



Daily current affairs

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European wind survey satellite launched

A new satellite that will use advanced laser technology to track global winds and improve weather forecasts has been successfully put into orbit, launch company Arianespace said.

The launch of the “Aeolus” satellite — named after the guardian of wind in Greek mythology — took place at 2120 GMT on Wednesday, after a 24-hour delay due to adverse weather conditions.

“Aeolus” satellite

- The satellite - named Aeolus after the guardian of wind in Greek mythology - will be placed at an altitude of 320km (200 miles) above the Earth.
- It is part of the Copernicus project, a joint initiative of the European Union and the European Space Agency (ESA) to track environmental damage and aid disaster relief operations.
- Aeolus is equipped with a single instrument: a Doppler wind lidar - an advanced laser system designed to accurately measure global wind patterns from space.
- “This mission will thus provide much-needed data to improve the quality of weather forecasting as well as contributing to long-term climate research,” Arianespace said in its website.
- Tropical winds in particular are very poorly mapped because of the almost complete absence of direct observations.
- The **Doppler lidar** transmits short, powerful pulses of laser light toward Earth in the ultraviolet spectrum. Particles in the air - moisture, dust, gases - scatter a small fraction of that light energy back to the transceiver, where it is collected and recorded.
- The delay between the outgoing pulse and the so-called “backscattered” signal reveals the wind’s direction, speed and distance travelled.
- Once per orbit data is downloaded to a ground station in Svalbard, Norway.
- Aeolus is the fifth of the ESA’s planned Earth Explorer missions.
- Others already completed or in operation have measured Earth’s gravity and geomagnetic fields, soil moisture, ocean salinity and frozen expanses collectively known as the cryosphere.
- The new mission is also Arianespace’s 50th launch for the ESA.

Winds

- Because of the wind, heat is distributed around the planet.
- Equatorial regions receive more heat from the Sun than other parts of the world.

- This leads to differences in air temperature, density and pressure, which in turn, cause the air to move – creating wind.
- This movement of air constitutes the general circulation of the atmosphere, transporting heat away from equatorial regions towards the poles, and returning cooler air to the tropics.
- The wind clearly plays an important role in weather forecasts, which in turn are not only important for planning our daily affairs, but vital for numerous commercial activities such as farming, fishing, transport, and for taking appropriate measures when extreme weather is on the horizon.
- Although weather forecasts have advanced considerably in recent years, there is a need for global wind measurements to improve them even further.
- ESA's Aeolus mission will fill this gap by providing global wind-profiles in near-real time.
- The European Centre for Medium-Range Weather Forecasts will process these data and the data in their numerical weather prediction models, which will lead to better forecasting.

DNA reveals first inter-species child

- Denny's mother was a Neanderthal, but her father a Denisovan, a distinct species of primitive human
- Her mother was a Neanderthal, but her father was Denisovan, a distinct species of primitive human that also roamed the Eurasian continent 50,000 years ago, scientists reported on Wednesday in the journal Nature.
- There was earlier evidence of interbreeding between different hominin, or early human, groups," said lead author Viviane Slon, a researcher at the Max Planck Institute for Evolutionary Anthropology. "But this is the first time that we have found a direct, first-generation offspring," she said.
- Denny's surprising pedigree was unlocked from a bone fragment unearthed in 2012 by Russian archeologists at the Denisova Cave in the **Altai Mountains of Siberia**.
- Analysis of the bone's DNA left no doubt: the chromosomes were a 50-50 mix of Neanderthal and Denisovan, two distinct species of early humans that split apart between 4,00,000 to 5,00,000 years ago.

