The impact of changes in the weather on the surface temperature of Windermere (UK) and Lough Feeagh (Ireland)

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Map showing the location of Windermere and Lough Feeagh
Windermere in Cumbria
Lough Feeagh in County Mayo
The most important Lamb weather types

<table>
<thead>
<tr>
<th>Lamb Type</th>
<th>Description</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>W</td>
<td>Westerly</td>
<td>18.4 %</td>
</tr>
<tr>
<td>A</td>
<td>Anticyclonic</td>
<td>18.2 %</td>
</tr>
<tr>
<td>C</td>
<td>Cyclonic</td>
<td>13.0 %</td>
</tr>
<tr>
<td>AW</td>
<td>Anticyclonic westerly</td>
<td>4.7 %</td>
</tr>
<tr>
<td>S</td>
<td>Southerly</td>
<td>4.2 %</td>
</tr>
</tbody>
</table>
Pressure pattern for Lamb ‘westerly’ weather type
Pressure pattern for Lamb ‘anticyclonic’ weather type
The long-term trend in the lake surface temperatures

**Windermere**

- Surface temperature (°C)
- Year
- $r = 0.62$

**Feeagh**

- Surface temperature (°C)
- Year
- $r = 0.31$
The long-term trend in the variability of the surface temperatures

Windermere

Feeagh
The relationship between the variability of surface temperature and cloud cover at Windermere

\[ r = -0.49 \]
The influence of westerly conditions on the surface temperature

Windermere

Feeagh
The influence of westerly conditions on the variability of surface temperature

Windermere

Feeagh
The influence of anticyclonic conditions on the surface temperature

Windermere

Feeagh
The influence of anticyclonic conditions on the variability of surface temperature

Windermere

Feeagh
Conclusions

• Changes in the synoptic weather patterns recorded over the UK and Ireland have a significant effect on the thermal characteristics of lakes.

• There are systematic differences in the surface temperature variations recorded at Windermere and Lough Feeagh.

• Measurements of this kind demonstrate that the two lakes behave as very effective ‘integrators’ of the local weather.

Further details of the CLIME project can be found on: http://clime.tkk.fi