There has been four periods repeated campaigns at Dali gravity network co-operated between Institute of Seismology China Earthquake Administration and Earthquake Research Institute University of Tokyo since 2005. This paper investigated the least square adjustment which solutions depend on the number of absolute gravity datum used and calibration functions of LaCoste&Romberg (LCR) relative gravimeters using the high precision absolute gravity measurements as the weighted constraint model. It is found that the solutions’ precision will be improved more if we use all absolute gravity observation values as constraints and calibration functions of relative gravimeters which have been not calibrated long time or parameters different from before. Using this method, the mean point gravity precision is better than 12μgal every repeated measurement. The solutions show that there are negative gravity changes in all most Dali area the second gravimetry 3~4 2007 compared to the first time 8~9 2005, and two negative gravity variation more than -50μgal situated at Yangbi and block between Erhai Lake and Eryuan. A model with ETOPO1 terrain data and supposing average 0.6m water height variation in phreatic aquifer between the two seasons used to calculate gravitation the observation points absorbed in seasonal water mass. Our solution demonstrates that the simple seasonal precipitation model could be interpreted the negative gravity changes in Dali, correlation coefficient between model and observation is to 0.67, and RMS is 26.96μgal. The seasonal effect is a non-ignorable important effect when we apply gravimetry data to analysis temporal variation of north Red River fault Zone.