

Measuring groundwater head in a brackish environment

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ABSTRACT

To anticipate rising sea levels, various measures are taken in the coastal zone.

These measures potentially change the distribution of salt water and the groundwater level near the shore. In order to monitor this effect, monitoring wells are often in which pressure and electrical conductivity are measured with automatic loggers. The groundwater levels often show tidal fluctuations, so it is important to measure them accurately so that gradual changes can be detected. Verification through hand measurements, is only possible if we have an estimate of the density profile from the logger to the water surface. In order to determine the pressure at the screen, the density profile along the entire monitoring well is needed.

As a test, we measured the density profile in a number of monitoring wells at different times. These measurements show that there is often a stratification of fresh water above brackish or salt water. We have also been able to establish that this profile changes over time. In this research we try to find out what the cause is (using extra measurements such as geophysics), and we propose methods to improve the measurement and determine the corrections needed to produce accurate groundwater heads.