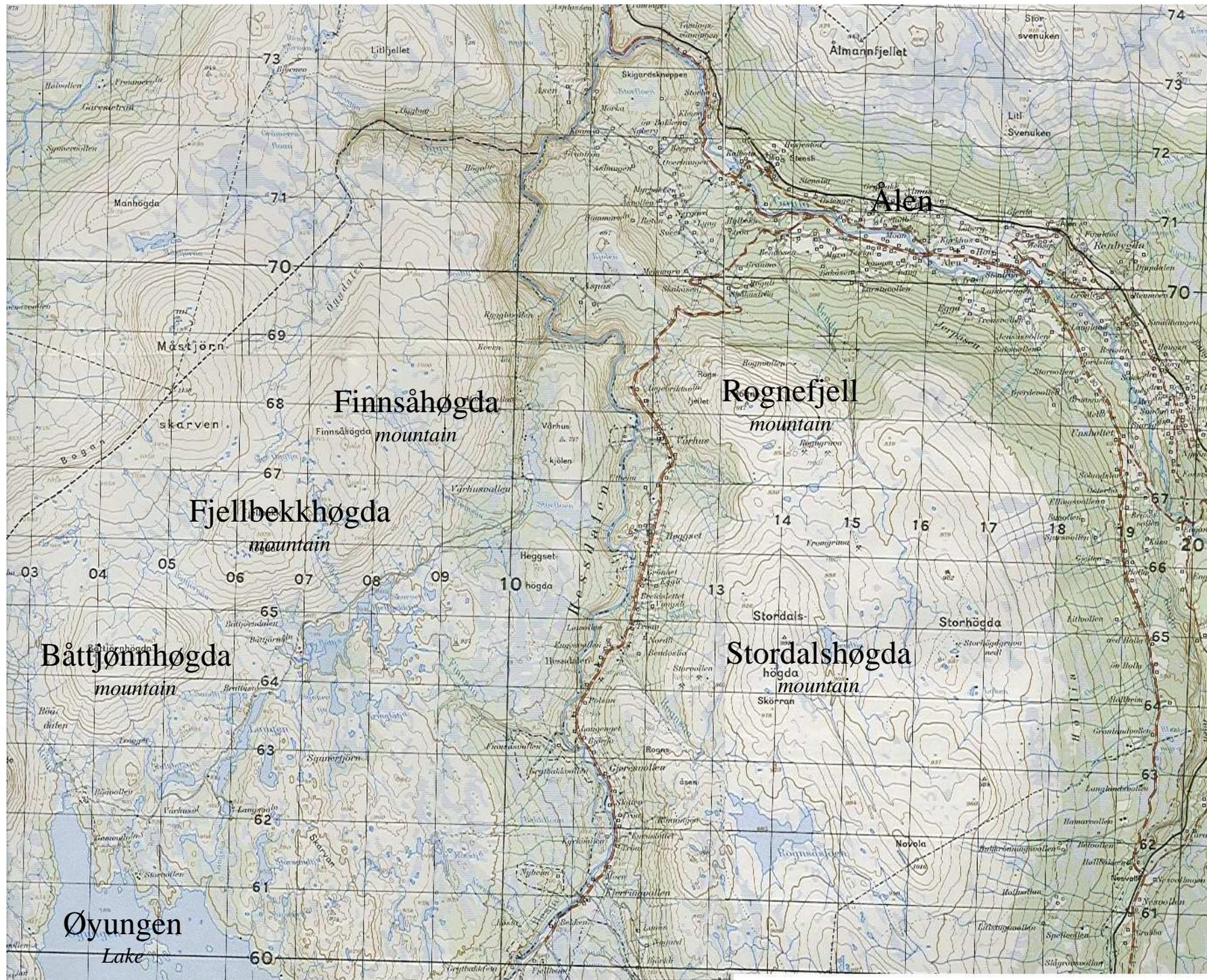
*Erling Strand , Bjørn Gitle Hauge , Jacques Zlotnicki,  
Stelio Montebugnoli, Jader Monari , Elizabeth Blank,  
Thomas Farges, Paul Yvetot and Frédéric Fauquet.*





Hessdalen is located in the southern part of Norway, 35 km (21 miles) north-north-west of the town Røros, in the municipality of Holtålen.

The valley goes in a north-south direction and has mountains in the west and in the east.



The Hessdalen Phenomena (HP) have several different appearances, - or «types».

Most of the observations could be put in one of these «types»:

1. Strong, white or blue flashes.

Lasting from a fraction of a second up to a couple of seconds.

2. Yellow or yellow-white «ball» of light.

These have different shapes. They can stand still for minutes, even hour, and they can move slowly, or fast. Can be several meters in diameter. The ground has been illuminated. Can also have flash with another color.

3. Several lights together.

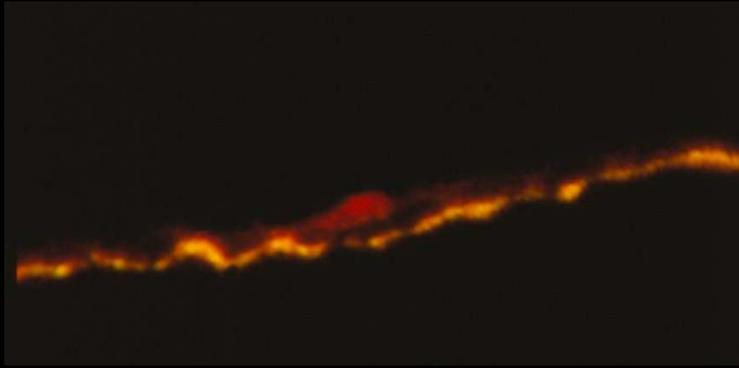
It looks like the lights are «connected» to something.

However, HP could possibly be split in more «types», - especially type 2.

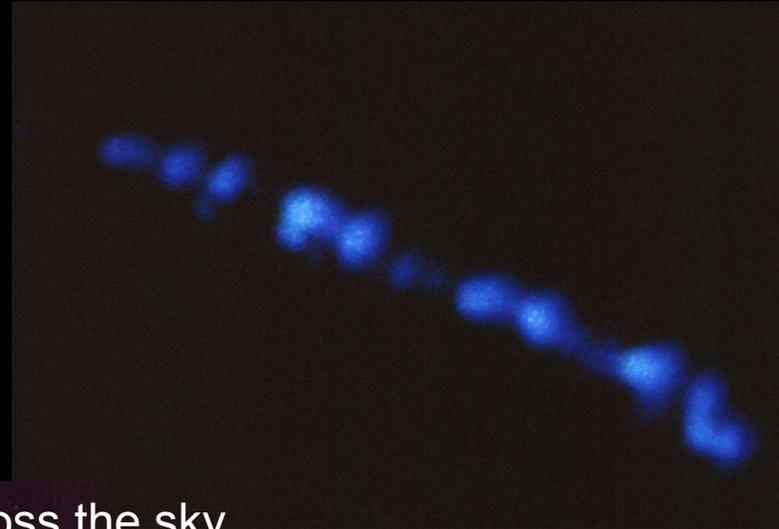
## Observation 25. September 1982



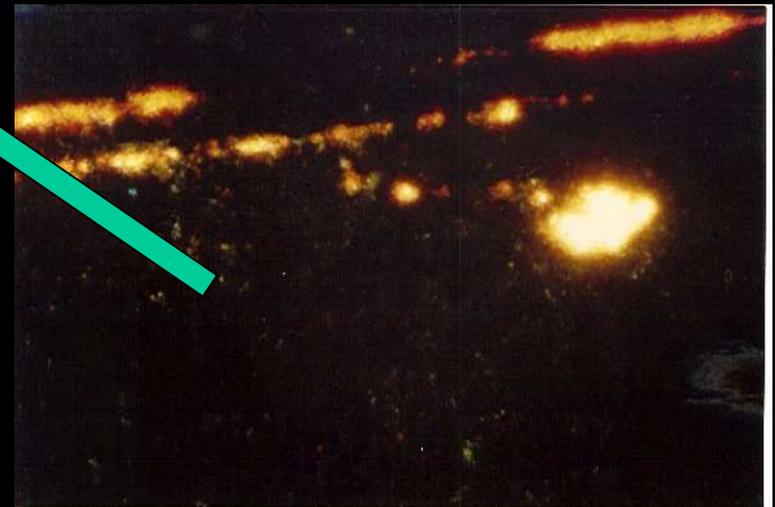
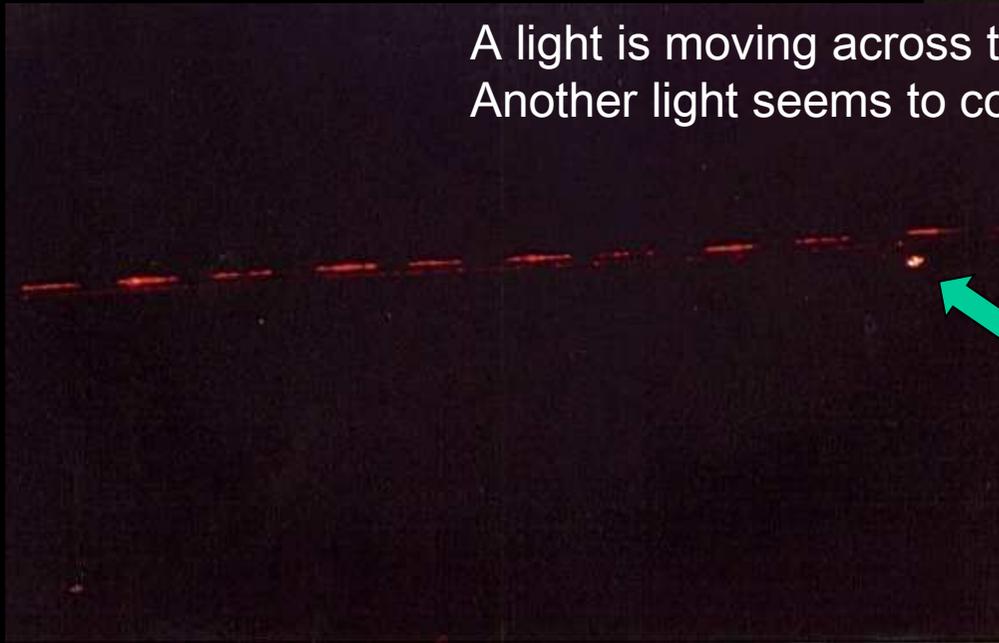
A yellow light with red flashes



Blue flashes

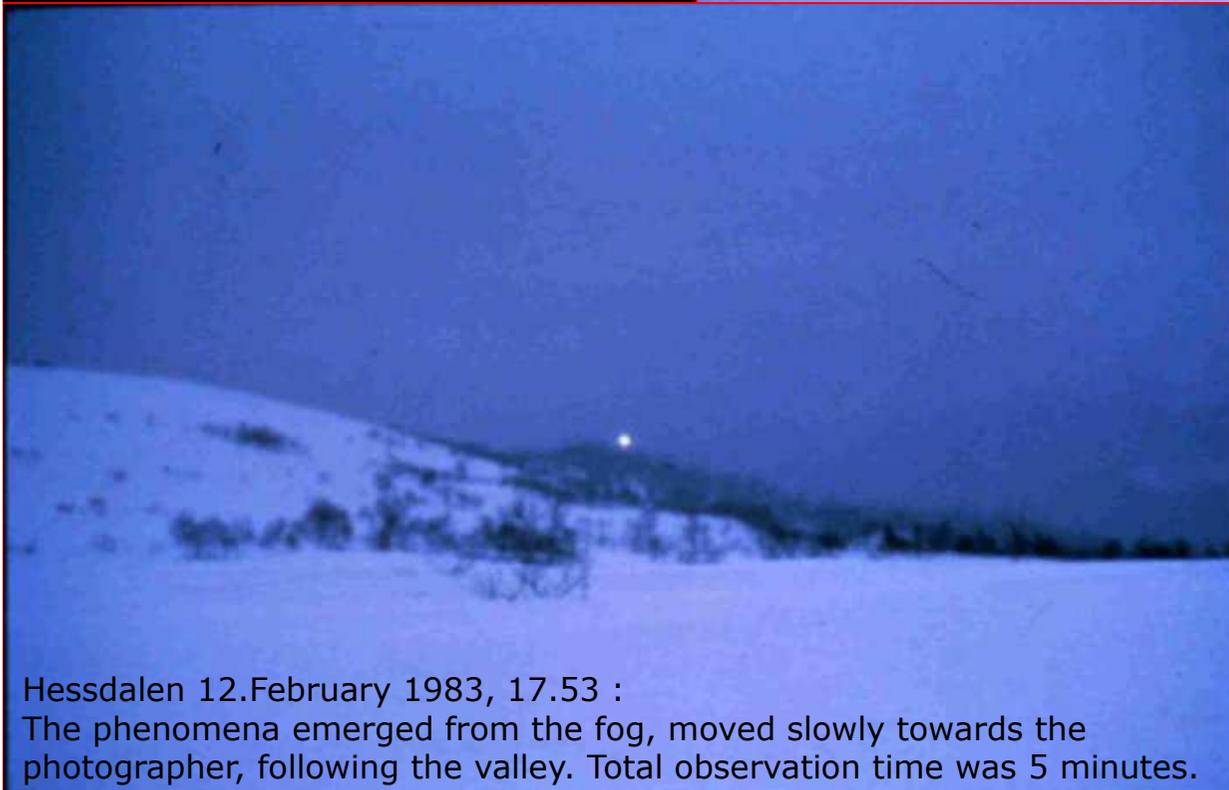


A light is moving across the sky.  
Another light seems to come out of it



12th February 1983  
at 17:53

Obs:Leif Havik

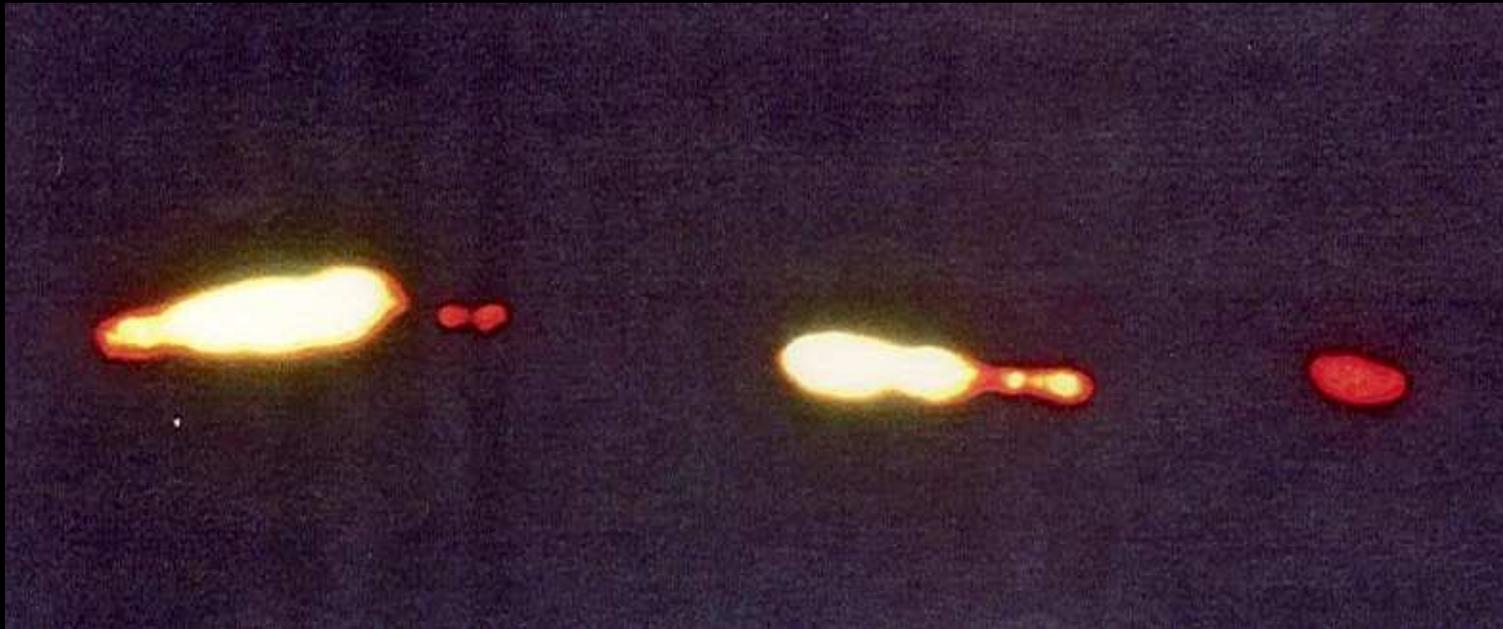


The phenomena  
occur in "all"  
weather conditions.

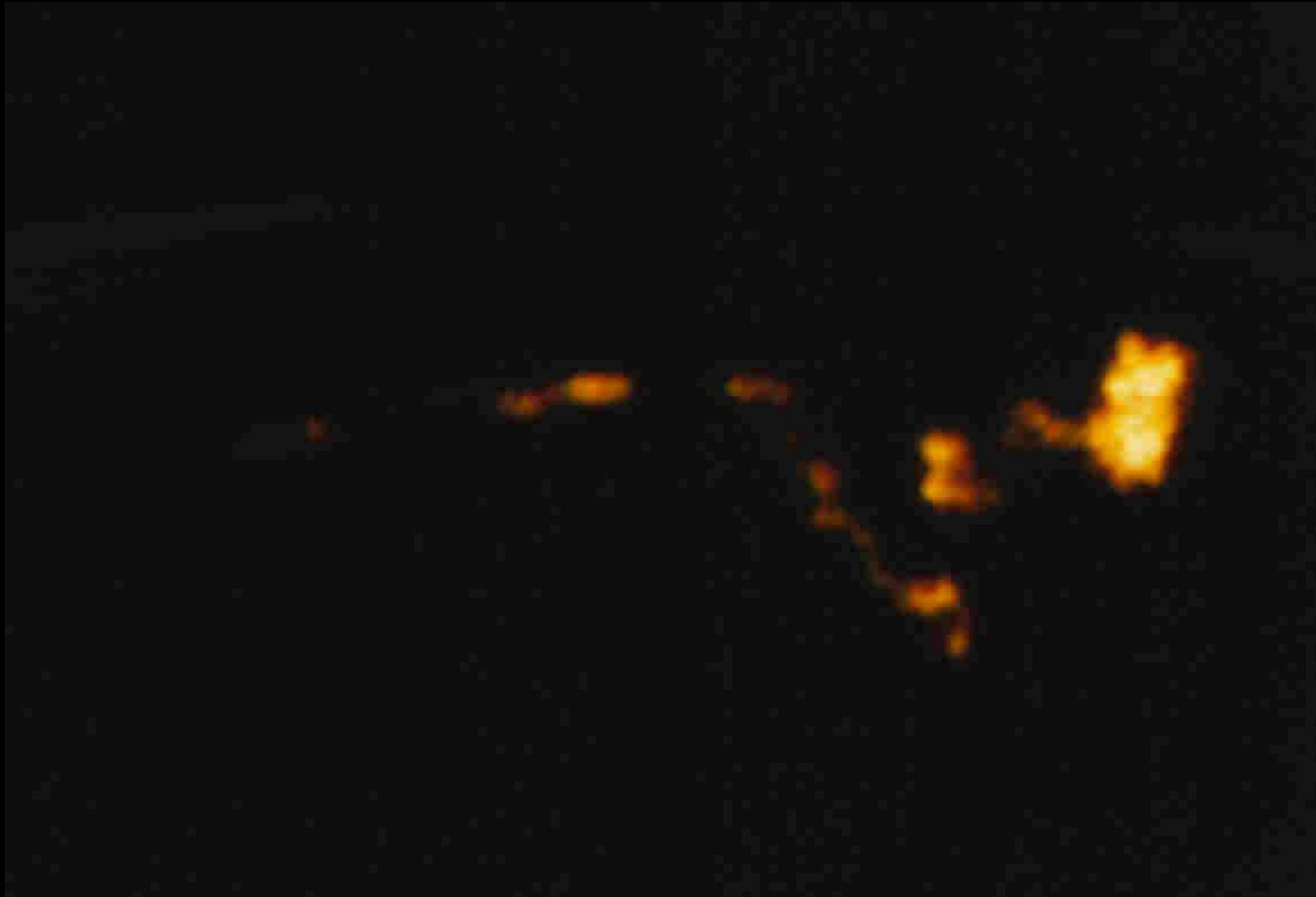
Hessdalen 12. February 1983, 17.53 :  
The phenomena emerged from the fog, moved slowly towards the  
photographer, following the valley. Total observation time was 5 minutes.

Hessdalen 18th March 1982, at 19:33.

Photographer: Leif Havik. Exposure time: 1/15 second



"The light disappeared during the exposure time." The photographer caught the disappearance on film.



# Instrumentation used

## Field work 1984 and 1985:

- Still camera with grating. With this we can get the optical spectrum of the light phenomena. We used a Kodak TRI-X black and white film.
- A hand-held infra-red viewer. With this it is possible to see if the IR part of the optical spectrum.
- A spectrum analyzer, covering the electro-magnetic spectrum from 150 KHz to 1250 MHz.
- A seismograph measuring any seismic activity
- A magnetograph measure the earth magnetic field. Even PC1 (2 Hz) pulsation could be measured by this instrument. We used a Fluxgate magnetometer, type FM100. It has the upper frequency of 0,5 Hz.
- A radar can find out about distance and mean speed, and if the HP reflect radar waves. We used Atlas 2000, which is a 3 cm radar. The frequency is 9450 MHz.
- A Geiger counter could find possible radioactive radiation.

## EMBLA mission in 2000:

- ELFO unit for the VLF-ELF band
- Inspire unit for the VLF band
- SS-5 and Sentinel-1 units for a small band around 1420 MHz



# Instrumentation used

## EMBLA missions in 2001, 2002 and 2004:

- Telescope
- CCD camera,
- Still camera
- Low-Resolution Spectrograph
- A low frequency (440MHz) radar was also used in 2002



## Science Camps 2002 - 2013:

- Video camera
- Still camera
- Still camera with grating
- Inspire VLF receiver
- Geiger counter
- Weather station
- Image intensifier



## Automatic station (Hessdalen AMS=Blue Box):

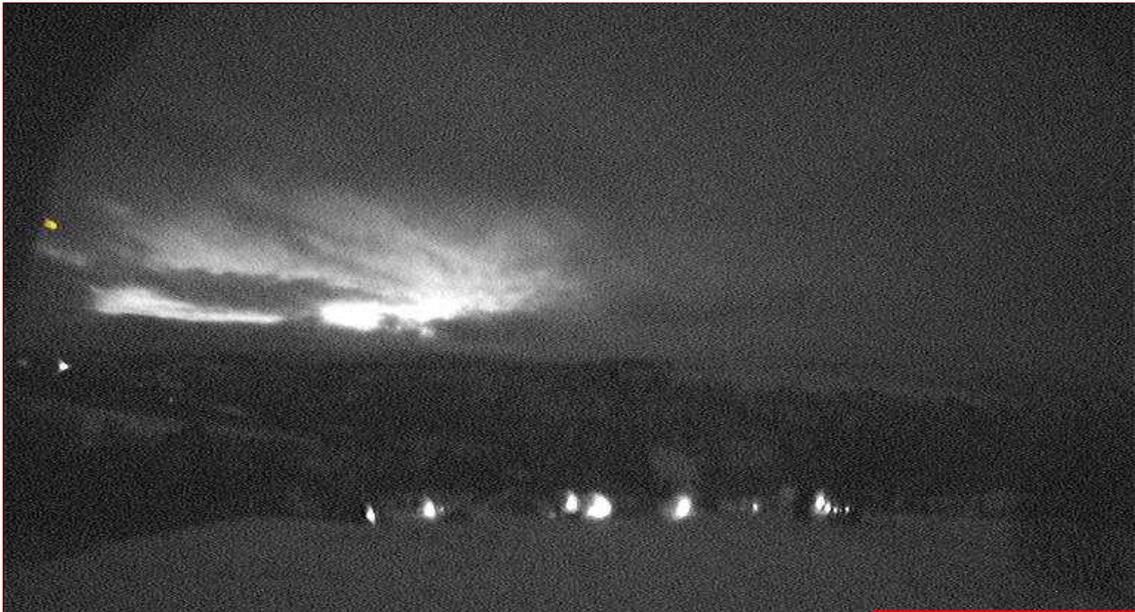
- CCD camera
- Weather station
- Air traffic registration



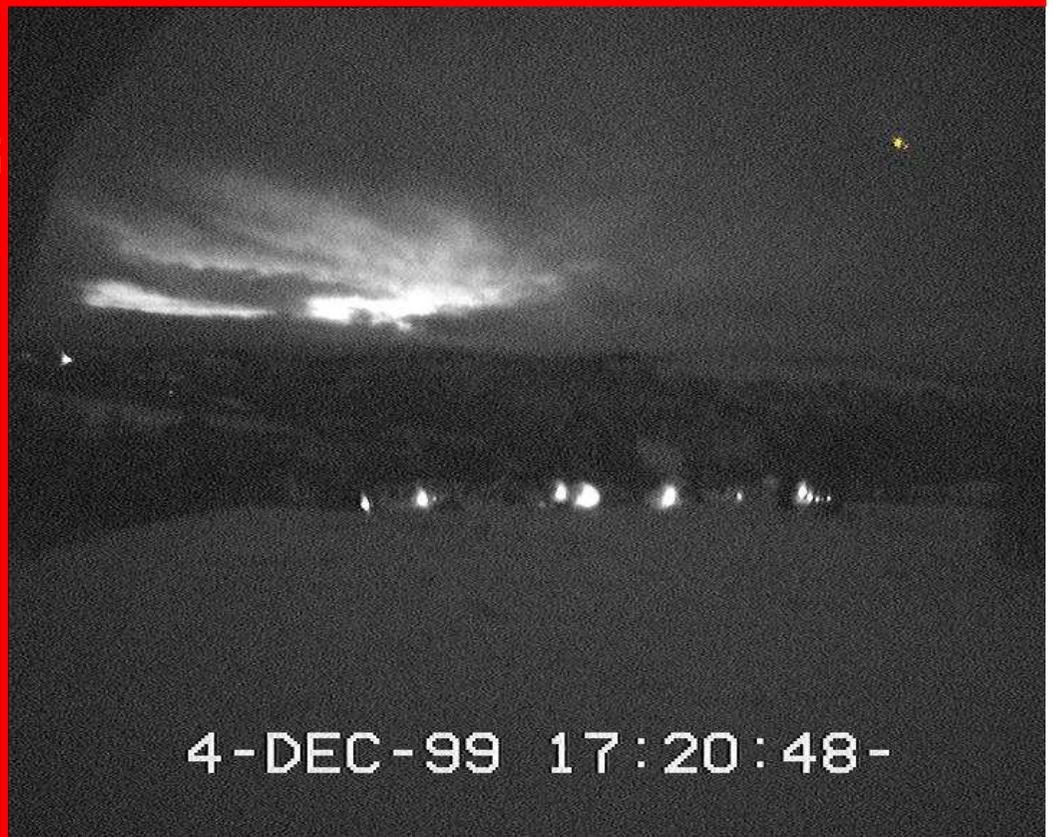
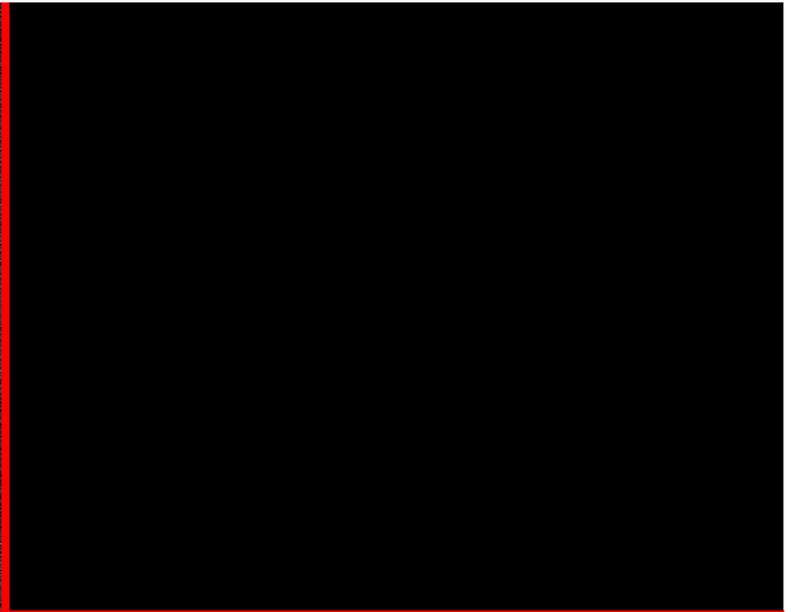
Some of the results.

Two helical lights.

21-SEP-99 05:59:15-



4-DEC-99 17:20:25



4-DEC-99 17:20:48-





4-DEC-99 17:20:30-



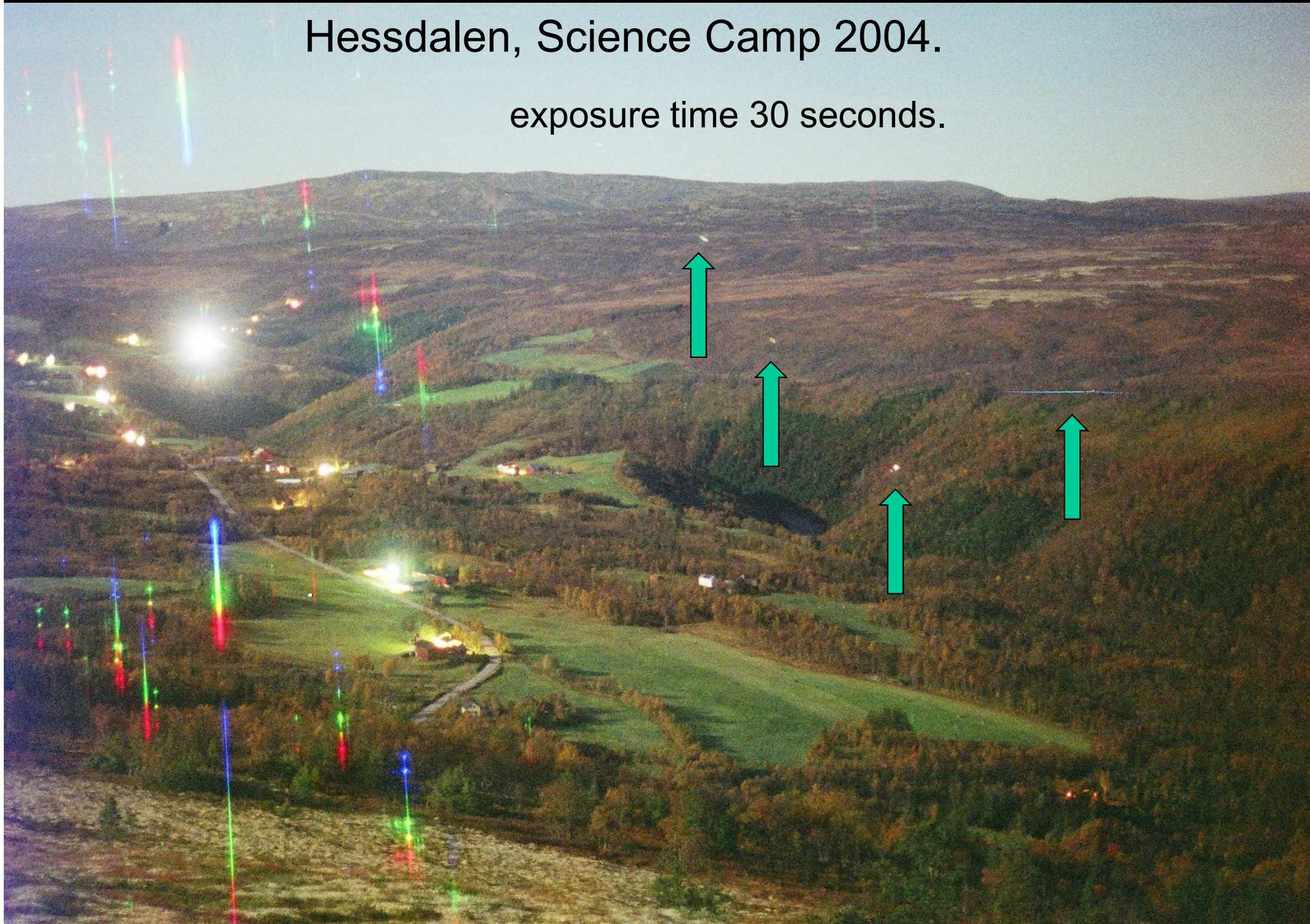
4-DEC-99 17:20:25-



4-DEC-99 17:20:48-

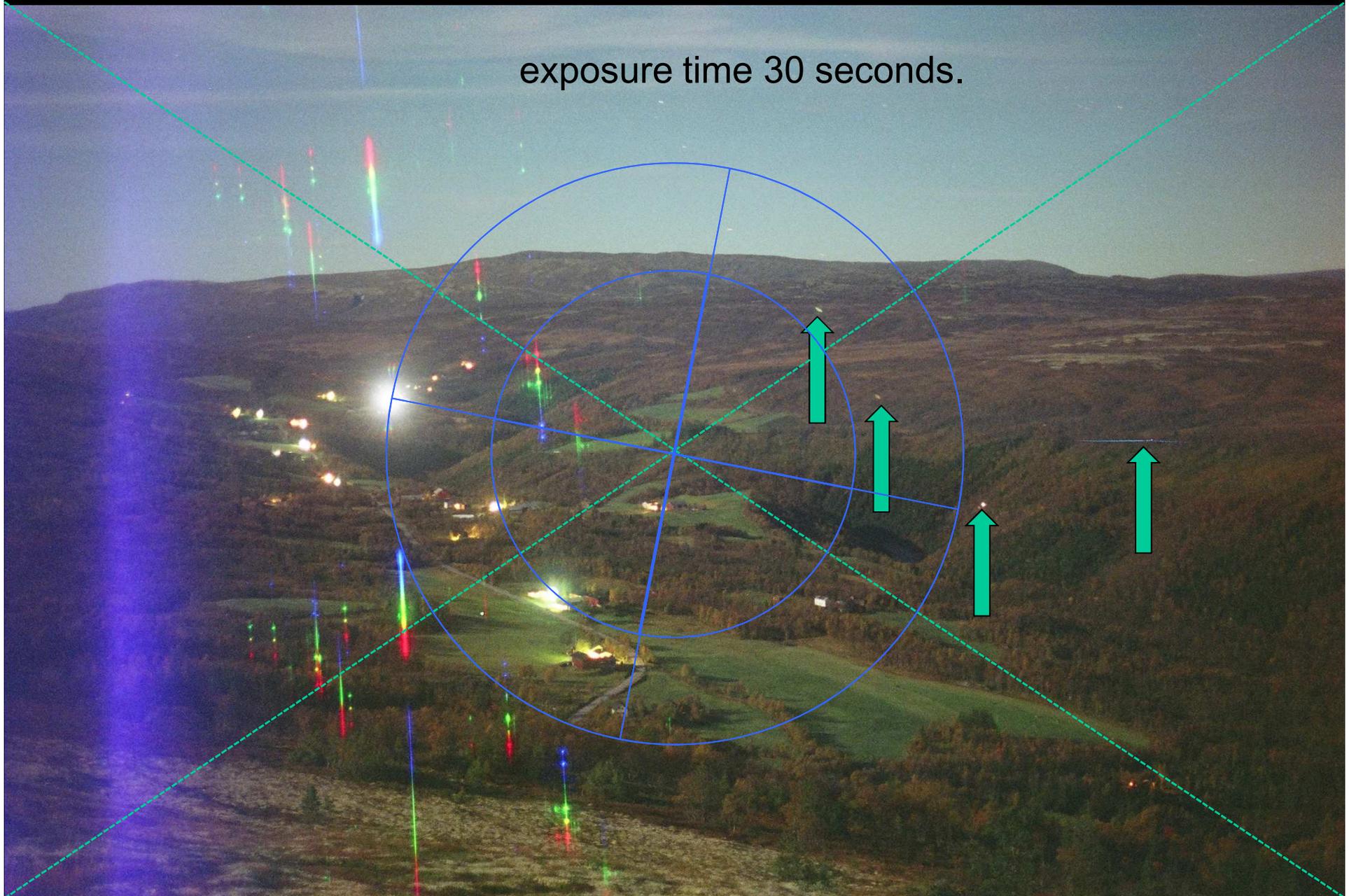
Hessdalen, Science Camp 2004.

exposure time 30 seconds.



# Hessdalen, Science Camp 2004.

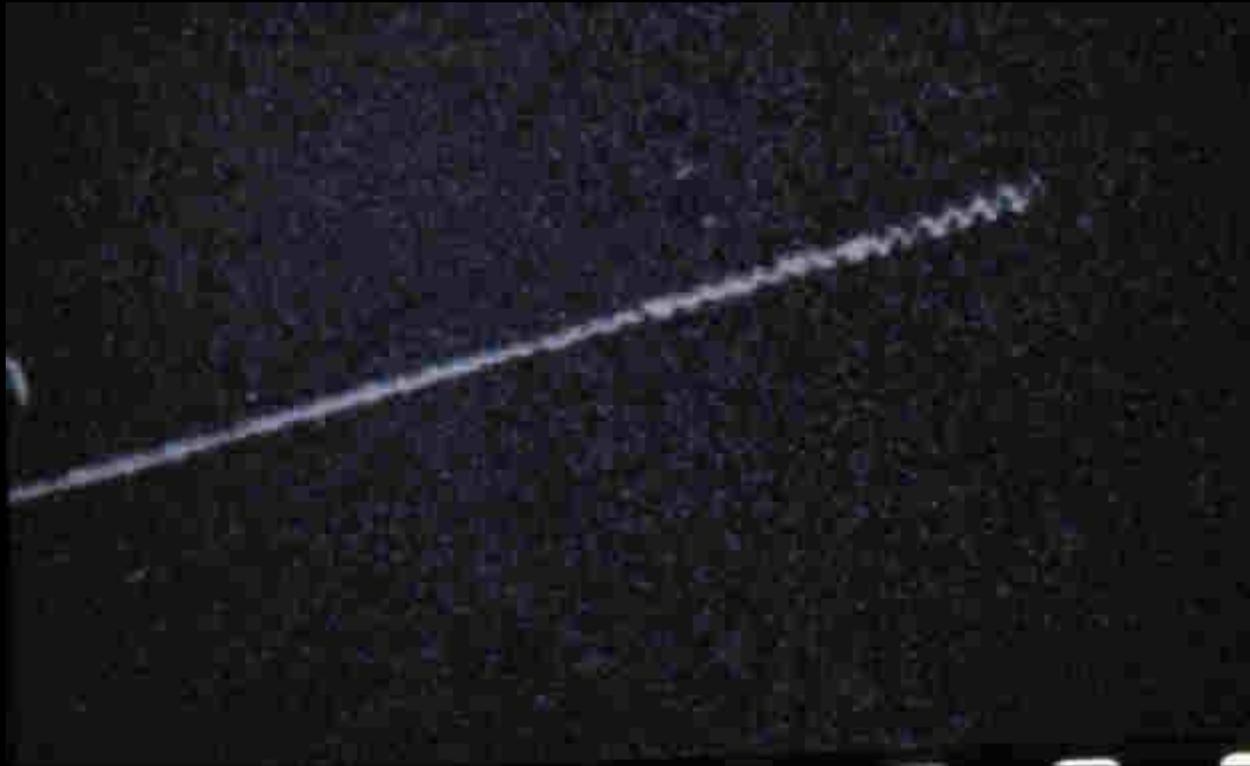
exposure time 30 seconds.



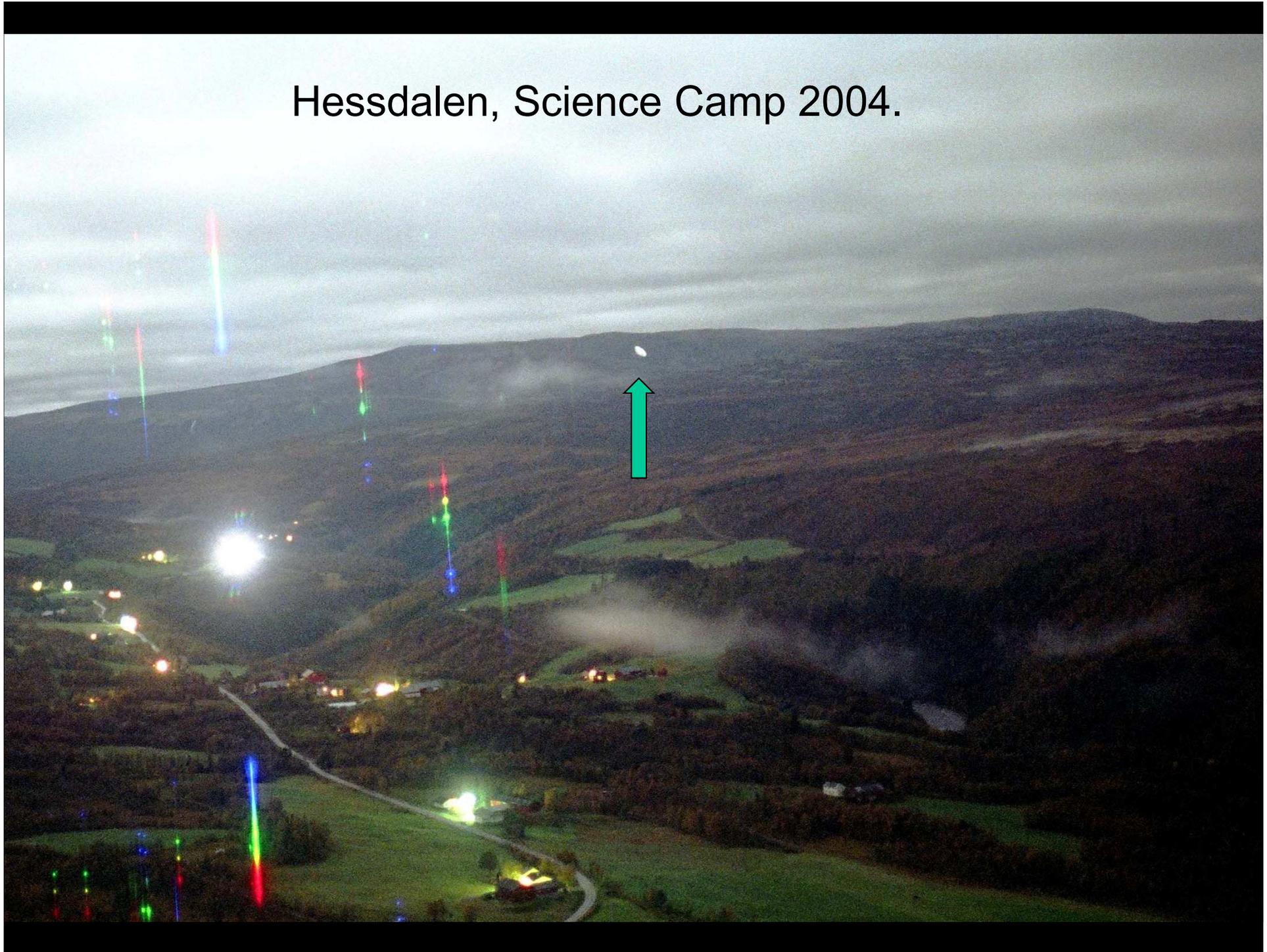
# Hessdalen, Science Camp 2004.



During the field work in 1984, a similar light showed up.  
The light started to oscillate, with a frequency of 2 Hz



Hessdalen, Science Camp 2004.



# Hessdalen, Science Camp 2004.



20/9-2007 at: 21:55  
picture no. 0462

Referens Light

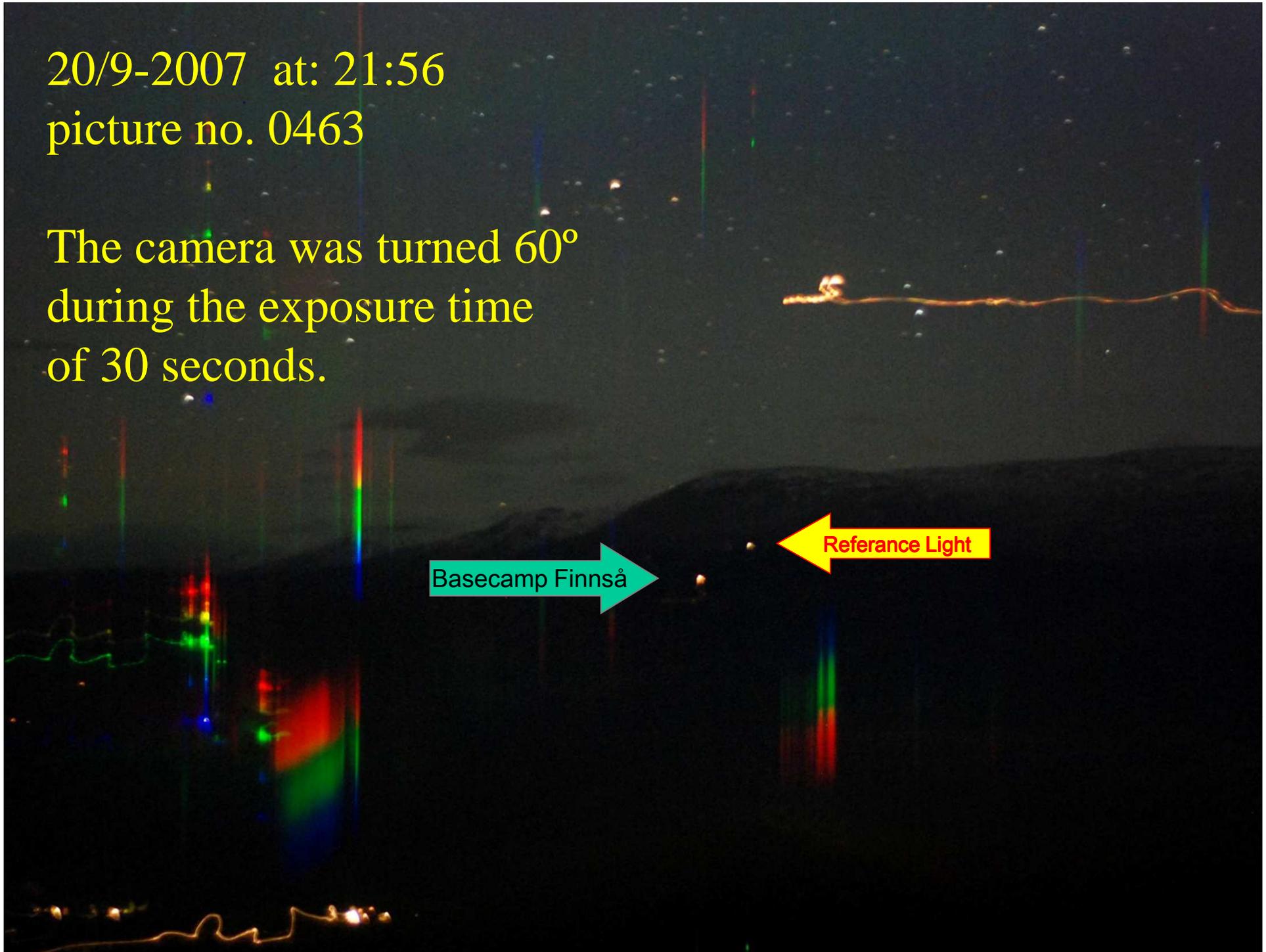


20/9-2007 at: 21:56  
picture no. 0463

The camera was turned  $60^\circ$   
during the exposure time  
of 30 seconds.

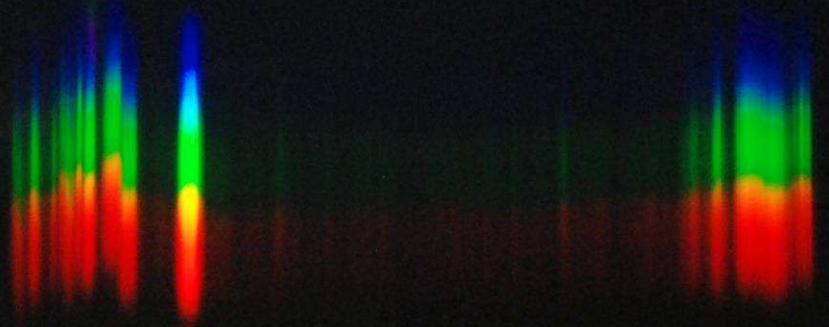
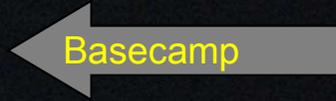
Basecamp Finnså

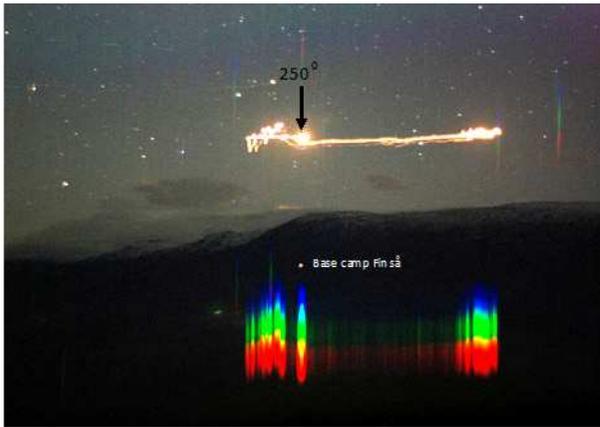
Referance Light



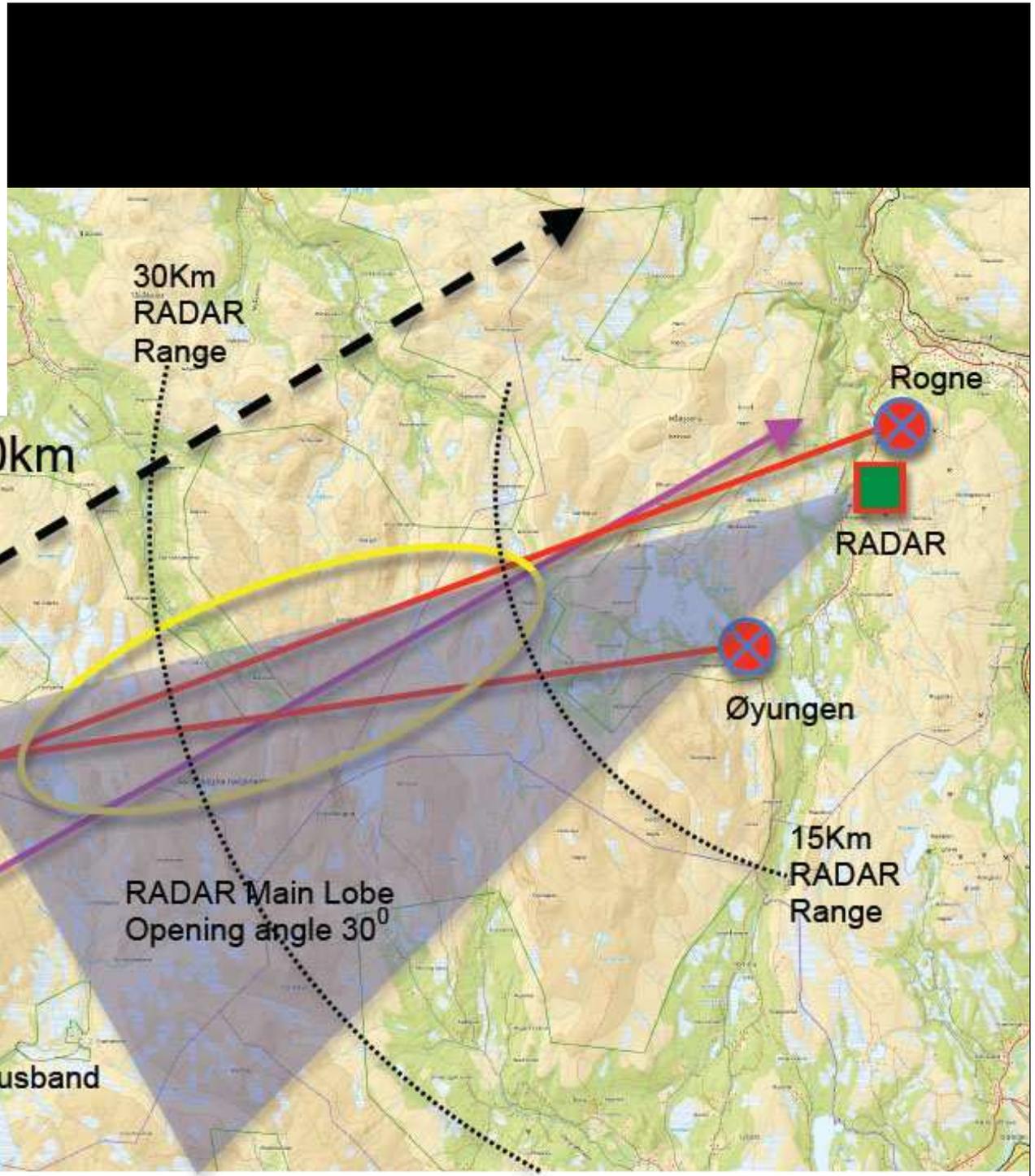
20/9-2007 21:58

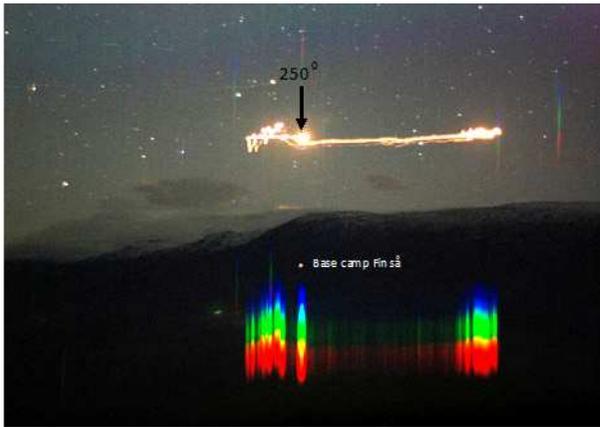
pic. 0464



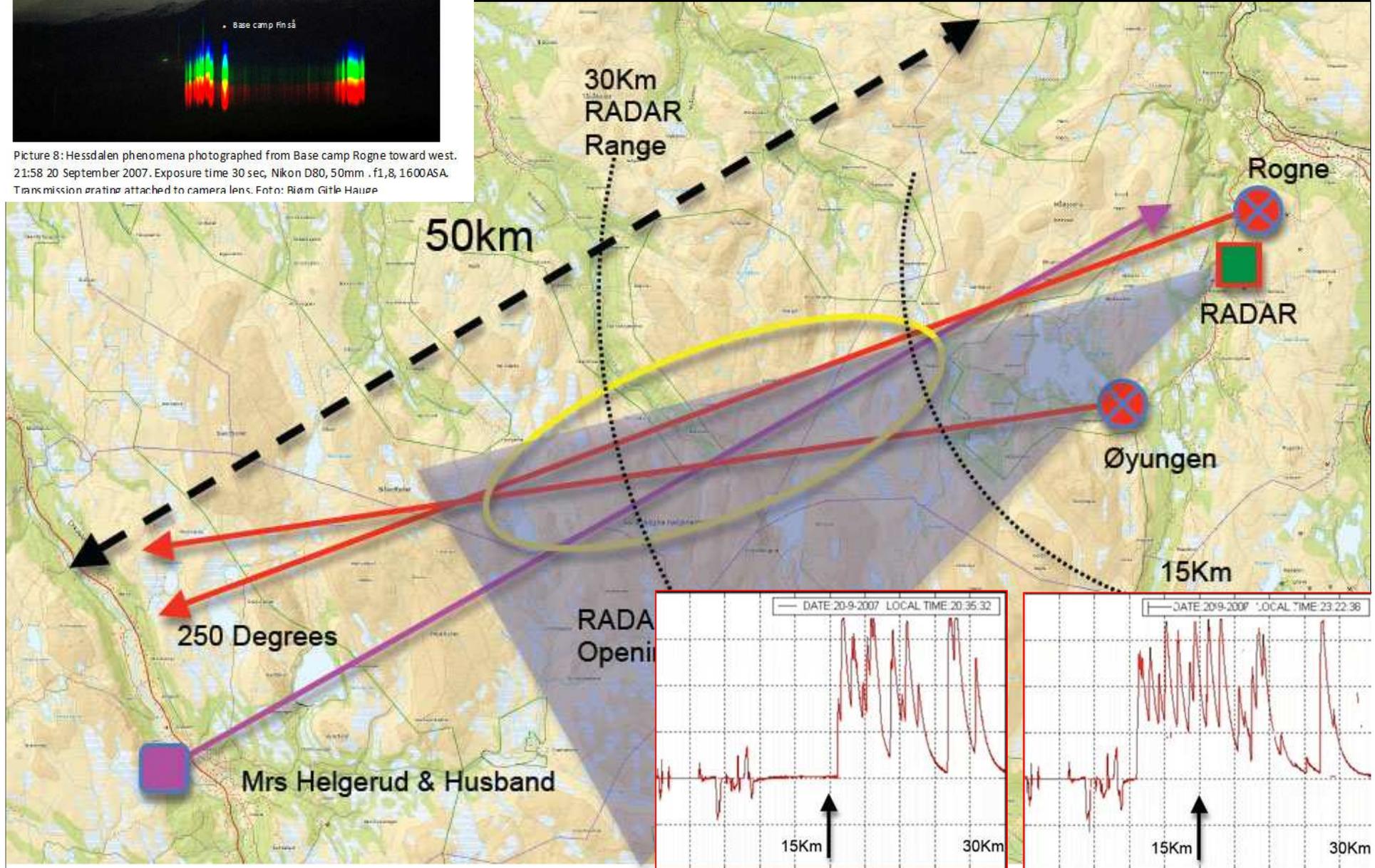
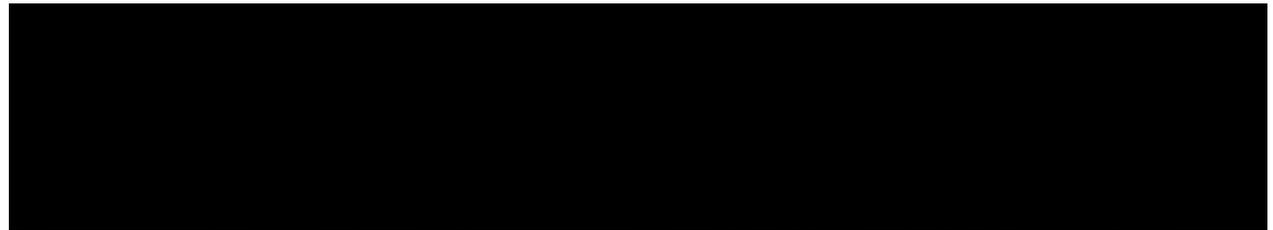


Picture 8: Hessdalen phenomena photographed from Base camp Rogne toward west. 21:58 20 September 2007. Exposure time 30 sec, Nikon D80, 50mm, f1,8, 1600ASA. Transmission grating attached to camera lens. Foto: Rigm Gisle Haupe

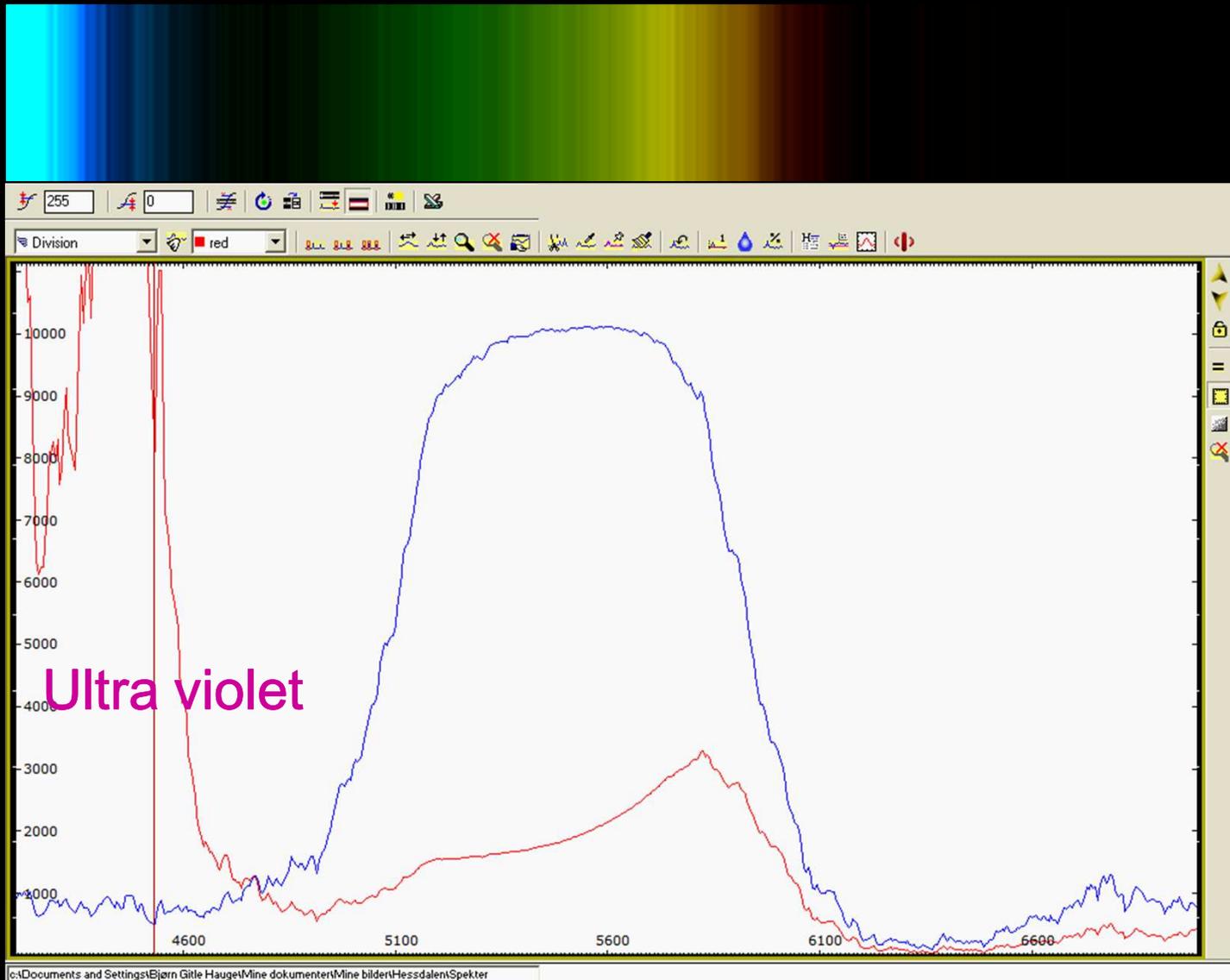




Picture 8: Hessdalen phenomena photographed from Base camp Rogne toward west. 21:58 20 September 2007. Exposure time 30 sec, Nikon D80, 50mm, f1,8, 1600ASA. Transmission grating attached to camera lens. Foto: Rigm Gisle Hauve



The Hessdalen Phenomena seems to have a lot of ultra violet (UV) light.





April 1991: By the lake Øydeskyvatn, southwest in Norway.  
A light is coming in front of the hill, stop, and og down on the snow.

Tracks were made in the snow, and it killed the bacteria in the snow.

Setesdalsheiene, April 1991.



Amount of bacteria in the snow



In the track

Between the tracks

15 m from the track

# "Min-min light" in Australia



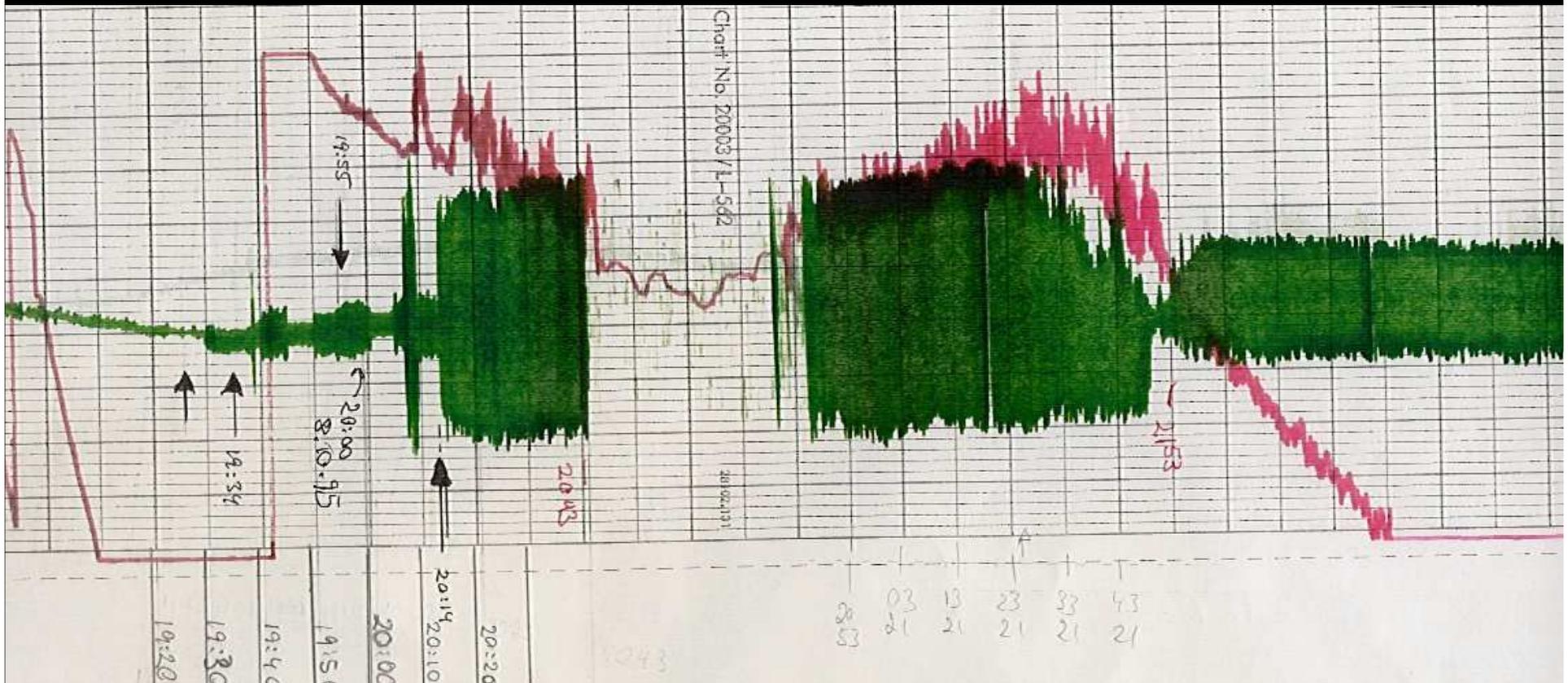
Some districts in Australia has a similar "ligh" as in Hessdalen.

ICRL and PEAR Lab, at Princeton University, carried out an expedition outback Australia, in 1995, in cooperation with Project Hessdalen



On its first night observing in the wilderness of the Kimberley Plateau, Western Australia, the 1995 earth lights expedition set up position on a low hill overlooking a small valley. Only camera equipment was deployed on this first session. In the course of the night, very occa-

# High magnetic activity the day with most observations.



Recording of magnetic activity.  
8. October 1995, outback Australia

## Some of the data:

- The HP is seen on radar, even when it cannot be seen by our eyes.
- Easier to see the HP when there are high magnetic activity and humidity(?)
- EM signals have been detected. (3 MHz, 3 KHz, 100K->2 GHz)
- Can show up from nowhere, and just disappear.
- High energy light (?). UV light.
- Many different shapes and speeds.

**Thank you for your attention.**

