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Supporting Information for

**Biogeochemical consequences of non-vertical methane transport in sediment offshore northwestern Svalbard**

**T. Treude1,2\*, S. Krause3, L. Steinle4, E. Burwicz3, L.J. Hamdan5, H. Niemann4,6-8, T. Feseker9, V. Liebetrau3, S. Krastel10, C. Berndt3**

1Department of Earth, Planetary and Space Sciences, University of California, Los Angeles, CA 90095, USA.

2Department of Atmospheric and Oceanic Sciences, University of California, Los Angeles, CA 90095, USA.

3GEOMAR Helmholtz Centre for Ocean Research Kiel, 24148 Kiel, Germany.

4Department of Environmental Sciences, University of Basel, 4056 Basel, Switzerland.

5School of Ocean Science and Engineering, University of Southern Mississippi, Ocean Springs, MS 39564, USA

6Department of Marine Microbiology and Biogeochemistry, NIOZ Royal Netherlands Institute for Sea Research, and Utrecht University, The Netherlands

7Department of Earth Sciences, Faculty of Geosciences, Utrecht University, Utrecht, The Netherlands

8CAGE - Centre for Arctic Gas Hydrate, Environment and Climate, Department of Geosciences, UiT The Arctic University of Norway in Tromsø, Norway

9MARUM Center for Marine Environmental Sciences and Department of Geosciences, University of Bremen, Germany

10Institute of Geosciences, University of Kiel, 24118 Kiel, Germany.

\*Corresponding author: Tina Treude (ttreude@g.ucla.edu)

**Contents of this file**

Figure S1 Caption

Movie S1 Caption

**Additional Supporting Information (Files uploaded separately)**

 Table S1

 Figure S1

 Movie S1

Figure S1. Peeper site. (A) Overview of the site showing chemosynthetic communities before peepers and heatflow probe were deployed. (B) Relative positions between Peeper 1, 2, and the heatflow probe. (C) Peeper 1 and 2 in the bacterial mat. (D) Peeper 3 and 4 in the tubeworm field. (E) Peeper 5 and 6 at the gas vent. (F) Filamentous sulfur bacteria overgrowing tubeworms. (G) Gas release after removal of Peeper 5 at the gas vent (close-up of the area shown in E). Note that instruments were not deployed in the center of the chemosynthetic communities to avoid disturbances of the surface sediment with the submersible.

Movie S1. Video of the temporal development of temperature in the sediment of the peeper site (bacterial mat close to Peeper 1 and 2) recorded by the heatflow probe. Temperature sensors (Sensor 1-8) were positioned at a distance of 4.5 cm. Sensor 8 was close to the sediment-water interface. Sensor 1 was at the deepest sediment depth. The heatflow probe recorded temperatures between 23 August 2012 9:39 (start of the JAGO dive) and 02 September 2012 14:39 (about two hours before the probe was retrieved from the sediment). The probe was deployed inside the sediment at the peeper site between 23 August 2012 13:24 (deployed) and 02. September 2012 16:50 (retrieved). For more details see text. Note that the recording started before the probe was deployed in the sediment.