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Vector EOF Analysis of SSH and Wind Stress for  
the GEOSAT Pre-ERM mission in the Gulf of  
Mexico.

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Sea Surface Height (SSH) data collected during  
the Pre-exact Repeat Mission of the U.S. Navy's  
GEOSAT satellite were analyzed together with  
wind stress data from FNOC to determine basin  
scale patterns of coherent variability. Time  
series of SSH variations were formed from  
altimeter cross-over points in 3-degree  
diamond-shaped grids in the Gulf of Mexico  
(GOM). Similarly, wind stress time series were  
formed at selected grid points in the GOM and  
in the North Equatorial Trade wind region of  
the Atlantic.

The two sets of time series, one year in  
length, were subjected to Empirical Orthogonal  
Function analysis. The first EOF mode  
contained more than twice the variance of the  
second mode, with the largest amplitudes  
(eigenvectors) of the pattern occurring just  
west of the loop current intrusion for SSH and  
in the western and northern Gulf for wind  
stress. A comparison is made with similar  
combined data for the Northern Indian Ocean  
where ocean response to Monsoon winds is  
strong, and better understood. In addition to  
the EOF analysis, events are followed through  
the Gulf in both wind and SSH records.

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