Borowa Gora (BG)
IGETS Station Report

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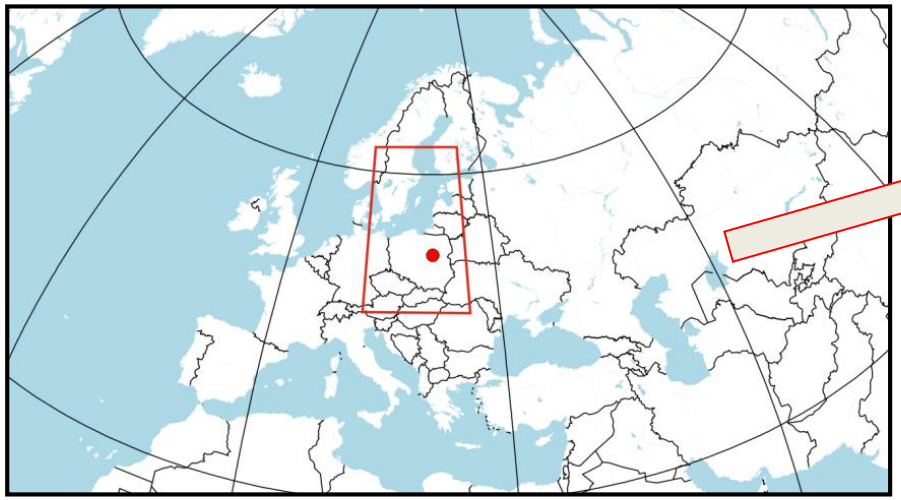
IGETS Business meeting 2017.07.03, IAG-IASPEI

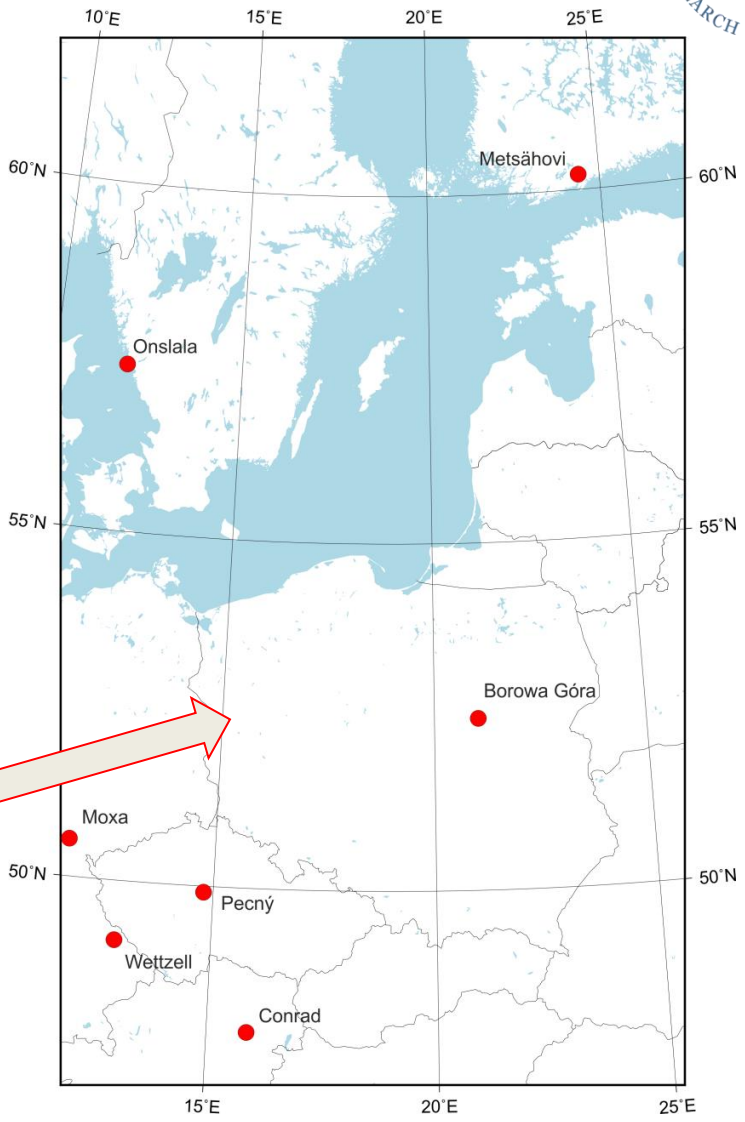
Joint Scientific Assembly of the International Association of Geodesy and the International Association of Seismology and Physics of the Earth's Interior, IAG-IASPEI, July 30 – August 4, 2017, Kobe, Japan

BG location

Location:

Borowa Gora
Geodetic–Geophysical Observatory
(50 km north of Warsaw, Poland)





BG infrastructure

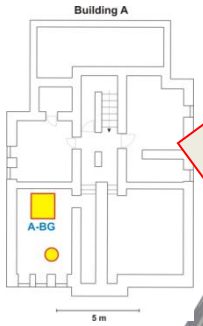
Infrastructure:

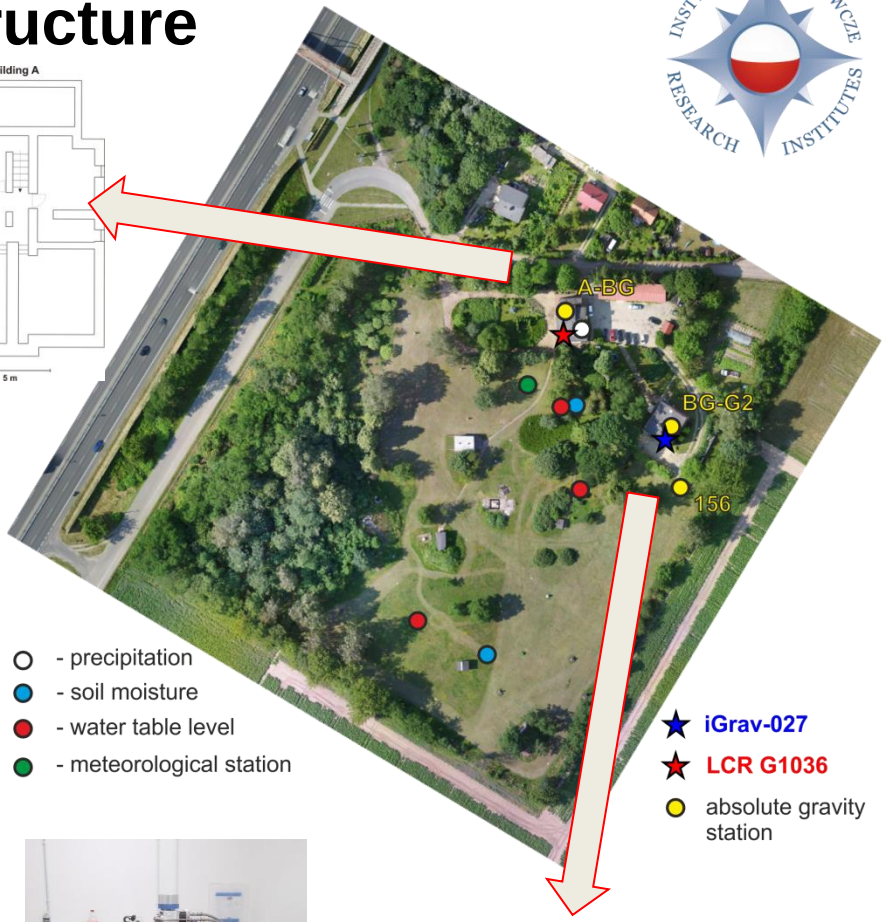
Gravimetry:

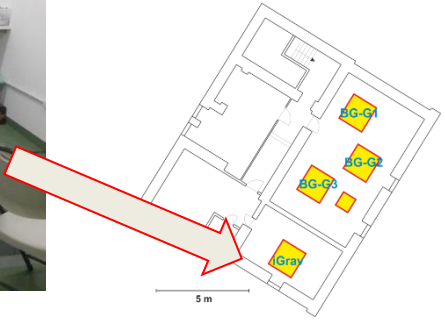
- ***iGrav-027*** *- First superconducting gravimeter installation in Poland* *2016.05 – ongoing (1.2 years)*
- ***LCR G1036*** *complete record since* *2012.02. - ongoing (5.5 years)*
- ***A10-020*** *absolute gravimeter – quasi monthly absolute determinations on 3 stations (AGrav)* *2008.10. - ongoing (8.8 years)*
- ***LCR G1012, G1084*** *– periodical earth tide records*

Meteorological/Hydrological

- *standard* ***meteo station****: temperature, air humidity, air pressure*
- ***water table level***, ***soil moisture***, ***precipitation***





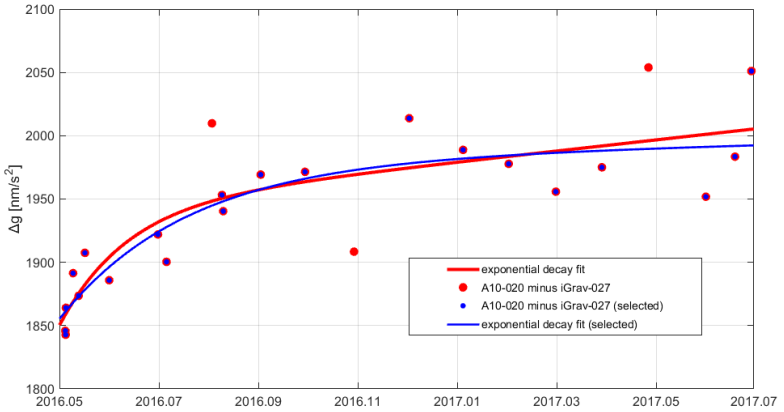


iGrav-027 first year

- Scale factor determinations
- Multiple experiments with AG and RG
- All results within <9 nm/s^2

Date	Instrument	iGrav-027 [nm/s^2/V]	error [nm/s^2/V]
2017.06	A10-020	-1065.13	3.51
2017.06	LCR G1012	-1062.08	0.80
2017.06	LCR G1084	-1064.06	0.33
2016.08	FG5-230	-1063.03	3.13
2016.05	A10-020	-1069.74	7.62
2016.05	LCR G1012	-1060.36	0.52
2016.05	LCR G1084	-1064.32	0.31
	average	**-1063.27**	**2.95**

- Drift function evaluation
- Exponential decay fit based on monthly A10-020 results „side by side”
- Linear term **50.3 nm/s^2/year**



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Question to IGETS: how do IGETS deal with scale fatcor changing in time?

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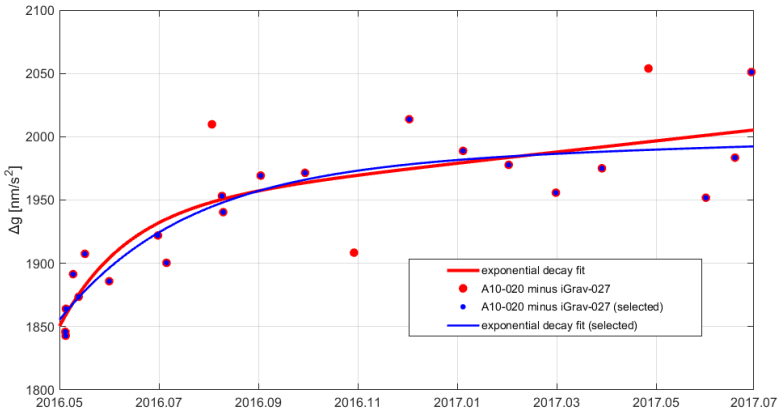
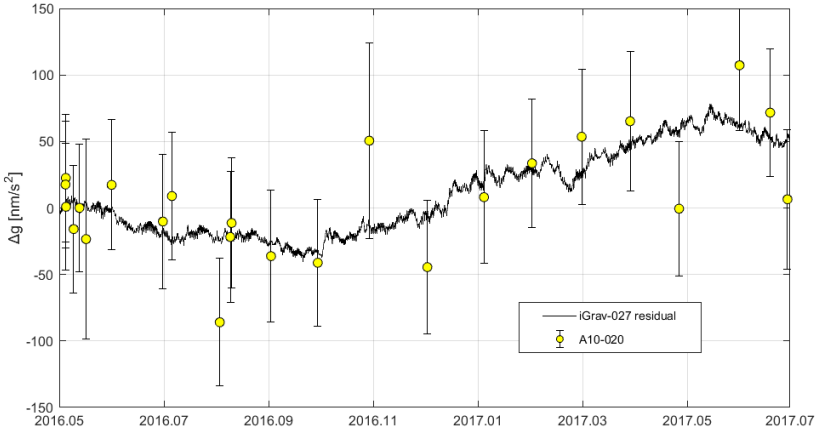
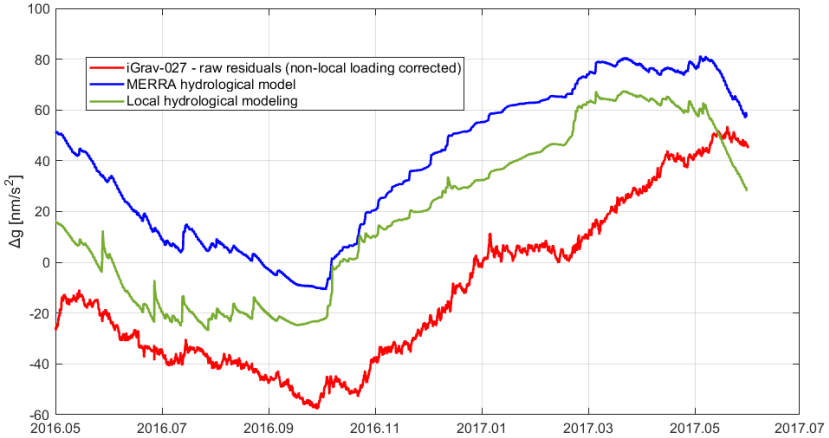


iGrav-027 first year

- Monthly A10-020 gravity determinations (experimental T.U.)
- A10-020 only results standard deviation: **41.0 nm/s²**
- A10-020 – iGrav-027 consistency: **31.1 nm/s²** *(improvement)*



- Time series corrected for atmospheric loading and compared to hydrological loading
- Correlation: **0.88 (local model)**, **0.92 (MERRA)**



Other activities

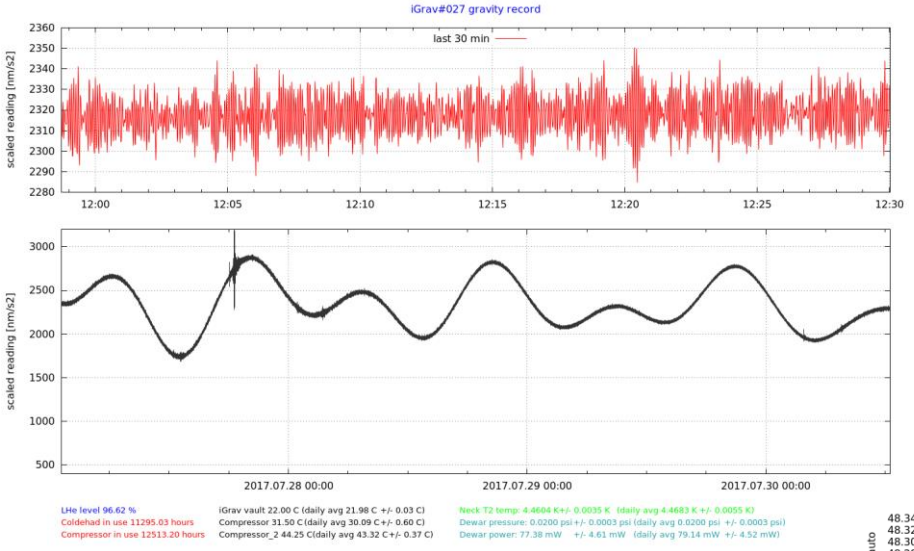
- 2016.08. – first **local AG comparison** campaign of the A10-020 and FG5-230 supplemented by the ***iGrav-027***
- 2016.12. – **installation of two seismometers** on the same pillars with LCR G1036 and iGrav-027 (RefTek 151B) – cooperation with Institute of Geophysics, University of Warsaw – 100 Hz registration ongoing

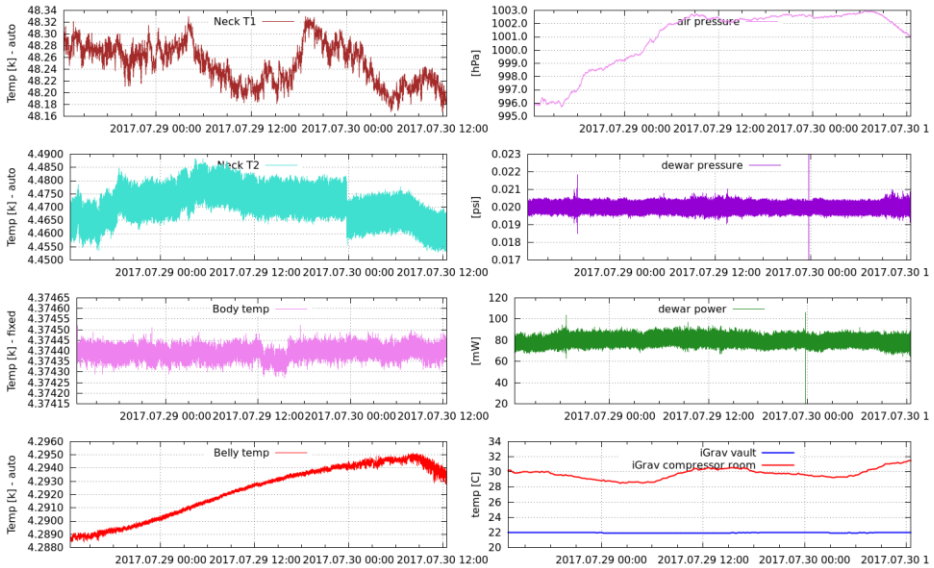
(initial results presentation on Friday – IAG-IASPEI - J09 session)

Future plans

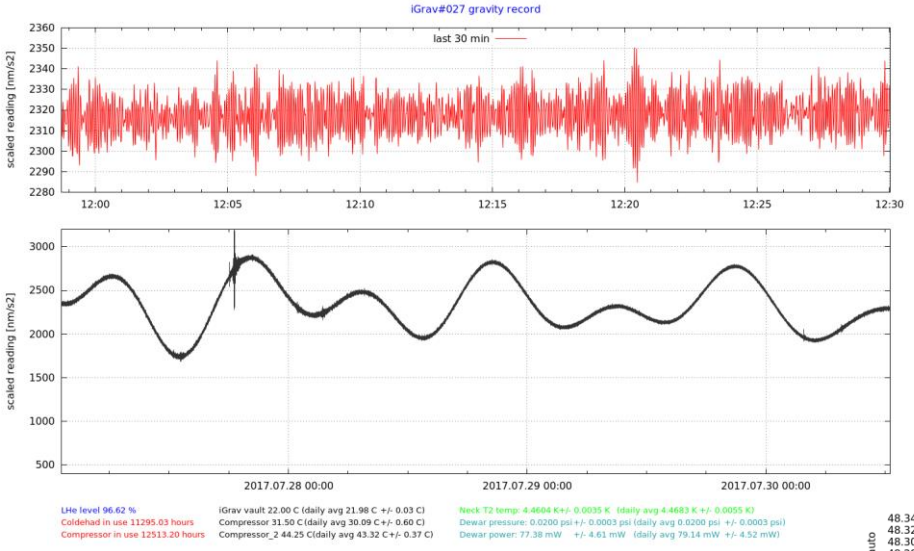
- Submit frequently data to IGETS with semi-automatic/automatic procedures – 1 min (gap/jump) corrected data from the iGrav-027 and LCR G1036
- Evaluate transfer function of the iGrav-027 with GWR cooperation (for seismic research)
- Further calibration experiments using AG and RG methods for the iGrav-027 and LCR G1036
- Creation of the iGrav-027 „live view” website
- Second local AG comparison campaign with the FG5-230 (**2017.09.**) – **OPEN INVITATION**, 3 pillars available, time schedule to be designed

Live view (iGrav-027)

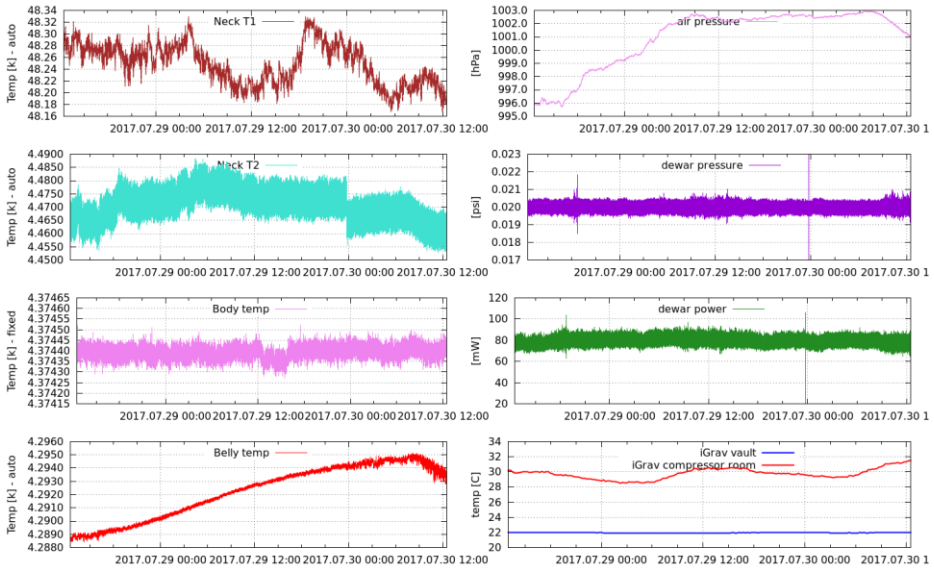




Live view (iGrav-027)



Coldhead in use ~11400 hours



EPOS-PL

- Idea: Create/Coordinate national gravity observation data repository (automatic/semi-automatic procedures)
- Tidal infrastructure map of Poland
- Gravimetry in EPOS-PL
- Contribution to **IGETS**
- Contribution to AGrav