HERMES/AGF/UIG/GETTY

Since the funders' statement, Facebook has released a further data set, but not the full range. Now that the deadline has passed, the Hewlett Foundation, one of the charities, says the group is assessing the next steps and determining which research proposals can be accomplished.

Other partners that have spent a year working with Facebook on data-sharing solutions say they are continuing their efforts to build a computing infrastructure that allows the company to share its data with researchers, irrespective of the funders' decisions. The partners will continue to release data sets in the coming weeks, and Facebook has more than 30 people working on the project, says Gary King, a social scientist at Harvard University in Cambridge, Massachusetts, and co-founder of Social Science One. This non-profit foundation was set up to act as a 'data broker' between Facebook and the researchers on this project and future initiatives. "To learn about societies, we must go to where the data are," says King. He says that the model his team is implementing is the only one plausible for collaborations with technology giants.

A spokesperson for Facebook told *Nature*: "This is one of the largest sets of links ever to be created for academic research on this topic. We are working hard to deliver on additional demographic fields while safeguarding individual people's privacy."

DATA SHORTCOMINGS

At issue is the amount and type of information that Facebook has been able to give external researchers. Data sets released so far, for example, include 32 million links, or URLs, each of which has been shared publicly by at least 100 users. These include some valuable information, such as ratings of a page's trustworthiness from third-party fact-checking sites. But the company had promised researchers around one billion links, including those largely shared privately, where fake news tends to circulate, says Simon Hegelich, a political data scientist at the Technical University of Munich in Germany. His team is studying misinformation during Germany's 2017 election. "My impression is that, at least for our project, the data that Facebook is offering is more or less useless," he adds.

Sharing data with researchers without compromising user privacy required new infrastructure. Social Science One and Facebook built a secure portal that connects to Facebook's servers and uses a mathematical technique known as differential privacy, which adds noise to the results of analyses that prevents users from becoming personally identifiable. Social-media data, although less sensitive than medical information, bring extra privacy challenges because they are connected to a person's real-world behaviour, so even if they are anonymized, it is relatively easy to identify individuals, says Jake Metcalf, a technology ethicist at the think tank Data & Society in New York City who is on the team conducting ethical reviews for proposals to the scheme. "It's a very challenging model to achieve," he says. ■

Ethiopia's highland waterfalls, where the Blue Nile begins.

WATER

Nations clash over giant Nile dam

Egypt says the Grand Ethiopian Renaissance Dam will cause water shortages — but Ethiopia stands firm.

BY ANTOANETA ROUSSI

Environmental scientists representing Egypt, Ethiopia and Sudan are at the heart of an increasingly bitter dispute over Africa's largest hydroelectric dam, which Ethiopia is building on the Nile.

The countries' researchers met in Sudan's capital, Khartoum, ahead of a conference of water ministers on 4–5 October. The dam's environmental impacts, especially on water supplies in Egypt, topped the agenda. But the ministers' meeting ended without resolution and Egypt is now calling for the United States to become involved. Ethiopia opposes this.

Egypt is concerned that Ethiopia is moving too fast to complete the Grand Ethiopian Renaissance Dam, and that its timetable will create water and food scarcity and put millions of Egypt's farmers out of work. Ninety per cent of Egypt's fresh water comes from the Nile, which runs south to north from Ethiopia's highlands, the main source of the tributary called the Blue Nile.

Ethiopia counters that the project, which is 60% complete, is essential for its electricity needs and is a matter of national sovereignty — not something Egypt can interfere with. According to the World Bank, 66% of Ethiopia's population is without electricity, the third highest proportion in the world. At its peak, the dam is expected to produce 6.45 gigawatts of electricity.

Ethiopia's government also says that its plan will enable countries to its north to cope more effectively with the effects of climate change. At present, unpredictable dry and wet weather in the Nile Basin — caused in part by climate change — is contributing to intermittent floods and water shortages. Ethiopia's plan will even out Nile water flow, making such events less likely, says Seleshi Bekele, Ethiopia's minister of water, irrigation and energy.

The three countries involved have established an independent expert panel, the National Independent Scientific Research Group, to help find a way forward.

STARTING SCHEDULE

When the dam will start operating depends on how quickly its main reservoir can be filled from Nile water, and this is central to the dispute. The reservoir provides the store of water that is used to drive turbines and generate electricity. Ethiopia wants the reservoir to be filled over 5 years, with 35 billion cubic ▶

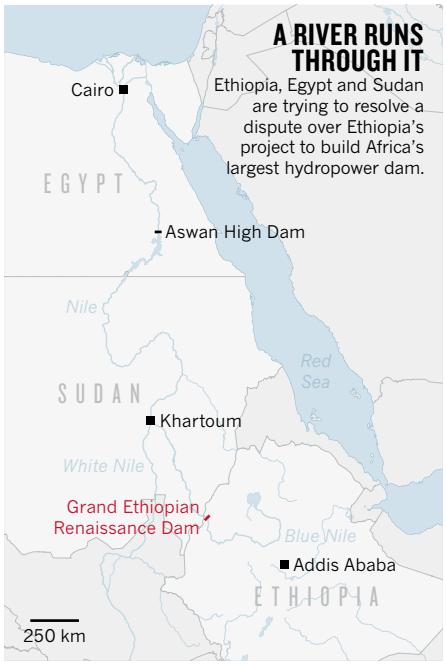
metres of water being released to countries downstream each year while the dam is being filled. Egypt says that its water supplies will be reduced during this period. It is calling for the reservoir to be filled more slowly, over 7 years, and wants more water to be released — 40 billion cubic metres per year.

Egypt and Ethiopia do not have a formal water-sharing agreement. Under the 1959 Nile Waters Agreement between Egypt and Sudan, Egypt takes 55.5 billion cubic metres of water from the Nile each year, and Sudan takes 18.5 billion. The agreement was reached shortly before Egypt began constructing its own megadam, the Aswan High Dam (see 'A river runs through it').

Ethiopia, however, was not part of this agreement and therefore does not recognize it. Ethiopian foreign-ministry spokesperson Nebiyat Getachew said at a press conference on 20 September that any proposal that did not respect "Ethiopia's sovereignty and its right to use the Nile dam" wouldn't be accepted.

"Ethiopia expects discussions and progress on our talks without the imposition of any one of the countries," says Bekele. "The issues are solvable technically and we can place the right framework on long-term operation, based on science and best practices."

Water-resources researcher Kevin Wheeler of the University of Oxford, UK, says that in a year with average rainfall, Egypt should experience little or no extra water scarcity if the reservoir is filled over 5–7 years, with at least 35 billion cubic metres of water released downstream.



But Egypt is right to be concerned about extra water scarcity in dry years and those with low rainfall, adds Wheeler, who co-wrote a 2016 paper on ways to fill the dam (K. G. Wheeler *et al. Water Int.* **41**, 611–634; 2016).

Harry Verhoeven, a Nile Basin researcher based in Qatar, says that ultimately there is little Egypt can do, and policymakers in Cairo will have to adjust to having less Nile water during the dam's filling period. "Reduced water flows over several years mean tough choices, not only of who gets the water but what crops you grow and whether domestic food supply or export markets are prioritized," he says.

Verhoeven says that Egypt could take the dispute to the International Court of Justice in The Hague, the Netherlands, but that would require both sides to agree to such arbitration. Even if they did agree, he predicts, the court would be unlikely to find in Egypt's favour. "Ethiopia has a right to develop the water resources in its territory," he says.

Egypt's ministry of water and irrigation did not respond to *Nature*'s repeated requests for comment. But in a statement issued earlier this month, the ministry said that it considered "it important for the Ethiopian side to engage in serious technical negotiations", and find an agreement that would be in "the common interests of the three countries".

Although neither side has been willing to budge so far, the countries are likely to find a compromise, says Ismail Serageldin, a former vice-president of the World Bank who predicted in 1995 that twenty-first-century wars would be fought over water. "Ethiopia wants as short a period as possible, Egypt wants as long a period as possible, they will negotiate and meet somewhere in the middle — I think it's good that people are talking."

"There's still time for wars," adds Serageldin, who later became a science adviser to Egypt's prime minister. "But who knows, we may turn out to be wise; wiser than I thought possible at the time that I said that." ■

ATMOSPHERE

Stratospheric data aid climate forecasts

Including the upper atmosphere in weather models helped understanding of rare Antarctic event.

BY DYANI LEWIS

For the past month, a rare atmospheric phenomenon has been brewing above Antarctica, raising temperatures in the upper atmosphere by 40 degrees and threatening to reverse the direction of a powerful jet stream for only the second time since records began.

At the first signs of this event, known as sudden stratospheric warming, Eun-Pa Lim, a climate scientist at the Australian Bureau of Meteorology in Melbourne, plugged the rising temperatures into a model she had designed that forecasts short-term climate over the Southern Hemisphere (E.-P. Lim *et al. J. Geophys. Res. Atmos.* **123**, 12002–12016; 2018). The model predicted that the warming above Antarctica will drive hot, dry winds across eastern Australia over the next three months.

The forecast has excited meteorologists because it shows how far the field has come in understanding the stratosphere — the second major layer of Earth's atmosphere — and its effects on weather.

For decades, meteorologists thought weather was mostly driven by what was happening in the troposphere, the layer between the stratosphere and Earth's surface. Then, in 2001, daily stratospheric weather maps revealed how the two regions interact (M. P. Baldwin and T. J. Dunkerton *Science* **294**, 581–584; 2001). Now these interactions are being included in models such as the one designed by Lim to forecast short-term climate — conditions occurring between a 7–10-day weather forecast and the following 3 months — around the world. For instance, meteorologists can now predict how conditions in the stratosphere will affect a climatic phenomenon that drives heavy rainfall in the United States in winter.

"We have a much better understanding of how the stratosphere affects the weather at the surface," says Adam Scaife, head of long-range forecasting at the Met Office Hadley Centre for Climate Science and Services in Exeter, UK.

Improved accuracy and confidence in such forecasts makes a big difference to government agencies preparing for heatwaves or fires, as well as to farmers, such as those in drought-affected eastern Australia, when planning irrigation or herd-mustering schedules, says Lim.

Sudden stratospheric warming events are common in the Northern Hemisphere, occurring every second year, on average, but they are rare in the Southern Hemisphere. The first such event recorded in the south, in 2002, took scientists by surprise.

Even if they had known it was coming,