



BUOY-BASED TEMPERATURE PROFILING IN THE AMMERSEE - BAVARIA

Research project on the long-term effects of climate change on Bavarian lakes

Background

In summertime, a temperature stratification occurs in deep lakes – the surface is warm, deep down the water is cold – which has considerable influence on the nutrient balance and the biological habitat in these lakes. Due to generally higher air temperatures induced by the climate change, both will change and hence also the life conditions of the ecosystems in the lakes.

The Bayerische Landesamt für Umwelt (Bavarian State Office for Environment) cooperated with the WWA Weilheim (Water Management Authority in Weilheim) and OTT Hydromet (detailed planning, system integration), to realize a measurement project for the continuous monitoring of water temperature in a water profile in the Bavarian Ammersee. As generally approved methods which have been tested already in the long term were practically non-existent, it was necessary to look for new approaches to realize the customer's idea of a buoy based temperature profile. With enormous effort a buoy was installed at the deepest point of the Ammersee (81 m) which is held in position by three concrete weights (750 kg each).

A measurement chain which is fixed on the underside of the buoy continuously measures the water temperature of the Ammersee at 16 different depths. Meteorological data monitored by the additionally installed compact weather station help to analyse the temperature data delivered by the measurement chain.

Monitoring Lösung

The measurement buoy is anchored at the deepest point of the lake (81 m). At its underside there is a measurement chain with 16 temperature sensors, evenly distributed down the water column right to the bottom of the lake.



For more information see:
<http://www.lfu.bayern.de/wasser/ammerseeboje/index.htm>



The buoy delivered by OTT Hydromet is equipped with extensive measurement technology:

- Compact weather station for monitoring the meteorological parameters: air temperature, air pressure, relative humidity, global radiation, wind direction and wind speed
- Solar panels for autonomous power supply
- Measurement chain with 16 temperature sensors



Measurement chain with 16 temperature sensors

- Data logger OTT netDL500 with remote data transmission



The temperature sensors of the measurement chain and of the compact weather station are continuously collecting data (average values in 15 minutes intervals). The measured data is stored in the OTT netDL data logger which is installed inside the buoy. Several times a day, the data are transferred via mobile communication from the measurement site to a database of the Water Management Authorities where they are immediately available for evaluation.

More information on OTT solutions and products:
www.ott.com