Table 1

A. Volume balance calculations.

i) Area covered by mud extrusions.

<table>
<thead>
<tr>
<th>publication</th>
<th>feature</th>
<th>weight of cut areas (g)</th>
<th>equivalent area (km²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cita and Camerlenghi 1990</td>
<td>Milano</td>
<td>0.0044</td>
<td>5.83</td>
</tr>
<tr>
<td></td>
<td>Napoli</td>
<td>0.0088</td>
<td>11.66</td>
</tr>
<tr>
<td></td>
<td>all domes</td>
<td>0.2317</td>
<td>307</td>
</tr>
<tr>
<td>Limonov et al. 1994</td>
<td>Milano</td>
<td>0.0038</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Napoli</td>
<td>0.0094</td>
<td>12.5</td>
</tr>
<tr>
<td></td>
<td>all domes</td>
<td>0.2581</td>
<td>342</td>
</tr>
<tr>
<td>Hieke et al. 1996</td>
<td>Milano</td>
<td>0.003</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Napoli</td>
<td>0.0071</td>
<td>9.5</td>
</tr>
<tr>
<td></td>
<td>all domes</td>
<td>0.1584</td>
<td>212</td>
</tr>
</tbody>
</table>

ii) Average mud dome areas.

<table>
<thead>
<tr>
<th>dome</th>
<th>average area from paper weight method (km²)</th>
<th>area calculated from diameter (Camerlenghi et al. 1995)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milano</td>
<td>5.41</td>
<td>7.42</td>
</tr>
<tr>
<td>Napoli</td>
<td>12.08</td>
<td>10.18</td>
</tr>
</tbody>
</table>
iii) Volume mud volcanoes.

<table>
<thead>
<tr>
<th>Dome</th>
<th>minimum volume (km$^3$)</th>
<th>minimum-maximum volume (km$^3$)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>conservative interpretation</td>
<td>regular interpretation</td>
</tr>
<tr>
<td>Milano</td>
<td>3.3892</td>
<td>7.8494</td>
</tr>
<tr>
<td>Napoli</td>
<td>9.541</td>
<td>14.5863</td>
</tr>
</tbody>
</table>

iv) Volume:area factors.

<table>
<thead>
<tr>
<th>Dome</th>
<th>Areas with weighing technique</th>
<th>Areas from Camerlenghi, et al. (1995)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milano (min)</td>
<td>0.63</td>
<td>0.46</td>
</tr>
<tr>
<td>Milano (min+max)</td>
<td>1.45</td>
<td>1.06</td>
</tr>
<tr>
<td>Napoli (min)</td>
<td>0.79</td>
<td>0.94</td>
</tr>
<tr>
<td>Napoli (min+max)</td>
<td>1.21</td>
<td>1.43</td>
</tr>
</tbody>
</table>

v) Volume of extruded mud.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>$V_{\text{min}}$</td>
<td>287 km$^2$ * 0.63 = 181 km$^3$</td>
<td>287 km$^2$ * 0.46 = 132 km$^3$</td>
</tr>
<tr>
<td>$V_{\text{max}}$</td>
<td>287 km$^2$ * 1.45 = 416 km$^3$</td>
<td>287 km$^2$ * 1.43 = 410 km$^3$</td>
</tr>
</tbody>
</table>

vi) Area to collect sediment on incoming African plate.

80 km breadth of study area * (6 km/Ma * 5 Ma duration of convergence) = 2400 km$^2$,
where the term in brackets is the length of the segment for sedimentary input.
vii) Thickness of incoming sequence vs. extruded mud.

<table>
<thead>
<tr>
<th>Technique</th>
<th>Minimum Volume (km$^3$)</th>
<th>Maximum Volume (km$^3$)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Input Area (2400 km$^2$)</td>
<td>Thickness needed for mud volcanism</td>
</tr>
<tr>
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<td></td>
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<tr>
<td>weighing</td>
<td>75</td>
<td>173</td>
</tr>
<tr>
<td>Camerlenghi, et al. (1995)</td>
<td>55</td>
<td>171</td>
</tr>
</tbody>
</table>

B. Gas efflux rates estimated for Olimpi mud domes.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Mud Breccia Volume (km$^3$)</th>
<th>Gas Efflux Rate (m$^3$/a)</th>
<th>Factor for Conversion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dashgil (USSR)</td>
<td>260</td>
<td>15*10$^6$</td>
<td>1733</td>
</tr>
<tr>
<td>Milano</td>
<td>5.41 (min.)</td>
<td>1.43*10$^5$</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7.42 (max.)</td>
<td>6.21*10$^5$</td>
<td></td>
</tr>
<tr>
<td>Napoli</td>
<td>10.18 (min.)</td>
<td>2.7*10$^5$</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12.08 (max.)</td>
<td>2.4*10$^6$</td>
<td></td>
</tr>
</tbody>
</table>