

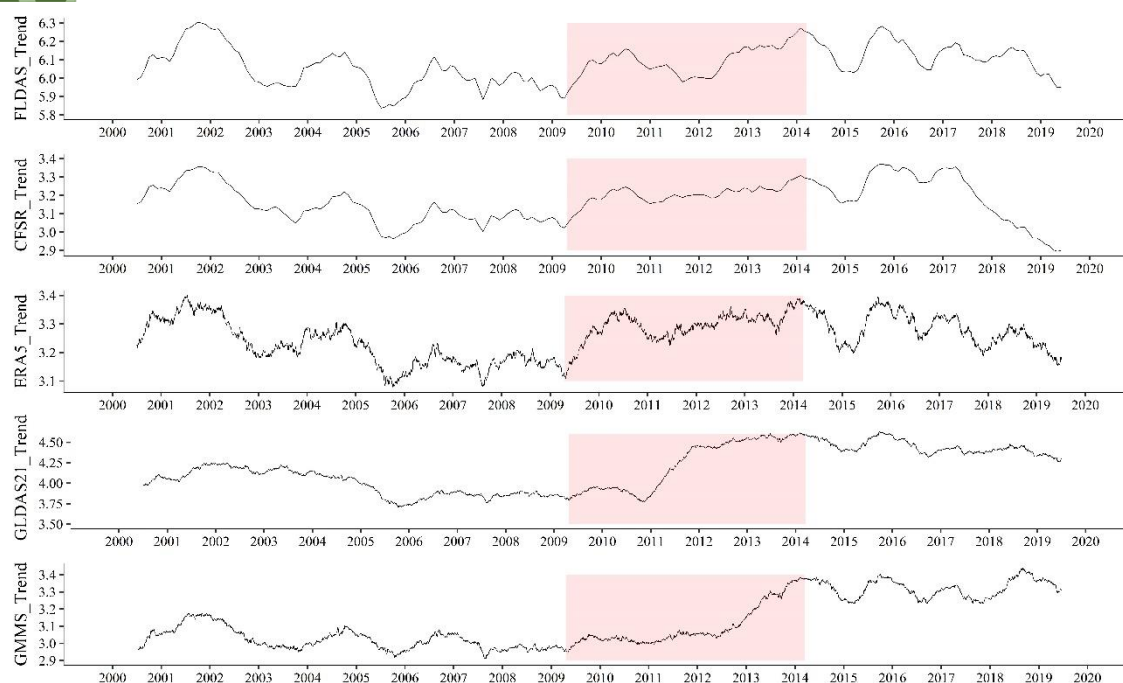


Figure S1: Comparisons of wind speed trend among different datasets (FLDAS, CFSR, ERA5, GLDAS2.1, GMMS)

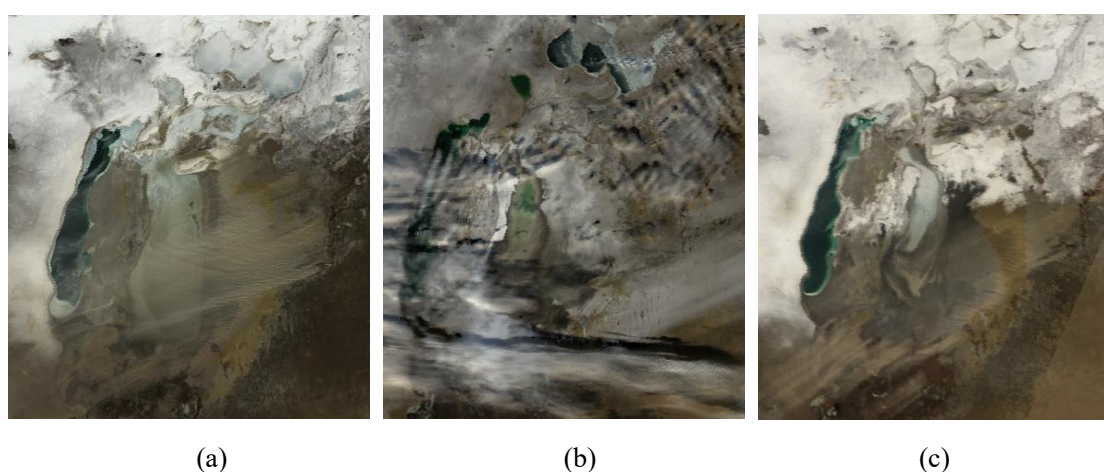


Figure S2: The dust events happened in winter (DJF) captured by MODIS true color images (a: February 1, 2005, b: December 16, 2009, c: January 21, 2012)

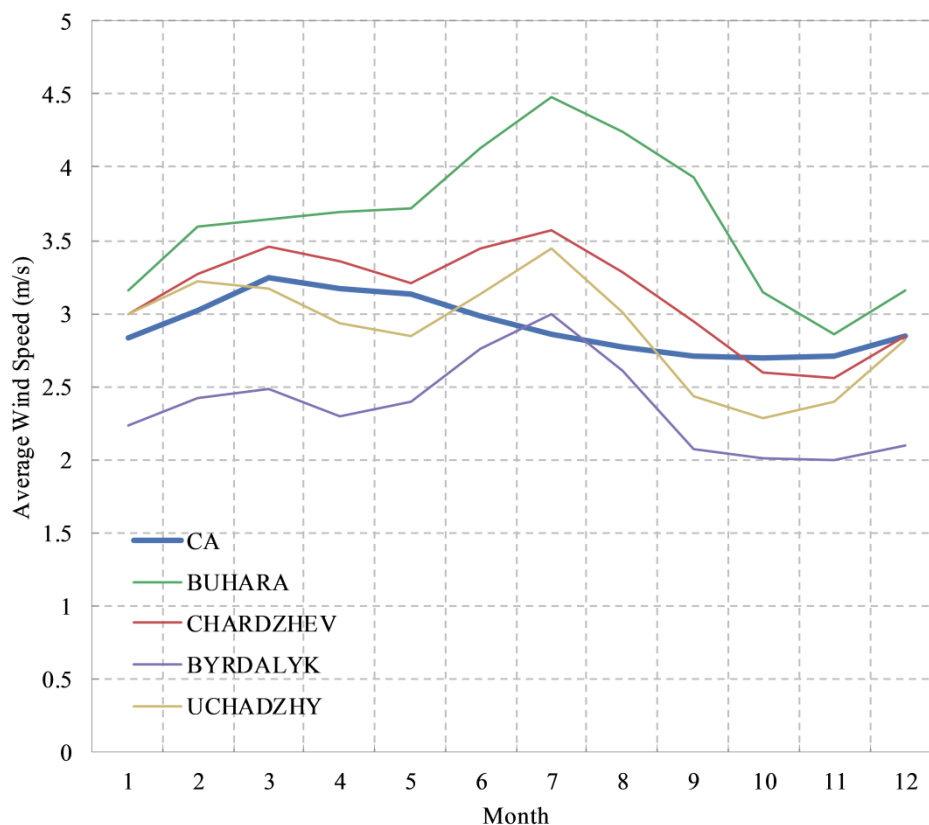


Figure S3: Monthly average wind speed of CA and other four weather stations in the middle reaches of Amu Darya

Table S1: The areas of different land cover types in Central Asia during 2000-2018 (km²)

Year	Cropland (Rainfed)	Cropland (Irrigated)	Forestland	Shrubland	Grassland	Sparse vegetation	Urbanland	Bareland	Waterbodies
2000	620011.3	215356.5	66354.54	284087.4	1036710	692488.2	3110.689	937198.3	123541
2001	628264.7	216332	66815.57	284091.9	1033412	687686.4	3683.236	935758.5	122813.8
2002	633182.8	217143	67253.47	284093.5	1031631	684518.6	4322.611	934699.7	122013.7
2003	634575.4	217352.5	67340.05	284105.2	1031425	684587.8	5013.301	939616.3	114842.9
2004	640445.8	217668	68627.42	284111.8	1033007	685816.8	5676.809	929158.9	114346.2
2005	640246.1	217587	68594.27	284124.3	1036730	683381.1	6017.911	928232	113946.2
2006	640553.1	217716.1	68632.46	284163.8	1038677	683943.1	6302.46	925808.2	113061.7
2007	642433.3	218026.2	68562.19	284194.9	1038904	685381.9	6613.861	924256.1	110485.7
2008	643259.3	218110.2	68634.78	284274.8	1039047	688985.1	6918.234	920238.4	109390.5
2009	649185.6	218117.4	68860.06	284351.1	1037793	691250	7130.983	918466.8	103703.2
2010	658679.1	218340.8	68787.27	284431.7	1034373	693443.1	7320.594	907690.3	105792.7
2011	659323.4	218315.3	68794.1	284506.5	1034079	696365.4	7515.377	905631.7	104327.4
2012	659223.6	218412.3	68793.04	284553.1	1035034	697977.8	7786.469	904234	102844.2
2013	659960.2	218177.2	68780.64	284560.9	1034311	698316	8177.227	903864.8	102710.4
2014	661852	218313.4	69061.28	284561.5	1033814	698704.5	8683.609	901423.2	102445.2
2015	661828.4	218136.5	69058.09	284560.4	1033803	698701.4	8914.922	901556.2	102299.9
2016	665882.5	218144.5	71133.35	285868.7	1033553	697084.2	9144.71	900168.1	122420.8
2017	668776	218043.6	71442.89	285853.3	1030691	696436	9770.759	899815	122571.6
2018	683328.5	218396.4	72006.88	285832.9	1021358	698530.9	10091.77	891578	122276.5