Sub-bottom and GPR surveys over two three puzzling lakes within the Ivrea Morainic Amphitheatre (NW Italy)

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The Instruments

- GPR 40 MHz
- Sub-bottom 10 kHz
- Sub-bottom 3.5 kHz
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Occurrence of shallow gas in the easternmost Lago Fagnano (Tierra del Fuego)
E. Lodolo, L. Baradello, A. Darbo, M. Caffau, A. Tassone, H. Lippai, A. Lodolo, G. De Zorzi and M. Grossi
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The Candia Lake CVES

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Fig. 3. Core correlation in Lake Candia between the 1990 core CAND3 and the 1995 core CAND95-B on the basis of magnetic susceptibility scans. A broken line has been drawn between the main peak present in both cores. Cores are plotted to match this peak. CAND3 was dated by $^{210}$Pb. AMS $^{14}$C dates are from core CAND95-B (present study). The lithology of core CAND95-B is also shown.
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THE VIVERONE LAKE

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SOME CONSIDERATIONS

But no bubble’s resonance has been taken into account!!

Water depth 4m; T= 12°C; S=3000ppm; Max CH₄ dissolved (gas/water ratio) about 11%

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### THE PUZZLING LAKE

<table>
<thead>
<tr>
<th>Paper</th>
<th>Site</th>
<th>Elevation m.a.m.s.l.</th>
<th>Ave. [mm/y]</th>
<th>Core length [m]</th>
<th>Inflow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simonneau et al., 2014, Quat. Sc. Rev.</td>
<td>Lake Blanc Huez, W French Alps</td>
<td>2550</td>
<td>0.3</td>
<td>3.4</td>
<td>no</td>
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<tr>
<td>Menounos B, 1997, The Holocene</td>
<td>Sky Pond, Colorado, USA</td>
<td>3000</td>
<td>0.3</td>
<td>3.8</td>
<td>no</td>
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<tr>
<td>Lami et al, 2000, J. Limnol.</td>
<td>Candia Lake, NW Italy</td>
<td>226</td>
<td>0.54</td>
<td>1.1</td>
<td>no</td>
</tr>
<tr>
<td>Nesje et al., 2000, Quat. Sc. Rev.</td>
<td>Sygneskardvatnet, W Norway</td>
<td>662</td>
<td>0.5</td>
<td>4.3</td>
<td>yes (glacier)</td>
</tr>
<tr>
<td>Punning J.M. et al., 2003, J. Paleolimn.</td>
<td>Vitina Linajärvi, N Estonia</td>
<td>75</td>
<td>0.9</td>
<td>9.5</td>
<td>no</td>
</tr>
<tr>
<td>Punning J.M. et al., 2003, J. Paleolimn.</td>
<td>Vitina Pikkjärvi, N Estonia</td>
<td>75</td>
<td>0.35</td>
<td>4</td>
<td>no</td>
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<tr>
<td>Facchinelli et al., 2005, RMZ Mat and Geoenv.</td>
<td>Sirio Lake, NW Italy</td>
<td>266</td>
<td>0.5 (¹)</td>
<td>1.7</td>
<td>no</td>
</tr>
<tr>
<td>Finsinger W., et al., 2006, Quat. Sc. Rev.</td>
<td>Avigliana Lago Piccolo, NW Italy</td>
<td>353</td>
<td>0.5 (²)</td>
<td>14.92</td>
<td>no</td>
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<tr>
<td>Hormes A. et al., 2009, Quat. Geochron.</td>
<td>Nedre Hervavatnet, W Norway</td>
<td>1413</td>
<td>0.2</td>
<td>2.18</td>
<td>yes (glacier)</td>
</tr>
<tr>
<td>Finsinger W., et al., 2014, Jour. of Limn.</td>
<td>Avigliana Lago Grande, NW Italy</td>
<td>353</td>
<td>0.6</td>
<td>3</td>
<td>no</td>
</tr>
<tr>
<td>Deolasez G., et al., 2007, Terra Nova</td>
<td>Lag la Cauma, East Swiss</td>
<td>996</td>
<td>0.4</td>
<td>3.9</td>
<td>no</td>
</tr>
<tr>
<td>Deolasez G., et al., 2007, Terra Nova</td>
<td>Lag Grond, East Swiss</td>
<td>1016</td>
<td>0.55</td>
<td>7.3</td>
<td>yes</td>
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<tr>
<td>van der Blit W.G.M. et al., 2015, Quat. Sc. Rev.</td>
<td>Lake Hajeren, NW Spitsbergen</td>
<td>35</td>
<td>0.24 (³)</td>
<td>3.32</td>
<td>yes (glacier)</td>
</tr>
</tbody>
</table>

¹ in the last 2000 years  
² down to 8.3m  
³ down to 270cm

- **SIRIO**: Being the thickness of sediments form SBP around 2.5m, where have the first 10000 years gone?  
- **CANDIA**: still we have not seen the bottom of the lacustrine sediments!
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