

Supplementary information for GRAVITY COMPLEXES AS A FOCUS OF SEAFLOOR FLUID SEEPAGE:
THE RIO GRANDE CONE, SE BRAZIL by Ketzer et al.

Supplementary Note 1

Information about inspected gas flares with a remotely operate vehicle. Number of bubble streams per flare and bubbling rates were used to calculate methane advective flux assuming bubble diameter of 0.5 cm. The quantity of methane n (moles) in each bubble was calculated based on the universal gas law and converted to mass (see Methods).

Flare 1 – Area 1 m²

| Stream no. | number of bubbles per second | emissions cm ³ h ⁻¹ | emissions Mg yr ⁻¹ |
|------------|------------------------------|---|-------------------------------|
| 1 | 2 | 471.238898 | 0.5244 |
| 2 | 3 | 706.858347 | 0.7866 |
| 3 | 2.5 | 589.048623 | 0.6555 |
| 4 | 3 | 706.858347 | 0.7866 |
| 5 | 4.3 | 1013.16363 | 1.1275 |
| Total | 14.8 | 3487.16785 | 3.8806 |

Flux = 2.4×10^4 mmol cm⁻² yr⁻¹

Flare 2 – Area 6 m²

| Stream no. | number of bubbles per second | emissions cm ³ h ⁻¹ | emissions Mg yr ⁻¹ |
|------------|------------------------------|---|-------------------------------|
| 1 | 4 | 942.477796 | 1.04881687 |
| 2 | 0.5 | 117.809725 | 0.13110211 |
| 3 | 1 | 235.619449 | 0.26220422 |
| 4 | 2 | 471.238898 | 0.52440844 |
| 5 | 4 | 942.477796 | 1.04881687 |
| 6 | 7 | 1649.33614 | 1.83542953 |
| 7 | 2 | 471.238898 | 0.52440844 |
| 8 | 7 | 1649.33614 | 1.83542953 |
| 9 | 4 | 942.477796 | 1.04881687 |
| 10 | 4 | 942.477796 | 1.04881687 |
| 11 | 2 | 471.238898 | 0.52440844 |
| 12 | 1 | 235.619449 | 0.26220422 |
| 13 | 4 | 942.477796 | 1.04881687 |
| 14 | 0.5 | 117.809725 | 0.13110211 |
| 15 | 0.5 | 117.809725 | 0.13110211 |
| 16 | 7 | 1649.33614 | 1.83542953 |
| 17 | 4 | 942.477796 | 1.04881687 |
| 18 | 2 | 706.858347 | 0.78661266 |
| 19 | 7 | 1649.33614 | 1.83542953 |
| 20 | 2 | 471.238898 | 0.52440844 |
| 21 | 4 | 942.477796 | 1.04881687 |
| 22 | 4 | 942.477796 | 1.04881687 |
| 23 | 4 | 942.477796 | 1.04881687 |
| 24 | 0.5 | 117.809725 | 0.13110211 |
| 25 | 1 | 235.619449 | 0.26220422 |
| 26 | 4 | 942.477796 | 1.04881687 |
| 27 | 4 | 942.477796 | 1.04881687 |
| 28 | 2 | 471.238898 | 0.52440844 |
| 29 | 4 | 942.477796 | 1.04881687 |
| 30 | 2 | 471.238898 | 0.52440844 |
| 31 | 2 | 471.238898 | 0.52440844 |
| 32 | 0.5 | 117.809725 | 0.13110211 |
| Total | 97.5 | 23208.5157 | 25.8271155 |

Flux = 2.7×10^4 mmol cm⁻² yr⁻¹