The satellite mission GOCE(Gravity field and steady-state Ocean Circulation Explorer) strives for a high-accuracy, high-resolution model of the Earth's static gravity field. The temporal gravity variations in GOCE satellite gradiometry data should be corrected before application in Earth sciences and gravity field analysis. In this paper, we study a number of tidal effects acting on the gradiometer, including astronomical tides, solid earth tides, ocean tides and pole tides. And for non-tidal temporal gravity variable correction, the seasonal mass variations including continental water storage as well as ice mass variations are considered. The corresponding correction models for satellite gradiometry data are derived. We make use of JPL planetary ephemeris dataset, CSR 4.0 model, IERS conventions and Earth orientation parameters, GRACE gravity field monthly time series in computation. The results indicate that the respective effects of astronomical tides, solid earth tides and ocean tides are $10^{-4}$ in order, with pole tides effect is small, which is $10^{-5}$ in order. The total tidal temporal gravity effect is $10^{-5}$ in order, which is close to GOCE measurement accuracy. Corresponding to GOCE mission first 6 months measurement phase, the total seasonal mass variations derived from GRACE monthly gravity field is $10^{-4}$ in order. In consideration of GOCE mission profile with two 6 monthly measurement phases interrupted by a hibernation phase of 5 months, the non-tidal temporal gravity variation to the observations should be corrected.