



## **Differential results integrated with continuous and discrete gravity measurements between nearby stations**

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Integrated gravity is an efficient way in studying spatial and temporal characteristics of the dynamics and tectonics. Differential measurements based on the continuous and discrete gravity observations shows highly competitive in terms of both efficiency and precision with single result.

The differential continuous gravity variation between the nearby stations, which is based on the observation of Scintrex g-Phone relative gravimeters in every single station. It is combined with the repeated mobile relative measurements or absolute results to study the regional integrated gravity changes. Firstly we preprocess the continuous records by Tsoft software, and calculate the theoretical earth tides and ocean tides by "MT80TW" program through high precision tidal parameters from "WPARICET". The atmospheric loading effects and complex drift are strictly considered in the procedure. Through above steps we get the continuous gravity in every station and we can calculate the continuous gravity variation between nearby stations, which is called the differential continuous gravity changes. Then the differential results between related stations is calculated based on the repeated gravity measurements, which are carried out once or twice every year surrounding the gravity stations. Hence we get the discrete gravity results between the nearby stations. Finally, the continuous and discrete gravity results are combined in the same related stations, including the absolute gravity results if necessary, to get the regional integrated gravity changes. This differential gravity results is more accurate and effective in dynamical monitoring, regional hydrologic effects studying, tectonic activity and other geodynamical researches. The time-frequency characteristics of continuous gravity results are discussed to insure the accuracy and efficiency in the procedure.