

Name: _____

“Magnetic Storm” Discussion Questions

Go to <https://www.youtube.com/watch?v=NJUTUFAWfEY> and watch the video (about 55 min). Answer the questions below. **Note:** For maximum credit, be explicit and descriptive in your responses!

1. What generates the Earth's magnetic field?

2. How long will the Earth's magnetic field last, given its current rate of decay?

3. At the present time, where do the magnetic field lines emerge from the Earth and where do they reenter?

4. Why is the Earth's magnetic field important in order for Earth to remain a living planet?

5. Describe how the auroras (the northern and southern lights) are produced.

6. What did the Mars Global Surveyor discover with regard the current magnetic conditions on Mars? (Select one choice.)
 - () Mars has global magnetism from its core.
 - () Mars has no magnetism whatsoever.
 - () Some areas on the surface were magnetic.
 - () No conclusions could be made.

7. Describe how ancient pottery provides information about the behavior of Earth's magnetic field over time.

8. How much has the Earth's magnetic field declined over the past 300 years?

9. Is the rate of this change increasing or decreasing?
 - () the rate of change is increasing
 - () the rate of change is decreasing

10. What are the **two** reasons sodium metal was used in Professor Dan Lathrop's experiments that modeled the behavior of the Earth's magnetic field?
 - 1.

 - 2.

11. Based on "sodium dynamo" experiments, what do some scientists think was the cause of Mars' magnetic situation today?

12. What information is contained in the frozen lava layers of the Hawaiian archipelago, and what startling discovery was made?

13. According to geologic records, when did the last magnetic reversal occur?

14. On average, how often does the Earth's magnetic field undergo a reversal?

15. In the computer model of the Earth's magnetic field, what were some indications that the simulation was about to undergo a reversal?

16. Why were 18th and 19th century sailors obsessed with the Earth's magnetic field?

17. What is the "South Atlantic anomaly" and what has it been doing over the past 100 years?

18. At the height up the magnetic upheaval that took place on Steen's mountain 16 million years ago, by how much did the direction of the Earth's magnetic field change over the 10 days or so it took the flow to cool according to the geologic records?

19. About how long was the Earth without its magnetic field during the reversal of 16 millions years ago?

20. What is the predicted increase in annual deaths due to skin cancer as a result of the increased radiation that reaches the Earth's surface if the field vanishes?

21. Is there anything we can do to prevent the collapse of the Earth's magnetic field? If so, what? If not, why not?