In recent years, the importance of groundwater as a new type of global change indicator has caused wide attention. Stochastic, isotopic and hydrochemical studies have been made to find out the most sensitive indicators of environmental change. However, the most obvious indicator groundwater temperature and ground water temperature trends were neglected probably due to missing good quality data. Well known is the temperature dependence of isotope fractionation in the precipitation and the shallow groundwater. The mean precipitation rate ranges from 900 to 1500 mm/a and the mean yearly temperature varies between 8 – 11 °C on the surface of the investigated Austrian groundwater bodies.

In frame of the Austrian Water Quality system (GZÜV 2000) groundwater temperatures and the depth to groundwater were measured mainly four times per year in several groundwater bodies and in 20 Alpine springs over the last 18 years (1992 – 2009). In several wells fixed temperature probes of the Austrian Hydrological survey measure the groundwater temperatures over the same time period. In about 60 % of the monitoring sites the groundwater temperatures increase significantly in the range of 1 – 1.4° C. However, in many of the monitoring wells the depth to the groundwater levels decreased in the range of 0.3 – 1m over the same time period.

The implications to climate change versus change in land use are discussed and their shifts in hydrochemistry are shown.