world's oldest individuals over half a century. They estimated that human longevity hit a ceiling at about 115 years — 125 tops.

Vijg and his team argued that given few, if any, gains in maximum lifespan since the mid-1990s, human ageing had reached its natural limit (X. Dong *et al. Nature* **538**, 257–259; 2016). The longest known lifespan belonged to Jeanne Calment, a French super-centenarian who died in 1997 at age 122.

Experts challenged the statistical methods in the 2016 study, setting off a firestorm into which Barbi and Lagona now step. Working with colleagues at the Italian National Institute of Statistics, the researchers collected records on every Italian aged 105 years and older between 2009 and 2015 — gathering certificates of death, birth and survival in an effort to minimize the chances of 'age exaggeration', a common problem among the oldest old.

They also tracked individual survival trajectories from one year to the next, rather than lumping people into age intervals as previous studies that combine data sets have done. And by focusing just on Italy, which has one of the highest rates of centenarians per capita in the world, they avoided the issue of variation in data collection between different jurisdictions.

As such, says Kenneth Howse, a health-policy researcher at the Oxford Institute of Population Ageing, UK, "these data provide the best evidence to date of extreme-age mortality plateaus in humans".

Ken Wachter, a mathematical demographer at the University of California, Berkeley, and an author of the latest study, suspects that previous disputes over the patterns of late-life mortality have largely stemmed from bad records and statistics. "If we can get data of this quality for other countries, I expect we're going to see much the same pattern."

ANTONIO CALANNI/AP/REX/SHUTTERSTOCK

Emma Morano, who died in 2017 at age 117, was the last surviving person born in the nineteenth century.

Robine is not so sure. He says that unpublished data from France, Japan and Canada suggest that evidence for a mortality plateau is "not as clear cut". A global analysis is still needed to determine whether the findings from Italy reflect a universal feature of human ageing, he says. Brandon Milholland, a co-author of the 2016 *Nature* paper, says that the evidence for a mortality plateau is "marginal", because the latest study included fewer than 100 people who lived to 110 or beyond. Leonid Gavrilov, a longevity researcher at the University of Chicago in Illinois, notes that even small inaccuracies in the Italian longevity records could lead to a spurious conclusion.

Others say the conclusions of the study are biologically implausible. "You run into basic limitations imposed by body design," says Jay Olshansky, a bio-demographer at the University of Illinois at Chicago, noting that cells that do not replicate, such as neurons, will continue to wither and die as a person ages, placing upper boundaries on humans' natural lifespan.

This study is thus unlikely to be the last word on the age-limit dispute, says Haim Cohen, a molecular biologist at Bar-Ilan University in Ramat-Gan, Israel. "I'm sure that the debate is going to continue." ■

CLIMATE CHANGE

Cyprus asserts itself as hub for climate research

Proposed science institute will focus on the Mediterranean and Middle East.

BY ANITA MAKRI

The tiny island of Cyprus is reshaping itself into a regional hub for climate-change research. The country lies at the meeting point of the Mediterranean, the Middle East and North Africa — areas where climate change is expected to take a heavy toll in the coming decades, but in which research capacity to address the issue is limited.

Cyprus's President Nicos Anastasiades announced plans on 5 June to create a government initiative that will coordinate action against global warming across the Mediterranean and support the creation of a €30-million (US$35-million) climate-change research centre at the Cyprus Institute in Nicosia, the nation's leading multidisciplinary research institution. "This is a priority issue for the government," says Theodoulos Mesimeris, head of the climate-change division of the Cypriot environment ministry. The initiative will also create a comprehensive plan for reducing Cyprus's greenhouse-gas emissions in line with goals set by the 2015 Paris climate accord.

Resources for climate research in the region are too small to scope out even the challenges, let alone the solutions, says Costas Papanicolas, president of the Cyprus Institute, who helped to plan the initiative with government ministers and Anastasiades.

Climate models suggest[1] that the Mediterranean and Middle East are getting warmer and drier at a rate faster than the global average; precipitation in the Mediterranean is expected to drop, especially in summer, by as much as 30–40% by the end of the century if no mitigation efforts are made, according to Filippo Giorgi, an Earth-systems physicist at the ▶

PETROS KARADJIAS/AP/REX/SHUTTERSTOCK

Water scarcity is a growing problem in Cyprus and the surrounding region.

International Centre for Theoretical Physics in Trieste, Italy. Rains — when they come — will be more intense. Crop failures, forest fires and freshwater shortages[2] are just some of the issues that threaten economies, lifestyle and tourism. Parts of the region are set to become uninhabitable. In the Middle East, for instance, average maximum temperatures could increase from 43 °C to almost 50 °C by the end of this century, without mitigation[3].

"There is warming, and there is no mechanism to counteract the warming," says Jos Lelieveld, an atmospheric chemist at the Max Planck Institute for Chemistry in Mainz, Germany, who also works at the Cyprus Institute.

REGIONAL IMPACT

Few monitoring systems exist in the eastern Mediterranean and Middle East to systematically measure variables such as temperature, humidity and desertification. The monitoring that does exist is inconsistent, and the data are too poor to feed into climate-change models, which would help researchers to understand local impacts and refine policy options.

At the core of the proposed hub — the Eastern Mediterranean Middle East Climate and Atmosphere Research Centre — will be a high-quality observatory for monitoring concentrations of greenhouse-gas emissions and atmospheric contaminants, which will take advantage of Cyprus's geographical location to establish the region's contributions.

The centre will absorb the existing climate-research activities of the Cyprus Institute. The institute, launched in 2007, has already helped to raise awareness of the issue in the region, says Khaled Toukan, chairman of the Jordan Atomic Energy Commission and the country's former energy minister. Jordan and other countries in the Middle East are moving towards clean energy, he says, but purely from an economic perspective.

Papanicolas says that the institute is capitalizing on Cyprus's position as the only European Union country in the Middle East. It has already won €400,000 in EU research money to develop a plan for the facility, and it is now preparing a bid for €15 million in EU funding, which would be matched by the Cypriot government and would bankroll the centre for the next decade. ■

1. IPCC. *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects* (Cambridge Univ. Press, 2014).
2. Lelieveld, J. *et al. Clim. Change* **114**, 667–687 (2012).
3. Lelieveld, J. *et al. Clim. Change* **137**, 245–260 (2016).

ASTRONOMY

NASA telescope's woes grow

The James Webb Space Telescope's cost and schedule problems threaten other big missions.

BY ALEXANDRA WITZE

NASA's beleaguered James Webb Space Telescope (JWST) is facing yet another delay, and will not launch until March 2021. That's ten months later than the tentative schedule that the agency announced just three months ago. To meet the new target, NASA must persuade lawmakers in Congress to approve a higher price for the mission.

The space agency estimates that the latest delay will add US$800 million to the telescope's cost, on top of the $8 billion Congress has already approved for its development. NASA plans to make up that shortfall in part by using money that had been intended to support the telescope's science operations in space. Still, the delays will loom over the agency's astrophysics budget, with unknown effects on the next big space telescope in NASA's queue: the Wide-Field Infrared Survey Telescope (WFIRST).

"I'm not happy sitting here," said Thomas Zurbuchen, NASA's associate administrator for science, at a 27 June news briefing on the delay. But he said that ensuring a successful mission was worth the extra time and money. Among other things, the telescope will peer back in time to explore some of the earliest galaxies to form in the Universe, and will probe the atmospheres of planets around other stars.

"JWST should continue because of the compelling science."

"JWST should continue because of the compelling science and because of its national importance," said Thomas Young, a retired executive with Lockheed Martin in Bethesda, Maryland. He oversaw an independent review of the telescope project that led to the revised schedule and budget estimates.

Members of Congress have sharply criticized NASA for previous JWST delays, and the latest announcement has continued the pattern. "Programme delays and cost overruns don't just delay the JWST's critical work, but they also harm other valuable NASA missions, which may be delayed, defunded, or discarded entirely," said Representative Lamar Smith (Republican, Texas), the chairman of the House science committee, in a statement.

JWST is the most complex astronomical telescope ever built, and problems have piled up towards the end of its development. The observatory is undergoing extensive testing at Northrop Grumman Aerospace Systems in Redondo Beach, California. The independent review