

Problem areas in DORIS TRF realization, in preparation for ITRF2004

The IDS Analysis Coordinator team
M. Feissel-Vernier (1,2), K. Le Bail (2,3), J.-J. Valette (4)

1. Observatoire de Paris
2. Institut Géographique National/LAREG
3. Observatoire de la Côte d'Azur/GEMINI
4. Collecte Localisation Satellites (CLS)

2 May 2005

CONTENTS

- 1. Products analyzed**
- 2. TRF origin**
- 3. TRF scale**
- 4. Station selections**
- 5. Station breaks**
- 6. Problem stations**
- 7. What contribution of IDS to the ITRF2004?**

Summary. The purpose of this working document is to provide background information for the discussion among IDS Analysis Centers. Several aspects of the products available for the ITRF2004 are proposed for discussion: the terrestrial reference frames are analysed in terms of drifts, seasonalities and spectrum of their translations and scales. Various approaches of scale discrepancies and station screening are mentioned. A more detailed analysis of the station behaviours is presented in parallel by K. Le Bail.

1. Products analyzed

The products analysed in the remaining of this report are weekly time series of terrestrial reference frames (TRF) provided by the following Analysis Centers.

- IGN-JPL (622 files)
- INASAN (610 files)
- LEGOS-CLS (615 files). Note: the 2002-2004 solution is still the unrevised one (18/04/05)
- GSFC (~52 files)

The series of TRFs were provided by the Analysis Centers under the form of series of unconstrained TRF-EOP solutions (Sinex files) at weekly intervals, covering the years 1993 through 2004, except for the GSFC solution, which covers the year 2004 only.

These are referred to ITRF2000 using the CATREF software at CLS. The CATREF analysis is restricted to the consideration of the station coordinates. The list of reference stations used to define the datum is given in section 5. The output of this treatment analysed here are as follows.

- Time series of translation and scale parameters
- Time series of station coordinate residuals

2. TRF origin

The translation of the origins of the TRFs are measured relative to the ITRF2000 origin, that is based on the most reliable SLR solutions. Their differences are listed in tables 2-4.

Table 2. Translation Tx: Bias, trend and annual component

Series	Bias	Linear trend	Amplitude of annual term	Residual StDev
ignwd05	3.3 mm	-0.53 +- 0.09 mm/year	5-10 mm	6.5 mm
inawd03	2.6 mm	-0.49 +- 0.08 mm/year	5-10 mm	6.4 mm
lcawd12	-5.6 mm	-0.81 +- 0.07 mm/year	5-15 mm	5.0 mm

Table 3. Translation Ty: Bias, trend and annual component

Series	Bias	Linear trend	Amplitude of annual term	Residual StDev
ignwd05	7.3 mm	0.14 +- 0.09 mm/year	3- 8 mm	6.4 mm
inawd03	7.9 mm	0.18 +- 0.08 mm/year	3- 8 mm	6.6 mm
lcawd12	0.0 mm	-0.44 +- 0.07 mm/year	3- 6 mm	5.1 mm

Table 4. Translation Tz: Bias, trend and annual component

Series	Bias	Linear trend	Amplitude of annual term	Residual StDev
ignwd05	-35.3 mm	5.19 +- 0.42 mm/year	20-30 mm	31.4 mm
inawd03	-43.4 mm	5.19 +- 0.54 mm/year	20-50 mm	(1)
lcawd12	13.0 mm	0.46 +- 0.46 mm/year	15-30 mm	25.0 mm

Notes

1. Evaluations unaffected by a -120 mm anomaly in 1998
2. Not significant, because of the above-mentioned anomaly

The annual signatures of the translation parameters are shown on figure 1. The Tx seasonal components are large and changing in time after 1996, but in good agreement between the three solutions. For Ty, the amplitudes are smaller and more stable, with a semi-annual component appearing around 1998 in LCA. The Tz behaviour is similar to that of Tx, with quite larger amplitudes. The seasonal terms in Tx and Tz are in phase in all three solutions. The Ty and Tz LCA amplitudes are smaller than the others, with an interseasonal variation in Tz.

Figure 2 shows the same parameters over the 1992-1999 time span, for which estimations of geophysical-driven geocenter motion are available (Ramillien, Le Bail, Valette, Feissel-Vernier et al., article in preparation). All three DORIS Tx seasonal terms agree with it before they start changing amplitudes around 1996. In Ty, LCA is in best phase agreement with the geophysical expectation, with a discrepant semi-annual contribution appearing towards 1998. The amplitudes of the DORIS Tz are much larger than the geophysical expectation.

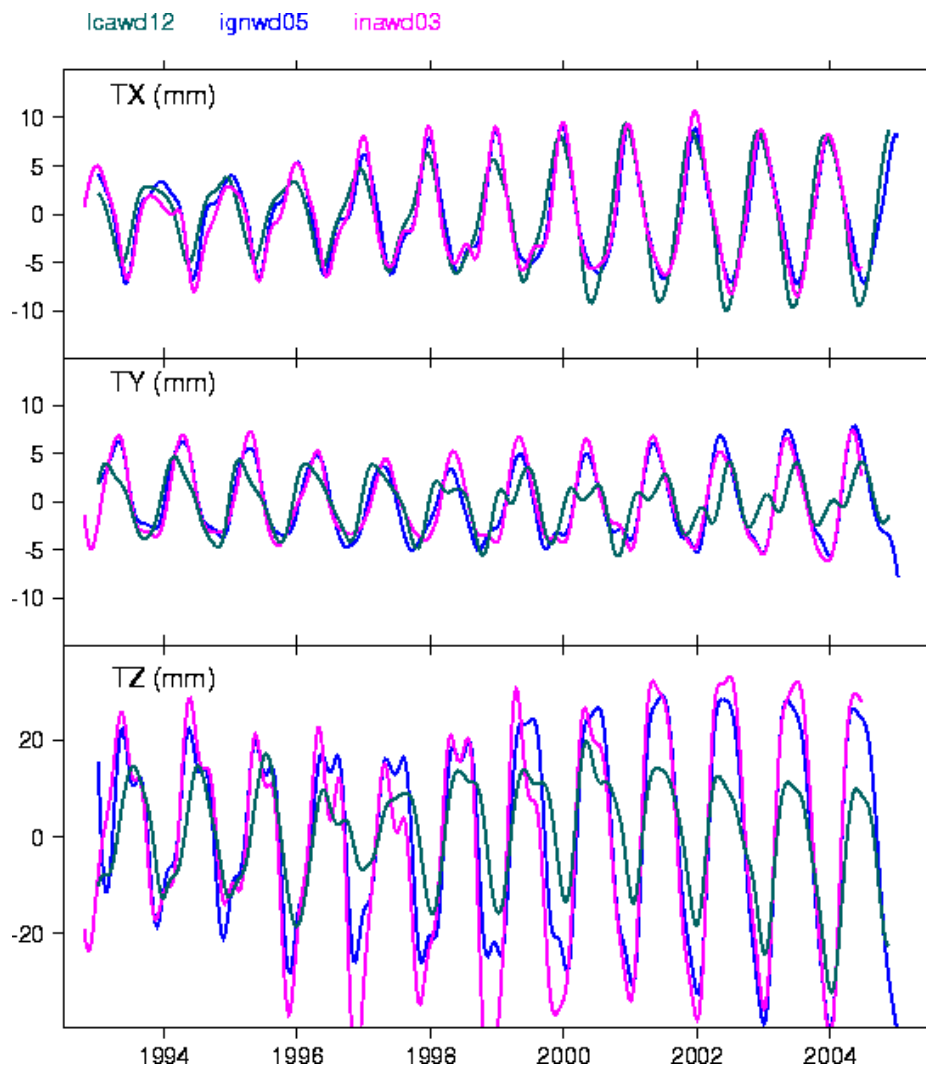


Figure 1. Annual component of TRF origin translations.
 Colour code: blue: igpwd05; pink: inawd03; green: lcawd02.

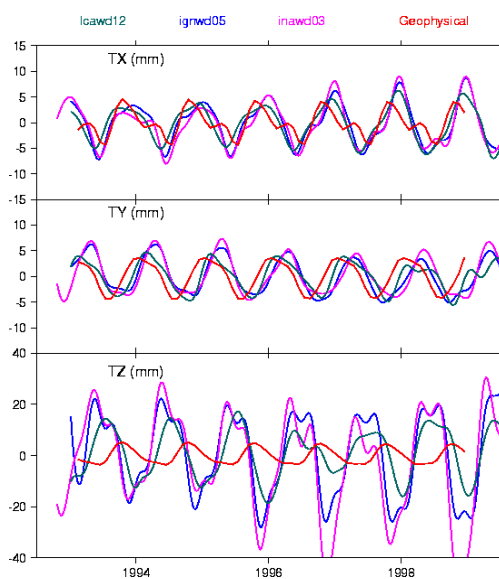


Figure 2. Annual component of TRF origin translations.
 Colour code: blue: igpwd05; pink: inawd03;
 green: lcawd02; red: geophysical.

Figure 3 shows the behaviour of the DORIS and geophysical TRF origin motions under a spectral viewpoint, using the Allan graph description. The three DORIS solutions have similar signatures in the equatorial plane components: the seasonal signature is imbedded in a noise with a spectrum close to white noise. The Tx and Ty components reach a stability of 2-3 mm for a one-year sampling time. The spectrum of the Tz variations is quite noisier than those in the equatorial plane, with a stability of 2-3 cm for a one-year sampling time. In all three components the spectral power of the DORIS signal remains higher than that of the geophysical one.

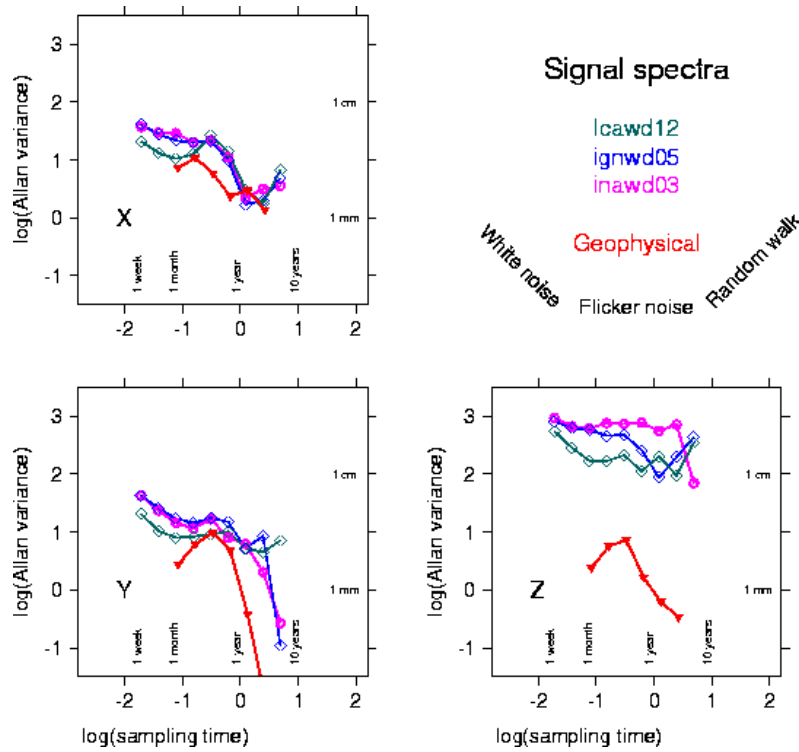


Figure 3. Spectral signature of geocenter motion observed with DORIS, SLR and expected from geophysical data. Colour code: blue: ignwd05; pink: inawd03; green: lcawd12; red: geophysical. A slope equal to -1 is the signature of white noise.

3. TRF Scale

The scales of the DORIS TRFs are compared with the ITRF2000 scale, that is based on the most reliable SLR and VLBI solutions. The differences are listed in table 5.

Table 5. TRF scale: Bias, trend and annual component

Series	Bias	Linear trend	Amplitude of annual term	Residual StDev
ignwd05	3.3 mm	-0.56 +- 0.09 mm /year	5-10 mm	6.5 mm
inawd03	-12.3 mm	-1.05 +- 0.06 mm /year	~5 mm	5.2 mm
lcawd12	40.7 mm	-0.32 +- 0.08 mm /year	~3 mm	4.6 mm

The annual signatures are shown on figure 4. Notice the changing with time of IGN amplitude and the phase opposition of the IGN and INA signatures. The LCA signal includes a sizeable semi-annual contribution and a low interseasonal component.

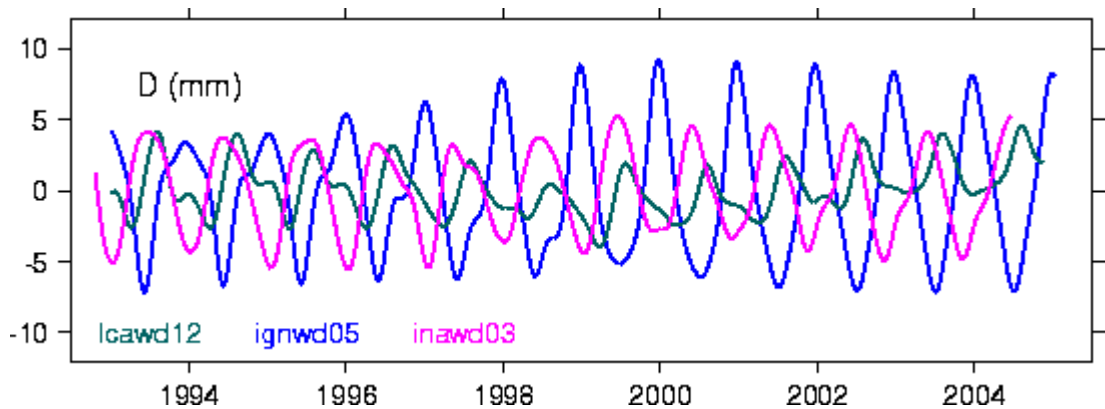


Figure 4. Annual component of TRF scales.
 Colour code: blue: ignwd05; pink: inawd03; green: lcawd12

Figure 5 shows the behaviour of the TRF scale time series under a spectral viewpoint, using the Allan graph description. The IGN series has a higher level of noise in the short term, and the LCA a higher noise level in the long term. The annual component signatures are barely visible in the noise context. The scale reaches a stability of 2-3 mm (0.4 ppb) for a one-year sampling time.

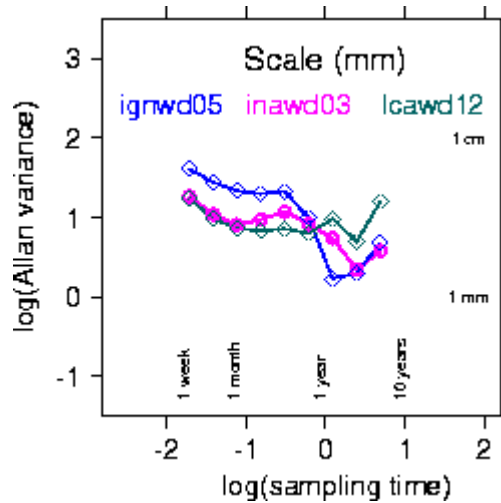


Figure 5. Spectral content of DORIS time series of TRF scale. Colour code: blue: ignwd05; pink: inawd03; green: lcawd12. A slope equal to -1 is the signature of white noise.

4. Station selections

The stations used for defining the datum in the CATREF analysis are listed in tables 6a (ign, ina, lca) and 6b (gsfc).

Table 6a. Datum stations for the the analysis of the ign, ina, lca series.

*CODE	PT	__DOMES__	T	__STATION DESCRIPTION__	APPROX_LON_	APPROX_LAT_	__APP_H_
ADEA	A	91501S001		ILE DES PETRELS antenn	140 00 05.1	-66 39 45.6	0.9
AREA	A	42202S005		AREQUIPA antenna	288 30 24.9	-16 27 56.6	2493.7
BADA	A	12338S001		BADARY antenna	102 14 05.7	51 46 11.0	812.3
CACB	A	41609S001		CACHOIERA PAULISTA ant	314 59 52.8	-22 40 57.8	571.1
CIBB	A	23101S001		CIBINONG antenna	106 50 55.8	-6 29 26.4	161.1
COLA	A	23501S001		COLOMBO	79 52 27.0	6 53 31.4	-76.8
DAKA	A	34101S004		DAKAR antenna	342 33 59.9	14 43 54.9	44.6
DIOA	A	12602S011		DIONYSOS antenna	23 55 58.3	38 04 42.2	513.6
DJIA	A	39901S002		DJIBOUTI antenna	42 50 47.9	11 31 34.7	716.0
EASA	A	41703S008		EASTER ISLAND antenna	250 36 58.8	-27 08 52.2	120.1
EVEB	A	21501S001		EVEREST antenna	86 48 47.3	27 57 29.3	4962.0
GALA	Z	42004S001		SAN CRISTOBAL antenna	270 23 01.6	-0 54 02.5	5.3
GOMB	A	40405S037		GOLDSTONE antenna	243 12 29.1	35 14 54.1	1041.1
GUAB	A	50501S001		GUAM antenna	144 54 50.4	13 32 23.0	290.9
KERB	A	91201S003		KERGUELEN antenna	70 15 45.7	-49 21 07.5	62.6
KOKA	A	40424S008		KAUAI antenna	200 20 04.7	22 07 23.2	1165.7
KRUB	A	97301S004		KOUROU antenna	307 21 36.7	5 05 55.0	109.8
MANA	A	22006S001		MANILLE antenna	121 02 28.2	14 32 07.6	87.0
META	A	10503S013		METSAHOVI antenna	24 23 04.2	60 14 31.2	62.9
NOUA	A	92701S001		NOUMEA antenna	166 24 37.4	-22 16 10.1	85.3
PURA	A	21604S003		PURPLE MOUNTAIN antenn	118 49 29.3	32 04 01.7	263.5
RIDA	A	40499S016		RICHMOND	279 36 39.7	25 37 25.4	-18.5
ROTA	A	66007S001		ROTHERA antenna	291 52 32.2	-67 34 09.5	26.9
TRIA	A	30604S001		TRISTAN DA CUNHA ant.	347 41 14.9	-37 03 55.0	48.6
WALA	A	92901S001		WALLIS antenna	183 49 13.9	-13 15 56.7	158.9
YELA	A	40127S007		YELLOWKNIFE antenna	245 31 11.6	62 28 51.3	186.4

Table 6b. Datum stations for the the analysis of the gsfc series.

*CODE	PT	__DOMES__	T	__STATION DESCRIPTION__	APPROX_LON_	APPROX_LAT_	__APP_H_
KIUB	A	12334S006		KIUBB antenna	66 53 07.3	39 08 05.0	623.4
KRAB	A	12349S001		KRASNOYARSK	92 47 36.6	55 59 35.6	216.9
PURA	A	21604S003		PURPLE MOUNTAIN antenn	118 49 29.3	32 04 01.7	263.5
ASDB	A	30602S004		ASCENCION	345 40 03.6	-7 54 58.5	38.5
LIBB	A	32809S003		LIBB	9 40 19.6	0 21 14.5	34.6
YELB	A	40127S008		YELLOWKNIFE antenna	245 31 12.5	62 28 51.9	182.0
GALA	Z	42004S001		SAN CRISTOBAL antenna	270 23 01.6	-0 54 02.5	5.3
CHAB	A	50207S001		CHATHAM ISLAND	183 26 00.9	-43 57 22.1	60.5
ADEB	A	91501S002		ILE DES PETRELS antenn	140 00 07.3	-66 39 54.6	-1.0
REUB	A	97401S002		LA REUNION	55 34 18.3	-21 12 30.1	1561.1

Willis & Ries have derived a core network for POD applications. The complete list is not yet available to us in machine readable form.

Le Bail & Feissel-Vernier have derived stability criteria based on the extra linear signal spectrum and the stability level for a one-year sampling time. See tables 10-12. More detail in K. Le Bail's presentation.

5. Station breaks

Table 7 gives the list of station breaks that were agreed upon in 2004.

Table 7. Datum stations for the the analysis of the gsfc series.

*CODE	PT	SOLN	T	_DATA_START_	_DATA_END_	COMMENTS
AREA	A	2	D	01:174:00000	000:00:00000	Earthquake, 23.06.2001
FAIB	A	2	D	02:307:00000	000:00:00000	Earthquake, 03.11.2002
SODB	A	2	D	02:276:00000	000:00:00000	Earthquake, 03.10.2002
COLA	A	2	D	94:320:00000	000:00:00000	
DIOA	A	2	D	95:091:00000	000:00:00000	
KRAB	A	2	D	99:001:00000	000:00:00000	Nov 1999???
SAKA	A	2	D	94:283:00000	001:32:00000	Earthquake, 04.10.1994
SAKA	A	3	D	01:329:00000	000:00:00000	

Additional comments by J. Ries follow.

- OTTA: Ottawa: several points have been defined for the same antenna using information contained in the DORISMail #0062 jan 4, 1999
- AMSA: all data have been deleted after Jan 1, 1996 (antenna fall)
- AMSB: Amsterdam all data have been deleted (antenna fall)
- SODA: All data have been deleted before Jan 1, 1996 (volcano depletion)
- Pascal has identified an additional break at TRIB on July 31 2004, due to an earthquake. Can that be confirmed by someone
- For COLA, the cause is an earthquake in our list. Can that be confirmed? It's nice to pin a real event to these when possible.
- Regarding AREA, we are dropping that as a break, in the sense that we now recommend no data after the quake be used. So there would be no break in the time series for AREA...it would just stop. There was too much non-linear motion after the quake for that data to be useable, even if a break is inserted

6. Problem stations

Table 8

Table 9. Stations detected as unstable by KLB-MFV. Acronym ending with Z refer to appended series of residual coordinates of successive stations in the same site.

ignwd05

DOMES	No	Stn	Start	End	#	%Ms	% Edited			%Expl_var. & Noise			Weight	Stb		
							E	N	U	PCT1	PCT2	PCT3	factor	Ind		
30313S001	MARA	1993.0	1998.5	5	19	0	0	1	87	Wh	12	Wh	1	Wh	3.42	3
30602S004	ASDB	1999.3	2005.0	5	23	1	0	0	60	Wh	39	Wh	2	Wh	1.75	3
30606S003	HELB	1998.3	2003.2	4	28	0	1	1	89	Wh	10	Wh	0	Wh	1.98	3
39901S002	DJIA	1993.0	2000.5	7	9	1	1	2	59	Wh	25	Wh	15	Wh	1.87	3
39901S000	DJIZ	1993.0	2005.0	11	18	2	1	2	59	Wh	28	Wh	13	Fl	2.03	3
40102S009	OTTA	1994.1	1998.0	3#	6	0	1	1	89	Fl	11	Fl	0	Wh	7.50	3
40102S000	OTTZ	1994.1	2000.6	6	6	0	1	1	82	Wh	16	Fl	2	Wh	6.26	3
40503S004	SODB	1998.4	2005.0	6	38#	4	2	5	62	Wh	27	Wh	12	Wh	2.24	3
40503S000	SODZ	1996.0	2005.0	8	36#	2	2	4	69	Wh	22	Wh	8	Wh	1.54	4
41609S001	CACB	1993.0	2003.2	10	30#	0	1	1	70	Wh	22	Wh	8	Wh	2.18	4
41705S008	SAOB	1997.1	2000.9	3#	46	0	2	1	86	Wh	13	Wh	0	Wh	1.87	3
92201S008	PAQB	1998.9	2005.0	6	17	3	2	2	59	Wh	32	Wh	9	Wh	2.37	3
92403S001	RAQB	1996.3	2004.6	8	22#	2	2	3	61	Wh	21	Wh	18	Wh	1.44	3

Table 9 (cont.). Stations detected as unstable by KLB-MFV. Acronym ending with Z refer to appended series of residual coordinates of successive stations in the same site.

inawd03

DOMES No	Stn	Start	End	#	%Ms	% Edited			%Expl_var. & Noise			Weight factor	Stb Ind			
						E	N	U	PCT1	PCT2	PCT3					
10503S013	META	1993.0	2000.8	7	3	2	1	1	58	Wh	35	Wh	7	Wh	2.92	3
22006S000	MANZ	1993.2	2004.5	11	13	3	2	3	49	Wh	30	Wh	21	Wh	2.24	4
34101S004	DAKA	1993.1	2001.0	7	7	1	2	0	67	Wh	31	Wh	1	Wh	2.30	3
39901S002	DJIA	1993.0	2000.5	7	4	2	2	3	68	Wh	25	Wh	7	Wh	2.37	3
39901S000	DJIZ	1993.0	2004.5	11	8	3	2	3	59	Wh	25	Wh	16	Wh	3.16	4
40503S003	SODA	1993.0	1997.8	4	21#	4	1	5	98	F1	2	Wh	0	Wh	3.05	3
40503S004	SODB	1998.4	2004.4	6	29#	4	3	5	74	F1	26	Wh	0	Wh	2.41	3
40503S000	SODZ	1993.0	2004.4	11	29#	5	7	8	95	Wh	3	Wh	1	Wh	6.50	4
41609S001	CACB	1993.0	2003.2	10	8#	2	2	1	72	Wh	25	Wh	3	Wh	3.33	4
41710S001	CARB	1993.0	2003.2	10	8#	2	2	1	72	Wh	25	Wh	3	Wh	3.33	4
91201S003	KERB	1994.9	2001.2	6	5	1	1	1	73	Wh	22	Wh	5	Wh	3.44	3
92403S001	RAQB	1996.3	2004.4	8	12#	3	1	2	74	Wh	22	Wh	4	Wh	2.91	3
92901S001	WALA	1993.0	2000.9	7	11	1	1	1	63	Wh	35	Wh	2	Wh	2.20	3

1cawd12

DOMES No	Stn	Start	End	#	%Ms	% Edited			%Expl_var. & Noise			Weight factor	Stb Ind			
						E	N	U	PCT1	PCT2	PCT3					
22006S000	MANZ	1993.2	2004.7	11	17	0	4	2	85	Wh	11	Wh	4	Wh	2.05	3
30313S002	MARB	1999.5	2004.6	5	31#	2	2	1	77	Wh	15	Wh	8	Wh	1.80	3
30602S004	ASDB	1999.4	2004.9	5	10	0	2	1	77	Wh	21	Wh	2	Wh	2.13	3
40102S009	OTTA	1994.1	1997.8	3#	28	2	1	1	89	Wh	11	Wh	0	Wh	.24	3
40408S000	FAIZ	1993.0	2002.8	9	7#	2	4	1	71	F1	27	Wh	3	Wh	3.37	3
40503S000	SODZ	1993.7	2004.9	11	32#	1	8	6	84	Wh	11	Wh	5	Wh	1.70	3
41609S001	CACB	1993.0	2003.2	10	15#	0	2	1	64	Wh	19	Wh	18	Wh	1.61	4
41703S008	EASA	1993.0	2001.0	7	9	0	6	1	84	Wh	15	Wh	1	Wh	1.72	3
92403S001	RAQB	1996.4	2004.6	8	15#	2	5	2	76	Wh	19	Wh	5	Wh	2.67	3

7. What contribution of IDS to ITRF2004?

Expertise on TRF stability/accuracy/systematic errors

- TRF origin: seasonality, interannual and long term behaviour
- TRF scale: seasonality, interannual and long term behaviour
- ...

Expertise on station quality

- Stability
- Reliability
- Breaks
- ...

Combined product

- ...
- ...

- Table 10. Quality indices for DORIS stations with time series longer than 3.1 years (KLB-MFV). Acronym ending with Z refer to appended series of residual coordinates of successive stations in the same site.

ignwd05

DOMES No	Stn	Start	End	#	%Ms			% Edited			%Expl_var. & Noise			Weight	
					E	N	U	E	N	U	EOF1	EOF2	EOF3		
Components:		Amplitude annual			One-yr Std Dev			1-yr All_StDv & Noise			Stab. index				
(mm)	E	N	U	E	N	U	E	N	U						
10003S000	TLSZ	1993.0	2005.0	11	6	1	2	2	77	Wh	12	Wh	11	Wh	1.77
		3.2	3.6	4.0	1.7	1.2	1.4	2.0	Wh	4.3	Wh	3.3	Wh		1
10003S001	TLSA	1993.0	1997.6	4	3	1	1	0	87	Wh	13	Wh	0	Wh	.92
		3.1<	7.0	1.4<	1.8	1.3	1.6	1.5	Wh	2.7	Wh	.5	Wh		1
10003S003	TLHA	1997.6	2005.0	7	8	1	2	3	85	Wh	11	Fl	4	Wh	2.38
		4.1	2.4	4.9	1.7	1.2	1.3	2.1	Wh	5.2	Wh	3.7	Wh		1
10202S000	REYZ	1993.0	2005.0	11	12	2	2	2	54	Wh	28	Wh	18	Wh	2.43
		1.8<	6.0	10.6	1.4	1.3	1.4	5.8	Wh	4.0	Wh	6.0	Wh		1
10202S002	REYB	1998.9	2004.7	5	6	2	3	2	69	Wh	29	Wh	2	Wh	3.33
		2.5	7.8	10.9	1.3	1.1	1.2	3.6	Wh	3.6	Fl	7.1	Wh		2
10202S001	REYA	1993.0	1998.7	5	12	1	0	0	95	Wh	4	Wh	1	Wh	3.47
		.7<	1.6<	11.7	1.6	1.5	1.6	5.1	Wh	4.6	Wh	7.0	Wh		1
10317S002	SPIA	1993.0	1999.2	6	3	1	2	0	71	Fl	18	Wh	12	Wh	2.21
		2.1	8.0	16.3	1.1	1.1	1.0	2.5	Wh	4.1	Wh	3.2	Wh		1
10317S004	SPIB	1999.6	2003.6	4	23	2	1	2	80	Fl	18	Wh	2	Wh	2.59
		5.0	6.4	30.6	1.0	1.1	1.0	4.1	Wh	.9	Wh	3.9	Fl		1
10503S015	METB	2000.9	2005.0	4	28#	3	2	3	99	Wh	1	Wh	0	Wh	1.62
		5.7	4.6	13.4	4.5	3.4	3.7	1.6	Wh	3.2	Wh	10.6	Wh		1
10503S013	META	1993.0	2000.8	7	5	0	1	1	53	Wh	30	Wh	17	Wh	2.24
		11.4	6.6	10.0	1.8	1.7	1.7	6.7	Wh	5.9	Wh	6.5	Wh		4
12334S006	KIUB	2001.4	2004.9	3#	17	3	1	3	77	Wh	23	Wh	0	Wh	2.75
		3.2	10.4	1.6<	1.4	.9	1.1	5.5	Wh	1.8	Fl	2.2	Wh		1
12334S005	KITB	1996.4	2001.3	4	33#	0	2	1	83	Wh	16	Wh	0	Wh	.64
		1.6<	5.0	4.0	3.3	2.4	2.6	2.5	Wh	3.0	Wh	.8	Wh		1
12334S004	KITA	1993.0	1996.4	3#	13	1	1	2	90	Wh	10	Wh	0	Wh	2.17
		1.1<	6.6	9.7	1.7	1.2	1.4	5.9	Fl	2.2	Wh	1.2	Wh		1
12338S001	BADA	1993.0	2002.5	9	18#	0	0	0	86	Wh	11	Wh	3	Wh	2.88
		.7<	11.9	5.4	1.8	1.4	1.5	2.8	Wh	5.2	Wh	7.8	Wh		2
12349S001	KRAB	1997.8	2005.0	7	22#	3	3	4	86	Wh	12	Wh	1	Wh	1.27
		5.9	16.5	6.6	2.1	1.5	1.7	3.5	Wh	3.4	Wh	1.8	Wh		1
12602S011	DIOA	1993.1	2005.0	11	29#	1	2	3	74	Wh	21	Wh	5	Wh	1.58
		2.0<	1.9	8.5	3.9	2.7	3.6	9.0	Wh	3.5	Wh	6.4	Wh		2
21604S003	PURA	1993.1	2005.0	11	32#	1	3	3	48	Wh	40	Wh	12	Wh	1.41
		7.1	9.4	6.7	2.5	1.7	2.1	6.1	Wh	4.7	Wh	3.7	Wh		2
22006S001	MANA	1993.2	2003.0	9	30	0	0	1	68	Wh	17	Wh	15	Wh	1.65
		4.6	5.1	2.7<	2.8	1.8	2.5	6.1	Wh	5.0	Wh	6.7	Wh		3
22006S000	MANZ	1993.2	2004.6	11	31	0	0	1	60	Wh	32	Wh	8	Wh	1.68
		5.5	5.8	2.6<	2.9	1.8	2.5	5.5	Wh	8.0	Wh	5.9	Wh		2
23101S001	CIBB	1993.1	2000.7	7	28	1	1	1	56	Wh	29	Wh	15	Wh	1.24
		4.7	4.5	11.1	2.7	1.6	2.2	5.2	Wh	4.4	Wh	3.4	Wh		1
23101S000	CIBZ	1993.1	2005.0	11	27	2	2	2	55	Wh	32	Wh	13	Wh	1.26
		2.5	2.3	11.0	2.5	1.5	2.0	4.4	Wh	4.2	Wh	4.2	Wh		1
23101S002	CICB	2001.1	2005.0	3#	19	3	2	1	64	Wh	36	Wh	1	Wh	1.37
		2.0<	1.3<	10.6	1.7	1.0	1.3	1.5	Wh	3.7	Wh	1.4	Wh		1
30302S202	HBKA	1993.0	1997.4	4	4	0	1	0	75	Wh	24	Wh	2	Wh	2.39
		4.4	8.6	2.6<	1.9	1.3	1.6	6.8	Wh	4.4	Fl	1.8	Wh		2
30302S206	HBKB	2000.6	2004.8	4	13	2	2	2	91	Wh	6	Wh	3	Wh	1.40
		5.0	15.4	1.8<	1.6	1.1	1.3	1.6	Wh	2.1	Wh	2.6	Wh		1
30302S200	HBKZ	1993.0	2004.8	11	9	1	1	2	62	Wh	24	Wh	14	Wh	1.49
		3.3	12.2	1.2<	1.9	1.2	1.5	3.1	Wh	3.8	Wh	3.7	Wh		1
30302S005	HBLA	1997.5	2000.6	3#	9	1	0	1	81	Wh	19	Wh	0	Wh	2.50
		.5<	13.1	2.4<	2.2	1.4	1.8	7.6	Wh	5.0	Wh	.1	Wh		1

ignwd05

DOMES No	Stn	Start	End	#	%Ms	% Edited			%Expl_var. & Noise			Weight				
						E	N	U	EOF1	EOF2	EOF3	factor				

Components:	Amplitude	annual		One-yr Std Dev			1-yr All_StDv & Noise			Stab.						
(mm)	E	N	U	E	N	U	E	N	U		index					

30313S001	MARA	1993.0	1998.5	5	19	0	0	1	87	Wh	12	Wh	1	Wh	3.42	
		2.0<	5.8	5.3	2.6	2.0	2.3		13.0	Wh	7.7	Wh	6.0	Wh		3
30313S002	MARB	1999.5	2004.3	4	35#	1	1	2	95	Wh	5	Fl	0	Wh	2.18	
		5.5	17.7	5.5	4.7	3.8	7.3		20.1	Wh	5.0	Fl	9.0	Wh		3
30602S004	ASDB	1999.3	2005.0	5	23	1	0	0	60	Wh	39	Wh	2	Wh	1.75	
		8.3	4.4	12.8	2.9	1.7	2.3		6.5	Wh	5.4	Wh	5.4	Wh		3
30606S002	HELA	1993.1	1997.3	4	16	0	1	2	87	Wh	12	Wh	1	Wh	1.14	
		1.8<	4.1	1.0<	2.6	1.5	2.0		1.3	Wh	4.4	Wh	1.1	Wh		1
30606S003	HELB	1998.3	2003.2	4	28	0	1	1	89	Wh	10	Wh	0	Wh	1.98	
		9.0	2.8<	1.3<	2.7	1.6	2.0		5.5	Wh	6.3	Fl	4.9	Wh		3
30604S001	TRIA	1993.1	2001.4	8	8	0	0	0	82	Wh	10	Wh	8	Wh	1.49	
		3.9	4.7	4.0	2.1	1.5	1.7		4.0	Wh	3.3	Wh	4.6	Wh		1
31906S000	PDLZ	1999.0	2005.0	5	19	6	4	4	87	Wh	11	Wh	2	Wh	1.93	
		5.6	7.3	8.6	2.0	1.3	1.5		4.8	Wh	3.0	Wh	2.2	Wh		1
31906S002	PDMB	2001.8	2005.0	3#	10	2	1	1	95	Wh	3	Wh	1	Wh	2.26	
		6.3	7.9	9.6	1.5	1.0	1.1		4.2	Wh	2.0	Wh	1.9	Wh		1
31903S001	SAMB	1994.0	1997.8	3#	32	0	0	0	56	Wh	33	Wh	11	Wh	1.25	
		3.4<	13.2	14.8	3.6	2.6	3.1		7.5	Wh	1.9	Wh	4.9	Wh		1
32809S002	LIBA	1993.0	1999.1	6	13	0	0	1	67	Wh	27	Wh	6	Wh	1.27	
		3.8<	8.4	4.6	2.7	1.5	2.2		5.1	Wh	3.7	Wh	3.3	Wh		1
32809S003	LIBB	1999.2	2005.0	5	15	3	1	0	71	Wh	17	Wh	12	Wh	1.30	
		4.8	9.2	7.5	2.1	1.2	1.5		3.9	Wh	1.5	Wh	2.9	Wh		1
32809S000	LIBZ	1993.0	2005.0	11	15	2	1	3	51	Wh	35	Wh	14	Wh	1.52	
		4.4	5.4	6.3	2.4	1.4	1.9		5.1	Wh	3.6	Wh	4.9	Wh		1
34101S004	DAKA	1993.3	2001.0	7	10	0	1	1	82	Wh	18	Wh	1	Wh	2.41	
		3.6	5.6	2.0<	2.5	1.5	1.9		8.6	Wh	4.2	Wh	3.3	Wh		1
39801S005	MAHB	2001.5	2005.0	3#	28	4	5	6	81	Wh	19	Wh	0	Wh	1.80	
		3.1<	7.0	7.2	2.0	1.2	1.8		5.7	Wh	.6	Wh	1.7	Wh		1
39901S002	DJIA	1993.0	2000.5	7	9	1	1	2	59	Wh	25	Wh	15	Wh	1.87	
		7.5	.8<	13.4	2.0	1.3	1.8		4.6	Wh	5.7	Wh	5.8	Wh		3
39901S003	DJIB	2000.6	2005.0	4	32	4	4	4	67	Wh	32	Wh	1	Wh	2.16	
		3.2<	5.0	10.9	2.0	1.3	1.8		1.5	Wh	5.0	Wh	6.3	Wh		2
39901S000	DJIZ	1993.0	2005.0	11	18	2	1	2	59	Wh	28	Wh	13	Fl	2.03	
		3.6	3.0	11.4	2.0	1.3	1.8		5.3	Wh	4.9	Fl	7.2	Wh		3
40102S009	OTTA	1994.1	1998.0	3#	6	0	1	1	89	Fl	11	Fl	0	Wh	7.50	
		4.0<	11.4	5.4	1.8	1.3	1.5		20.5	Fl	6.7	Wh	5.8	Wh		3
40102S000	OTTZ	1994.1	2000.6	6	6	0	1	1	82	Wh	16	Fl	2	Wh	6.26	
		1.2<	9.0	5.7	1.8	1.3	1.5		7.4	Wh	17.6	Fl	4.6	Wh		3
40101S002	STJB	1999.8	2005.0	5	8	0	2	0	60	Wh	34	Fl	6	Wh	1.99	
		3.7	6.0	9.0	1.5	1.1	1.2		2.3	Wh	3.4	Wh	5.4	Fl		1
40127S007	YELA	1993.0	2001.8	8	1	0	1	1	60	Wh	31	Wh	9	Wh	1.78	
		5.5	5.2	8.3	1.2	1.2	1.3		3.0	Wh	3.3	Wh	3.6	Wh		1
40127S008	YELB	2001.8	2005.0	3#	2	1	2	0	93	Wh	6	Wh	1	Wh	1.97	
		4.5	.4<	10.0	.9	.7	.8		2.0	Wh	1.1	Wh	1.7	Fl		1
40127S000	YELZ	1993.0	2005.0	11	2	1	3	2	58	Wh	25	Wh	18	Wh	1.81	
		4.7	3.0	9.2	1.2	1.1	1.1		3.8	Wh	2.6	Wh	2.3	Wh		1
40408S004	FAIA	1993.0	1999.4	6	1	1	1	0	50	Wh	45	Wh	5	Wh	2.07	
		3.4	5.4	10.5	1.2	1.2	1.2		1.7	Wh	2.6	Wh	5.5	Wh		1
40408S000	FAIZ	1993.0	2002.8	9	7	1	1	0	72	Wh	23	Wh	4	Wh	3.08	
		2.7	3.8	4.9	1.2	1.2	1.2		2.8	Wh	3.8	Wh	7.2	Wh		2
40405S037	GOMB	1996.8	2004.7	7	16#	1	1	1	63	Wh	33	Wh	5	Wh	.85	
		7.5	5.7	1.8	2.6	1.8	2.2		3.3	Wh	2.7	Wh	3.6	Wh		1
40424S008	KOKA	1993.0	2002.8	9	16	0	0	1	51	Wh	39	Wh	10	Wh	1.82	
		8.8	3.4	1.4<	1.9	1.3	1.5		6.4	Wh	2.4	Wh	2.7	Wh		1
40424S000	KOKZ	1993.0	2005.0	11	16	1	1	1	62	Wh	28	Wh	10	Wh	1.81	
		9.2	3.8	2.0	1.8	1.2	1.4		4.5	Wh	3.1	Wh	4.5	Wh		1

ignwd05

DOMES No	Stn	Start	End	#	%Ms	% Edited			%Expl_var. & Noise			Weight				
						E	N	U	EOF1	EOF2	EOF3	factor				

Components:	Amplitude	annual		One-yr Std Dev			1-yr All_StDv & Noise			Stab.						
(mm)	E	N	U	E	N	U	E	N	U		index					

40451S176	GREB	2000.5	2005.0	4	8	1	2	0	60	Wh	37	Fl	3	Wh	1.48	
		6.1	6.2	10.3	1.5	1.0	1.2		2.0	Wh	2.4	Fl	3.7	Fl		1
40499S016	RIDA	1993.1	2005.0	11	18#	0	1	2	51	Wh	34	Wh	15	Wh	1.73	
		4.3	5.6	8.2	2.3	1.4	1.8		5.8	Wh	5.6	Wh	3.2	Wh		1
40503S004	SODB	1998.4	2005.0	6	38#	4	2	5	62	Wh	27	Wh	12	Wh	2.24	
		8.4	7.1	4.6	2.7	1.7	2.2		7.4	Wh	7.2	Wh	7.3	Wh		3
40503S000	SODZ	1996.0	2005.0	8	36#	2	2	4	69	Wh	22	Wh	8	Wh	1.54	
		6.7	6.6	4.2	3.8	2.4	3.3		5.3	Wh	9.1	Wh	7.9	Wh		4
41507S004	RIOB	1995.1	2001.0	5	5	0	1	1	75	Wh	23	Wh	2	Wh	2.20	
		2.6<	2.3<	2.4	1.8	1.7	1.8		6.6	Wh	2.0	Wh	4.1	Wh		2
41507S000	RIOZ	1993.0	2004.9	11	6	1	4	2	45	Wh	31	Wh	23	Wh	1.72	
		2.8	6.2	3.0	1.6	1.5	1.6		5.1	Wh	3.8	Wh	3.9	Wh		1
41507S005	RIPB	2001.2	2004.9	3#	6	2	2	3	74	Wh	25	Wh	1	Wh	1.04	
		6.7	7.3	3.1	1.0	.8	.9		3.2	Wh	.2	Wh	.5	Wh		1
41609S001	CACB	1993.0	2003.2	10	30#	0	1	1	70	Wh	22	Wh	8	Wh	2.18	
		3.0<	6.9	2.0<	3.0	2.1	2.4		9.4	Wh	8.7	Wh	9.3	Wh		4
41703S008	EASA	1993.0	2001.0	7	21	0	1	1	46	Wh	38	Wh	17	Wh	1.36	
		2.2<	8.5	7.5	2.2	1.6	1.7		2.8	Wh	2.6	Wh	6.3	Wh		1
41703S009	EASB	2001.7	2005.0	3#	23	3	1	1	62	Wh	38	Wh	0	Wh	1.20	
		.6<	7.3	5.5	1.5	1.1	1.2		.6	Wh	3.1	Wh	2.0	Wh		1
41705S007	SANA	1993.1	1996.8	3#	22	0	1	0	89	Wh	10	Wh	1	Wh	2.84	
		4.7<	13.4	4.5<	3.0	2.1	2.5		11.3	Wh	5.8	Wh	4.7	Wh		2
41705S009	SANB	2001.5	2005.0	3#	12	1	2	2	59	Wh	39	Fl	2	Wh	1.97	
		6.9	9.9	4.5	1.4	.9	1.1		2.7	Fl	1.0	Fl	5.5	Wh		1
41705S008	SAOB	1997.1	2000.9	3#	46	0	2	1	86	Wh	13	Wh	0	Wh	1.87	
		7.3	9.6	7.4	4.7	3.2	3.8		5.4	Wh	13.5	Wh	4.6	Wh		3
42202S000	AREZ	1993.6	2001.4	7	25	0	1	1	80	Wh	13	Wh	7	Wh	1.83	
		6.4	1.1<	8.9	3.7	2.2	2.7		9.0	Wh	2.8	Wh	5.8	Wh		2
42202S005	AREA	1993.6	2001.4	7	25	0	1	1	80	Wh	13	Wh	7	Wh	1.83	
		6.4	1.1<	8.9	3.7	2.2	2.7		9.0	Wh	2.8	Wh	5.8	Wh		2
50103S201	ORRA	1993.0	1996.2	3#	25	0	1	1	63	Wh	36	Wh	1	Wh	1.35	
		10.5	11.5	3.9<	2.9	2.1	2.5		3.1	Wh	5.4	Wh	4.7	Wh		1
50107S006	YARA	1993.0	1999.8	6	17	0	0	0	66	Wh	31	Wh	3	Wh	2.89	
		7.6	5.8	4.0	2.5	1.7	2.0		1.9	Wh	5.5	Wh	12.3	Wh		1
50107S010	YARB	1999.8	2003.9	4	13	1	3	2	97	Wh	3	Wh	0	Wh	1.77	
		2.9	3.6	9.1	1.6	1.1	1.3		.5	Wh	4.3	Wh	.7	Wh		1
50119S002	MSOB	1999.0	2003.0	4	9	0	0	3	86	Fl	12	Wh	2	Wh	2.25	
		1.2<	15.8	5.5	2.0	1.4	1.6		5.4	Wh	4.8	Wh	1.1	Wh		1
50207S001	CHAB	1999.2	2005.0	5	24	2	3	4	83	Wh	14	Wh	2	Wh	1.45	
		3.7	11.5	4.8	1.7	1.3	1.4		1.8	Wh	2.6	Wh	3.3	Wh		1
50501S001	GUAB	1994.0	2000.6	6	17	0	0	0	60	Wh	37	Wh	3	Wh	2.41	
		2.8<	9.4	4.7	2.3	1.6	2.0		9.9	Wh	2.8	Wh	4.0	Wh		1
66007S001	ROTA	1993.0	2004.2	11	3	1	1	2	50	Wh	39	Wh	11	Wh	2.16	
		4.9	6.0	6.2	1.1	1.1	1.2		3.7	Wh	4.8	Wh	3.2	Wh		1
66006S001	SYOB	1993.3	1998.3	4	0	0	1	1	97	Wh	3	Wh	0	Wh	3.21	
		3.5	6.5	6.8	1.0	1.0	1.0		3.8	Wh	4.0	Wh	1.0	Wh		1
66006S003	SYPB	1999.3	2005.0	5	3	1	2	1	90	Wh	8	Fl	2	Wh	3.67	
		7.3	11.3	7.6	.8	.8	.8		3.4	Wh	2.1	Wh	4.0	Fl		1
91201S003	KERB	1994.9	2001.2	6	9	1	1	1	89	Wh	8	Wh	2	Wh	3.61	
		6.3	11.3	6.3	1.7	1.4	1.5		6.8	Wh	7.8	Wh	.9	Wh		1
91201S004	KESB	2001.3	2005.0	3#	22#	1	1	1	51	Wh	49	Fl	0	Wh	2.11	
		7.8	13.1	1.3<	1.7	1.2	1.4		1.8	Wh	6.2	Wh	4.0	Wh		1
91401S003	AMTB	2001.3	2005.0	3#	38	0	2	2	85	Wh	11	Wh	4	Wh	1.42	
		5.3	12.4	6.1	2.1	1.4	1.6		.5	Wh	5.0	Wh	2.5	Fl		1
91501S001	ADEA	1993.0	2002.2	9	3	0	1	0	78	Wh	14	Wh	8	Wh	2.72	
		2.1<	13.1	2.9	1.1	1.1	1.1		5.0	Wh	3.4	Wh	3.1	Wh		1

ignwd05

DOMES No	Stn	Start	End	#	%Ms	% Edited			%Expl_var. & Noise			Weight				
						E	N	U	EOF1	EOF2	EOF3	factor				

Components:	Amplitude	annual		One-yr Std Dev			1-yr All_StDv & Noise			Stab.						
(mm)	E	N	U	E	N	U	E	N	U				index			

91501S000	ADEZ	1993.0	2005.0	11	13#	1	2	0	66	Wh	26	Wh	8	Wh	2.84	
		2.1	13.8	1.6		1.1	1.1	1.1	4.4	Wh	4.9	Wh	4.0	Wh		1
92201S008	PAQB	1998.9	2005.0	6	17	3	2	2	59	Wh	32	Wh	9	Wh	2.37	
		6.8	16.9	6.9		2.0	1.4	1.7	6.7	Fl	1.5	Wh	7.6	Wh		3
92403S001	RAQB	1996.3	2004.6	8	22#	2	2	3	61	Wh	21	Wh	18	Wh	1.44	
		4.9	14.0	5.3		2.6	1.9	2.3	5.9	Wh	6.6	Wh	4.4	Wh		3
92701S001	NOUA	1993.0	2000.5	7	21	1	1	0	76	Wh	18	Wh	6	Wh	2.25	
		3.2<	11.5	10.1		3.1	2.0	2.6	7.3	Wh	6.4	Wh	7.8	Wh		2
92902S001	FUTB	2001.1	2005.0	3#	34#	3	1	4	96	Wh	4	Wh	0	Wh	.76	
		4.7	9.5	10.5		2.0	1.4	1.5	1.2	Wh	1.6	Wh	1.1	Wh		1
92901S001	WALA	1993.0	2000.9	7	24	0	0	1	80	Wh	16	Wh	4	Wh	1.61	
		3.0<	2.7<	6.2		3.4	2.1	2.6	6.1	Wh	4.7	Wh	4.7	Wh		2
97301S004	KRUB	1993.0	2005.0	11	24#	1	1	2	77	Wh	20	Wh	3	Wh	2.09	
		4.2	3.5	4.0		2.0	1.3	1.8	3.2	Wh	7.1	Wh	2.5	Wh		1
97401S001	REUA	1993.0	1998.9	5	16	1	0	0	78	Wh	20	Wh	3	Wh	1.92	
		5.3	3.6	7.4		2.3	1.5	1.9	5.3	Wh	3.3	Wh	4.3	Wh		1
97401S002	REUB	1999.0	2005.0	6	16	2	2	2	78	Wh	18	Wh	4	Wh	1.16	
		4.1	10.3	3.0		1.8	1.2	1.5	2.3	Wh	3.4	Wh	1.6	Wh		1
97401S000	REUZ	1993.0	2005.0	11	16	1	1	1	58	Wh	35	Wh	7	Wh	1.37	
		4.5	7.1	4.3		2.0	1.3	1.7	4.3	Wh	3.1	Wh	3.0	Wh		1

Table 11. Quality indices for DORIS stations with time series longer than 3.1 years (KLB-MFV). Acronym ending with Z refer to appended series of residual coordinates of successive stations in the same site.

inawd03

DOMES No	Stn	Start	End	#	%Ms			% Edited			%Expl_var. & Noise			Weight factor	
					E	N	U	E	N	U	EOF1	EOF2	EOF3		
Components:		Amplitude annual			One-yr Std Dev			1-yr All_StDv & Noise			Stab. index				
(mm)		E	N	U	E	N	U	E	N	U					
10003S000	TLSZ	1993.0	2004.5	11	1	2	2	2	59	Wh	31	Wh	11	Wh	2.05
		4.1	4.0	3.8	1.7	1.2	1.4	4.9	Wh	4.8	Wh	4.5	Fl		1
10003S001	TLZA	1993.0	1997.6	4	3	2	2	1	95	Wh	4	Wh	1	Wh	.97
		3.5<	7.5	1.9<	1.8	1.4	1.6	2.5	Wh	1.4	Wh	.3	Wh		1
10003S003	TLHA	1997.6	2004.5	6	0	2	2	2	75	Wh	18	Fl	6	Wh	2.83
		5.3	2.9	4.9	1.6	1.1	1.2	4.9	Wh	3.1	Wh	5.3	Fl		2
10202S000	REYZ	1993.0	2004.5	11	9	2	2	3	64	Wh	30	Wh	6	Wh	3.19
		2.4	7.0	11.7	1.5	1.3	1.4	5.3	Wh	7.8	Wh	5.3	Fl		2
10202S002	REYB	1998.7	2004.5	5	4	3	3	3	77	Wh	20	Wh	2	Wh	2.96
		3.8	9.5	12.8	1.3	1.1	1.2	3.4	Wh	4.9	Fl	6.1	Wh		1
10202S001	REYA	1993.0	1998.7	5	12	1	2	0	88	Wh	11	Wh	1	Wh	3.17
		.3<	3.7	9.3	1.6	1.5	1.6	3.1	Wh	4.0	Wh	8.2	Wh		1
10317S002	SPIA	1993.0	1999.2	6	5	2	2	1	82	Wh	15	Wh	3	Wh	3.16
		1.5<	6.7	15.4	1.1	1.2	1.0	3.5	Wh	3.5	Wh	5.4	Fl		1
10317S004	SPIB	1999.6	2003.6	4	22	1	3	1	77	Fl	22	Wh	1	Wh	2.76
		5.3	6.3	30.8	1.0	1.1	1.0	4.9	Wh	1.4	Wh	4.2	Fl		1
10503S015	METB	2000.9	2004.5	3#	30#	4	4	3	96	Wh	4	Wh	0	Wh	4.06
		4.6	6.2	11.4	1.6	1.3	1.4	8.2	Wh	.6	Wh	6.4	Wh		1
10503S013	META	1993.0	2000.8	7	3	2	1	1	58	Wh	35	Wh	7	Wh	2.92
		13.9	7.6	10.7	1.8	1.6	1.7	6.5	Wh	8.3	Wh	8.1	Wh		3
12334S005	KITB	1996.4	2001.3	4	27#	3	5	4	95	Wh	5	Wh	1	Wh	2.73
		2.0<	6.9	6.8	3.2	2.2	2.5	.7	Wh	9.4	Wh	9.2	Wh		1
12334S004	KITA	1993.0	1996.4	3#	12	1	1	3	88	Wh	12	Wh	0	Wh	1.59
		.3<	6.3	8.9	1.7	1.2	1.4	3.9	Wh	3.6	Wh	1.0	Wh		1
12338S001	BADA	1993.0	2002.7	9	15#	2	1	1	90	Wh	8	Wh	2	Wh	2.82
		.8<	11.1	6.2	1.8	1.4	1.5	1.7	Wh	5.2	Wh	7.3	Wh		2
12349S001	KRAB	1997.8	2004.5	6	21#	3	2	4	88	Wh	11	Wh	1	Wh	1.73
		7.6	17.0	5.0	2.2	1.6	1.8	5.8	Wh	4.5	Wh	3.0	Wh		1
12602S011	DIOA	1993.0	2004.5	11	20#	6	4	5	54	Wh	40	Wh	6	Wh	1.11
		3.1	1.3<	9.8	3.1	2.2	2.6	5.0	Wh	3.0	Wh	5.3	Wh		1
21604S003	PURA	1993.0	2004.5	11	20#	5	4	5	57	Wh	30	Wh	13	Wh	1.93
		5.4	11.7	9.1	2.5	1.8	2.1	8.6	Wh	4.5	Wh	5.8	Wh		4
22006S001	MANA	1993.2	2003.0	9	11	3	2	3	72	Wh	18	Wh	10	Wh	1.88
		7.6	11.6	3.4	2.5	1.5	2.2	6.1	Wh	5.4	Wh	4.5	Wh		2
22006S000	MANZ	1993.2	2004.5	11	13	3	2	3	49	Wh	30	Wh	21	Wh	2.24
		7.8	11.4	3.4	2.5	1.5	2.2	8.6	Wh	7.4	Wh	8.1	Wh		4
23101S001	CIBB	1993.0	2000.7	7	14	3	2	3	60	Wh	27	Wh	13	Wh	2.04
		1.3<	6.4	12.8	2.5	1.5	2.0	8.6	Wh	4.0	Wh	3.7	Wh		2
23101S000	CIBZ	1993.0	2004.5	11	13	4	3	4	62	Wh	28	Wh	11	Wh	1.81
		.9<	3.6	11.7	2.4	1.4	2.0	7.0	Wh	3.2	Wh	4.8	Wh		2
23101S002	CICB	2001.1	2004.5	3#	2	1	2	1	84	Wh	15	Wh	0	Wh	1.88
		2.0<	1.5<	11.0	1.7	1.1	1.4	1.1	Wh	.1	Wh	5.2	Wh		1
30302S202	HBKA	1993.0	1997.4	4	3	2	2	1	66	Wh	31	Wh	2	Wh	2.33
		3.8<	8.5	2.7<	1.9	1.3	1.6	6.6	Wh	4.7	Wh	2.2	Wh		2
30302S206	HBKB	2000.6	2004.5	3#	1	1	2	2	85	Wh	12	Wh	3	Wh	1.23
		6.2	16.1	2.5	1.5	1.0	1.2	.1	Wh	3.0	Wh	.2	Wh		1
30302S200	HBKZ	1993.0	2004.5	11	2	2	2	3	47	Wh	32	Wh	21	Wh	2.04
		3.6	12.8	1.6	1.8	1.2	1.5	6.0	Wh	4.8	Wh	4.5	Wh		2
30302S005	HBLA	1997.5	2000.6	3#	1	1	1	2	79	Wh	21	Wh	0	Wh	3.76
		4.4<	13.6	5.7	2.0	1.3	1.6	10.7	Wh	3.4	Wh	4.5	Wh		1
30313S001	MARA	1993.0	1998.5	5	8	4	2	4	98	Wh	1	Wh	1	Wh	4.94
		2.3<	9.8	5.0	2.5	1.8	2.1	15.9	Wh	9.3	Wh	3.3	Wh		2

inawd03

DOMES No	Stn	Start	End	#	%Ms	% Edited			%Expl_var. & Noise			Weight	
						E	N	U	EOF1	EOF2	EOF3	factor	

Components:	Amplitude	annual		One-yr Std Dev			1-yr All_StDv & Noise			Stab.			
(mm)	E	N	U	E	N	U	E	N	U		index		

30313S002	MARB	1999.5	2004.5	4	28#	4	3	4	93 Wh	7 Wh	0 Wh	5.96	
		4.6	22.0	5.1		2.0	1.5	1.8	1.2 Wh	19.0 Fl	2.2 Wh		2
30602S004	ASDB	1999.3	2004.5	5	3	4	2	3	70 Wh	26 Wh	4 Wh	1.59	
		6.3	3.2	13.4		2.7	1.6	2.2	6.8 Wh	3.8 Wh	2.2 Wh		1
30606S002	HELA	1993.0	1997.3	4	9	1	2	2	74 Wh	25 Wh	1 Wh	1.35	
		4.2<	4.7	1.1<		2.6	1.5	2.0	3.9 Wh	4.7 Wh	1.2 Wh		1
30606S003	HELB	1998.3	2003.2	4	10	2	3	1	81 Wh	19 Fl	0 Wh	1.83	
		8.3	6.2	2.7<		2.5	1.5	1.9	6.6 Wh	6.1 Fl	5.8 Wh		2
30604S001	TRIA	1993.0	2001.4	8	3	1	1	1	88 Wh	9 Wh	3 Wh	2.71	
		3.8	3.2	5.6		2.0	1.4	1.6	3.7 Wh	2.4 Wh	8.4 Wh		2
31906S000	PDLZ	1998.9	2004.5	5	2	6	6	7	87 Wh	13 Wh	0 Wh	3.15	
		3.9<	9.1	9.3		2.0	1.4	1.5	5.5 Wh	2.3 Wh	8.2 Wh		1
31903S001	SAMB	1994.0	1997.9	3#	4	1	2	2	93 Wh	7 Wh	1 Wh	2.42	
		11.9	10.2	13.8		2.9	2.1	2.5	6.8 Wh	1.9 Wh	9.1 Wh		1
32809S002	LIBA	1993.0	1999.1	6	7	1	1	0	83 Wh	15 Wh	1 Wh	1.78	
		4.6	8.8	6.2		2.6	1.5	2.1	6.6 Wh	3.9 Wh	2.7 Wh		1
32809S003	LIBB	1999.2	2004.5	5	0	3	3	2	79 Wh	16 Wh	5 Wh	1.47	
		2.9<	11.0	8.8		2.1	1.2	1.5	2.3 Wh	2.1 Wh	4.5 Wh		1
32809S000	LIBZ	1993.0	2004.5	11	5	2	3	3	67 Wh	23 Wh	10 Wh	1.21	
		3.6	5.7	7.9		2.3	1.3	1.8	1.9 Wh	3.4 Wh	4.2 Wh		1
34101S004	DAKA	1993.1	2001.0	7	7	1	2	0	67 Wh	31 Wh	1 Wh	2.30	
		4.4	8.2	2.3		2.4	1.4	1.8	8.4 Wh	6.4 Wh	3.4 Wh		3
39901S002	DJIA	1993.0	2000.5	7	4	2	2	3	68 Wh	25 Wh	7 Wh	2.37	
		5.6	2.9	12.9		1.9	1.3	1.7	3.2 Wh	7.1 Wh	6.5 Wh		3
39901S003	DJIB	2000.6	2004.5	3#	16	3	5	5	94 Wh	6 Wh	0 Wh	2.38	
		7.2	4.8	5.8		1.7	1.1	1.5	1.5 Wh	1.3 Wh	6.7 Wh		1
39901S000	DJIZ	1993.0	2004.5	11	8	3	2	3	59 Wh	25 Wh	16 Wh	3.16	
		4.6	5.2	9.9		1.9	1.2	1.7	9.4 Wh	6.9 Fl	8.4 Wh		4
40102S009	OTTA	1993.6	1998.0	4	12	1	0	2	91 Fl	8 Fl	0 Wh	10.92	
		4.7	10.5	6.8		1.7	1.3	1.4	26.6 Fl	13.8 Fl	4.2 Wh		2
40101S002	STJB	1999.8	2004.5	4	4	1	2	1	75 Wh	25 Fl	0 Wh	4.06	
		3.6	6.1	7.8		1.4	1.1	1.2	4.3 Wh	1.8 Wh	9.1 Fl		2
40127S007	YELA	1993.0	2001.8	8	2	1	1	1	76 Wh	20 Wh	4 Wh	3.24	
		6.9	5.2	9.6		1.3	1.2	1.2	3.8 Wh	4.6 Wh	6.9 Wh		2
40127S000	YELZ	1993.0	2004.4	11	2	2	2	2	69 Wh	27 Fl	4 Wh	3.14	
		6.2	3.0	9.2		1.2	1.1	1.2	5.1 Wh	5.0 Wh	5.2 Wh		1
40408S004	FAIA	1993.0	1999.4	6	4	1	1	0	87 Wh	12 Wh	2 Wh	2.87	
		3.2	6.6	12.0		1.2	1.2	1.2	1.8 Wh	2.5 Wh	6.0 Wh		1
40408S000	FAIZ	1993.0	2002.8	9	8	1	1	0	85 Wh	11 Wh	4 Wh	5.23	
		2.5	4.4	5.8		1.2	1.2	1.2	3.0 Wh	5.2 Wh	11.2 Wh		2
40405S037	GOMB	1996.8	2004.4	7	10#	1	1	1	64 Wh	31 Wh	5 Wh	2.32	
		8.7	5.0	3.3		1.8	1.3	1.5	2.2 Wh	6.6 Wh	5.6 Fl		1
40424S008	KOKA	1993.0	2002.9	9	4	2	1	1	77 Wh	13 Wh	9 Wh	2.34	
		11.6	5.4	2.2<		1.7	1.2	1.4	4.3 Wh	5.7 Wh	4.3 Wh		1
40424S000	KOKZ	1993.0	2004.4	11	3	2	2	2	64 Wh	26 Wh	11 Wh	2.23	
		11.4	4.0	1.4<		1.7	1.2	1.3	6.5 Wh	4.4 Wh	4.2 Fl		2
40451S176	GREB	2000.5	2004.5	3#	0	2	2	0	69 Fl	31 Fl	1 Wh	1.74	
		7.6	7.6	10.2		1.5	1.0	1.1	4.7 Wh	.0 Fl	.4 Fl		1
40499S016	RIDA	1993.1	2004.4	11	11#	3	2	2	81 Wh	16 Wh	2 Wh	2.86	
		3.0	6.2	9.8		2.5	1.5	1.9	5.8 Wh	9.8 Wh	3.6 Wh		2
40503S003	SODA	1993.0	1997.8	4	21#	4	1	5	98 Fl	2 Wh	0 Wh	3.05	
		5.6<	6.1<	.7<		2.9	1.9	2.5	6.5 Fl	12.5 Fl	3.7 Fl		3
40503S004	SODB	1998.4	2004.4	6	29#	4	3	5	74 Fl	26 Wh	0 Wh	2.41	
		14.5	10.2	11.2		4.2	2.7	3.6	8.3 Wh	14.1 Fl	8.7 Wh		3
40503S000	SODZ	1993.0	2004.4	11	29#	5	7	8	95 Wh	3 Wh	1 Wh	6.50	
		9.9	8.5	7.4		4.0	3.0	3.4	15.1 Fl	29.0 Fl	26.0 Fl		4

inawd03

DOMES No	Stn	Start	End	#	%Ms	% Edited			%Expl_var. & Noise			Weight				
						E	N	U	EOF1	EOF2	EOF3	factor				

Components:	Amplitude	annual		One-yr Std Dev			1-yr All_StDv & Noise			Stab.						
(mm)	E	N	U	E	N	U	E	N	U			index				

41507S004	RIOB	1995.1	2001.0	5	2	0	2	1	96	Wh	4	Wh	0	Wh	6.26	
		4.5	3.6	6.9	1.7	1.7	1.8		5.8	Wh	3.0	Wh	18.2	Fl		2
41507S000	RIOZ	1993.0	2004.5	11	4	1	4	2	45	Wh	43	Wh	12	Wh	2.37	
		3.0	5.3	4.2	1.6	1.5	1.6		4.8	Wh	6.4	Wh	6.6	Wh		2
41507S005	RIPB	2001.2	2004.5	3#	1	3	2	2	96	Wh	4	Wh	0	Fl	6.39	
		7.2	6.1	2.2<	1.1	.9	1.0		6.8	Wh	7.5	Fl	5.2	Wh		1
41609S001	CACB	1993.0	2003.2	10	8#	2	2	1	72	Wh	25	Wh	3	Wh	3.33	
		8.3	6.6	1.0<	2.5	1.7	2.0		11.6	Wh	9.2	Wh	9.1	Wh		4
41703S008	EASA	1993.0	2001.0	8	6	1	2	1	75	Wh	18	Wh	7	Wh	2.59	
		4.9	7.6	7.3	2.0	1.5	1.6		6.4	Wh	4.1	Wh	6.5	Wh		2
41705S007	SANA	1993.0	1996.9	3#	6	1	1	2	71	Wh	28	Wh	1	Wh	1.45	
		4.4<	10.9	3.8<	2.9	2.0	2.3		.6	Wh	5.9	Wh	5.7	Wh		1
41705S008	SAOB	1997.0	2000.9	3#	22	2	3	5	97	Wh	3	Fl	0	Wh	4.03	
		4.3<	9.6	9.8	3.3	2.2	2.7		8.9	Wh	14.4	Fl	10.4	Wh		2
41710S001	CARB	1993.0	2003.2	10	8#	2	2	1	72	Wh	25	Wh	3	Wh	3.33	
		8.3	6.6	1.0<	2.5	1.7	2.0		11.6	Wh	9.2	Wh	9.1	Wh		4
42202S000	AREZ	1993.5	2001.4	7	2	3	2	2	87	Fl	10	Wh	3	Wh	3.72	
		11.5	4.8	6.3	3.2	1.9	2.4		17.3	Fl	4.9	Wh	5.1	Wh		2
42202S005	AREA	1993.5	2001.4	7	2	3	2	2	87	Fl	10	Wh	3	Wh	3.72	
		11.5	4.8	6.3	3.2	1.9	2.4		17.3	Fl	4.9	Wh	5.1	Wh		2
50103S201	ORRA	1993.0	1996.2	3#	11	1	3	1	82	Wh	17	Wh	1	Wh	1.92	
		7.1<	13.1	6.5	2.8	2.0	2.4		6.0	Wh	6.8	Wh	1.2	Wh		1
50107S006	YARA	1993.0	1999.8	6	8	1	2	1	73	Wh	25	Wh	1	Wh	3.58	
		5.1	6.6	7.1	2.4	1.7	2.0		2.7	Wh	6.1	Wh	13.8	Wh		2
50107S010	YARB	1999.8	2003.9	4	2	1	2	0	84	Wh	16	Wh	0	Fl	1.92	
		2.1<	4.1	9.2	1.5	1.1	1.2		2.6	Wh	4.4	Wh	1.1	Fl		1
50119S002	MSOB	1998.9	2003.0	4	0	1	0	3	95	Wh	4	Wh	1	Wh	3.90	
		1.0<	17.6	7.0	1.9	1.4	1.6		6.4	Wh	9.5	Fl	1.0	Wh		1
50207S001	CHAB	1999.2	2004.4	5	16	4	5	5	92	Wh	7	Wh	1	Wh	3.35	
		4.2	9.0	3.4	1.8	1.3	1.4		4.9	Wh	6.6	Wh	4.8	Wh		1
50501S001	GUAB	1994.0	2000.6	6	8	1	1	2	56	Wh	37	Wh	7	Wh	2.01	
		4.4	10.1	3.7	2.2	1.5	1.8		7.7	Wh	6.0	Wh	4.2	Wh		2
66007S001	ROTA	1993.0	2004.2	11	3	2	2	2	81	Wh	12	Wh	7	Fl	3.16	
		3.9	4.7	7.2	1.1	1.1	1.2		3.1	Wh	4.7	Wh	5.9	Fl		1
66006S001	SYOB	1993.3	1998.3	4	3	0	1	1	93	Wh	5	Wh	3	Wh	3.72	
		2.8	7.0	6.3	1.0	1.0	1.0		4.3	Wh	5.4	Wh	1.0	Wh		1
66006S003	SYPB	1999.3	2004.5	5	1	1	2	1	91	Wh	8	Wh	1	Wh	4.80	
		6.2	12.7	8.6	.9	.9	.9		3.8	Wh	3.9	Wh	6.0	Fl		2
91201S003	KERB	1994.9	2001.2	6	5	1	1	1	73	Wh	22	Wh	5	Wh	3.44	
		5.1	10.1	8.8	1.7	1.3	1.5		4.2	Wh	5.8	Wh	9.2	Wh		3
91401S001	AMSA	1993.0	1997.3	4	4	3	0	2	95	Wh	5	Wh	1	Wh	4.54	
		11.1	10.4	4.9	2.1	1.4	1.6		9.7	Wh	10.6	Wh	2.0	Wh		1
91501S001	ADEA	1993.0	2002.2	9	3	1	3	0	67	Wh	30	Wh	2	Fl	4.80	
		3.4	12.3	2.7	1.1	1.1	1.1		4.5	Wh	2.9	Wh	10.6	Fl		2
91501S000	ADEZ	1993.0	2004.5	11	14#	2	2	1	48	Wh	34	Wh	17	Fl	2.45	
		3.3	13.0	1.8	1.1	1.1	1.1		3.7	Wh	4.7	Wh	5.2	Fl		2
92201S008	PAQB	1998.3	2004.4	6	7	4	4	4	90	Wh	5	Wh	4	Wh	3.99	
		8.7	18.7	5.1	2.1	1.5	1.7		12.7	Wh	2.4	Wh	4.0	Wh		2
92403S001	RAQB	1996.3	2004.4	8	12#	3	1	2	74	Wh	22	Wh	4	Wh	2.91	
		5.1	14.0	6.1	2.3	1.7	2.0		5.4	Wh	5.3	Wh	10.6	Fl		3
92701S001	NOUA	1993.0	2000.6	7	9	3	2	4	77	Wh	16	Wh	7	Wh	1.76	
		3.5<	9.7	11.4	2.9	1.9	2.5		3.4	Wh	6.9	Wh	5.5	Wh		2
92901S001	WALA	1993.0	2000.9	7	11	1	1	1	63	Wh	35	Wh	2	Wh	2.20	
		7.8	3.3<	7.9	3.0	1.9	2.3		10.4	Wh	6.6	Wh	3.9	Wh		3
97301S004	KRUB	1993.0	2004.5	11	13#	3	2	2	84	Wh	12	Wh	3	Wh	2.18	
		3.4	5.2	1.7<	2.2	1.4	2.0		4.3	Wh	7.5	Wh	4.1	Wh		2

inawd03

DOMES No	Stn	Start	End	#	%Ms	% Edited			%Expl_var. & Noise			Weight				
						E	N	U	EOF1	EOF2	EOF3	factor				

Components:	Amplitude	annual	One-yr Std Dev			1-yr All_StDv & Noise						Stab.				
(mm)	E	N	U	E	N	U	E	N	U				index			

97401S001	REUA	1993.0	1998.9	5	6	2	1	2	74	Wh	24	Wh	2	Wh	3.05	
		6.0	5.3	8.0	2.1	1.4	1.8	9.7	Wh	3.6	Wh	5.3	Wh		1	
97401S002	REUB	1999.0	2004.5	5	1	3	2	2	68	Wh	24	Wh	9	Wh	1.54	
		4.5	11.5	2.4	1.7	1.1	1.5	2.7	Wh	4.1	Wh	1.9	Wh		1	
97401S000	REUZ	1993.0	2004.5	11	4	3	2	1	63	Wh	24	Wh	13	Wh	1.90	
		5.0	8.4	4.6	1.9	1.3	1.6	5.9	Wh	3.5	Wh	4.2	Wh		1	

Table 12. Quality indices for DORIS stations with time series longer than 3.1 years (KLB-MFV). Acronym ending with Z refer to appended series of residual coordinates of successive stations in the same site.

lcawd12

DOMES No	Stn	Start	End	#	%Ms			% Edited			%Expl_var. & Noise			Weight	
					E	N	U	E	N	U	EOF1	EOF2	EOF3		
Components:		Amplitude annual			One-yr Std Dev			1-yr All_StDv & Noise			Stab. index				
(mm)	E	N	U	E	N	U	E	N	U						
10003S000	TLSZ	1993.1	2004.9	11	2	2	3	1	50	Wh	33	Wh	17	Wh	1.67
		1.4<	3.0	5.5	2.7	1.7	1.7		7.1	Wh	4.7	Wh	3.9	Wh	1
10003S001	TLSA	1993.1	1997.6	4	1	1	3	2	94	Wh	6	Wh	0	Wh	1.10
		4.1	6.0	4.4	3.0	2.2	2.1		1.6	Wh	4.4	Wh	1.6	Wh	1
10003S003	TLHA	1997.7	2004.9	7	2	2	3	1	67	Wh	28	Wh	5	Wh	2.09
		1.1<	3.7	5.9	1.9	1.1	1.3		4.8	Wh	5.0	Fl	3.6	Wh	1
10202S000	REYZ	1993.0	2004.7	11	9	2	2	2	62	Wh	24	Wh	14	Wh	1.77
		1.1<	2.4	2.3	2.0	1.7	1.6		4.9	Wh	4.8	Fl	4.2	Wh	1
10202S002	REYB	1998.7	2004.7	5	6	1	1	1	81	Fl	17	Wh	2	Wh	3.18
		2.2	2.7	3.5	1.3	1.0	1.2		5.3	Wh	5.5	Fl	3.0	Wh	1
10202S001	REYA	1993.0	1998.7	5	10	1	3	0	78	Wh	19	Wh	3	Wh	1.26
		6.4	2.3	1.4<	2.5	2.2	2.0		2.1	Wh	1.5	Wh	5.4	Wh	1
10317S002	SPIA	1993.0	1999.2	6	3	4	4	1	81	Fl	18	Wh	1	Wh	1.85
		4.2	2.6	6.2	2.0	1.9	1.3		3.3	Fl	1.9	Wh	5.9	Fl	1
10317S004	SPIB	1999.6	2003.6	3#	22	1	1	2	73	Wh	27	Wh	0	Wh	5.03
		7.2	7.6	18.2	.7	.8	.7		2.6	Fl	5.0	Wh	4.8	Wh	1
10503S015	METB	2000.9	2004.9	4	7	4	1	3	77	Wh	23	Wh	0	Fl	3.62
		4.1	4.9	12.2	1.3	.9	1.1		2.1	Wh	7.8	Fl	1.4	Wh	1
10503S013	META	1993.0	2000.8	7	2	1	1	1	48	Wh	45	Wh	7	Wh	1.09
		3.8	1.9	1.7<	2.6	2.1	2.0		5.0	Wh	1.9	Wh	3.8	Wh	1
12334S006	KIUB	2001.4	2004.9	3#	13	1	2	2	87	Wh	12	Wh	0	Wh	2.89
		3.9	6.2	6.9	1.7	.9	1.1		5.3	Wh	2.2	Wh	3.8	Wh	1
12334S005	KITB	1996.9	2001.3	4	26#	2	2	3	58	Wh	40	Wh	2	Wh	.77
		2.9<	3.6	4.1	5.6	3.2	3.3		5.2	Wh	5.6	Wh	.8	Wh	1
12334S004	KITA	1993.0	1996.4	3#	10	2	4	1	100	Wh	0	Wh	0	Wh	1.59
		1.9<	1.0<	8.7	2.4	1.5	1.7		1.4	Wh	1.2	Wh	5.0	Wh	1
12338S001	BADA	1993.0	2002.6	9	16#	2	3	1	86	Wh	10	Wh	4	Wh	1.37
		7.8	2.4	3.2	2.5	1.7	1.8		2.8	Wh	.7	Wh	4.6	Wh	1
12349S001	KRAB	1999.4	2004.9	5	14	3	3	2	99	Wh	1	Wh	0	Fl	2.15
		5.4	8.7	7.9	1.4	.9	1.1		.7	Wh	3.5	Fl	2.7	Wh	1
12602S011	DIOA	1993.1	2004.9	11	24#	3	2	2	74	Wh	23	Wh	3	Wh	.87
		7.6	4.8	9.9	11.1	6.0	6.4		11.6	Wh	4.8	Fl	8.5	Wh	2
21604S003	PURA	1993.1	2004.9	11	30#	3	6	6	81	Wh	16	Wh	2	Wh	1.05
		10.0	4.7	5.2	6.0	3.5	5.3		8.2	Wh	2.3	Wh	6.5	Wh	2
22006S001	MANA	1993.2	2003.0	9	15	0	4	1	90	Wh	6	Wh	4	Wh	2.05
		15.9	2.6	2.3	4.5	2.3	3.2		12.5	Wh	3.9	Wh	4.8	Wh	2
22006S000	MANZ	1993.2	2004.7	11	17	0	4	2	85	Wh	11	Wh	4	Wh	2.05
		18.3	1.1<	3.6	4.1	2.0	3.1		12.1	Wh	4.6	Wh	5.7	Wh	3
23101S001	CIBB	1993.1	2000.7	7	17	1	3	2	70	Wh	23	Fl	7	Wh	1.22
		3.7	7.2	9.6	3.4	1.8	2.3		3.8	Wh	2.0	Wh	6.3	Fl	1
23101S000	CIBZ	1993.1	2004.9	11	16	2	4	3	75	Wh	19	Fl	6	Wh	1.40
		8.0	8.7	9.3	3.5	1.7	2.2		6.8	Wh	4.4	Wh	4.5	Fl	2
23101S002	CICB	2001.1	2004.9	3#	7	3	2	4	94	Wh	6	Wh	0	Wh	2.67
		12.0	9.9	9.3	2.4	1.0	1.6		4.6	Wh	6.6	Wh	2.6	Wh	1
30302S202	HBKA	1993.1	1997.4	4	0	1	4	2	82	Wh	16	Wh	3	Wh	.90
		12.2	8.3	8.9	2.6	1.8	1.9		1.8	Wh	3.4	Wh	2.3	Wh	1
30302S206	HBKB	2000.6	2004.8	4	4	2	3	1	85	Wh	14	Fl	1	Wh	1.92
		9.7	6.0	7.5	1.5	.8	1.1		3.0	Wh	2.3	Wh	3.2	Fl	1
30302S200	HBKZ	1993.1	2004.8	11	2	2	3	2	64	Wh	26	Wh	10	Wh	1.50
		10.6	4.4	5.0	2.4	1.4	1.7		5.4	Wh	2.8	Wh	3.5	Wh	1
30302S005	HBLA	1997.4	2000.6	3#	2	1	2	0	62	Wh	38	Wh	0	Wh	1.09
		14.1	2.9	2.0<	2.6	1.4	1.8		.5	Wh	2.9	Wh	3.9	Wh	1

lcawd12

DOMES No	Stn	Start	End	#	%Ms	% Edited			%Expl_var. & Noise			Weight				
						E	N	U	EOF1	EOF2	EOF3	factor				

Components:	Amplitude	annual		One-yr Std Dev			1-yr All_StDv & Noise			Stab.						
(mm)	E	N	U	E	N	U	E	N	U		index					

30313S001	MARA	1993.1	1998.5	5	8	2	2	2	87	Wh	11	Wh	2	Wh	1.68	
	6.5	.8<	4.5	3.6	2.7	2.7			8.4	Wh	4.0	Wh	5.8	Wh		1
30313S002	MARB	1999.5	2004.6	5	31#	2	2	1	77	Wh	15	Wh	8	Wh	1.80	
	6.9	12.6	4.5	3.2	2.1	2.5			2.7	Wh	9.1	Wh	4.6	Wh		3
30602S004	ASDB	1999.4	2004.9	5	10	0	2	1	77	Wh	21	Wh	2	Wh	2.13	
	10.3	4.2	9.1	3.9	1.6	2.7			6.1	Wh	4.2	Wh	11.2	Wh		3
30606S002	HELA	1993.1	1997.3	4	10	1	2	1	78	Wh	21	Wh	1	Wh	1.49	
	11.2	9.2	1.5<	4.8	2.8	2.8			8.9	Wh	6.0	Wh	1.3	Wh		2
30606S003	HELB	1998.3	2003.2	4	8	0	0	0	96	Wh	3	Wh	1	Wh	1.20	
	9.9	5.9	2.5<	4.1	1.8	2.6			6.8	Fl	.4	Wh	2.7	Wh		1
30604S001	TRIA	1993.1	2001.4	8	2	0	1	1	69	Wh	25	Wh	6	Wh	1.18	
	9.5	1.4<	2.3	3.0	2.0	2.0			5.1	Wh	3.8	Wh	2.9	Wh		1
31906S000	PDLZ	1998.9	2004.9	5	6	4	5	3	91	Wh	6	Fl	3	Wh	2.26	
	8.6	2.8	3.7	2.3	1.2	1.5			6.1	Wh	3.0	Fl	3.1	Wh		2
31903S001	SAMB	1994.0	1997.9	3#	12	0	2	1	62	Wh	38	Wh	0	Fl	.93	
	16.4	1.9<	11.0	5.7	4.0	4.1			.1	Wh	2.6	Wh	10.9	Wh		2
32809S002	LIBA	1993.1	1999.1	6	6	1	2	1	45	Wh	39	Wh	16	Wh	.61	
	9.0	3.9	3.8	5.2	2.6	2.5			2.6	Wh	5.2	Wh	2.4	Wh		1
32809S003	LIBB	1999.2	2004.9	5	2	1	1	1	81	Wh	12	Wh	7	Wh	1.35	
	10.7	6.8	6.0	2.1	.9	1.4			2.3	Wh	2.0	Wh	2.8	Wh		1
32809S000	LIBZ	1993.1	2004.9	11	5	2	3	2	71	Wh	20	Wh	9	Wh	.86	
	10.2	5.0	5.5	3.3	1.7	1.9			2.4	Wh	3.2	Wh	3.8	Wh		1
34101S004	DAKA	1993.3	2001.0	7	6	0	4	1	61	Wh	33	Wh	6	Wh	1.20	
	2.0<	6.4	7.0	4.0	2.2	2.3			4.5	Wh	2.2	Wh	7.2	Wh		1
39801S005	MAHB	2001.5	2004.9	3#	13	5	5	5	92	Wh	8	Wh	0	Wh	1.08	
	8.5	6.5	5.9	2.9	1.3	2.3			3.3	Wh	2.5	Wh	1.8	Wh		1
39901S002	DJIA	1993.1	2000.5	7	5	2	3	2	72	Wh	18	Wh	10	Fl	1.33	
	7.2	1.4<	4.0	2.9	1.6	2.3			4.4	Wh	4.8	Fl	4.6	Wh		1
39901S003	DJIB	2000.6	2004.5	3#	20	2	3	4	87	Wh	12	Wh	1	Fl	.57	
	5.4	1.9<	8.7	2.5	1.2	2.0			1.4	Wh	.9	Fl	3.2	Wh		1
39901S000	DJIZ	1993.1	2004.5	11	10	2	3	3	63	Wh	20	Wh	17	Wh	1.21	
	5.9	2.3	3.7	2.9	1.5	2.3			4.4	Wh	5.0	Wh	4.1	Wh		1
40102S009	OTTA	1994.1	1997.8	3#	28	2	1	1	89	Wh	11	Wh	0	Wh	.24	
	6.7	7.7	9.9	58.6	50.2	49.7			7.7	Wh	20.9	Wh	11.4	Wh		3
40101S002	STJB	1999.8	2004.9	5	6	1	2	1	63	Wh	34	Wh	3	Wh	.82	
	8.0	6.9	6.5	3.3	2.2	2.6			2.0	Wh	4.2	Fl	3.6	Wh		1
40127S007	YELA	1993.0	2001.8	8	1	1	6	1	65	Wh	29	Wh	6	Wh	1.53	
	6.6	6.0	2.1	1.9	1.7	1.5			4.9	Wh	3.7	Wh	1.9	Wh		1
40127S000	YELZ	1993.0	2004.9	11	2	2	7	0	56	Wh	28	Wh	15	Wh	1.57	
	2.9	6.6	5.3	1.7	1.6	1.4			4.9	Wh	4.3	Wh	3.5	Fl		1
40408S004	FAIA	1993.0	1999.4	6	2	2	9	1	67	Wh	31	Wh	2	Wh	1.83	
	3.9	7.3	16.1	2.0	1.9	1.6			2.6	Wh	4.2	Fl	5.9	Wh		1
40408S000	FAIZ	1993.0	2002.8	9	7#	2	4	1	71	Fl	27	Wh	3	Wh	3.37	
	2.3	9.8	7.9	1.7	1.6	1.5			5.6	Wh	6.2	Fl	10.1	Wh		3
40405S037	GOMB	1996.8	2004.7	7	13#	2	7	1	81	Wh	18	Wh	1	Wh	.86	
	4.5	9.6	8.5	3.7	2.0	2.7			7.8	Wh	1.3	Wh	2.8	Wh		2
40424S008	KOKA	1993.0	2002.9	9	5	1	5	2	64	Wh	20	Wh	15	Wh	1.66	
	13.0	4.3	4.6	2.4	1.7	1.6			5.2	Wh	4.4	Wh	4.4	Fl		1
40424S000	KOKZ	1993.0	2004.9	11	5	1	6	2	78	Wh	12	Wh	10	Fl	1.54	
	14.6	4.2	5.8	2.3	1.6	1.5			4.0	Wh	4.0	Wh	4.6	Fl		1
40451S176	GREB	2000.6	2004.9	4	3	1	0	1	72	Fl	28	Wh	0	Wh	2.88	
	3.4	5.1	6.8	1.6	.9	1.1			7.2	Fl	1.9	Wh	2.3	Wh		2
40499S016	RIDA	1993.1	2004.9	11	13#	2	7	2	91	Fl	6	Wh	3	Wh	1.83	
	5.2	2.3	2.7	3.5	2.1	2.1			8.2	Fl	4.5	Wh	3.0	Wh		2
40503S003	SODA	1993.7	1997.8	4	24#	1	4	6	97	Fl	2	Wh	1	Wh	2.05	
	10.3	18.1	7.2	5.6	3.6	3.8			2.6	Wh	13.6	Wh	7.9	Wh		1

lcawd12

DOMES No	Stn	Start	End	#	%Ms	% Edited			%Expl_var. & Noise			Weight	
						E	N	U	EOF1	EOF2	EOF3	factor	

Components:	Amplitude	annual		One-yr Std Dev			1-yr All_StDv & Noise			Stab.			
(mm)	E	N	U	E	N	U	E	N	U		index		

40503S004	SODB	1998.4	2004.9	6	31#	2	3	5	56 Wh	40 Wh	4 Wh	1.45	
		3.0<	9.2	7.1	4.1	1.9	2.9		5.2 Wh	6.0 Wh	8.7 Wh		2
40503S000	SODZ	1993.7	2004.9	11	32#	1	8	6	84 Wh	11 Wh	5 Wh	1.70	
		1.3<	10.2	7.0	5.8	3.2	4.3		7.7 Wh	10.1 Wh	10.2 Fl		3
41507S004	RIOB	1995.1	2001.0	5	4	2	5	1	73 Wh	20 Wh	7 Wh	1.95	
		5.8	6.7	4.0	2.6	2.1	1.8		6.7 Wh	1.8 Wh	5.8 Wh		1
41507S000	RIOZ	1993.0	2004.9	11	5	2	4	2	65 Wh	28 Wh	7 Wh	1.30	
		7.1	.4<	3.7	2.0	1.6	1.5		4.7 Wh	2.5 Wh	3.4 Wh		1
41507S005	RIPB	2001.2	2004.9	3#	4	4	1	2	79 Wh	20 Wh	0 Wh	1.87	
		9.9	3.7	3.7	1.2	.8	.9		3.7 Wh	.0 Wh	1.4 Wh		1
41609S001	CACB	1993.0	2003.2	10	15#	0	2	1	64 Wh	19 Wh	18 Wh	1.61	
		10.3	1.6<	4.9	4.4	2.8	3.1		11.5 Wh	6.0 Wh	7.5 Wh		4
41703S008	EASA	1993.0	2001.0	7	9	0	6	1	84 Wh	15 Wh	1 Wh	1.72	
		5.7	.5<	5.1	3.4	2.3	2.1		8.3 Wh	2.5 Wh	5.9 Wh		3
41703S009	EASB	2001.7	2004.9	3#	18	4	1	3	80 Wh	20 Wh	1 Wh	.90	
		3.2<	4.8	1.3<	1.8	.9	1.2		2.5 Wh	.2 Wh	.9 Wh		1
41705S007	SANA	1993.1	1996.9	3#	14	2	4	1	94 Wh	5 Wh	1 Wh	.99	
		5.0<	3.6<	7.1	4.2	3.2	3.0		5.9 Wh	1.9 Wh	1.7 Wh		1
41705S009	SANB	2001.5	2004.9	3#	5	3	4	1	75 Wh	24 Wh	1 Wh	2.19	
		10.6	.7<	4.5	1.7	.9	1.2		3.3 Wh	4.4 Fl	2.3 Wh		1
41705S008	SAOB	1997.1	2000.9	3#	31	2	9	4	94 Wh	6 Wh	0 Wh	1.75	
		4.9<	6.4	7.5	4.4	2.4	3.0		5.7 Wh	6.2 Wh	6.6 Wh		1
42202S000	AREZ	1993.6	2001.4	7	9	0	5	2	77 Fl	23 Wh	0 Wh	1.44	
		17.9	10.5	.9<	4.5	2.8	2.9		9.4 Fl	2.7 Wh	3.9 Wh		2
42202S005	AREA	1993.6	2001.4	7	9	0	5	2	77 Fl	23 Wh	0 Wh	1.44	
		17.9	10.5	.9<	4.5	2.8	2.9		9.4 Fl	2.7 Wh	3.9 Wh		2
50103S201	ORRA	1993.1	1996.2	3#	12	0	2	2	93 Wh	6 Wh	1 Wh	1.53	
		8.3	6.4	3.1<	4.1	2.8	3.1		6.8 Wh	6.4 Wh	.6 Wh		1
50107S006	YARA	1993.1	1999.7	6	9	0	4	1	86 Wh	12 Wh	2 Wh	2.20	
		6.7	6.4	3.0	3.2	2.0	2.3		8.1 Wh	4.0 Wh	6.5 Wh		2
50107S010	YARB	1999.8	2003.9	4	4	2	2	1	74 Fl	25 Fl	1 Wh	1.80	
		17.4	6.0	6.3	2.4	1.3	1.8		2.5 Wh	4.3 Wh	5.4 Wh		1
50107S000	YARZ	1993.1	2004.9	11	7	2	5	2	62 Wh	22 Wh	16 Wh	1.22	
		11.2	6.6	6.4	2.9	1.7	2.1		4.1 Wh	4.1 Wh	4.6 Wh		1
50119S002	MSOB	1999.0	2003.0	4	5	1	1	3	93 Wh	7 Wh	1 Wh	2.07	
		4.9	6.6	6.1	2.5	1.5	1.9		1.1 Wh	4.6 Wh	6.5 Wh		2
50207S001	CHAB	1999.2	2004.9	5	21	1	1	2	80 Wh	19 Fl	1 Wh	4.57	
		9.4	2.2<	2.2	1.6	.9	1.0		7.7 Wh	6.4 Fl	5.2 Wh		2
50501S001	GUAB	1994.1	2000.6	6	9	0	3	1	90 Wh	8 Wh	2 Wh	1.37	
		9.6	2.6	2.4	3.1	1.8	2.3		6.2 Wh	3.1 Wh	2.2 Wh		1
66007S001	ROTA	1993.1	2004.2	11	4	2	5	2	68 Wh	17 Wh	15 Wh	1.19	
		6.3	1.2	.7<	2.0	1.9	1.8		4.2 Wh	3.5 Wh	3.2 Wh		1
66006S001	SYOB	1993.2	1998.3	5	2	5	3	3	93 Wh	5 Wh	1 Wh	.89	
		1.7	1.9	4.5	1.9	1.7	1.5		2.6 Wh	2.0 Wh	1.5 Wh		1
66006S003	SYPB	1999.1	2004.9	5	5	2	3	2	88 Fl	8 Fl	4 Wh	4.86	
		3.7	11.8	3.2	.8	.7	.7		2.5 Fl	3.6 Fl	5.5 Fl		1
91201S003	KERB	1995.0	2001.2	6	6	2	1	2	68 Wh	27 Wh	5 Wh	.97	
		3.1	4.7	.2<	3.0	1.9	1.9		2.4 Wh	3.7 Wh	3.9 Wh		1
91401S003	AMTB	2001.3	2004.9	3#	30	2	4	3	82 Wh	18 Wh	0 Wh	1.78	
		8.5	8.7	8.5	2.9	1.5	1.9		7.7 Wh	2.7 Fl	6.3 Wh		2
91401S001	AMSA	1993.1	1997.3	4	3	2	5	2	98 Wh	2 Wh	0 Wh	2.54	
		5.1	3.4	5.6	3.3	1.9	2.1		7.6 Wh	7.8 Fl	3.8 Wh		2
91501S001	ADEA	1993.1	2002.2	9	3	2	3	2	90 Fl	8 Fl	2 Wh	1.56	
		3.7	5.7	3.5	2.0	1.9	1.4		4.8 Fl	3.1 Fl	2.9 Wh		1
91501S000	ADEZ	1993.1	2003.0	9	8	2	3	3	76 Fl	18 Wh	6 Wh	2.17	
		4.0	5.5	3.8	1.7	1.5	1.3		6.4 Fl	2.5 Wh	3.3 Wh		1

lcawd12

DOMES No	Stn	Start	End	#	%Ms	% Edited			%Expl_var. & Noise			Weight				
						E	N	U	EOF1	EOF2	EOF3	factor				

Components:	Amplitude	annual		One-yr Std Dev			1-yr All_StDv & Noise			Stab.						
(mm)	E	N	U	E	N	U	E	N	U				index			

92201S008	PAQB	1998.6	2004.9	6	5	2	2	3	69	Wh	20	Wh	10	Wh	2.19	
		13.7	7.6	1.1<	2.4	1.2	1.9		7.1	Wh	3.6	Wh	7.0	Wh		2
92403S001	RAQB	1996.4	2004.6	8	15#	2	5	2	76	Wh	19	Wh	5	Wh	2.67	
		10.2	.6<	3.5	3.4	2.1	2.6		12.1	Wh	5.2	Wh	9.9	Wh		3
92701S001	NOUA	1993.1	2000.6	7	17	1	3	1	65	Wh	25	Wh	10	Wh	.95	
		10.2	2.0<	6.4	4.7	2.6	3.0		5.5	Wh	4.6	Wh	4.7	Wh		1
92722S001	LIFB	1993.1	2004.9	11	5	2	3	2	71	Wh	20	Wh	9	Wh	.86	
		10.2	5.0	5.5	3.3	1.7	1.9		2.4	Wh	3.2	Wh	3.8	Wh		1
92902S001	FUTB	2001.1	2004.9	3#	22#	1	1	3	85	Wh	15	Wh	0	Wh	2.46	
		9.1	9.0	4.6	2.4	1.1	1.5		3.2	Wh	1.8	Wh	7.5	Wh		2
92901S001	WALA	1993.1	2000.9	7	12	0	5	0	83	Wh	11	Wh	6	Wh	1.21	
		15.8	4.1	9.9	5.0	2.6	2.9		8.3	Wh	3.3	Wh	2.3	Wh		2
97301S004	KRUB	1993.0	2004.9	11	7	1	6	1	67	Wh	28	F1	5	Wh	1.35	
		4.1	2.7	2.4	2.9	2.0	2.2		5.6	Wh	3.1	F1	4.5	Wh		1
97401S001	REUA	1993.1	1998.9	5	6	1	2	2	70	Wh	24	Wh	6	Wh	1.81	
		5.6	9.4	4.7	4.0	2.0	2.6		10.8	Wh	2.8	Wh	3.3	Wh		1
97401S002	REUB	1999.0	2004.9	5	6	2	2	2	76	Wh	23	Wh	1	Wh	.66	
		5.5	10.9	5.7	2.0	1.0	1.4		2.1	Wh	.2	Wh	1.6	Wh		1
97401S000	REUZ	1993.1	2004.9	11	6	2	2	2	81	Wh	17	Wh	2	Wh	2.62	
		4.0	9.4	4.7	3.2	1.6	2.1		11.8	Wh	2.5	Wh	3.2	Wh		2