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Submission to the inquiry into Australia's Antarctic Territory

Background

We are researchers at the UNSW Canberra with an interest in improving the understanding of science and regulation in Antarctica. Dr Stuart Pearson is involved in researcher higher degree training through Sino-Australian Research Centre for Coastal Management (SARCCM) and Maozeng Jiang who is an outstanding PhD student. Maozeng completed his undergraduate and postgraduate qualifications in international environmental law from one of China's leading Universities with a focus on Maritime issues. Together we are working to understand the ways researchers from both nations consider the regulations that govern their research activities to protect the environment in Antarctica. As we work together across our cultures and science we meet people with many views and we are more convinced of the benefits of ongoing scientific co-operation. Our submission seeks to bring the value of Antarctica as an exceptional place for scientific collaboration to the Committee's attention and we would be happy to discuss them further.

Overview

In summary Australia should increase the joint scientific effort with other nations, including China to ensure mutual development of the scientific opportunities and maintenance of the Antarctic Treaty System obligations. Australia should particularly sustain environmental research and protections including regulatory measures that can be shared amongst all nations active in Antarctica. Australia's strongest ally, United States of America (USA) has shown the scientific fruits of collaborations with China.

In regard to maintaining national interests; serving the scientific program into the future; and most specifically international engagement

In May 2017, China's State Oceanic Administration (that is, to some extent, equivalent to the Australian Antarctic Division) released its white paper on Antarctic affairs, *China's Antarctic Activities*. In this governmental paper China commits to the Antarctic Treaty System, environmental protection, and encouraging scientific research in Antarctica. China regards international cooperation as “*one of the critical components*” in China's Antarctic activities. In the section ‘Visions and Actions’, China shows its ambition in Antarctica. This ambition is for peaceful use of Antarctica, for maintaining stability of the Antarctic Treaty System, for increasing support for capabilities of science and logistics, and for explicitly promoting international cooperation in Antarctica.

Harmony and cooperation is a philosophy deeply embedded in Chinese thoughts. Chinese government emphasises mutual benefits in its engagements with other nations. But, with China's rising capabilities, some will seek to stretch the ‘China threat theory’ into the Antarctic areas. China's activities in Antarctica should not be regarded as threats to Australia's national interests. As Rothwell & Jackson (2011) have concluded there are no threats to Australia's Antarctic sovereign interests under the protection of the Antarctic Treaty. From a practical view, Australia cannot stop China's rising engagement in Antarctica. Being unreasonably anxious over the imagined threat is harmful for Australia's own interests. There is more to be gained from encouraging cooperation between Australia and China; as we suggest in this submission.

Australia and China have a long history of cooperation and mutual understanding including fields of economics, environment, science and Antarctica. Australia and China's cooperation in Antarctica was promoted in 2014 when Australia and China signed a MoU on Antarctic cooperation. We hope that continues to strengthen through shared research including social sciences and governance research. Australia should make diplomatic efforts to nurture international co-operation. The Australian parliament should seek further information about how to support industry and services such as the Hobart port that can develop from increased Antarctic research, including that from China's planned expeditions. There are long-term strategic benefits from Australia-China collaborations in Antarctica that can help improve understanding of collaborative management and inoculate against misunderstanding.

In a new analysis for this submission (Appendix), we identify an important pattern in the joint publication of China-affiliated authors. Our method used the Web of Science list of articles and relevant topics from 2001 to 2017. This preliminary analysis shows that China-affiliated authors are publishing more (absolutely and proportionately) with USA than Australia-affiliated authors. The USA has provided an example of strong collaboration outcomes in Antarctic research with China.

We suggest further analysis and investigation on the joint research cooperation and publication by Australian and Chinese scientists could contribute to future improvements. Scientific research collaborations cannot be forced by governmental decree. However, it will be beneficial for the Australian government to, where

appropriate, identify and remove potential barriers and to promote scientific cooperation between Australian and Chinese scientists because it can further Australia's interests in Antarctica. This should also be supported by existing bilateral and multinational diplomatic and national research agency conversations.

In conclusion, in addition to sustaining investment in Antarctica scientific research and logistics, more effective cooperation with China and other countries is the best course of action for Australia. We suggest that the Parliamentary Committee could influence the future of Antarctic science and Australia's interests through more effective collaborations.

Thank you for the opportunity to make this submission to the Committee.

Yours Sincerely,

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Appendix

Method. Bibliographic search in a specified period using selected keywords

1. Tool: Web of Science (access provided by UNSW Library), last searched on 11 August, 2017

2. Main search rules in the Web of Science: according to the Web of Science, (1) the 'topic' includes: Title, Abstract, Author Keywords, and Keywords Plus®; (2) the quotation marks are used for an exact phrase; (3) rule of 'lemmatization' is automatically applied to topic search queries by the Web of Science (e.g. 'citing', 'cites' are the inflected terms of the word 'cite'); the Web of Science does not distinguish capitalization.

3. Literature review: Zhang & Hua (2014) searched Chinese research publications regarding Antarctica between 1982 and 2011 using the Web of Science, Thomson Data Analyzer and Tcinet; and their conclusion is that USA (1st) accounts 20.90% of total cooperative countries for China, while Australia (2nd) accounts for 10.54%. Ji, Pang, and Zhao (2014) conducted a bibliometric analysis of Antarctic research publications between 1993 and 2012 using the Science Citation Index database and their results support our claim that Australia is not China's strongest collaborator.

4. Main steps in searching: (1) entered terms in the 'Topic' field (the terms are: antarctic, antarctica, "southern ocean", respectively); (2) refined the results by 'year'(2001-2016; 2014; 2015; 2016; 2017), 'document types' (article), and 'countries/territories' (Peoples R China); (3) then, we got a preliminary result in which an article at least contains an author based in China; (4) within this result, used the tool 'results analysis' in the Web of Science to rank the results by "Countries/Territories"; (5) finally, this new analysis result can demonstrate the percentage of cooperative countries for China.

5. Methodological limitations: this is a preliminary and indicative search, because, (1) Some of the search results may not be related to Antarctic affairs, because an article may use the word 'Antarctic'/'Antarctica'/'southern ocean' in its abstract just as a reference; (2) A scientist's affiliated institution in one country does not absolutely mean this scientist is the citizen of this country; (3) Many of scientists' articles may not be included in the Web of Science; and (4) Other unforeseeable factors might be included.

6. The only way to delimitate the limitations of this method is to read these articles one by one, but it is not feasible for us currently. To reduce the adverse impacts of the limitations, we searched three times using three different keywords (antarctic, antarctica and "southern ocean" between 2001 to 2016, and separately in the year 2014, 2015, 2016 and 2017.

7. Results: Without exception, no matter which topic or which timespan, Australian and Chinese scientists jointly published efforts do not exceed the joint publications of the USA and China.

Search 1 (antarctic)

Topic: **antarctic**; Year: **2001-2016**; Document types: article; Countries/Territories: PEOPLES R China.

Countries/Territories	Record Count	Percent of 1227
PEOPLES R CHINA	1227	100.0 %
USA	271	22.1 %
AUSTRALIA	100	8.2 %
GERMANY	84	6.8 %
ENGLAND	82	6.7 %

Topic: **antarctic**; Year: **2014**; Document types: article; Countries/Territories: PEOPLES R China.

Countries/Territories	Record Count	Percent of 120
PEOPLES R CHINA	120	100.0 %
USA	23	19.2 %
ENGLAND	14	11.7 %
GERMANY	13	10.8 %
AUSTRALIA	11	9.2 %

Topic: **antarctic**; Year: **2015**; Document types: article; Countries/Territories: PEOPLES R China.

Countries/Territories	Record Count	Percent of 139
PEOPLES R CHINA	139	100.0 %
USA	35	25.2 %
ENGLAND	11	7.9 %
GERMANY	10	7.2 %
AUSTRALIA	8	5.8 %

Topic: **antarctic**; Year: **2016**; Document types: article; Countries/Territories: PEOPLES R China.

Countries/Territories	Record Count	Percent of 190
PEOPLES R CHINA	190	100.0 %
USA	44	23.2 %
AUSTRALIA	18	9.5 %
GERMANY	16	8.4 %
ENGLAND	13	6.8 %

Topic: **antarctic**; Year: **2017 (searched on 11 August)**; Document types: article; Countries/Territories: PEOPLES R China.

Countries/Territories	Record Count	Percent of 82
PEOPLES R CHINA	82	100.0 %
USA	18	22.0 %
GERMANY	10	12.2 %
ENGLAND	8	9.8 %
FRANCE	7	8.5 %
AUSTRALIA	6	7.3 %

Search 2 (antarctica)

Topic: **antarctica**; Year: **2001-2016**; Document types: article; Countries/Territories: PEOPLES R China.

Countries/Territories	Record Count	Percent of 1433
PEOPLES R CHINA	1433	100.0 %
USA	291	20.3 %
AUSTRALIA	126	8.8 %
GERMANY	84	5.8 %
ENGLAND	74	5.1 %

Topic: antarctica; Year: **2014**; Document types: article; Countries/Territories: PEOPLES R China.

Countries/Territories	Record Count	Percent of 181
PEOPLES R CHINA	181	100.0 %
USA	41	22.7 %
AUSTRALIA	18	9.9 %
ENGLAND	13	7.2 %
GERMANY	10	5.5 %

Topic: antarctica; Year: **2015**; Document types: article; Countries/Territories: PEOPLES R China.

Countries/Territories	Record Count	Percent of 150
PEOPLES R CHINA	150	100.0 %
USA	35	23.3 %
AUSTRALIA	17	11.3 %
GERMANY	10	6.7 %
ENGLAND	8	5.3 %

Topic: antarctica; Year: **2016**; Document types: article; Countries/Territories: PEOPLES R China.

Countries/Territories	Record Count	Percent of 192
PEOPLES R CHINA	192	100.0 %
USA	41	21.4 %
AUSTRALIA	18	9.4 %
GERMANY	15	7.8 %
ENGLAND	12	6.3 %

Topic: antarctica; Year: **2017(searched on 11 August)**; Document types: article; Countries/Territories: PEOPLES R China.

Countries/Territories	Record Count	Percent of 74
PEOPLES R CHINA	74	100.0 %
USA	19	25.7 %
AUSTRALIA	8	10.8 %
GERMANY	5	6.8 %
CANADA	4	5.4 %

Search 3 (“southern ocean”)

Topic: “southern ocean”; Year: **2001-2016**; Document types: article;

Countries/Territories: PEOPLES R China.

Countries/Territories	Record Count	Percent of 362
PEOPLES R CHINA	362	100.0 %
USA	124	34.3 %
ENGLAND	37	10.2 %
GERMANY	36	9.9 %
AUSTRALIA	32	8.8 %

Topic: “southern ocean”; Year: **2014**; Document types: article; Countries/Territories: PEOPLES R China.

Countries/Territories	Record Count	Percent of 41
PEOPLES R CHINA	41	100.0 %
USA	19	46.3 %
GERMANY	7	17.1 %
CANADA	6	14.6 %
ENGLAND	6	14.6 %
JAPAN	4	9.8 %
AUSTRALIA	3	7.3 %

Topic: “southern ocean”; Year: **2015**; Document types: article; Countries/Territories: PEOPLES R China.

Countries/Territories	Record Count	Percent of 44
PEOPLES R CHINA	44	100.0 %
USA	19	43.2 %
ENGLAND	7	15.9 %
AUSTRALIA	3	6.8 %
CANADA	3	6.8 %

Topic: “southern ocean”; Year: **2016**; Document types: article; Countries/Territories: PEOPLES R China.

Countries/Territories	Record Count	Percent of 60
PEOPLES R CHINA	60	100.0 %
USA	15	25.0 %
AUSTRALIA	11	18.3 %
ENGLAND	9	15.0 %
GERMANY	7	11.7 %

Topic: “southern ocean”; Year: **2017 (searched on 11 August)**; Document types: article; Countries/Territories: PEOPLES R China.

Countries/Territories	Record Count	Percent of 30
PEOPLES R CHINA	30	100.0 %
USA	12	40.0 %
AUSTRALIA	6	20.0 %
CANADA	6	20.0 %
ENGLAND	3	10.0 %

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