Space weather facts

1. Solar flares and coronal mass ejections can cause a disturbance in the Earth’s magnetic field (magnetosphere), called a geomagnetic storm.

2. Solar flares can sometimes heat the solar atmosphere to temperatures of 50 million C - far hotter that the sun's core!

3. The fastest coronal mass ejection was recorded on 4th August 1972 and travelled from the sun to earth in 14.6 hours - a speed of nearly 10 million kilometers per hour!

4. On 8th April 1947, the largest sunspot in modern history reached its maximum size of over 330 times Earth's area.

5. The first solar flare recorded occurred on 2nd September 1859 and was sighted by two astronomers who happened to be looking at the sun at exactly the right time!

6. Between 10-12th May 1999, the solar wind nearly vanished, causing Earth's magnetosphere to expand in volume by over 100 times!

7. A typical CME can be millions of kilometers in size, but have the mass of only a small mountain!

8. The most powerful aurora can generate over 1 trillion watts of power.

9. On 13th March 1989 a geomagnetic storm caused a blackout in Quebec, Canada. It resulted in a £4 billion loss to the Canadian economy.

10. During intense solar flares, astronauts see bright flashing streaks of light as a result of high-energy particles zipping through their eyeballs.
11. The largest, single, challenge for astronauts travelling to Mars will be to overcome exposure to solar storms and radiation.

12. Around £1 billion in satellite technology was damaged or destroyed during the last sunspot cycle.

13. The 4th August 1972 flare (in between Apollo missions 16 and 17) solar was so powerful that, by some estimates, a space-suited astronaut would have received a lethal dose of radiation.

14. Earth's climate was seriously chilled during the Maunder Minimum (1645-1715) when no sunspots were observed. People ice-skated on the Thames in summer!

15. During a single second, the sun converts 4 million tons of matter into pure energy.

16. The core of the sun is nearly as dense as lead, and has a temperature of 15 million C.

17. During a severe solar storm, Earth loses about 100 tons of its atmosphere into space.

18. Toy 'rare-earth' magnets can be 5 times stronger than a sunspot magnetic field.