

On board Research Vessel *Meteor* in the equatorial North Atlantic, Sunday 7 October 2012

Dear all,

In the morning of Wednesday 4 October we left Las Palmas de Gran Canaria and set sail towards the South to the working area of Traffic. Traffic is the NWO (Dutch NSF) funded project that aims at monitoring and collecting Saharan dust along a transatlantic transect at 12°N. Along this transect we will deploy five moorings consisting of two sediment traps each and a fair number of other instruments including current meters, temperature- and salinity loggers, and instruments to measure the amount particles sinking towards the ocean floor.

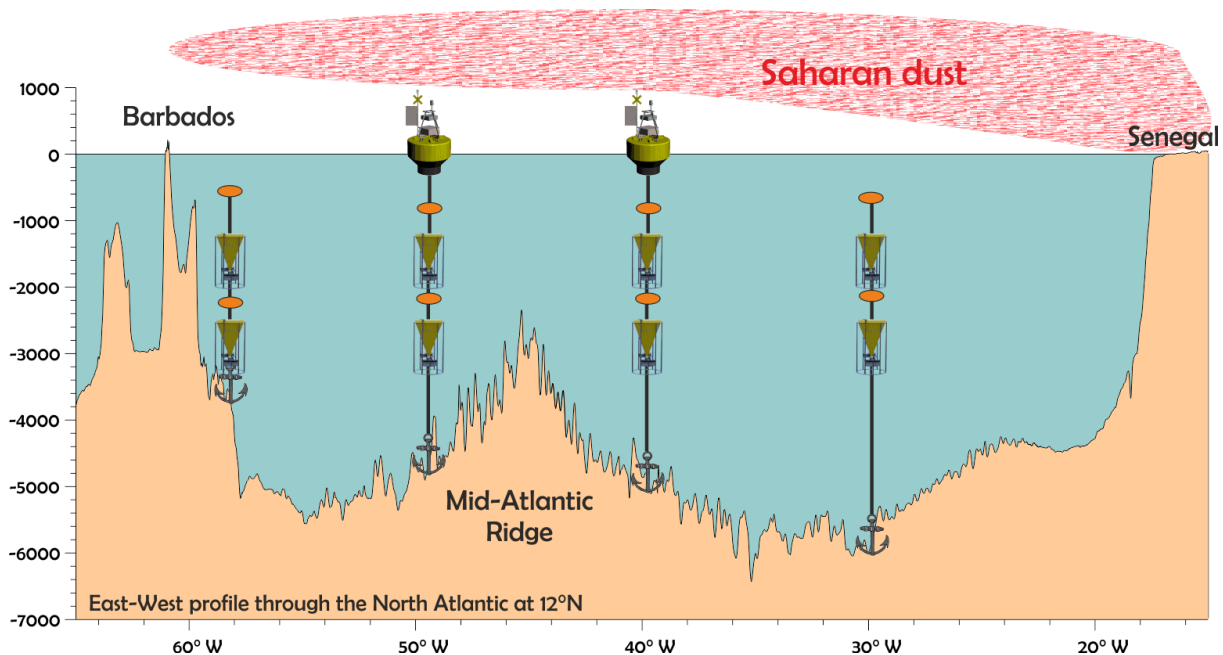


Figure 1) eventual layout of the Traffic Transatlantic array of sediment traps and dust-collecting buoys.

As Gran Canaria lies at about 28°N, we had about four days of transit time ahead of us. This gave us the time to unpack the container, prepare the labs, test the instruments, and prepare the first mooring.

On the early morning of Sunday 7 October we reached the easternmost station of the transect at 12°N/23°W where we first sailed a small multibeam- and parasound survey to get an impression of the seafloor topography. After that, we deployed a water sampler equipped with a CTD to measure the temperature and salinity of the ocean under the ship down to the sea floor at 5100 m. Thirdly, a multicorer was deployed to sample the sea floor, and finally, the first mooring was deployed.

For an idea of what our moorings look like, please have a look at Figure 1. Each mooring has sediment traps (yellow) at 1200 and 3500 m water depth, kept upright by big floats (orange). The sediment traps consist of a huge funnel, collecting anything sinking through the water column, which ends in a cup fixed to a carousel. This carousel contains 24 of these cups, and it rotates the cups underneath the funnel on a pre-programmed scheme. This way we'll not only continuously collect Saharan dust deposited on the ocean surface and sinking towards the sea floor, we'll also collect the remains of plankton and algae that live in the surface ocean and which also sink to the ocean floor. Next year, during the second cruise (of at least four) we hope to deploy two floating dust collectors, also shown on Figure 1. With these we can collect dust from the atmosphere on the same temporal resolution as the sediment traps in the water. This way, we can compare the nutrient composition of 'dry' dust travelling through the atmosphere, with 'wet' dust, sinking through the water column.

Why!?

The big hypothesis we'd like to test is: do Saharan dust outbreaks have a fertilising effect on the Atlantic Ocean? And if so, can dust fertilisation be used to sequester CO₂ from the atmosphere?

After three years and four cruises, we hope to have quantitative answers to these questions. For the moment we are recovering from a long but very successful first day on station, while already on our way to the second station. The smooth deployment of all instruments today is the result of a close-, very efficient-, and pleasant collaboration with officers and crew on board this great ship. In addition, we very much enjoy the fantastic hospitality of the support staff in the mess and pantry that spoils us with excellent food! Finally, we are very pleased to be in this warm part of the Atlantic where the ocean is calm with a temperature of 29°C, and the sun is shining bright.

For more info on our cruise, please have a look at www.stuut.tv/html/jbatsea.html The blog can be read both in Dutch and English. A German version will be made available on the MARUM website at: www.marum.de/Expeditions-Logbuecher.html

Many greetings to all of you from the Meteor in the equatorial North Atlantic!
On behalf of the ship's- and scientific crew,
Jan-Berend Stuut

