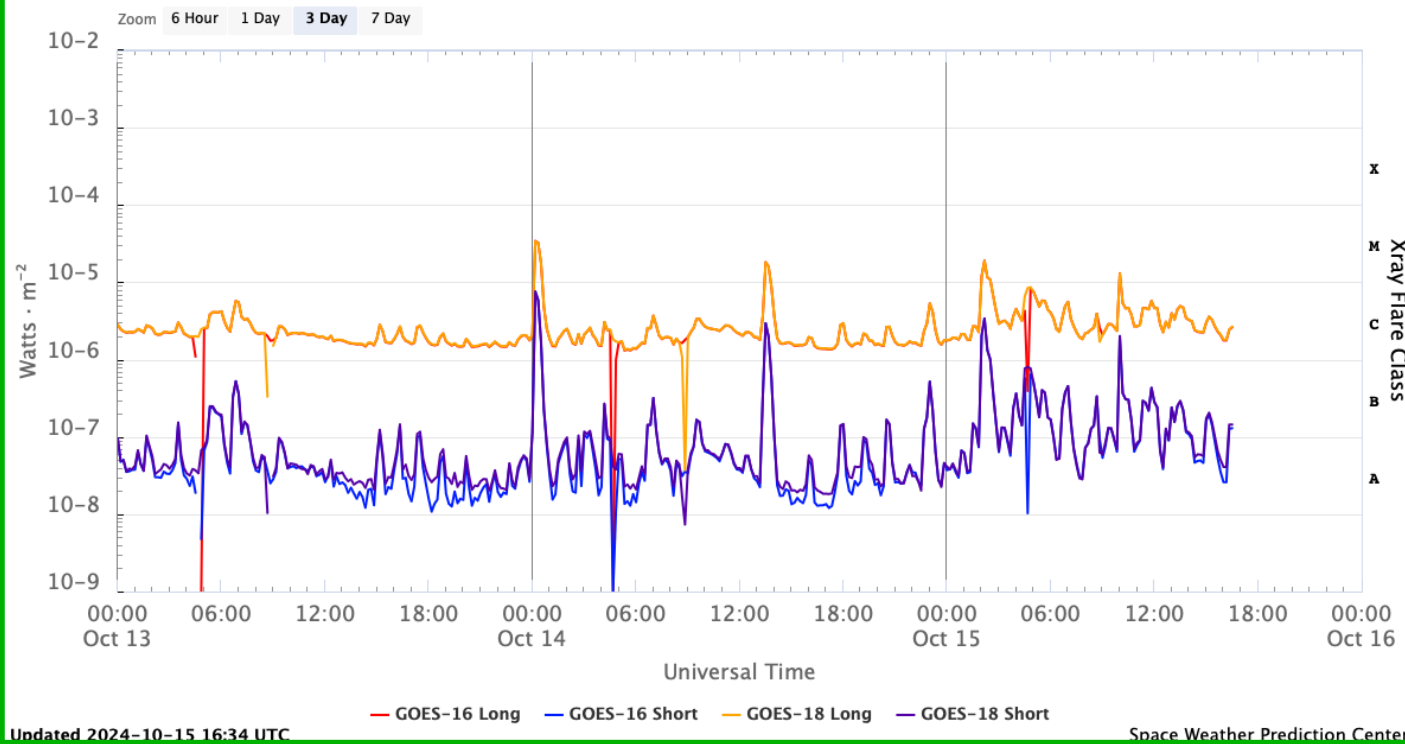


X-ray Flux Passport



GOES X-Ray Flux (1-minute data)



Type

X-ray output (0.1-0.8 nm and 0.05-0.4 nm) of the solar spectrum versus time.

Use

To quantify solar flares happening on the side of the Sun facing Earth.

Units

$W \cdot m^{-2}$
Integrated over 1 min

Data location

<https://www.swpc.noaa.gov/products/goes-x-ray-flux>

Sensor

GOES-16 satellite
GOES-18 satellite

Sensor location

Geostationary orbit

Cadence

Integrated over 1 min

Plot

X-axis: time in UTC

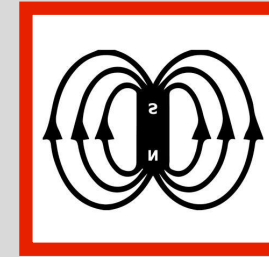
Y-axis: X-ray flux in W/m^2 , i.e. how much energy (Joule) passes in 1 sec ($W=Watt=J/s$) through 1 square meter at geostationary height.

Classes

The long wavelength (0.1-0.8 nm, red and orange) is the reference for identification of the class. The red is measured by GOES 18, orange by GOES 16.

The flare classes are indicated on the right of the graphs. When the peak of the red/orange curve is in blue/green/yellow/orange/red, it is a A/B/C/M/X-class flare.

Kp-index Passport



What

Kp-index (NOAA) represents the planetary geomagnetic condition or the state of the magnetic field of Earth. It is a planetary index and is valid for the globe.

Use

To quantify the disturbance of the magnetic field of Earth. The scale ranges from 0 to 9, with 0 indicating no disturbance and 9 the highest disturbance of the Earth magnetic field .

Plot

X-axis: data and time in UTC, time stamp every 3 hours. Ranges from 3 days in the left (left) to now (right).

Y-axis:

coloured bars of 3 hours wide, height= Kp-index (NOAA)
Height of a bar represents a number: 0, 0+, 1-, 1, 1+, 2-, 2, 2+, ... 8-, 8, 8+, 9-, 9.

With e.g. 2- = 1,70 and 2+ = 2,30 etc.

Estimated

by NOAA, US

Data location

<https://www.swpc.noaa.gov/products/planetary-k-index>

Definitive

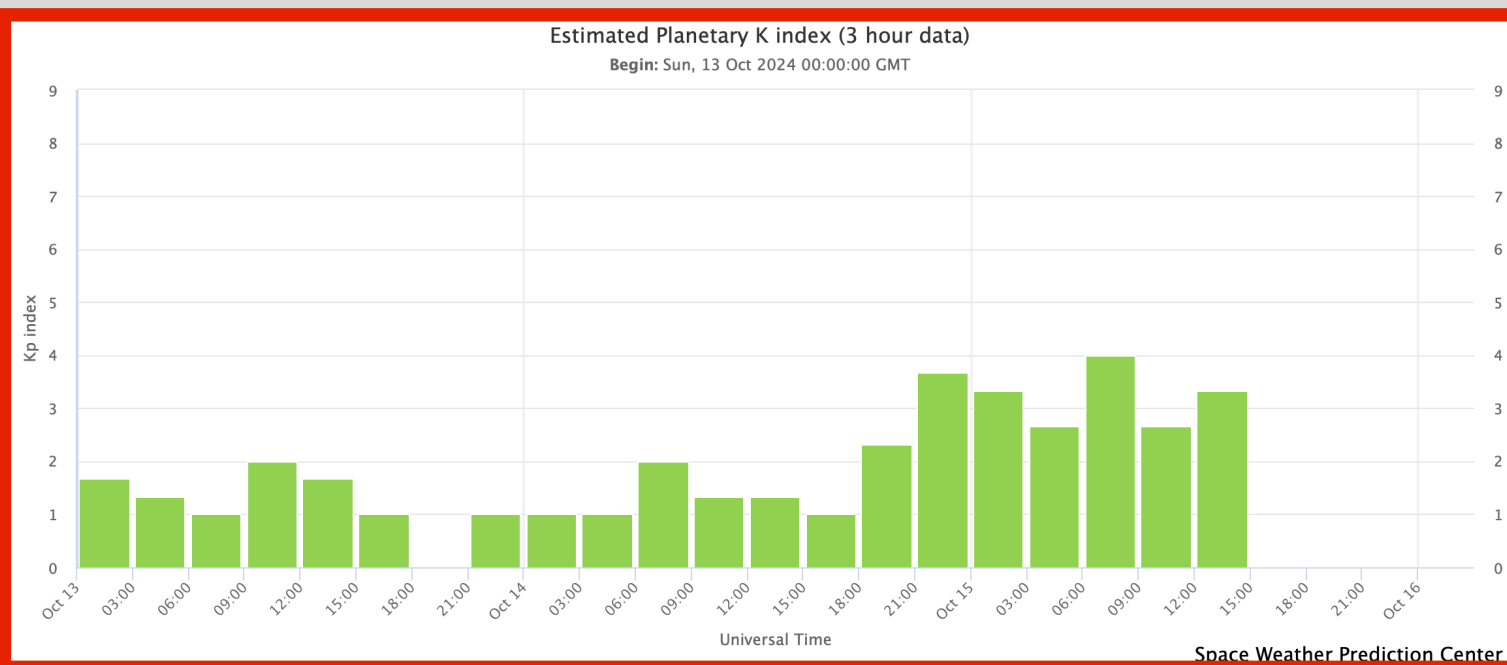
The values become definitive after calculation and confirmation by the German Research Centre for Geosciences, Potsdam.

Observatories

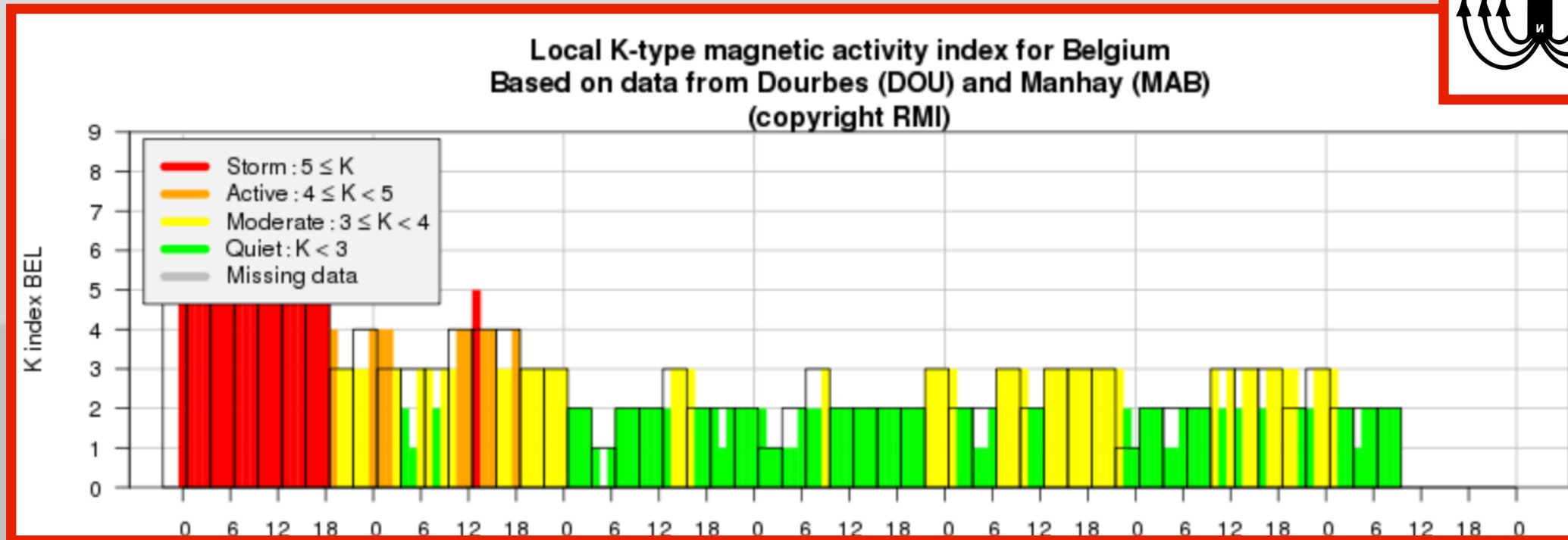
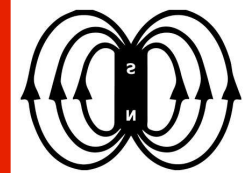
Thirteen (13) Geomagnetic Observatories between 44 degrees and 60 degrees northern or southern geomagnetic latitude.

Magnetometers

The calculation is based upon the measurements done by magnetometers.



K Belgium Passport



What

K Belgium represents the geomagnetic conditions or the state of the magnetic field of Earth above Belgium. It is an index for Belgium.

Use

To quantify the disturbance of the magnetic field of Earth. The scale ranges from 0 to 9, with 0 indicating no disturbance and 9 the highest disturbance of the Earth magnetic field.

Plot

X-axis: data and time in UTC. Ranges from 7 days in the left (left) to now (right).

Y-axis: coloured bars of 1 hour wide, height= K Belgium.

Height of a bar represents a natural number: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9

Sensors

The calculation is based upon the measurements done by the Royal Meteorological Institute of Belgium based on the measurements done in Dourbes and Manhay, Belgium.

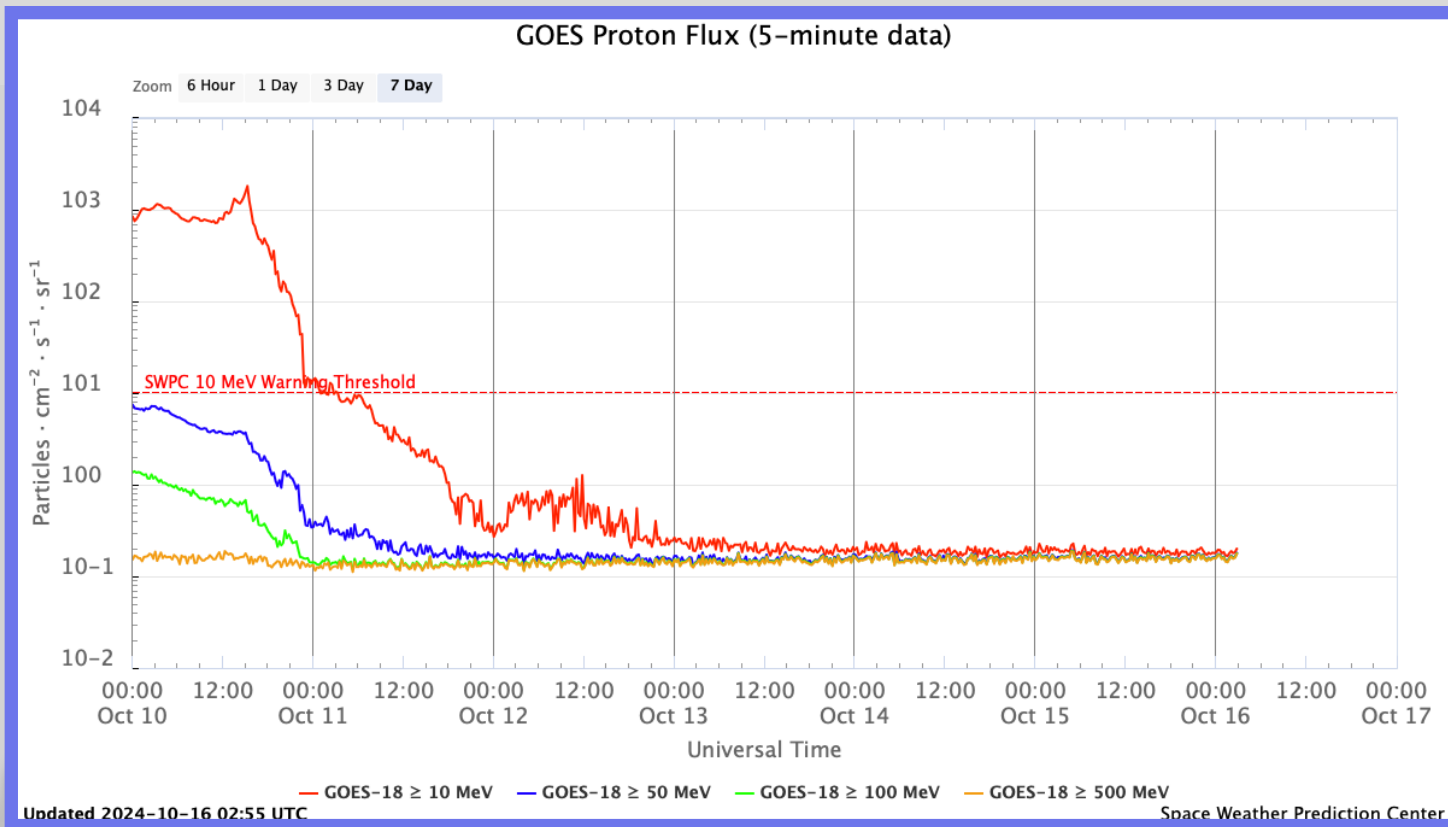
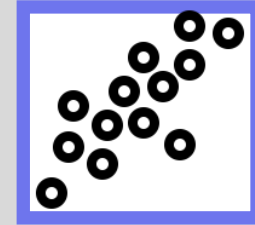
Provider

Royal Meteorological Institute of Belgium

Data location

http://ionosphere.meteo.be/geomagnetism/K_BEL/

Proton Flux Passport



Type

Graph, flux of solar protons versus time.

Use

To quantify proton events impacting Earth.

Units

Particles/($\text{cm}^2 \cdot \text{s} \cdot \text{sr}$) with s=second and sr=steradian

Sensor

GOES-18 satellite

Sensor location

Geostationary orbit

Cadence

Integrated over 5 min

Data location

<https://www.swpc.noaa.gov/products/goes-proton-flux>

Plot

X-axis: time in UTC

Y-axis: Particles/($\text{cm}^2 \cdot \text{s} \cdot \text{sr}$), i.e. how many solar protons with a particular energy (eV) pass in 1 sec through 1 square centimeter from a cone with the Sun at the apex. The count is done at geostationary height.

The 4 colours represent 4 energies.