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A new method for long-term monitoring of Arctic methane release systems – Application offshore NW Svalbard

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While the Arctic is warming at a rate of almost twice the global average and needs particular attention for climate impacts, it is a challenging place to perform oceanic measurement, especially in regions of seasonal sea ice cover and stormy seasons. The Centre for Arctic Gas Hydrate, Environment and Climate (CAGE) aims at understanding the impact of methane release on the marine environments and climate change, and one of the strategies relies on monitoring Arctic gas hydrate systems to evaluate the variability of methane release and its dependence on oceanographic changes. Two forefront K-lander observatories, emerging from a collaboration between CAGE and Kongsberg, were successfully deployed and retrieved offshore NW Svalbard in known natural gas release fields (240m and 90m depth), providing eleven months of high-resolution multi-sensor data. Multiple data sets include ocean temperature, salinity, oxygen, dissolved methane and CO_2, fluorescence, turbidity as well as ocean current and underwater acoustic measurements. Development and implementation of such cross-disciplinary technology and data analysis brings the marine and maritime research technology fields to the forefront of environmental studies to understand global change and its impacts.
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