



## **Two modes of Gulf Stream variability revealed in 17 years of satellite altimeter data**

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Monthly mapped sea level anomalies (MSLA) of the NW Atlantic in the region immediately downstream of the Gulf Stream (GS) separation point reveal a leading mode in which the path shifts ca.100km meridionally about a nominal latitude of 39° N, producing coherent sea level anomaly (SLA) variability from 72° W to 50° W. This mode can be captured by use of a simple 16 point index based on SLA data taken along the maximum of the observed variability in the region 33-46° N and 45-75° W. The second group of EOF modes of variability describe GS meanders, which propagate mainly westward interrupted by brief periods of eastward or stationary meanders. These meanders have wavelengths of ca. 400km and can be seen in standard EOFs by spatial phase shifting of a standing meander pattern in the SLA data. The spectral properties of these modes indicate strong variability at interannual and longer periods for the first mode, and periods of a few to several months for the meanders. While the former is quite similar to a previous use of the altimeter for GS path shifts Peña-Molino and Joyce [2008] the simple index suggested by the data could be a useful measure of future shifts of the GS path. The meander time scales, however, are generally shorter than indicated in the work of Lee and Cornillon [1995].