

# Absolute Gravity Measurements in Taiwan

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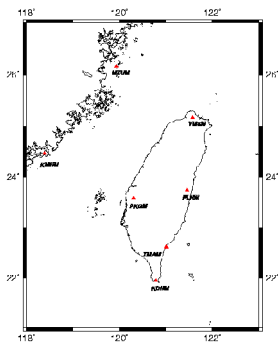
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## Introduction

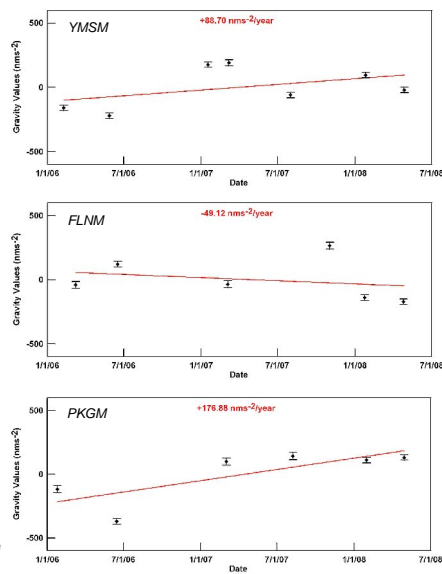
Most of the absolute gravity measurements used by the two absolute gravimeters, FG5#224 and FG5#231, for different purposes in Taiwan have been carried out in these years. We evaluate the uncertainty of the absolute gravity measurements about 3 uGal (1 uGal = 1×10<sup>-8</sup> ms<sup>-2</sup>) at the 68% confidence level. It can be reached the accuracy as the specification of the absolute gravimeters FG5.

### GPS continuous tracking stations

To analyze the precise velocity of the vertical movements by comparing with the long-term absolute gravity measurements and the results of the GPS continuous tracking stations.

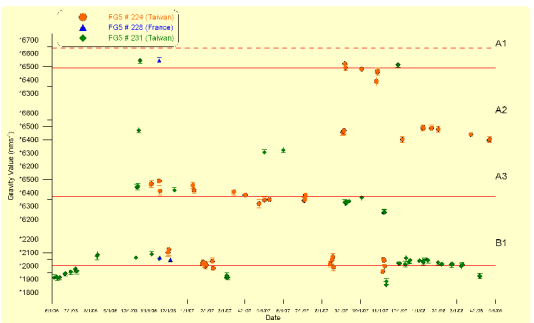


Those pictures only show the results of the absolute gravity measurements



### Gravity basis of the National Gravity Datum Service (NGDS)

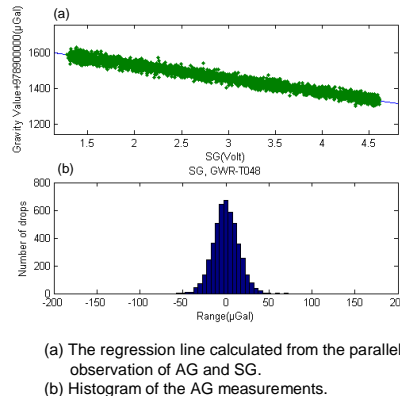
To provide the gravity basis by regular observations of the absolute gravity measurements in the National Gravity Datum Service.



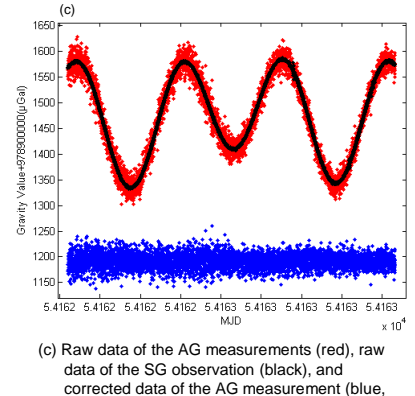
The control charts made from 4 different piles:  
 (1) the symbols: the different instruments (include French FG5).  
 (2) the center line: the mean calculated from data.  
 (3) the upper and lower control limits: 3 standard deviations above and below the center line.

### Calibration factors of the superconducting gravimeter

To determine the SG scale factor by parallel observations of the absolute gravimeter (FG5 #231) and the superconducting gravimeter (OSG #048).



(a) The regression line calculated from the parallel observation of AG and SG.  
 (b) Histogram of the AG measurements.



(c) Raw data of the AG measurements (red), raw data of the SG observation (black), and corrected data of the AG measurement (blue, corrected by tide and atmosphere).

### Absolute Gravity Taiwanese Orography (AGTO) project

To study this natural laboratory of building and collapsing of the mountain ranges using absolute gravity measurements.

From 2006 to 2010

- Nov 2006: Measurement (French FG5) **done!**
- Nov 2007: Measurement (Taiwanese FG5) **done!**  
 3 stations delayed to Mar 2008 **done!**
- Nov 2008: Measurement (French FG5)
- Nov 2009: Measurement (Taiwanese FG5)
- Nov 2010: Measurement (French FG5)

