

# Space Weather Tutorial

Quiz

Good Luck!!



## Question 1

By which solar event are the strongest geomagnetic storms produced?

- A. Coronal mass ejections
- B. Solar flares
- C. Proton events
- D. Northern light



## Question 2

The ionosphere is crucial for radio communication. This atmospheric layer is formed by incident solar X- and EUV-rays and is disturbed by space weather events such as solar flares, geomagnetic storms and solar proton events. Where are the disturbances caused by proton events mainly felt?

- A. At the day side of Earth
- B. At the night side of Earth
- C. Predominantly at low latitudes
- D. Predominantly at high latitudes



### Question 3

ISES, the International Space Environment Service groups several Regional Warning Centers. How many RWC's are there?

- A. 6, one per continent except Antarctica.
- B. 7, one per continent
- C. 11, fixed number
- D. 2008: 22, countries can apply on a yearly basis to become an RWC



## Question 4

What is the distance Sun-Earth?

- A. 0.5 light-seconds
- B. 8.3 light-minutes
- C. 138.88 light-hours
- D. 1 light-year



## Question 5

Where do coronal holes get their name from?

- A. The layer beneath the corona, the chromosphere acts as a sink dragging all the plasma away from the corona at the position of these structures.
- B. C. Hole was the first to detect them during the Skylab mission.
- C. A coronal hole contains less plasma compared to its surroundings. It radiates less in wavelengths typical for the corona (EUV, X-rays) and appears as a black entity in coronal pictures.
- D. A coronal hole contains more plasma compared to its surroundings. It radiates less in wavelengths typical for the corona (EUV, X-rays) because it is too dense and appears as a black entity in coronal pictures.



## Question 6

The temperature in the Sun's atmosphere:

- A. Decreases continuously with the altitude
- B. Increases without stopping with the altitude
- C. Decreases and then increase with the altitude
- D. stays almost constant with the altitude



## Question 7

Among the following techniques, which is the most appropriated to forecast a solar flare in a sunspot group?

- A. To measure the position of the sunspot group on the visible solar disc
- B. To interpret the in-situ measurements of the highly energized particles by interplanetary probes
- C. To follow the evolution of the magnetic structure of the sunspot group.
- D. To count the chromospheric protuberances in the neighborhood of the sunspot group.



## Question 8

The solar magnetic field:

- A. Is contained only inside the sun, under the photosphere
- B. Extends till 200 solar radii of the solar surface and is absent at larger distances from the Sun
- C. Extends to approximately  $10^2$  AU.
- D. Extends to infinitely



## Question 9

How much does the total solar irradiance vary during the 11-year activity cycle of the Sun?

- A. 2%
- B. 0.1%
- C. 0.003%
- D. 0.0001%



## Question 10

Without the solar wind, would the terrestrial magnetosphere exist?

- A. Yes and it would not be much different
- B. No, because it is generated by the interaction of the solar wind and the terrestrial magnetic field
- C. Yes but it would have another shape
- D. No because the solar wind produces the magnetic field of the Earth.



## Question 11

Why are optical solar telescopes often built on the top of a tower?

- A. To avoid the view being blocked by other surrounding buildings
- B. To decrease turbulence effects due to the heating of the air close to the ground by the Sun
- C. To better cool down the cameras because the air temperature decreases with height
- D. To respect international construction standards for observatories.



## Question 12

The first European Space Weather week was held in

- A. Brussels, Belgium
- B. Meudon, France
- C. Noordwijk, The Netherlands
- D. Trieste, Italy



## Question 13

What is a typical solar wind speed?

- A. 20-30 km/s, like the spicule-jets that are thought to be at the origin of the solar wind.
- B. 200-1000 km/s
- C. As fast as the relativistic energetic particles that are released during proton events
- D. Speed of light



## Question 14

Space Situational Awareness is

- A. The Space program of Barack Obama
- B. A term to describe phenomena that encompass space threats
- C. A scale on which astronaut alertness is measured
- D. A recent space mission including the idea of a permanent basis on the moon.



## Question 15

What is NOT directly linked with the solar wind?

- A. Coronal holes
- B. Coronal mass ejections
- C. IMF: the Interplanetary magnetic field
- D. Solar Flares



## Question 16

The IMF ( $B_x$ ,  $B_y$ ,  $B_z$ ), the interplanetary magnetic field can reconnect with the Earth's magnetic field. What configuration leads to a strong reconnection at the day side of the magnetosphere? The component of the IMF

- A. perpendicular to the Earth's magnetic field should be large and pointing in the direction of the Sun
- B. perpendicular to the Earth's magnetic field should be large and pointing in the direction of the Earth
- C. parallel to the Earth's magnetic field should be large and pointing in the opposite direction.
- D. parallel to the Earth's magnetic field should be large and pointing in the same direction.



Question 17  
TEC stands for

- A. Total Electron Content
- B. Timely Electricity Conversion
- C. Total Electricity Content
- D. Timely Electron Conversion



## Question 18

What Space Weather ingredient lies in the origin of GIC's?

- A. Flares
- B. Proton events
- C. Solar wind
- D. Galactic cosmic rays



## Question 19

How many participants were registered for the esww5 on Nov 12?

- A. 100
- B. 150
- C. 200
- D. 250



## Question 20

Galactic cosmic rays reaching the Earth

- A. Are correlated with solar activity.
- B. Are anti-correlated with solar activity
- C. Are not correlated with solar activity



## Question 21

The particles coming along with the solar wind can enter the Earth's atmosphere creating aurora. The particles typical for the dynamical night time aurora enter

- A. Through the polar cusp
- B. From the magnetotail
- C. From both the magnetotail and through the polar cusp
- D. From everywhere because they are not linked with the magnetosphere.



## Question 22

Which beer is NOT a trappist?

- A. Chimay
- B. Grimbergen
- C. Orval
- D. Westmalle



Schiftingsvraag: when did the last M-flare occurred?

- YYYY MM DD HH:MM
- Universal Time
- Peak time



# Game Over

The winner will be announced  
during the conference dinner,  
Tuesday Nov 20, 2008

Thank you!!



## Solutions

1A;2D;3C;4B;5C;6C;7C;8C;9B;10C;  
11B;12C;13B;14B;15D;16C;17A;18C;19C;20B;  
21B;22B;  
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