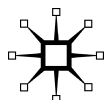


Globalizing Polar Science
Reconsidering the International
Polar and Geophysical Years

Edited by
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James Rodger Fleming,
and
David H. DeVorkin

palgrave
macmillan



GLOBALIZING POLAR SCIENCE

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First published in 2010 by

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175 Fifth Avenue, New York, NY 10010.

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ISBN: 978-0-230-10532-4 Hardcover

ISBN: 978-0-230-10533-1 Paperback

Library of Congress Cataloging-in-Publication Data

Globalizing polar science : reconsidering the International Polar and
Geophysical years / edited by Roger D. Launius, James R. Fleming, and
David H. DeVorkin.

p. cm.—(Palgrave studies in the history of science and technology)
ISBN 978-0-230-10532-4

1. Research—Polar Regions—International cooperation—History.
2. Geophysics—International cooperation. I. Launius, Roger D. II. Fleming,
James Rodger. III. DeVorkin, David H., 1944—

Q180.A3G56 2010

509.11—dc22

2010013627

A catalogue record of the book is available from the British Library.

Design by Newgen Imaging Systems (P) Ltd., Chennai, India.

First edition: December 2010

10 9 8 7 6 5 4 3 2 1

Printed in the United States of America.

Chapter 8

China and the International Geophysical Year¹

Zuoyue Wang and Jiuchen Zhang

In the history of science during the cold war, the International Geophysical Year (IGY) 1957–58 often has been viewed as a great success story of global scientific collaboration across the Iron Curtain, with the only exception being the withdrawal of the People's Republic of China (PRC) from the endeavor when the IGY organizers admitted Taiwan in 1957. Thanks to research by Ronald Doel, we now know that the U.S. State Department played a central role in the controversy by prompting Taiwan to apply for IGY membership, but little is known about the mainland Chinese side of the story.² In this essay we propose to examine Chinese sources to reconstruct the considerations that led China to join the IGY in the first place and the reactions to the Taiwanese issue that eventually led to its withdrawal. We will also examine the impact of the IGY on Chinese geophysical research even after its formal withdrawal from the collaboration.

China and IPY

Although it did not send polar expeditions, China was involved in both the first and second International Polar Years (IPY), 1882–83 and 1932–33, that were sponsored by the International Meteorological Organization (now the World Meteorological Organization) and were precursors to the IGY. During the first IPY, the French-run geomagnetic station at Sheshan near Shanghai provided data for the international collaboration.³ The second IPY coincided with a great buildup of Chinese scientific effort under the new Nationalist government. As a result China was able to expand considerably its participation in the project: Besides measurements of geomagnetism and solar radiation at Sheshan, observatories at Shanghai and Qingdao carried out measurements related to the determination of longitudes and latitudes, and, perhaps most notably, two stations were established at the mountaintops at Taishan in Shandong and Emei in Sichuan to carry out

meteorological measurements. Coordinating most of these activities was the leading Chinese meteorologist and geographer Zhu Kezhen, who had received his PhD from Harvard in 1918 and who at the time headed the newly established Meteorological Institute of the Academia Sinica. Working under difficult conditions and without the resources to participate in polar explorations, Chinese scientists played only a marginal role in the second IPY, but they were nevertheless delighted to make a contribution to the global endeavor.⁴

The international political environment changed dramatically for Chinese scientists when the third IPY, renamed the International Geophysical Year to indicate a broadened scope, was proposed in the early 1950s for implementation in 1957–58. In 1949 the Communist forces under the leadership of Mao Zedong had won the civil war against the U.S.-backed Nationalist government under Jiang Jieshi (Chiang Kai-shek), which had fled to Taiwan. Most Chinese scientists were unfamiliar with the Communists but nevertheless decided in the end to stay on the mainland, primarily due to their loss of confidence in the corruption-ridden Nationalists and with the hope that the Communists would provide a stable political government for the reconstruction of the country and the support of scientific research. For example, Zhu Kezhen declined, at great personal risk, Jiang's special invitation to retreat with him to Taiwan. Instead, Zhu responded to the new government's call to Beijing to become a vice president of the Chinese Academy of Sciences (CAS). The CAS was established in those institutes of the Academia Sinica that had remained on the mainland; the Academia Sinica moved its headquarters and a few institutes to Taiwan, where it continued operations.

Joining IGY

Thus by 1951–52, when the International Council of Scientific Unions (ICSU) approved the proposal for the IGY—a proposal that had originated in 1950 at the famous Washington dinner party attended by, among others, Sydney Chapman of Oxford, James van Allen of Johns Hopkins's Applied Physics Laboratory, and Lloyd Berkner of the Carnegie Institution—China became both an important link in the international project and a sensitive political issue. Any comprehensive investigation of the geophysics of Earth would be amiss if it did not include the vast Chinese mainland, but China, even more than the Soviet Union, posed a problem for the IGY organizers: The recent revolution had placed the country's representations in international scientific associations in dispute as both sides of the Taiwan strait—the PRC under the Communists and the Republic of China under the Nationalists—vied for China's seat. Furthermore, the United States, in armed conflict with China in Korea, continued to back the Nationalists in the United Nations and other international bodies, such as ICSU.

The IGY organizers were determined to find a way to get China involved in the IGY. In 1952, vowing its non-political nature, the ICSU Special Committee (*Comité Spéciale de l'Année Géophysique Internationale*,

[CSAGI]) for the IGY reportedly issued invitations to both the Chinese Academy of Sciences in Beijing, which at the time also used the Latin name *Academia Sinica*, and the Nationalist *Academia Sinica* in Taipei.⁵ Clearly, from the point of view of the IGY organizers, the best scenario was that both sides would agree to participate, which would contribute not only to the gathering of geophysical data but also to the perception that science indeed could bring political enemies together.⁶

In December, the CAS in Beijing received the CSAGI invitation, dated November 28, 1952, and signed by its interim secretary, Ernest Herbays, a Belgian radio scientist. The General Office (*bangongting*) of the CAS promptly translated the letter into Chinese and sent it to the bureau in charge of foreign cultural affairs in the Commission on Culture and Education (CCE) of the Administrative Council (the cabinet) and the foreign ministry for instructions. The foreign ministry responded on January 23, asking the CAS to consider three questions: (1) What were the benefits and drawbacks of participation? (2) What preparations would be required and what difficulties would be encountered, and in what name would China participate? (3) How were the two earlier IPYs carried out, and how were earlier Chinese governments involved in them? The ministry also advised that the CAS consult with the People's Revolutionary Military Commission (PRMC).⁷ This step was necessary not only because geophysical research would have obvious military implications but also because, until August 1953, the military controlled the People Republic of China's meteorological services.⁸ Meanwhile the CAS received a second letter from Herbays in March 1953 requesting that it notify CSAGI of its plans and suggestions for the IGY by May 15.⁹

As a result of consultation with not only the PRMC but also relevant institutes within the academy—especially its premier Purple Mountain Observatory in Nanjing, the Institute of Geophysics, and the Institute of Geography—the CAS leadership came to the consensus that China's participation in the IGY would depend on that of the Soviet Union. On May 9, 1953, while waiting for an answer from the Soviet Union on an inquiry along this line, the CAS proposed to the CCE a draft reply to CSAGI stating, "The question raised is under consideration; once a decision is made you will be notified." But the CCE apparently did not approve of the message, and it was never sent.¹⁰ Clearly Chinese scientists understood that for the Chinese government, participation in the IGY was more a political than a scientific question. Given the hostility that existed between China and the United States, due in large part to the Korean War, and given the fact that the Soviet Union had not yet decided to participate in the IGY, it was perhaps not surprising that silence remained the best response of the CAS to the repeated CSAGI requests for participation in this period.

A turning point in the Chinese attitude toward the IGY came in 1955, when several developments converged: The death of Stalin and the end of the Korean War in 1953 had marked a relaxation of cold-war tension and, perhaps most decisively, news of the Soviet decision to participate in the IGY paved the way for a decision by the Chinese Academy of Sciences to do

likewise. In March 1955 Ivan Bardin, vice president of the Soviet Academy of Sciences and president of the Soviet IGY National Committee, wrote to Guo Moro, Chinese writer, archaeologist, and president of the CAS, announcing the Soviet decision to participate in the IGY and expressed the wish that China do the same.¹¹ The letter was followed by a visit to China, from April 26 to June 23, of a high-level delegation of the Soviet Academy of Sciences as part of increased contact between the two academies.¹² The delegation included Bardin and Vladimir Belousov, a seismologist who was by then not only a member of the Soviet IGY committee but also a Soviet nominee as a member of the CSAGI bureau that made executive decisions on the IGY.¹³ During his trip Belousov did his best, in the words of Zhu, who accompanied him on an extensive tour in southwestern China, to “abet” the CAS to join the IGY.¹⁴ Chinese scientists were aware of the benefits—for both Chinese science and for the success of the IGY—of their participation in the IGY, but it would have been difficult for them to make the case to join the IGY if the Soviets had decided to sit out, given China’s push for closer Sino-Soviet scientific collaboration, and its concern about Western resistance to its return to international science. Perhaps equally important for Chinese scientists was the expectation that Soviet participation would help convince the Chinese government not only to give the CAS the green light on IGY, but also to allocate more resources to geophysical research in general.

Soviet influence proved decisive. On June 18, 1955, the CAS made the decision to participate in the IGY and to organize a national IGY committee under Zhu Kezhen, presumably with the blessing of the central government.¹⁵ Two weeks later, the CAS announced the formation of the Chinese IGY committee: Besides Zhu as chair, it included Zhao Jiuzhang (Jeou-jang Jaw), director of the Geophysical Institute, as vice chair; Tu Changwang, director of the Chinese Meteorological Bureau; Chu Shenglin, chair of the Physics Department of Beijing University; and CAS scientists Wang Ganchang, Zhang Yuzhe, Wu Heng, Chen Zongqi, Ye Duzheng, Shi Yafeng, and Zhu Gangkun (no relation to Zhu Kezhen). Chen Zongqi and Zhu Gangkun served as secretary and deputy secretary, respectively.¹⁶ On September 3, 1955, five days before a major CSAGI meeting was to take place in Brussels, Zhu informed Marcel Nicolet, the CSAGI secretary, of China’s decision to participate in the IGY and the formation of its national IGY committee, with the condition: “If the IGY includes Taiwan, it will be difficult for us to participate in it.” CSAGI quickly responded, on September 8, that it welcomed all scientists, including those from the Chinese Academy of Sciences and those from Taiwan, to participate in the IGY. Two days later, CSAGI telegraphed Zhu that Taiwan had not formed its own IGY committee, with the implication that Taiwan would not be an issue in the IGY.¹⁷

Initially the CAS determined that China would participate formally only in meteorology, geomagnetism, solar radiation, and longitude and latitude measurements, with atmospheric physics, ionospheric studies, and tectonics as possibilities, but not oceanography or glaciology.¹⁸ By the time the Chinese IGY committee held its first meeting two weeks later, however, it was

decided to add cosmic rays and atmospheric physics to the list.¹⁹ Ionospheric studies and seismology were added in early 1956.²⁰ Zhu soon got a glimpse of the benefits of participation in the IGY: In early 1956, he spent two days studying IGY country reports sent by Belousov to get a sense of recent geoscientific developments in the world. With alarm, he noted that “India and Japan are far ahead of us.”²¹

Taking advantage of China’s official participation in the IGY and the expected Soviet support, Chinese scientists proposed an ambitious geophysical program that promised to greatly advance research in the field and in weather forecasting, but which would also entail a huge increase in government funding and the importation of key scientific instruments from the Soviet Union and Europe. In September 1956, for example, the Chinese Meteorological Bureau, under the direction of Tu Changwang, gained the approval of the State Council for the expansion of solar radiation stations from a handful to more than 20 by the time the IGY started.²² In late 1956 Zhu Kezhen secured the purchase of cosmic-ray detectors from the Soviets in addition to the participation of two Chinese scientists on Soviet oceanographic vessels for training purpose.²³

Such rapid expansion met with various obstacles, such as the lack of qualified scientists and technicians to operate the new instruments and the costs associated with the dependence on the Soviets as almost the sole source of the latter. In January 1957, for example, Zhu learned to his dismay that the price for a Soviet radar wind system had increased within a few months from 50,000 to 300,000 rubles. Thus China had to cut back its order from eight sets to three.²⁴ Already in July 1956, Premier Zhou Enlai had cautioned the CAS that it should not pursue too many IGY projects but should focus on a few that it could do well in order to showcase Chinese achievements on the international stage. “We should be realistic, be good at hiding our weaknesses, and impress the world with our best effort (*yiming jingren*),” as he told Zhang Jingfu, CAS vice president and Communist party leader.²⁵

The CAS was torn between Zhou Enlai’s instruction for consolidation, on the one hand, and pressures for expansion, on the other hand, from the international scientific community. In August and September 1956, the Chinese IGY committee sent three scientists, Chen Zongqi, Zhu Gangkun, and Lü Baowei, to three IGY conferences held in Moscow, Brussels, and Barcelona. As a result of suggestions made at these conferences, the CAS proposed an expansion of China’s IGY projects and received the approval of the State Council: The number of meteorological stations participating in the IGY was increased from five to 90, and measurements taken at those stations extended beyond surface and high-altitude observations to include radiosonde observation and solar radiation measurement, the installation of a magnetic fluxmeter at the Guangzhou Geomagnetic Station, aurora observations at meteorological stations in northern China, and the establishment of a station south of Beijing for the measurement of longitudes.²⁶ Two new stations in Lhasa, Tibet, one on geomagnetism and another on seismology, were also constructed specifically for the IGY. According to Zhu Kezhen,

the foreign currency needed for the purchase of instruments to equip these stations more than doubled the total annual national funds for scientific research allocated by the Nationalists before 1949.²⁷

Chinese enthusiasm for the IGY reached a height in February 1957 when Zhu Kezhen published an article in *The People's Daily*, the most influential official newspaper in the country, titled, "The Organization of the International Geophysical Year and International Scientific Collaboration." In it he called the IGY "not only a great movement in the development of geophysics, but also a new approach to international scientific collaboration." International collaboration was necessary for all sciences, but especially for geophysics, he noted. He mentioned the expected benefits of the establishment of a global network of high-altitude meteorological stations for the forecasting of weather, and of polar research for the understanding of ocean currents. Remarkably, he also pointed out that "the climate of the northern temperate zone and the northern frigid zone has undergone a warming trend during the 20th century," citing, among other pieces of evidence, Chinese observations of the upward movement of the snow line in Xinjiang, northwestern China, by as much as 70 meters in the last 40–50 years. There was a lack of evidence to determine whether a warming trend was also happening in the tropical regions and in Antarctica, and was therefore global, but he hoped the IGY would help establish enough stations to obtain the necessary data for this purpose.²⁸

Zhu then went on to describe in detail the various IGY projects, including Antarctic exploration, atmospheric and Earth sciences, and the launching of satellites by the United States and the Soviet Union. In connection with the latter, he made a point of mentioning the Chinese invention of the rocket in the eleventh century during the Song dynasty, "marking the first step toward the artificial moon." In reviewing the subsequent development of the technology, especially Wernher von Braun's recent proposal for an American military base in space, Zhu made the appeal that "artificial satellites should not become a militaristic weapon of any one country, but a tool for bringing in new knowledge and life for all humankind." He detailed the Chinese IGY program and acknowledged that "our scientific level still lagged quite behind world standards." But he hoped that when the expected next IGY came around in 25 years, China "would have caught up with the scientifically advanced countries."²⁹

While Zhu's article primed the public about China's participation in the IGY, the organizers made final preparations by sending a high-level delegation of scientists, under Zhao Jiuzhang, to Tokyo to participate in the IGY regional meeting for the western Pacific from February 25 to March 2, 1957. Such a move also had international political benefits, as Liao Chengzhi, chair of the Communist Party's powerful Central Commission on International Activities, told Zhu Kezhen: "We want to establish friendly relations with Japan."³⁰ There, Chinese scientists joined colleagues from Australia, Indonesia, Japan, Pakistan, the Philippines, the United States, and the Soviet Union to review IGY programs of participating countries in

the region and make suggestions for additional observations and technical cooperation. Calling it “a very successful meeting” in a report published in the *CAS Science Bulletin* on his return, Zhao signaled that China was ready for the IGY.³¹

The finalized Chinese IGY program was published in the March 27, 1957, issue of *Science Bulletin*. It was composed of eight main categories: (1) meteorology, which involved 90 sites, all of which would be engaged in surface measurements; five in radiosonde and wind measurement, and located in Beijing, Shanghai, Hankou, Ganzhou, and Haikou; 23 in radiosonde measurement of high-altitude temperature, pressure, and humidity in addition to wind measurement by theodolites; 23 in solar radiation observation; one, at Wuhan, in high-altitude ozone observation; (2) geomagnetism at four stations in Beijing, Sheshan, Lhasa, and Guangzhou; (3) aurora observation at 23 meteorological stations; (4) ionosphere: six stations at Manzhouli, Beijing, Sheshan, Wuhan, Chongqing, and Guangzhou; (5) solar activities observation at four stations in Beijing, Nanjing, Sheshan, and Kunming; (6) cosmic rays at Beijing and Dongchuan (near Kunming); (7) longitude and latitude measurement at the Xujiahui station in Shanghai and latitude determination at a station near Tianjin; and (8) seismology: seven stations in Beijing, Lanzhou, Nanjing, Sheshan, Lhasa, Kunming, and Guangzhou.³²

The Taiwan Issue and Withdrawal

So by March 1957 China was ready for the IGY, but was the IGY ready for China? Quite unbeknown to Zhu and other Chinese scientists, in late 1956 and early 1957 the IGY organizers faced a mounting crisis about the issue of China's representation, which issue they thought they had successfully skirted when Taiwan apparently failed to respond to the IGY invitation even after China joined in 1955. At the Barcelona conference in September 1956 Zhu Gangkun had an informal conversation about Taiwan with Sydney Chapman, his dissertation adviser at Oxford in the late 1940s. When Chapman asked Zhu Gangkun whether China would agree to Taiwan joining the IGY, Zhu Gangkun responded indirectly by asking Chapman how he would react if Scotland, Wales, and England all joined the IGY in the name of Great Britain? Chapman laughed, recalled Zhu Gangkun years later, and said “You are grown up.”³³ Having heard nothing from CSAGI about Taiwan after this exchange, Chinese scientists probably breathed a sigh of relief. But the storm was brewing.

Apparently just as Chapman and Zhu Gangkun were talking in Barcelona, the U.S. State Department, alarmed by China's participation in the conference, decided to push the Chinese Nationalist government in Taiwan to apply for participation in the IGY. According to research by Ronald Doel and colleagues, Walter McConaughy, director of the Office of Chinese Affairs at the State Department and a close friend of Jiang Jieshi, first contacted Jiang's embassy staff in Washington, who then prompted Zhu Jiahua (Chu Chia-hua, no relation to Zhu Kezhen), president of Academia Sinica in

Taipei, to write to CSAGI and apply for participation in the IGY. Denying ever receiving an invitation from CSAGI, Zhu Jiahua now requested one for his academy to attend the Tokyo conference and insisted the PRC be deleted from the IGY list of participants.³⁴ The letter, according to Walter Sullivan, *New York Times* science reporter and author of a history about the IGY, threatened to politicize the international collaboration and result in “the wrecking of the IGY.”³⁵

Rejecting Zhu Jiahua’s demand for the IGY exclusion of the PRC, Chapman and the IGY leadership nevertheless felt that they had to accept the Nationalists, who remained a member of ICSU. Writing on February 12, 1957, Chapman told the CAS about Taiwan’s application for participation, CSAGI’s intention to issue an invitation to Taiwan for the Tokyo conference if it would send only scientists, not government officials—and would refrain from raising political issues—and his hope that China would find this compromise acceptable. Believing this turn of events was the handiwork of “American imperialists,” the Chinese government stood firm in its initial response (sent in Zhu Kezhen’s name on February 18), requiring the exclusion of the Nationalists as a condition for the PRC participation in the IGY: “China will join IGY only on condition Taiwan should not be admitted. Otherwise China will withdraw from IGY.”³⁶

Zhu Kezhen apparently did not see Chapman’s letter until he returned from a trip. When he prepared to respond in more detail to CSAGI in early April, Zhu Kezhen, an enthusiastic believer in international scientific collaboration, pushed within the Chinese government for a more flexible stand. In talking to officials at the Foreign Ministry, he agreed that “We certainly would oppose Taiwan’s admission into the IGY, but it will be difficult for the IGY to refuse it, for it actually is a member of the ICSU and has the sponsorship of the Americans.”³⁷ He seemed to have succeeded to a certain extent. In his follow-up letters to Nicolet on April 8 and to Chapman on April 10, Zhu Kezhen sounded a more conciliatory tone: China would still insist on the official exclusion of Taiwan and was against the listing of two national committees for China, but would not “object [to] scientists from Taiwan coming to the IGY gatherings” as long as they agreed to acknowledge, “implicitly or explicitly,” the PRC as the sole representative of China in international affairs. He also welcomed any qualified Chinese geophysicist, implicitly those in Taiwan, as a member of the Chinese IGY National Committee.³⁸ Nicolet’s initial response to his April 8 letter seemed to give Zhu Kezhen encouragement: “It appears that Nicolet regards this matter very seriously, so CSAGI will likely weigh it carefully when it meets next.”³⁹

Probably encouraged by the tone of Zhu Kezhen’s letters, Chapman and his CSAGI colleagues proposed one last compromise in June 1957: the IGY would quietly admit the Nationalists, but the word “national” would be dropped from the list of all IGY participants, and there would be two consecutive entries on China: “Chinese IGY Committee: Peking” and “Chinese IGY Committee: Taipei.”⁴⁰

CSAGI's decision to admit Taiwan intensified the internal debate in Beijing as to how to respond to this unwelcome development. On the one hand, the CAS, especially Zhu Kezhen, took a moderate stand, seeking to protest the decision but stopping short of withdrawing from the IGY. For example, on June 26, the leadership of the Chinese IGY National Committee, including Zhu Kezhen, Zhao Jiuzhang, and Tu Changwang, met with Pei Lisheng, who, as the secretary general of the CAS, was a key link to the central government. They agreed that "we should take a clear stand, firmly opposing CSAGI's 'two Chinas' approach, but should not propose to withdraw from the IGY on our own." Specifically they suggested that:

(1) We will protest to CSAGI that we do not accept putting Beijing and Taiwan on equal footing, and ask that it carefully reconsider the matter; otherwise we would not be able to meet our responsibilities (referring to the payment of dues and the supply of our geophysical data); (2) If the problem could not be solved satisfactorily, we will continue our various planned geophysical measurements and observations at home, but we will not carry any responsibilities toward CSAGI and will not exchange scientific data with foreign countries; (3) We naturally can still communicate with the Soviet Union and obtain scientific data from elsewhere in the world through the Soviet Union, thus not suffering very much.⁴¹

On the other hand, the foreign ministry, especially Qiao Guanhua, assistant to Zhou Enlai in Zhou's capacity as foreign minister, pushed for the hard-line position of withdrawing from the IGY if CSAGI did not reverse itself on the issue of Taiwan.⁴² And, as the Communist Party Group of the CAS reported to the party's central committee on June 28, the foreign ministry's position prevailed:

On the 27th, after consulting with relevant departments in the Foreign Ministry, [we] agreed with these basic principles but [we] would like to take a clearer and firmer specific stand, i.e., we should make it clear that if CSAGI does not alter the approach of its executive bureau, we will firmly withdraw from the IGY.⁴³

The CAS Party Group did not believe CSAGI's argument that it had to admit Taiwan because it was nonpolitical or Taiwan was a member of ICSU. Rather it saw the move as part of a plot to create "two Chinas" that had been advocated by the United States. Furthermore the Party Group suspected that CSAGI "most likely will force us out" of the IGY if China did not consent to its new proposal.⁴⁴

The next day a cablegram went to CSAGI in Zhu Kezhen's name declaring that Taiwan had been an integral part of China since ancient times, that CSAGI had buckled under the pressure of a conspiracy by a certain international political force to create "two Chinas" when it had admitted Taiwan as an independent country, and that "the People's Republic of China National IGY Committee would withdraw from CSAGI and all its activities until

it corrects this decision."⁴⁵ Thus the IGY started the next day without the official participation of mainland China, the most populous, and one of the largest, countries in the world.

Conclusion

After China's formal withdrawal from the IGY, its various IGY activities did, as the CAS Party Group had reported to the Central Commission, continue as planned. The National IGY Committee was changed to the Chinese National Geophysics Committee and went on to hold meetings and coordinate the collection of data.⁴⁶ Despite the threat contained in the Party Group's report, some data did find its way into the World Data Center in Moscow and was made available to, among others, Lloyd Berkner, who revealed this fact in a 1959 speech to the Industrial College of the Armed Forces in Washington, D.C. Nevertheless, in the speech he criticized the Chinese government as "so backward that it permitted its political jargon to stand in the way of its active participation."⁴⁷

While the differences in views between Zhu Kezhen and the foreign ministry indicated China's decision to withdraw from the IGY was, indeed, political, not scientific, one could question whether it was not exactly the same politics-driven thinking that motivated the U.S. government to push Taiwan to join the IGY in the first place, with almost certain knowledge that it would lead to China's withdrawal and cause a major interruption in international scientific collaboration. In the end the whole incident probably helped promote geophysical research in Taiwan, but it had serious negative impact on scientific research in China.⁴⁸ One of the practical effects of China's withdrawal was the disappearance of urgency in coordinating the collecting, printing, and circulation (even within China) of the vast amount of scientific data produced at the various IGY sites all over the country. By May 1958 only World Day ionospheric observations and sun-spot observations produced monthly reports as planned; monthly meteorological reports lasted only until September 1957, and no reports on geomagnetism and seismology existed at all. Of course, there is no guarantee that such reports would have been forthcoming had China remained in the IGY, but the need to fulfill its international obligations would probably have helped produce the pressure for a much better communications effort.

Perhaps more important, United States intervention resulted in the weakening of the political status of moderate scientists within China, a consequence that was evidently counterproductive to the American goal of promoting "peaceful evolution" in the country. To hard-line party and government leaders, scientists like Zhu Kezhen who had advocated increased Chinese participation in international science appeared to be naïve, at best, in their faith in scientific internationalism and in the possibility of separating science from politics. Coinciding with the launching of the Anti-rightist campaign of renewed ideological control in China, this episode probably contributed to a general tightening of any international scientific opening to the West in this period.⁴⁹ Although Zhu

Kezhen survived the Anti-rightist campaign relatively unscathed, the IGY incident certainly did not enhance his political standing. During a “self-criticism” session a year later, he had to mention the IGY as one of those tasks given to him by the CAS that he failed to carry out successfully.⁵⁰ Even more painfully, his son Zhu Xiwen, a school teacher in Nanjing, was persecuted as a rightist at this time and died several years later in a labor camp.⁵¹

Of course the eventual withdrawal of China from the IGY should not obscure the sincere attempts at scientific internationalism on the part of Chapman, Zhu Kezhen, and others in a difficult international political environment. Both Chapman and Zhu promoted such an ideal in the form of the IGY. Chapman did so by trying to persuade China first to join and then, after Taiwan applied, to stay in the project, while Zhu Kezhen did likewise by organizing and publicizing the effort in China and then by making the case, although unsuccessfully, for it to remain in the IGY. What drove their allegiance to scientific internationalism was not just traditional idealism, but also practical needs: Chinese scientists and the IGY needed access to each other’s data, and eventually both succeeded, at least to a limited extent. Yet what this examination demonstrated, above all, is that even though scientific internationalism played an important role even at the height of the cold war, ultimately it was the states, on both sides of the Iron Curtain, that determined the conduct of international scientific interactions.

Notes

1. We express our thanks to the late Dr. Zhu Gangkun of the Chinese Academy of Sciences for an informative interview on his experiences related to China and the IGY during the 1950s, to organizers and participants at the October 2007 “Making Science Global” conference at the Smithsonian Institution for encouragement and constructive feedback, and to Wang Yangzong, Zhang Li, Pan Tao, Ronald Doel, and Rip Bulkeley for helpful discussions and assistance with materials.
2. Ronald E. Doel, Dieter Hoffmann, and Nikolai Kremntsov, “National States and International Science: A Comparative History of International Science Congresses in Hitler’s Germany, Stalin’s Russia, and Cold War United States,” *Osiris* 20 (2005): 49–76.
3. “Sheshan dicitai jianjie,” <http://www.geomag.ac.cn/sitenet/SSH/index.htm>.
4. Zhu Kezhen, “Emeishan Taishan guoji jinian guance baogao bianyan” (introduction to *Report on the Measurements for the International Polar Year Carried out at Emei and Tai Mountains*), 1935, reprinted in Zhu Kezhen, *Zhu Kezhen quanji* (the complete works of Coching Chu), vol. 2 (Shanghai: Shanghai Scientific and Technological Education Press, 2004), 277–278. On Zhu, see also Zuoyue Wang, “Saving China through Science: The Science Society of China, Scientific Nationalism, and Civil Society in Republican China,” *Osiris* 17 (2002): 291–322.
5. To avoid confusion, we will use “CAS” to refer to the academy in Beijing and “Academia Sinica” for the one in Taiwan unless otherwise noted.
6. Walter Sullivan, *Assault on the Unknown: The International Geophysical Year* (New York: McGraw-Hill, 1961), 36–37.
7. CAS, “Guanyu ‘guoji diqiu wuli nian’ qingkuang de jieshao he woguo canjia zhe yi gongzuo de jianyi” (background on the IGY and suggestions on our country’s participation in this work), June 30, 1956, in Archives of the Chinese Academy of Science, Beijing, folder “1956-4-52.”
8. Xue Weimin, ed., *Dangdai zhongguo de qixiang shiye* (meteorological services in contemporary China) (Beijing: Chinese Social Science Press, 1984), 402.

9. CAS, "Guanyu 'guoji diqiu wuli nian,'" June 30, 1956.
10. CAS, "Guanyu 'guoji diqiu wuli nian,'" June 30, 1956.
11. CAS, "Guanyu 'guoji diqiu wuli nian,'" June 30, 1956. On Soviet decision to join the IGY, see Rip Bulkeley, "Aspects of the Soviet IGY," *Russian Journal of Earth Sciences* 10, no. 1 (2008): ES1003, available online at: <http://elpub.wdcb.ru/journals/rjes/v10/2007ES000249/2007ES000249.pdf>.
12. On the Soviet visit, see "Zhongguo kexueyuan yuanwu changwu huiyi guanyu sulian kexueyuan daibiaotuan de jianyi he zhongsu liangguo kexueyuan zhijian de hezuo de jueyi" (resolution on the suggestions of the delegation of the Soviet Academy of Sciences and on CAS-SAS collaboration made at the regular meeting of the CAS), June 22, 1955, *Kexue tongbao* (Chinese science bulletin), (August 1955). See also Zhu Kezhen diaries for April 27–June 23, 1955, in *Zhu Kezhen riji* (Zhu Kezhen's diaries), vol. 3 (Beijing: Science Press, 1989), 553–572.
13. Bulkeley, "Aspects of Soviet IGY."
14. Zhu diary for June 18, 1955, in *Zhu Kezhen riji*, vol. 3, 571–572.
15. Zhu diary for June 18, 1955, in *Zhu Kezhen riji*, vol. 3, 571–572.
16. Zhu diary for June 30, 1955, in *Zhu Kezhen riji*, vol. 3, 574–575. In January 1957, Tu was promoted to be a vice chair, and several others were added as members. See Wang Zhongjun, ed., *Zhongguo kexueyuan shishi huiyao 1955 nian* (major events in the history of the Chinese Academy of Sciences in 1955) (Beijing: Chinese Academy of Sciences, 1995), 8, 26–27.
17. The exchanges are in the Archives of the Chinese Academy of Science, Beijing, folder "1955-1-30." See also Sullivan, *Assault on the Unknown*, 36.
18. Zhu diary for June 18, 1955.
19. Zhu diary for July 2, 1955.
20. Zhu diary for January 4, 1956, in *Zhu Kezhen riji*, vol. 3, 636.
21. Zhu diary for January 1, 1956, in *Zhu Kezhen riji*, vol. 3, 635.
22. Wen Kegang et al., *Tu Changwang zhuan* (biography of Tu Changwang) (Beijing: Contemporary China Press, 1997), 451.
23. Zhu to Bardin, July 24 and October 27, 1956, in Zhu Kezhen, *Zhu Kezhen quanji* (collected works of Zhu Kezhen), vol. 3 (Shanghai: Shanghai Scientific and Technological Education Press, 2004), 305, 308.
24. Zhu diary for January 14, 1957, in *Zhu Kezhen riji*, vol. 4 (Beijing: Science Press, 1989), 7. See also Wen, *Tu Changwang zhuan*, 460–461.
25. Zhu diary for July 27, 1956, in *Zhu Kezhen riji*, vol. 3, 696–697.
26. CAS to State Council, January 25, 1957, in Xue Pangao and Ji Chuqing, eds., *Zhongguo kexueyuan shishi huiyao 1957 nian* (major events in the history of the Chinese Academy of Sciences in 1957) (Beijing: Chinese Academy of Sciences, 1998), 25–27.
27. Zhu Kezhen, "Guoji diqiu wulinian de zuzhi he guoji hezuo" (the IGY and international scientific collaboration), *People's Daily*, February 19, 1957.
28. Zhu, "Guoji diqiu wulinian de zuzhi he guoji hezuo."
29. Zhu, "Guoji diqiu wulinian de zuzhi he guoji hezuo."
30. Zhu Kezhen diary for February 11, 1957, in *Zhu Kezhen riji*, vol. 4, 15.
31. Zhao Jiuzhang, "Guoji diqiu wulinian dongjing xi taipingyang quyu huiyi" (IGY western Pacific regional conference in Tokyo), *Kexue tongbao* (science bulletin), (October 1957): 312–313. See also Zhu Kezhen diary for April 2, 1957, in *Zhu Kezhen riji*, vol. 4, 39–40.
32. Zhou Hang, "Woguo canjia guoji diqiu wulinian de gongzuo jihua" (our country's working plan for participation in the IGY), *Kexue tongbao* 6 (March 27, 1957): 185–186.
33. Interview with Zhu Gangkun by Jiuchen Zhang and Zuoyue Wang, August 27, 2007, Beijing.
34. Doel and others, "National States and International Science," 69. Sullivan, *Assault on the Unknown*, 37. There is evidence that the IGY was not unknown to the scientific community in Taiwan before Zhu Jiahua made his protest. See, for example, Xue Jixun, "Guoji diqiu wulixue nian" (International Geophysical Year), *Jiaoyu yu wenhua*

- (education and culture) 10, no. 1 (December 1955): 17–19. Xue later became a member of Taiwan's IGY committee. See *Final Report [of] Chinese National Committee [for the] International Geophysical Year 1957–58* (Taipei: Chinese National Committee for the IGY, April 1959), 16.
35. Sullivan, *Assault on the Unknown*, 37.
 36. Sullivan, *Assault on the Unknown*, 41. On the Chinese belief in the American role, see Communist Party Group of the CAS to Central Commission on International Activities, June 28, 1957, in Xue Pangao and Ji Chuqing, eds., *Zhongguo kexueyuan shishi huiyao 1957 nian*, 182–183.
 37. Zhu Kezhen diary for April 1, 1957, in *Zhu Kezhen riji*, vol. 4, 39.
 38. Sullivan, *Assault on the Unknown*, 41.
 39. Zhu Kezhen diary for April 26, 1957, in *Zhu Kezhen riji*, vol. 4, 48.
 40. Sullivan, *Assault on the Unknown*, 42.
 41. Communist Party Group of the CAS to Central Commission on International Activities, June 28, 1957, in Xue and Ji, eds., *Zhongguo kexueyuan shishi huiyao 1957 nian*, 182–183.
 42. On Qiao's role, see Zhu Kezhen diary for August 12, 1957, in *Zhu Kezhen riji*, vol. 4, 91–92.
 43. Communist Party Group of the CAS to Central Commission on International Activities, June 28, 1957.
 44. Communist Party Group of the CAS to Central Commission on International Activities, June 28, 1957.
 45. Zhu Kezhen to Chapman, June 6, 1957, in *Zhu Kezhen quanji*, vol. 3, 364.
 46. See Zhu Kezhen diaries for September 21, 1957; February 1, 1958; and May 21, 1958; in *Zhu Kezhen riji*, vol. 4, 103, 144–145, 179, respectively.
 47. Lloyd Berkner, "International Geophysical Year," January 27, 1959, a speech at the Industrial College of the Armed Forces, Washington, DC, available online at: www.ndu.edu/library/ic3/L59-097.pdf.
 48. On the Chinese Nationalist effort for the IGY, see *Final Report [of] Chinese National Committee [for the] International Geophysical Year 1957–58*.
 49. See, for example, Zhu Kezhen diary of August 24, 1961, in *Zhu Kezhen riji*, vol. 4, 550.
 50. "Remarks at 'Jiao Xin' [baring one's thoughts] Rallies of the CAS," June 11 and 13, 1958, in Zhu Kezhen, *Zhu Kezhen quanji*, vol. 3, 439–440.
 51. Zhu Kezhen diaries of May 25, 1958, and February 20, 1961, in *Zhu Kezhen riji*, vol. 4, 181 and 509–510, respectively. There is no evidence that Xiwen's persecution had any direct connection with his father's political situation.