Correspondence

Groundwater: a call to action

As we embark on the United Nations 'decade of action' (see go.nature.com/2opvyi3), and as this week's UN COP25 Climate Change Conference concludes in Madrid, let's remember the crucial contribution of groundwater to climate resilience and sustainable development.

Besides sustaining drinking water and ecosystems worldwide, groundwater acts as a subsurface sponge for floods. It is a resource against drought and for natural climate solutions that sequester soil carbon. And it is crucial for sustainable development because it enables food security and lifts rural populations out of poverty.

However, these essential benefits are being undermined by the long-term depletion, contamination and salinization of groundwater (see, for example, I. E. M. de Graaf et al. Nature 574, 90–94; 2019).

In our view, groundwater needs to be monitored and managed with greater rigour on regional and global scales so that it can be used more effectively to boost climate adaptation and sustainable development. As members of a global group of scientists and practitioners, we have issued a call to action to international and national governmental and non-governmental agencies, development organizations, corporations, decision makers and scientists, to ensure that groundwater benefits society now and into the future (see go.nature.com/37gnbtb).

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Evaluating Italy's ranking boom

The president and vice-president of the Italian National Agency for the Evaluation of Universities and Research Institutes (ANVUR) claim that Italy's rise in international research-impact rankings is a real effect (P. Miccoli and R. I. Rumiati Nature 574, 486; 2019), and not (as we have argued) the result of Italian scholars citing one another's articles more heavily (see Nature http://doi.org/dcgj; 2019). We question their evidence for this claim.

First, they say that scientific productivity in Italy has risen in the past decade, possibly stimulated by the introduction of performance-related university funding. More articles are indeed being published, but the yearly growth rate of Italy's scientific production has in fact slowed down since the introduction of performance-related targets in 2012, according to ANVUR's own statistics (see go.nature.com/34ms9n; in Italian).

Second, they state that ANVUR recognizes the importance of correcting gaming behaviours, including self-citation. They point out that, in an evaluation of 2011–14 work, the agency established a criterion for 'downgrading' papers in which self-citation exceeded a given threshold. ANVUR's own reports, however, show that this downgrading was never applied (see go.nature.com/2jn2si; in Italian).

In our view, ANVUR's claim needs to be grounded more in fact and less in aspiration.

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We'll take 'quantum advantage'

We take issue with the use of 'supremacy' when referring to quantum computers that can out-calculate even the fastest supercomputers (F. Arute et al. Nature 574, 505–510; 2019). We consider it irresponsible to override the historical context of this descriptor, which risks sustaining divisions in race, gender and class. We call for the community to use 'quantum advantage' instead.

The community claims that quantum supremacy is a technical term with a specified meaning. However, any technical justification for this descriptor could get swamped as it enters the public arena after the intense media coverage of the past few months.

In our view, 'supremacy' has overtones of violence, neocolonialism and racism through its association with 'white supremacy'. Inherently violent language has crept into other branches of science as well — in human and robotic spaceflight, for example, terms such as 'conquest', 'colonization' and 'settlement' evoke the terra nullius arguments of settler colonialism and must be contextualized against ongoing issues of neocolonialism.

Instead, quantum computing should be an open arena and an inspiration for a new generation of scientists.

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Proven protection against air pollution

As researchers for the certifying body for personal protective equipment in the United States, we caution against misinterpretation of Wei Huang's and Lidia Morawska's contention that face masks could increase health risks from air pollution (Nature 574, 29–30; 2019).

Although the authors attempt to distinguish between 'medical masks' and 'specialist respirators', a clearer definition of 'mask' would avoid confusion over the capabilities of different protective devices. As they point out, surgical masks are loose-fitting and ineffective against air pollution. However, respirators approved by the National Institute for Occupational Safety and Health (NIOSH) fit tightly to the face and filter at least 95% of airborne particles, including aerosolized nanoparticulates (E. Vo et al. Ann. Occup. Hyg. 59, 1012–1021; 2015).

Even NIOSH-approved respirators that have not been personally fitted provide some protection in non-occupational settings (see go.nature.com/35ztfy). Outdoor workers in California, for example, wore such devices as safeguards against non-oily particulate hazards produced by this year's wildfires (go.nature.com/35jwdw).

An absence of evidence from clinical trials is no reason not to take precautionary measures.

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Disclaimer: These conclusions do not necessarily represent the official position of NIOSH.