Northeast					
Heilongjiang	Inner Mongolia	Jilin	Liaoning		
451.13	166.23	235.63	189.80		
Northwest					
Shaanxi	Gansu	Qinghai	Ningxia	Xinjiang	Tibet
142.29	81.89	14.93	0.69	98.30	4.61
North					
Beijing	Tianjin	Hebei	Henan	Shandong	Shanxi
10.88	21.85	397.20	968.85	720.26	110.02
Central					
Anhui	Hubei	Hunan	Jiangxi		
848.38	446.85	811.33	273.04		
Southeast					
Fujian	Guangdong	Hainan	Jiangsu	Shanghai	Zhejiang
145.56	210.47	43.66	981.17	28.00	165.14
Southwest					
Chongqing	Guangxi	Sichuan	Guizhou	Yunnan	
109.47	106.00	406.50	103.17	188.63	

Table S1. The CO emission from crop field burning (Gg/y) in Chinese provinces, autonomous regions and municipalities (excluding Hong Kong, Macao and Taiwan)



Fig. S1 Crop field burning captured by MODIS with the background of MODIS real-time true color map from Oct. 6^{th} to 11^{th} .



Fig. S2 The sensitivity experiments to mountain effects, including (a) the enclosing scope and sensitive configuration of remove behaviors for (b) both mountains of Taihang and Yanshan (R-TY), (c) Taihang Mountains (R-T) and (d) Yanshan Mountains (R-Y).



Fig. S3 Topography of the NCP region and two mountain effects on the air pollution. The first (*Effect-1*) is the "mountain blocking effect". The second (*Effect-2*) is the "mountain guiding effect". The mountain effects were emphasized with bold black arrows. Meanwhile, the 200-meter contour was highlighted with bold black line.