Although atomic hydrogen is one of the key species in upper mesospheric chemistry, its temporal evolution is mostly unknown. Direct measurements are virtually not existing. Indirect measurements via the observation of vibrationally excited hydroxyl in combination with collocated ozone data are the only way to obtain this quantity - at least on a global and long term basis.

In this paper, atomic hydrogen abundance as derived from the SCIAMACHY and GOMOS instruments on Envisat is presented. These observations extend from about 30S-70N in latitude and 85-95 km in altitude. The time-span of the dataset covers the declining phase of the 23rd solar cycle. The temporal evolution is analyzed and compared to model simulations of the HAMburg Model of the Neutral and Ionized Atmosphere. Differences are discussed with respect to dynamical and photochemical effects.