For the last two decades, steric sea level is one of the two main contributions of the observed sea level rise. This contribution is not monotonic and varies with time both globally and regionally. Different estimations, based on different analyses and computing strategies of in situ hydrographic data, conclude to substantial global ocean warming, principally located in the upper 500m to 700m depth of ocean, even if deeper ocean signal may also be non negligible. In this study, we analyze the contribution of different oceanic layers to steric sea level changes over the past 7 years using existing temperature and salinity databases (in particular from Argo since ~2003). We study the depth-time dependence of the thermosteric/halosteric/steric component, at global and ocean basin scales. Inference on the depth and time evolution of thermal expansion and its contribution to sea level is explored. Differences between the different data bases and outputs of Ocean General Circulation Models are also investigated and discussed.