

Includes: Tables S1-S2 and Figures S1-S2.

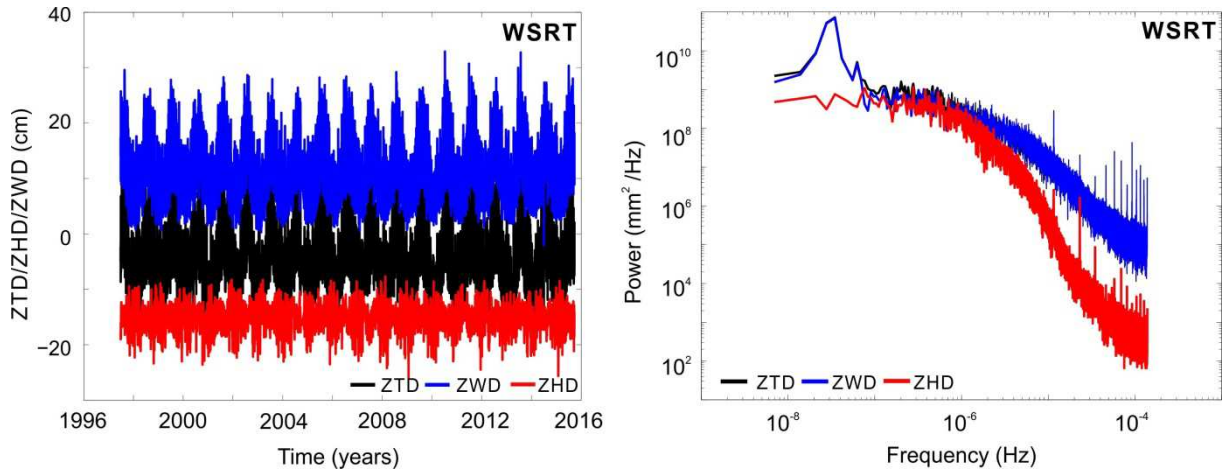


Figure S1. Left: Zenith Total Delay (ZTD) time series (in black) plotted together with its two components: the Zenith Hydrostatic Delay (ZHD, in red) and the Zenith Wet Delay (ZWD, in blue). The plots were shifted upwards to provide better readability. Right: A Power Spectral Density (PSD) of three above mentioned. Color codes remain the same. The ZTD and ZWD are nearly identical with almost the same stochastic character.

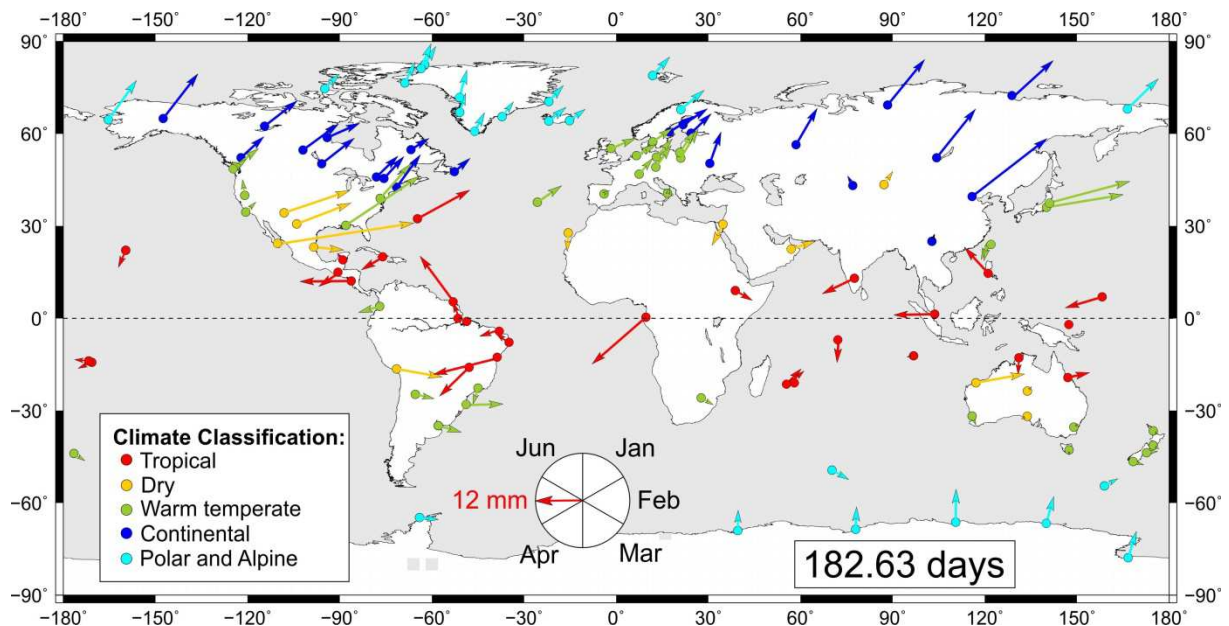


Figure S2. Semi-annual amplitudes for 120 selected stations. Stations are classified into five different climate zones: tropical, dry, warm temperate, continental and polar and Alpine. The length of arrow depicts the amplitude of the semi-annual sine curve with a reference to 12 mm. Phase shifts are counted as clockwise beginning from the North which means peak in January.

Table S1. Statistics related to the detected discontinuities in the ZTD time series of the 120 GPS stations discussed in this study. A climate zone that station is incorporated into is given as a first letter of its name: tropical (T), dry (D), warm temperate (WT), continental (C) and polar and Alpine (PA). The latter one includes the division into Northern (NH) and Southern Hemisphere (SH), as a character of ZTD series differs for them. All amplitudes and their errors are given in mm for a pure white noise assumption.

Station	Country	Climate zone	Longitude	Latitude	Epoch	Amplitude \pm error (mm)
AB11	USA	PA (NH)	194.63	64.56	2011-03-10	-14.53 \pm 0.42
ADIS	Ethiopia	T	38.77	9.03	-	-
ALGO	Canada	C	281.93	45.95	1997-01-15	1.40 \pm 0.39
					1999-08-18	1.09 \pm 0.37
					2012-12-19	0.36 \pm 0.36
ALIC	Australia	D	133.89	-23.67	1999-11-02	-0.70 \pm 0.55
					2003-10-22	5.00 \pm 0.60
					2004-12-25	-10.46 \pm 0.61
					2009-07-23	17.75 \pm 0.55
					2011-07-19	-13.68 \pm 0.54
ALRT	Canada	PA (NH)	297.66	82.49	2004-08-29	-1.16 \pm 0.34
					2007-09-03	0.00 \pm 0.36
					2010-09-13	-4.25 \pm 0.36
					2011-09-14	-4.19 \pm 0.40
					2012-07-21	-0.97 \pm 0.37
AREQ	Peru	D	288.51	-16.46	1996-11-12	1.78 \pm 0.30
					2001-06-25	7.60 \pm 1.56
					2001-07-08	-13.67 \pm 1.56
					2007-08-15	-2.66 \pm 0.31
					2012-06-06	-0.68 \pm 0.30
2014-04-01	2.30 \pm 0.33					
ARTU	Russia	C	58.56	56.42	-	-
ASPA	USA	T	189.28	-14.32	2008-09-30	-12.08 \pm 1.74
					2008-11-04	1.21 \pm 1.80
					2009-09-28	-6.17 \pm 0.64
AUCK	New Zealand	WT	174.83	-36.60	1999-12-15	-5.07 \pm 0.43
					2001-10-27	-6.64 \pm 0.50
					2002-12-01	6.65 \pm 1.34
					2003-01-08	-7.64 \pm 1.31
					2005-11-02	-3.07 \pm 0.78
					2006-02-25	-2.78 \pm 0.78
					2011-06-30	-5.66 \pm 0.45
BELE	Brazil	T	311.54	-1.40	2007-04-16	-0.31 \pm 0.35
BILI	Russia	PA (NH)	166.44	68.07	2006-04-19	-0.29 \pm 0.30
BJFS	China	C	115.89	39.60	2004-12-25	-1.31 \pm 0.45
					2010-05-21	-0.86 \pm 0.54
					2011-03-10	2.89 \pm 0.53
BLUF	New Zealand	WT	168.29	-46.58	2004-11-21	-32.72 \pm 1.36
					2004-12-22	36.25 \pm 1.31
					2007-09-29	-1.86 \pm 0.43
					2009-07-14	-33.61 \pm 3.49
					2009-07-18	34.79 \pm 3.49
					2010-11-23	0.09 \pm 0.49
BRAZ	Brazil	T	312.12	-15.94	2007-03-12	-10.80 \pm 0.43
					2012-09-17	6.42 \pm 1.02
					2012-11-26	-5.85 \pm 1.21
					2013-04-24	0.32 \pm 0.77
					2014-10-22	10.31 \pm 1.34
					2014-12-02	0.89 \pm 2.23
					2014-12-22	-69.76 \pm 2.37
					2015-01-20	50.78 \pm 2.05
					2015-02-25	22.38 \pm 1.82
2015-04-14	-23.31 \pm 1.36					
BRFT	Brazil	T	321.57	-3.87	2006-05-08	0.49 \pm 0.64
					2007-06-23	1.02 \pm 5.34
					2007-06-25	-1.39 \pm 5.34
					2011-01-04	-4.12 \pm 2.14

					2011-01-17	4.66 ± 2.27
					2011-04-13	-4.58 ± 3.87
					2011-04-17	3.81 ± 3.79
					2015-01-03	-0.36 ± 0.63
BRMU	UK, Bermuda	T	295.30	32.37	1997-09-30	1.64 ± 0.59
					2003-03-11	-5.01 ± 0.59
					2006-07-23	-11.21 ± 1.07
					2006-11-02	7.57 ± 1.08
					2009-04-14	1.14 ± 0.66
					2010-04-11	-0.94 ± 1.26
					2010-07-01	-13.04 ± 1.65
					2010-09-15	5.23 ± 1.29
					2011-09-27	14.13 ± 0.64
					2012-09-29	3.80 ± 0.94
BUEN	Colombia	WT	282.99	3.88	2012-10-20	-1.05 ± 0.96
					2013-08-12	-0.59 ± 0.29
					1996-01-26	-3.99 ± 0.35
CAS1	Antarctica	PA (SH)	110.52	-66.28	1997-11-08	1.34 ± 0.31
					1999-12-08	2.28 ± 0.32
					2004-10-24	2.66 ± 0.33
					2007-11-03	-5.96 ± 0.34
					2008-12-02	6.88 ± 0.38
					2010-01-31	-4.87 ± 0.34
					2013-12-10	-9.36 ± 0.31
					2005-06-01	2.09 ± 0.36
CEDU	Australia	D	133.81	-31.86	2007-04-23	-2.90 ± 0.35
					2012-08-01	1.54 ± 0.33
					CHAT	New Zealand
CHET	Mexico	T	271.70	18.49	2009-05-27	-0.41 ± 0.72
					2012-11-06	0.44 ± 0.63
					2014-10-13	1.02 ± 0.69
CHPI	Brazil	WT	315.01	-22.68	2010-02-26	-11.47 ± 0.56
					2013-07-29	-2.57 ± 0.90
CHUR	Canada	C	265.91	58.75	1998-03-09	0.50 ± 0.28
					2000-07-18	-0.08 ± 0.28
					2004-09-24	4.12 ± 0.51
					2005-02-02	1.95 ± 0.51
					2008-03-27	1.84 ± 0.34
					2009-03-31	5.22 ± 0.35
COCO	Australia, Cocos	T	96.83	-12.18	2000-06-17	-17.51 ± 0.72
					2001-08-04	-2.95 ± 0.71
					2005-03-28	-17.26 ± 0.63
					2007-09-12	6.35 ± 0.65
					2012-04-11	-11.10 ± 0.66
DARW	Australia	T	131.13	-12.84	2015-06-14	-21.42 ± 1.21
					1999-11-24	-0.92 ± 0.59
					2001-10-19	-18.46 ± 0.65
					2003-03-17	2.12 ± 0.64
DAV1	Antarctica	PA (SH)	77.97	-68.57	2011-06-07	-13.53 ± 0.59
					1996-02-04	2.79 ± 3.26
					1996-02-06	-1.48 ± 3.26
					1997-08-23	-3.22 ± 0.26
					1999-11-01	1.28 ± 0.25
					2007-07-31	-2.99 ± 0.24
					2011-02-20	-5.57 ± 0.22
DGAR	British Indian Ocean Territory	T	72.37	-7.26	1996-07-14	5.50 ± 1.84
					1999-11-01	0.23 ± 0.50
					2002-01-18	-0.25 ± 0.52
					2004-05-17	0.31 ± 0.75
					2004-12-25	-0.42 ± 0.76
					2012-04-10	0.10 ± 0.55
DUBO	Canada	C	264.13	50.25	1996-11-06	-0.26 ± 1.59
					1997-01-07	9.72 ± 0.81
					1999-10-03	8.57 ± 0.35
					2004-11-25	6.44 ± 0.38
					2009-08-26	6.87 ± 0.34
					2011-10-02	1.19 ± 0.33
DUM1	Antarctica	PA (SH)	140.00	-66.66	2014-02-25	5.33 ± 0.35
					1997-12-19	-0.11 ± 0.57
					1998-03-24	-0.20 ± 0.56
					2010-12-04	-0.25 ± 0.23
FAIR	USA, Alaska	C	212.50	64.97	1996-04-15	-8.08 ± 0.36

					2000-04-14	1.07 ± 0.34
					2004-12-21	-1.71 ± 0.33
					2008-03-24	-1.68 ± 0.32
					2012-04-27	5.23 ± 0.33
FLIN	Canada	C	258.02	54.72	1997-01-06	2.07 ± 0.41
					1999-09-20	-1.75 ± 0.30
					2001-01-12	-0.69 ± 0.31
					2010-12-23	0.63 ± 0.27
					2014-02-23	-2.85 ± 0.28
GLSV	Ukraine	C	30.50	50.36	2007-11-12	2.11 ± 2.32
					2007-11-20	1.88 ± 2.32
					2009-10-21	-1.44 ± 0.33
					2012-09-05	0.31 ± 0.30
GODE	USA	WT	283.17	39.02	1998-10-01	4.59 ± 0.56
					2002-05-02	-0.62 ± 0.57
					2006-04-10	-4.38 ± 0.63
					2012-07-06	25.16 ± 2.07
					2012-08-06	-21.39 ± 2.26
					2012-12-13	3.04 ± 1.94
GUAO	China	D	87.18	43.47	2013-01-29	-3.55 ± 1.70
					2011-07-07	-2.85 ± 2.62
					2011-07-09	-0.02 ± 2.62
GUAT	Guatemala	T	269.48	14.59	2003-01-20	-0.07 ± 0.41
					2007-06-12	0.90 ± 0.42
					2008-09-17	-0.52 ± 0.40
					2011-11-27	-1.38 ± 0.51
					2012-06-26	2.37 ± 0.72
HOB2	Australia, Tasmania	WT	147.44	-42.80	2012-11-07	-0.46 ± 0.61
					1997-05-21	12.63 ± 0.38
					1998-10-25	-4.17 ± 0.50
					1999-08-15	7.68 ± 0.78
					1999-11-29	-13.81 ± 0.70
					2002-03-27	-9.73 ± 3.02
					2002-04-01	4.46 ± 3.02
HOFN	Iceland	PA (NH)	344.80	64.26	2004-12-22	4.14 ± 0.46
					2005-10-03	-0.41 ± 0.46
					2000-06-20	5.35 ± 0.48
					2001-09-20	-11.76 ± 0.48
					2004-08-23	-2.71 ± 0.43
					2007-09-22	-2.57 ± 0.49
HRAO	South Africa	WT	27.69	-25.89	2013-05-04	-8.77 ± 0.51
					2014-08-24	-0.79 ± 0.55
					2004-11-18	3.34 ± 0.44
					2006-02-22	-0.17 ± 0.47
					2007-04-25	-4.72 ± 0.53
					2008-02-13	4.30 ± 0.56
					2009-01-14	4.22 ± 0.45
					2012-04-11	-5.38 ± 0.36
IISC	India	T	77.57	13.02	2014-07-22	2.63 ± 0.43
					2001-07-16	-1.57 ± 0.50
					2004-12-25	9.48 ± 0.98
					2005-03-27	-3.66 ± 0.98
					2008-07-09	3.02 ± 0.46
IMBT	Brazil	WT	311.34	-28.23	2012-04-10	2.19 ± 0.47
					2010-02-26	-0.14 ± 0.93
					2013-10-02	-0.49 ± 0.90
IRKT	Russia	C	104.32	52.21	1999-06-28	-0.00 ± 0.21
JOZE	Poland	WT	21.03	52.09	2004-12-04	-5.08 ± 0.32
KARR	Australia	D	117.10	-20.98	1996-06-11	5.10 ± 0.62
					2003-06-03	5.44 ± 0.59
					2010-05-20	17.52 ± 0.53
					2013-09-10	-4.24 ± 0.54
KELY	Greenland	PA (NH)	309.06	66.98	1996-04-04	-1.98 ± 0.44
					2001-09-13	-5.09 ± 0.35
					2002-10-04	2.84 ± 0.36
KERG	French Southern Territories	PA (SH)	70.26	-49.35	2010-06-07	-0.29 ± 0.30
					1999-03-31	-1.54 ± 0.45
					2002-11-07	0.14 ± 0.48
					2008-07-27	8.85 ± 1.42
					2008-09-04	-1.42 ± 1.42
					2011-02-14	-3.29 ± 0.56
					2012-01-16	4.78 ± 0.55

KIRO	Sweden	PA (NH)	21.06	67.87	-	-
KMOR	Greenland	PA (NH)	296.47	81.25	-	-
KOKB	Hawaii	T	200.34	22.12	1996-01-09	5.31 ± 0.41
					1999-07-22	-0.52 ± 0.31
					2002-04-01	5.94 ± 0.58
					2002-09-23	-11.32 ± 1.61
					2002-10-14	-0.41 ± 1.55
					2004-05-27	-1.62 ± 0.37
KOUR	French Guiana	T	307.19	5.25	-	-
KULU	Greenland	PA (NH)	322.85	65.57	1997-04-09	-0.06 ± 0.51
					1999-04-28	-3.14 ± 2.22
					1999-05-08	1.65 ± 2.22
					2008-05-23	3.91 ± 0.36
					2012-08-24	-6.97 ± 0.31
KUNM	China	C	102.80	25.02	1999-05-20	-1.49 ± 0.48
					2002-11-10	3.40 ± 0.59
					2003-03-26	-9.89 ± 0.59
					2004-12-25	2.85 ± 0.40
					2009-01-18	-2.47 ± 0.40
					2010-12-25	-0.04 ± 0.37
LAMA	Poland	WT	20.67	53.89	2000-10-05	9.49 ± 0.36
					2007-11-16	-6.32 ± 0.34
					2011-02-08	5.83 ± 0.32
LPAZ	Mexico	D	249.68	24.13	-	-
LPGS	Argentina	WT	302.07	-34.90	1998-02-23	3.60 ± 0.46
					2002-11-19	-4.94 ± 0.52
					2010-02-26	-2.92 ± 0.51
					2012-03-14	7.66 ± 0.75
					2012-10-03	-0.36 ± 0.73
MAC1	Australia	PA (SH)	158.94	-54.49	1995-06-26	0.90 ± 4.81
					1995-06-29	-3.02 ± 4.77
					2001-01-03	6.62 ± 0.48
					2002-03-12	-8.04 ± 0.49
					2004-12-22	4.15 ± 0.43
					2012-06-21	-2.66 ± 0.43
MANA	Zambia	T	273.75	12.14	2004-10-08	-4.24 ± 3.89
					2004-10-12	6.80 ± 3.91
					2005-07-01	0.67 ± 0.59
					2009-05-27	-1.83 ± 0.55
					2010-04-16	9.51 ± 0.55
					2012-02-04	-5.02 ± 0.64
					2012-08-26	-14.15 ± 0.99
					2012-11-30	12.59 ± 0.89
					2014-04-09	-6.77 ± 0.68
2014-10-13	5.52 ± 0.71					
MAPA	Brazil	T	308.90	0.04	2012-01-14	-0.00 ± 0.44
MAR6	Sweden	C	17.26	60.59	2006-06-26	-2.40 ± 0.39
					2014-01-13	4.07 ± 0.43
					2015-02-26	-9.49 ± 0.82
					2015-06-04	2.64 ± 1.02
MAS1	Spain	D	344.37	27.76	1996-04-17	-1.80 ± 0.34
					1999-08-13	-5.86 ± 0.34
					2000-12-19	3.76 ± 0.36
					2008-07-06	-0.03 ± 0.33
					2012-06-17	-6.69 ± 0.29
MATE	Italy	WT	16.70	40.64	1996-07-08	-3.47 ± 0.34
					1999-06-17	3.16 ± 0.68
					1999-09-24	-8.33 ± 0.68
					2008-11-20	-32.32 ± 3.66
					2008-11-23	31.31 ± 3.66
MCM4	Antarctica	PA (SH)	166.67	-77.83	1998-03-24	-5.60 ± 0.32
					1999-02-05	4.42 ± 0.44
					1999-09-06	-2.00 ± 0.38
					2002-01-02	1.61 ± 0.24
					2006-05-18	2.25 ± 0.27
					2007-11-05	-3.21 ± 0.29
MDO1	USA	D	255.99	30.68	2002-08-20	-2.43 ± 0.31
					2004-12-06	2.80 ± 0.31
					2007-02-08	-0.40 ± 0.30
					2013-02-21	8.19 ± 0.51
					2013-08-08	-6.77 ± 0.73
METS	Finland	C	24.40	60.21	1995-04-29	10.98 ± 0.69

					2000-05-22	8.34 ± 0.35
					2010-08-19	-1.22 ± 0.50
					2011-05-08	14.48 ± 0.67
					2011-12-03	-9.75 ± 0.58
					2013-06-27	4.58 ± 0.40
MOB1	USA	WT	271.98	30.22	-	-
					1997-01-29	-9.24 ± 1.51
					2000-01-31	0.90 ± 0.47
					2004-11-17	5.94 ± 0.47
					2007-10-30	-1.92 ± 0.44
					2009-08-16	-2.06 ± 0.47
					2011-02-18	4.25 ± 0.46
					2014-10-15	4.78 ± 0.51
MORP	UK	WT	358.31	55.21		
					2001-09-02	0.32 ± 0.38
					2004-12-24	1.31 ± 0.40
					2009-07-14	3.01 ± 0.44
					2010-09-02	5.99 ± 0.45
MQZG	New Zealand	WT	172.65	-43.70		
					1996-02-13	3.87 ± 0.47
					1999-08-05	-1.19 ± 0.35
					2001-11-07	-1.80 ± 0.42
					2003-01-09	2.54 ± 0.42
					2008-12-08	-5.61 ± 0.47
					2009-09-24	2.80 ± 0.46
					2014-04-23	5.79 ± 0.39
NANO	Canada	WT	235.91	49.29		
					1997-02-08	0.25 ± 0.51
					1998-08-04	0.06 ± 0.36
					2003-12-17	-0.26 ± 0.39
					2005-02-09	0.24 ± 0.40
					2012-10-01	-0.23 ± 0.51
					2013-04-28	0.20 ± 0.57
					2014-04-23	0.12 ± 0.45
					2008-01-23	-2.97 ± 0.24
					2010-04-30	5.38 ± 2.27
					2010-05-04	-5.84 ± 2.27
NEAH	USA	WT	235.38	48.29		
					1996-07-07	3.90 ± 0.48
					2004-07-13	1.79 ± 0.45
					2011-06-23	3.11 ± 0.40
					2005-11-09	3.36 ± 0.32
					2009-10-28	7.09 ± 0.34
					1998-06-07	5.82 ± 0.45
					1999-10-27	-3.96 ± 0.40
					2001-02-12	-0.11 ± 0.39
					2004-12-25	0.01 ± 0.38
					2007-05-15	4.12 ± 0.97
					2007-06-24	3.71 ± 1.15
					2007-09-14	-5.47 ± 0.70
					2010-10-25	-0.62 ± 0.37
					2012-04-10	-1.66 ± 0.37
					1998-03-31	3.04 ± 0.30
					1999-08-26	0.77 ± 2.08
					1999-09-02	-2.37 ± 2.08
					2000-12-04	8.19 ± 0.42
					2001-09-04	-1.95 ± 0.38
					2009-05-11	8.10 ± 0.30
					1999-02-01	3.62 ± 0.32
					2003-08-18	-4.04 ± 0.56
					2004-03-09	3.49 ± 0.57
					2013-08-27	-1.66 ± 0.92
					2013-11-05	6.45 ± 0.95
					2015-05-04	-6.71 ± 0.70
ONSA	Sweden	WT	11.93	57.39		
					2011-03-10	-0.17 ± 0.75
P211	Japan	WT	140.56	37.09		
					1999-05-03	10.89 ± 0.44
					2007-08-01	-3.83 ± 0.37
					2009-03-29	-2.00 ± 0.44
					2010-02-26	0.96 ± 0.40
					2013-11-16	-2.04 ± 0.33
					2002-12-17	0.04 ± 0.49
					2006-12-12	30.12 ± 4.10
					2006-12-16	-25.02 ± 4.10
					2008-04-05	-6.48 ± 0.52
					2012-10-16	2.49 ± 0.50
PDEL	Portugal	WT	334.34	37.74		
					1999-07-22	-6.14 ± 0.37
PERT	Australia	WT	115.89	-31.80		

					2001-06-06	-1.62 ± 0.36
					2003-06-04	-8.66 ± 0.36
					2008-01-08	-0.25 ± 0.44
					2008-11-05	-6.30 ± 0.49
					2009-11-14	0.61 ± 0.40
					2012-10-22	-6.19 ± 4.46
					2012-10-24	7.73 ± 4.46
PIE1	USA	D	251.88	34.30	1999-05-31	-0.02 ± 0.24
					2004-08-04	5.64 ± 0.24
					2007-01-22	-1.04 ± 0.25
					2013-10-23	6.98 ± 0.26
PIMO	Phillipines	T	121.08	14.63	1999-12-10	-0.59 ± 0.75
					2001-09-25	0.72 ± 0.67
					2002-11-13	-0.65 ± 0.66
					2005-09-21	0.34 ± 0.64
					2008-05-23	-0.28 ± 0.74
					2009-02-18	0.18 ± 0.75
					2012-08-30	-0.21 ± 0.68
PNGM	Papua New Guinea	T	147.37	-2.04	2002-09-07	-0.66 ± 0.73
					2007-07-27	-0.29 ± 0.53
					2008-06-05	0.20 ± 0.50
					2010-07-18	-0.22 ± 0.42
					2012-09-12	0.19 ± 0.44
					2014-03-10	-0.46 ± 0.45
POHN	Micronesia	T	158.21	6.95	2006-10-18	6.51 ± 0.62
					2011-01-09	15.15 ± 0.64
					2011-12-06	0.60 ± 0.62
					2014-11-11	17.73 ± 0.63
POTS	Germany	WT	13.07	52.37	1995-10-02	-0.43 ± 0.47
					2009-04-15	-4.88 ± 0.34
					2011-02-15	1.15 ± 0.33
QAQ1	Greenland	PA (NH)	313.95	60.71	2003-09-28	-0.78 ± 0.91
					2003-12-29	1.41 ± 0.89
					2006-05-06	0.80 ± 0.55
					2009-08-25	1.07 ± 0.58
					2012-08-23	1.01 ± 0.53
					2014-10-04	0.08 ± 0.55
QUIN	USA	WT	239.06	39.97	1998-04-01	3.03 ± 0.28
					2003-07-08	0.39 ± 0.28
					2005-06-14	-5.27 ± 0.27
					2009-01-14	1.64 ± 0.30
					2010-05-06	-3.52 ± 0.57
					2010-08-11	-1.43 ± 0.55
RAMO	Israel	D	34.76	30.59	2000-07-16	1.37 ± 0.23
					2003-02-25	-1.83 ± 0.28
					2004-03-17	0.20 ± 0.27
RECF	Brazil	T	325.05	-8.05	2007-05-07	0.08 ± 0.50
					2012-08-27	0.04 ± 0.44
					2015-03-19	0.17 ± 0.71
RESO	Canada	PA (NH)	265.11	74.69	2004-02-19	1.81 ± 0.23
REUN	Reunion	T	55.57	-21.20	2003-05-27	0.17 ± 0.38
					2008-12-02	-0.08 ± 0.42
REYK	Iceland	PA (NH)	338.04	64.13	2000-06-20	6.20 ± 0.43
					2003-04-11	-1.22 ± 1.08
					2003-06-12	9.38 ± 1.08
					2007-09-18	4.58 ± 5.71
					2007-09-20	-2.94 ± 5.74
					2008-03-12	2.29 ± 0.69
					2013-05-01	-5.43 ± 0.45
RINK	Greenland	PA (NH)	309.01	71.84	2010-04-26	0.36 ± 0.36
					2011-06-27	-0.47 ± 0.40
SAMO	Samoa	T	188.26	-13.84	2003-09-01	-4.38 ± 0.64
					2007-08-01	-8.07 ± 0.64
					2009-09-28	-9.38 ± 0.59
					2012-04-30	9.36 ± 0.61
					2015-03-29	-7.80 ± 0.82
SCH2	Canada	C	293.17	54.83	1999-08-03	-26.78 ± 6.15
					1999-08-04	24.11 ± 6.15
					2003-10-12	5.10 ± 0.37
					2008-02-14	4.95 ± 0.47
					2008-10-06	-1.80 ± 0.51
					2009-11-12	5.47 ± 0.42

					2011-05-04	1.54 ± 0.37
SCOR	Greenland	PA (NH)	338.05	70.48	2005-06-28	-8.57 ± 0.56
SCUB	Cuba	T	284.24	20.01	2000-12-06	-0.04 ± 0.56
					2010-01-11	-0.64 ± 0.45
					2014-12-17	0.95 ± 1.93
					2015-01-07	-1.26 ± 2.00
SELE	Kazakhstan	C	77.02	43.17	1998-12-08	5.74 ± 0.30
					2002-05-22	2.13 ± 0.29
					2004-12-25	1.41 ± 0.29
					2008-07-07	7.17 ± 0.32
SSA1	Brazil	T	321.48	-12.97	2012-10-10	-0.29 ± 0.69
STJO	Canada	C	307.32	47.59	1995-03-01	-4.08 ± 1.67
					1995-06-09	1.15 ± 1.32
					1995-11-03	-1.18 ± 1.04
					1996-07-31	0.50 ± 0.68
					2000-05-25	-0.01 ± 0.50
					2010-03-17	-0.08 ± 0.50
SYOG	Antarctica	PA (SH)	39.58	-69.00	2013-01-31	-0.09 ± 0.47
					1999-10-25	0.26 ± 0.23
					2007-01-25	7.73 ± 0.25
					2013-12-23	17.69 ± 0.77
TAMP	Mexico	D	262.14	22.27	-	-
TCMS	Taiwan	WT	120.99	24.79	2004-12-26	0.30 ± 0.53
THU3	Greenland	PA (NH)	291.18	76.53	2003-11-12	7.49 ± 0.33
					2008-02-14	2.81 ± 0.34
					2009-04-29	6.90 ± 0.36
TIDB	Australia	WT	148.98	-35.39	1996-06-25	8.32 ± 0.39
					2000-06-29	-3.19 ± 0.35
					2004-12-11	1.53 ± 0.37
					2010-07-04	2.37 ± 0.39
TIXI	Russia	C	128.87	71.63	1999-03-29	-6.04 ± 0.41
					2002-10-13	-2.47 ± 0.26
					2010-10-19	-7.15 ± 0.45
					2011-03-10	1.22 ± 0.44
TOW2	Australia	T	147.06	-19.26	1999-11-26	-16.06 ± 0.64
					2002-09-29	-9.47 ± 0.64
					2007-03-31	1.17 ± 0.67
					2011-09-22	-41.45 ± 0.70
					2013-01-21	14.53 ± 0.70
					2015-08-23	9.83 ± 2.14
TSKB	Japan	WT	140.09	36.10	1995-04-03	8.43 ± 1.46
					1995-07-30	-14.92 ± 1.06
					1999-08-03	-2.85 ± 0.71
					2000-08-21	-2.17 ± 0.70
					2002-06-17	-4.79 ± 0.63
					2004-05-28	-6.82 ± 0.62
					2007-07-15	-3.45 ± 0.74
					2008-05-06	-11.56 ± 1.83
					2008-06-12	5.69 ± 1.77
					2011-07-01	-12.12 ± 0.63
TWTF	Taiwan	WT	121.16	24.95	2013-10-14	-3.45 ± 0.62
					2002-03-30	1.15 ± 1.04
					2003-12-09	0.22 ± 0.78
					2004-12-25	0.47 ± 0.81
					2007-09-05	0.32 ± 0.81
					2009-07-12	5.98 ± 1.89
					2009-08-16	-9.98 ± 2.42
					2009-10-02	4.96 ± 2.01
					2009-12-18	-0.56 ± 1.35
					2011-03-10	0.54 ± 0.78
UNSA	Argentina	WT	294.59	-24.72	2013-07-02	4.31 ± 1.53
					2013-08-27	-3.70 ± 1.54
					2001-05-20	-1.17 ± 0.41
					2004-06-08	0.66 ± 0.40
					2008-07-23	0.68 ± 0.49
					2009-04-27	1.17 ± 0.57
VAAS	Finland	C	21.77	62.96	-	-
VACS	Mauritius	T	57.50	-20.29	-	-
VILL	Spain	WT	356.05	40.44	1999-07-28	-3.85 ± 0.41

					2000-07-17	-1.35 ± 0.50
					2001-05-28	-0.77 ± 0.43
					2004-09-27	-5.04 ± 0.65
					2005-01-17	1.17 ± 0.67
					2006-11-28	-4.37 ± 0.37
					2012-12-26	-2.22 ± 0.36
VNDP	USA	WT	239.38	34.55	1995-11-08	10.19 ± 0.50
					1997-02-28	-0.88 ± 0.40
					1999-07-08	-2.15 ± 0.37
					2003-12-21	-1.52 ± 0.46
					2004-10-18	4.46 ± 0.47
					2006-10-09	-3.30 ± 0.39
					2012-02-01	0.15 ± 0.39
					2015-07-26	16.55 ± 0.91
WES2	USA	C	288.51	42.61	1995-09-05	2.17 ± 1.35
					1995-11-16	-3.86 ± 1.43
					1996-04-24	-0.53 ± 1.67
					1996-06-10	3.09 ± 1.56
					1997-05-26	-12.37 ± 1.79
					1997-06-29	11.78 ± 1.80
					1998-05-31	3.77 ± 0.66
					2000-08-22	-3.03 ± 0.66
					2001-07-26	-1.68 ± 0.67
					2007-09-20	-4.54 ± 0.57
					2009-11-30	-0.10 ± 0.53
					2014-06-23	-2.40 ± 0.61
					WGTN	New Zealand
2009-01-28	0.77 ± 0.42					
2010-11-13	3.72 ± 0.41					
2013-07-20	10.84 ± 1.45					
2013-08-15	-9.45 ± 1.45					
WILL	Canada	C	237.83	52.23	1995-07-07	2.26 ± 0.39
					2003-05-05	-1.68 ± 0.24
					2013-10-21	6.26 ± 0.25
WSRT	Netherlands	WT	6.60	52.91	1998-03-16	-4.70 ± 0.54
					2000-01-04	2.50 ± 0.36
WTZR	Germany	WT	12.88	49.14	2009-01-18	-3.36 ± 0.33
					2010-06-29	1.19 ± 0.33
					2014-02-12	1.44 ± 0.31
YELL	Canada	C	245.52	62.48	1996-08-21	5.86 ± 0.25
					1999-08-09	-2.47 ± 0.22
					2013-07-17	-0.62 ± 0.23
YIBL	Oman	D	56.11	22.18	2006-11-11	-0.76 ± 0.49
					2014-01-23	-0.55 ± 0.50
ZIMM	Switzerland	WT	7.47	46.87	1997-08-05	2.17 ± 0.37
					1998-11-05	-2.19 ± 0.33
					2003-08-11	-3.18 ± 0.27
					2006-02-21	2.82 ± 0.30
					2015-04-26	4.50 ± 0.52

Table S2. Trend given together with its uncertainty for a pure white noise (WH) and autoregressive plus white noise (AR(4)+WH) process in ZTD residuals.

Station	Country	Longitude	Latitude	WH		AR(4)+WH		Ratio of uncertainties
				Trend	Uncertainty	Trend	Uncertainty	
AB11	USA	194.63	64.56	3.20	0.08	2.81	0.78	9.8
ADIS	Ethiopia	38.77	9.03	-0.51	0.04	-0.53	0.27	7.4
ALGO	Canada	281.93	45.95	-0.04	0.03	-0.03	0.20	7.0
ALIC	Australia	133.89	-23.67	-0.52	0.10	-0.32	0.95	9.7
ALRT	Canada	297.66	82.49	1.14	0.10	0.44	0.88	9.3
AREQ	Peru	288.51	-16.46	0.63	0.05	0.51	0.40	8.5
ARTU	Russia	58.56	56.42	0.42	0.02	0.43	0.16	8.3
ASPA	USA	189.28	-14.32	0.47	0.08	0.31	0.59	7.9
AUCK	New Zealand	174.83	-36.60	1.29	0.08	1.29	0.50	6.5
BELE	Brazil	311.54	-1.40	-0.54	0.05	-0.55	0.29	6.2
BILI	Russia	166.44	68.07	0.40	0.05	0.44	0.49	9.9
BJFS	China	115.89	39.60	0.49	0.07	0.41	0.49	6.9
BLUF	New Zealand	168.29	-46.58	0.18	0.11	0.83	0.70	6.6
BRAZ	Brazil	312.12	-15.94	1.11	0.05	1.10	0.50	9.6
BRFT	Brazil	321.57	-3.87	1.94	0.14	1.27	0.95	6.8
BRMU	UK. Bermuda	295.30	32.37	0.42	0.11	0.61	0.74	7.0
BUEN	Colombia	282.99	3.88	0.34	0.04	0.35	0.15	3.7
CASI	Antarctica	110.52	-66.28	0.13	0.07	-0.15	0.60	9.2
CEDU	Australia	133.81	-31.86	0.32	0.05	0.25	0.33	6.2
CHAT	New Zealand	183.43	-43.95	0.30	0.04	0.27	0.26	6.7
CHET	Mexico	271.70	18.49	-1.94	0.16	-1.22	1.23	7.9
CHPI	Brazil	315.01	-22.68	0.94	0.09	1.01	0.73	8.2
CHUR	Canada	265.91	58.75	-1.02	0.05	-0.91	0.35	7.2
COCO	Australia. Cocos	96.83	-12.18	2.38	0.13	1.16	1.17	9.0
DARW	Australia	131.13	-12.84	1.52	0.08	0.86	0.69	8.9
DAV1	Antarctica	77.97	-68.57	0.17	0.03	0.74	0.32	9.8
DGAR	British Indian Ocean Territory	72.37	-7.26	-0.39	0.08	-0.36	0.71	8.8
DUBO	Canada	264.13	50.25	-1.20	0.06	-1.13	0.39	6.1
DUM1	Antarctica	140.00	-66.66	1.09	0.02	0.95	0.19	9.3
FAIR	USA. Alaska	212.50	64.97	-0.01	0.06	0.32	0.59	9.4
FLIN	Canada	258.02	54.72	0.57	0.03	0.72	0.21	6.9
GLSV	Ukraine	30.50	50.36	0.25	0.04	0.25	0.29	7.7
GODE	USA	283.17	39.02	0.25	0.10	0.87	0.77	7.8
GUAO	China	87.18	43.47	0.08	0.02	0.06	0.16	6.6
GUAT	Guatemala	269.48	14.59	1.94	0.09	2.00	0.68	7.4
HOB2	Australia. Tasmania	147.44	-42.80	0.11	0.04	0.15	0.23	6.1
HOFN	Iceland	344.80	64.26	0.03	0.09	0.36	0.78	8.5
HRAO	South Africa	27.69	-25.89	-0.21	0.07	0.07	0.52	7.9
IISC	India	77.57	13.02	-0.25	0.09	0.03	0.69	7.9
IMBT	Brazil	311.34	-28.23	1.60	0.26	1.78	1.97	7.7
IRKT	Russia	104.32	52.21	0.26	0.02	0.25	0.11	6.7
JOZE	Poland	21.03	52.09	0.99	0.03	1.00	0.21	7.7
KARR	Australia	117.10	-20.98	-1.58	0.07	-1.64	0.64	8.7
KELY	Greenland	309.06	66.98	-0.37	0.04	-0.19	0.30	7.8
KERG	French Southern Territories	70.26	-49.35	-0.52	0.08	-0.34	0.48	6.0
KIRO	Sweden	21.06	67.87	0.02	0.02	0.02	0.18	9.8
KMOR	Greenland	296.47	81.25	-0.80	0.04	-0.77	0.49	12.5
KOKB	Hawaii	200.34	22.12	0.30	0.03	0.31	0.21	6.7
KOUR	French Guiana	307.19	5.25	0.32	0.02	0.32	0.11	6.8

KULU	Greenland	322.85	65.57	0.14	0.04	0.40	0.42	9.8
KUNM	China	102.80	25.02	0.37	0.10	0.30	0.66	6.8
LAMA	Poland	20.67	53.89	-0.20	0.05	0.05	0.35	7.1
LPAZ	Mexico	249.68	24.13	-0.64	0.10	-0.54	1.17	11.7
LPGS	Argentina	302.07	-34.90	-0.36	0.07	-0.51	0.46	6.2
MAC1	Australia	158.94	-54.49	0.07	0.06	0.20	0.42	7.0
MANA	Zambia	273.75	12.14	-0.03	0.11	-0.35	0.69	6.1
MAPA	Brazil	308.90	0.04	1.58	0.08	1.42	0.53	6.9
MAR6	Sweden	17.26	60.59	0.32	0.05	0.60	0.38	8.2
MAS1	Spain	344.37	27.76	0.32	0.05	0.53	0.32	6.9
MATE	Italy	16.70	40.64	0.47	0.03	0.33	0.22	6.6
MCM4	Antarctica	166.67	-77.83	0.03	0.04	0.25	0.43	11.9
MDO1	USA	255.99	30.68	0.02	0.04	-0.16	0.33	7.9
METS	Finland	24.40	60.21	-0.53	0.04	-0.53	0.29	7.8
MOB1	USA	271.98	30.22	0.38	0.05	0.41	0.38	7.8
MORP	UK	358.31	55.21	-0.72	0.09	-0.81	0.62	6.7
MQZG	New Zealand	172.65	-43.70	-1.16	0.08	-1.26	0.51	6.6
NANO	Canada	235.91	49.29	0.45	0.06	0.08	0.47	7.4
NEAH	USA	235.38	48.29	0.50	0.05	0.36	0.42	8.7
NKLG	Gabon	9.67	0.35	0.85	0.03	0.83	0.15	4.6
NRC1	Canada	284.38	45.45	-0.14	0.05	0.05	0.36	7.0
NRIL	Russia	88.36	69.36	-0.88	0.06	-0.81	0.51	9.3
NTUS	Malaysia	103.68	1.34	0.24	0.09	0.17	0.49	5.4
NYAL	Norway	11.87	78.92	-0.60	0.04	-0.47	0.37	10.3
ONSA	Sweden	11.93	57.39	-0.11	0.04	-0.21	0.32	7.6
P211	Japan	238.30	36.87	-0.02	0.10	0.98	0.88	8.7
PALM	Antarctica	295.95	-64.77	-0.14	0.05	0.12	0.48	10.3
PDEL	Portugal	334.34	37.74	-0.30	0.10	0.11	0.68	6.5
PERT	Australia	115.89	-31.80	1.51	0.07	1.58	0.41	5.8
PIE1	USA	251.88	34.30	-0.26	0.04	-0.51	0.31	8.4
PIMO	Phillipines	121.08	14.63	3.77	0.16	3.28	1.21	7.4
PNGM	Papua New Guinea	147.37	-2.04	-1.19	0.11	-0.72	0.88	8.1
POHN	Micronesia	158.21	6.95	-2.13	0.14	-1.96	0.82	6.0
POTS	Germany	13.07	52.37	0.65	0.03	0.73	0.18	7.3
QAQ1	Greenland	313.95	60.71	-2.06	0.15	-0.99	1.09	7.2
QUIN	USA	239.06	39.97	-0.07	0.05	-0.03	0.34	7.1
RAMO	Israel	34.76	30.59	0.31	0.02	0.28	0.13	6.0
RECF	Brazil	325.05	-8.05	-0.53	0.07	-0.61	0.58	8.5
RESO	Canada	265.11	74.69	0.06	0.02	0.09	0.23	10.5
REUN	Reunion	55.57	-21.20	0.51	0.06	0.48	0.50	8.8
REYK	Iceland	338.04	64.13	-1.03	0.08	-0.82	0.71	8.9
RINK	Greenland	309.01	71.84	-1.34	0.10	-1.26	0.84	8.5
SAMO	Samoa	188.26	-13.84	1.75	0.16	1.57	1.07	6.8
SCH2	Canada	293.17	54.83	-0.78	0.07	-1.09	0.53	7.5
SCOR	Greenland	338.05	70.48	-0.06	0.03	-0.23	0.40	11.9
SCUB	Cuba	284.24	20.01	-0.49	0.05	-0.35	0.50	9.4
SELE	Kazakhstan	77.02	43.17	-0.85	0.06	-0.51	0.41	6.6
SSA1	Brazil	321.48	-12.97	0.10	0.14	0.34	1.18	8.2
STJO	Canada	307.32	47.59	0.98	0.06	0.89	0.45	7.9
SYOG	Antarctica	39.58	-69.00	-0.31	0.03	0.06	0.30	10.0
TAMP	Mexico	262.14	22.27	0.82	0.06	0.76	0.59	10.6
TCMS	Taiwan	120.99	24.79	-0.41	0.05	-0.18	0.59	10.9
THU3	Greenland	291.18	76.53	-1.42	0.06	-3.19	0.64	11.6
TIDB	Australia	148.98	-35.39	0.28	0.06	0.40	0.39	6.7
TIXI	Russia	128.87	71.63	0.72	0.04	0.68	0.31	8.8
TOW2	Australia	147.06	-19.26	2.36	0.12	0.10	1.09	9.2
TSKB	Japan	140.09	36.10	2.64	0.15	2.60	1.13	7.4
TWTF	Taiwan	121.16	24.95	-2.29	0.27	1.67	1.97	7.3
UNSA	Argentina	294.59	-24.72	0.66	0.08	0.79	0.54	6.6
VAAS	Finland	21.77	62.96	0.26	0.02	0.26	0.16	8.4
VACS	Mauritius	57.50	-20.29	-0.35	0.08	-0.34	0.68	8.6
VILL	Spain	356.05	40.44	0.69	0.06	0.61	0.44	7.4
VNDP	USA	239.38	34.55	-0.07	0.07	-0.37	0.49	7.0

WES2	USA	288.51	42.61	0.79	0.10	1.05	0.68	7.1
WGTV	New Zealand	174.81	-41.32	-0.47	0.09	-0.46	0.53	6.2
WILL	Canada	237.83	52.23	-0.01	0.02	0.03	0.19	8.0
WSRT	Netherlands	6.60	52.91	-0.02	0.02	-0.05	0.16	7.2
WTZR	Germany	12.88	49.14	0.33	0.02	0.30	0.18	8.0
YELL	Canada	245.52	62.48	0.15	0.02	0.20	0.14	8.1
YIBL	Oman	56.11	22.18	0.16	0.08	-0.11	0.74	9.9
ZIMM	Switzerland	7.47	46.87	0.05	0.04	-0.30	0.29	8.4