Tropical storm Isaac and resulting phosphorus impacts on the northern Refuge marsh

Donatto Surratt
Everglades National Park
Isaac passed through south Florida beginning on Aug 25th
• Marsh stage was maintained higher than canal stage during the two months leading to Isaac.
• Inflows resulting from Isaac-related operations rapidly increased canal and marsh stage.
• Canal stage exceeded marsh stage for a short period.
• Outflows started later than inflows and at less than half the rate of inflows.
• Continued outflows reduced canal stages over the two weeks following Isaac.
• Canal water intrusion was limited to 0.5 km or less during the month preceding Isaac
• Inflows from STA1W resulted in canal water rapidly intruding 2.4 km into the marsh interior
• Outflows and continued rainfall reduced intrusion over the two weeks following Isaac
• Methods for determining canal water intrusion and the explanation of the conductivity isopleth can be found at http://sofia.usgs.gov/lox_monitor_model/reports/2nd_annual_07.html
LOXA101 TP

- WY06-12 annual:
  - mean = 15.4 ppb
  - median 16.7 ppb
- Prior to Isaac
  - max = 58 ppb
- Post Isaac
  - 9/5/12 = 219 ppb
  - 9/11/12 = 108 ppb
LOXA105 TP

- WY06-12 annual:
  - mean = 17.4 ppb
  - median 19.1 ppb

- Prior to Isaac
  - max = 52 ppb

- Post Isaac
  - 9/10/12 = 89 ppb
  - 9/12/12 = 79 ppb
Take home points

- Over the 8 days following Isaac,
  - untreated inflows from G300 and G301 were more than 10% of the total annual Refuge inflow since 2005
  - TP load from G300 and G301 was more than 45% of the total annual load to the Refuge since 2005, and TP concentrations were substantially higher than observed since 2005
  - Waters from all inflows intruded up to 2.4 km into the marsh
- These flows increased phosphorus concentrations in the marsh immediately downstream from the STA1W and G300 discharges