

Correspondence

Preprints – *Nature's* dark past

I read with pleasure that *Nature* is now actively promoting the use of preprints, having backed their dissemination since 1997 (see *Nature* 569, 307; 2019).

It is worth remembering that when the first preprints were distributed 50 or so years ago, you frowned on the practice.

Several times in 1966, you railed against preprints, pioneered at the time by the US National Institutes of Health (NIH). In July that year, you described them as “offensive” (*Nature* 211, 333–334; 1966). Preprints, you claimed the following month, were characterized by “inaccessibility, impermanence, illiteracy, uneven quality, and lack of considered judgment” (*Nature* 211, 897–898; 1966). By November, they were “an offence against scholarship” (*Nature* 212, 865–866; 1966). The following year, this first iteration of preprints was killed off because journals were boycotting them (see go.nature.com/2wmpbbw).

Your motivation was presumably to protect your financial position, because you felt that the NIH preprint service — and its proposed extension into physics — threatened your status and profits. As you now realize, this is not the case. **Matthew Cobb** *University of Manchester, UK.*
cobb@manchester.ac.uk

Low nuclear risks worth climate gains

I fear that your coverage of long-term health effects from nuclear testing in Kazakhstan could unjustifiably promote the public's phobia about nuclear energy and detract from what nuclear power can do for the global climate (see *Nature* 568, 22–24; 2019).

Since the fall of the Soviet Union in 1991, Kazakhstan's Semipalatinsk site has been

secured and surveyed, and the results published (N. A. Nazarbayev *et al. Scientific, Technical and Engineering Work to Ensure the Safety of the Former Semipalatinsk Test Site Vols 1–3*; 2017). The nuclear accidents at Chernobyl, Goiânia and Fukushima have indicated that damage to human health from radiation and radioactivity is rare (see go.nature.com/32wxw5b). In my opinion, enough is known today from germline biology to confirm that any risk from historical exposures to radiation is limited.

The blast released by a nuclear weapon is highly destructive over many kilometres. However, radioactivity and low or moderate levels of radiation are much less harmful, as a century of medical use and laboratory tests attest.

Wade Allison* *University of Oxford, UK.*
wade.allison@physics.ox.ac.uk
*Declares competing interests; see go.nature.com/2jqzube for details.

Nuclear energy saves lives

I disagree with your view that the risks of chronic exposure to ‘low level’ radioactivity in Kazakhstan should inform debate on expanding nuclear power to reduce carbon emissions (*Nature* 568, 22–24; 2019). I find it alarmist and misleading.

It is alarmist because the detonation of nuclear weapons at the Semipalatinsk test site exposed the public to much higher doses of radiation than even the most catastrophic accidents at nuclear reactors such as Chernobyl and Fukushima. It is misleading because, despite extensive research, no adverse effects of chronic exposure to low-level radiation (less than 500 millisieverts per year) have been detected (M. Tubiana *et al. Radiology* 251, 13–22; 2009). Safety levels are set far

below this by regulators out of caution, not because there is any evidence of harm.

The risks of nuclear energy need to be compared with the higher risks of alternative energy sources, notably fossil fuels. By replacing some generators fired by fossil fuels, nuclear energy has saved an estimated 2 million lives since 1971 (see P. A. Kharecha and J. E. Hansen *Environ. Sci. Technol.* 47, 4889–4895; 2013). Moreover, avoiding the risk of severe climate change requires a rapid reduction in greenhouse-gas emissions, which is not achievable without the expansion of nuclear power. **Anton van der Merwe** *University of Oxford, UK.*
anton.vandermerwe@path.ox.ac.uk

Apply strict levels of marine protection

Following President Emmanuel Macron's call last month for an increase in the coverage and protection of marine protected areas (MPAs) in France's exclusive economic zone, it is important that levels of protection are appropriately set for each of the French sea basins.

France plans to establish more than 20 new protected areas by 2022. In the French Southern and Antarctic Lands, for example, the country's ecological defence council intends to create an MPA around the islands of Saint-Paul and Amsterdam and to increase protection of the Glorioso Islands' MPA. Together, these will meet Macron's objective for MPAs to cover 30% of France's exclusive economic zone, and for one-third of these areas to be ‘strongly protected’.

The French Biodiversity Agency is still working on a definition of ‘strong protection’. In my view, the term should be confined to full and high protection (as defined by the MPA Guide: <http://wcmc.io/8408>). Only such stringent levels are likely to deliver the

expected ecological benefits (see M. Zupan *et al. Front. Ecol. Environ.* 16, 381–387; 2018). Macron's targets must therefore include each of the French sea basins.

The ecological defence council aims to set guidelines on the degrees of protection that will preserve biodiversity and sustain the livelihood of millions of people. It will also monitor the implementation of these guidelines.

Joachim Claudet *National Centre for Scientific Research, Paris, France.*
joachim.claudet@cnrs.fr

Three priorities for polar research

As early-career researchers in polar science, we are extremely concerned over the intergovernmental Arctic Council's first-ever failure last month to agree on scientific priorities (see go.nature.com/2efubti). In our view, polar science is being held back by the very institutions that stand to benefit from such research. Three things are needed to improve management and influence policy in polar regions.

Polar research should draw on knowledge co-produced with Arctic communities and others who are directly affected by rapid climate shifts. Academic reward structures need reforming to recognize that community, communication and policy involvement are as crucial as funding and publishing: inclusion, retention and service efforts must be rated more highly by universities, funding agencies and governments. And those bodies should strengthen ties across subfields of polar science to promote genuinely transdisciplinary research. **Mike MacFerrin*** *University of Colorado Boulder, USA.*
michael.macferrin@colorado.edu
*On behalf of 32 co-signatories (see go.nature.com/1yrdjfor full list.)