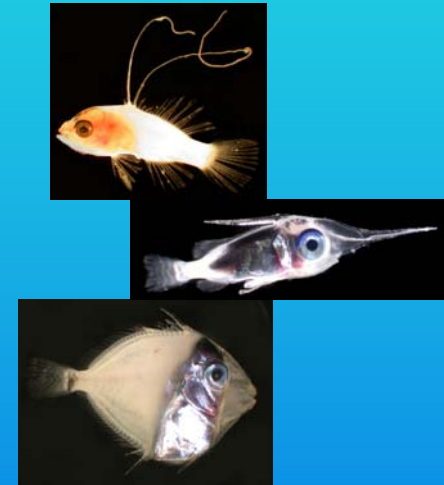
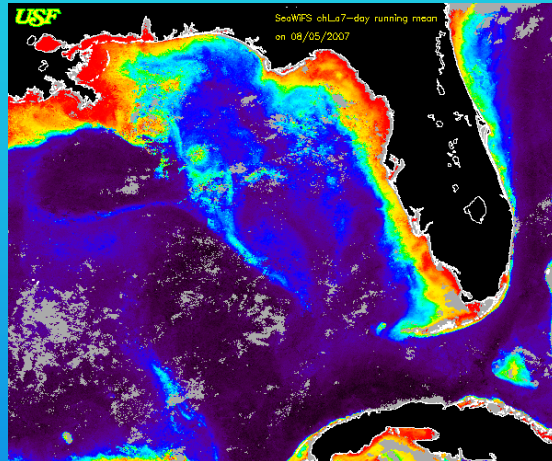


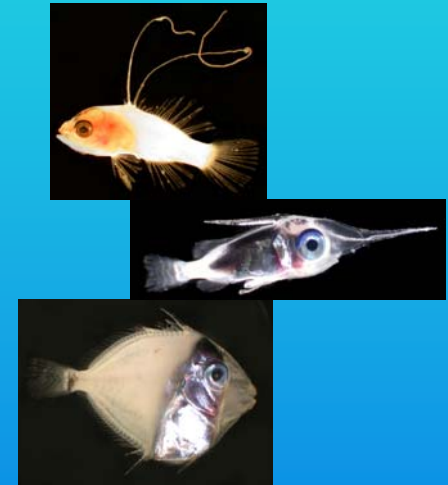
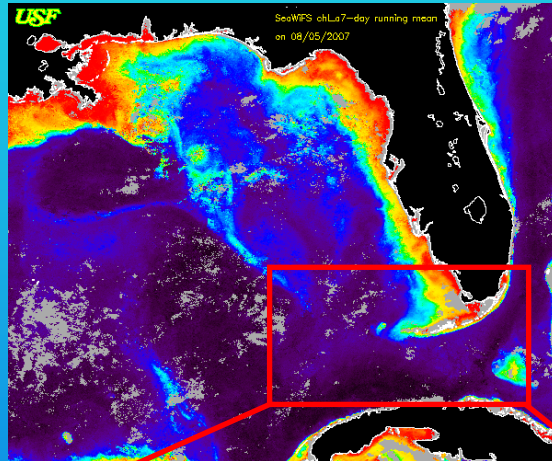
Larval reef fish assemblages in the Florida Keys and the influence of mesoscale eddies on larval distributions



K. Shulzitski, S. Sponaugle, R. Cowen

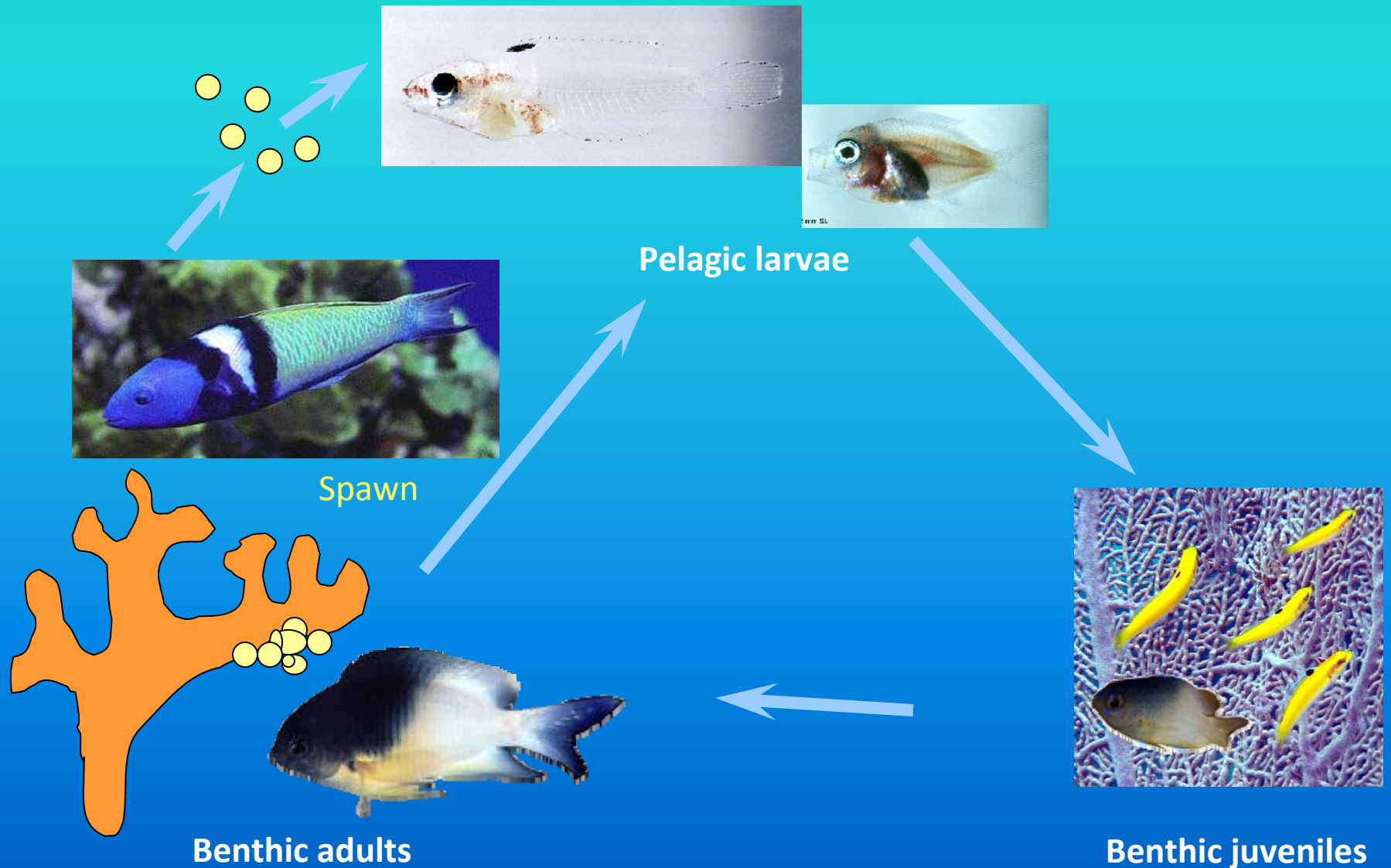
Rosenstiel School of Marine and Atmospheric Science

Larval reef fish assemblages in the Florida Keys and the influence of mesoscale eddies on larval distributions

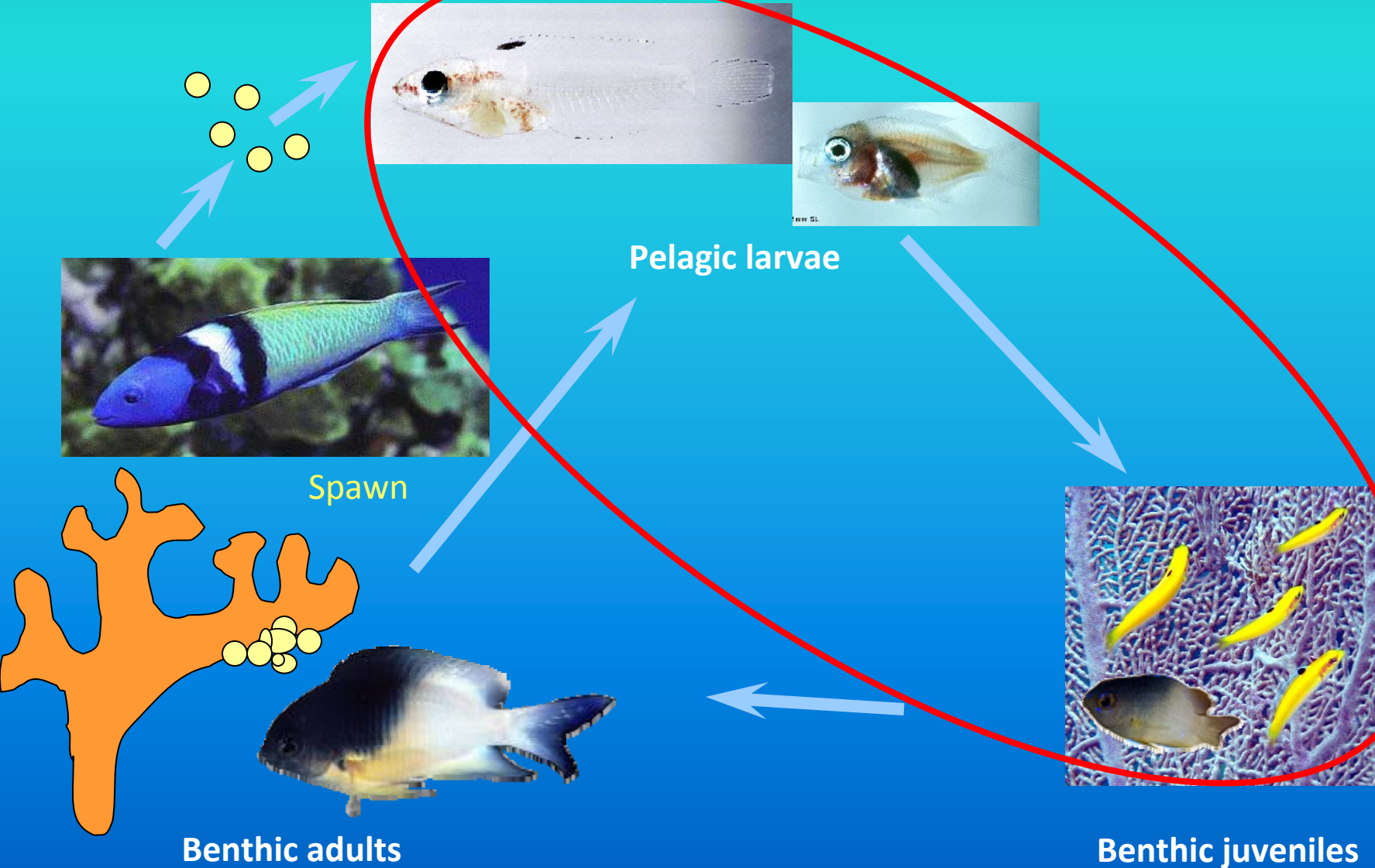


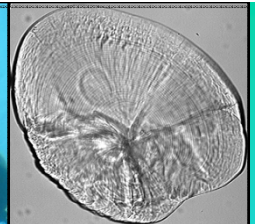
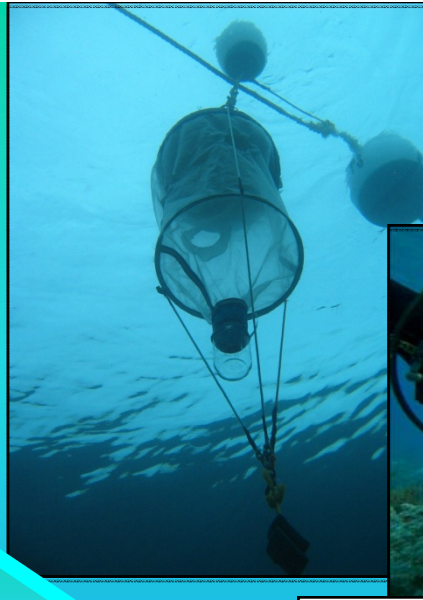
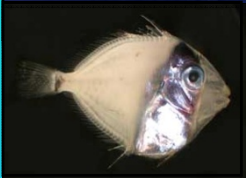
Population Connectivity

The vast majority of benthic marine organisms have a complex life cycle

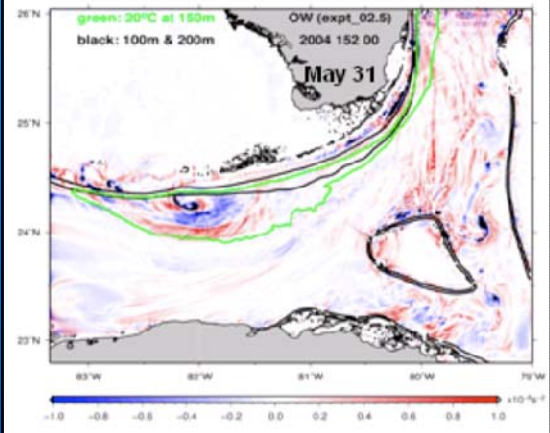
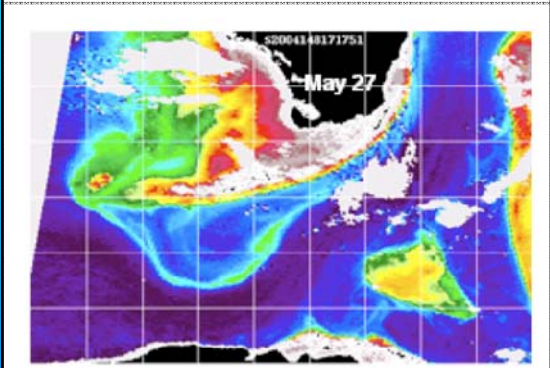
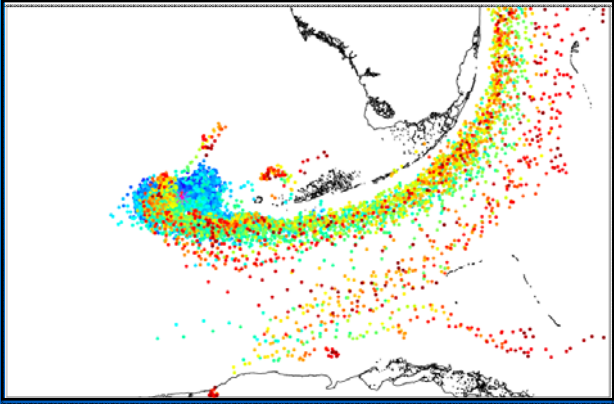
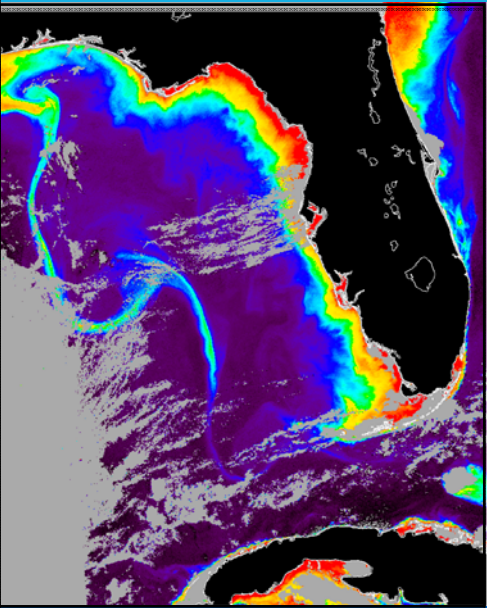
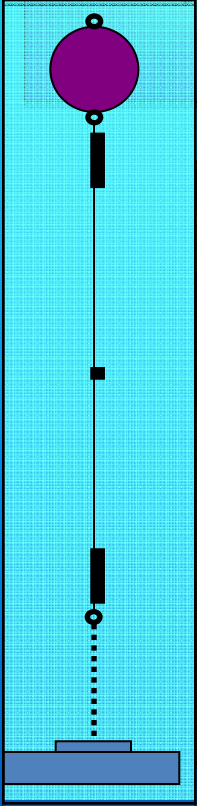


Major implications for population connectivity

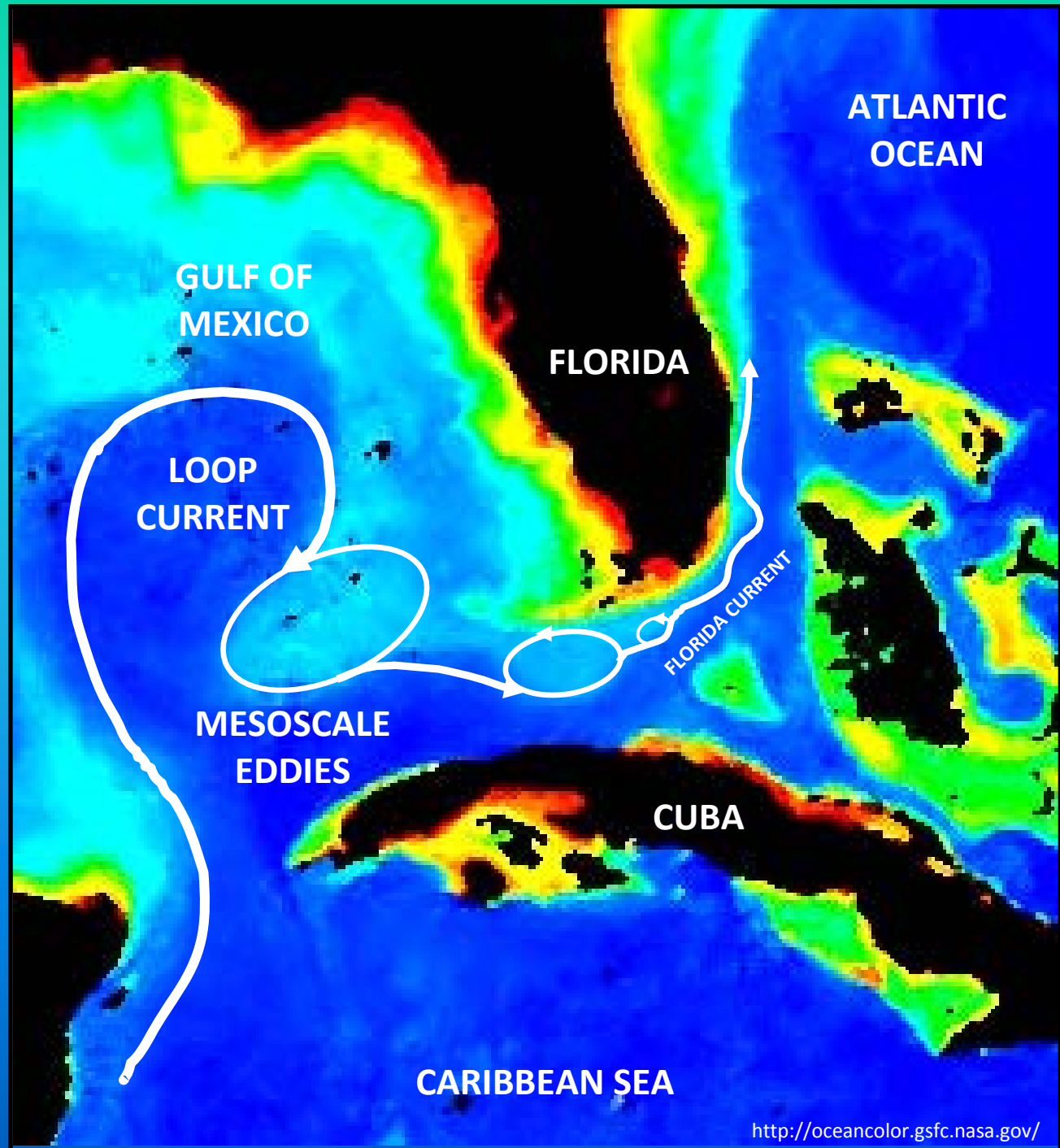




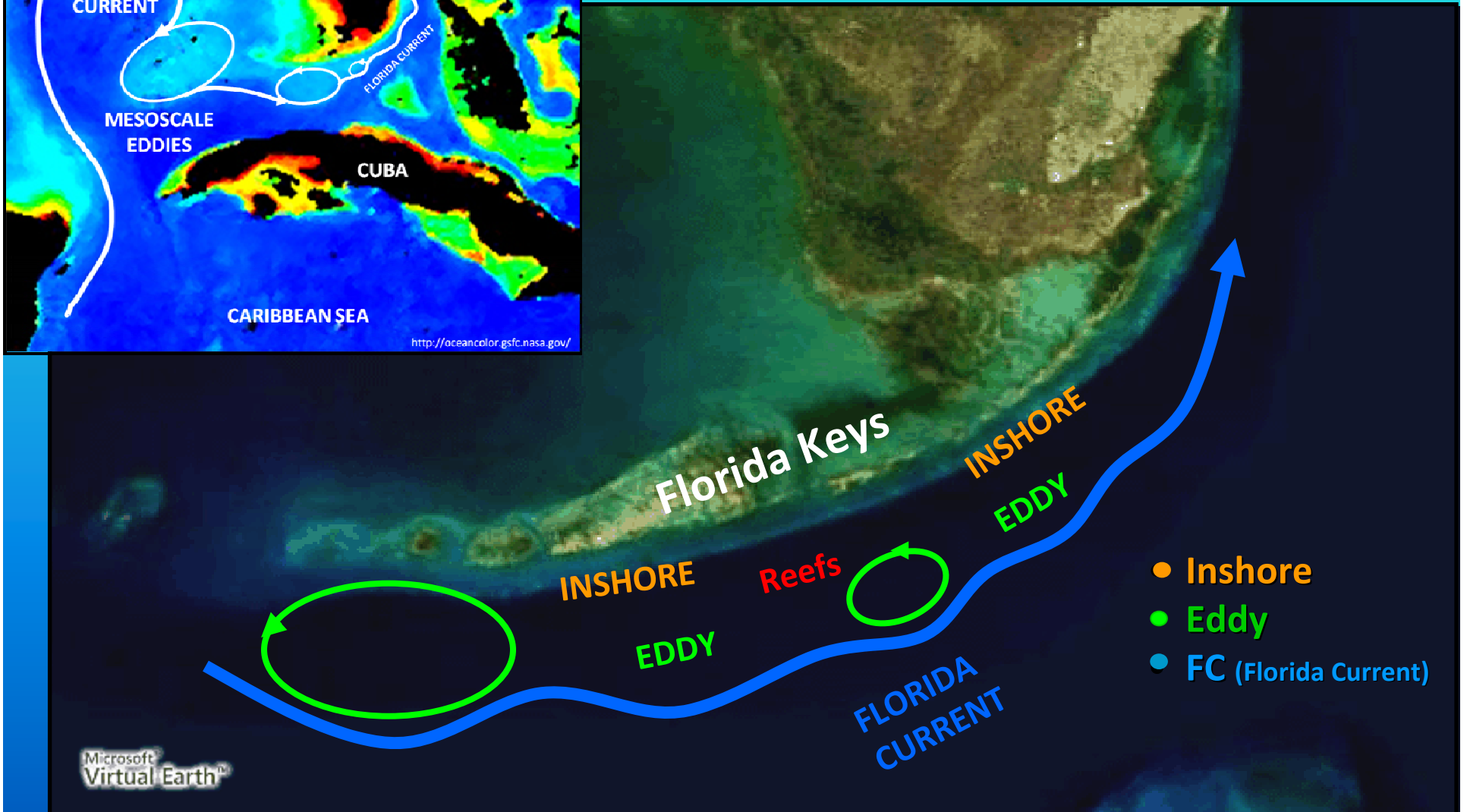
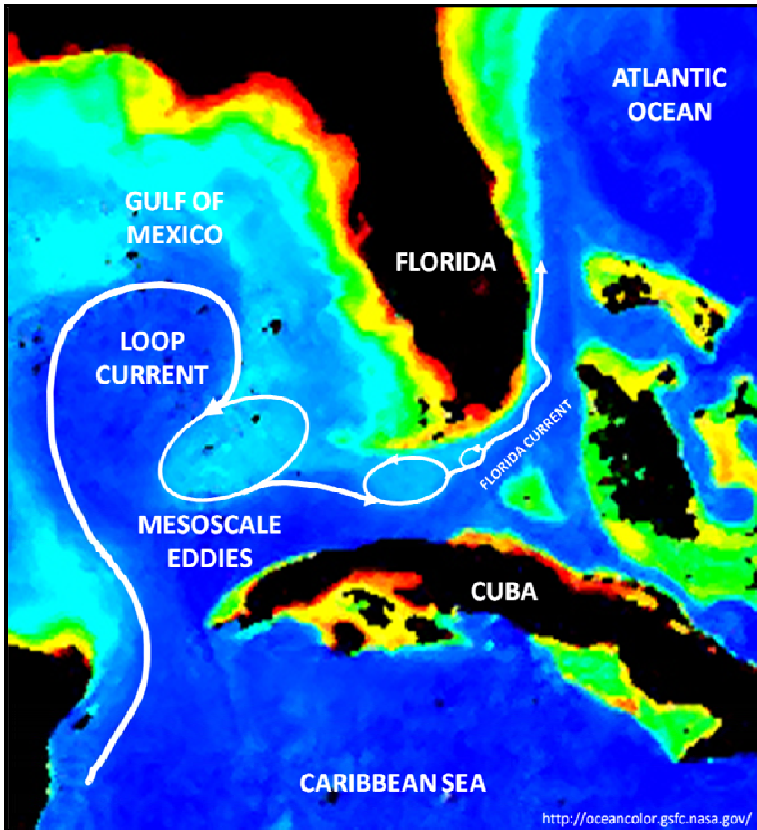
Dispersal kernels



Study area



The physical environment can be classified into zones

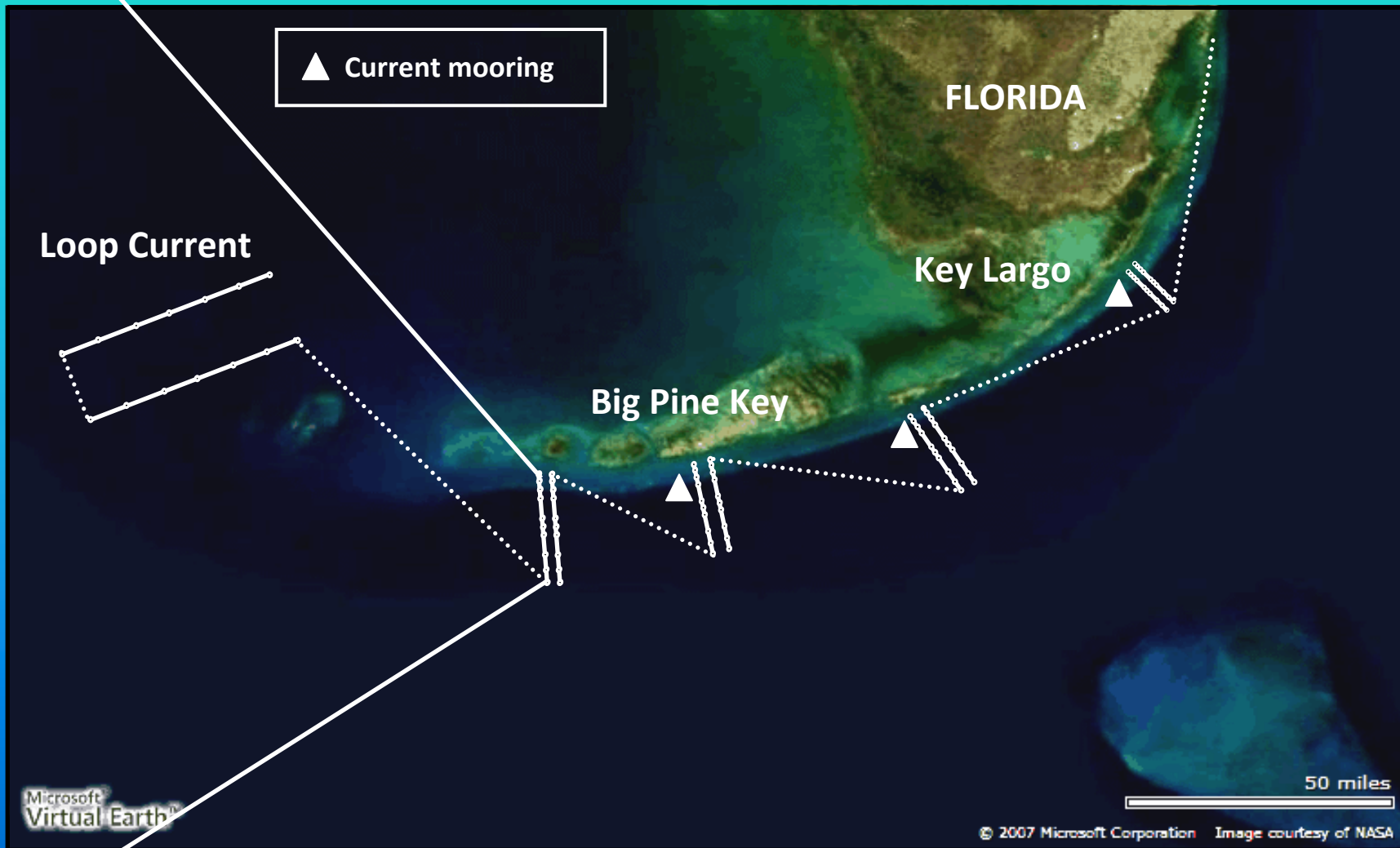


Ichthyoplankton sampling

Inshore

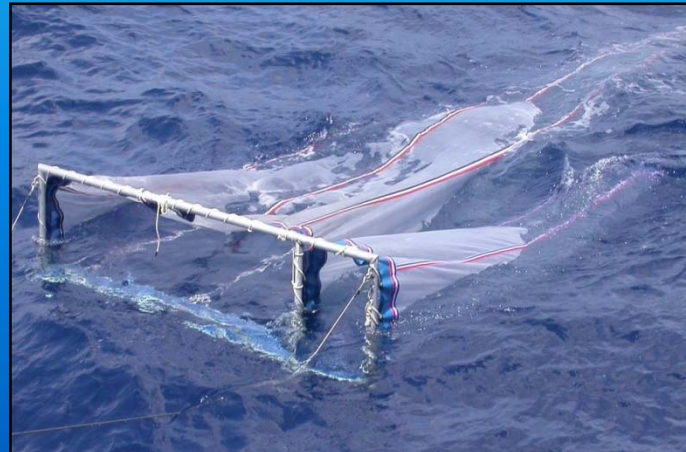
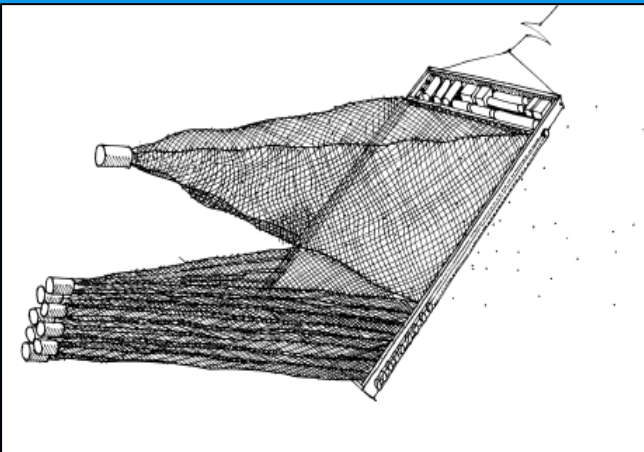
Eddy

FC



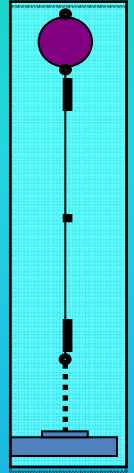
Ichthyoplankton Collection

- Inshore frame net
- MOCNESS – depth-stratified



Physical Data Collection

- Underway data
 - Currents
 - Temperature
 - Fluorescence
- CTD casts
- Current meter moorings
- Satellite-tracked drifters

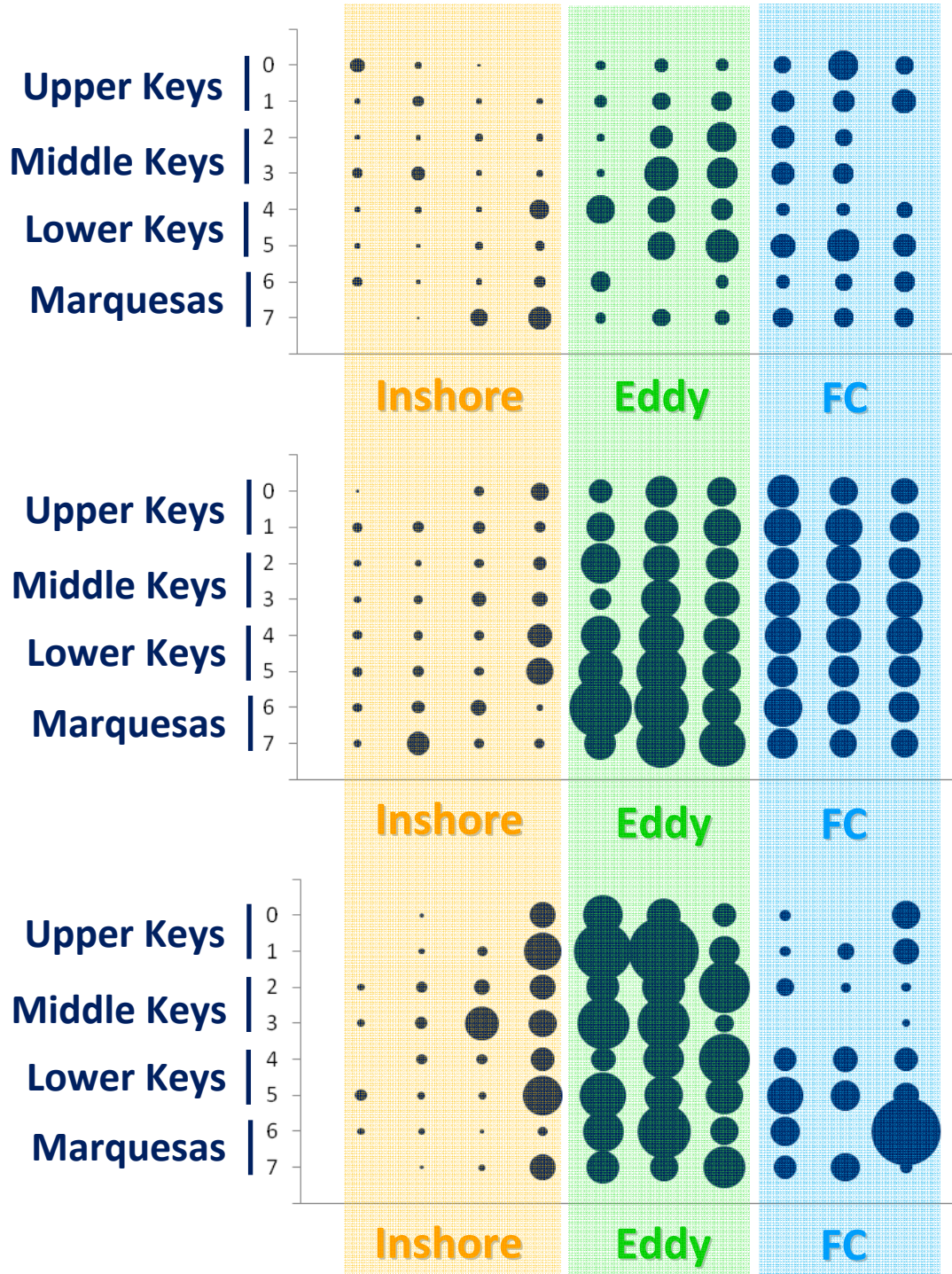


Larval Abundance per 1000 m³

10

250

500



Cruise 1
June 2007

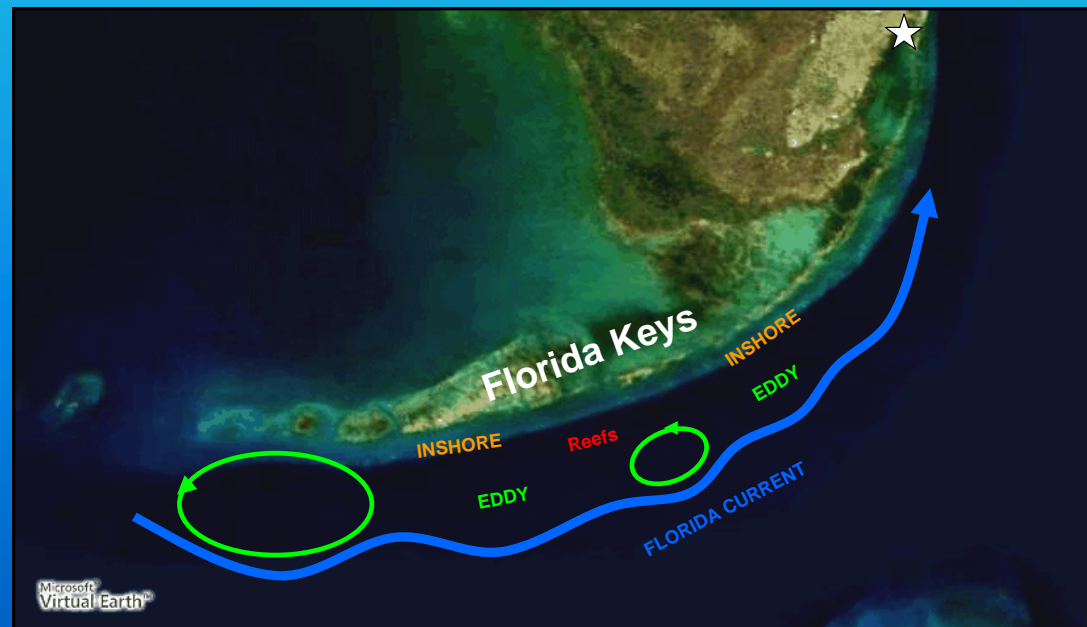
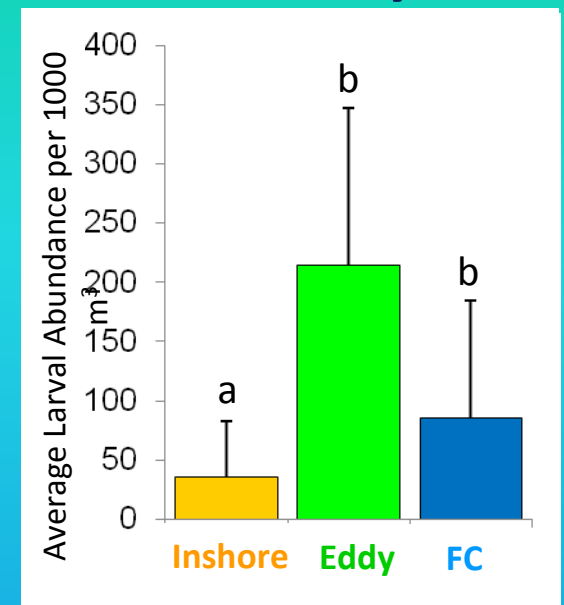
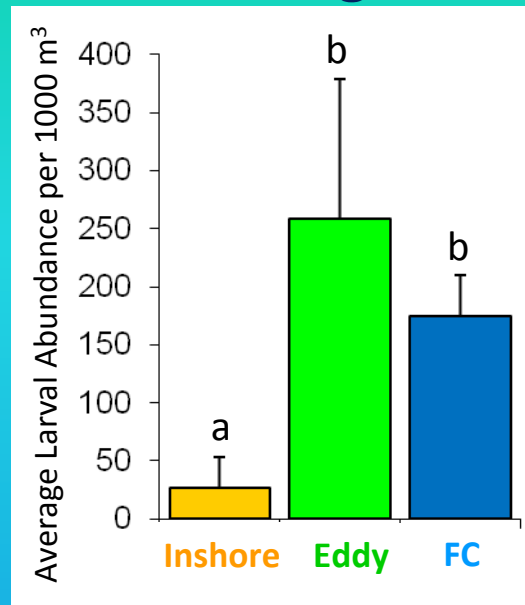
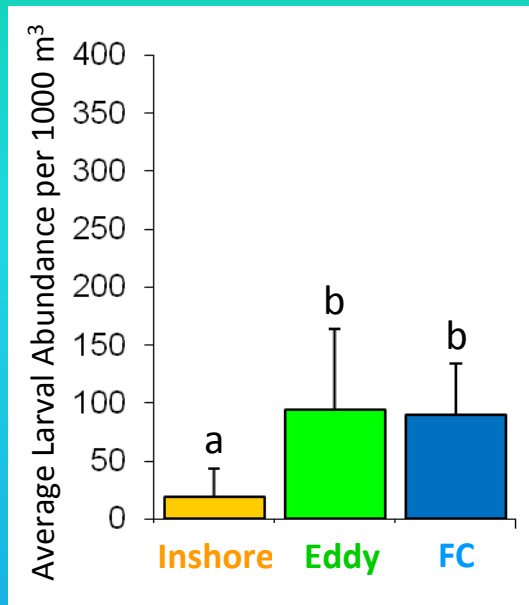
Cruise 2
August 2007

Cruise 3
July 2008

Cruise 1 June 2007

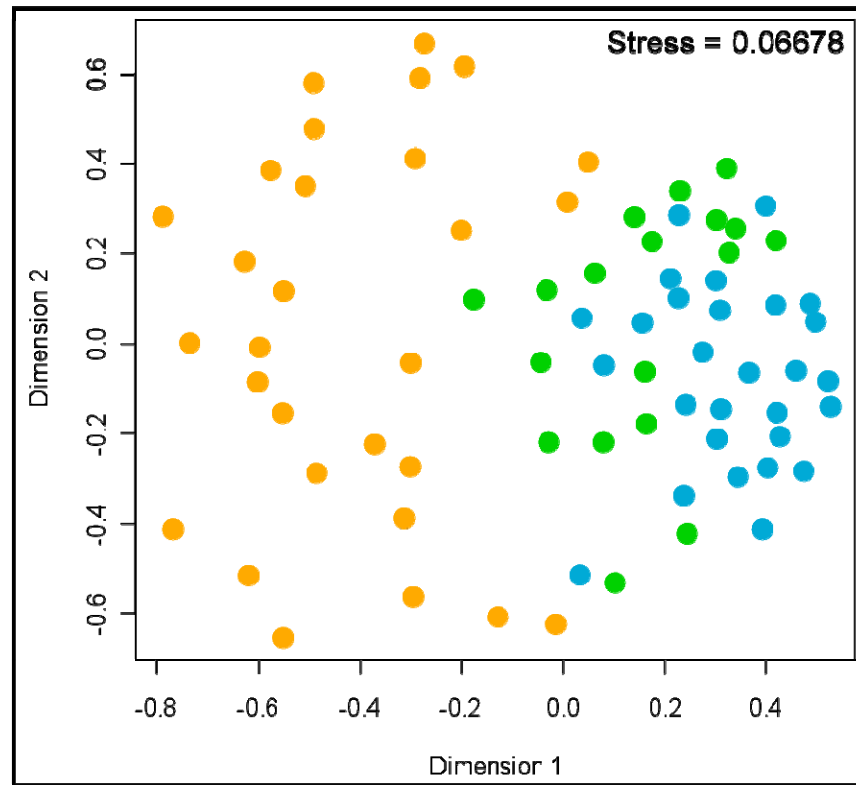
Cruise 2 August 2007

Cruise 3 July 2008



Larval assemblages differ by zone

CRUISE 1

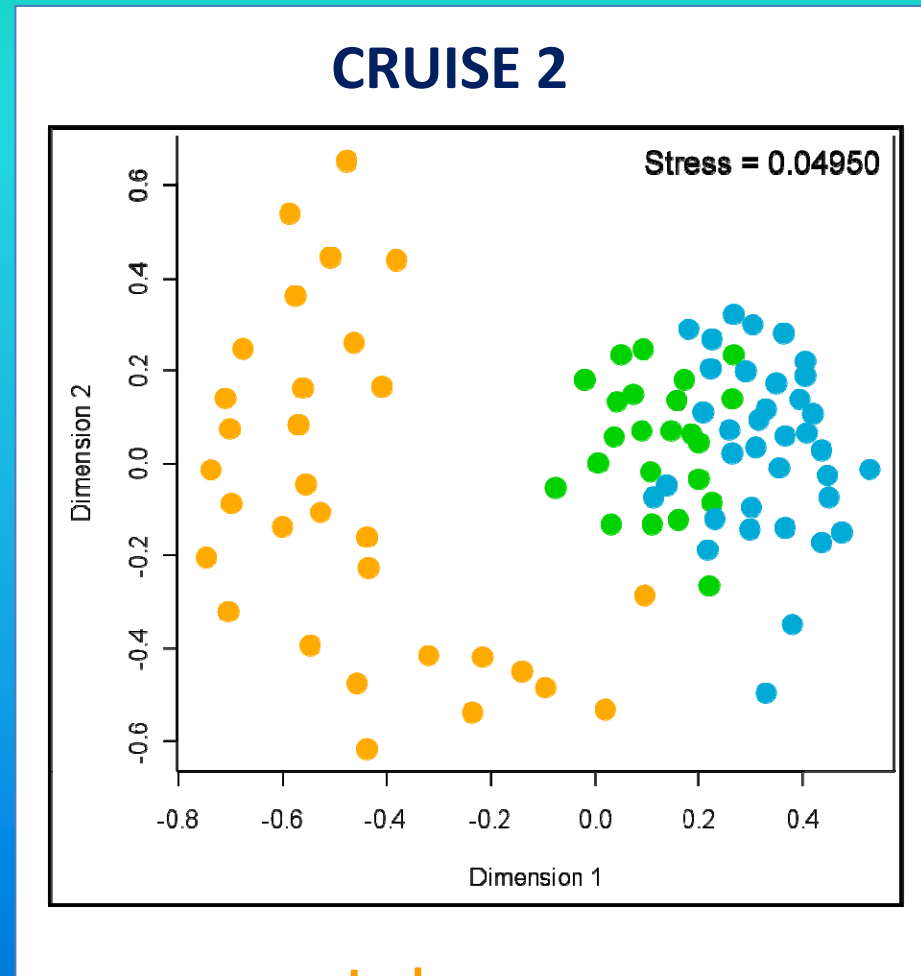
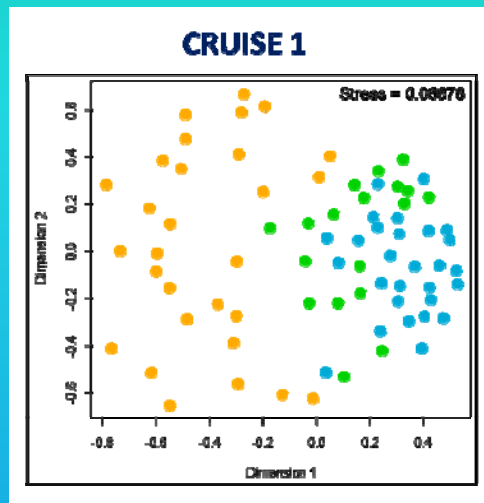


Inshore zone

Eddy zone

FC zone

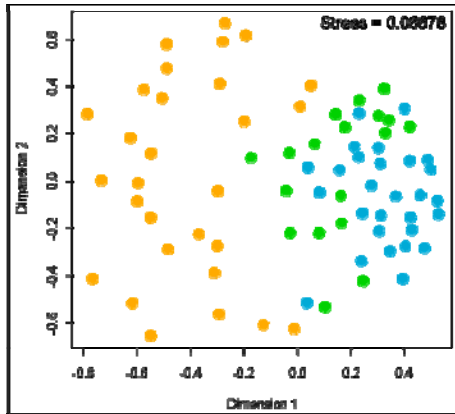
Larval assemblages differ by water mass



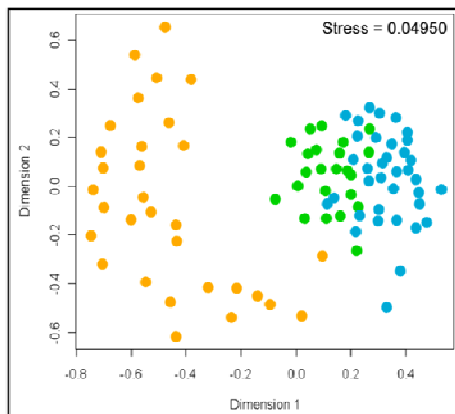
Inshore zone
Eddy zone
FC zone

Larval assemblages differ by water mass

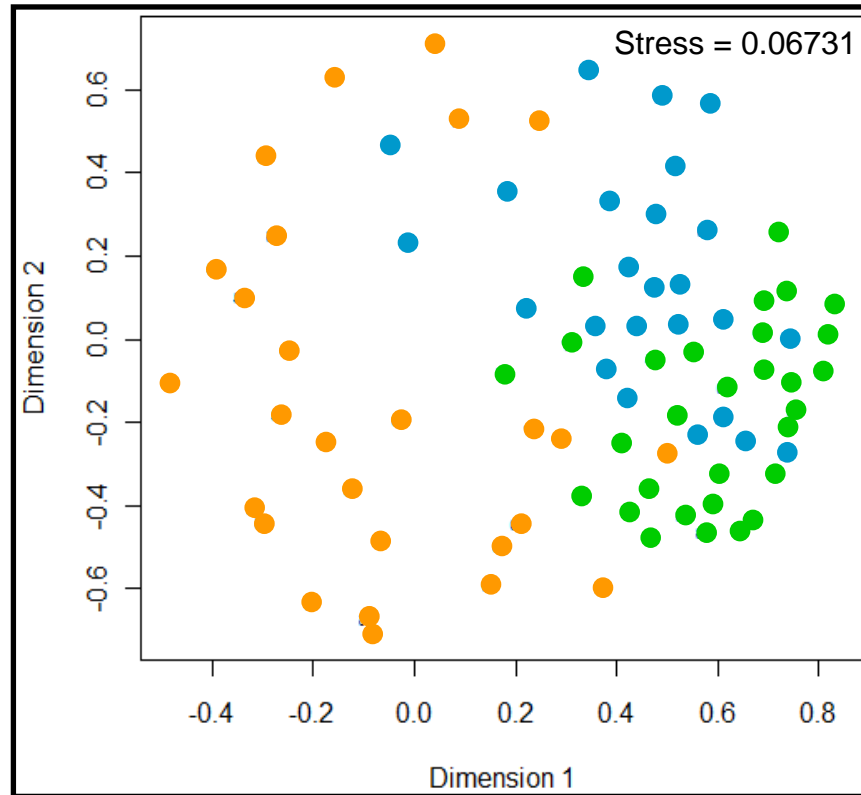
CRUISE 1



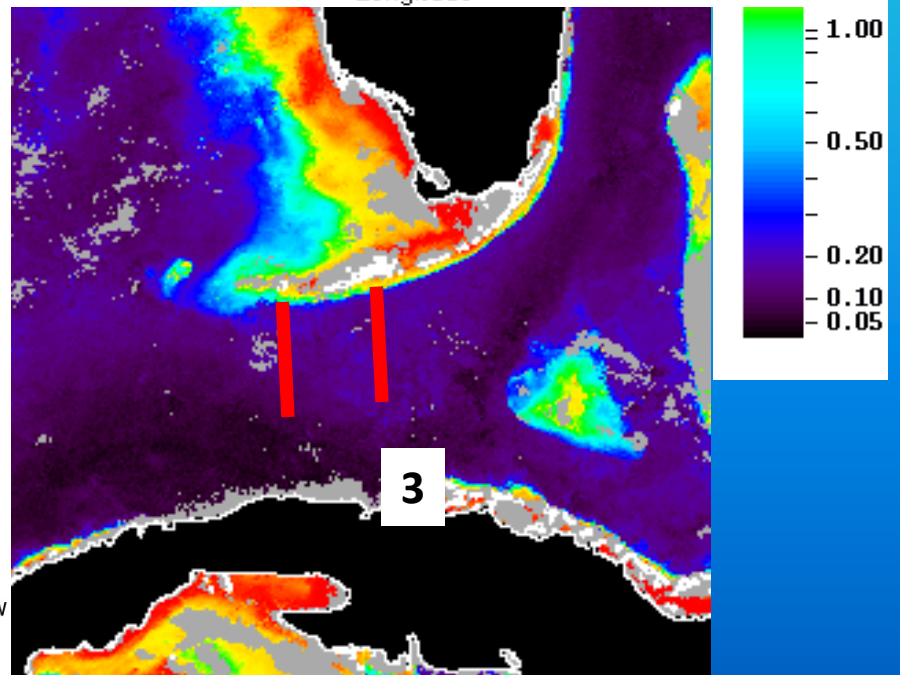
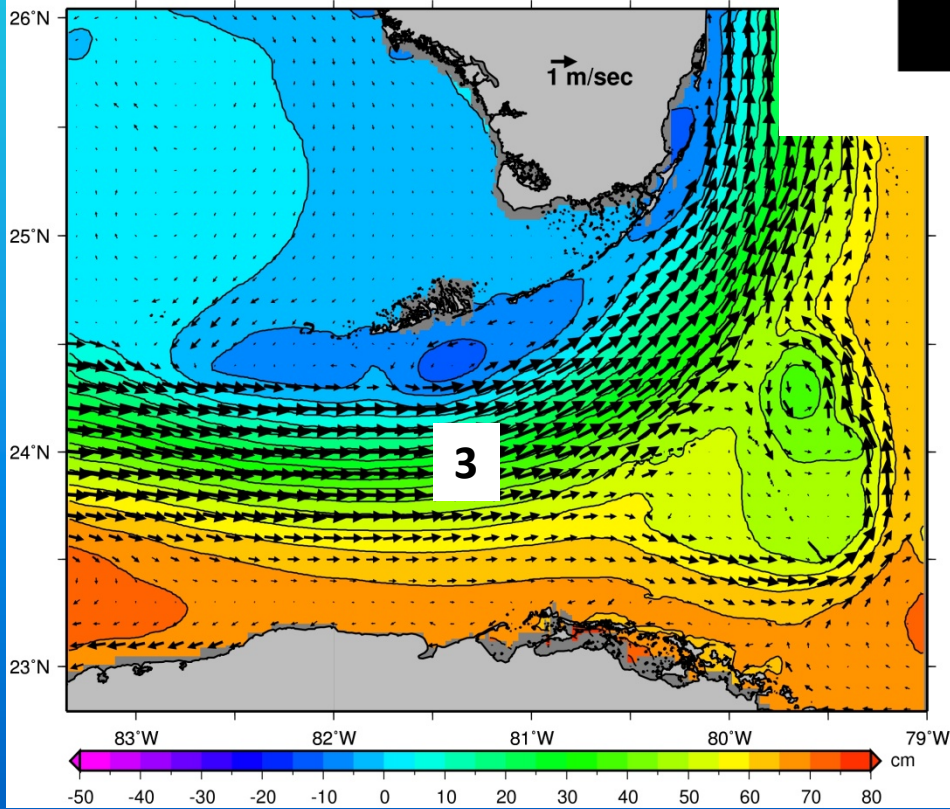
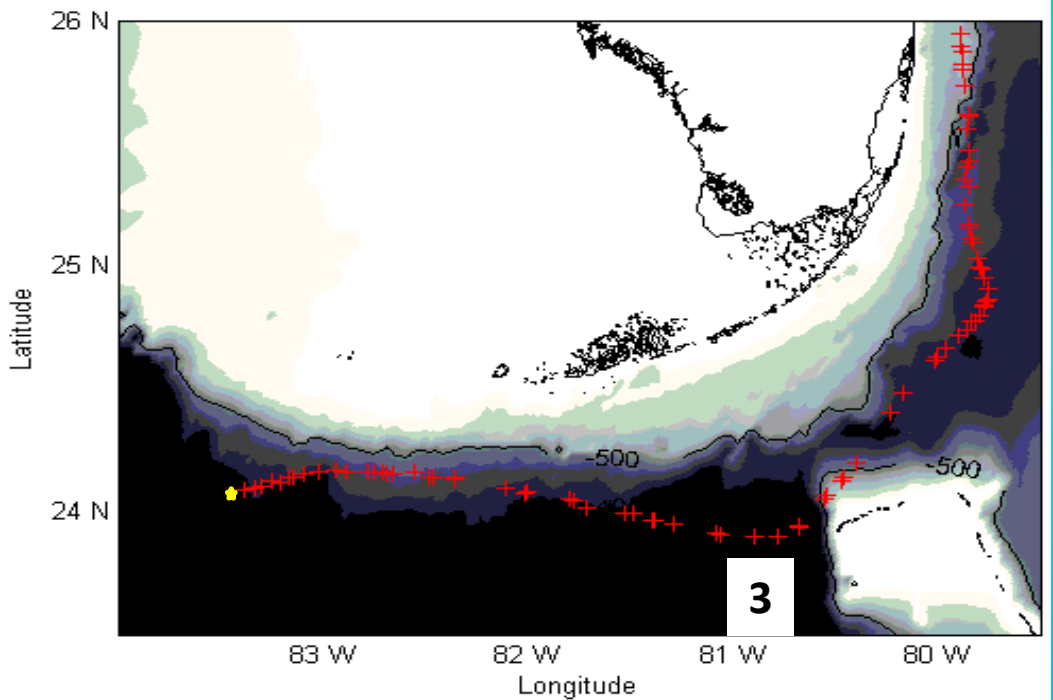
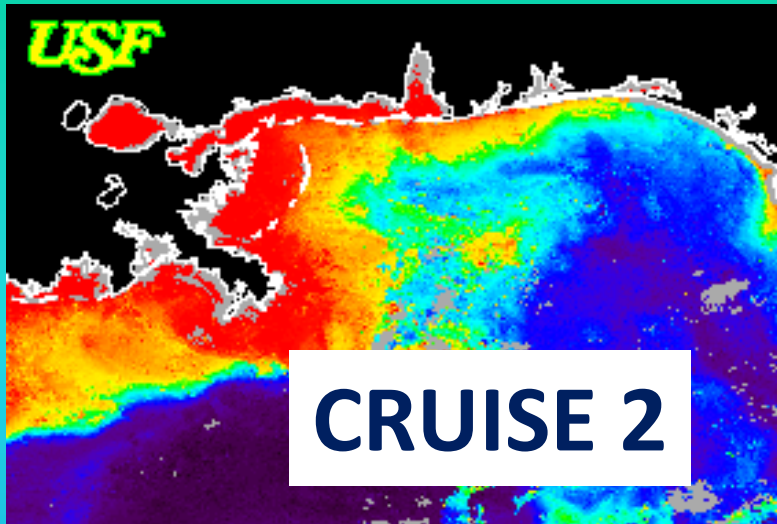
CRUISE 2



CRUISE 3



Inshore zone
Eddy zone
FC zone

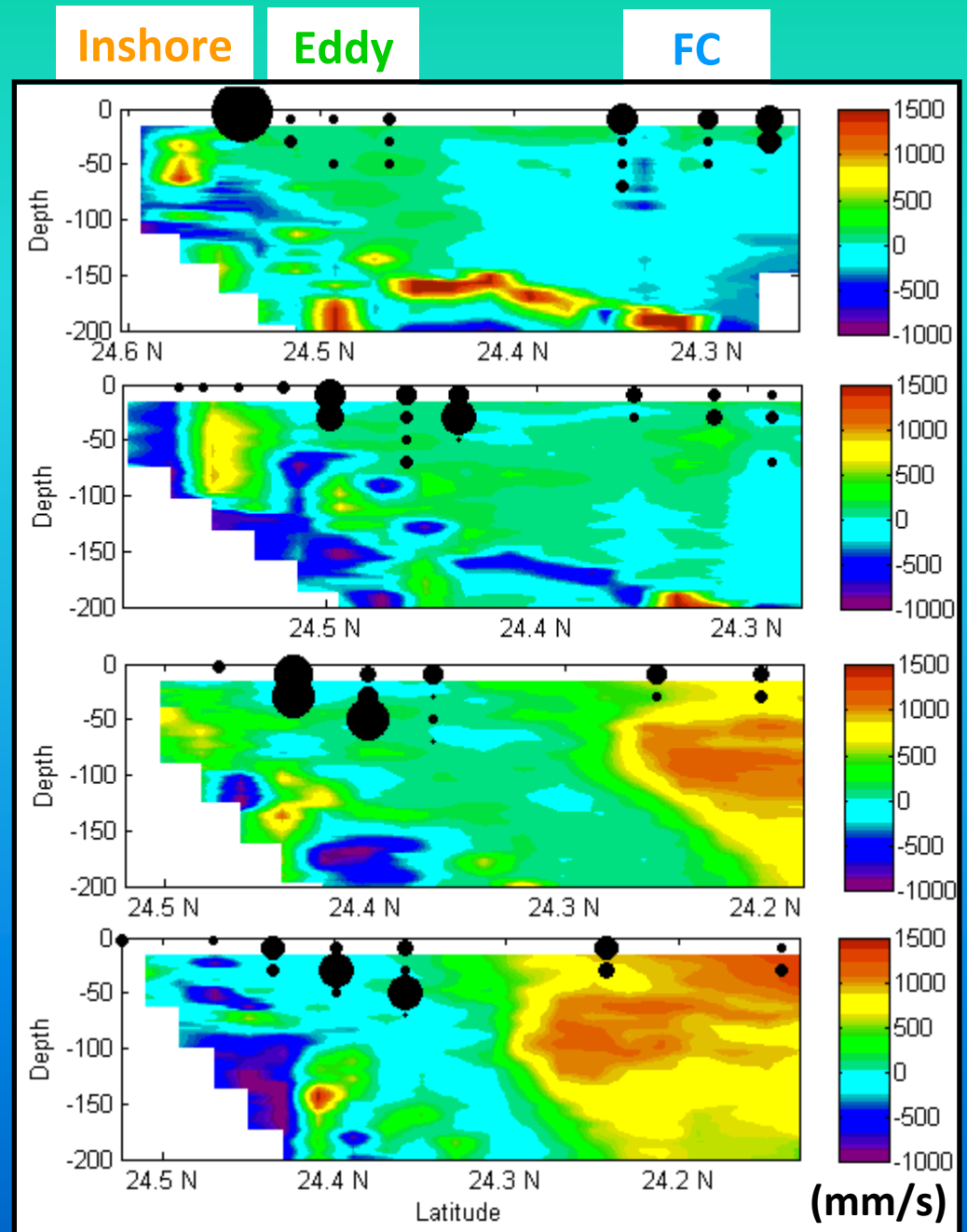


Snapper larvae more abundant in association with the eddy



Lower Keys

Marquesas

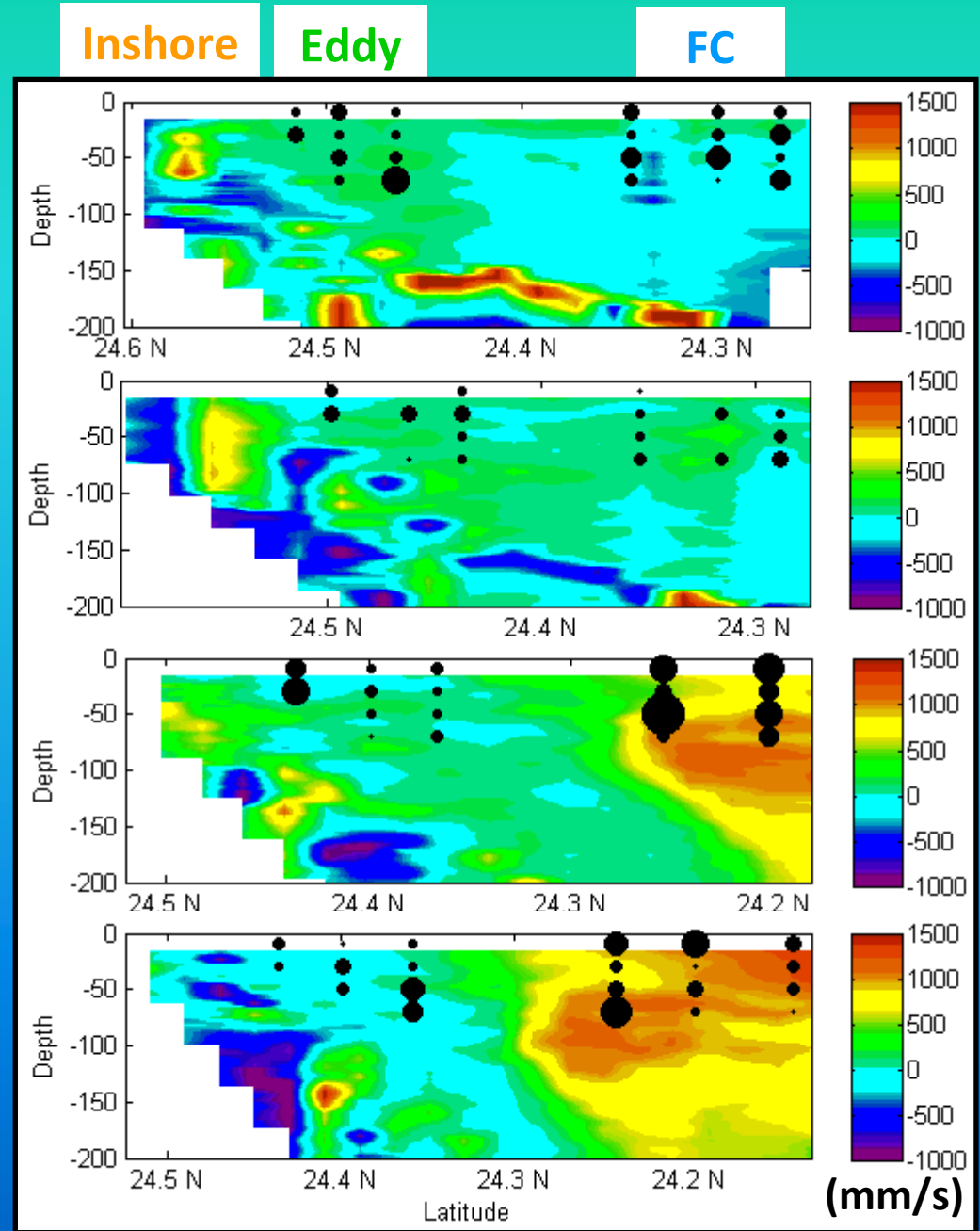


Scorpionfish larvae exhibit opposite pattern

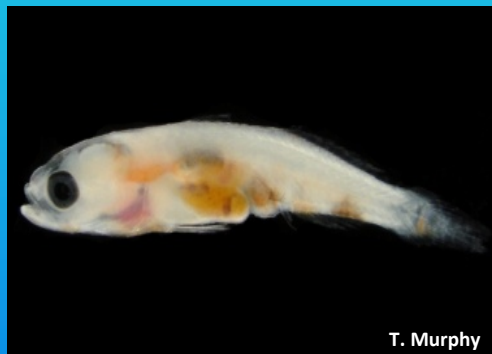


Lower Keys

Marquesas

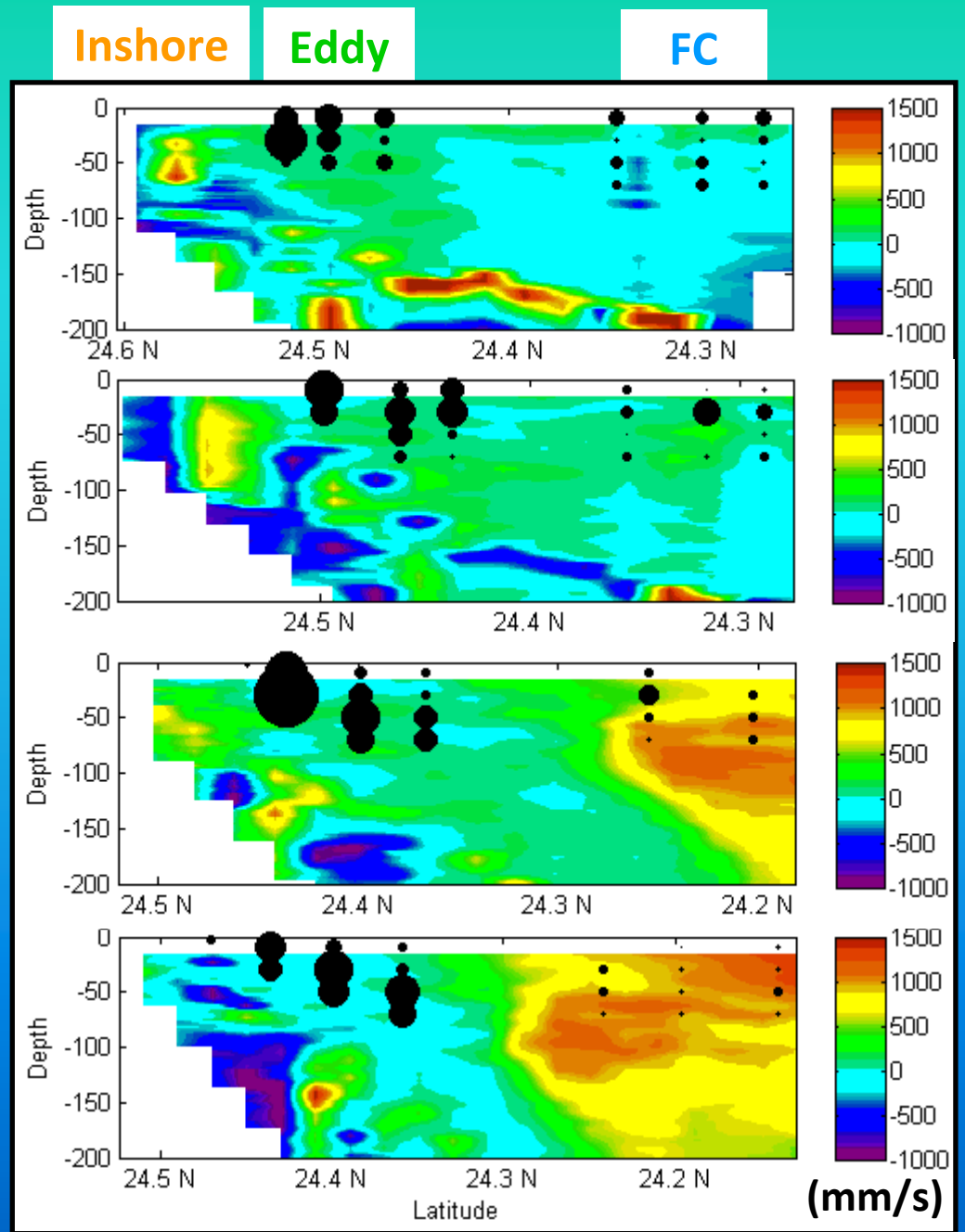


Goby larvae found nearshore



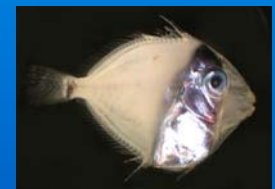
Lower Keys

Marquesas



Conclusions

- Reef fish larvae consistently more abundant offshore in eddy and FC waters than inshore
- Larval assemblages differ according to water mass
- Larvae more abundant when mesoscale eddies are moving through the Straits of Florida (SOF)
- Species-specific larval distributions in association with a mesoscale eddy in 2007
- Eddies are important features in the SOF with major implications for larval life histories

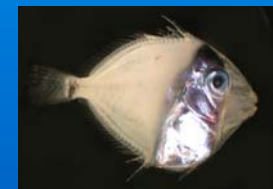
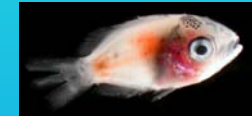
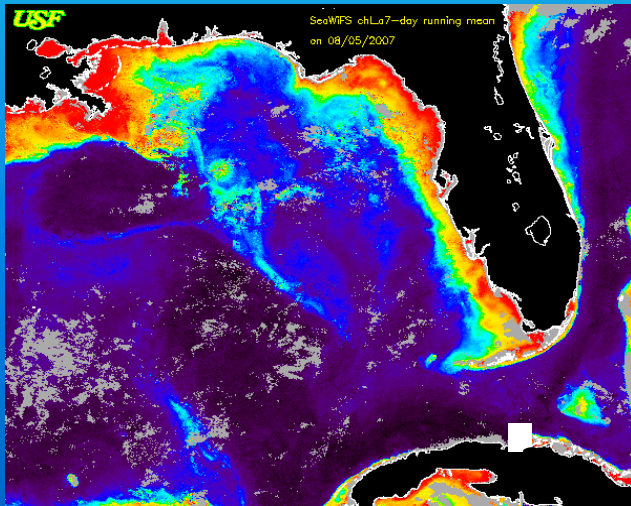


Acknowledgements

Su Sponaugle
Robert Cowen
Villy Kourafalou
Claire Paris
Tom Lee

Funding

UM Fellowship
National Science Foundation
Science Made Sensible



Sean Bignami
Tauna Rankin
Kristen Walter
Evan D'Alessandro
Klaus Hubert
Jonathan Kool
Martha Hauff
Joel Llopiz
Cedric Guigand
Adam Greer
Tom Murphy
Jennie Boulay
Lisa Havel
Lindsay Jones
Jason Downing