

4.10 Lake Levels and Area

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Lakes affect climate primarily due to evaporation of water. In turn the level, area and temperature of lakes are impacted by regional climate. Lakes provide a range of services including drinking water, supply to industry and agriculture, recreational opportunities and ecosystem maintenance among others. In Ireland there are over 12,000 lakes, many quite small and shallow, mainly in the midlands and west. Measurement of levels, area and volume is important in order to monitor climate change effects and also for water management purposes.

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Map 4.3. Location of lake level monitoring stations.

Measurements

Lake levels are currently measured at 73 locations by the EPA, the Office of Public Works and the ESB. Some of the EPA measurements are carried out as part of Water Framework Directive requirements. In addition, the water temperature on over 220 lakes is being measured and an EPA coordinated programme to carry out a bathymetric survey of 820 lakes is under way, with over 300 lakes surveyed so far.

Satellite altimetry is used internationally to determine water levels in large lakes, with typical vertical accuracy of 20 cm. This provides useful data in the absence of *in situ* measurements.

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Time-series and Trends

No systematic analysis of lake levels has been carried out to date. [Figure 4.18](#) shows an example of measurements of the monthly mean level for Lough Oughter in Co. Cavan from 1977 to 2011. This is a good example of an unimpacted lake with no water extraction and limited development in the lake surrounds. Levels change on a seasonal basis with a minimum during the summer months and a maximum during winter, but long-term trends in the data are not immediately evident.

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purposes a number of representative lakes need to be identified. Ideally, no water abstraction should take place on these lakes. Moreover, high-quality measurements and long data records should exist. Systematic analysis of historical lake level records should also be carried out.

Further Information and Data Sources

Information on the EPA's lake monitoring programme:

<http://www.epa.ie/whatwedo/monitoring/water/lakes/>

Register of hydrometric stations: <http://www.epa.ie/whatwedo/monitoring/water/hydrometrics/network/>

Online hydrometric data for the local authority and EPA hydrometric network:

<http://hydronet.epa.ie/conditions.htm>

Online hydrometric data for the Office of Public Works hydrometric network:

<http://www.opw.ie/hydro/index.asp?mpg=main.asp>

Information and data on lake levels retrieved using satellite altimeters: http://www.pecad.fas.usda.gov/cropexplorer/global_reservoir/

Maintaining the Observations

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The EPA is committed to measuring a number of lake parameters to meet the requirements of the Water Framework Directive. For long-term climate monitoring

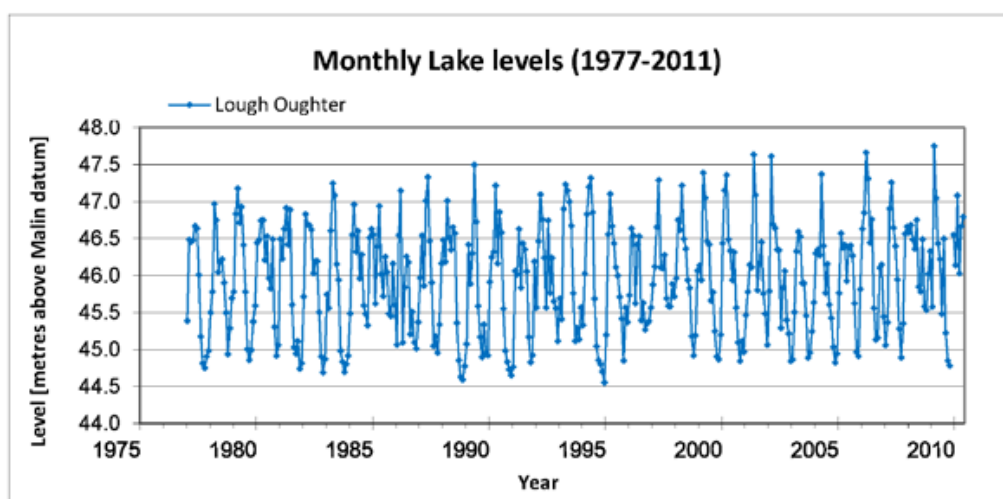


Figure 4.18. Monthly mean levels on Lake Oughter, Co. Cavan (1977–2011).