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Level 5 – 19th June 2023

Groundwater pumping by humans has tilted Earth's axis

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<https://breakingnewsenglish.com/2306/230619-earths-axis-5.html>

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Please try Levels 4 and 6. They are (a little) harder.

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THE READING

From <https://breakingnewsenglish.com/2306/230619-earths-axis-5.html>

Scientists know the effect of underground reservoirs on maintaining Earth's balance. Geophysicist Ki-Weon Seo has discovered that humans have extracted so much groundwater from under our feet that the tilt of Earth's axis has changed. This shift has been big enough to relocate the North Pole. The mass of polar ice is drifting by more than four centimetres a year. Professor Seo calculated that we extracted more than two trillion tons of groundwater between 1993 and 2010. This caused Earth to wobble. Seo said the pumping of groundwater has caused sea levels to rise by 6.24 millimetres.

Professor Seo explained that groundwater affects gravity. He said: "Every mass moving around on the surface of the Earth can change the rotation axis." Scientists have recently found out how groundwater affects Earth's axis. They previously thought water-driven shifts were caused by melting glaciers. Seo was puzzled at how this could cause a tilt. He concluded that extracting underground water was also a factor. Much of the extraction of groundwater is due to irrigation. Another researcher said: "The very way the planet wobbles is impacted by our activities."

Sources: <https://www.nature.com/articles/d41586-023-01993-z>
<https://www.science.org/content/article/humanity-s-groundwater-pumping-has-altered-earth-s-tilt>
<https://www.eurekalert.org/news-releases/992713>

PHRASE MATCHING

From <https://breakingnewsenglish.com/2306/230619-earths-axis-5.html>

PARAGRAPH ONE:

- | | |
|-------------------------------|---------------------|
| 1. Scientists know the | a. much groundwater |
| 2. underground | b. levels to rise |
| 3. humans have extracted so | c. the North Pole |
| 4. the tilt of Earth's | d. reservoirs |
| 5. big enough to relocate | e. drifting |
| 6. The mass of polar ice is | f. to wobble |
| 7. This caused Earth | g. axis has changed |
| 8. groundwater has caused sea | h. effect |

PARAGRAPH TWO:

- | | |
|----------------------------------|-------------------------|
| 1. groundwater affects | a. is due to irrigation |
| 2. Every mass moving around | b. affects Earth's axis |
| 3. change the rotation | c. shifts |
| 4. how groundwater | d. on the surface |
| 5. water-driven | e. wobbles |
| 6. caused by melting | f. gravity |
| 7. the extraction of groundwater | g. axis |
| 8. The very way the planet | h. glaciers |

LISTEN AND FILL IN THE GAPS

From <https://breakingnewsenglish.com/2306/230619-earths-axis-5.html>

Scientists (1) _____ of underground reservoirs on maintaining Earth's balance. Geophysicist Ki-Weon Seo has discovered that humans (2) _____ much groundwater from under our feet (3) _____ of Earth's axis has changed. This shift has been big enough to relocate the North Pole. The mass of polar (4) _____ by more than four centimetres a year. Professor Seo calculated that we extracted more than two trillion tons of groundwater between 1993 and 2010. This caused (5) _____. Seo said the pumping of groundwater has caused sea (6) _____ by 6.24 millimetres.

Professor Seo explained that (7) _____. He said: "Every mass moving around on (8) _____ the Earth can change the rotation axis." Scientists have recently found out how groundwater (9) _____. They previously thought water-driven shifts were caused by melting glaciers. Seo was puzzled at how this could (10) _____. He concluded that extracting underground water was also a factor. Much of the extraction of groundwater is (11) _____. Another researcher said: "The very way the planet wobbles is (12) _____ activities."

PUT A SLASH (/) WHERE THE SPACES ARE

From <https://breakingnewsenglish.com/2306/230619-earths-axis-5.html>

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EARTH SURVEY

From <https://breakingnewsenglish.com/2306/230619-earths-axis-4.html>

Write five GOOD questions about Earth in the table. Do this in pairs. Each student must write the questions on his / her own paper.

When you have finished, interview other students. Write down their answers.

	STUDENT 1 _____	STUDENT 2 _____	STUDENT 3 _____
Q.1.			
Q.2.			
Q.3.			
Q.4.			
Q.5.			

- Now return to your original partner and share and talk about what you found out. Change partners often.
- Make mini-presentations to other groups on your findings.

WRITE QUESTIONS & ASK YOUR PARTNER(S)

Student A: Do not show these to your speaking partner(s).

a) _____

b) _____

c) _____

d) _____

e) _____

f) _____

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WRITE QUESTIONS & ASK YOUR PARTNER(S)

Student B: Do not show these to your speaking partner(s).

a) _____

b) _____

c) _____

d) _____

e) _____

f) _____

