

**The sky is falling:
The sun is exploding
Duck!**

Jaap Akkerhuis

The Guardian Express

mammoth sunspots are becoming troublesome, sending CMEs which, unlike regular solar flares, may be dangerous to earthly inhabitants in coming days.

These CMEs can be even more disruptive because they are capable of sending billions of tonnes of charged gas and other particles into space. When powerful eruptions reach Earth, the charged matter can blow out transformers in power grids as well as tripping electronics on satellites.

The so-called Carrington Event of 1-2 September 1859 shorted telegraph wires, starting fires in North America and Europe, and caused bright aurorae (northern and southern lights) to be seen in Cuba and Hawaii.



Four ways the Internet could go down

1. Space weather

www.carliniinstitute.com: Earthquakes, volcanic eruptions, hurricanes, tornadoes, and wind storms appear to happen after strong solar activity on the sun.

Geomagnetic Activity on the Sun Influences our Thoughts

Is your network still alive ?

(Are you?)

Space Weather Monitors

Stanford SOLAR Center



English

The SID Monitor

SID MONITORS
AWESOME MONITORS
SCIENCE
DATA
OBTAINING A MONITOR
DISTRIBUTION
FOR EDUCATORS
STUDENT CENTER
INSTALLATION AND USE
THE TEAM
PUBLICATIONS
REFERENCES
ACKNOWLEDGEMENTS



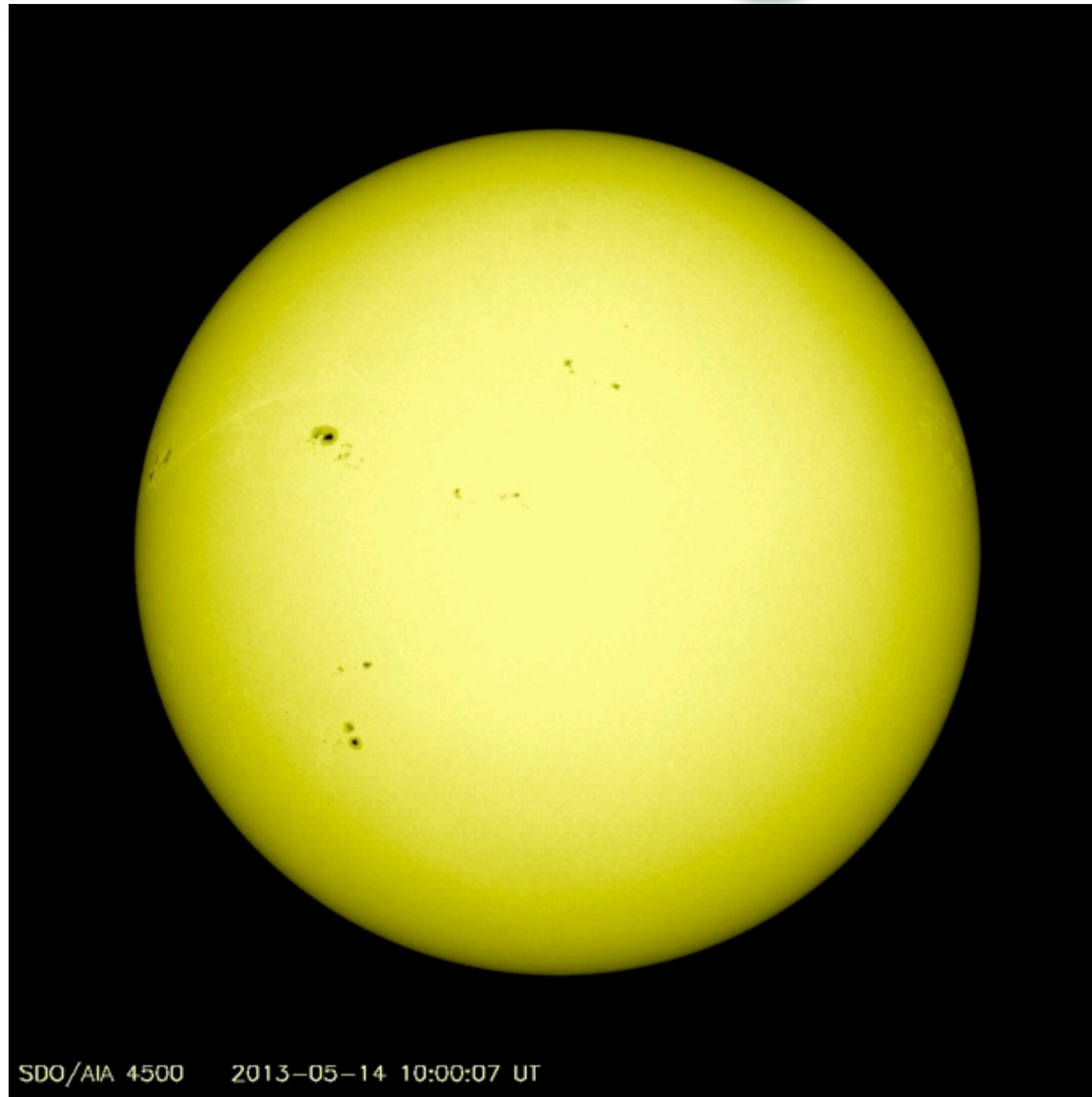
Original SID Monitor

New SuperSID Monitor

Google™ Custom Se



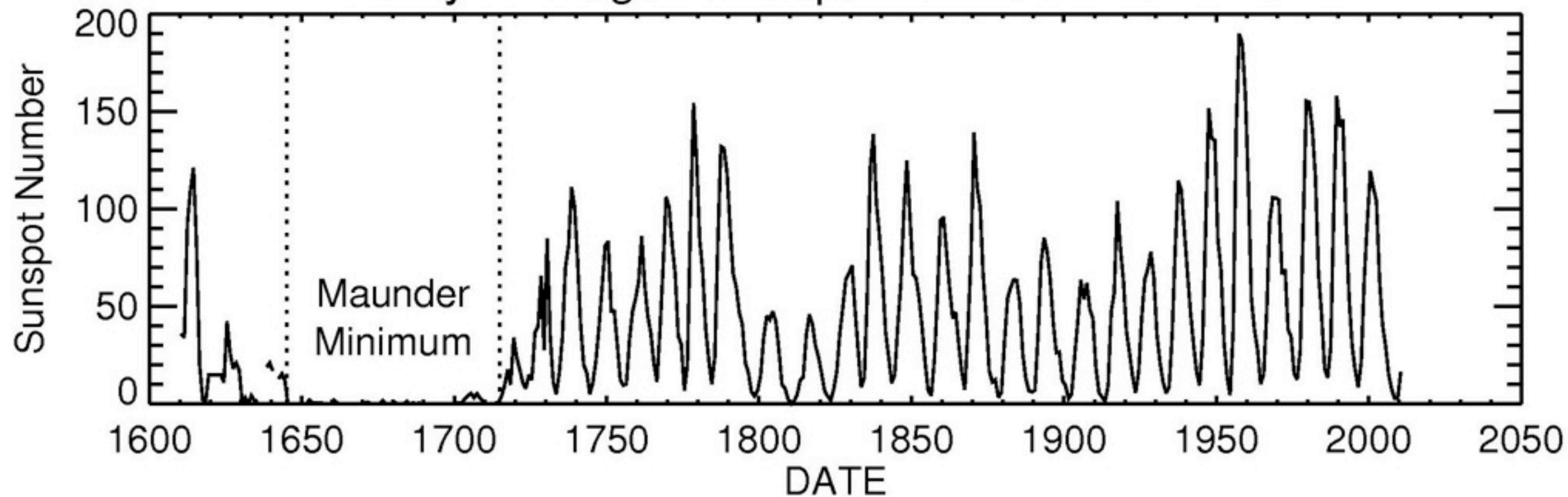
The boring Sun



SDO/AIA 4500 2013-05-14 10:00:07 UT

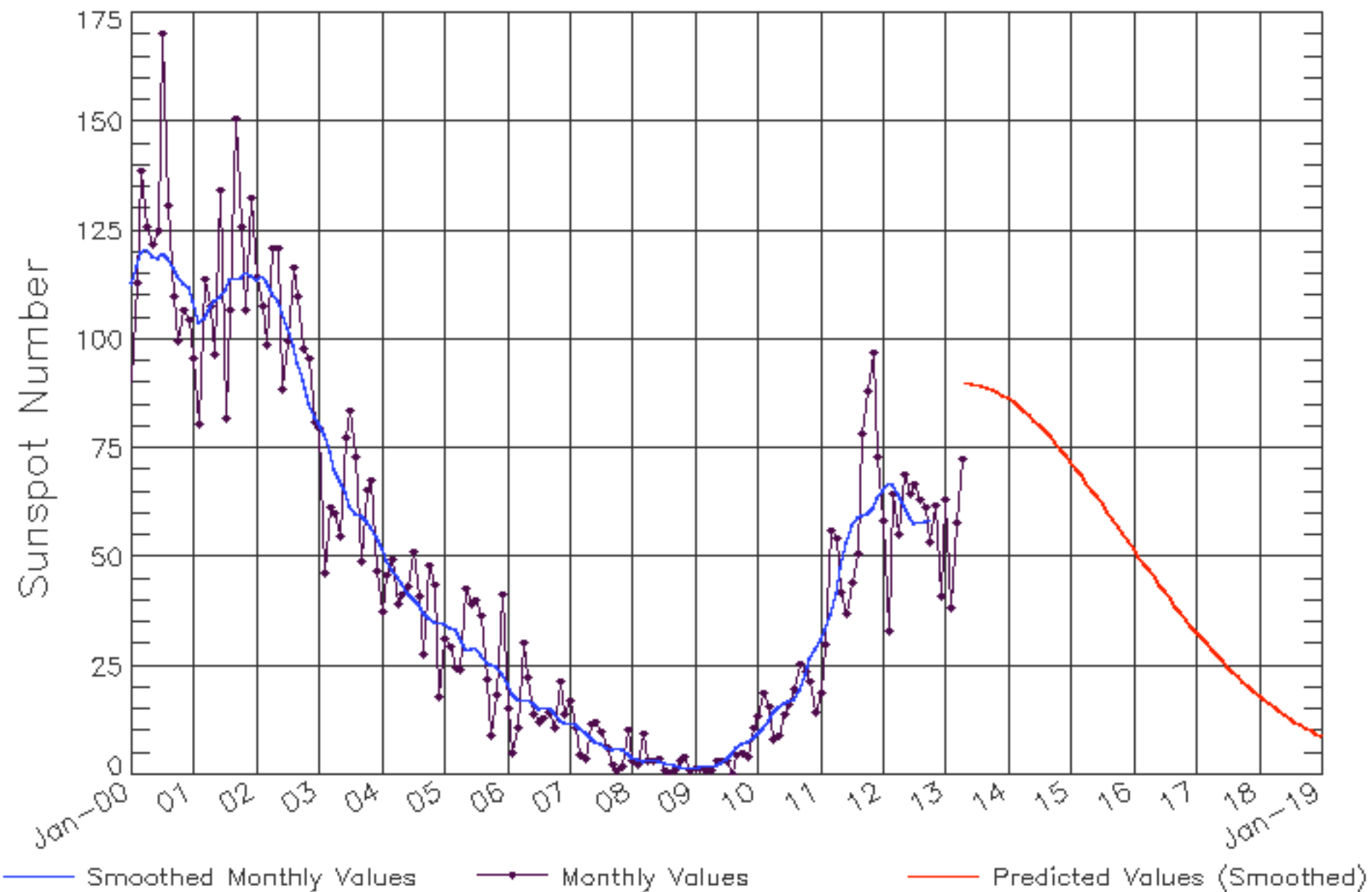
These Spots

Yearly Averaged Sunspot Numbers 1610-2010



Current Cycle

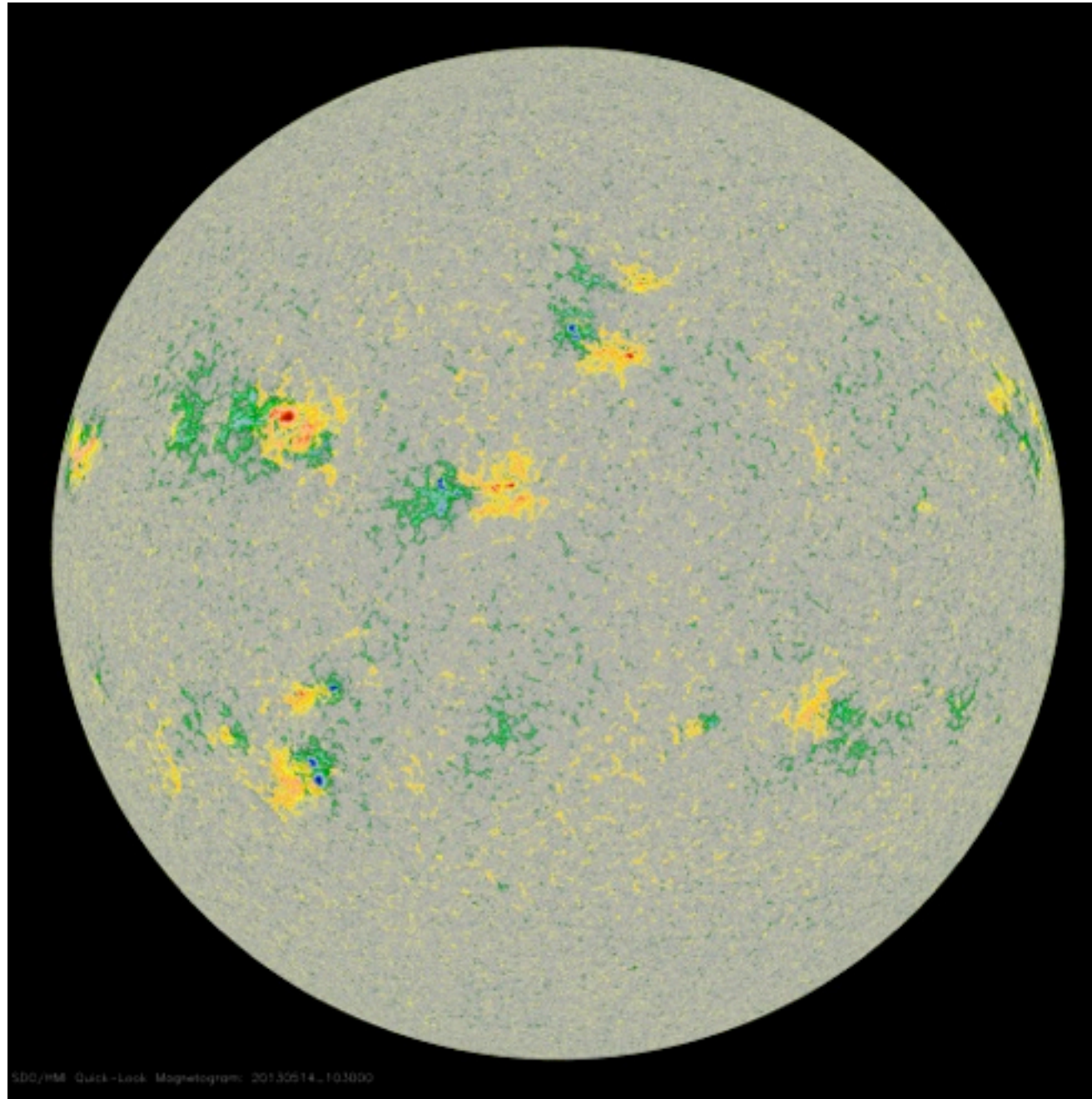
ISES Solar Cycle Sunspot Number Progression
Observed data through Apr 2013



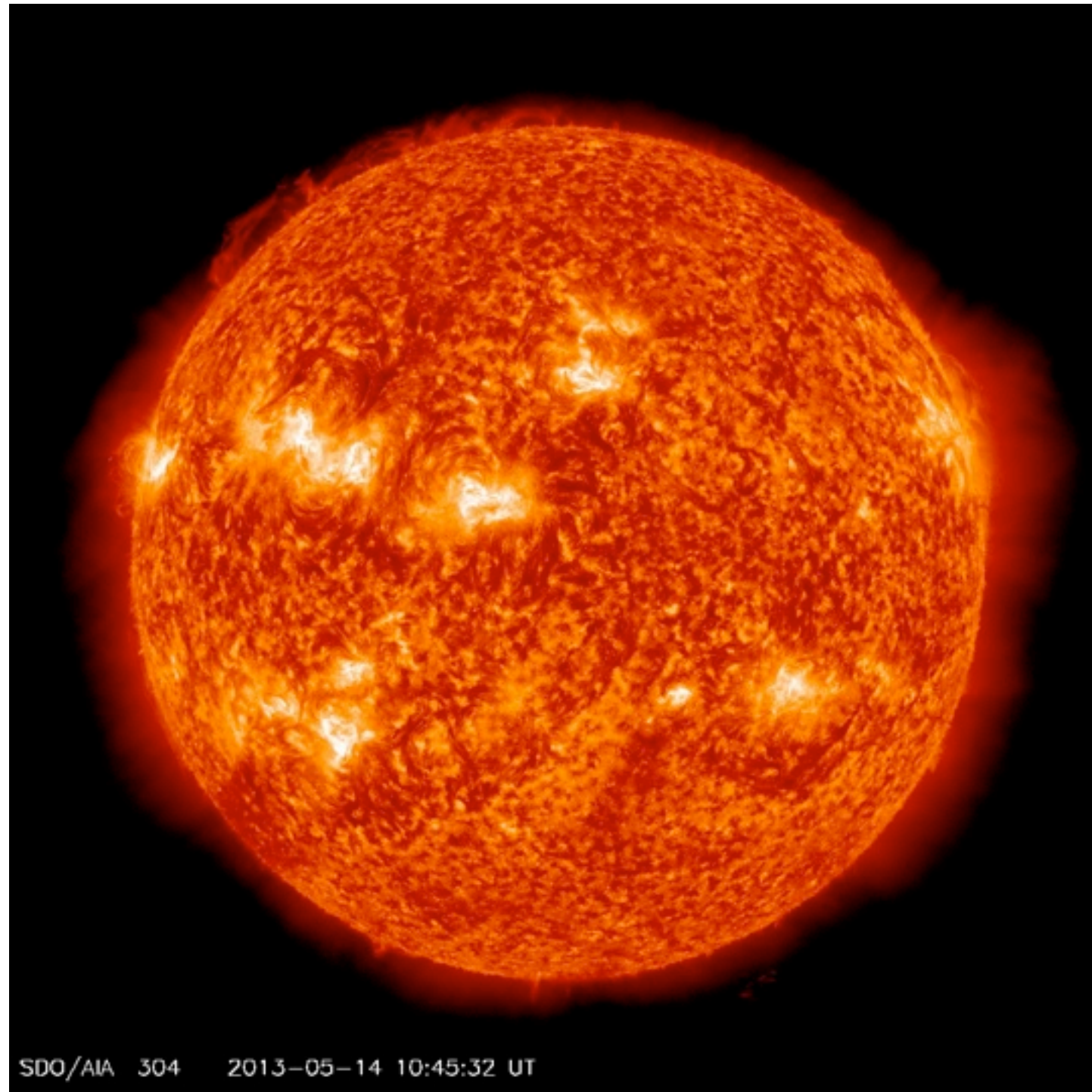
Updated 2013 May 6

NOAA/SWPC Boulder, CO USA

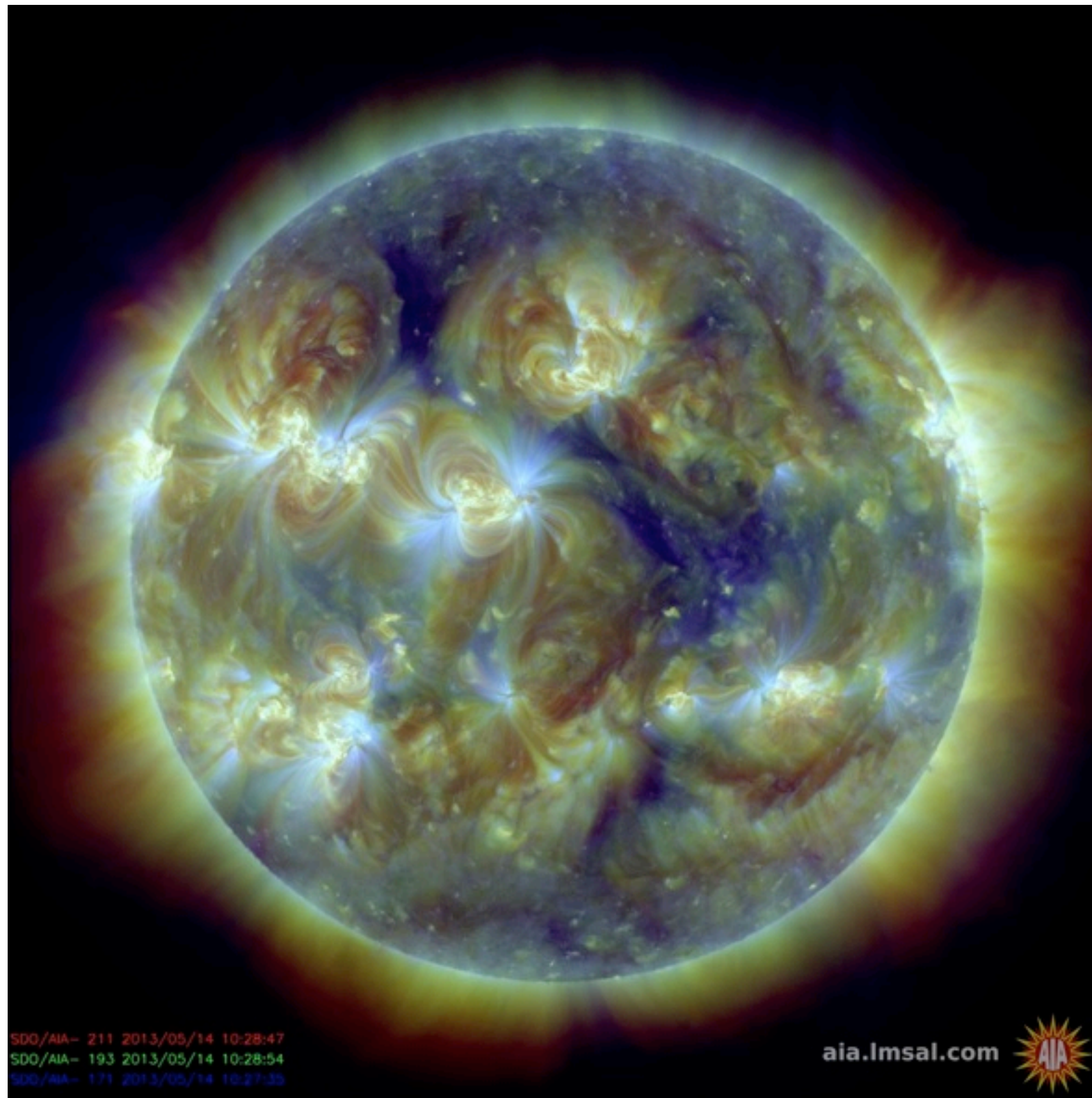
Magnetic sun



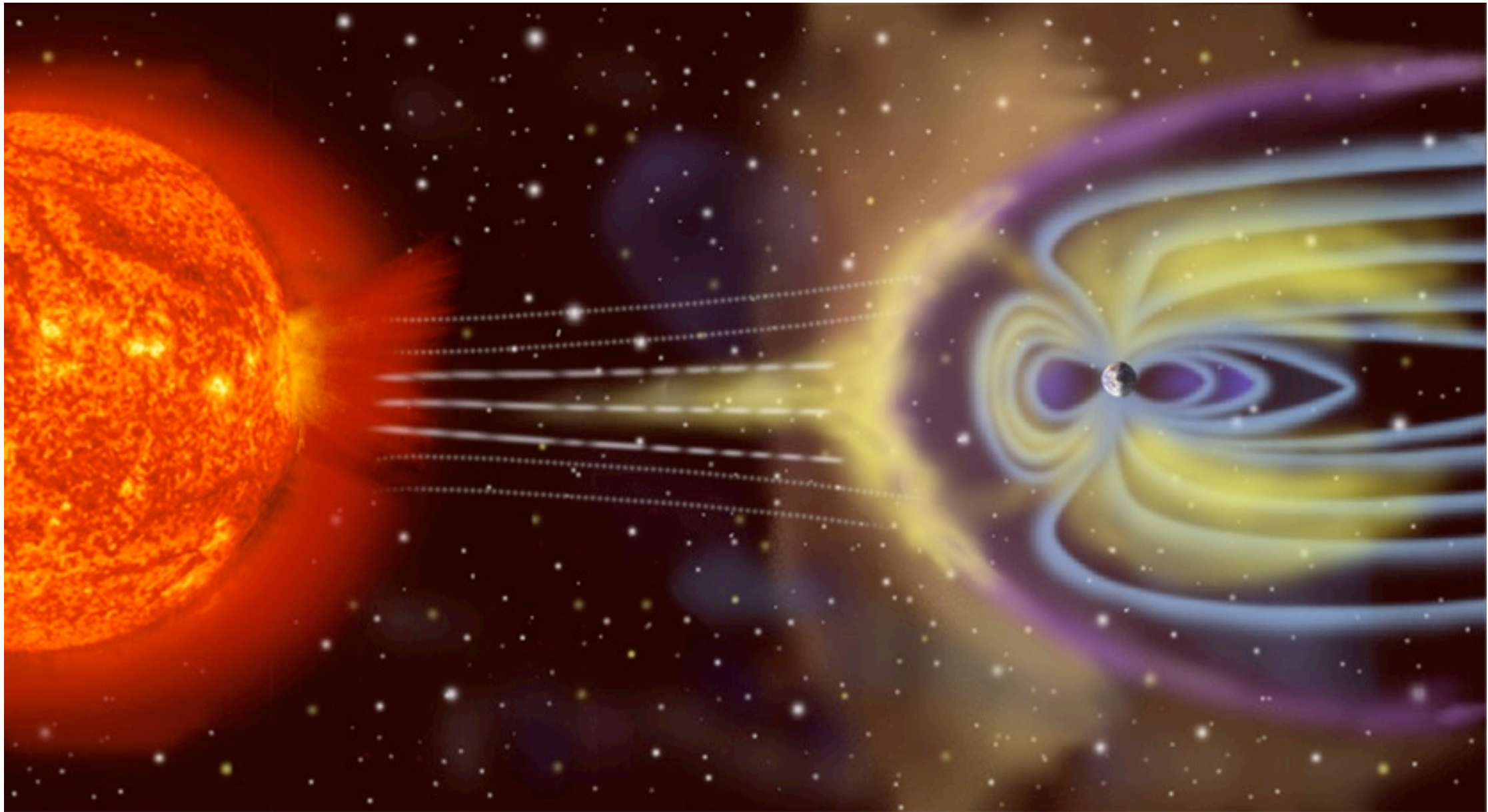
Hot and Cold Sun



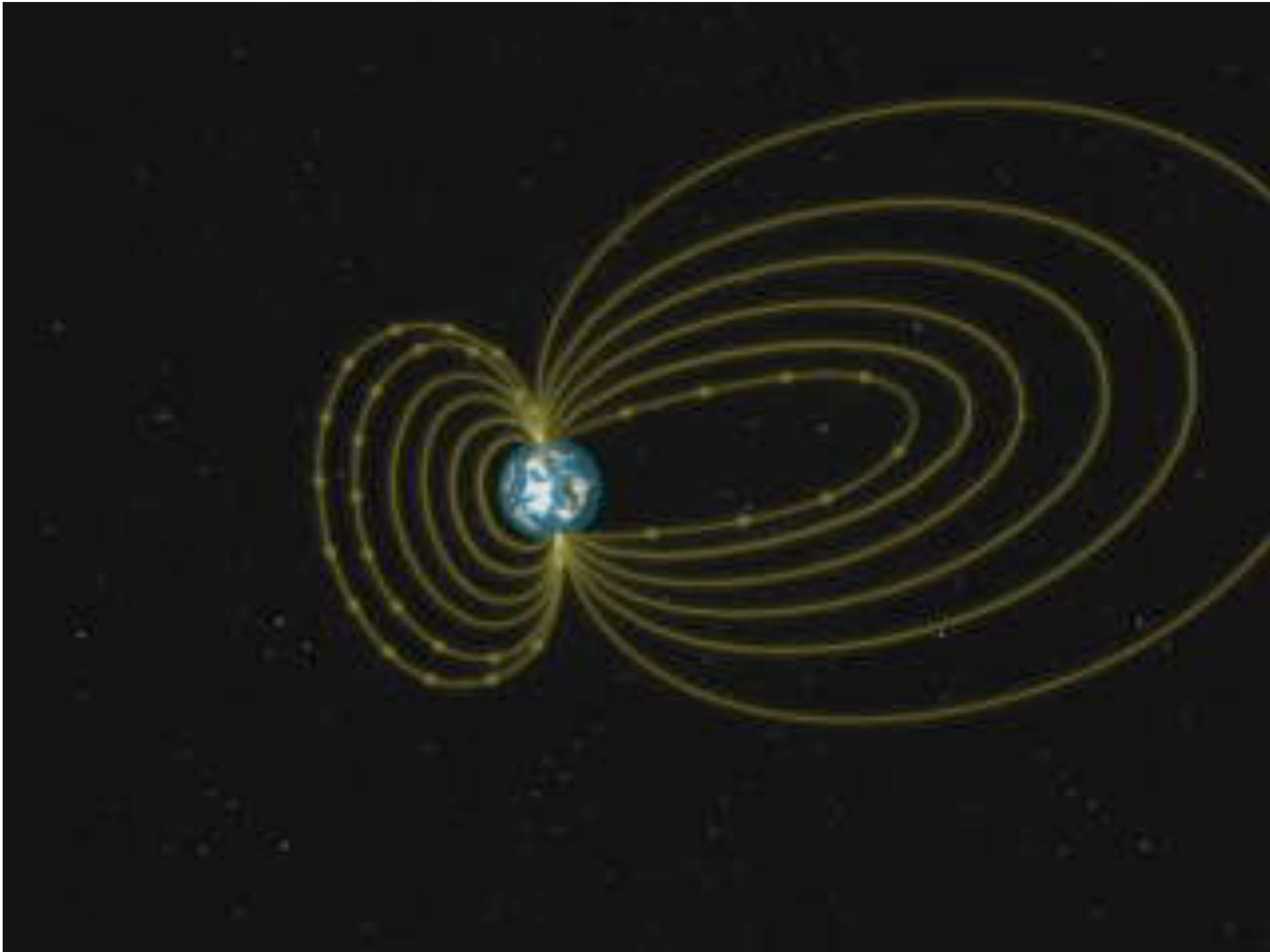
Active Sun



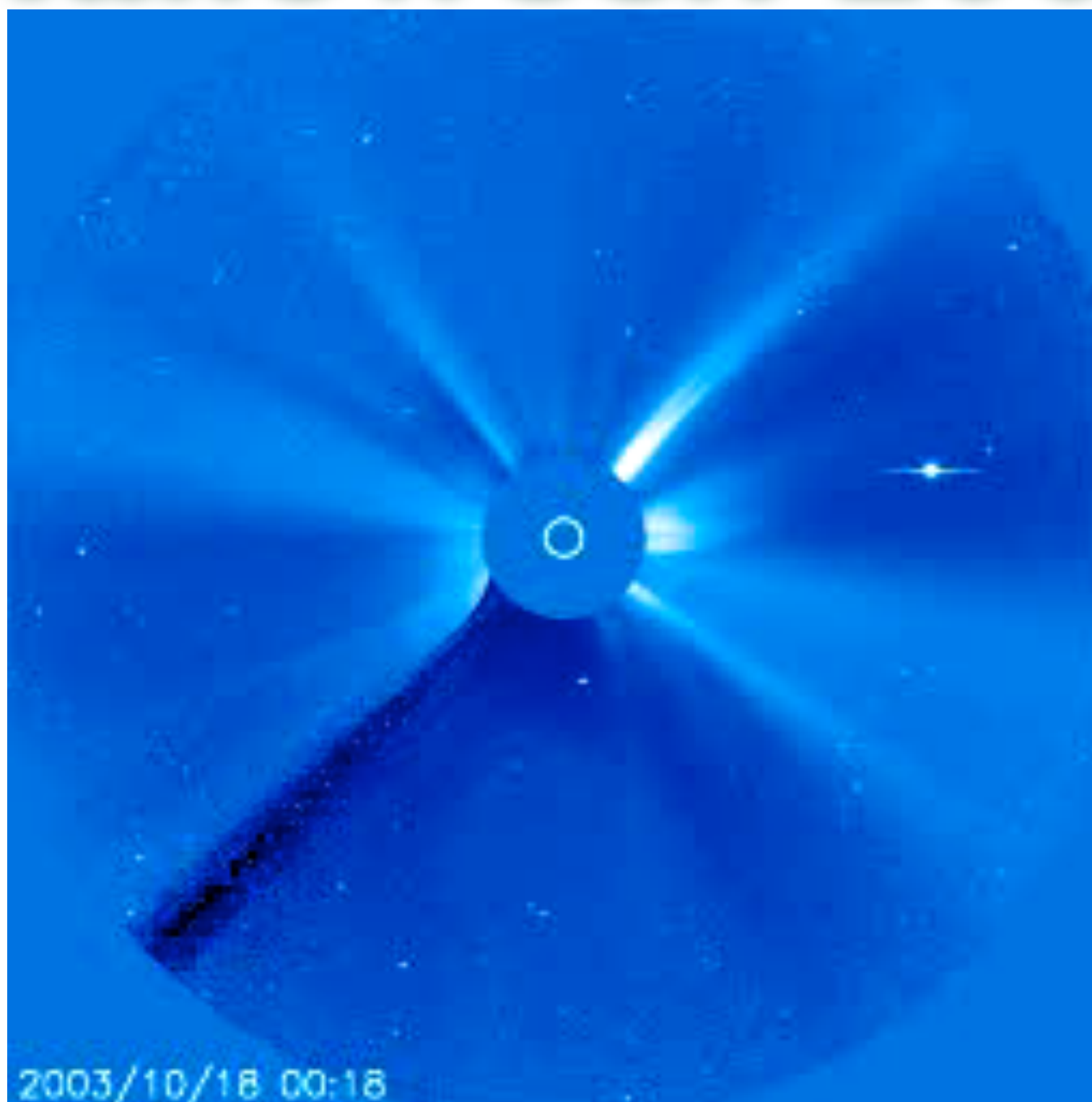
“Interactive” Sun



Dynamics



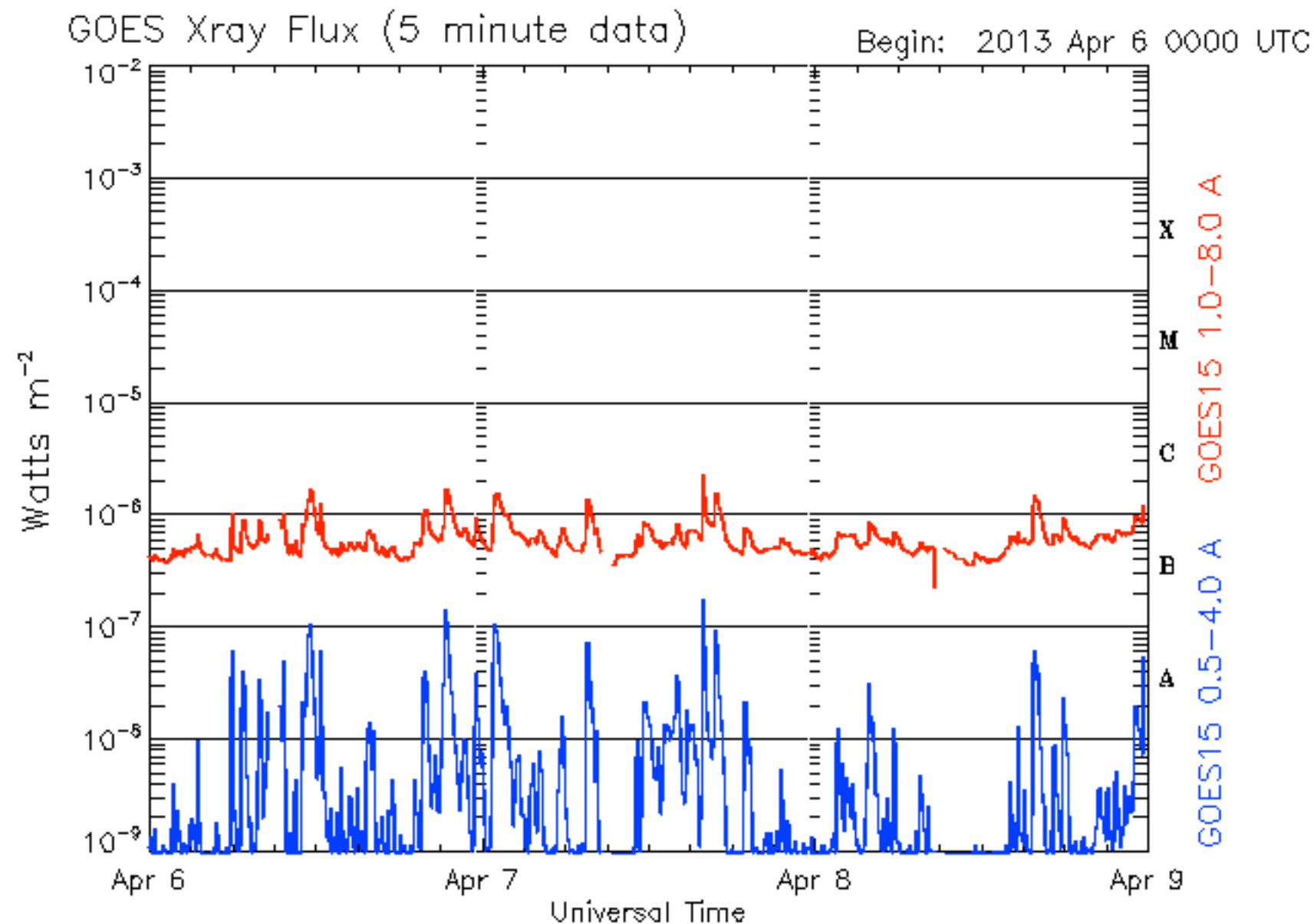
Halloween 2003



Activity classification

- By X-Ray Class
- C Class: low
- M Class: Medium; $M6 = 6 \times 10^{-5}$ Watts / square meter
- X Class: Exciting
- Coronal Mass Ejection (CME or Sun Flares)

GOES Satellites



Updated 2013 Apr 8 23:55:11 UTC

NOAA/SWPC Boulder, CO USA

Damage

- One year moon == 2000 X-Rays pics
- Storms April 1972 would have killed astronauts on way to moon
- Magnetic Storms killed Transformer in NJ and brought down East US/Canada Grid
- Carrington event

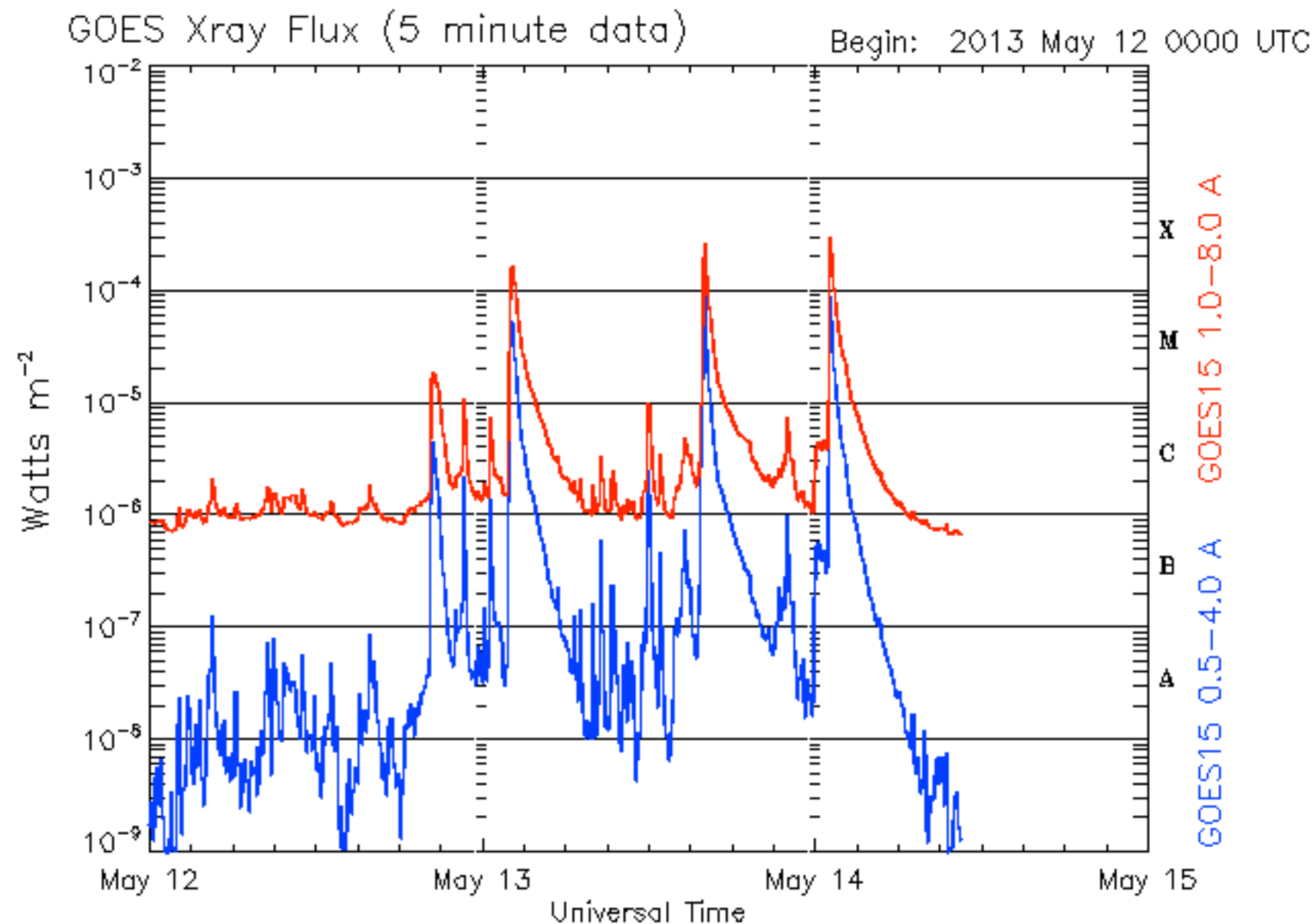
1859 Carrington event

- Flare hit earth within 19 hours
- Aurora's all over North USA
- Telegraph systems broke down
- Telegraphs worked without power

This Week

- Biggest explosion in years: X1.7, X2.7, X3.2, X1.2
- Did you notice?

This Week



Updated 2013 May 14 10:40:12 UTC

NOAA/SWPC Boulder, CO USA

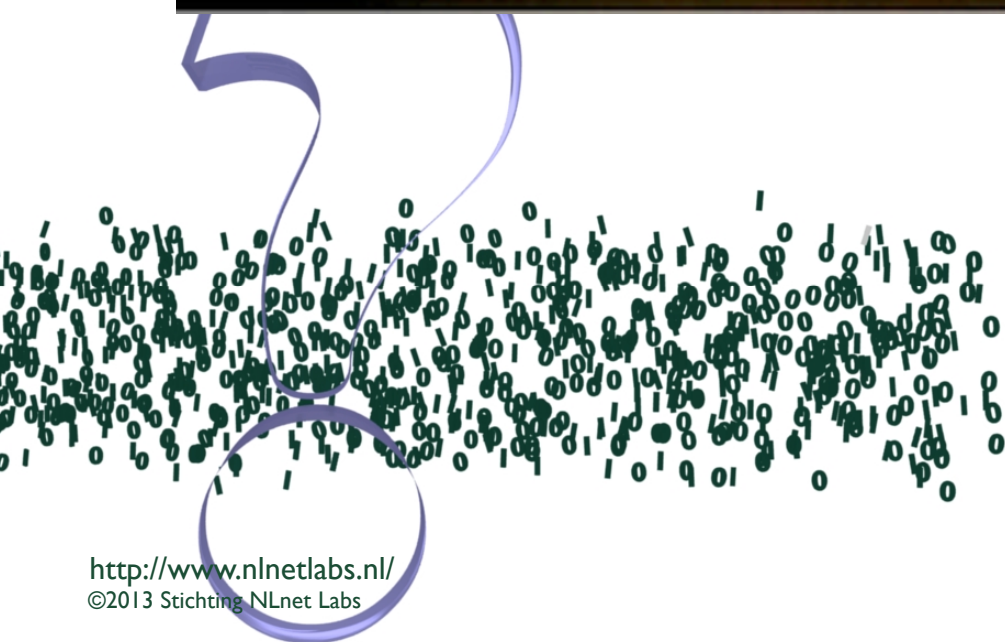
Statistics, statistics ...

Sun: 5 Billion year

Measurements 400 year

Two anomalies in that time

Is your network still alive?



Questions

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