

Progress of the Greenhouse Gases Monitoring Programme by the China Meteorological Administration (CMA) and Cooperative Projects

L.X. Zhou, L.X. Liu, F. Zhang, B. Yao, X.C. Zhang, M. Wen, S.X. Fang, L. Xu, and Y.P. Wen

Chinese Academy of Meteorological Sciences (CAMS), China Meteorological Administration (CMA),
46 Zhongguancun Nandajie, Beijing 100081, China; +86-10-58995279, Fax: +86-10-62176414,
E-mail: zhoulx@cams.cma.gov.cn

Observational data from GAW stations were widely referenced by the WMO Greenhouse Gases Bulletin and a number of scientific reports. Long-term observation since 1990 validated comparable atmospheric CO₂ and CH₄ mixing ratios at Mt. Waliguan GAW global station (WLG, 36.29°N, 100.90°E, 3816m asl) in western China to that of other background stations in the globe. From September 2006 to August 2007, preliminary data from grab air sampling at the three GAW regional stations in China showed higher atmospheric CO₂ and CH₄ mixing ratios at Shangdianzi (SDZ, 40.39°N, 117.07°E, 293.9m asl), Lin'an (LA, 30.3°N, 119.73°E, 138m asl), Longfengshan (LFS, 44.73°N, 127.6°E, 310m asl), respectively, compared to at WLG. It is inferred that nature and human activities have distinct influence on the China regional background atmosphere. In the past decades, there are kinds of long-term or short period observation and research at a few sites in China conducted by different agencies. However, none of these measurements could effectively document spatial and temporal distributions of greenhouse gases in China and provide essential constraints especially to our understanding of the regional carbon cycle and climate change. Thus, it is essential to establish a long-term observational network at multiple sites in China and to carefully calibrate on internationally agreed reference scales, and quality controlled under the GAW framework. These long-term measurements are of the highest quality and accuracy possible to identify trends, seasonal variability, spatial and temporal distribution, source and sink strengths of greenhouse gases to permit climate and carbon cycle researchers to improve our understanding of the carbon cycle and predict how the atmosphere and climate will evolve in the future as a result of human activities.

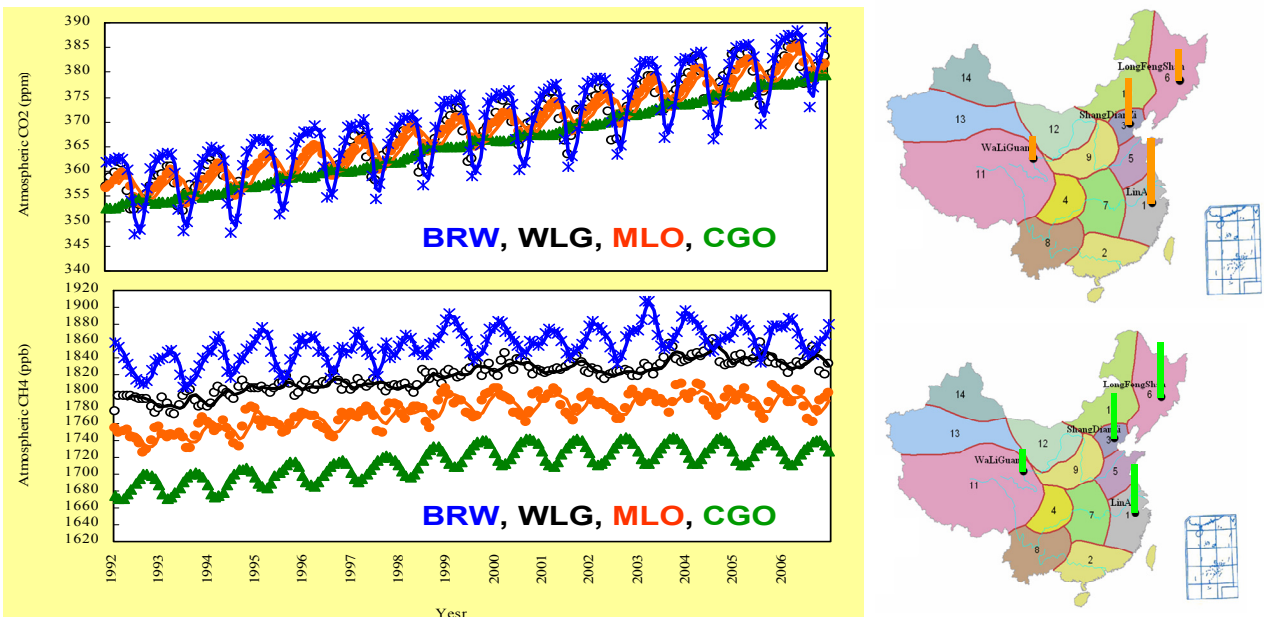


Figure 1 (left). Atmospheric CO₂ and CH₄ mixing ratios at GAW global stations BRW, WLG, MLO and CGO.

Figure 2 (right). Atmospheric CO₂ (top) and CH₄ (bottom) mixing ratios at China GAW stations WLG, SDZ, LA, LSF.