On the transport of river induced low salinity waters in the SoFLA-HYCOM domain

Rafael Schiller, Villy Kourafalou and Ge Peng
(UM/RSMAS)

In collaboration with
Libby Johns (NOAA-AOML)
Pat Hogan (NRL)
Comprehensive Everglades Restoration Plan (CERP)
Florida Bay basins
SoFLA-HYCOM

- September 99 to December 02
- 2004
NOAA-SFP oceanographic observations

OCEANOGRAPHIC STATIONS
- REAL-TIME C/T/Optics
- REAL-TIME C/T/Currents
- REAL-TIME C/T/Optics/Currents/
- C/T/Currents
- C/T
- REAL-TIME CMAN/SeaKeys/COMPS (NOAA/R/OUSEF)
- bimonthly DRIFTER DEPLOYMENT SITE

SURVEY TRACKS
- bimonthly REGIONAL TRACK
- and associated CTD acronyms
- monthly BISCALLAY BAY TRACK
- monthly FLORIDA BAY TRACK

PRESENT NOAA SFP ARRAY (FY05)
Fresh water fluxes and pathways

- Approximate area around cruise tracks
- Surface salinity variability
- Freshwater pathways
Area mean values – Daily fields

Area mean values of salinity and precipitation - Year 1999

Area mean values of salinity and precipitation - Year 2000
- Fresh water fluxes - Sections: ~ 55km long
- Fresh water fraction $F = \frac{(S_a - S)}{S_a}$

$S_a = $ Ambient salinity (35.5)
Florida Bay basins
low salinity during the dry season due to intrusion from the SW Florida shelf
Strong southward winds after maximum precipitation (and river runoff) in fall 2004.
FLAh0.04 Time Series on SW FL Shelf Salinity

FNMOOC (3-hourly) Wind Stress: V-Comp

fnmoc-1.0: red  81.40W 25.15N

Daily Salinity (psu)

NCODA: red  Free: blue  81.40W 25.15N  k = 1

Daily Salinity (psu)

NCODA: red  Free: blue  81.40W 24.86N  k = 1

Date

Northwest

Northeast

Southwest

Southeast
Next Steps – Remote sources

GOMh0.04 Surface Salinity (expt_20.0 NCODA)
- Northern Gulf of Mexico domain
- Evaluate the dynamics behind the offshore transport of MR plume waters towards the South Florida Region
Thanks!