

Table S1. AOD ground-based observation site information for sun photometers.

Name of station	Longitude (°E)	Latitude (°N)	Time span	Measuring instrument
wlmq	87.600	43.750	October 2018-July 2019	Microtops II sunphotometer
jh	83.568	44.545	July 2015-August 2018	
ws	84.620	44.450	July 2015-August 2018	
Muztagh_Ata	75.039	38.408	June 2011-October 2011	CE-318 sunphotometer
Issyk-Kul	76.983	42.623	August 2007-May 2016	
IAOCA-KRSU	78.529	42.464	March 2014-May 2017	
Dushanbe	68.858	38.553	July 2010-April 2018	

Note: wlmq, Urumqi City; jh, Jinghe County; ws, Wusu City.

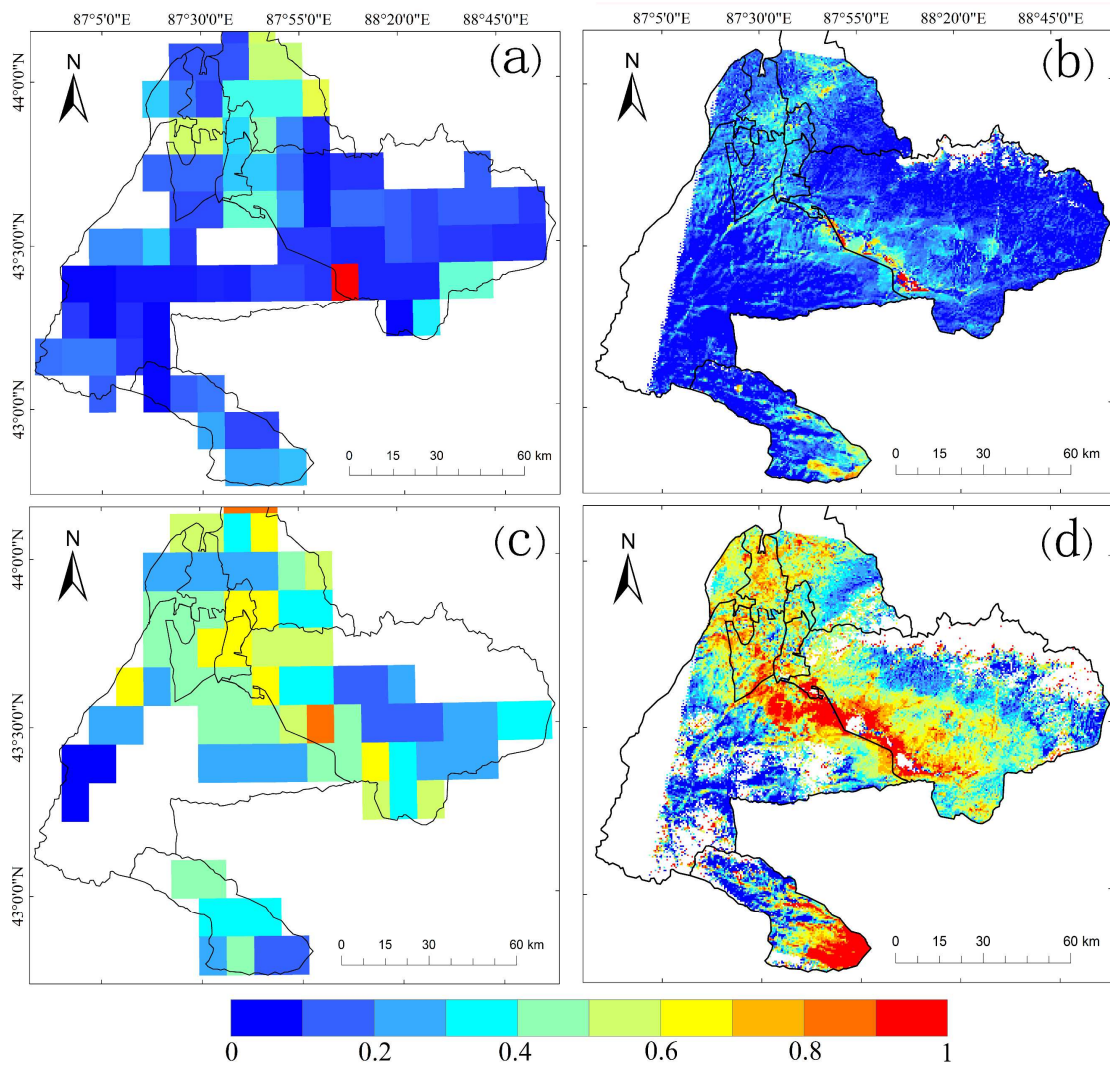


Figure S1. Spatial pattern of the satellite-retrieved AOD on August 13, 2010 and April 10, 2011. (a) and (c) MODIS C6 DB AOD product (10 km). (b) and (d) Landsat (500 m).