

Long-term analysis of Aerosol Optical Depth over the Huaihai Economic Region (HER): Possible causes and Implications

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1 The data processing of AOD

We extracted the 550-nm spectral data from a daily 10-km aerosol dataset. Data processing mainly includes projection, mosaic, vector cropping for Huaihai Economic Region (HER) and averaging operations with ArcGIS 10.3. The monthly mean AOD values were calculated by using daily data as

$$\bar{x} = \frac{\sum x_i}{n} \quad (1)$$

where x_i is the daily AOD value, and n is the number of days. By using (1), we also obtained seasonal and multi-year averaged AOD data.

Table S1. The fire points of straw burning monitored by environmental and meteorological satellites in summer of 2014 and 2015.

Province	Summer 2014	Summer 2015	Change rate ^a
Jiangsu	53	5	-90.57%
Shandong	230	185	-19.57%
Henan	815	512	-37.18%
Anhui	644	32	-95.03%

^a Compared to the same period in 2014.

Table S2. Remote sensing monitoring Daily for fire points of straw burning.

Province	2010.6.25	2011.6.16	2013.6.15	2016.6.15-6.16	2017.6.15
Jiangsu	25	72	11		
Shandong	11	24	38	7	6
Henan	2	27	52	2	
Anhui	75	20	124		

Table S3. Correlation coefficients between different natural factors.

Variables ^b	SD	P	AWS	AT	ARH	NDVI
SD	1	0.033	0.234**	0.482**	-0.446**	0.402**
P		1	-0.161*	0.740**	0.673**	0.592**
AWS			1	-0.194**	-0.381**	-0.257**
AT				1	0.465**	0.724**
ARH					1	0.358**
NDVI						1

*.p<0.05; **.p<0.01.

^b AWS, average wind speed; SD, sunshine duration; P, precipitation; ARH, average relative humidity; AT, average temperature; NDVI, normalized difference vegetation index.