

## Views &amp; Comments

## Responding to Global Changes as a Community of Common Destiny

Xiangwan Du

Former Vice President, Chinese Academy of Engineering; Chairman, China National Expert Committee of Climate Change

As humankind progresses in giant steps, we also face a series of daunting challenges, crises, and security threats, including environmental degradation, climate change, a sharp decline in biodiversity, nuclear proliferation, epidemics, and terrorism, to name but a few. How to respond to these threats is a test of human reason and wisdom.

Climate change is a global security issue to which no country is immune. Scientific understanding of and a proactive response to climate change are required for the sustainable development of humankind.

## 1. Climate change and climate security

(1) Global warming is an indisputable fact [1]: ① The average land surface temperature increased by 0.85 °C from 1880 to 2012; and ② the average global temperature was 14.6 °C in 2014, the warmest year since record keeping began in 1880 (Fig. 1 [1]).

(2) Climate change has led to a sharp increase in natural disasters in the 21st century (Fig. 2).

(3) Extreme events such as floods and heatwaves will increase people's risks of infectious diseases and malnutrition; and forced migration caused by climatic warming may give rise to health and social problems.

(4) The negative impacts of climatic warming on food security far outweigh its positive impacts, leading to an expected reduction of wheat and corn production by 1.9% and 1.2%, respectively, every ten years.

(5) Water security has become an increasingly prominent issue: Glaciers in many regions are shrinking and impacting downstream runoff and water resources; perennially frozen soil layers in high-latitude areas and high-elevation mountainous areas are melting because of climatic warming; and one-third of the world's 200 major rivers show changes in runoff patterns, mainly characterized by a decrease in runoff volume.

(6) Climate change impacts global ecological security: In some regions, terrestrial species are moving toward polar areas by 17 km and toward areas of higher elevation by 11 m every ten years; and from 1982 to 2008, the growing season in the northern hemisphere started an average of 5.4 days earlier and was extended by 6.6 days.

(7) China has a fragile ecological system and has been significantly affected by climate change [2]. ① High temperatures:

Since the beginning of the 21st century, regions with a high average temperature have accounted for 27.4% of China's area, which is three times more than that of the previous regular level.

② Rainstorms: The number of rain days has decreased, while the number of heavy rain days has increased by 10%. ③ Drought: The

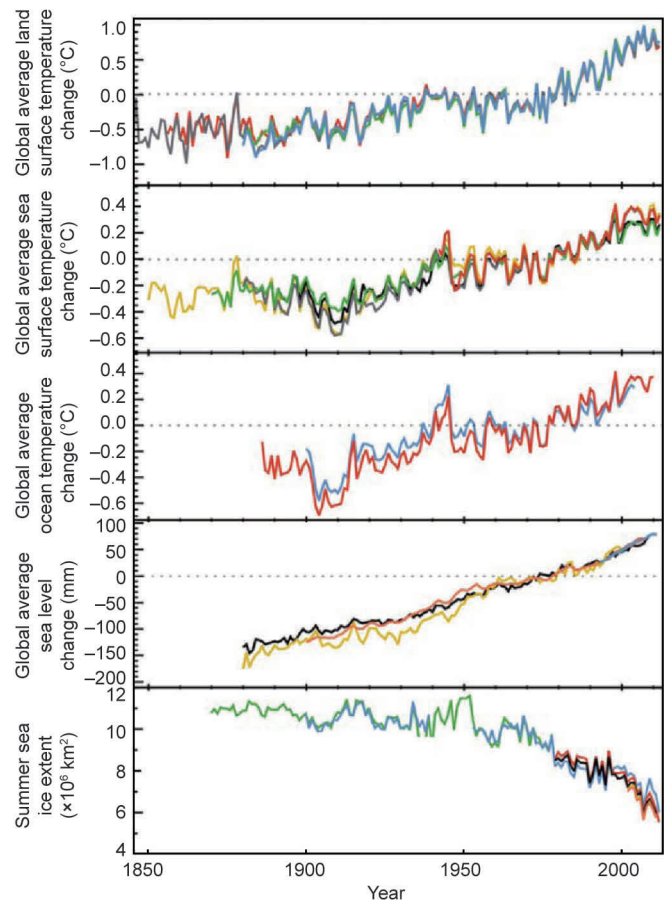


Fig. 1. Graphs showing significant shifts in land surface, sea surface, and ocean temperatures; sea level; and summer sea ice extent (data source: The Fifth Assessment Report of the Intergovernmental Panel on Climate Change) [1].

number of days of moderate and severe drought in Northeast China, North China, and Southwest China has increased by 24%, 15%, and 34%, respectively. ④ Typhoons: Half of the typhoons that have occurred since the beginning of the 21st century reached or exceeded grade 12—nearly twice the level in the 1990s. ⑤ Deaths: Between 1990 and 2013, more than 91 000 people died from meteorological disasters; these disasters also caused more than 5.5 trillion CNY in direct economic losses.

(8) Climate change has had a concrete and far-reaching impact on China's major engineering projects, such as high-speed railways on perennially frozen ground, a south-to-north water diversion project, and the safety of coastal cities and zones.

Climate security, highlighted by climate change, is an all-new non-traditional kind of security that has become a global concern for humankind and that calls for international efforts to respond together.

Judging from the present trends, global environmental issues including climate change will likely worsen in the 21st century. Given the limited space available on earth, the impossibility of humans migration to another habitable planet in the foreseeable future, and the steady increase in world population, the per capita space and environmental capacity will increasingly shrink. Human reason dictates that humans must respond with sustainable development thinking and strategies.

## 2. Transforming development patterns to respond to global changes

The most fundamental way to address climate change is to turn away from resource-intensive high-carbon development and toward ecological civilization through green and low-carbon development. While countries differ in their transformation agendas, green and low-carbon are common directions of development. Developed countries are pushing low-carbon energy development in order to lay the foundation for a new approach to development. Many developing countries have also embraced the concept of coordination and balance between poverty eradication and sustainable development by taking climate response as a new opportunity and a development orientation to drive low-carbon industries and create new markets and jobs.

After years of rapid economic development, China is increasingly realizing the unsustainability of growth based on an excessive consumption of resources and environmental degradation. The mitigation and adaptation strategy for addressing climate change is completely in line with the concept of a “transformation of development mode” and provides a long-term perspective and driver for the transformation effort.

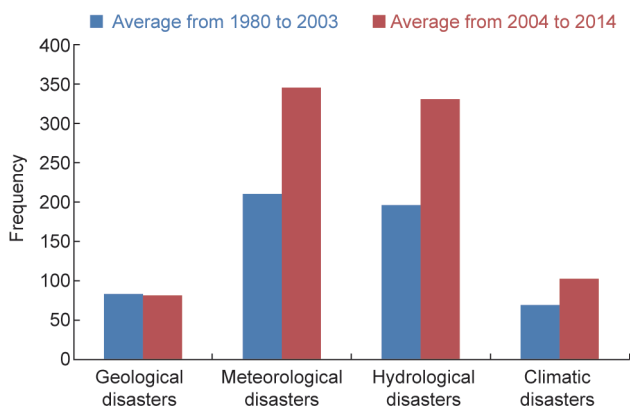


Fig. 2. A comparison of the average frequency of natural disasters in 1980–2003 and in 2004–2014 (data source: Munich Re; National Climate Center).

China is one of the global regions with a high PM<sub>2.5</sub> concentration (Fig. 3 [3]) and carbon dioxide concentration (Fig. 4). In spite of their different definitions, these two concentrations have a common root and source in the combustion of coal and petroleum.

Transformation of development mode means “development within the boundary of environmental capacity,” “development with the environment protected,” and “development guided by ecological civilization.”

Transformation of development mode means adjusting the industrial structure by phasing out backward capacities, driving the transformation and upgrade of traditional industries, and developing high value-added new industries and the service industry.

Transformation of development mode means promoting the energy revolution by curtailing short-sighted needs, conserving energy, and improving efficiency; by controlling the total consumption of high-carbon energy sources and driving their clean low-carbon conversion; by vigorously developing non-fossil energy (renewable energy and nuclear energy) and natural gas (including unconventional natural gas); and by promoting distributed low-carbon energy networks in the process of urbanization, and improving the energy consumption structure in rural areas [4].

Transformation of development mode means transitioning from high-quantity growth to high-quality growth; and from being driven by primary factors of production to being driven by science, technology, and innovation.

Transformation of development mode means embracing circular economy by reducing waste generation and improving waste categorization and resourcification; by protecting and developing forestry and increasing biologic carbon sequestration; and by driving the construction of smart plus low-carbon cities and communities.

Transformation of development mode means establishing the national strategic goal of low-carbon development. After proactively announcing a series of Climate 2020 Goals including

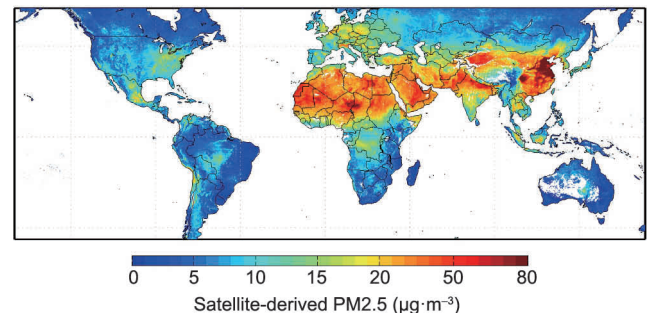


Fig. 3. Global PM<sub>2.5</sub> concentration distribution over 2001–2006 [3].

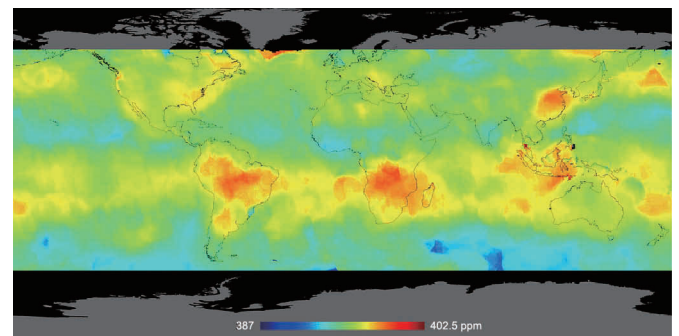


Fig. 4. Average carbon dioxide concentration in October–November, 2014 (NASA OCO-2).

reducing carbon emission intensity in 2009, China announced a new set of goals and measures in 2015, including setting China's peak carbon dioxide emissions at 2030, and submitting its carbon-curbing plan to the United Nations. China's international responsibility for its climate change response is highly consistent with its inherent need for domestic economic transformation.

### 3. Building a community of common destiny through win-win cooperation

All humans inhabit the same planet and are bound together by the same challenges and interests. At the United Nations Conference on Sustainable Development held in Rio de Janeiro in 2012, a set of sustainable development goals were set forth. It was emphasized that these goals cover the three dimensions of economic development, social progress, and environmental protection; and that they are applied to all countries. The call to build an "international community of common destiny" put forward by Chinese leaders at the Boao Forum for Asia is consistent with these goals. Although the world is full of conflicts, humankind—being endowed with reason—must come up with solutions and strategies for the world's sustainable development and future.

The building of a community of common destiny is a practical and operable strategy of great significance that requires unremitting efforts from all humans. Practical directions for achieving win-win cooperation include:

- (1) Promoting energy low-carbonization: This is in the interests of all countries. Through the International Energy Charter, 75 countries have agreed on a cooperation mecha-

nism in this respect.

- (2) Responding to climate change together: The 2015 Paris Climate Conference (COP21) will hopefully bring the global community an important step forward.
- (3) Launching the "One Belt, One Road" initiative: This initiative will build a low-carbon development belt in an important attempt to facilitate win-win cooperation worldwide.
- (4) Establishing a global innovation system: Carrying out cooperation for international innovation projects and exploring pathways to a sustainable future of humankind will drive the establishment of a global innovation system.

In this age of globalization, countries must embrace the concept of a "community of common destiny," expand common ground through win-win cooperation, and join together to create a bright future for our world.

### References

- [1] Pachauri RK, Meyer LA, editors. *Climate change 2014: synthesis report. Contribution of working groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Geneva: IPCC; 2014.
- [2] The Third National Climate Change Assessment Report Writing Committee. *The third national climate change assessment report*. Beijing: Science Press; 2015. Chinese.
- [3] Voiland A. *New map offers a global view of health-sapping air pollution* [Internet]. Washington, DC: National Aeronautics and Space Administration; 2010 Sep 22 [cited 2015 Sep 15]. Available from: <http://www.nasa.gov/topics/earth/features/health-sapping.html>.
- [4] Du X. *Mitigation and adaptation—China's strategy addressing climate change* [invited presentation]. In: *3rd International Conference on Climate Change (ICCC2014): Urban Adaptation to Climate Change—Building Resilience in Hong Kong and Asia's Major Cities*; 2014 Nov 27–29; Hong Kong, China; 2014.