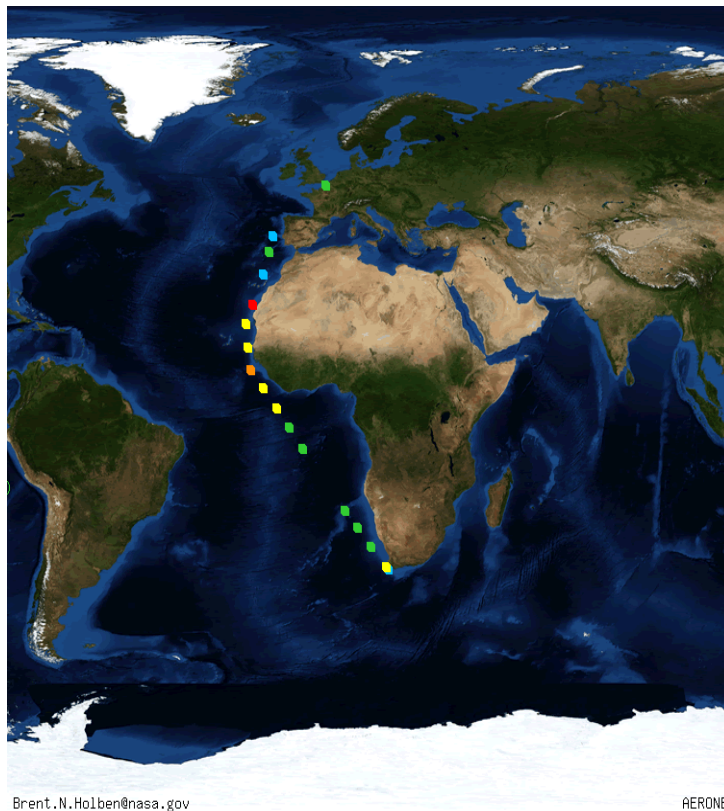


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**Short Cruise Report**  
**SO 259-2**

**Capetown - Emden**  
**14.10.2017 – 04.11.2017**

**Chief Scientist: Stefan Kinne**  
**Captain: Lutz Mallon**



## Objectives

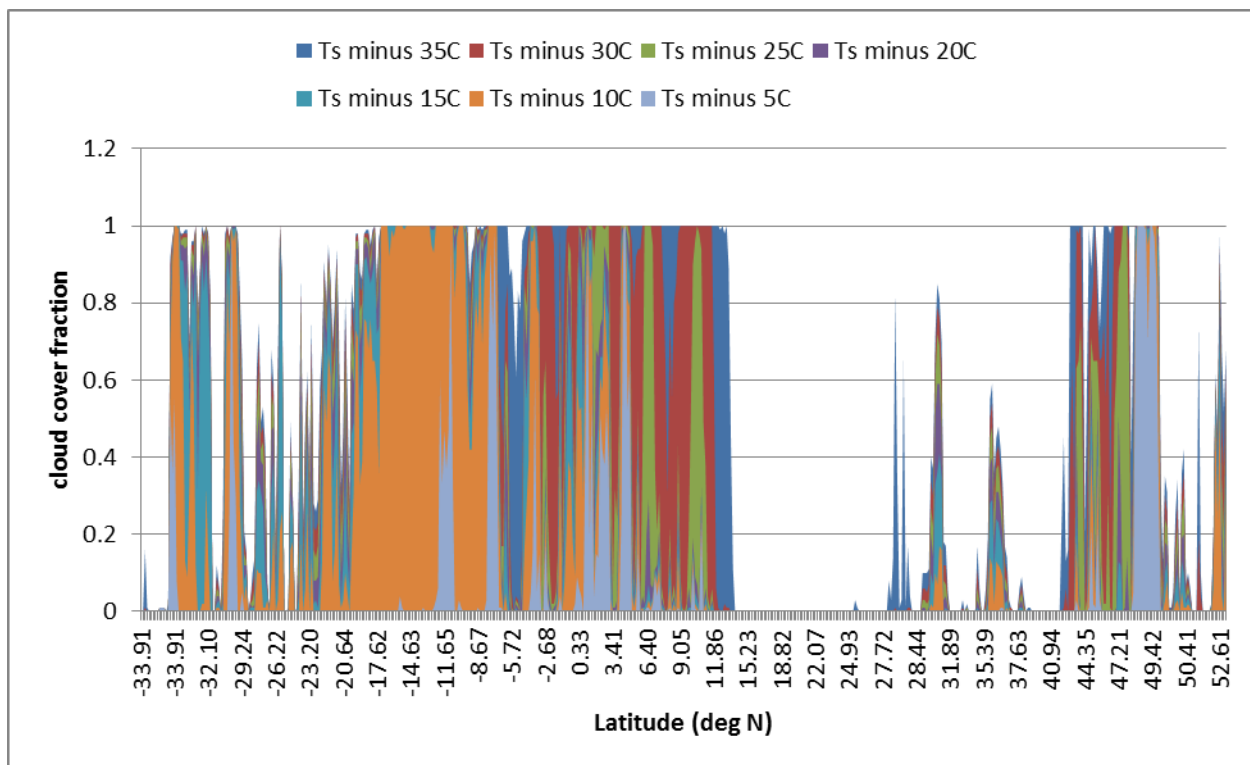
Atmospheric measurements were conducted to collect needed reference data for global modeling and satellite remote sensing. The atmospheric sampling involved two instruments, a sun-photometer and a thermal camera. The sun-photometer was operated in a handheld mode during the day, when the sun was not covered by clouds. Then column properties of aerosol (i.e. amount and particle size) and water vapor could be sampled. The upward looking thermal camera took heat images of the sky every 10 seconds day and night. The camera images collected cloud statistics on cover, structure and cloud base altitude. The data-sampling with both instruments were complemented by standard instrumentation on the ship so that many relationships (as postulated in modeling) can be tested.

## Narrative

The RV Sonne left Cape Town (at local noon) on October 13<sup>th</sup>, stopped (from 9 am to 7 pm local time) on October 28<sup>th</sup> at Las Palmas for fuel and technicians, conducted rolling exercises on October 30<sup>th</sup> for a few of hours off Portugal and reached Emden (at local noon) on November 4<sup>th</sup>. No stations were carried out during the SO 259-2 transit leg.

The encountered aerosol properties are accessible via the web of the Marine Aerosol network: [https://aeronet.gsfc.nasa.gov/new\\_web/cruises\\_new/Sonne\\_17\\_2.html](https://aeronet.gsfc.nasa.gov/new_web/cruises_new/Sonne_17_2.html)

The encountered cloud properties during the transit leg are summarized via hourly averages of the cloud-cover as function of cloud base altitude in the Figure below



**Figure** hourly average cloud cover as function of cloud base altitude and latitude (from Capetown to Germany). Cloud base altitude was stratified into 7 altitude regimes: Ts -5C, Ts -10C, Ts -15C, Ts -20C, Ts -25C, Ts -30C, Ts -35C for cloud bases below ca. 500m, 1000m, 1500m, 2000m, 2500m., 3000m and 3500m.

## **Acknowledgements**

I thank the entire crew, led by captain Lutz Mallon, for their support, knowledge, advice and humor. This made the Sonne 259-2 cruise an enjoyable experience not to mention to the great skills of the cook. I thank the funding agencies (DFG, FZJ), especially Doreen Roessler, and I acknowledge the great support by the Leitstelle in Hamburg.

## **Teilnehmerliste / Participants**

Stefan Kinne                  Fahrtleiter / *Chief Scientist*                  MPI-M

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*Max-Planck Institute for Meteorology, Hamburg, Germany*

## **Station list**

No stations