One of the many aspects of global change is that stratospheric transport is predicted to change due to changing tropospheric forcing and changes in the radiative balance. It is particularly challenging to derive such changes from observations. One possibility is the use of long lived trace gases as transport tracers. However, many transport tracers are also affected by chemical processes and long term tropospheric trends and a high data quality is needed. Further the observational data base is very sparse for most such tracers. A further possibility is the use of meteorological data. We present data on the long term evolution of mean age in the middle stratosphere of the mid latitudes, which allows us to constrain possible changes in the so called deep branch of the Brewer-Dobson circulation. A further data set stems from airborne and ozonesonde observations in the lowermost stratosphere. Here, we focus on the step-like change observed after the year 2000. Finally we present residual circulation trajectory calculations which allow to investigate long term changes in the residual transport of air masses into the lowermost stratosphere. The combination of these different observations suggest that changes in the tropical upwelling have in the past resulted in changes in the shallow branch of the Brewer-Dobson circulation rather than in the deep branch reaching into the middle and upper stratosphere.