

## WS0224 – Florida Straits 27°N Section

November 20, 2002 (9.7 hour section occupation)

- **9 LADCP velocity profiles** – single WH300 LADCP data  
LADCP data processed with Visbeck v10.8 at 10m vertical resolution...
- **105 SADCP velocity profiles** – OS150 SADCP data  
SADCP data processed with CODAS3 at 4m (OS150) vertical resolution...
- **1000m by 10m grid resolution** – along-channel velocity field  
profiles interpolated onto grid using either MATLAB *griddata* or MATLAB *gridfit*...

### Grid Interpolation and Boundary Extrapolation:

- total cross-sectional area = 43.00 km<sup>2</sup> (percent total area = 100%)
- cross-sectional area of gridded velocity field = 38.96 km<sup>2</sup> (90.60%)
- cross-sectional area of boundary (to be extrapolated) = 4.04 km<sup>2</sup> (9.40%)

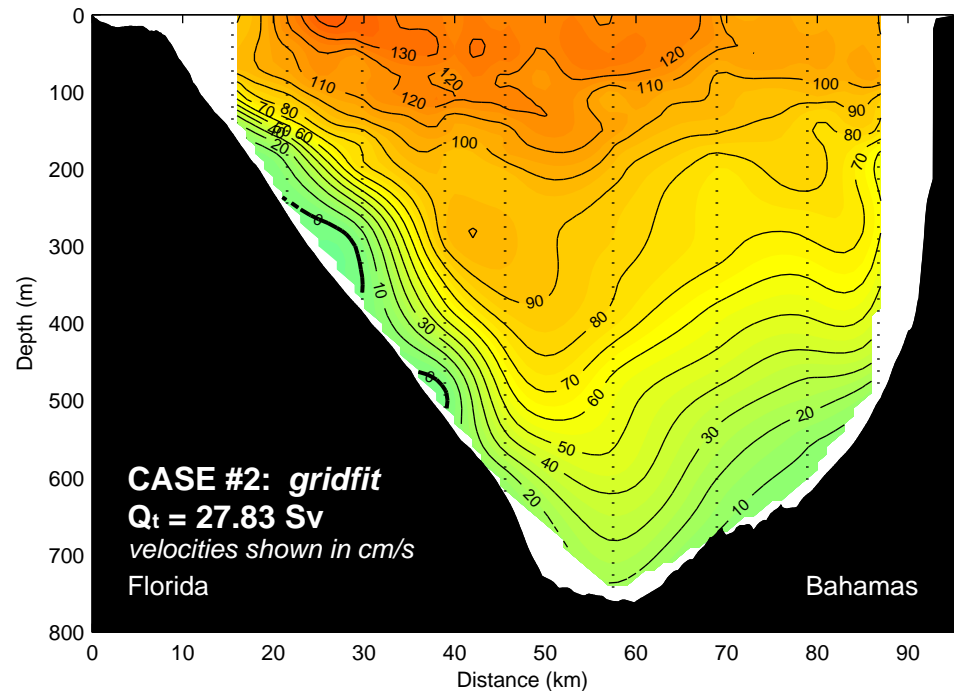
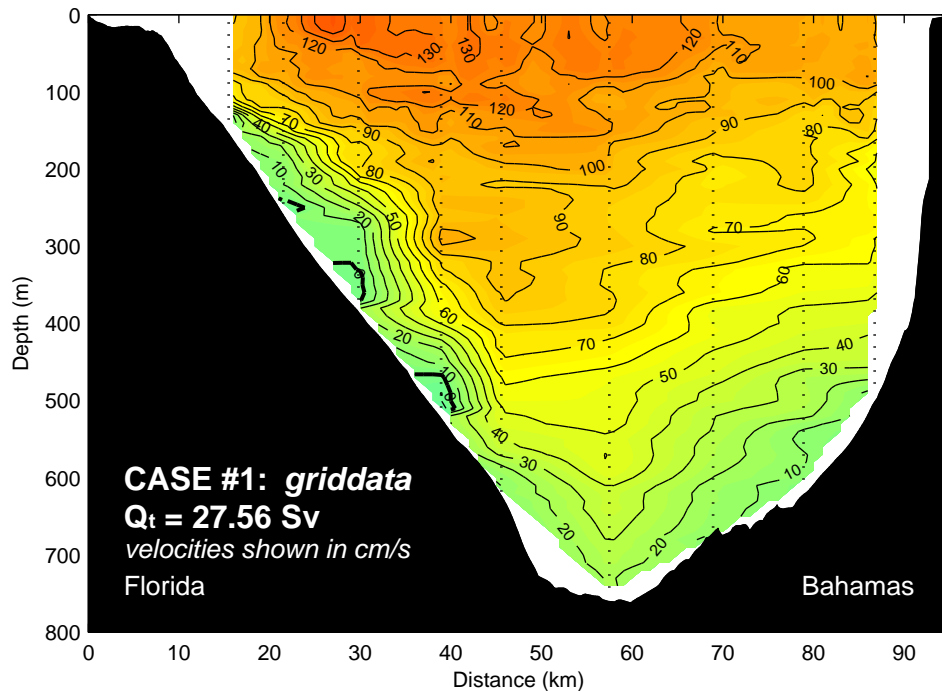
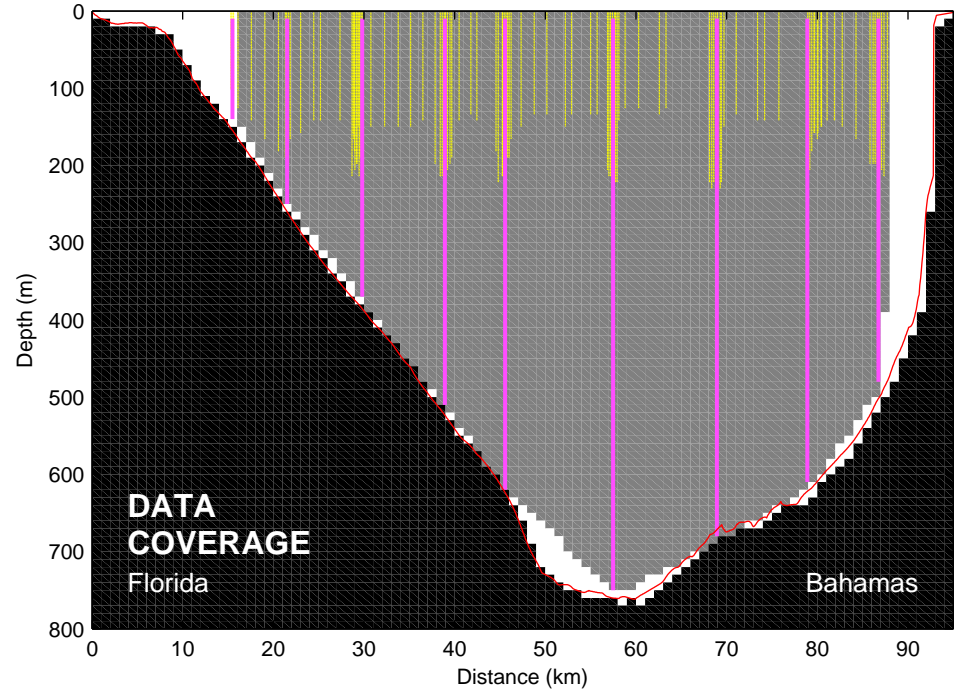
**CASE #1:** interp. = *griddata* (linear), extrap. = none

- total detided transport ( $Q_t$ ) = 27.56 Sv (1 Sv = 10<sup>6</sup>m<sup>3</sup>s<sup>-1</sup>)
- *griddata* is a true interpolant (exactly predicts all supplied data)\*

**CASE #2:** interp. = *gridfit* (linear/triangles, smoothing = 0.4), extrap. = none

- total detided transport ( $Q_t$ ) = 27.83 Sv
- *gridfit* is NOT a true interpolant (simulates behavior of supplied data)

CASE #1  $Q_t$  – CASE #2  $Q_t$  = -0.26 Sv (transport difference)



## WS0224 – Florida Straits 27°N Section

November 20, 2002 (9.7 hour section occupation)

- **9 LADCP velocity profiles** – single WH300 LADCP data  
LADCP data processed with Visbeck v10.8 at 10m vertical resolution...
- **105 SADCP velocity profiles** – OS150 SADCP data  
SADCP data processed with CODAS3 at 4m (OS150) vertical resolution...
- **1000m by 10m grid resolution** – along-channel velocity field  
profiles interpolated onto grid using either MATLAB *griddata* or MATLAB *gridfit*...

### Grid Interpolation and Boundary Extrapolation:

- total cross-sectional area = 43.00 km<sup>2</sup> (percent total area = 100%)
- cross-sectional area of gridded velocity field = 38.96 km<sup>2</sup> (90.60%)
- cross-sectional area of boundary (to be extrapolated) = 4.04 km<sup>2</sup> (9.40%)

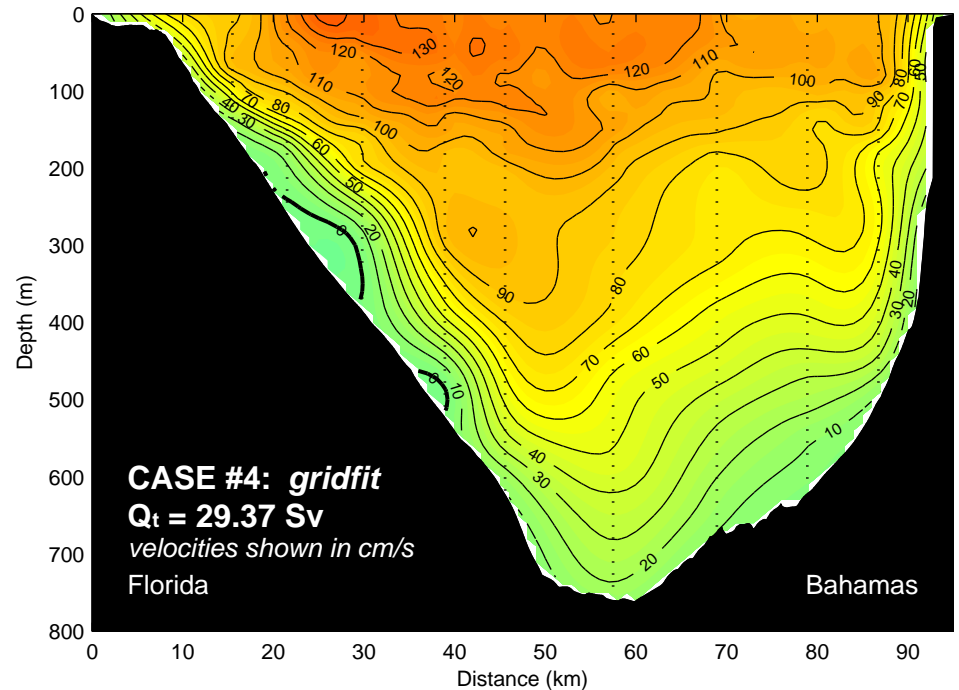
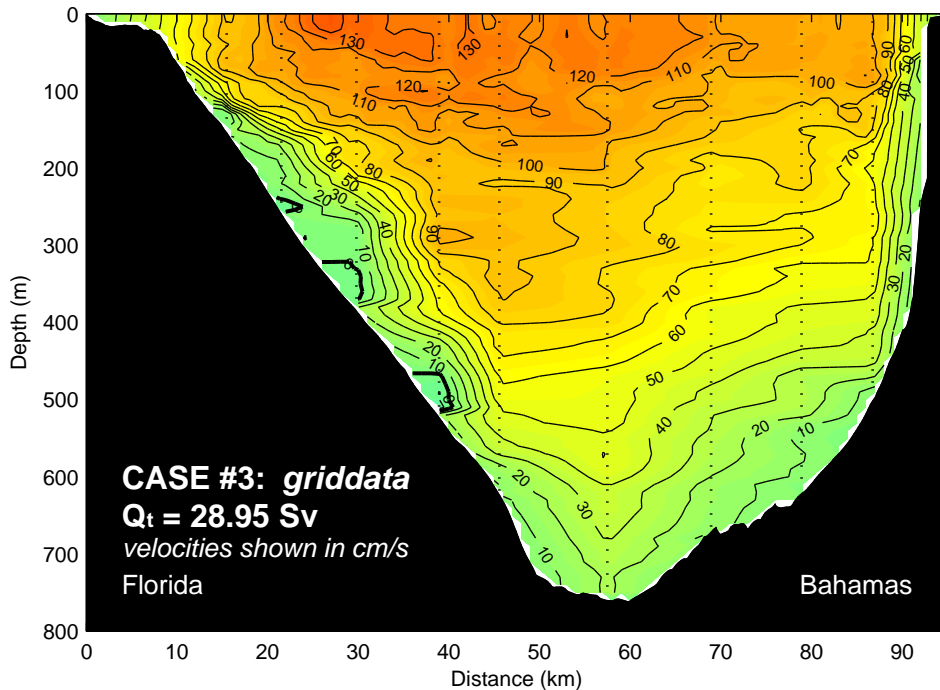
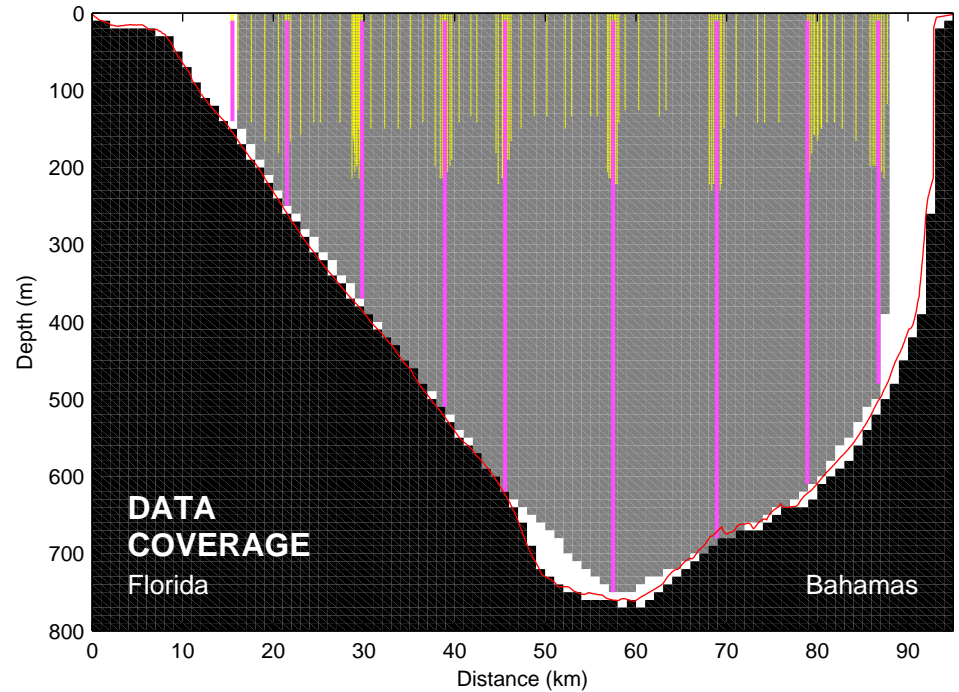
#### CASE #3: interp. and extrap. = *griddata* (linear)

- total detided transport ( $Q_t$ ) = 28.95 Sv (1 Sv = 10<sup>6</sup>m<sup>3</sup>s<sup>-1</sup>)
- extrapolated boundary transport contribution = 1.38 Sv

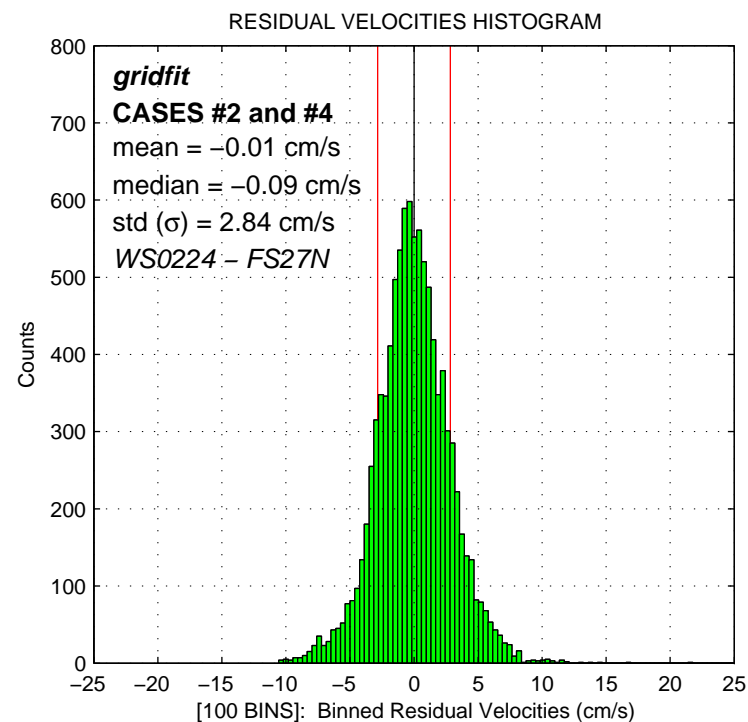
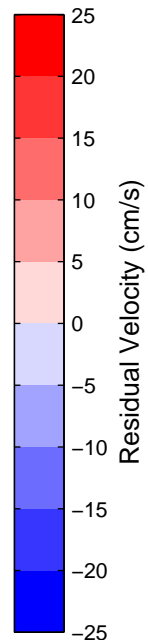
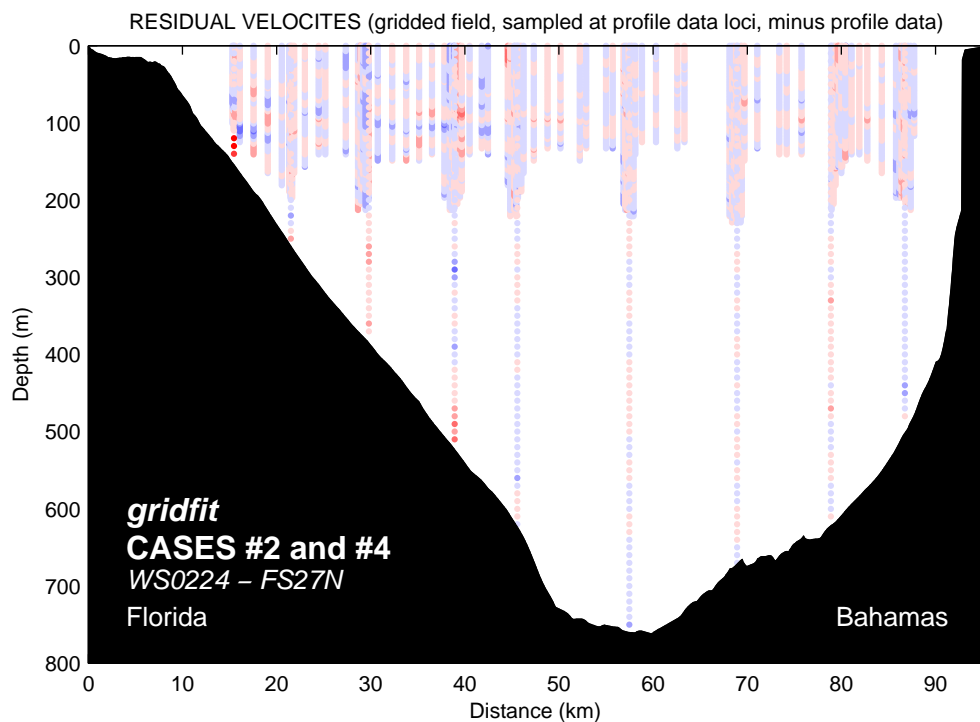
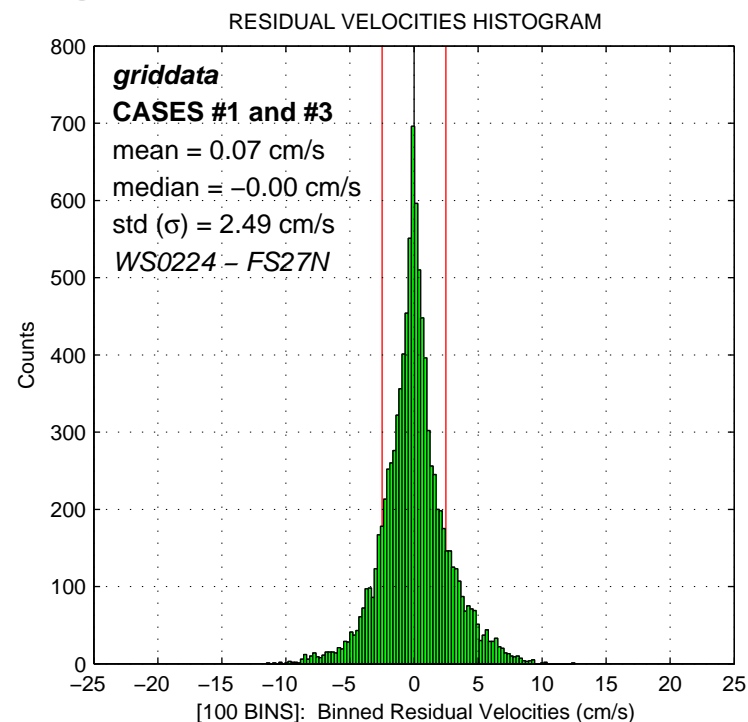
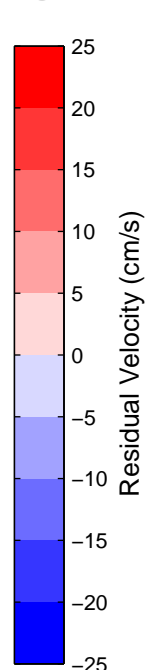
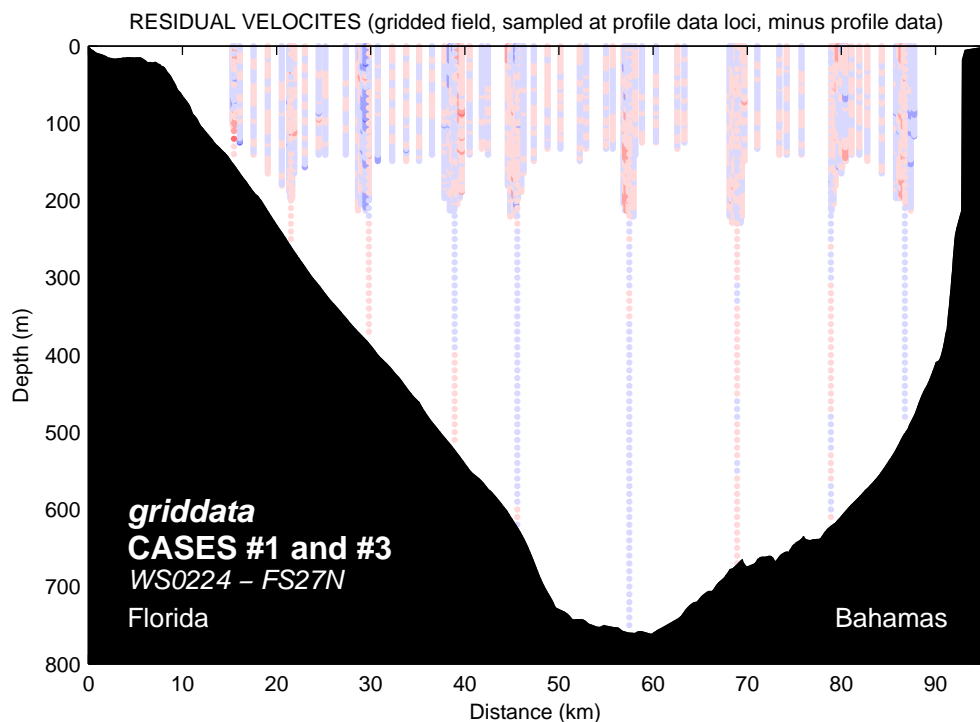
#### CASE #4: interp. and extrap. = *gridfit* (linear/triangles, smoothing = 0.4)

- total detided transport ( $Q_t$ ) = 29.37 Sv
- extrapolated boundary transport contribution = 1.55 Sv

CASE #3  $Q_t$  – CASE #4  $Q_t$  = -0.43 Sv (transport difference)



[ PAGE 3 of 4 ] Section Tool Quality: How well do griddata and gridfit represent the original data?



# Florida Straits 27°N Section

WS0224 – November 20, 2002 (9.7 hour section occupation)

