Forests are a very important component of the natural environment, performing numerous ecosystem functions, the beneficiaries of which are both the environment and human society. Unfortunately, as a result of a complex of natural factors, which are increasingly influenced by climate change and human activity, forest ecosystems are under growing pressure, which results in the intensification of changes occurring in them. Due to the need to ensure the sustainability of forests, the development of appropriate protective strategies and sustainable forest management, monitoring of changes in forests is a very important issue. Nowadays, due to the large-area character of forest formations, remote sensing based solution are used for their measurements. They allow comprehensive, precise and repeatable measurements, while offering a reasonable price/area ratio, which is a particular advantage in the case of satellite remote sensing. Measurement technologies of sensors used in satellite remote sensing can be divided into optical (passive) and active. Optical imaging provides valuable spectral information of registered object, allowing for example to determine the health condition or species composition of the forest stands, and is characterized by ease of interpretation. However, their limitation is dependence on meteorological conditions and time of day, as well as lack of possibility of direct estimation of height structure of registered object. These problems are overcomed by active measurement technologies, among which we can distinguish satellite laser scanning (SLS) and microwave measurements (Synthetic Aperture Radar, SAR). Satellite laser scanning offers comprehensive information about the vertical structure of the analyzed area, this technology is currently used by two satellite missions, GEDI (NASA) and ICESat-2 (NASA). The GEDI mission has been operational since 2019, its aim is to measure the height structure of forest stands on a global scale, which also makes it potentially useful for detecting changes in forest stands. The ICESat-2 mission, operating since 2018, aims to monitor polar areas and measure ice cover, but its measurements can also be used to determine the height of vegetation formations. SAR technology in turn, addresses another limitation of optical data, as it offers the possibility to acquire measurements regardless of meteorological conditions and time of day. Missions using microwave measurements have been available for many years, however recently on the market appeared SAR images characterized by very high spatial and temporal resolution, opening new possibilities of acquiring data. The aim of the project is to determine the applicability of measurements derived from satellite laser scanning (SLS), SAR and multispectral optical missions in the monitoring of forest changes in Poland. In addition, the accuracy of measurements of the vertical structure of forests located in Poland, obtained by the SLS missions (GEDI and ICESat-2), which are calibrated to provide accurate measurements on a global scale, will be assessed. It will be also verified whether SAR imagery allows precise determination of changes in the vertical and horizontal structure of forests regardless of meteorological conditions, which in Poland where the average number of cloudy days is close to 200, would be of great importance for the almost instantaneous monitoring of forest transformation. The results of the study will determine whether the measurements of SAR and SLS satellite missions can be used to determine the changes that occur in Polish forests, and whether their synergy allows a comprehensive monitoring of forest changes. The implementation of the research results into forest practice would allow to develop a system that detects the ongoing changes in the forest stands, and may also be used in the development of planning, protective or management strategies.