

## A Probabilistic Description of the Mesoscale Eddy Field in the Ocean

**Martin Scharffenberg**, CEN - University of Hamburg

**Stavroula Biri**, (CEN - University of Hamburg, Germany) ; **Detlef Stammer**, (CEN - University of Hamburg, Germany)

**Event:** 2015 Ocean Surface Topography Science Team Meeting

**Session:** Science III: Large scale and global change ocean processes: the ocean's role in climate

**Presentation type:** No preference

Global and regional probability density functions and higher statistical moments are analyzed for anomalies of the surface geostrophic velocity components inferred from the 3 year Jason-1 TOPEX/POSEIDON Tandem mission and for sea level anomalies (SLA) observed through the TOPEX/POSEIDON, Jason-1 and Jason-2 altimetric missions, together covering a 19 year period. Results are compared with those obtained from the AVISO 19 year,  $1/3^\circ$  gridded SLA space-time objective analysis, and associated geostrophic velocity anomalies. The study reveals that eddy variability appears to be Gaussian over most parts of the ocean, outside the influence of energetic current systems, and that specific flow regimes in the ocean can be identified through higher statistical moments of the flow field and SLA observations. However, the moment-ratio diagrams of skewness and kurtosis reveal that in energetic boundary currents the ocean does not follow Gaussian statistics, but rather behaves like an exponential distribution. Higher statistical moments of SLA and velocity anomalies do vary seasonally and thereby provide valuable information about the seasonal changes of the oceans' flow field.

**Corresponding author:**

**Martin Scharffenberg**

CEN - University of Hamburg

[martin.scharffenberg@uni-hamburg.de](mailto:martin.scharffenberg@uni-hamburg.de)