

Antarctic and Southern Ocean publications with New Zealand authorship

- trends in basic metrics from 1990 to 2018

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BACKGROUND

This survey was motivated by the 2013-16 Antarctica New Zealand Statement of Intent, which identified improving the quality of Antarctic and Southern Ocean science as a key impact for its work. It noted two key performance indicators with the following statement (p. 22):

1. The raw number of peer reviewed papers provides a comparative measure of the output of the science across years.
2. We use the number of citations as an indicator of the quality, impact and international reach of these papers. The increase in citations of the previous 6 years' papers gives an indication that the quality of the science output has continued to increase

GOAL

As scientists we recognise that these are crude measures that need professional in-depth assessment before the factors can be confidently linked to the trends they show. Nevertheless, the compilation of such data lays the foundation for more sophisticated assessments widely used by review panels for maintaining the health of scientific organisations. My hope is that this simple analysis of the basic data may be useful in justifying the need for an on-going deeper study.

ACKNOWLEDGEMENTS

Thanks to Andrew Gray, who made the project possible, to Fiona Shanhun and Rebecca Macneil for crucial discussions on the subject categories and sharing the Antarctica NZ database, and the Antarctic Research Centre, VUW, for financial support for 2018. Also to colleagues for reviewing drafts of the report on which this poster is based.

THIS STUDY

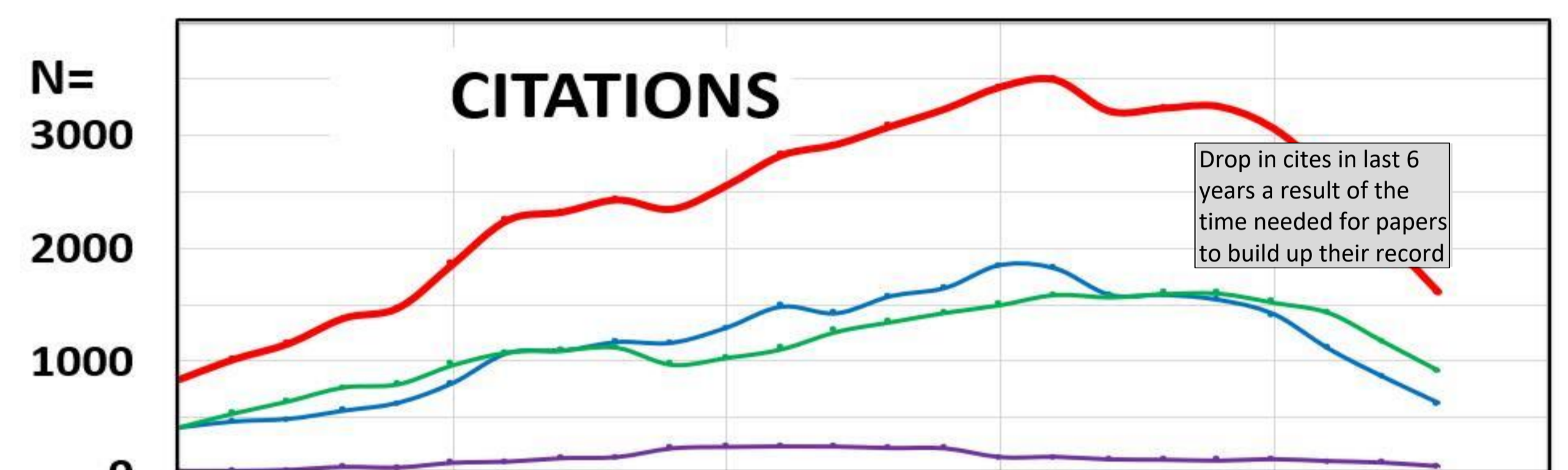
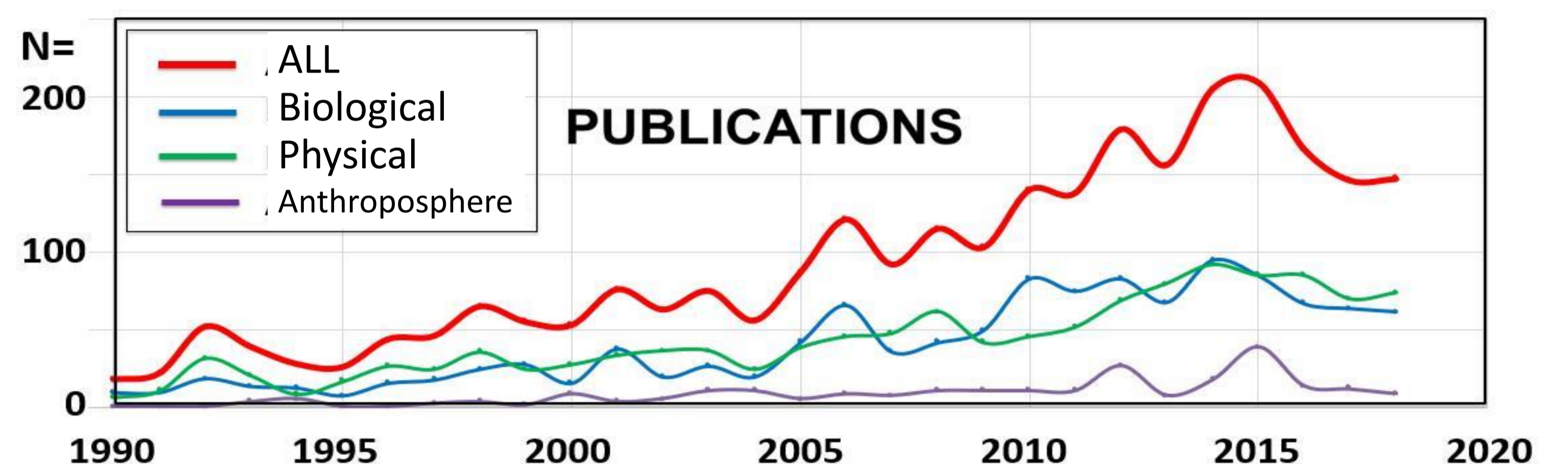
The study grew out of conversations with Antarctica NZ in 2016, and in 2017 Andrew Gray, then Head Librarian, British Antarctic Survey, in 2017. Andrew provided the procedure for extracting from the SCOPUS database of all Antarctic and Southern Ocean publications (Gray and [2017](#), [2016](#)). For the first survey we selected for all publications with at least one New Zealand author. From early 2018 I have been collaborating with Antarctica NZ, who is also using SCOPUS for Antarctic research publications supported by them from 2011-17 (awaiting 2018 results). This has led to the merged database presented here. The more focused Antarctica NZ database represents around 30% of the total, but with decreasing new entries going back in time from 23% in 2017 to 4% in 2011. We agreed on the desirability of a comprehensive database.

TRENDS FROM 1990 TO 2018

The main trends from the database, which comprises 2575 papers and 61355 citations, are shown on the right, with the overall trends in red.

The irregular and growing rise in publications for two decades reverses around 2015. In contrast, citations (average for the previous six years) rise more strongly and peak earlier, around 2011, and decline slightly before the inevitable drop that results from the ~6 years it takes for papers to gather the bulk of their citations. The trends for biological and physical sciences are not much different.

Caveat: We are aware of significant publications in the form of expedition reports, conference proceedings, papers within the Antarctic Treaty system etc that are not captured by SCOPUS unless referenced in a peer-reviewed journal. We are also aware that as a field of research Anthroposphere publications will be under-represented in this database.



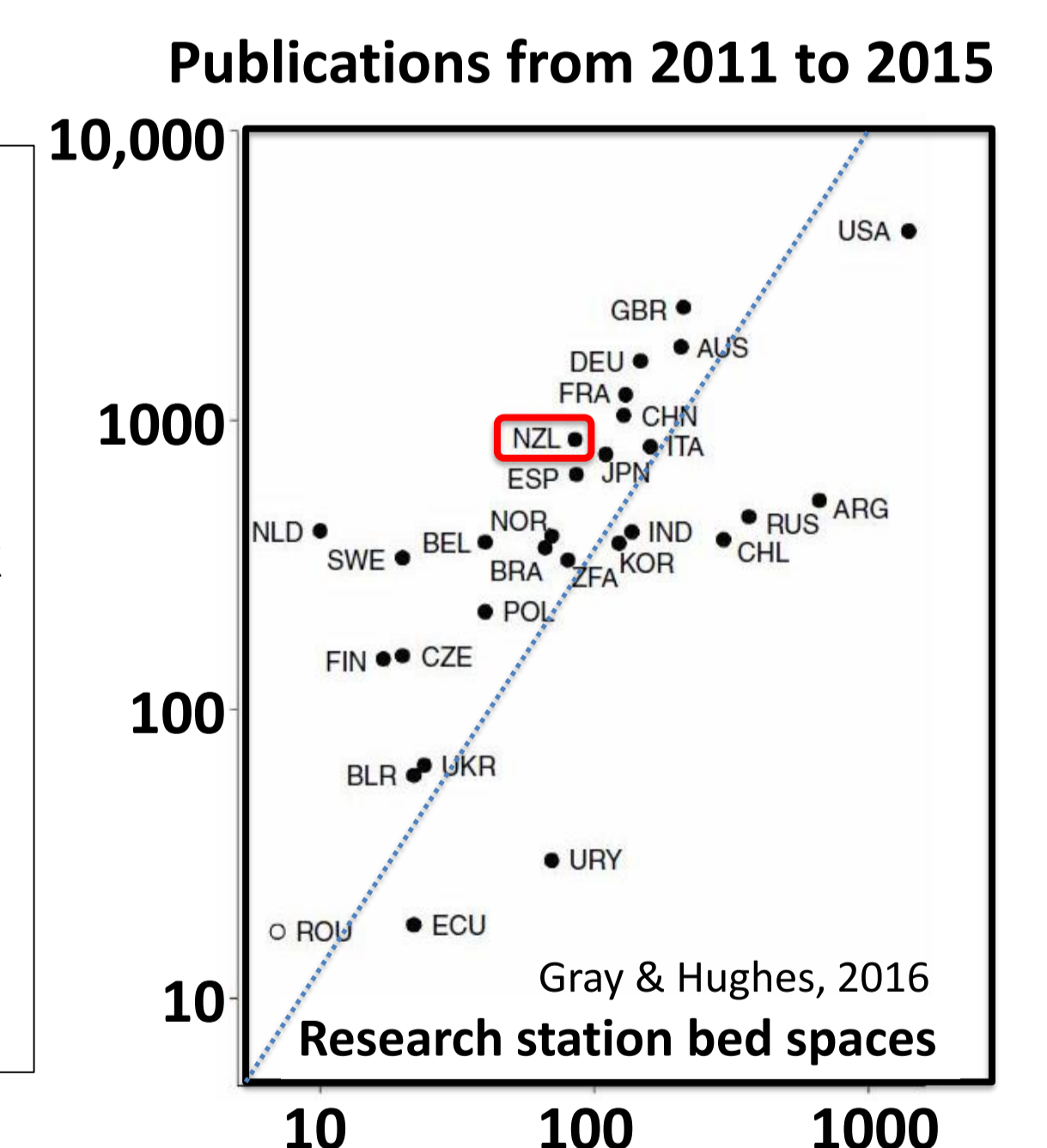
NEXT STEPS

The mid-2019 download for the period from 1990 to the end of 2018 was completed on June 15, and has been shared with Antarctica NZ's Rebecca Macneil for the annual update of citations since 1990. We will be discussing further analysis. The report and the 1998 to 2018 database (based on a January download so without citations updated from the June 15 download) are available from peter.barrett@vuw.ac.nz on request.

COMMENTS WELCOME.

INTERNATIONAL COMPARISON

A simple comparison of NZ's scientific output from our 2015 peak compares well with other Treaty nations in this study (right). Even at current levels it would still be respectable. But this is not really the point. Are we doing as well as we could?



SUBJECT DESCRIPTIONS

Subject	Abbrev	Description	2010-18
Biosphere- Marine	BIO-M	Reports on all aspects of marine life, including birds and animals dependent on the ocean.	26%
Biosphere- Terrestrial	BIO-T	Reports on all aspects of terrestrial life, including inland lakes.	19%
Biosphere-All	BIO	Reports on the global ecosystem	1%
Biological Sciences			46%
Atmosphere	ATMOS	Reports on atmospheric physics, chemistry and modern climate over last ~170 years of the instrumental record	9%
Space	SPACE	Reports on phenomena beyond the atmosphere from observations in the Antarctic region	2%
Paleoclimate	PALEO	Reports involving climate-related pre-modern records preserved in lakes, in ice, on land, and on the ocean floor.	9%
Cryosphere	CRYOS	Reports on glaciers and ice sheets, ice shelves, sea ice, frozen ground, and related processes.	10%
Geosphere	GEOSP	Reports on marine and terrestrial geoscience, along with evolution of Earth's biota and surface features.	9%
Oceans	OCEAN	Reports on physics, chemistry and movement of the modern ocean.	4%
Physical Sciences			43%
Anthroposphere	HUMAN	Reports covering the Humanities, Social Sciences and Arts; also includes media output [film, music, art, and print]	10%
TOTAL			100%

PUBLICATION NUMBERS – 2010 TO 2018

SUBJECT	2010	2011	2012	2013	2014	2015	2016	2017	2018	AVR
<i>Biosphere-Marine</i>	28	51	49	45	44	52	36	42	49	27%
<i>Biosphere-Terrestrial</i>	53	23	28	23	48	28	31	20	11	18%
<i>Bio-general</i>	2	1	6	0	3	5	0	2	0	1%
Sum - Biological	83	75	83	68	95	85	67	64	60	46%
<i>Atmosphere</i>	8	14	12	12	17	19	20	14	18	9%
<i>Space</i>	3	3	3	2	3	9	4	4	1	2%
<i>Oceans</i>	5	7	2	6	10	10	8	6	9	4%
<i>Paleoclimate</i>	5	7	15	20	20	14	21	23	17	10%
<i>Cryosphere</i>	11	8	19	19	20	21	17	19	14	10%
<i>Geosphere</i>	14	13	18	21	22	12	15	4	15	9%
Sum-Physical	46	52	69	80	92	85	85	70	74	44%
<i>Anthroposphere</i>	11	11	27	8	18	39	14	12	11	10%
TOTAL	140	138	179	156	205	209	166	146	145	100%