

## Supplementary information

**Table S1. Statistics for AIRS CO over central east China for background periods beginning with different start years and ending in 2019. Values in parentheses are bootstrapped 95% confidence intervals for each estimate. Trend and differences estimates are considered statistically significant if their confidence intervals do not span 0. All statistics are calculated only over the January 23 - April 8 lockdown period for each year.**

Variable		CO (ppbv)					
2019 mean		137.9	(134.7, 141.3)				
2020 mean		133.5	(130.3, 136.8)				
2020 % difference from 2019		-3.2	(-6.3, 0.1)				
Start year	Background mean	2020 % difference from background			2020 predicted from trend	2020 % difference from trend	2020 abs difference from trend
		mean	trend (yr <sup>-1</sup> )	trend R <sup>2</sup>			
2005	150.9	-11.5	-1.8	0.17	136.8	-2.4	-3.3
	(149.8, 152.0)	(-13.7, -9.2)	(-2.0, -1.5)	(0.13, 0.21)	(134.9, 138.7)	(-5.0, 0.5)	(-6.9, 0.7)
2006	149.7	-10.7	-1.6	0.13	137.7	-3	-4.1
	(148.6, 150.8)	(-13.0, -8.5)	(-1.9, -1.3)	(0.09, 0.17)	(135.7, 139.8)	(-5.7, -0.3)	(-7.9, -0.3)
2007	149.5	-10.7	-1.9	0.16	136.1	-1.8	-2.5
	(148.3, 150.7)	(-12.9, -8.3)	(-2.2, -1.6)	(0.11, 0.20)	(134.0, 138.3)	(-4.6, 1.1)	(-6.3, 1.4)
2008	147.9	-9.7	-1.6	0.11	137.5	-2.8	-3.9
	(146.8, 149.1)	(-12.0, -7.3)	(-1.9, -1.3)	(0.07, 0.15)	(135.4, 139.6)	(-5.5, 0.0)	(-7.6, 0.0)
2009	146.8	-9	-1.5	0.08	138.1	-3.3	-4.5
	(145.6, 148.1)	(-11.3, -6.5)	(-1.8, -1.1)	(0.04, 0.12)	(135.9, 140.5)	(-6.0, -0.3)	(-8.3, -0.4)
2010	146.8	-9	-1.9	0.12	136.2	-1.9	-2.6
	(145.6, 148.0)	(-11.4, -6.6)	(-2.3, -1.6)	(0.08, 0.16)	(133.9, 138.6)	(-4.8, 1.0)	(-6.6, 1.3)
2011	146.4	-8.8	-2.3	0.13	134.8	-0.9	-1.3
	(145.2, 147.7)	(-11.1, -6.4)	(-2.8, -1.9)	(0.09, 0.18)	(132.3, 137.2)	(-3.9, 2.1)	(-5.4, 2.8)
2012	145.2	-8	-2.4	0.11	134.6	-0.7	-1
	(143.9, 146.5)	(-10.4, -5.4)	(-2.9, -1.8)	(0.07, 0.16)	(131.9, 137.3)	(-3.9, 2.6)	(-5.4, 3.5)
2013	143.2	-6.7	-1.5	0.04	137.1	-2.6	-3.6
	(141.9, 144.5)	(-9.1, -4.4)	(-2.1, -0.9)	(0.01, 0.08)	(134.3, 140.1)	(-5.8, 0.5)	(-8.1, 0.7)
2014	142.8	-6.5	-2	0.05	135.9	-1.7	-2.3
	(141.4, 144.4)	(-9.0, -4.0)	(-2.9, -1.2)	(0.02, 0.10)	(132.5, 139.1)	(-4.8, 1.7)	(-6.6, 2.3)
2015	142.1	-6	-2.4	0.05	134.8	-0.9	-1.3
	(140.5, 143.7)	(-8.4, -3.6)	(-3.5, -1.3)	(0.02, 0.10)	(131.4, 138.3)	(-4.4, 2.6)	(-6.1, 3.4)
2016	141.5	-5.7	-3.6	0.07	132.4	0.9	1.1
	(139.8, 143.4)	(-8.2, -3.2)	(-5.2, -2.1)	(0.02, 0.12)	(128.1, 136.5)	(-2.9, 5.1)	(-3.9, 6.5)
2017	138.7	-3.7	-0.8	0.01	137	-2.5	-3.5
	(136.8, 140.6)	(-6.3, -1.0)	(-3.0, 1.5)	(0.00, 0.03)	(131.7, 142.4)	(-6.7, 2.1)	(-9.5, 2.8)
2018	137.9	-3.1	0.7	0.01	138.9	-3.8	-5.3
	(135.5, 140.2)	(-5.8, -0.3)	(-3.5, 4.9)	(0.00, 0.03)	(132.2, 145.9)	(-8.8, 1.7)	(-12.8, 2.3)

**Table S2. Same as Table S1, but for OMI SO<sub>2</sub>.**

Variable		SO <sub>2</sub> (DU)					
2019 mean		0.031	(0.018, 0.046)				
2020 mean		0.057	(0.045, 0.070)				
2020 % difference from 2019		95	(14.8, 249.6)				
Start year	Background mean	2020 % difference from background	trend (yr <sup>-1</sup> )	trend R <sup>2</sup>	2020 predicted from trend	2020 % difference from trend	2020 abs difference from trend
2005	0.33 (0.31, 0.36)	-83 (-87, -79)	-0.03 (-0.04, -0.03)	0.17 (0.13, 0.21)	0.06 (0.03, 0.08)	14 (-37, 120)	0 (-0.03, 0.03)
2006	0.33 (0.30, 0.35)	-82 (-86, -78)	-0.04 (-0.04, -0.03)	0.21 (0.17, 0.25)	0.03 (0.00, 0.06)	390 (-6, 1200)	0.03 (-0.00, 0.06)
2007	0.32 (0.30, 0.35)	-82 (-86, -78)	-0.04 (-0.05, -0.04)	0.26 (0.22, 0.31)	-0.01 (-0.04, 0.02)	2587 (203, 10557)	0.07 (0.04, 0.10)
2008	0.29 (0.27, 0.32)	-80 (-85, -76)	-0.04 (-0.05, -0.04)	0.26 (0.22, 0.31)	-0.02 (-0.06, 0.01)	1682 (198, 4234)	0.08 (0.05, 0.12)
2009	0.24 (0.22, 0.26)	-76 (-82, -71)	-0.04 (-0.04, -0.03)	0.2 (0.15, 0.25)	0.02 (-0.00, 0.05)	1216 (23, 5185)	0.04 (0.01, 0.06)
2010	0.24 (0.21, 0.26)	-76 (-81, -69)	-0.04 (-0.05, -0.04)	0.25 (0.21, 0.30)	-0.02 (-0.04, 0.01)	1709 (226, 7137)	0.07 (0.05, 0.10)
2011	0.23 (0.21, 0.25)	-75 (-81, -69)	-0.05 (-0.06, -0.05)	0.31 (0.26, 0.36)	-0.05 (-0.08, -0.03)	216 (164, 324)	0.11 (0.08, 0.14)
2012	0.21 (0.18, 0.23)	-72 (-79, -65)	-0.06 (-0.07, -0.05)	0.32 (0.26, 0.38)	-0.06 (-0.09, -0.03)	200 (158, 275)	0.12 (0.09, 0.15)
2013	0.16 (0.15, 0.18)	-65 (-74, -56)	-0.05 (-0.06, -0.04)	0.27 (0.21, 0.33)	-0.03 (-0.06, -0.01)	352 (193, 720)	0.09 (0.06, 0.12)
2014	0.14 (0.12, 0.16)	-58 (-68, -46)	-0.05 (-0.06, -0.04)	0.25 (0.18, 0.32)	-0.04 (-0.07, -0.01)	341 (179, 749)	0.1 (0.06, 0.13)
2015	0.1 (0.09, 0.12)	-44 (-58, -28)	-0.04 (-0.05, -0.03)	0.21 (0.14, 0.28)	-0.01 (-0.03, 0.01)	3481 (263, 13964)	0.07 (0.04, 0.09)
2016	0.08 (0.07, 0.10)	-30 (-48, -10)	-0.03 (-0.04, -0.02)	0.16 (0.08, 0.24)	0 (-0.03, 0.02)	3853 (147, 14173)	0.06 (0.03, 0.08)
2017	0.07 (0.05, 0.08)	-12 (-37, 19)	-0.04 (-0.05, -0.02)	0.14 (0.06, 0.22)	-0.01 (-0.04, 0.02)	2750 (200, 12709)	0.07 (0.04, 0.09)
2018	0.05 (0.04, 0.06)	23 (-15, 73)	-0.04 (-0.06, -0.01)	0.07 (0.01, 0.16)	-0.01 (-0.04, 0.03)	4426 (108, 8002)	0.06 (0.03, 0.10)

Table S3. Same as Table S1, but for OMI NO<sub>2</sub>.

Variable		NO <sub>2</sub> (10 <sup>15</sup> molec cm <sup>-2</sup> )					
2019 mean		9.6	(8.7, 10.5)				
2020 mean		6.5	(5.8, 7.2)				
2020 % difference from 2019		-32.1	(-42.1, -21.7)				
Start year	Background mean	2020 % difference from background			2020 predicted from trend	2020 % difference from trend	2020 abs difference from trend
		trend (yr <sup>-1</sup> )	trend R <sup>2</sup>				
2005	10.8	-39.8	0	0	10.9	-40.8	-4.5
	(10.5, 11.0)	(-46.5, -32.7)	(-0.0, 0.1)	(0.00, 0.01)	(10.4, 11.5)	(-47.8, -33.6)	(-5.3, -3.6)
2006	10.9	-40.7	0	0	10.7	-39.3	-4.2
	(10.7, 11.1)	(-47.3, -34.1)	(-0.1, 0.0)	(0.00, 0.01)	(10.1, 11.2)	(-46.7, -32.1)	(-5.1, -3.3)
2007	11.1	-41.8	-0.1	0.02	10.1	-36.1	-3.7
	(10.9, 11.4)	(-48.5, -35.1)	(-0.2, -0.1)	(0.00, 0.03)	(9.6, 10.7)	(-43.9, -28.0)	(-4.6, -2.7)
2008	11.2	-42.2	-0.2	0.04	9.7	-33.5	-3.3
	(10.9, 11.5)	(-48.3, -35.8)	(-0.3, -0.1)	(0.01, 0.06)	(9.2, 10.3)	(-41.2, -25.1)	(-4.1, -2.4)
2009	11.2	-42.3	-0.3	0.06	9.2	-29.9	-2.8
	(10.9, 11.5)	(-48.6, -36.0)	(-0.4, -0.2)	(0.03, 0.09)	(8.6, 9.8)	(-38.1, -20.8)	(-3.6, -1.8)
2010	11.4	-43.3	-0.5	0.13	8.3	-22.2	-1.8
	(11.0, 11.7)	(-49.6, -36.9)	(-0.7, -0.4)	(0.08, 0.18)	(7.7, 8.9)	(-32.4, -11.4)	(-2.8, -0.9)
2011	11.3	-42.8	-0.7	0.17	7.8	-16.8	-1.3
	(11.0, 11.6)	(-48.8, -36.1)	(-0.8, -0.5)	(0.11, 0.23)	(7.1, 8.5)	(-28.2, -5.0)	(-2.3, -0.4)
2012	11	-41.1	-0.7	0.14	7.8	-17.3	-1.4
	(10.6, 11.3)	(-48.1, -34.6)	(-0.8, -0.5)	(0.09, 0.20)	(7.1, 8.6)	(-28.8, -5.0)	(-2.4, -0.4)
2013	10.4	-37.8	-0.5	0.07	8.4	-23.4	-2
	(10.0, 10.7)	(-44.7, -30.4)	(-0.6, -0.3)	(0.03, 0.12)	(7.7, 9.2)	(-34.0, -11.8)	(-3.1, -0.9)
2014	10	-35.2	-0.3	0.03	8.9	-26.7	-2.4
	(9.6, 10.4)	(-42.8, -27.4)	(-0.5, -0.1)	(0.00, 0.06)	(8.0, 9.7)	(-36.9, -15.6)	(-3.5, -1.3)
2015	9.8	-34.1	-0.3	0.02	8.9	-27.1	-2.4
	(9.4, 10.2)	(-41.8, -26.5)	(-0.6, -0.0)	(0.00, 0.05)	(7.9, 9.9)	(-37.8, -15.4)	(-3.6, -1.2)
2016	9.6	-32.7	-0.2	0.01	9.1	-28.7	-2.6
	(9.2, 10.1)	(-40.6, -24.7)	(-0.6, 0.2)	(0.00, 0.03)	(8.1, 10.2)	(-39.6, -17.2)	(-4.0, -1.4)
2017	9.6	-32.7	-0.5	0.02	8.6	-24.8	-2.2
	(9.1, 10.1)	(-41.0, -24.4)	(-1.1, 0.2)	(0.00, 0.06)	(7.3, 10.0)	(-38.0, -9.2)	(-3.7, -0.7)
2018	9.2	-30	0.3	0.01	9.7	-32.7	-3.2
	(8.6, 9.9)	(-38.8, -21.3)	(-1.0, 1.6)	(0.00, 0.05)	(7.8, 11.8)	(-47.2, -14.6)	(-5.5, -1.1)

**Table S4. Same as Table S1, but for MODIS AOD.**

Variable		AOD					
2019 mean		0.48	(0.41, 0.55)				
2020 mean		0.41	(0.36, 0.46)				
2020 % difference from 2019		-14.3	(-29.4, 3.1)				
Start year	Background mean	2020 % difference from background			2020 predicted from trend	2020 % difference from trend	2020 abs difference from trend
		trend (yr <sup>-1</sup> )	trend R <sup>2</sup>				
2005	0.58	-29.9	-0.01	0.01	0.52	-21.3	-0.11
	(0.56, 0.60)	(-38.7, -20.3)	(-0.01, -0.00)	(0.00, 0.03)	(0.48, 0.55)	(-32.3, -8.9)	(-0.17, -0.04)
2006	0.58	-29.8	-0.01	0.02	0.51	-19.4	-0.1
	(0.56, 0.60)	(-38.6, -20.0)	(-0.01, -0.01)	(0.00, 0.03)	(0.47, 0.54)	(-30.6, -6.7)	(-0.16, -0.03)
2007	0.58	-30.2	-0.01	0.03	0.49	-17	-0.08
	(0.56, 0.60)	(-39.0, -20.7)	(-0.02, -0.01)	(0.01, 0.05)	(0.45, 0.53)	(-29.5, -5.0)	(-0.15, -0.02)
2008	0.58	-30	-0.02	0.03	0.47	-14.2	-0.07
	(0.56, 0.60)	(-38.9, -20.2)	(-0.02, -0.01)	(0.01, 0.06)	(0.44, 0.51)	(-26.0, 0.2)	(-0.13, 0.00)
2009	0.58	-29.4	-0.02	0.04	0.46	-11.5	-0.05
	(0.56, 0.60)	(-38.2, -19.7)	(-0.03, -0.01)	(0.02, 0.07)	(0.42, 0.50)	(-24.3, 3.2)	(-0.12, 0.01)
2010	0.58	-29.9	-0.03	0.06	0.43	-4.4	-0.02
	(0.56, 0.60)	(-39.5, -19.8)	(-0.04, -0.02)	(0.03, 0.10)	(0.38, 0.47)	(-19.2, 12.6)	(-0.09, 0.05)
2011	0.58	-29.6	-0.03	0.08	0.4	1.6	0
	(0.55, 0.60)	(-38.6, -20.2)	(-0.05, -0.03)	(0.05, 0.13)	(0.35, 0.45)	(-14.6, 20.3)	(-0.06, 0.08)
2012	0.56	-27.2	-0.04	0.08	0.4	2.9	0.01
	(0.54, 0.58)	(-37.0, -17.1)	(-0.05, -0.03)	(0.04, 0.12)	(0.35, 0.45)	(-14.5, 21.7)	(-0.06, 0.08)
2013	0.54	-25.2	-0.04	0.07	0.39	3.8	0.01
	(0.52, 0.57)	(-34.3, -14.9)	(-0.05, -0.03)	(0.03, 0.12)	(0.34, 0.45)	(-13.1, 24.2)	(-0.06, 0.09)
2014	0.52	-22.1	-0.04	0.05	0.4	3.3	0.01
	(0.50, 0.55)	(-32.3, -10.8)	(-0.05, -0.02)	(0.01, 0.10)	(0.34, 0.46)	(-15.9, 24.9)	(-0.07, 0.09)
2015	0.49	-17.3	-0.01	0.01	0.45	-9	-0.04
	(0.47, 0.52)	(-28.0, -4.9)	(-0.03, 0.00)	(0.00, 0.04)	(0.39, 0.52)	(-25.1, 9.7)	(-0.13, 0.04)
2016	0.48	-15.3	-0.01	0.01	0.47	-11.8	-0.06
	(0.45, 0.51)	(-26.7, -2.6)	(-0.04, 0.02)	(0.00, 0.03)	(0.39, 0.54)	(-28.6, 10.1)	(-0.15, 0.04)
2017	0.48	-14.2	0	0.01	0.47	-13.2	-0.07
	(0.44, 0.51)	(-26.4, -1.0)	(-0.04, 0.04)	(0.00, 0.03)	(0.38, 0.57)	(-32.1, 10.8)	(-0.18, 0.04)
2018	0.47	-14.2	0.01	0.01	0.49	-14.6	-0.08
	(0.44, 0.52)	(-26.5, -0.4)	(-0.07, 0.09)	(0.00, 0.04)	(0.36, 0.63)	(-37.4, 17.6)	(-0.23, 0.06)

**Table S5. Statistics for AIRS CO over southern China for background periods beginning with different start years and ending in 2019. Values in parentheses are bootstrapped 95% confidence intervals for each estimate. Trend and differences estimates are considered statistically significant if their confidence intervals do not span 0. All statistics are calculated only over the January 23 - April 8 lockdown period for each year.**

Variable		CO (ppbv)	
2019 mean		128.5	(124.4, 132.8)
2020 mean		144.7	(139.6, 150.3)
2020 % difference from 2019		12.6	(7.2, 18.3)

Start year	Background mean	2020 % difference from background			2020 predicted from trend	2020 % difference from trend	2020 abs difference from trend
		mean	trend (yr <sup>-1</sup> )	trend R <sup>2</sup>			
2005	145.8	-0.7	-1.5	0.08	133.7	8.2	11
	(144.3, 147.3)	(-4.5, 3.2)	(-1.8, -1.2)	(0.05, 0.11)	(131.2, 136.4)	(3.7, 12.7)	(5.0, 17.0)
2006	145	-0.1	-1.5	0.07	133.8	8.3	11
	(143.5, 146.5)	(-3.9, 3.8)	(-1.8, -1.2)	(0.04, 0.10)	(131.1, 136.4)	(3.9, 13.1)	(5.2, 17.3)
2007	144.9	-0.1	-1.8	0.09	132.1	9.5	12.6
	(143.4, 146.5)	(-4.0, 4.0)	(-2.2, -1.4)	(0.06, 0.12)	(129.4, 134.9)	(4.8, 14.4)	(6.4, 18.8)
2008	143.1	1.1	-1.4	0.05	134.1	7.9	10.6
	(141.5, 144.7)	(-2.7, 5.3)	(-1.9, -1.0)	(0.02, 0.08)	(131.1, 137.1)	(3.4, 12.7)	(4.6, 16.9)
2009	142.2	1.8	-1.3	0.04	134.5	7.7	10.3
	(140.6, 143.9)	(-2.0, 5.8)	(-1.8, -0.8)	(0.01, 0.06)	(131.5, 137.6)	(3.1, 12.2)	(4.2, 16.2)
2010	142.4	1.6	-1.9	0.06	132	9.6	12.7
	(140.7, 144.3)	(-2.5, 5.5)	(-2.6, -1.3)	(0.03, 0.10)	(128.8, 135.3)	(4.7, 14.6)	(6.2, 19.1)
2011	141.6	2.2	-2.2	0.07	131.2	10.4	13.6
	(139.9, 143.4)	(-1.7, 6.4)	(-2.8, -1.5)	(0.04, 0.11)	(128.0, 134.4)	(5.3, 15.4)	(7.1, 20.1)
2012	141	2.7	-2.5	0.07	130.2	11.3	14.7
	(139.1, 143.0)	(-1.2, 6.8)	(-3.4, -1.6)	(0.03, 0.12)	(126.3, 134.0)	(6.3, 16.5)	(8.2, 21.1)
2013	139.6	3.8	-2.2	0.05	131	10.6	13.9
	(137.8, 141.5)	(-0.2, 8.0)	(-3.1, -1.3)	(0.02, 0.10)	(127.4, 134.6)	(5.5, 15.7)	(7.5, 20.2)
2014	138.7	4.4	-2.5	0.05	130.3	11.2	14.5
	(136.7, 140.7)	(0.4, 8.5)	(-3.7, -1.2)	(0.01, 0.10)	(125.9, 134.8)	(5.5, 16.8)	(7.3, 21.3)
2015	138.1	4.8	-3.5	0.07	127.8	13.3	17
	(136.1, 140.2)	(0.7, 9.0)	(-4.9, -2.1)	(0.03, 0.13)	(123.0, 132.5)	(7.4, 19.2)	(9.7, 24.0)
2016	137	5.7	-4.8	0.09	125	15.8	19.7
	(134.8, 139.1)	(1.4, 10.1)	(-6.6, -3.0)	(0.03, 0.16)	(119.9, 130.2)	(9.4, 22.7)	(11.9, 27.3)
2017	133.2	8.8	-0.5	0	132.1	9.7	12.8
	(130.7, 135.6)	(4.3, 13.3)	(-3.2, 2.1)	(0.00, 0.02)	(125.7, 138.5)	(3.2, 16.3)	(4.3, 20.8)
2018	134	8.1	-7.8	0.05	122.2	18.7	22.6
	(130.9, 137.0)	(3.5, 12.9)	(-13.8, -2.0)	(0.00, 0.12)	(113.0, 131.4)	(9.5, 29.2)	(12.3, 33.2)

**Table S6. Same as Table S5, but for OMI SO<sub>2</sub>.**

Variable		SO <sub>2</sub> (DU)						
2019 mean		-0.02	(-0.04, -0.001)					
2020 mean		0.003	(-0.01, 0.02)					
2020 % difference from 2019		116	(24, 223)					
Start year	Background mean	2020 % difference from background		trend (yr <sup>-1</sup> )	trend R <sup>2</sup>	2020 predicted from trend	2020 % difference from trend	2020 abs difference from trend
2005	0.06	-95	-0.01	0.11	-0.02	129	0.02	
	(0.05, 0.07)	(-122, -67)	(-0.01, -0.01)	(0.07, 0.14)	(-0.03, -0.01)	(21, 223)	(0.00, 0.05)	
2006	0.06	-95	-0.01	0.12	-0.03	112	0.03	
	(0.05, 0.07)	(-122, -67)	(-0.01, -0.01)	(0.08, 0.16)	(-0.04, -0.01)	(43, 184)	(0.01, 0.05)	
2007	0.06	-95	-0.01	0.13	-0.03	109	0.04	
	(0.05, 0.07)	(-123, -65)	(-0.01, -0.01)	(0.09, 0.17)	(-0.05, -0.02)	(55, 165)	(0.02, 0.06)	
2008	0.05	-93	-0.01	0.11	-0.03	111	0.03	
	(0.04, 0.06)	(-132, -55)	(-0.01, -0.01)	(0.08, 0.15)	(-0.05, -0.02)	(47, 179)	(0.01, 0.06)	
2009	0.03	-91	-0.01	0.07	-0.02	100	0.02	
	(0.03, 0.04)	(-143, -38)	(-0.01, -0.01)	(0.04, 0.10)	(-0.03, -0.00)	(-31, 305)	(-0.00, 0.04)	
2010	0.03	-89	-0.01	0.09	-0.03	114	0.03	
	(0.02, 0.04)	(-143, -35)	(-0.01, -0.01)	(0.05, 0.14)	(-0.04, -0.01)	(43, 195)	(0.01, 0.05)	
2011	0.03	-87	-0.01	0.08	-0.03	113	0.03	
	(0.02, 0.03)	(-153, -18)	(-0.01, -0.01)	(0.04, 0.13)	(-0.04, -0.01)	(42, 195)	(0.01, 0.05)	
2012	0.02	-83	-0.01	0.05	-0.02	118	0.02	
	(0.01, 0.03)	(-186, 22)	(-0.01, -0.01)	(0.02, 0.09)	(-0.03, -0.01)	(-6, 268)	(-0.00, 0.04)	
2013	0.01	-77	-0.01	0.03	-0.01	122	0.02	
	(0.01, 0.02)	(-234, 82)	(-0.01, -0.00)	(0.01, 0.07)	(-0.03, -0.00)	(-95, 428)	(-0.00, 0.04)	
2014	0.01	-16	-0.01	0.02	-0.01	263	0.01	
	(0.00, 0.02)	(-436, 506)	(-0.01, -0.00)	(0.00, 0.05)	(-0.03, 0.00)	(-267, 722)	(-0.01, 0.04)	
2015	0.01	38	-0.01	0.04	-0.02	142	0.03	
	(-0.00, 0.02)	(-391, 951)	(-0.02, -0.00)	(0.00, 0.09)	(-0.04, -0.00)	(-13, 278)	(-0.00, 0.05)	
2016	0	38	-0.01	0.03	-0.02	146	0.02	
	(-0.00, 0.01)	(-1262, 2319)	(-0.02, -0.00)	(0.00, 0.09)	(-0.04, -0.00)	(-46, 296)	(-0.00, 0.05)	
2017	0	588	-0.02	0.09	-0.04	108	0.04	
	(-0.01, 0.01)	(-1162, 3090)	(-0.03, -0.01)	(0.02, 0.17)	(-0.06, -0.02)	(62, 159)	(0.02, 0.07)	
2018	-0.01	240	-0.03	0.06	-0.05	113	0.06	
	(-0.02, 0.00)	(-665, 1478)	(-0.05, -0.01)	(0.01, 0.16)	(-0.09, -0.02)	(68, 148)	(0.02, 0.10)	

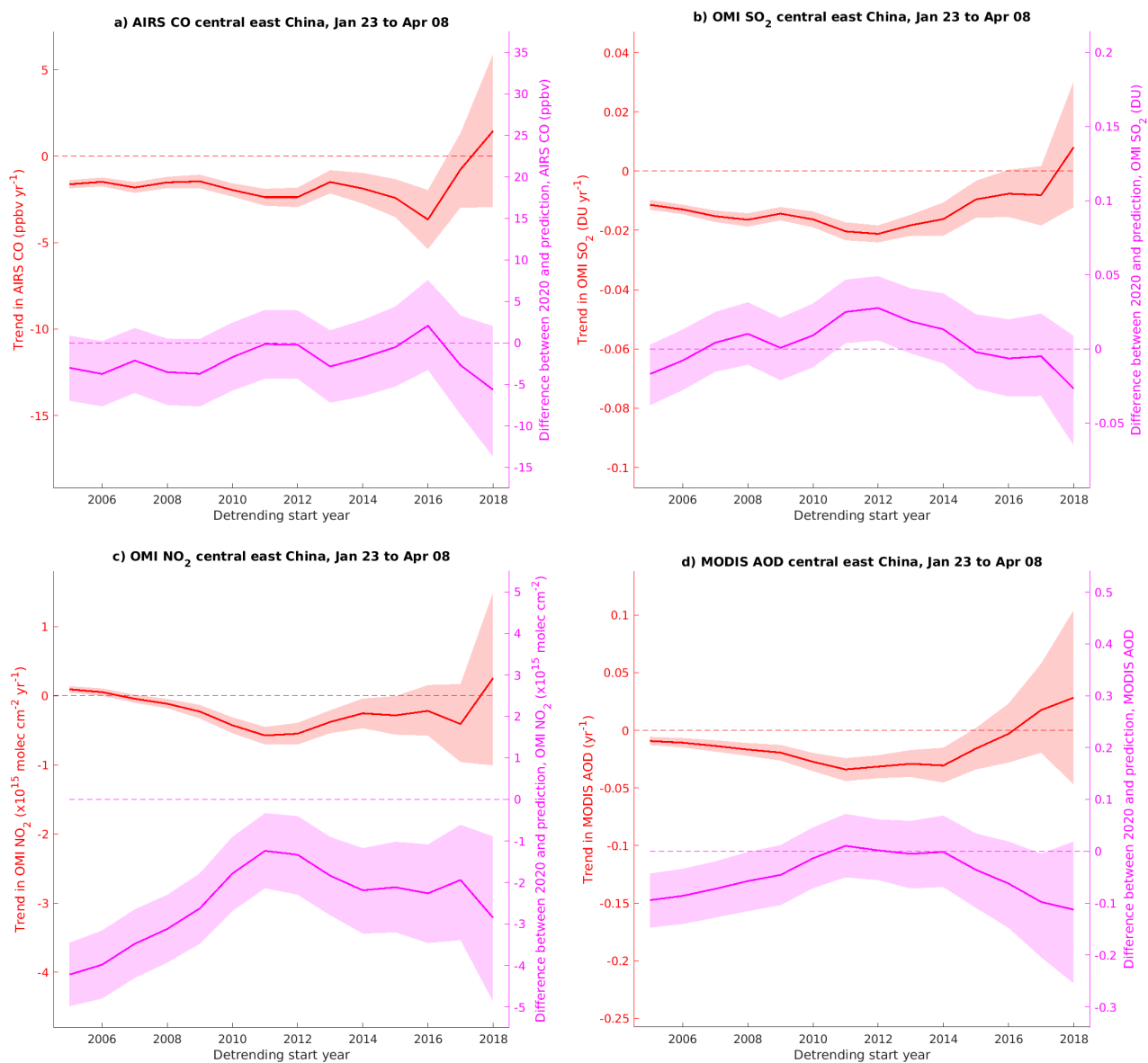
Table S7. Same as Table S5, but for OMI NO<sub>2</sub>.

Variable		NO <sub>2</sub> (10 <sup>15</sup> molec cm <sup>-2</sup> )					
2019 mean		4.3	(3.9, 4.7)				
2020 mean		3.3	(3.0, 3.7)				
2020 % difference from 2019		-22.2	(-32.6, -10.4)				
Start year	Background mean	2020 % difference from background	trend (yr <sup>-1</sup> )	trend R <sup>2</sup>	2020 predicted from trend	2020 % difference from trend	2020 abs difference from trend
2005	4.8	-30.6	0	0	4.6	-28	-1.3
	(4.6, 4.9)	(-37.9, -23.0)	(-0.0, 0.0)	(0.00, 0.01)	(4.4, 4.8)	(-35.8, -19.5)	(-1.7, -0.9)
2006	4.8	-30.8	0	0	4.6	-27.4	-1.3
	(4.7, 4.9)	(-38.3, -23.3)	(-0.1, 0.0)	(0.00, 0.01)	(4.3, 4.8)	(-36.0, -18.7)	(-1.7, -0.8)
2007	4.9	-31.6	-0.1	0.02	4.4	-23.8	-1
	(4.7, 5.0)	(-38.9, -24.2)	(-0.1, -0.0)	(0.00, 0.03)	(4.1, 4.6)	(-32.5, -14.5)	(-1.5, -0.6)
2008	4.9	-31.6	-0.1	0.02	4.3	-22.2	-1
	(4.7, 5.0)	(-38.5, -24.6)	(-0.1, -0.0)	(0.01, 0.04)	(4.0, 4.5)	(-31.1, -12.7)	(-1.4, -0.5)
2009	4.8	-31.1	-0.1	0.02	4.2	-21.1	-0.9
	(4.7, 5.0)	(-38.8, -23.5)	(-0.1, -0.0)	(0.01, 0.04)	(3.9, 4.5)	(-30.8, -10.7)	(-1.3, -0.4)
2010	4.9	-32.1	-0.2	0.06	3.8	-13.5	-0.5
	(4.7, 5.1)	(-39.3, -24.8)	(-0.3, -0.1)	(0.03, 0.09)	(3.5, 4.2)	(-24.3, -2.1)	(-1.0, -0.1)
2011	4.9	-31.9	-0.3	0.08	3.6	-6.7	-0.2
	(4.7, 5.1)	(-39.2, -24.6)	(-0.3, -0.2)	(0.05, 0.13)	(3.2, 3.9)	(-19.1, 7.8)	(-0.7, 0.3)
2012	4.7	-28.9	-0.2	0.04	3.9	-13.9	-0.5
	(4.5, 4.8)	(-36.4, -20.9)	(-0.3, -0.1)	(0.01, 0.08)	(3.5, 4.2)	(-25.8, -0.8)	(-1.1, -0.0)
2013	4.5	-25.8	-0.1	0.01	4.2	-21.7	-0.9
	(4.3, 4.6)	(-33.5, -17.6)	(-0.1, 0.0)	(0.00, 0.03)	(3.9, 4.6)	(-31.2, -10.3)	(-1.4, -0.4)
2014	4.4	-24.7	0	0	4.3	-23.2	-1
	(4.2, 4.6)	(-33.3, -16.0)	(-0.1, 0.1)	(0.00, 0.02)	(3.9, 4.7)	(-33.8, -11.8)	(-1.6, -0.5)
2015	4.3	-22.9	0.1	0.01	4.7	-29	-1.4
	(4.1, 4.5)	(-31.4, -13.8)	(-0.0, 0.3)	(0.00, 0.04)	(4.2, 5.1)	(-38.5, -18.3)	(-1.9, -0.8)
2016	4.4	-24.4	0.1	0.01	4.6	-27.2	-1.3
	(4.2, 4.6)	(-32.8, -15.4)	(-0.1, 0.3)	(0.00, 0.03)	(4.0, 5.1)	(-38.1, -14.9)	(-1.9, -0.6)
2017	4.5	-25.4	0	0	4.4	-24.2	-1.1
	(4.2, 4.7)	(-33.7, -16.6)	(-0.3, 0.2)	(0.00, 0.02)	(3.8, 5.0)	(-36.2, -10.3)	(-1.8, -0.4)
2018	4.5	-26.5	-0.4	0.02	3.8	-11.8	-0.5
	(4.2, 4.8)	(-35.7, -17.0)	(-1.1, 0.1)	(0.00, 0.07)	(2.9, 4.7)	(-31.4, 15.2)	(-1.5, 0.5)

Table S8. Same as Table S5, but for MODIS AOD.

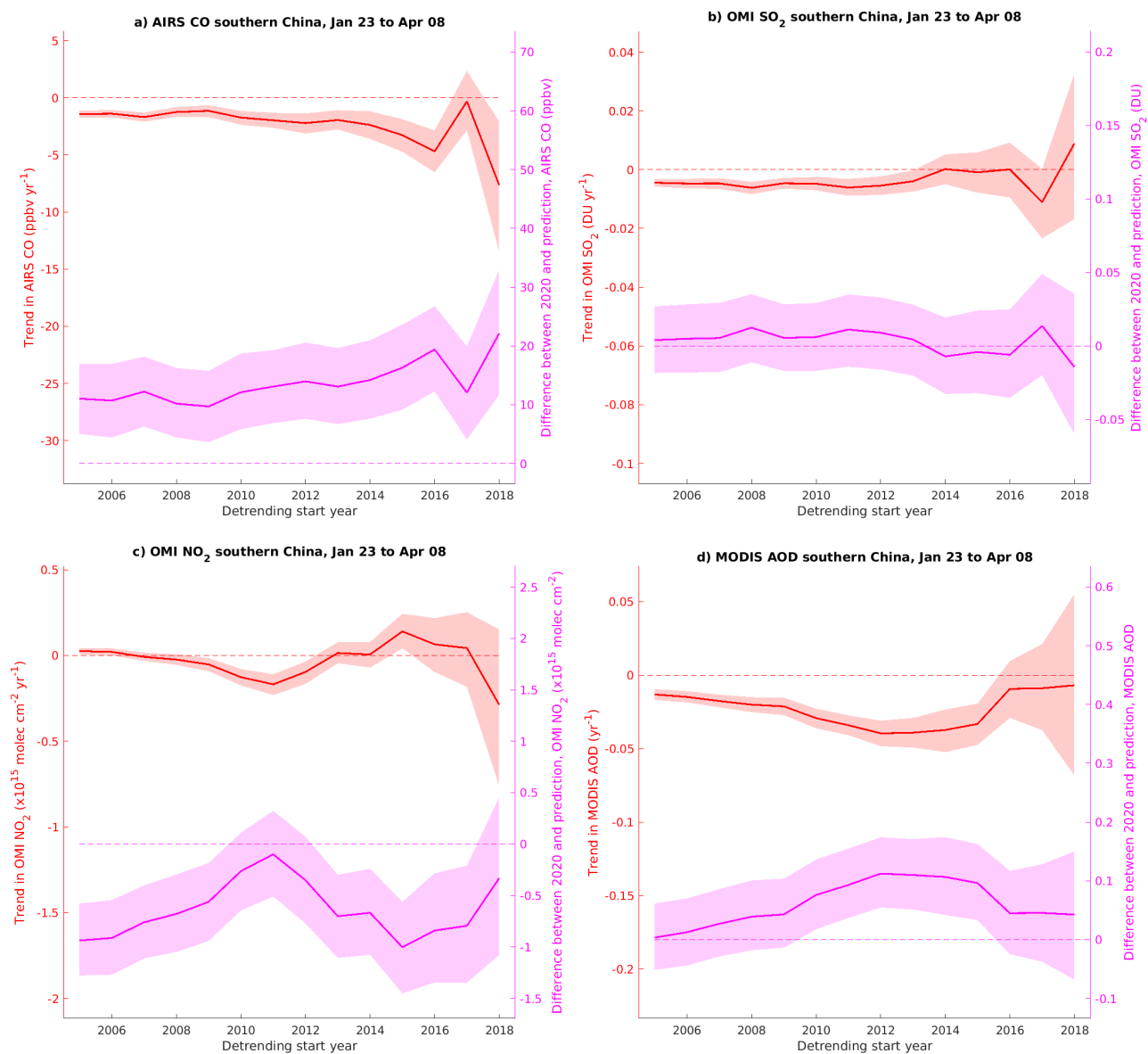
Variable		AOD					
2019 mean		0.34		(0.30, 0.39)			
2020 mean		0.38		(0.34, 0.43)			
2020 % difference from 2019		12		(-7, 34)			
Start year	Background mean	2020 % difference from background	trend (yr <sup>-1</sup> )	trend R <sup>2</sup>	2020 predicted from trend	2020 % difference from trend	2020 abs difference from trend
2005	0.49	-22	-0.01	0.07	0.37	3	0.01
	(0.47, 0.51)	(-31, -11)	(-0.02, -0.01)	(0.04, 0.12)	(0.34, 0.40)	(-12, 19)	(-0.04, 0.07)
2006	0.49	-22	-0.02	0.09	0.36	5	0.02
	(0.47, 0.51)	(-32, -11)	(-0.02, -0.01)	(0.05, 0.13)	(0.33, 0.39)	(-10, 22)	(-0.04, 0.08)
2007	0.49	-22	-0.02	0.11	0.34	11	0.04
	(0.47, 0.51)	(-31, -11)	(-0.02, -0.02)	(0.07, 0.15)	(0.31, 0.38)	(-5, 29)	(-0.02, 0.10)
2008	0.48	-21	-0.02	0.12	0.33	15	0.05
	(0.46, 0.50)	(-30, -10)	(-0.03, -0.02)	(0.07, 0.17)	(0.30, 0.36)	(-2, 34)	(-0.01, 0.11)
2009	0.47	-19	-0.02	0.11	0.33	17	0.05
	(0.45, 0.49)	(-29, -8)	(-0.03, -0.02)	(0.06, 0.16)	(0.29, 0.36)	(-0, 38)	(-0.00, 0.11)
2010	0.47	-19	-0.03	0.16	0.29	32	0.09
	(0.45, 0.49)	(-29, -8)	(-0.04, -0.03)	(0.12, 0.22)	(0.26, 0.33)	(10, 56)	(0.03, 0.15)
2011	0.46	-17	-0.04	0.17	0.28	39	0.11
	(0.44, 0.48)	(-27, -5)	(-0.04, -0.03)	(0.12, 0.23)	(0.24, 0.31)	(16, 65)	(0.05, 0.16)
2012	0.44	-14	-0.04	0.17	0.26	47	0.12
	(0.42, 0.47)	(-25, -1)	(-0.05, -0.03)	(0.11, 0.23)	(0.22, 0.30)	(21, 80)	(0.06, 0.18)
2013	0.43	-11	-0.04	0.14	0.26	46	0.12
	(0.40, 0.45)	(-21, 2)	(-0.05, -0.03)	(0.08, 0.21)	(0.22, 0.30)	(21, 78)	(0.06, 0.18)
2014	0.4	-6	-0.04	0.09	0.27	42	0.11
	(0.38, 0.43)	(-17, 8)	(-0.05, -0.02)	(0.04, 0.16)	(0.22, 0.32)	(14, 75)	(0.04, 0.18)
2015	0.38	0	-0.03	0.06	0.28	34	0.1
	(0.36, 0.40)	(-13, 14)	(-0.05, -0.02)	(0.02, 0.11)	(0.24, 0.33)	(10, 64)	(0.03, 0.16)
2016	0.36	7	-0.01	0.01	0.34	13	0.04
	(0.33, 0.38)	(-7, 24)	(-0.03, 0.02)	(0.00, 0.03)	(0.29, 0.40)	(-9, 38)	(-0.03, 0.11)
2017	0.35	8	-0.01	0.01	0.33	18	0.05
	(0.33, 0.38)	(-7, 24)	(-0.04, 0.02)	(0.00, 0.05)	(0.26, 0.39)	(-8, 48)	(-0.03, 0.13)
2018	0.35	10	0	0.01	0.34	14	0.04
	(0.31, 0.38)	(-6, 28)	(-0.06, 0.06)	(0.00, 0.05)	(0.25, 0.44)	(-16, 55)	(-0.07, 0.14)





5

**Figure S1.** Same as Figure 6, but when daily values are calculated from the median of individual retrievals, rather than the mean.



10 Figure S2. Same as Figure 8, but when daily values are calculated from the median of individual retrievals, rather than the mean.

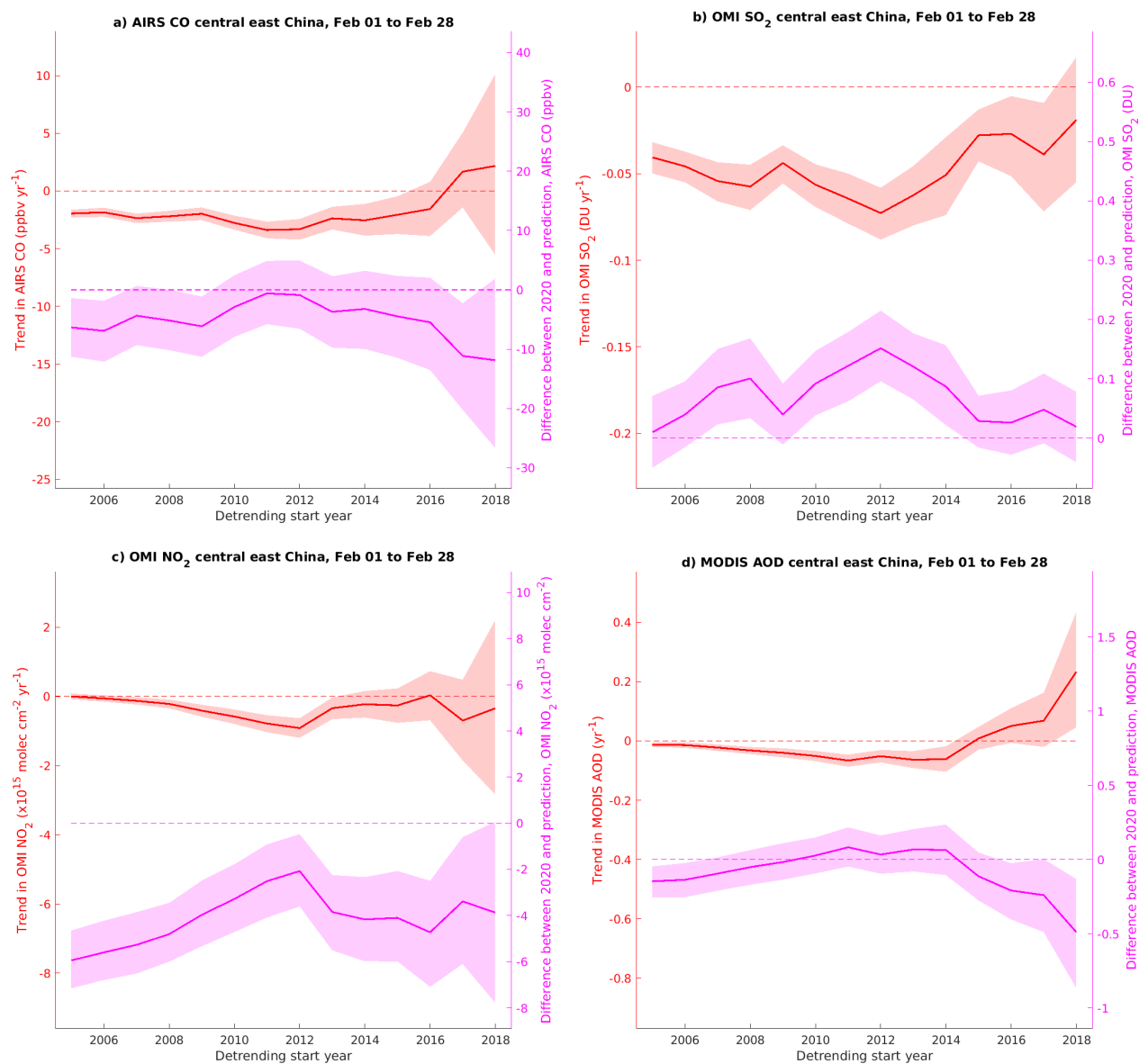
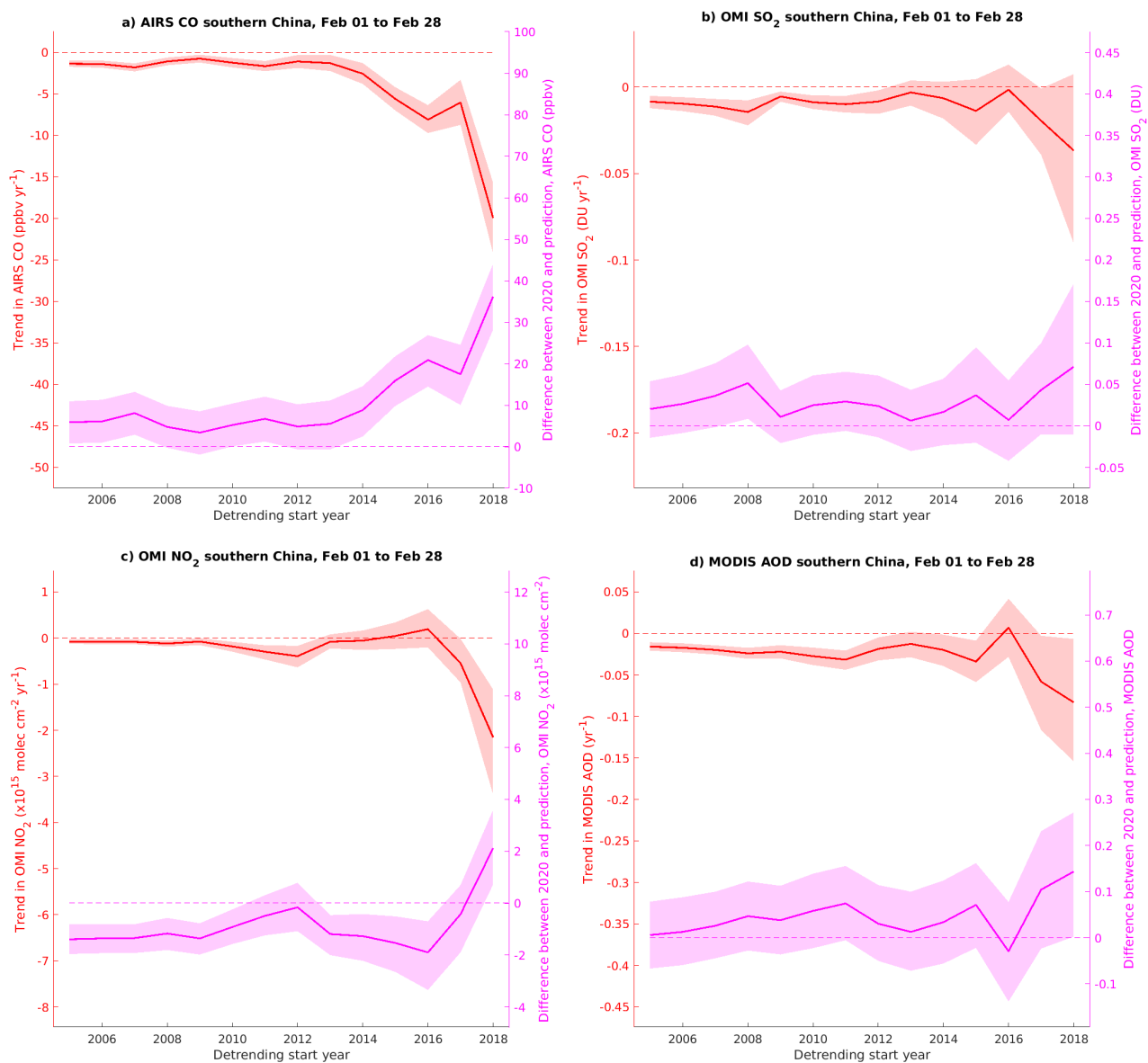


Figure S3. Same as Figure 6, but for a February lockdown period.



15 **Figure S4.** Same as Figure 8, but for a February lockdown period.