

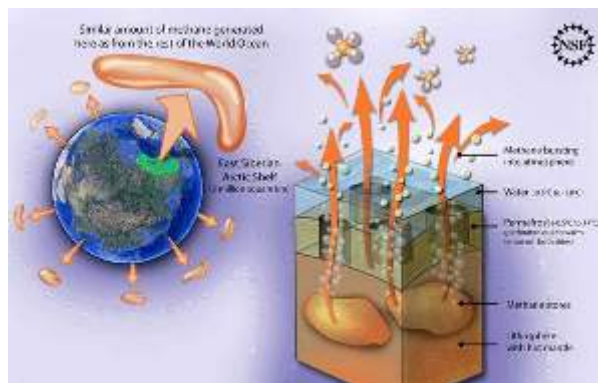
## Shock as retreat of Arctic sea ice releases deadly greenhouse gas

by Steve Connor via stele - Independent UK *Wednesday, Dec 14 2011, 10:21am*

international / environment / other press

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Dramatic and unprecedented plumes of methane – a greenhouse gas 20 times more potent than carbon dioxide – have been seen bubbling to the surface of the Arctic Ocean by scientists undertaking an extensive survey of the region.



The scale and volume of the methane release has astonished the head of the Russian research team who has been surveying the seabed of the East Siberian Arctic Shelf off northern Russia for nearly 20 years.

In an exclusive interview with The Independent, Igor Semiletov, of the Far Eastern branch of the Russian Academy of Sciences, said that he has never before witnessed the scale and force of the methane being released from beneath the Arctic seabed.

"Earlier we found torch-like structures like this but they were only tens of metres in diameter. This is the first time that we've found continuous, powerful and impressive seeping structures, more than 1,000 metres in diameter. It's amazing," Dr Semiletov said. "I was most impressed by the sheer scale and high density of the plumes. Over a relatively small area we found more than 100, but over a wider area there should be thousands of them."

Scientists estimate that there are hundreds of millions of tonnes of methane gas locked away beneath the Arctic permafrost, which extends from the mainland into the seabed of the relatively shallow sea of the East Siberian Arctic Shelf. One of the greatest fears is that with the disappearance of the Arctic sea-ice in summer, and rapidly rising temperatures across the entire region, which are already melting the Siberian permafrost, the trapped methane could be suddenly released into the atmosphere leading to rapid and severe climate change.

Dr Semiletov's team published a study in 2010 estimating that the methane emissions from this region were about eight million tonnes a year, but the latest expedition suggests this is a significant underestimate of the phenomenon.

In late summer, the Russian research vessel Akademian Lavrentiev conducted an extensive survey of about 10,000 square miles of sea off the East Siberian coast. Scientists deployed four highly

sensitive instruments, both seismic and acoustic, to monitor the "fountains" or plumes of methane bubbles rising to the sea surface from beneath the seabed.

"In a very small area, less than 10,000 square miles, we have counted more than 100 fountains, or torch-like structures, bubbling through the water column and injected directly into the atmosphere from the seabed," Dr Semiletov said. "We carried out checks at about 115 stationary points and discovered methane fields of a fantastic scale - I think on a scale not seen before. Some plumes were a kilometre or more wide and the emissions went directly into the atmosphere - the concentration was a hundred times higher than normal."

Dr Semiletov released his findings for the first time last week at the American Geophysical Union meeting in San Francisco.

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