The temporal and spatial changes in water masses reflect storage resources fluctuations in the oceans, atmosphere, cryosphere and on land. Waters constitute more than 70% of our planet, so their exact determination, due to the severely warming climate, is becoming more and more important in many areas, including industrial and social, and has a significant impact on human existence. For example, changes in continental water resources make a significant contribution to, among others, estimating the rise in Global Mean Sea Level. It must be noticed that almost 5 billion people live in areas at risk of lack of access to freshwater. So in the future, the understanding of dominant biomes in aquifers is crucial to assess changes in continental water resources and to notice possible conflicts caused by external factors. Constantly growing population, expanding agricultural irrigation areas and economic development cause the growing demand for water around the World. Nowadays, the observed changes in the distribution of the water resources can be estimated based on variations in the Earth's gravity field. Such valuable and, importantly, continuous and global information, was provided by the gravimetric GRACE (*Gravity Recovery and Climate Experiment*) mission for over 16 years. The changes in the Earth's gravity field were estimated based on variations in the highly accurately (several μm) measured distance between the two twin satellites moving in the same orbit at a distance near 250 kilometres. Since May 2018, the continuing GRACE Follow-On mission has been operating, providing users even more accurate information on the gravity field from the satellite level, in the form of spherical harmonic coefficients. In recent years, due to the unavailability of in-situ observations in a larger part of the World in better spatial resolution than from the GRACE/-FO missions, they are successfully used by the scientific community also outside the geodesy (hydrologists, oceanographers), enabling among others assessment of the variations in continental water storage. However, the data is provided from many sources. In this project, we plan to use several weighting schemes to combine the data available from the three official processing centres. The monthly GRACE/-FO gravity fields recalculated to the Total Water Storage will be the main subject of our research. The calculations will also include the analysis of the size of the real signal attenuated in the spatial averaging process, which is removed due to the reduction of observation noise. The analysis will be carried out on the river catchments (strong hydrological signal) located all over the World and methods selected regardless of their size. In the research, we will focus mainly on the drought periods, which will be determined from drought indicators and indicators estimated from gravimetric mission data. We believe that the obtained results will help to indicate the magnitude of the removed geophysical signal and gain knowledge about the causes and effects of drought monitoring. Another project goal will be to answer the questions about the reliability of satellite hybrid data to assess the expansion rate and the magnitude of changes in continental water resources. The research will include the assessment determined for only GRACE/-FO data and their hybrids with the laser distance measurement data to artificial Earth’s satellites (*Satellite Laser Ranging*) and their combinations with gravimetric and magnetic satellites data. The results of the research will help to extend the knowledge about regional redistributions of continental water resources, their causes and effects, and improve their evaluation.