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Widespread methane seepage around South Georgia - A common new phenomenon of the Southern Ocean continental shelf?

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Cold seeps are sources of gases and reduced fluids from the lithosphere to the hydrosphere and are well known from both passive and active continental margins all over the oceans. Specific investigations over the last 15 years document a much higher presence of cold seeps than previously thought. By looking at the distribution of colds seeps on the world's ocean it becomes immediately clear that the Southern Ocean seems to be an exception, because seepage seems to be very rare. Since the geological setting for active seepage does not differ from other oceans, we conducted R/V POLARSTERN cruise ANT-XXIX/4 in March 2013 to the areas of the Sandwich Island and South Georgia in order to explore the seafloor and increase our knowledge on active seepage. Beside other findings we have been surprisingly successful in mapping, surveying and sampling of active gas emission sites in glacial troughs on the northern shelf of South Georgia. By using ship-mounted hydro-acoustic systems we detected over 150 single gas emission sites, which were exclusively found to originate from the glacial trough and fjord systems. Video-based seafloor observations showed the ebullition of gas from seabed and water column and sediment sampling revealed distinctly enriched methane concentrations. During the presentation the results of the research cruise will be shown and the possible global impact of this new finding will be discussed.