# AUTOMATIC MONITORING STATION at PIBURGER SEE

# (Tyrol, Austria)


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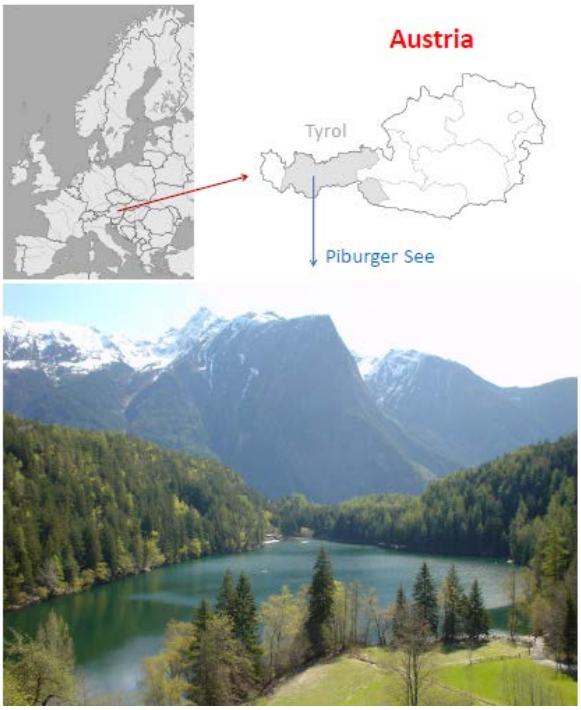
PIBURGER SEE (Tyrol, Austria)

Piburger See is a small oligo-mesotrophic mountain lake located in the Eastern Alps (47°11'N, 10°50'E, Tyrol, Austria) (Fig. 1). The mostly coniferous catchment ranges from 913 to 2400 m altitude. The lake is meromictic during spring and develops hypolimnetic anoxia in summer. Holomixis can occur in autumn, but generally lasts for a few days only depending on weather conditions. Lake water retention time is about 2 years. Piburger See is a soft water lake with a mean conductivity of ~ 70 µS $cm^{-1}$, neutral pH and an alkalinity of about 500 µeq $L^{-1}$.
Piburger See is a protected site since 1929, has experienced moderate cultural eutrophication around the mid-20th century, and has been successfully restored. Its limnology has been studied since the 1970s.




**LAKE CHARACTERISTICS**

| | |
|---|---|
| Surface area | 0.17 km² |
| Maximum depth | 24 m |
| Mean depth | 14 m |

**CATCHMENT CHARACTERISTICS**

| | |
|---|---|
| Catchment | 1.6 km² |
| Elevation | 913 – 2400 m |
| Geology | Granite, gneiss |
| Coniferous forest | 82 % |
| Rocks | 10 % |
| Meadows | 6 % |
| Roads | 2 % |

Fig. 1. Site description of Piburger See (Foto credit: H.Thies)

Monitoring platform with automatic weather station and thermistor chain

The Piburger See platform (Fig. 2) has been installed during the EU RTD project CLIME in fall 2003 at the center of the lake above its maximum depth. It holds a meteorological station with sensors for air temperature, humidity, air pressure, wind direction, wind speed, and global radiation.
A thermistor chain is installed along the lake vertical profile with sensors at a depth of 0/1/3/6/9/12/15/18/21/24 m. The monitoring station was equipped by the Austrian company Sommer (www.sommer.at).
Parameters were measured 5 times a minute and stored as 15-min average values on a Sommer MRS-X data logger. Data were transferred from the lake platform by a Sommer DFM radio transmitter to a nearby Sommer MRS-X data logger and were sent by a Siemens TC 35 GSM modem to Innsbruck University.

Fig. 2. Monitoring platform at Piburger See
(Foto credit: H.Thies)

Installed sensors

- Wind direction and wind speed: Wind sensor Model 03002 (Young Company, US)
- Global radiation: Star pyranometer, Type 8101 (Schenk, Austria)
- Air temperature and humidity: Hygromer MP-100A (Rotronic, Switzerland)
- Air pressure: Micro switch PK8763 (Honeywell / Sommer)
- Lake vertical profile thermistors: Pt 100 - 1/10DIN (Sommer, Austria)
- Data logger: MRS-X (Sommer, Austria)

Data

Data files contain raw data at 15 minutes intervals.
Missing data flagged by 9999.
For negative radiation values confer :

Oswald et al. (2016): Pyranometer offsets triggered by ambient meteorology: insights from laboratory and field experiments. Atmos. Meas. Tech. Discuss., doi:10.5194/amt-2016-351.

Acknowledgements

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