

UNITED STATES – CHINA
SCIENCE AND TECHNOLOGY COOPERATION



Biennial Report to the United States Congress

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Office of Science and Technology Cooperation
Bureau of Oceans and International Environmental and Scientific Affairs

Implementation of Agreement between the U.S. and China on Science and Technology

This 2012 biennial report was prepared in consultation with federal agencies that conducted bilateral Science and Technology activities under the 1979 U.S.-China Science and Technology Cooperation Agreement (S&T Agreement) and its protocols to satisfy the requirements of the Bob Stump National Defense Authorization Act for Fiscal Year 2003 (Public Law 107-314) that the State Department provide a periodic monitoring mechanism related to that Agreement. The S&T Agreement continued to advance a range of U.S. objectives during the reporting period. The State Department and other federal agencies continued to hold policy discussions on the protection of intellectual property, scientific merit review processes, and transparent publishing of scientific data that encouraged China to support democratic and meritocratic principles. All activities undertaken by the U.S. technical agencies under this agreement were in the civilian domain. These cooperative activities also accelerated scientific progress in the United States, providing significant direct benefit to a range of U.S. technical agencies.

Account of Activities: Following are the activities conducted since the previous report as well as activities projected through 2014. An annex with additional information is available at: <http://www.state.gov/e/oes/rls/rpts/index.htm>.

Department of Agriculture:

Agricultural Research Service (ARS): ARS and the Chinese Ministry of Science and Technology (MOST) signed annexes for Dairy Production and Water Saving Technology research and a Letter of Intent to continue its bilateral dialogue on food security research in biotechnology, water saving technology, and gene bank technologies. ARS also collaborated with the Chinese Academy of Agricultural Sciences in Beijing's Sino-American Bio Control Lab by jointly investigating the control of invasive insect pests and resistant plant species. This cooperation enhanced U.S. preparedness to control invasive agricultural pest species, and helped U.S. scientists develop new seed varieties and keep food prices competitive by gaining access to genetic resources in Chinese collections.

Animal and Plant Health Inspection Service (APHIS): APHIS held, co-sponsored, or participated in numerous events that benefited the United States by enhancing preparedness and response to potential animal and plant diseases; by cataloging

wildlife borne disease threats in China; by providing data on the incidence and prevalence of infectious diseases with potential commercial impact and on infectious diseases not endemic to the U.S.; by developing a cadre of Chinese technicians familiar with U.S. safeguarding methodology and reporting practices on notifiable animal diseases; by providing an opportunity to harmonize regulations in the biotechnology sector; and by creating information pathways to prevent major trade disruptions and to implement early responses to animal pest and disease events to safeguard U.S. agriculture.

Foreign Agricultural Service: The U.S. Department of Agriculture continued exchanges under the Scientific Cooperation Exchange Program in order to share technical information and identify potential areas for joint cooperation in areas that included biotechnology, food safety, food security, climate change, and alternative energy. Further details on this program and its activities are included in the annex to this report at <http://www.state.gov/e/oes/rls/rpts/index.htm>. This collaboration promoted U.S. agricultural priorities, encouraged long-term cooperation, and created a positive atmosphere for trade.

National Institute of Food and Agriculture (NIFA): NIFA supported several institutions' research, extension and teaching programs that engaged Chinese colleagues through student and faculty exchanges, and collaboration on ideas, techniques and data to enhance U.S. agricultural science programs in agro-biotechnology, bio-energy education, trade, horticulture, climate change, youth development, and pest management.

U.S. Forest Service (USFS): Many forest ecosystems in China mirror ecosystems in the United States, making technical exchange beneficial for U.S. researchers. USFS hosted two study delegations from the China's State Forestry Administration (SFA) focused on aspects of forest and watershed management, tourism, administration and law enforcement. In addition, a group of representatives from USFS, the Memphis Zoo, and SFA conducted assessment-visits to two USFS-established community-based protection and restoration forest health demonstration sites in China. In 2011, USFS renewed its MOU with SFA and jointly outlined technical activities for collaboration.

Department of Commerce:

National Institute of Standards and Technology (NIST): NIST collaborated under three agreements/protocols and supported several workshops on key metrology areas with U.S. industry and several Chinese institutions, including the Chinese

Academy of Sciences and National Institute of Metrology. This cooperation benefited U.S. consumers and producers by advancing Chinese understanding and acceptance of transparent, non-discriminatory standards and measurement methodologies for a range of industrial and technology applications.

National Oceanic and Atmospheric Administration (NOAA): NOAA participated in several bilateral meetings relating to its two Protocols on atmospheric research, and marine and fishery science. NOAA and China's State Oceanic Administration also agreed to a *2011-2015 Framework Plan for Ocean Science and Technology Cooperation*, which has the potential to advance U.S. science by improving China's timely data sharing.

Department of Defense (DOD): DOD attended international S&T conferences in China on topics including robotics, portable fuel cells, non-oxide glasses, metamaterials, ballistics, and nanomaterials for electrochemical systems. DOD also engaged in several exchanges with the PRC on pandemic influenza, energy, disaster management, and environmental issues to foster collaboration on areas of mutual benefit and to support efforts to combat global transnational threats.

Department of Energy (DOE): DOE signed an agreement in 2011 with the Chinese Academy of Sciences to facilitate cooperation in energy research, and continued collaboration with MOST under the \$150 million Clean Energy Research Center (CERC). This center is funded in equal parts by the United States and China, with U.S. funding made up of \$37.5 million from DOE and \$47.3 million from partner organizations. It awarded competitive grants through DOE to two U.S. universities and one national laboratory for cooperative research projects with five Chinese research institutions in clean vehicles, advanced coal technology, and building energy efficiency. Other outcomes included DOE participation in an advanced neutrino experiment at Daya Bay, China; research collaborations that led to the observation of the helium antimatter nucleus at Brookhaven National Laboratory; and contributions to the Continuous Electron Beam Accelerator Facility 6GeV experimental program, 12GeV upgrade, and accelerator research at the Thomas Jefferson National Accelerator Facility.

Department of Health and Human Services (HHS): The Centers for Disease Control and Prevention collaborated with China in global immunization, outbreak response, surveillance, and epidemiologic training. The National Institutes of Health (NIH) also collaborated in basic biomedical and behavioral sciences, and in FY 2010, seventeen out of twenty-seven HHS/NIH Institutes and Centers were involved with Chinese counterparts. The Health Resources and Services

Administration collaborated in the National Marrow Donor Program Agreements for Unrelated Blood Stem Cell Transplants. Data and sample sharing benefited the United States and its scientific community by enhancing ability to recognize and respond to domestic and global disease outbreaks and by providing opportunities to advance treatment and prevention of diseases that affect Americans. The Food and Drug Administration (FDA) collaborated through strategic engagement with Chinese regulators of food and medical products, outreach to Chinese firms that export FDA-regulated products to the United States, and encouragement of China's engagement with international standard-setting bodies, enabling the FDA to enhance safety of imported food and medical products from China through better information sharing and access to production facilities.

Department of Interior:

Fish and Wildlife Service (FWS): FWS and China's State Forestry Administration (SFA) signed Annex 11 to the Protocol on Cooperation and Exchanges in the Field of Conservation of Nature outlining cooperation through 2013 in conservation of threatened and endangered species. FWS's cooperation supports broad U.S. goals for implementation of CITES, and addresses challenges of invasive species and the wildlife/human disease interface.

National Park Service (NPS): NPS's sister park relationships with Chinese protected areas increased Chinese tourism to the United States. The Grand Canyon National Park had an estimated 50,000 Chinese visitors from 2010-11. NPS also renewed its cooperative efforts with the Ministry of Housing and Urban-Rural Development through a 2012-2014 Action Plan and engaged China's SFA to develop cooperative activities on natural resource management, including a high-level SFA delegation visit to the United States in late 2011 and study tours of U.S. national parks.

United States Geological Survey (USGS): USGS operates ten cooperative seismic observatories in China and participated in numerous studies. In May 2011, 44 American geophysicists attended a Sino-U.S. Workshop on Earthquake Hazards in Chengdu. In November 2010, the Director of USGS discussed sharing of earth observational data from satellite remote sensing platforms at an international plenary meeting in Beijing, and signed a new protocol with the Chinese Centre for Earth Observation and Digital Earth. The Chinese data gained by USGS through these studies provided valuable lessons from recent disastrous earthquakes, significantly advancing U.S. efforts in disaster prevention and response.

Department of Transportation (DOT): DOT collaborated with China under the aegis of the 4th U.S.-China Transportation Forum, a mechanism to share technical information and best practices to increase the efficiency and safety of the transportation system. This exchange promotes harmonization of standards and enhances public transport safety for the United States.

Environmental Protection Agency (EPA): EPA collaborated with Chinese partners on pollution prevention and management; development, implementation and enforcement of environmental law; and management of environmental information. Mutual research interests included sustainability science and technology, new environmental technologies, and sustainable green communities. These programs reduce pollution loads and their impacts on the United States. Improved Chinese environmental laws, regulations and enforcement promote environmental management consistent with global standards, improving U.S. products' competitiveness in the global marketplace.

National Science Foundation (NSF): NSF awarded \$15,766,998 to U.S. researchers engaged in bilateral collaborative activities with China to advance basic science and train the next generation of scientists: \$14,195,577 was relevant to the S&T Agreement and "Basic Sciences Protocol," and \$1,571,421 was relevant to the S&T Agreement and "Earthquake Studies Protocol." NSF also conducted activities through the Integrated Ocean Drilling Program, and sent 80 U.S. graduate students to China in 2010-2011 for research through the East Asia and Pacific Summer Institutes as operated under an agreement with MOST.

Nuclear Regulatory Commission (NRC): NRC signed the Memorandum of Further Cooperation on the Nuclear Safety of the AP 1000 Nuclear Reactor with China's National Nuclear Safety Administration (NNSA). NRC benefits from the exchange of construction inspectors by gaining understanding of NNSA's recent construction experience on building the first AP-1000 nuclear power reactor, resulting in better U.S. safety and oversight of planned AP-1000 reactor construction projects in the United States.

Office of Science and Technology Policy (OSTP): OSTP chaired the 2009 U.S.-China Joint Commission Meeting on Scientific and Technological Cooperation, which meets biannually to coordinate and manage collaborative science and technology activities of the U.S. and Chinese governments. Additionally, OSTP participated in the U.S.-China Innovation Dialogue, which serves as a forum for sharing best practices in promoting innovation and entrepreneurship and for

identifying, analyzing, and overcoming discriminatory aspects of China's innovation policies.