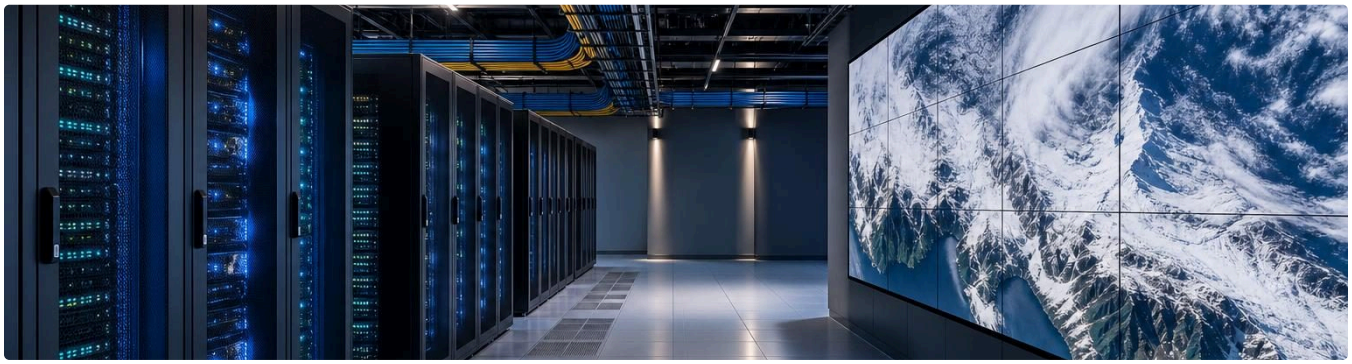
AI Forecasting Pushes Disaster Work Into the Data Center

Swiss researchers are pairing NASA climate data with a supercomputer to speed up forecasts and spot danger sooner.



Rows of supercomputer cabinets sit beside a display of satellite-like weather patterns over mountains and ice.

Researchers in Switzerland have copied around 100 petabytes of public NASA climate and Earth-observation data onto servers next to one of the world's most powerful supercomputers, according to reporting by Phys.org. Earth-observation data means information gathered from satellites and other sensors that watch the planet's land, oceans, ice, and **atmosphere**. The goal is to train artificial intelligence, or AI, which is software built to find patterns in data and use those patterns to make predictions. In this case, the predictions could improve weather forecasts and help identify warning signs before some natural hazards become disasters.

The project is based at the Federal Institute of Technology Zurich, known as ETH, and uses a supercomputer called Alps at the Swiss National Supercomputing Centre in Lugano. A supercomputer is not just a fast desktop; it is a large system built from many connected **processors** that can run huge calculations at the same time. The copied NASA archive includes about 6 billion files. Phys.org reports that it took about a year to move the data, which researchers compared to about 20 million feature-length films in storage size, or about a million times the storage on a typical computer.

That storage detail matters because forecasting is becoming as much a data-handling job as a weather job. Traditional weather and climate models use mathematical equations to simulate how air, water, heat, and pressure move through the atmosphere and oceans. Those models are powerful, but they can take hours to run. The AI approach described by ETH researchers uses statistical models, meaning models that learn relationships from existing data instead of recalculating every physical process from scratch. Reto Knutti, a climate physics professor involved in the work, said such a model can run a multi-day global **forecast** in about a minute.

For the people doing the work, speed changes the workflow. If a forecast takes hours, there are fewer chances to test different starting conditions or check whether a specific danger pattern is forming. If a model can run quickly, teams can do more **iterations**, which are repeated runs of a model with adjusted inputs or conditions. The machine is still only useful if the data **pipeline** works. A data pipeline is the full path that moves raw data from storage through cleaning, processing, model training, and final output. In this project, putting the data physically near the supercomputer reduces the de-

lay that would come from waiting for massive files to move across slower connections.

The jobs behind this kind of system are not limited to one title. Climate scientists and computational physicists design the questions and judge whether model results make scientific sense. Data engineers build and maintain the systems that move, store, and organize files without losing track of them. Supercomputing technicians and system administrators keep the compute **cluster**, which is a group of linked machines working together, powered, cooled, connected, and secure. Remote-sensing specialists interpret **satellite** images and sensor data. Emergency managers and public officials would be the people turning a warning into an evacuation order or other action, if the science supports it.

The article points to two kinds of hazards where better data scanning could matter: landslides and glacier collapses. A **landslide** is a sudden movement of rock, soil, or debris down a slope. A glacier collapse happens when a large section of ice breaks loose, sometimes sending water, ice, and debris downhill. ETH researchers noted that not all disasters can be predicted. But they said some geology-related hazards can show warning signs in satellite data if there is enough monitoring and enough computing power to notice the pattern. The article cites the Swiss village of Blatten, which was evacuated before a glacier collapse last year, avoiding mass casualties.

For hiring, the takeaway is that technical workers in this field need more than one narrow skill. The article does not list job requirements, but the work described depends on people who can handle very large datasets, understand **statistics** well enough to question a model, and communicate risk without overstating certainty. A fast AI forecast is not automatically a correct forecast. Someone has to check whether the model is seeing a real pattern, a sensor error, or a coincidence in old data. That makes quality control, documentation, and teamwork part of the technical job, not extras.

The promise is not that AI will replace forecasters or emergency planners. The more realistic change is that AI may become another tool in the shop: fast, powerful, and only useful when trained, tested, and supervised well. The work moves between field knowledge, computer hardware, software models, and public safety decisions. In a career pathway, that matters because the future job may not be labeled “AI forecaster.” It may be data technician, satellite analyst, climate modeler, systems operator, or emergency planning specialist working on the same chain of information.

Written from reporting by Phys.org.

THINK IT THROUGH

1. **If an AI model can produce forecasts much faster than traditional methods, how should a forecasting team balance speed against the need to verify results before warning the public?**

   > **A strong answer:** A strong answer should weigh the value of early warnings against false alarms, missed alarms, model limits, and the human responsibility to review outputs.

2. **Which part of the workflow described in the article seems most important for preventing harm: collecting the data, moving and storing it, training the model, interpreting the result, or acting on the warning?**

   > **A strong answer:** A strong answer should defend a choice while recognizing that the system fails if any major link in the chain is weak.

3. **For someone trying to get hired into this kind of work, should training focus more on environmental science, computer systems, or statistics? Make a case for one while explaining why the others still matter.**

   > **A strong answer:** A strong answer should connect career preparation to the actual tasks in the article, including data scale, model judgment, and real-world risk decisions.

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ATMOSPHERE CLUSTER DATASET FORECAST ITERATIONS
LANDSLIDE PIPELINE PROCESSORS SATELLITE STATISTICS

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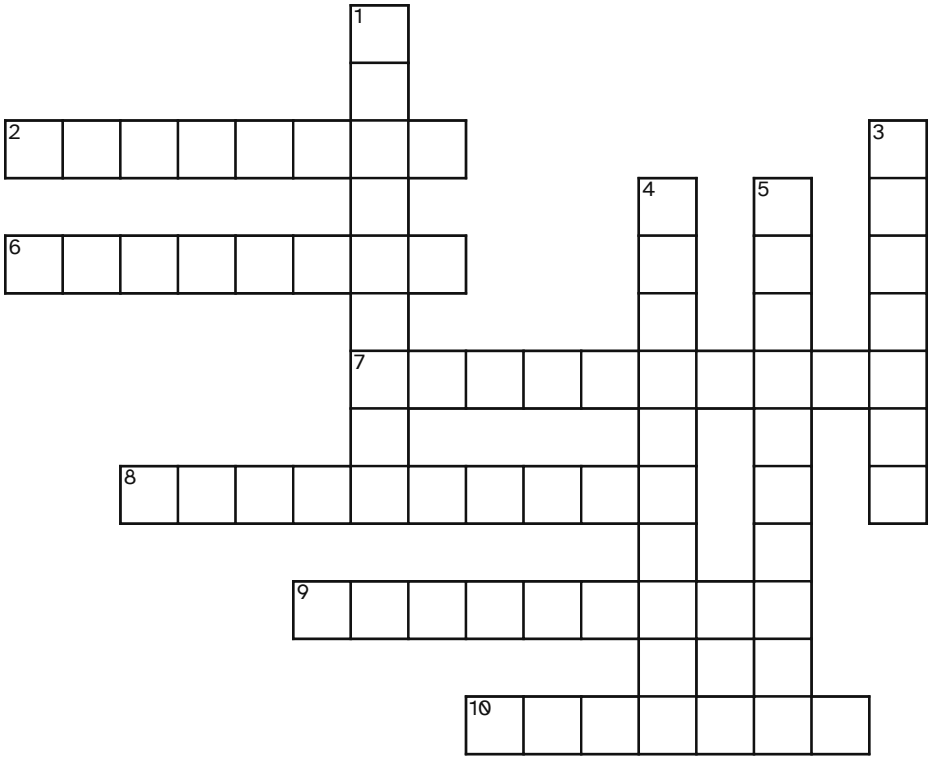

ACROSS

2 Linked route moving raw information through preparation, training, and output

6 Weather outlook based on available evidence

7 Repeated test runs with altered inputs or conditions

8 Computer chips that execute instructions and calculations

9 Orbiting Earth observer that collects images and measurements

10 Networked computers working together on large tasks

DOWN

1 Sudden downhill movement of rock, soil, or debris

3 Organized collection of information for analysis or training

4 Methods for finding patterns in collected information

5 Gaseous envelope around Earth where weather occurs

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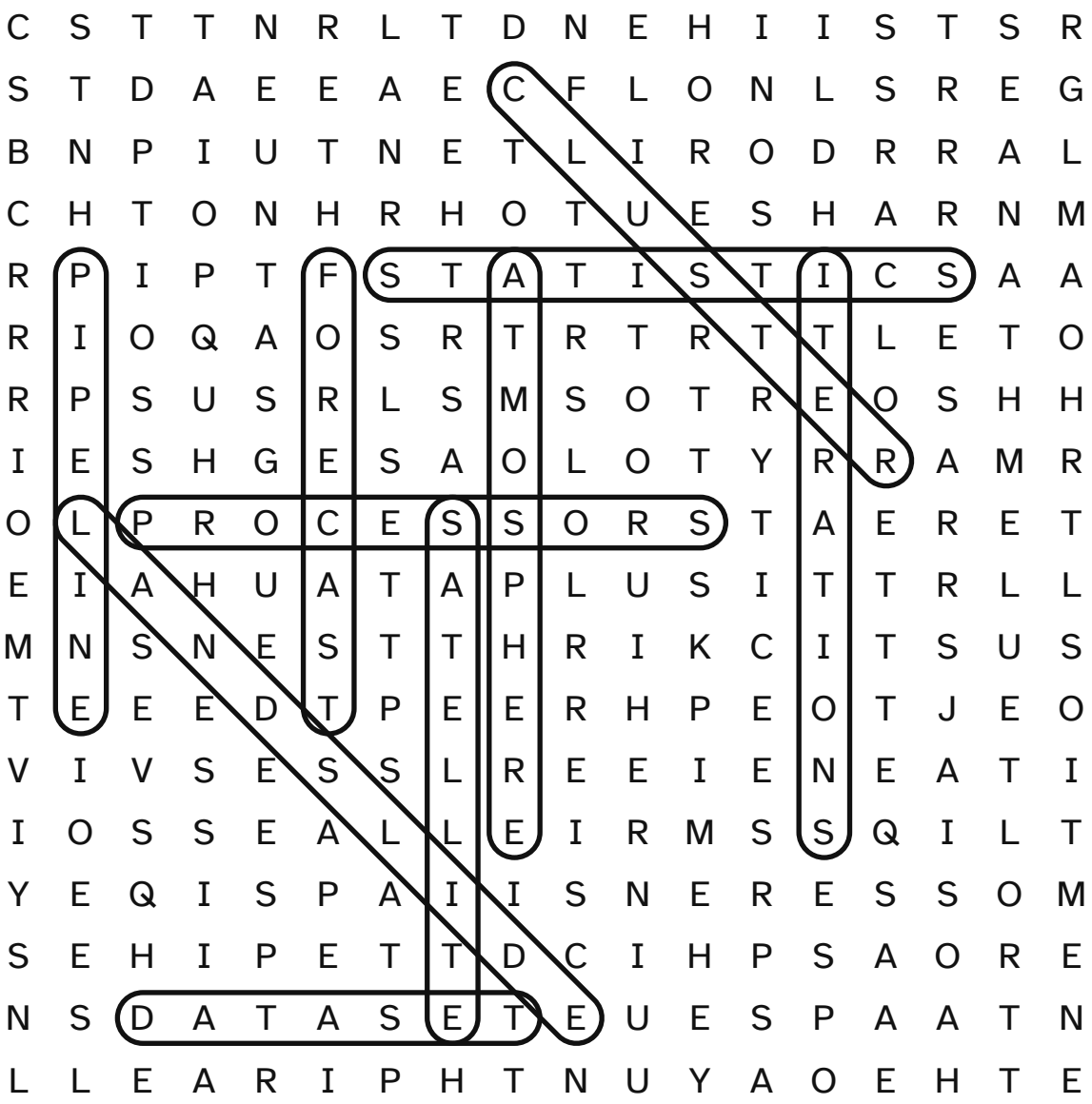
— answer key



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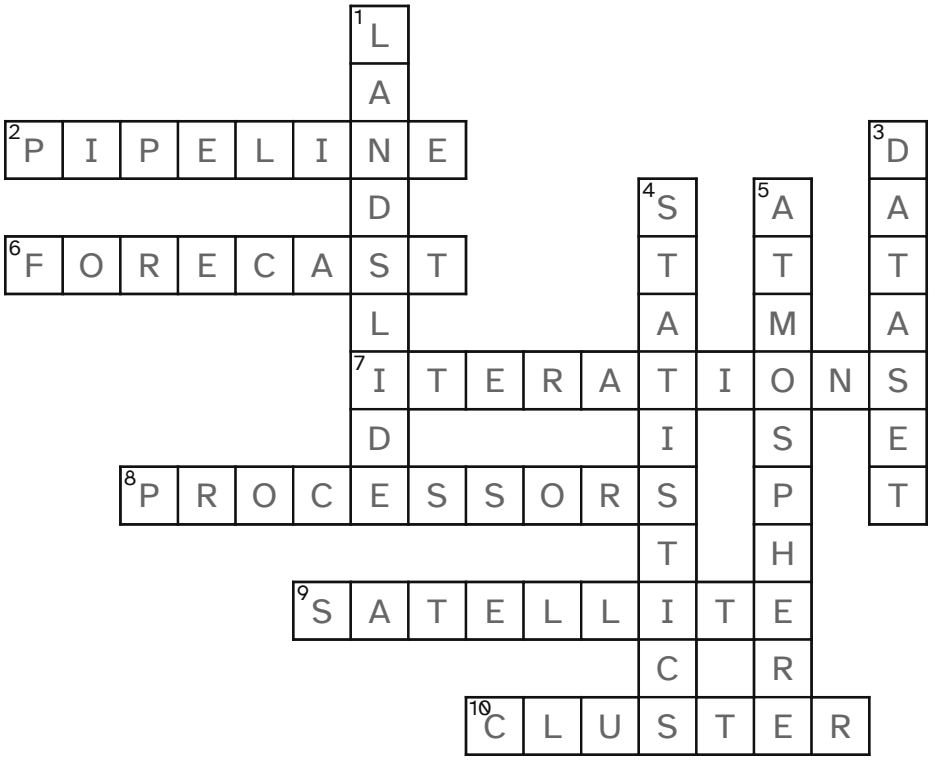

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Where this came from

This article was written for 3andB from the reporting below. It is not a reprint — the wording is ours and the facts are theirs.

Phys.org

"Researchers eye AI revolution in natural disaster forecasts"

Published	Friday, September 11, 2026
Read by us on	Friday, September 11, 2026

https://phys.org/news/2026-09-eye-ai-revolution-natural-disaster.html

WHAT IS IN THIS PACKET

The article with a note on each question, a word search, a crossword, and the answer key to both.

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