



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<sup>2</sup> 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<sup>3</sup>.

“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).

PETROS KARADIAS/AP/REX/SHUTTERSTOCK

#### 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 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

found that engineers made several errors at Northrop, including using the wrong solvent to clean valves, which later leaked, and not tightening the sunshield fasteners properly.

The JWST has a 6.5-metre-wide segmented mirror that will launch in a folded configuration and then unfurl once it is in space. The telescope's sunshield must also deploy without a hitch. JWST is technologically more complex than the Hubble Space Telescope, whose primary mirror was ground incorrectly, a problem discovered after launch. Astronauts fixed Hubble's vision in low Earth orbit, but repairs in space won't be possible for JWST, which will orbit 1.5 million kilometres from Earth.

Until last September, JWST was on track for an October 2018 launch. Then NASA pushed the date to June 2019, then May 2020 — and now March 2021.

### DECADAL DETOUR

The previous delay, which NASA announced in March, had prompted Zurbuchen to propose that the US astronomy community postpone its next 'decadal survey'. This influential process, which takes place every ten years, asks astronomers to decide which scientific questions their field should tackle and what facilities they need to answer those questions. Preparations for the next survey, which is due in 2020, were well under way when Zurbuchen suggested delaying it.

But the two other agencies involved in the survey — the US National Science Foundation and the Department of Energy — did not want to put it off. And neither did most of the astronomers polled by the US National Academies of Sciences, Engineering and Medicine, which oversees the survey. In late May, Zurbuchen reversed his stance, and the survey is now on track to meet its original deadline.

On 27 June, Paul Hertz, NASA's head of astrophysics, told an advisory committee that the rising costs for JWST were "likely to impact other science programmes". At particular risk is WFIRST, slated for launch in the mid-2020s. Just as JWST was the highest priority recommendation from the 2000 decadal survey, WFIRST was the highest priority in the 2010 decadal survey. Both are being developed by NASA's astrophysics division. The Trump administration has proposed cancelling WFIRST, although Congress has so far come to its rescue with continued funding.

In the long run, JWST promises revolutionary research that cannot be achieved any other way, says Jason Kalirai, an astronomer at the Space Telescope Science Institute in Baltimore, Maryland, and the project scientist for the telescope. "We need JWST to make the next big breakthroughs in astrophysics — and are willing to wait for it," he says. ■

### FUNDING

# EU crackdown on 'ethics dumping'

*Fund aims to stop scientists exporting dubious research.*

BY LINDA NORDLING

**E**thics dumping — doing research deemed unethical in a scientist's home country in a foreign setting with laxer ethical rules — will be rooted out in research funded by the European Union, officials announced last week.

Applications to the EU's €80-billion (US\$93-billion) Horizon 2020 research fund will face fresh levels of scrutiny to make sure that research practices regarded as unethical in Europe are not exported to other parts of the world. Wolfgang Burtscher, the European Commission's deputy director-general for research, made the announcement at the European Parliament in Brussels on 29 June.

Burtscher said that a new code of conduct developed to curb ethics dumping will soon be applied to all EU-funded research projects. That means applicants will be referred to the code when they submit their proposals, and ethics committees will use the document when considering grant applications.

The rules will apply to all research funded under Horizon 2020, and to all future EU funding programmes. The EU had banned ethics dumping in Horizon 2020 grants since 2013. But no clear guidelines existed to help ethics reviewers and researchers identify potential digressions in grant applications. The code, drafted as part of a Horizon 2020-funded project called TRUST, was published in May; the latest announcement gives it teeth.

The code provides clear guidance for doing research in resource-poor settings. Animal studies, for example, must not be conducted outside the EU if they would not be allowed in the scientists' home country. Another provision states that "lower educational standards, illiteracy or language barriers" among research

participants can never be an excuse to hide information from them or provide it incompletely. The code also addresses situations that might not arise in Europe-based studies. For instance, sex work is legal in many countries in Europe but not in Kenya. And homosexuality is illegal in many countries worldwide. So studies involving sex workers or gay people, for example, must take measures to ensure the safety of participants.

The ethics-dumping guidelines were produced with representatives from such vulnerable populations. Joyce Adhiambo, a Kenyan former sex worker who promotes sex workers' rights in research and in HIV-prevention services, sees the code as a matter of mutual respect. "When [researchers] want something from sex workers, we deal with it respectfully. We ask the same in return," she said at the Brussels event.

Adhiambo told *Nature* that researchers must use their privileged position to encourage communities to become actively involved in studies. Members could be hired as research assistants, for example, or to help translate and explain consent forms to participants. "We come from a poor setting but we have a voice. We have a culture and a way of living. We have our traditional knowledge, and when we walk in the path together, we are going to make a brighter future for all these research projects."

Ethics dumping — coined by the European Commission in 2013 — is a contentious term, and few researchers admit to the practice. In a recent book, researchers with the TRUST project cited research carried out on wild-caught monkeys in Africa, and clinical trials in India in which people living in poverty were denied life-saving screening in the control arm, as examples of ethics dumping (see [go.nature.com/2mkhcx4](http://go.nature.com/2mkhcx4)). ▶



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