

News in focus

SARS-CoV-2 virus, its transmission routes or treatments or vaccines. The document states that universities need to consider “the questions society is concerned about” when publicizing research on the virus. (*Nature* was sent the document, which is stamped by the MOE and includes the name of an agency official, by a researcher who did not want to comment.)

The education ministry seems to have issued another order after a meeting of the Joint Prevention and Control Mechanism on 25 March, according to a second notice that also seems to come from the MOE and has been posted on Pincong, a Chinese-language forum. This notice, dated 7 April, states that studies on the virus’s source must be approved by a university academic committee and the education ministry’s science and technology department before being published in a journal or posted on a preprint server or blog. Academic committees must evaluate all other COVID-19 papers for “academic value and timing”. The notice also warns that studies must not exaggerate the efficacy of vaccines or treatments.

According to archived web pages, the 7 April notice was reproduced on the website of the School of Information Science and Technology at Fudan University in Shanghai, but was subsequently removed. UK newspaper *The Observer* has reported that a similar notice was posted on, and then removed from, the website of the China University of Geosciences in Wuhan.

Helpful policies

Several researchers in China welcome the vetting process for COVID-19 studies. Alice Hughes, a conservation biologist at the Chinese Academy of Sciences (CAS) Xishuangbanna Tropical Botanical Garden, says the measure will stop the dissemination of potentially inaccurate and sensationalist research, such as a controversial study published in the *Journal of Medical Virology* in January, which suggested that snakes were the virus’s host.

Hughes says her institute’s director told her in late February that research on COVID-19 required MOST approval. She has not seen official policy documents herself. In early March, she says, she had a paper approved by the CAS and then by MOST within 72 hours. “We are continuing to see China publishing papers on the origins through this system,” she says.

Zhang Zhigang, an evolutionary microbiologist at Yunnan University in Kunming who published on the outbreak’s origins before the vetting process came in, also thinks it’s a good way to control research quality and reliability.

But news of the policies hasn’t reached all scientists or institutions. Chen Jin-Ping, an animal-disease researcher at the Guangdong Institute of Applied Biological Resources in Guangzhou who is also studying the virus’s origins, says he hasn’t been told that he needs ministry approval for his research to be published. And Fei Ma, dean of research and

graduate studies at Xi’an Jiaotong–Liverpool University in Suzhou, China, says he hasn’t heard of the need for coronavirus-related research to be approved by MOST or other government agencies.

Denis Simon, executive vice-chancellor at Duke Kunshan University, says his institute hasn’t received any official notices, but that researchers are discussing the issue.

Some researchers outside China fear the vetting process could hold up the release of important research. “Right now we desperately need all kinds of research relating to SARS-CoV-2, from basic studies to understand mechanisms of disease to vaccines and therapeutics,” says Ashley St. John, a virologist at the Duke–NUS Medical School in Singapore.

“We can’t afford any delays right now.”

Understanding the origin of SARS-CoV-2 could also lead to warning systems for virus spillovers from animals to people, she says.

Sarah Cobey, an infectious-disease researcher at the University of Chicago in Illinois, adds that it would be problematic if results from China were being filtered or suppressed for reasons other than quality. Observations of viral spread across countries inform the use of interventions such as social distancing, she says.

“If the research presents a biased picture, much of the record can eventually be corrected through studies of SARS-CoV-2 elsewhere,” she says, “but the distortion and delay would probably come at the cost of human health.”

COVID-19 COULD RUIN WEATHER FORECASTS AND CLIMATE RECORDS

As environmental-monitoring projects go dark, data that stretch back for decades are about to get gappy.

By **Giuliana Viglione**

Twice each year, Ed Dever’s group at Oregon State University in Corvallis heads out to sea off the Oregon and Washington coasts to refurbish and clean more than 100 delicate sensors that make up one segment of a US\$44-million-per-year scientific network called the Ocean Observatories Initiative. “If this had been a normal year, I would have been at sea right now,” he says.

Instead, Dever is one of many scientists sidelined by the coronavirus pandemic, watching from afar as precious field data disappear and instruments degrade. The scientific pause could imperil weather forecasts and threaten long-standing climate studies. In some cases, researchers are expecting gaps in data that have been collected regularly for decades. “The break in the scientific record is probably unprecedented,” says Frank Davis, an ecologist at the University of California, Santa Barbara.

Davis is executive director of the Long Term Ecological Research (LTER) programme, a

network of 30 sites stretching from the far north of Alaska all the way down to Antarctica. Consisting of both urban and rural locations, the LTER network allows scientists to study ecological processes over decades – from the impact of dwindling snowfalls on the mountains of Colorado to the effects of pollution in a Baltimore stream. At some sites, this might be the first interruption in more than 40 years, he says. “That’s painful for the scientists involved.”

Weather forecasting takes a hit

Other monitoring programmes are facing similar gaps. Scientists often ride along on the commercial container ships that criss-cross the world’s oceans, collecting data and deploying a variety of instruments that measure weather, as well as currents and other properties of the ocean. Most of those ships are still running, but travel restrictions mean that scientists are not allowed on board, says Justine Parks, a marine technician who manages one such programme at the Scripps Institution of Oceanography in La Jolla, California.

Port strikes and political instability have halted specific cruises in the past, Parks says. But, to her knowledge, this is the first time that the entire programme has shut down for an extended period of time.

Measurements made at sea are important for

“The break in the scientific record is probably unprecedented.”



Scientists are skipping trips meant to maintain sensors for the Ocean Observatories Initiative.

forecasting weather over the oceans, as well as for keeping longer-term records of ocean health and climate change, says Emma Heslop, a programme specialist in ocean observations at the Intergovernmental Oceanographic Commission in Paris. Her group is still trying to assess the extent of the damage that the pandemic is doing to the ocean-observing community as a whole, but researchers are already feeling some effects. Over the past two months, they've seen steadily declining numbers of shipboard observations – amounting, since the beginning of February, to a 15% loss of stations reporting data. And although the community is working hard to figure out other ways to collect important data, the situation is likely to worsen as the pandemic stretches on. “The longer the restrictions are in place,” Parks says, “the longer it will take for our operations to recover.”

Commercial flights provide invaluable weather data, too – measuring temperature, pressure and wind speeds. The meteorological data provided by the US aircraft fleet had decreased to half its normal levels as of 31 March, according to the US National Oceanic and Atmospheric Administration (NOAA).

Maintenance woes

Satellites and weather balloons can fill in some gaps, but certain aircraft data are irreplaceable. “It’s certainly the case that with the virtual loss of worldwide aviation, there is a gap in some of the records,” says Grahame Madge, a spokesperson for the UK Met Office in Exeter.

The Met Office estimates that the loss of aircraft observations will increase their forecast

error by 1–2%, but notes that, in areas where flights are typically more abundant, scientists’ forecast accuracy might suffer even more. The Met Office maintains more than 250 UK weather stations that provide continuous or daily feeds of autonomously collected atmospheric and weather data. For now, those systems are functioning just fine, but if an instrument goes down, Madge says, it will be difficult to get staff out to fix the problem.

Many of the world’s atmospheric-monitoring data are collected with little to no human intervention, and such projects should be able to keep running. The Advanced Global Atmospheric Gases Experiment, for example, measures ozone-depleting compounds, greenhouse gases and other trace components in the atmosphere at 13 remote sites around the globe. Many of their systems are autonomous: the stations are each staffed by one or two people who perform routine maintenance to keep the instruments running. Ray Weiss, an atmospheric chemist at Scripps who leads the project, says that two instruments have broken down so far, but the loss of a single instrument or even a whole site for a few weeks is unlikely to jeopardize the network’s monitoring capabilities. Arlyn Andrews, who runs NOAA’s greenhouse-gas-monitoring programme, says that impacts on that network have been “relatively minor”, and less than 5% of the NOAA sites have lost data so far.

Unless the situation gets a whole lot worse, Weiss anticipates that the programme will escape relatively unscathed. “We’re limping through, is the bottom line.”

Q&A



Charlie Swanton

Cancer-evolution researcher Charlie Swanton at the Francis Crick Institute in London has led the conversion of some labs into a coronavirus testing facilities. Swanton, also a consultant oncologist at the University College London Hospitals (UCLH), spoke to *Nature* about the effort.

How did this start?

Scientists didn’t want to sit at home and read reports about increases in deaths. We reached out to the UCLH and they said there was an unmet need for staff and patient testing. So researchers set up a working group to convert laboratories here into a rapid real-time polymerase chain reaction (RT-PCR) screening facility. Five large laboratories here have now been repurposed. Everybody wanted to help.

What does it take to retool a cancer lab into a diagnostic testing facility?

You need the right people, laboratory infrastructure and reagents. We have here BSL-3 (biosafety-level-3) facilities and BSL-3 trained staff, 10–15 RT-PCR machines, environments to extract RNA from viral samples, and space. We repurposed a lot of the software tools that we use to track patients’ cancer and blood samples to help us track COVID-19 tests.

We get swabs couriered from the UCLH every day: they’re taken up in an isolated coronavirus-specific lift and barcoded; the virus is inactivated, the PCR test done and the results reported back via a messaging app to medical staff. We are currently doing hundreds of tests per day, and hope to get up to 500–1,000 tests per day.

How have researchers adapted?

This is a new way of working for many of our scientists and staff. Much of this diagnostic work is repetitive and quite boring, but the stakes are high. It’s been extraordinary to see the selflessness of scientists here to help in the bigger effort of getting medics back to the front line.

Interview by Noah Baker

This interview has been edited for length and clarity.