

Name: _____ Period: _____ Date: _____ EN _____

**SCIENTIFIC AMERICAN FRONTIERS – HOT PLANET COLD COMFORT
HOW DOES THE GREAT OCEAN CONVEYOR BELT WORK**

1. Is the Gulf Stream (and great ocean conveyor) like a river with clear edges or is it more of a turbulent flow?
2. What fraction of the solar energy that falls on the entire Atlantic is carried to the North Atlantic by the Gulf Stream sections of the great ocean conveyor belt? This is a LOT of energy!!
3. What is happening to the salinity of the North Atlantic
4. What role does salinity play in the “pump” that drives surface water down into the deep ocean at the north Atlantic arm of the ocean conveyor belt
5. What is more dense, saltier water or fresher water?
6. What could happen to the ocean conveyor belt if a lot of freshwater is added to the North Atlantic?
7. How could this change the climate for the surrounding countries? Would it become warmer or colder?

WHAT IS CAUSING SALINITY CHANGES IN THE NORTH ATLANTIC?

1. How is the amount of water running out of Russian Rivers into the Arctic Ocean Changing?
2. In the water cycle, moisture evaporates into the atmosphere, moves around through atmospheric circulation, and then is precipitated out, often at a totally new location. Where on the globe was the water that falls as rain or snow in northern latitudes originally evaporated from?

3. The water in the North Atlantic is getting fresher. How is the salinity in the tropics changing?
4. Are rivers, lakes, glaciers, and ice caps made of freshwater or saltwater?
5. Where is the largest store of fresh water outside of Antarctica and how close is it to the crucial North Atlantic salinity pump of the ocean conveyor belt?

STUDYING PAST CLIMATE (PALEOCLIMATOLOGY)

1. What was the “Little Ice Age”?
2. We can't exactly use the thermometer to go back in time to study past climate but luckily there are natural records of past climates hidden in the earth itself. Where are these past records and how do scientists study them?
3. What kind of information can scientists learn from studying the isotopic composition of tiny plankton shells preserved in ocean sediments?
4. What could cause the sudden onset of another little ice age?