



#### NAME

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#### TITLE OF PRESENTATION

What may cause the “Gulf Stream” to fail?

#### ABSTRACT OF PRESENTATION

As part of the Ocean Conveyor Belt—the primary ocean circulation pattern that encircles the globe—the Gulf Stream brings warm saline surface waters from the Gulf of Mexico up along the eastern seaboard of the United States, and crosses the North Atlantic heading for the coasts of northern Europe and into the Arctic Ocean. In the Nordic Seas, this warm current heats the atmosphere, becomes cooler and denser, causing it to sink to the bottom of the ocean. As more warm water is transported north, the cooler water sinks and moves south to make room for the incoming warm water. Eventually, the cold bottom waters are able to warm and rise to the surface, continuing the oceanic conveyor belt.

Paleo reconstructions from marine climate archives give us unique insight into past oceanic behavior and demonstrate that slowing of this Conveyor Belt has been directly linked with dramatic regional cooling events; just 8200 years ago, during a climatic cold snap caused by drainage of a large ice dammed lake, the currents was severely weakened, causing atmospheric temperatures to fall by as much as 6°C, and at the height of the last ice age, when most of north Europe was a frozen wasteland—the Gulf Stream had just two-thirds of the strength it has now. Variations in this Ocean Conveyor are even thought to have held sway in the historically important climate events such as the Little Ice Age, which led to considerably colder European winters, and the Medieval Warm Period that favored Norse colonies on Greenland. Understanding the origin and expression of natural climate variability on these short timescales is crucial for constraining their potential role in current and future climate changes.

#### BIOGRAPHICAL NOTE

Helga Kleiven is an associate professor at Department of Earth Science and a research leader at the Bjerknes Centre for Climate Research (BCCR), both at the University of Bergen. Dr. Kleiven is a marine geologist, with a research focus on reconstructing past ocean circulation and climate variability. She completed her PhD degree in 2000 at University of Bergen and did her postdoctoral research at University of Cambridge in the UK and Columbia University in the US. Since 2003 she has been affiliated with the BCCR where she currently leads and participate in several EU FP7 projects with focus on reconstructing natural climate variability and ocean currents in the North Atlantic region during past warm interglacial periods in earths history. Kleiven ha since 2009 been part of the “Klimaklok” and “Generasjon Grønn” teams, on going national lecture and outreach tours arranged by the Norwegian Ministry of Environments Klimaløft program to high-schools teachers and teaching colleges all over Norway.