IGETS Analysis Centre Tahiti (ICET) Status of GGP data processing in 2015

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INTRODUCTION

GGP raw minute data (GGP-SG-MIN) are preprocessed and validated at the Tahiti analysis Centre (ICET), in order to provide reliable hourly data sets for tidal analysis. In a first step, gaps and spikes in the monthly raw data files are corrected using the T-soft software. The corrected minute data (GGP-SG-CORMIN) are then uploaded on the Information System and Data Center (ISDC at isdc.gdz-postdam.de) with repair codes 12 or 22. The corrected minute data are decimated to one hour sampling and submitted to tidal analysis. The hourly data are also uploaded as one-year blocks (GGP-SG-HOUR, code h2) on the same site. We summarize the current status of our processing for all the GGP stations between 2011 and 2015.

We summarize in Table 1 the preprocessing and analysis work performed at ICET in the framework of the Global Geodynamics Program (GGP). Several stations are no more operating: BA, BE, BO, BR, KY, MA, PO, SY, VI. Other ones did not provide recently data on a regular basis: CO, MB and the stations depending from the Japanese computing center (CB, KA, NY), who did no more send data since 2013. Since last year most of the stations have been updated until end of 2014 (in red in the Table 1). It corresponds to a total of 388 months of data. Since the beginning of the GGP program in 1997 some 4,200 months of data from 34 superconducting gravimeters in 31 stations have been preprocessed.

The standard deviation STD computed with ETERNA (ANALYZE) is also given in Table 1. As the stability of the sensitivity of the superconducting gravimeters is better than 0.1%, the STD is a measure of the signal to noise ratio in the station. For 25 series the STD is lower than 1 nm/s^2 . When the STD is larger than 2 nm/s^2 the data set is not suitable for a precise determination of the fine tidal spectrum.

It was found that the Tsoft filter of half-length 8 hours, sometimes used to decimate the minute data to hourly values, was too short. As a result a significant attenuation of the semidiurnal waves was observed when an analysis based on hourly values was compared with the direct analysis of the original data sampled at one minute internal. The series marked with Y in the last column of Table 1 have been recomputed with a longer filter (24 hours) to suppress this effect. Several anomalies were found and corrected in the previous minute data series.

In the framework of the new IGETS Service it has been decided to provide corrected minute data expressed in mV to allow easy modifications of the calibration when new or more accurate values become available. In the same time the corrections applied during the preprocessing will be documented. It is especially important for the step corrections which could spoil the long term gravity variations recorded by the instrument.

Table 1: Status of preprocessed and analyzed GGP data on January 2016Data in red have been preprocessed and analyzed in 2015Stations Conrad, Onsala and Yebes have been preprocessed for the first timen: number of preprocessed months since last yearN: number of days effectively used in the global tidal analysisSTD: standard deviation of the global analysis (ETERNA)

Code	Location	SG Instr.	ICET	RAW	Corrected	n	Ν	STD	Hourly
			Code			(months)	(days)	(nm/s^2)	check
AP	Apache Point, USA	SG046	00466090	150200	150222	17	1695	1.169	Y
BA*	Bandung, Indonesia	T008	00084100	030600	030622		1104	2.938	
BE*	Brussels, Belgium	T003	07790200	000900	000901		¶6692	1.641	
BF	Black Forest, Germany	CD056_L	01560716	130900	130922		1134	0.611	Y
	-	CD056_U	02560716	130900	130922		1136	0.670	
BH	Bad Homburg,	(T001)					¶1005	0.950	
	Germany	CD030_L	01300734	070400	070422*		2222	0.783	Y
		CD030_U	02300734	070400	070422*		2218	0.835	Y
		SG044	00440734	150200	150222	16	2886	0.610	Y
BO*	Boulder, USA	C024	00246085	031000	031022		1850	1.109	
BR*	Brasimone, Italy	T015	00150515	991200	991222		1428	2.954	
CA	Cantley, Canada	T012	00126824	150300	150300	15	5472	1.421	Y
							¶6634	1.390	
CB	Canberra, Australia	C031	00314204	141200	141222	17	6097	0.783	Y
CO	Conrad, Austria	C025	00250699	131122	131122	72	2130	0.606	Y
ES	Esashi, Japan	T007	00072849	081200	081222?	→20040225	2274	1.491	
HS	Hsinchu, Taiwan	T048	00482695	120800	081222		898	2.249	
KA	Kamioka, Japan	T016	00162828	130700	130722		3006	1.229	Y
KY*	Kyoto, Japan	T009	00092823	030600	030622	→20020731	1533	3.691	
MA*	Matsushiro, Japan	T011	00112834	080600	080622		3954	1.008	
MB	Membach, Belgium	C021	00210243	120900	111222	!	5907	0.705	Y
MC	Medicina, Italy	C023	00230506	150200	150222	13	6174	0.900	Y
ME	Metsahovi, Finland	T020	00200892	131200	131222	14	5409	1.167	Y
							¶5564	1.166	
MO	Moxa, Germany	CD034_L	01340770	140200	140222		4841	0.550	Y
		CD034_U	02340770	140200	140222		4913	0.564	
NY	Ny Alesund, Norway	C039	00390005	120100	120122		3776	2.687	
OS	Onsala, Sweden	OSG54	00540875	151100	151122	54	2320	1.220	Y
PE	Pecny,CZ	OSG050	00500930	141200	141222	17	2758	0.562	Y
PO*	Potsdam, Germany	T018	00180765	980900	980912		2250	0.856	
ST	Strasbourg, France	(T005)					¶3272	2.265	
		C026	00260306	150100	150122	25	6134	0.633	Y
SU	Sutherland, South	CD037_L	01373806	141200	141222	12	3925	0.917	Y
	Africa	CD037_U	02373806	141200	141222	12	3748	0.945	Y
		SG052	00523806	141200	141222	12	2195	0.944	Y
SY	Syowa, Antarctic	T016	00169960	030100	030122*	→20001231	1279	1.387	
TC	Tigo, Concepcion, Chile	RT038	00387621	141200	141222	14	3450	1.075	Y
VI*	Vienna, Austria	C025	00250698	061200	061222		3402	0.525	Y
							¶4278	0.463	
WE	Wettzell, Germany	(SG103)	01030731	980900	980921*		¶726	2.639	
		CD029_L	01290731	101000	101022*		4264	0.579	Y
		CD029_U	02290731	101000	101022*	10	4226	0.597	Y
		CD030_L	01300731	150200	150222	18	1665	0.644	Y
		CD030_U	02300731	150200	150222	18	1679	0.609	Y
WU	Wuhan, China	T004	00322647	120700	120712•		3844	0.937	
YS	Yebes, Spain	OSG64	00640435	150600	150622	42	1273	0.633	Y
		2.2001	200.0.00		TOTAL	200	12/0	0.000	-
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* instrument stopped

¶ with data before 1997/07

? status unknown

 \rightarrow end of the global analysis

• preprocessed by data owner

() not included in GGP