Translating the effects of sea-level rise in urban systems to the coastal ecosystem interface

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They're wrong about rising sea levels... Last year it was over my knees.
Massive October King Tide Gives Miami Another Taste of Climate Change

By Henry Grabar  • OCT 05, 2017, 5:45 PM

King tides to peak in South Florida this week

BY JOEY FLECHAS
jflechas@miamiherald.com
OCTOBER 26, 2015 06:12 PM

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Review Article

Miami’s Sea Level Rise and How the King Tide is Outing America’s Political and Economic Jokers

John O'Brien*
University of Florida, Miami, FL, United States
Osborne and Newman unpublished data
• urbanized vs natural landscape

• 7.5 cm dia cores (in triplicate)

• Fresh and salt (30ppt) treatments

• Incubations 1 week, sampled 1,3,7 days
• Rosemary Collins (SWS)

• Significant increases in nutrient fluxes from salt water exposures

• Urban landscape source of C,N,P
<table>
<thead>
<tr>
<th>Compound</th>
<th>Natural Soil Increase in saltwater (%)</th>
<th>Urban Soil Increase in saltwater (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Naphthalene</td>
<td>29</td>
<td>312</td>
</tr>
<tr>
<td>Acenaphthene</td>
<td>140</td>
<td>224</td>
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<tr>
<td>Fluorene</td>
<td>78</td>
<td>386</td>
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<tr>
<td>Phenanthrene</td>
<td>&lt;10</td>
<td>189</td>
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<tr>
<td>Anthracene</td>
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<td>206</td>
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<td>Fluoranethene</td>
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<td>122</td>
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<td>Pyrene</td>
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<tr>
<td>Benzo(a)anthracene</td>
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<td>Benzo(b)fluoranthene</td>
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<td>Benzo(k)fluoranthene</td>
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<td>Indeno(1,2,3-cd)pyrene</td>
<td>77</td>
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67 Hurricanes FL Landfall in 100yrs

Opportunity knocks...err kicks down the door!
Hurricane Matthew
Category 4
October 4, 2016

Hurricane Hermine
Category 1
August 18, 2916

Opportunistic pre and post water samples
• Urban soils will leach contaminants when exposed to salt water

• Anthropogenic materials can be a significant source to surface waters

• In all study sites, TOC, TN, and TP increased with salt water transgression events

• Metals and PAH concentrations increased in ALL study sites post storm surge

• SLR will likely be a slow process punctuated with large scale transgression events – result in episodic loading events
Effects of Hurricane Irma on dissolved organic carbon fluxes along a salinity gradient

Schafer et al.    Poster # 4
Thank You!

“Scenic” A1A post-Matthew