

CHALLENGES AND INNOVATION IN CIVIL AND ENVIRONMENTAL ENGINEERING

Global Climate Change, Sea Level Rise and the Sustainability of our Nation's Beaches

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**Wednesday, March 24, 2010, 4:30pm
129 DeBartolo Hall**

Global Climate Change predictions are for a significantly warmer future earth and sea level rise acceleration. The Intergovernmental Panel on Climate Change (IPCC) predicts that in the coming century, sea level will accelerate with an average rate ranging from 28 cm/century to 42 cm/century compared to the present eustatic (world wide) rate of approximately 20 cm/century. Recognizing that beaches generally retreat (erode) in response to sea level rise, the following two questions arise: (1) What is the evidence of acceleration in sea level rise rates to date, and (2) What can (will) be the response in terms of maintaining our Nation's beaches in the presence of more rapidly rises in sea level?



Before and After Photographs of the Miami Beach Nourishment Project

effect of sea level rise and/or other causes of erosion. Estimates and costs of maintaining stable beaches are provided for various scenarios of future sea level rise. Beach maintenance practices in the presence of increased rates of sea level rise will be site dependent and depend on background erosion rates, local availability of large quantities of suitable sand for beach nourishment and the value of the beach for recreation or other purposes.

The evidence of acceleration in sea level rates is examined including the more recent satellite altimeter data which indicates a rate of approximately 50% above the more long term eustatic rate. Based on these results, the question of the sustainability of beaches under increased rates is considered using the Bruun Rule which predicts that for each unit of sea level rise, the beach retreats by 50 to 100 units. One approach for maintaining beaches is through beach nourishment, the placement of large quantities of sand in the nearshore system to counter the

A reception and an opportunity to meet the speaker will take place at 4:00pm in the CE/GEOS office conference room, Fitzpatrick 156, before the seminar