ESS 203 - Glaciers and Global Change

Class 08 – Friday January 22, 2021

Outline for today

- highlights of last Wednesday lecture: – *Jennifer Lomeli*
- Today's highlights on Monday: – *Justice Correa-West*

Highlight reporters

- Remember to turn in your ~100-word reports in Canvas

- Cost of peer-reviewed journals
- Bad acts in Science?
- How are they caught?

Lecture slides available in Canvas: Files > Lecture Slides
Also at http://courses.washington.edu/ess203/LECTURES/

HW 08 –Assignment for Monday

Matt Parsons, the UW Librarian for Earth and Space Sciences, has released a Panopto video lesson for our class on the topic of using UW library databases to find peer-reviewed publications available o you through UW libraries based on a number of search types. Please watch Matt's video lesson at:
https://uw.hosted.panopto.com/Panopto/Pages/Viewer.aspx?id=7f884164-9267-48f5-adb4-acb20005bc4c

Please write a couple of paragraphs outlining the relative advantages of the two databases "GeoRef" and "Web of Science", and how they can help your research for your group term research project.

So where are we now?

- We can answer “What is a glacier?”
- We know a bit about how curious scientists think.
- Now we are exploring how they communicate their ideas and results.

Reading a Scientific Paper

When you read a scientific paper, keep these three questions in your mind:

1) What is the question that the paper tries to answer?
2) What is the answer (according to the authors)?
3) What points are still unclear to you?

Reading a Scientific Paper

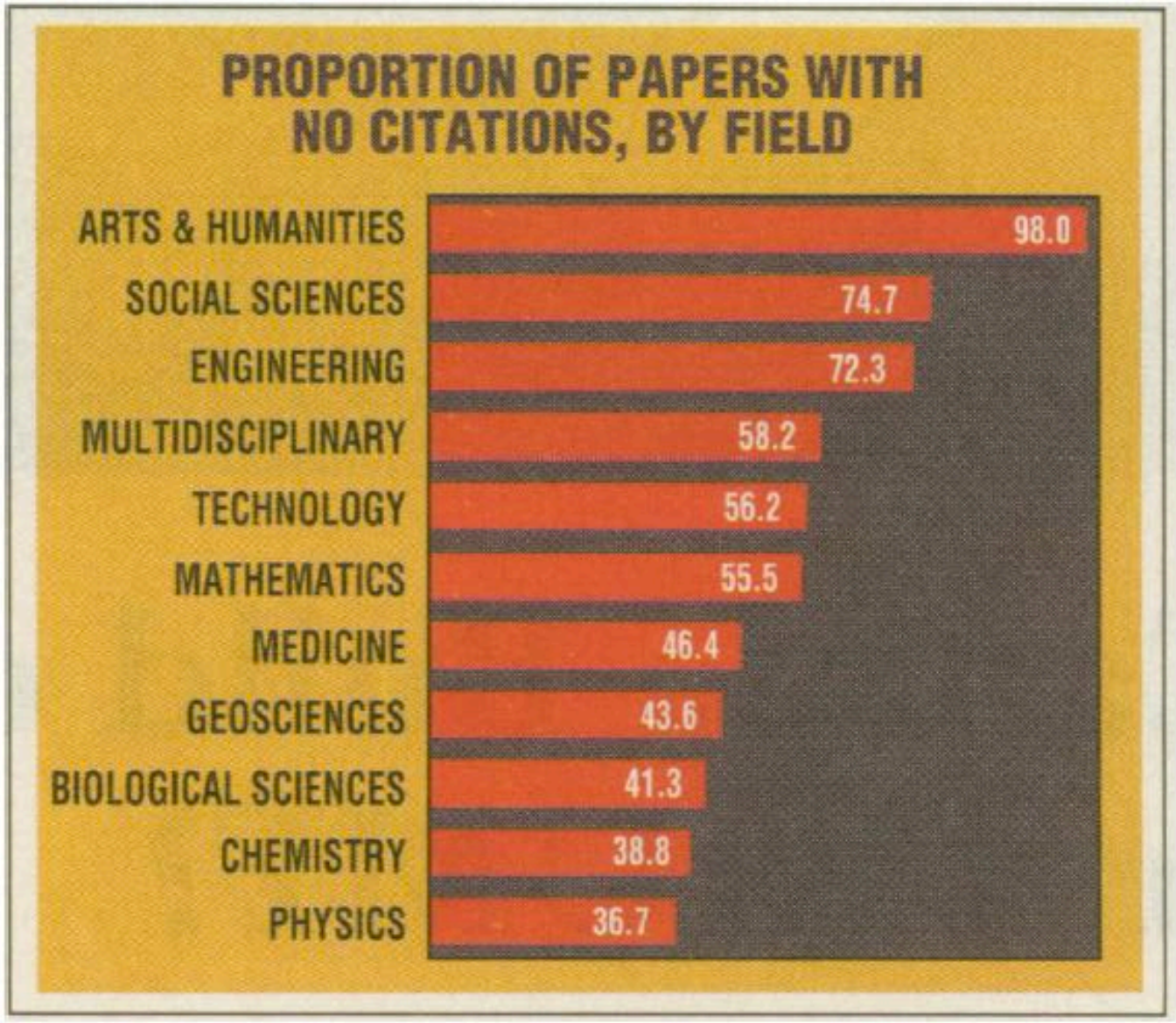
- Read the title and abstract carefully first.
- Look at the Conclusions if you are in doubt about questions 1) and 2).

Some details of how the problem was solved may be unclear (e.g. equations, footnotes, or descriptions of methods).

- Don't worry about this when you first read the paper. We will go over some of these details in class.
- Some details you can just accept, if the peer-reviewers have done their job.

Who uses the power of citations to build on prior work?

Bar graph shows percent of papers not cited at all in the 4 years following publication.



Hamilton, D.P. 1991. Research papers: who's uncited now? *Science* 251, 25.

The high cost of journals

The Good News:

- More and more good scientific studies are being carried out every year, and many of them can contribute to societal issues.

The Bad News:

- Library budgets are not keeping pace with proliferating journals, books, and on-line sources.
- Escalating prices and bundling of for-profit journals are major factors.

Nature Publishing Group – now part of Springer

- The international high-profile journal *Nature* has been a for-profit publishing enterprise since 1869.
- *Nature* gets many more good papers than it can publish.
- Rejecting manuscripts means lost revenues.
- NPG has spun off several new journals in specific fields to reduce pressure on mother-ship *Nature*.

➢*Nature Nanotechnology*
➢*Nature Physics*
➢*Nature Materials*
➢*Nature Biotechnology*
➢*Nature Genetics*
➢*Nature Immunology*
➢*Nature Cell Biology*

➢***Nature Geoscience (Vol. 1, No. 1, January 2008)***

2008 -Will UW subscribe to *Nature Geoscience*?

Subject: RE: Nature Geoscience--bad news …
Date: Wed, 6 Feb 2008 17:04:57 -0800
From: Matthew Parsons <parsonsm@u.washington.edu>

…

NPG (publishers of *Nature Geoscience*) quoted us a 2008 subscription price for online access at $4,620.00. This includes a one time 20% pre-pub discount and an additional UW discount. For 2009, the estimated price quote will jump to $6,200.00 (includes UW discount and accounts for 5% inflation).

Our 2008 serials budget is already encumbered and there is no new money to pay for new subscriptions. The only way I can justify picking up *Nature Geoscience* is if I cancel one or more current geology journals of equal value.

Sorry to be the bearer such news, but unless there is agreement on canceling several thousands of dollars of other journal titles, I won't be able to add *Nature Geoscience*. I am open to suggestions on this if you want to pursue it.

2021 – we still get it

In spite of even deeper cuts to the Library's serials budget, we still get *Nature Geoscience*.

- But an even larger number of less-widely used journals have been cancelled to keep it …

- It still has lots of good articles about ice.

January 12, 2014

ARTICLES
PUBLISHED ONLINE: 12 JANUARY 2014 | DOI: 10.1038/NGEO2045
nature geoscience

Muted change in Atlantic overturning circulation over some glacial-aged Heinrich events

Jean Lynch-Stieglitz[1]*, Matthew W. Schmidt[2], L. Gene Henry[1†], William B. Curry[3], Luke C. Skinner[4], Stefan Mulitza[5], Rong Zhang[6] and Ping Chang[2]

Heinrich events—surges of icebergs into the North Atlantic Ocean—punctuated the last glacial period. The events are associated with millennial-scale cooling in the Northern Hemisphere. Fresh water from the melting icebergs is thought to have interrupted the Atlantic meridional overturning circulation, thus minimizing heat transport into the northern North Atlantic. The northward flow of warm water passes through the Florida Straits and is reflected in the distribution of seawater properties in this region. Here we investigate the northward flow through this region over the past 40,000 years using oxygen isotope measurements of benthic foraminifera from two cores on either side of the Florida Straits. These measurements allow us to estimate water density, which is related to flow through the thermal wind balance. We infer a substantial reduction of flow during Heinrich Event 1 and the Younger Dryas cooling, but little change during Heinrich Events 2 and 3, which occurred during an especially cold phase of the last glacial period. We speculate that because glacial circulation was already weakened before the onset of Heinrich Events 2 and 3, freshwater forcing had little additional effect. However, low-latitude climate perturbations were observed during all events. We therefore suggest that these perturbations may not have been directly caused by changes in heat transport associated with Atlantic overturning circulation as commonly assumed.

Layers of ice-rafted debris, Heinrich layers, appear periodically in the sediments of the North Atlantic that were laid down during the last glacial period. These layers are thought to

Reconstructions of the density gradient in the upper ocean and model–data comparisons with deep water carbon isotope data suggest that if this configuration was associated with a

January 2016.
Vol. 9(1)
p. 51-55.

- UW Seattle
- Denmark
- U. Wisconsin & Oregon State
- New Zealand
- Australia
- France

nature geoscience

LETTERS

PUBLISHED ONLINE: 9 NOVEMBER 2015 | DOI: 10.1038/NGEO2580

The spatial extent and dynamics of the Antarctic Cold Reversal

Joel B. Pedro[1]*, Helen C. Bostock[2], Cecilia M. Bitz[3], Feng He[4,5], Marcus J. Vandergoes[6], Eric J. Steig[7], Brian M. Chase[8], Claire E. Krause[9], Sune O. Rasmussen[1], Bradley R. Markle[7] and Giuseppe Cortese[6]

Antarctic ice cores show that a millennial-scale cooling event, the Antarctic Cold Reversal (14,700 to 13,000 years ago), interrupted the last deglaciation[1–3]. The Antarctic Cold Reversal coincides with the Bølling–Allerød warm stage in the North Atlantic, providing an example of the inter-hemispheric coupling of abrupt climate change generally referred to as the bipolar seesaw[4–9]. However, the ocean–atmosphere dynamics governing this coupling are debated[10–15]. Here we examine the extent and expression of the Antarctic Cold Reversal in the Southern Hemisphere using a synthesis of 84 palaeoclimate records. We find that the cooling is strongest in the South Atlantic and all regions south of 40° S. At the same time, the terrestrial tropics and subtropics show abrupt hydrologic variations that are significantly correlated with North Atlantic climate changes. Our transient global climate model simulations indicate that the observed extent of Antarctic Cold Reversal cooling can be explained by enhanced northward ocean heat transport from the South to North Atlantic[10], amplified by the expansion and thickening of sea ice in the Southern Ocean. The hydrologic variations at lower latitudes result from an opposing enhancement of southward heat transport in the atmosphere mediated by the Hadley circulation. Our findings reconcile previous arguments about the relative dominance of ocean[5,10,11] and atmospheric[14,15] heat transports in inter-hemispheric coupling, demonstrating that the spatial pattern of past millennial-scale climate change reflects the superposition of both.

Whereas the Antarctic Cold Reversal (ACR) is well documented in Antarctic ice cores[1–3], its geographic extent in the broader Southern Hemisphere (SH) remains unclear. Marine archives highly correlated with the North Atlantic climate signal expressed in Greenland ice cores. Lacustrine records from southeast Africa (7° S; ref. 21) also suggest millennial-scale hydrologic variability in phase with the North Atlantic rather than with Antarctica. There is at present no consensus on the large-scale dynamics responsible for these disparate climate variations; in particular on the relative roles of ocean and atmospheric heat transport[14,15].

Previous efforts to constrain the spatial extent of the ACR have been limited by their focus on individual sub-regions of the SH, specific proxy types or the use of subjective methods to assess records[6,7,17,18]. We address these issues using a synthesis of 76 high-resolution SH palaeoclimate time series (including ice core, marine, speleothem, peat bog and lacustrine archives) and 8 palaeoglacial records (Supplementary Table 1). An objective statistical method is used to assess each record for the presence of an ACR signal (Methods). The assessment technique is informed by the structure and timing of the ACR in a recent Antarctic ice core $\delta^{18}O$ temperature-proxy stack[3]. Based on the ice core stack, we define the ACR as the period from 14.7 to 13 thousand years before present (that is, 14.7–13.0 ka), during which there is a significant break in the Antarctic deglacial warming trend (Fig. 1). We also test the records for the presence of North Atlantic signals, using the North Greenland Ice Sheet Project (NGRIP) $\delta^{18}O$ ice core record as our reference template for North Atlantic climate variations[22]. The assessment method classifies the records into strong ACR, weak ACR, and Greenland-like categories (Methods). Records not meeting the criteria for these categories (at the 95% confidence level) are classified as 'unclear'.

The resulting proxy-based spatial extent of the ACR is shown in Fig. 1a. ACR signals are seen in the South Atlantic and

nature International weekly journal of science

NATURE | EDITORIAL

Announcement: Five new Nature journals for 2017

11 January 2017

Since *Nature Genetics* was launched in 1992, the stable of Nature research and review journals has grown significantly. This year they'll be joined by five more — a launch rate that is unprecedented and unlikely to be repeated. These new online-only subscription journals are responding to positive signals from their target research communities. They also reflect a deliberate diversification of the Nature journals into multidisciplinary research that addresses societal challenges, without losing their commitment to the disciplines of fundamental science.

Two of them, *Nature Astronomy* and *Nature Ecology & Evolution*, exemplify the traditional disciplinary approach. The first issue of *Nature*, in 1869, opened with an introduction from the great evolutionary biologist Thomas Henry Huxley; later in the issue, Norman Lockyer, the founding editor, discussed the total solar eclipse that had been recently visible across the United States.

January 2017.
Vol. 10(2)
p. 95-99.

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nature geoscience

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NATURE GEOSCIENCE | ARTICLE

Centennial glacier retreat as categorical evidence of regional climate change

Gerard H. Roe, Marcia B. Baker & Florian Herla

Affiliations | Contributions | Corresponding author

Nature Geoscience **10**, 95–99 (2017) | doi:10.1038/ngeo2863

Received 21 September 2016 | Accepted 18 November 2016 | Published online 12 December 2016

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Abstract

The near-global retreat of glaciers over the last century provides some of the most iconic imagery for communicating the reality of anthropogenic climate change to the public. Surprisingly, however, there has not been a quantitative foundation for attributing the retreats to climate change, except in the global aggregate. This gap, between public perception and scientific basis, is due to uncertainties in numerical modelling and the short length of glacier mass-balance records. Here we present a method for assessing individual glacier change based on the signal-to-noise ratio, a robust metric that is insensitive to uncertainties in glacier dynamics. Using only meteorological and glacier observations, and the characteristic decadal response time of glaciers, we demonstrate that observed retreats of individual glaciers represent some of the highest signal-to-noise ratios of climate change yet documented. Therefore, in many places, the centennial-scale retreat of the local glaciers does indeed constitute categorical evidence of climate change.

Subject terms: Attribution · Climate-change impacts · Cryospheric science

January 22, 2018

nature geoscience

ARTICLES

https://doi.org/10.1038/s41561-017-0039-7

Massive collapse of two glaciers in western Tibet in 2016 after surge-like instability

Andreas Kääb[1*], Silvan Leinss[2], Adrien Gilbert[1], Yves Bühler[3], Simon Gascoin[4], Stephen G. Evans[5], Perry Bartelt[3], Etienne Berthier[6], Fanny Brun[6,7], Wei-An Chao[8], Daniel Farinotti[9,10], Florent Gimbert[7], Wanqin Guo[11], Christian Huggel[12], Jeffrey S. Kargel[13], Gregory J. Leonard[14], Lide Tian[15], Désirée Treichler[1] and Tandong Yao[15]

Surges and glacier avalanches are expressions of glacier instability, and among the most dramatic phenomena in the mountain cryosphere. Until now, the catastrophic collapse of a glacier, combining the large volume of surges and mobility of ice avalanches, has been reported only for the 2002 130×10^6 m^3 detachment of Kolka Glacier (Caucasus Mountains), which has been considered a globally singular event. Here, we report on the similar detachment of the entire lower parts of two adjacent glaciers in western Tibet in July and September 2016, leading to an unprecedented pair of giant low-angle ice avalanches with volumes of $68\pm2\times10^6$ m^3 and $83\pm2\times10^6$ m^3. On the basis of satellite remote sensing, numerical modelling and field investigations, we find that the twin collapses were caused by climate- and weather-driven external forcing, acting on specific polythermal and soft-bed glacier properties. These factors converged to produce surge-like enhancement of driving stresses and massively reduced basal friction connected to subglacial water and fine-grained bed lithology, to eventually exceed collapse thresholds in resisting forces of the tongues frozen to their bed. Our findings show that large catastrophic instabilities of low-angle glaciers can happen under rare circumstances without historical precedent.

Dec. 12, 2019

ARTICLES
https://doi.org/10.1038/s41561-019-0510-8

nature geoscience

Deep glacial troughs and stabilizing ridges unveiled beneath the margins of the Antarctic ice sheet

Mathieu Morlighem[1*], Eric Rignot[1,2], Tobias Binder[3], Donald Blankenship[4], Reinhard Drews[3,5], Graeme Eagles[3], Olaf Eisen[3,6], Fausto Ferraccioli[7], René Forsberg[8], Peter Fretwell[7], Vikram Goel[9], Jamin S. Greenbaum[4], Hilmar Gudmundsson[10], Jingxue Guo[11], Veit Helm[3], Coen Hofstede[3], Ian Howat[12], Angelika Humbert[3,6], Wilfried Jokat[3], Nanna B. Karlsson[3,13], Won Sang Lee[14], Kenichi Matsuoka[15], Romain Millan[1], Jeremie Mouginot[1,16], John Paden[17], Frank Pattyn[18], Jason Roberts[19,20,21], Sebastian Rosier[10], Antonia Ruppel[22], Helene Seroussi[2], Emma C. Smith[3], Daniel Steinhage[3], Bo Sun[11], Michiel R. van den Broeke[23], Tas D. van Ommen[19,20,21], Melchior van Wessem[23] and Duncan A. Young[4]

The Antarctic ice sheet has been losing mass over past decades through the accelerated flow of its glaciers, conditioned by ocean temperature and bed topography. Glaciers retreating along retrograde slopes (that is, the bed elevation drops in the inland direction) are potentially unstable, while subglacial ridges slow down the glacial retreat. Despite major advances in the mapping of subglacial bed topography, significant sectors of Antarctica remain poorly resolved and critical spatial details are missing. Here we present a novel, high-resolution and physically based description of Antarctic bed topography using mass conservation. Our results reveal previously unknown basal features with major implications for glacier response to climate change. For example, glaciers flowing across the Transantarctic Mountains are protected by broad, stabilizing ridges. Conversely, in

Feb 3, 2020

ARTICLES
https://doi.org/10.1038/s41561-019-0526-0

nature geoscience

Carbon release through abrupt permafrost thaw

Merritt R. Turetsky[1,2*], Benjamin W. Abbott[3], Miriam C. Jones[4], Katey Walter Anthony[5], David Olefeldt[6], Edward A. G. Schuur[7], Guido Grosse[8,9], Peter Kuhry[10,11], Gustaf Hugelius[10,11], Charles Koven[12], David M. Lawrence[13], Carolyn Gibson[1], A. Britta K. Sannel[10,11] and A. David McGuire[14]

The permafrost zone is expected to be a substantial carbon source to the atmosphere, yet large-scale models currently only simulate gradual changes in seasonally thawed soil. Abrupt thaw will probably occur in <20% of the permafrost zone but could affect half of permafrost carbon through collapsing ground, rapid erosion and landslides. Here, we synthesize the best available information and develop inventory models to simulate abrupt thaw impacts on permafrost carbon balance. Emissions across 2.5 million km² of abrupt thaw could provide a similar climate feedback as gradual thaw emissions from the entire 18 million km² permafrost region under the warming projection of Representative Concentration Pathway 8.5. While models forecast that gradual thaw may lead to net ecosystem carbon uptake under projections of Representative Concentration Pathway 4.5, abrupt thaw emissions are likely to offset this potential carbon sink. Active hillslope erosional features will occupy 3% of abrupt thaw terrain by 2300 but emit one-third of abrupt thaw carbon losses. Thaw lakes and wetlands are methane hot spots but their carbon release is partially offset by slowly regrowing vegetation. After considering abrupt thaw stabilization, lake drainage and soil carbon uptake by vegetation regrowth, we conclude that models considering only gradual permafrost thaw are substantially underestimating carbon emissions from thawing permafrost.

June 22, 2020

nature geoscience

ARTICLES

https://doi.org/10.1038/s41561-020-0587-0

Check for updates

Southern Ocean carbon sink enhanced by sea-ice feedbacks at the Antarctic Cold Reversal

C. J. Fogwill[1,2]✉, C. S. M. Turney[2,3,4], L. Menviel[2,5], A. Baker[2,3], M. E. Weber[6], B. Ellis[7], Z. A. Thomas[2,3,4], N. R. Golledge[8,9], D. Etheridge[10], M. Rubino[1,10,11], D. P. Thornton[10], T. D. van Ommen[12,13], A. D. Moy[12,13], M. A. J. Curran[12,13], S. Davies[14], M. I. Bird[15,16], N. C. Munksgaard[15,17], C. M. Rootes[18], H. Millman[1,5], J. Vohra[2], A. Rivera[19,20], A. Mackintosh[21], J. Pike[22], I. R. Hall[22], E. A. Bagshaw[22], E. Rainsley[1], C. Bronk-Ramsey[23], M. Montenari[1], A. G. Cage[1], M. R. P. Harris[1], R. Jones[24,28], A. Power[25], J. Love[25], J. Young[26], L. S. Weyrich[3,26] and A. Cooper[27]

The Southern Ocean occupies 14% of the Earth's surface and plays a fundamental role in the global carbon cycle and climate. It provides a direct connection to the deep ocean carbon reservoir through biogeochemical processes that include surface primary productivity, remineralization at depth and the upwelling of carbon-rich water masses. However, the role of these different processes in modulating past and future air–sea carbon flux remains poorly understood. A key period in this regard is the Antarctic Cold Reversal (ACR, 14.6–12.7 kyr BP), when mid- to high-latitude Southern Hemisphere cooling coincided with a sustained plateau in the global deglacial increase in atmospheric CO_2. Here we reconstruct high-latitude Southern Ocean surface productivity from marine-derived aerosols captured in a highly resolved horizontal ice core. Our multiproxy reconstruction reveals a sustained signal of enhanced marine productivity across the ACR. Transient climate modelling indicates this period coincided with maximum seasonal variability in sea-ice extent, implying that sea-ice biological feedbacks enhanced CO_2 sequestration and created a substantial regional marine carbon sink, which contributed to the plateau in CO_2 during the ACR. Our results highlight the role Antarctic sea ice plays in controlling global CO_2, and demonstrate the need to incorporate such feedbacks into climate–carbon models.

What's Right with Science?

Application of the scientific method has led to huge improvements in human quality of life over the past two centuries.

- Government investments in scientific research have paid off many times over.
- UW calculates that each $1 of state investment in Higher Ed at UW generates $21 in economic activity in Washington State.

What's Right with Science?

Application of the scientific method has led to huge improvements in human quality of life over the past two centuries.

- UW is a major research university, bringing tens of millions in federal research $ into Washington State every year.
- Those $ are effective at advancing knowledge and innovation because of effective peer review.

What can Go Wrong in Science?

Scientists are humans

- Political ideologies can sometimes "trump" science
- Honest mistakes can be made.
- Occasionally human failings can get the better of scientific ideals, and dishonest "mistakes" can be made …

Fortunately, cheating turns out to be rare in science, and it can be detected, exposed, and corrected. (How?)

- That's why it makes the news (it is unusual, and it can be detected ☺).

nature International weekly journal of science

NATURE | EDITORIAL

Scientists must fight for the facts

President Trump's unconventional stances cannot go unchallenged.

24 January 2017

On 21 January, one day after the inauguration of Donald Trump as the 45th president of the United States, millions of people took to the streets in protests across the country and around the world. The marches were spurred by Trump's treatment of women, but the focus expanded to include issues ranging from apparent hostility towards environmental regulations to disregard for the truth. Many hoped that the sobering reality of entering the White House would transform Trump's approach into something more conventionally presidential, but the early signs are not promising.

nature International weekly journal of science

NATURE | CORRESPONDENCE

Communication: Science censorship is a global issue

Euan G. Ritchie, Don A. Driscoll & Martine Maron

Affiliations | **Corresponding author**

Nature **542**, 165 (09 February 2017) | doi:10.1038/542165b

Published online 08 February 2017

Subject terms: Government · Funding · Research data · Communication

President Donald Trump issued an order on 23 January to effectively gag US government scientists at the Environmental Protection Agency and the Department of Agriculture from communicating with the media and the public (see *Nature* **542**, 10–11; 2017). Regrettably, suppression of public scientific information is already the norm, or is being attempted, in many countries (see, for example, go.nature.com/2kr5dnd). We fear that such gagging orders could encourage senior bureaucrats to use funding as a tool with which to rein in academic freedoms.

jobs US edition

theguardian

Feb 2, 2017.

Canadian scientists offer support to muzzled US counterparts

For nine years under Canada's previous government, science suffered harsh restrictions. Now US scientists may be facing a similar fate

Canadian scientists were not allowed to talk to the media on certain topics during the premiership of Stephen Harper. Photograph: Alamy

Ashifa Kassam in Toronto

Friday 27 January 2017 03.00 EST

Canadian scientists - who were muzzled for nearly a decade by the country's previous Conservative government - have been making contact with their counterparts in the US to offer their support and solidarity amid mounting fears that Donald Trump's presidency will seek to suppress climate science.

For nine years, scientists with Canada's federal government grappled with what many described as an all out assault on science.

Cheating in Science

In spite of Hollywood stereotypes, scientists are humans, with all the character complexity that implies …

- Just as in any other occupation, scientists sometimes break the rules …

What constitutes scientific cheating?

- Multiple publication of the same paper or results.
- Plagiarism (stealing ideas and presenting them as your own, without acknowledging sources).
- Fabrication of data.

Role of Peer review?

Double publishing?

Vol 451|24 January 2008 nature

COMMENTARY

A tale of two citations

Are scientists publishing more duplicate papers? An automated search of seven million biomedical abstracts suggests that they are, report **Mounir Errami** and **Harold Garner**.

With apologies to Charles Dickens, in the world of biomedical publications, "It is the best of times, it is the worst of times". Scientific productivity, as measured by scholarly publication rates, is at an all-time high[1]. However, high-profile cases of scientific misconduct remind us that not all those publications are to be trusted — but how many and which papers? Given the pressure

Simultaneous submission of duplicate articles by the same authors to different journals also violates journal policies.

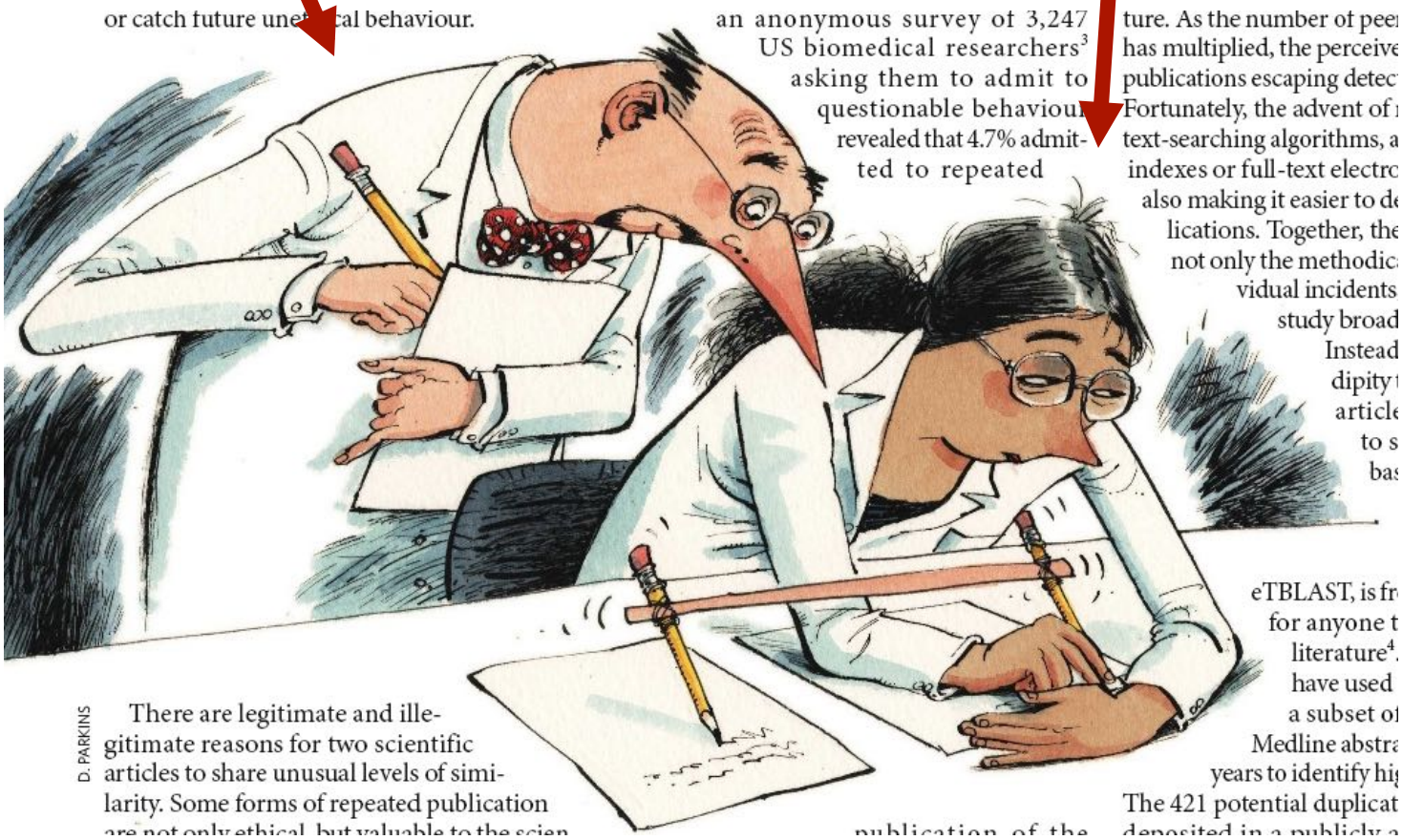
Previous studies that have tried to gauge the level of unethical publishing have mostly relied on small surveys of specific communities. One of the largest to date used

"The duplication of scientific articles has been largely ignored by the gatekeepers of scientific information."

citation index, Medline, and currently reports fewer than a thousand cases of duplication since the 1950s, discovered mainly by serendipity. Yet if the results of the anonymous survey[3] are extrapolated to the Medline database (more than 17 million citations and growing steadily), then you

Nature 451(7177) Jan 24 2008

Plagiarism? or double publishing?



Nature 451(7177) Jan 24 2008

What are the issues in duplicate publication?

- Duplicate publication overloads editors.
- It wears thin the patience of busy reviewers.
- It violates journal editorial policy, which expressly forbids submission of previously published papers. (From the editor's perspective, what's the point of publishing something again?

What is Plagiarism?

Shoe by Gary Brookins and Susie MacNelly Jan. 25th, 2020.

Plagiarism software checks the literature

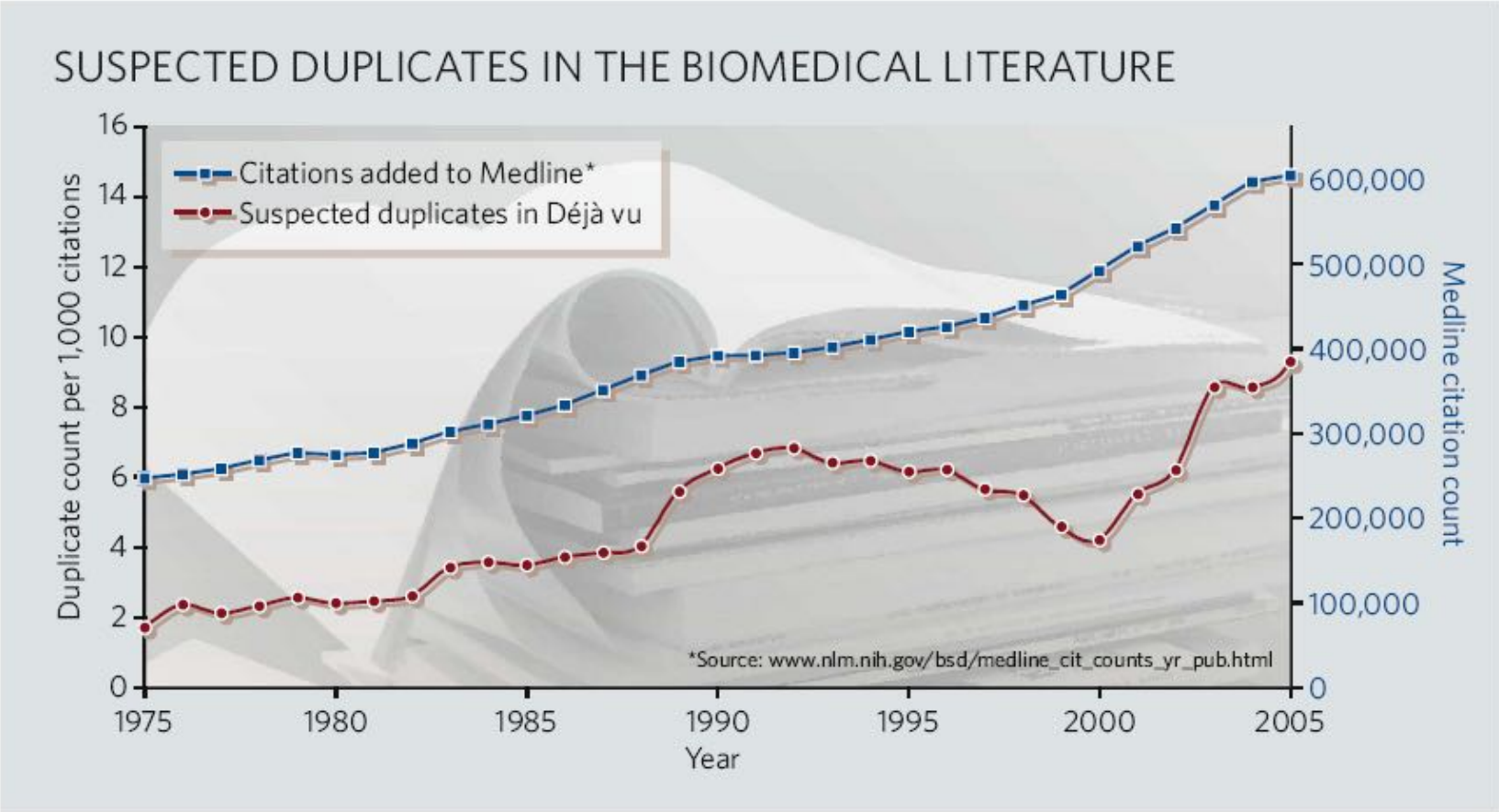


Figure 1. Increasing opportunity? The number of biomedical papers indexed in the citation database, Medline, has grown steadily over the past 30 years. A search of 7 million abstracts, using the text-matching software eTBLAST, reveals tens of thousands of highly similar articles (unpublished data), which are also growing in number. Are these legitimate or illegitimate publications?

Nature 451(7177) Jan 24 2008

How bad is it?

With so many new specialized journals, some authors may think duplicate publication will go undetected.

- In a 2002 survey, 4.7% of US biomedical researchers admitted (anonymously) to duplicate publication.
- 1.4% admitted to plagiarism.
- Maybe biomed is a specially high-pressure field ... (Why?)
- Follow the money …

Software to detect plagiarism can be used to check online research papers for plagiarism and duplicate publication.

- Journal editors are doing more plagiarism checks on submitted manuscripts.

Nature 451(7177) Jan 24 2008

Science Envy in Politics?

Plagiarism scandal grows in Iran

Published online 9 December 2009 | *Nature* 462, 704-705 (2009) | doi:10.1038/462704a

News

Investigation finds more cases of duplication in publications co-authored by ministers and senior officials.

Declan Butler

EXCLUSIVE

Nature has uncovered further instances of apparent plagiarism in papers co-authored by government ministers and senior officials in Iran. The spate of new examples raises questions about whether such incidents are symptomatic of conditions also common in other developing countries … or whether they are also linked specifically to the Iranian regime.

The players

An earlier probe revealed extensive plagiarism in a paper co-authored by transport minister Hamid Behbahani and four papers co-authored by science minister Kamran Daneshjou.

Daneshjou, a mechanical engineer at the Iran University of Science & Technology (IUST) in Tehran, was head of the interior-ministry office that oversaw this year's disputed election that kept President Mahmoud Ahmadinejad in power.

Nature 462, 704-705 (2009)

their misdeeds …

The paper[1] by Behbahani, an IUST researcher who supervised Ahmadinejad's PhD, has not been investigated, although it seems to be almost entirely put together from three earlier articles by different authors. It was retracted by the journal *Transport* in October.

1. Ziari, H., Behbahani, H. & Khabiri, M. M. *Transport XXI*, 207-212 (2006).

Nature 462, 704-705 (2009)

and their defense …

Behbahani has publicly said that the paper did not constitute plagiarism because only parts of the article were identical to earlier work. He challenged the allegations of plagiarism, calling them a "media attack, far from fairness and integrity" and "an illegitimate accusation".

Nature 462, 704-705 (2009)

Yet more plagiarized papers are showing up …

One paper[1] on asphalt-road resistance — by Behbahani's Transport co-authors Hassan Ziari, a deputy minister of roads and transportation whom Daneshjou recently appointed as head of Payame Noor University in Tehran, and Mohammed Khabiri, then a PhD student at the IUST — contains many sections that are identical to a 2005 paper[2] by scientists in Pakistan.

1. Ziari, H. & Khabiri, M. M. J. Eng. *Appl. Sci*. 2, 33-37 (2007).
2. Kamal, M. A., Shazib, F. & Yasin, B. J. *East. Asia Soc. Transport. Stud*. 6, 1329-1343 (2005).

***Nature* 462, 704-705 (2009)**

Moral Irony

Nature has also learned that the US National Academy of Sciences earlier this year (2009) removed a chapter from a 2003 book[1] on a US–Iranian workshop.
Ironically, the chapter, authored by Hassan Zohoor, secretary of the Academy of Sciences of the Islamic Republic of Iran, was called "The impact of moral values on the promotion of science". It was withdrawn because it substantially duplicated a 1999 paper[2] by Douglas Allchin, a historian and philosopher now at the University of Minnesota in Minneapolis.

1. *The Experiences and Challenges of Science and Ethics: Proceedings of an American-Iranian Workshop* (NAS, 2003).
2. Allchin, D. *Sci. Educ*. 8, 1-12 (1999).

So what's going on in Iran?

- What is the pressure that forces so many senior government ministers to cheat?
  - Election?
  - Protests?
  - Religious tensions?
  - Science envy?
  - Nuclear tension?

Nature 2012, 16 August, p.264

MISCONDUCT

Romanian scientists fight plagiarism

Researchers set up independent review panel after misconduct scandals hit government.

BY ALISON ABBOTT

Plagiarism scandals have shaken Romania this year. Former research minister Ioan Mang[1] and current Prime Minister Victor Ponta[2] have both been implicated, and leaders at a large medical university in Târgu-Mureş face similar accusations — although the government seems to have ignored those charges. Such scandals have convinced some Romanian scientists that they need to fight back against a culture of plagiarism that they see as ingrained in the university system.

This week, researchers are launching an online service called Integru, which will investigate and expose cases of plagiarism and other academic misconduct in Romania. Each case will be accompanied online by commentaries from international — and independent — reviewers selected for their expertise in the relevant field.

Integru's stated goal is to "help reform and restore confidence in the Romanian research and education system". Its editorial board, which comprises Romanian scientists working inside and outside the country, will remain anonymous to avoid personal attacks from those accused of misconduct.

Some Romanian academics facing allegations of plagiarism "have tried to dodge the bullet by questioning the motivation of the accusers", says one Integru board member. For example, both Mang and Ponta have belittled the charges against them by arguing that the whistle-blowers were politically motivated. Integru should be able to thwart that strategy, says the board member, "because suspicious papers will be posted alongside documentation of plagiarized and copy–pasted sections,

Plagiarism – not just Iranian or Romanian politicians …

The Seattle Times
Winner of Nine Pulitzer Prizes
Nation & World

Originally published Saturday, February 9, 2013 at 9:00 PM

Resignation over plagiarism highlights Germany's academic 'title envy'

The resignation of Germany's education minister over plagiarism charges has prompted some national soul-searching about the country's recent flurry of such cases.

By CHRIS COTTRELLNICHOLAS KULISH

The New York Times

BERLIN — For 32 years, the German education minister's 351-page dissertation sat on a shelf at Heinrich Heine University in Düsseldorf gathering dust while its author pursued a successful political career that carried her to the highest circles of German government.

The academic work was a ticking time bomb, however, and it exploded last year when an anonymous blogger published a catalog of passages suspected of having been lifted from other publications without proper attribution.

The university revoked the doctorate of the minister, professor Annette Schavan, on Tuesday, and on Saturday, she was forced to resign her Cabinet post. It was the second time a minister had quit the government of Chancellor Angela Merkel for plagiarism in less than two years.

Cultural differences

When's the last time you saw or heard an American politician trying to present himself or herself as an intellectual, let alone as a scientist?

Fraudulent data

- Some examples
- Was the fraud successful?
- Why or why not?
- What conditions encourage fraud?
- How do scientists identify and correct fraud?

Seattle PI Thursday, September 26, 2002

Scientific fraud found at Bell Labs
Star researcher fired for falsifying data

By LINDA A. JOHNSON
THE ASSOCIATED PRESS

TRENTON, N.J. -- A series of extraordinary advances claimed by scientists at Bell Labs are based on fraudulent data, a committee investigating the matter reported yesterday.

The findings, in effect, dismiss as fiction results from more than a dozen papers that had been promoted as major breakthroughs in physics, including claims last fall that Bell Labs had created molecular-scale transistors.

Jan Hendrik Schön, a star researcher in electronics, was fired after the outside committee found he falsified experimental data.

Seattle PI Thursday, September 26, 2002

The review committee concluded Schön, 32, made up or altered data at least 16 times between 1998 and 2001 -- the first case of scientific fraud in the 77-year history of the Nobel Prize-winning laboratory, Lucent Technologies said yesterday. Bell Labs is the research arm of Lucent, which makes telecommunications gear; the labs used to be part of AT&T.

The research involved work by Schön and other scientists in the fields of superconductivity, molecular electronics and molecular crystals, which could bring improvements to computers and telecommunications in a decade or more. The findings were published in several prominent scientific publications, including the journals *Science*, *Nature* and *Applied Physics Letters*.

Woo Suk Hwang

South Korea's Hwang Woo-suk was feted as a national hero when, in 2004, his research team said it had successfully cloned a human embryo and produced stem cells from it, a technique that could one day provide cures for a range of diseases.

But allegations he used unacceptable practices to acquire eggs from human donors, then faked two landmark pieces of research into cloning human stem cells, have left his reputation in tatters. …

BBC Jan 12, 2006.

He claimed to have cloned a cow in 1999, a pig in 2002, and then shot to worldwide fame in 2004 when he claimed to have *cloned the first human embryos and to have extracted stem cells from them.*

Then in August 2005, his team introduced Snuppy - an Afghan hound puppy which they said was the first cloned dog.

BBC
Jan 12, 2006.

Snuppy

Nature 436
Aug 4, 2005

Figure 1 | Dog cloned by somatic-cell nuclear transfer. **a,** Snuppy, the first cloned dog, at 67 days after birth (right), with the three-year-old male Afghan hound (left) whose somatic skin cells were used to clone him. Snuppy is genetically identical to the donor Afghan hound. **b,** Snuppy (left) was implanted as an early embryo into a surrogate mother, the yellow Labrador retriever on the right, and raised by her.

Group discussions of your homework questions for today

Peer review is the standard scientific procedure for quality control. Although it can have some issues, given human frailties, it is generally viewed as better than other alternatives.

Please read the Wikipedia entry on Peer Review at

https://en.wikipedia.org/wiki/Peer_review

Please comment on:

- The long history of peer review
- The purpose of peer review
- The selection and role of the "peers".
- Two criticisms sometimes leveled against peer review.

Now, please share and compare your new current ideas with your break-out room partners.

https://docs.google.com/document/d/1dV40QSlBA4FRV60gURZ4hItv88ft6BM2ecoFUHImLIo/edit#