

Lake Pallasjärvi, Finland

Location

The Lake Pallasjärvi is located in northern Finland, north of Arctic Circle.



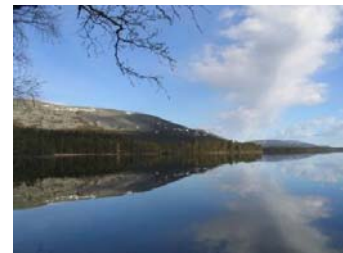
Catchment description

The habitat types in the catchment of Lake Pallasjärvi range from open marshes and lakeside landscapes to boreal coniferous forests.



Key descriptors

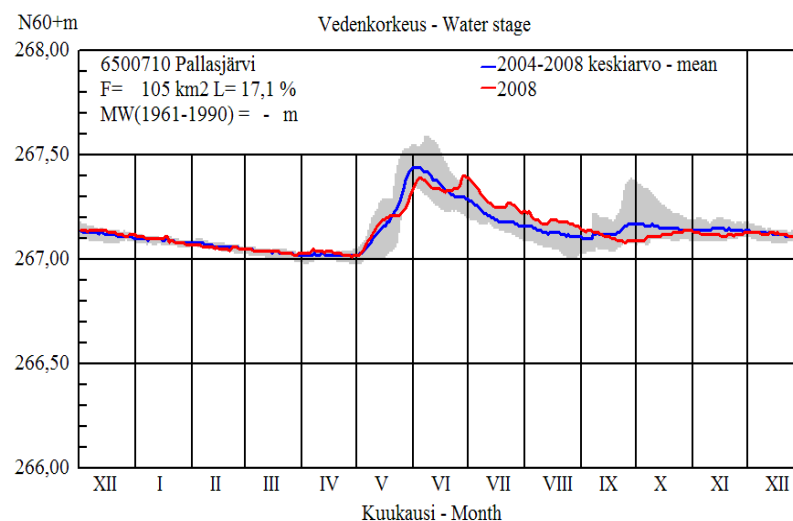
Catchment area	105.2 km ²
Mean flow at lake outlet (2004-2008)	1.64 m ³ s ⁻¹
Avg. annual rainfall (Ounasjoki)	464 mm
Lake area	17.25 km ²
Mean lake depth	9 m
Maximum lake depth	36 m
Lake volume	155*10 ⁶ m ³



Hydrological summary

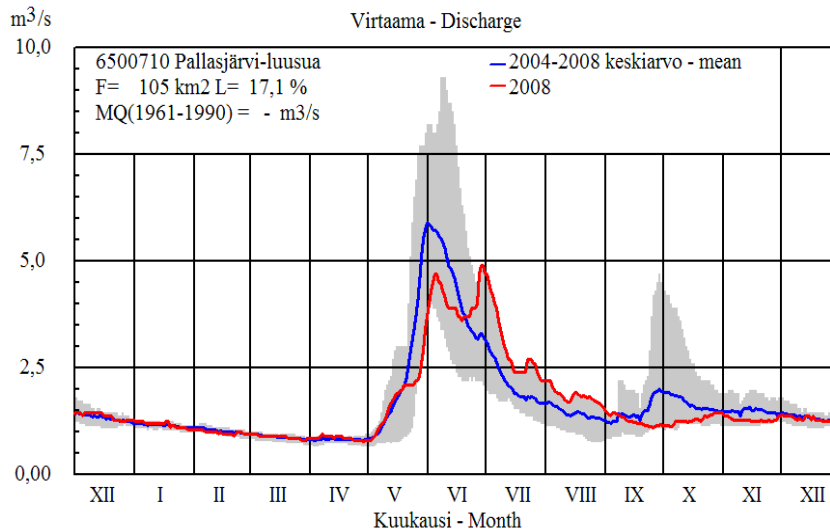
Flow regimes of rivers discharging to the lake are highly variable. The major inflow is from River Pyhäjoki. The lake and its catchment are almost in a natural state: this means that changing climate is the anthropogenic factor affecting hydrology and material fluxes in the longer term.

The figure below shows the mean water stage in Lake Pyhäjärvi during the period 2004–2008 and the water stage for 2008 (Source: SYKE).



Hydrological Observatory description

The figure below shows the mean discharge during the period 2004–2008 and the discharge in 2008 (Source: SYKE).



Data availability

Standard meteorological data are collected by Finnish Meteorological Institute (FMI), as well as a range of special observations are conducted within Global Atmospheric Watch (GAW) programme.



Figure: Pallas Sammaltunturi GAW station of FMI (photo: Jussi Paatero)

Hydrological observations and water quality data are collected by SYKE. Two automatic hydrological stations, one at the inflow of Pyhäjoki river and the other on Pallasjärvi lake are in operation since 2004. Water quality data are available from SYKE's HERTTA-database. Since 2004, there has been quite intensive water quality monitoring on 5 stations (including 3 inlets, lake and outlet). The frequency has been some 15-20 samples per year, with rather complete water chemistry analyses (about 25 water quality variables). SYKE is also studying persistent organic pollutants and mercury in the area in the framework of AMAP.

Hydrological Observatory description

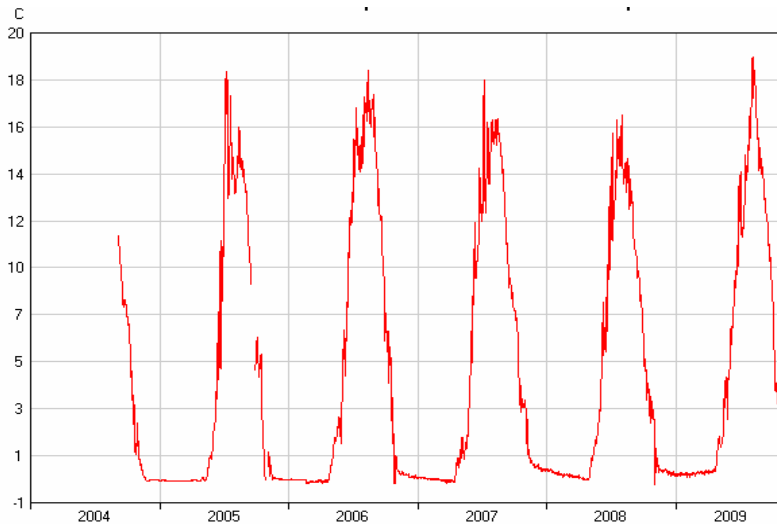


Figure: Surface water temperature (degrees C) during the period 2004–2009 (Source SYKE).

High spatial resolution GIS data is available of the land-use classes in the catchment of Pallasjärvi Lake, together with soil and bedrock maps.

Research Activity and Outputs

Pallasjärvi and its catchment is a fairly new site and it is under active development by SYKE.

Research themes include:

- Hydrological processes and climate change
- Changes in leaching and material fluxes (C/N) of the catchment and lake itself
- Harmful substances, POP substances, and mercury

Facilities and institutional support

Research infrastructure at Pallas includes Pallas-Sodankylä observatory of the Finnish Meteorological Institute, the Pallasjärvi Research Forest, and Lake Pallasjärvi catchment research area, located in the immediate vicinity of the Pallas-Yllästunturi National Park.

The Finnish Meteorological Institute has a unique infrastructure in the area including eddy-covariance measurements on CHG fluxes, and activities of GAW (Global Atmospheric Watch research programme). The Finnish Forest Research Institute is also having a range of research projects ongoing. An intensive forest monitoring site of ICP Forests is in the area, as well as Pallasjärvi and Sätkenä Research Forests.

The Pallasjärvi site is part of FinLTSER network (Finnish Long-Term Socio-Ecological Research network) coordinated by SYKE. This area of the Lake Pallasjärvi catchment will have a major role in future monitoring of the environment in Finland.

Value to network

Lake Pallasjärvi, with its catchment, provides an indispensable observatory in the network because it is the only observatory in the Arctic region of northern Europe.

Contact for further information

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Links:

- FinLTSER: www.environment.fi/syke/iter
- Global Atmospheric Watch Research Programme at Pallas: <http://fmigaw.fmi.fi/>
- Pallasjärvi and Sätkenä Research Forests:
<http://www.metla.fi/metsat/pallasjarvi/pallasjarvi-sijainti-en.htm>