

## WS0903 – Florida Straits 27°N Section

February 23–24, 2009 (11.3 hour section occupation)

- **9 LADCP velocity profiles** – single & dual WH300 LADCP data  
LADCP data processed with Visbeck v10.8 at 10m vertical resolution...
- **110 SADCP velocity profiles** – OS75 SADCP data  
SADCP data processed with CODAS3 at 16m (OS75) 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 = 40.93 km<sup>2</sup> (95.19%)
- cross-sectional area of boundary (to be extrapolated) = 2.07 km<sup>2</sup> (4.81%)

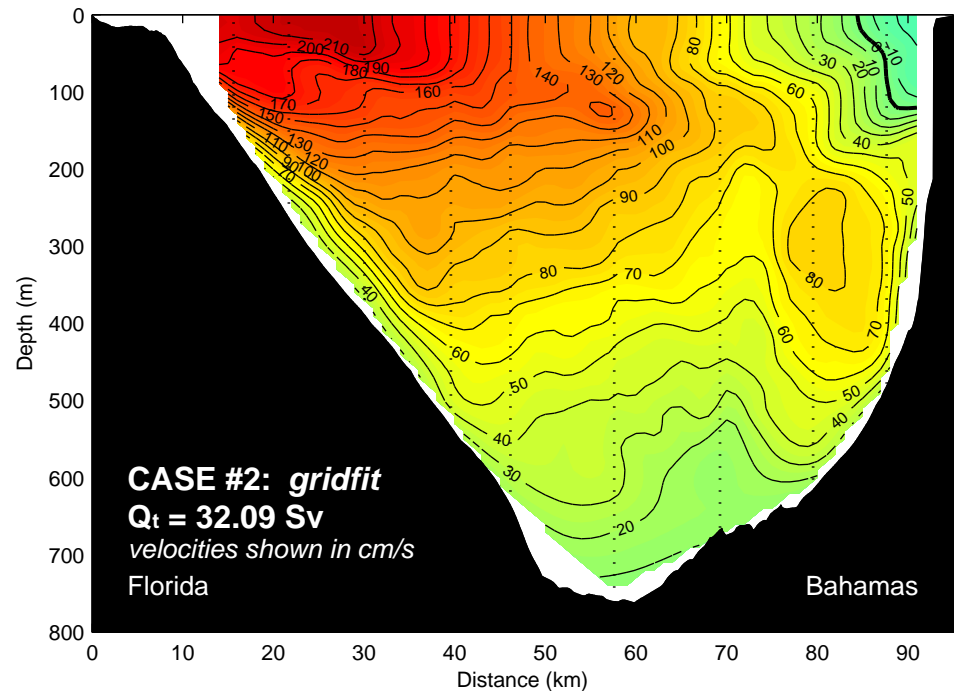
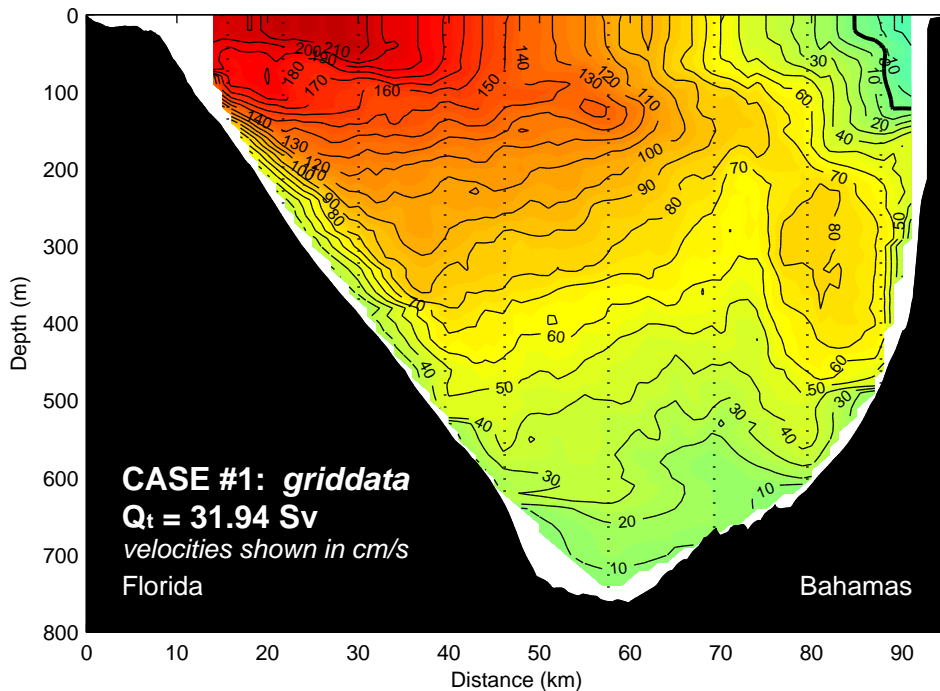
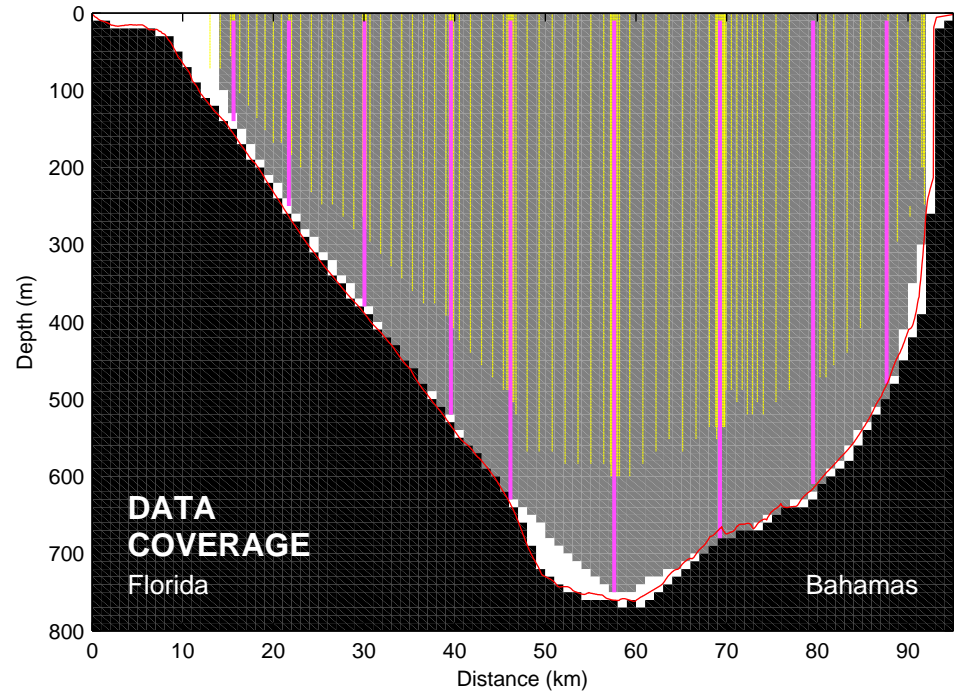
**CASE #1:** interp. = *griddata* (linear), extrap. = none

- total detided transport ( $Q_t$ ) = 31.94 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 ( $Q_t$ ) = 32.09 Sv
- *gridfit* is NOT a true interpolant (simulates behavior of supplied data)

CASE #1  $Q_t$  – CASE #2  $Q_t$  = -0.15 Sv (transport difference)



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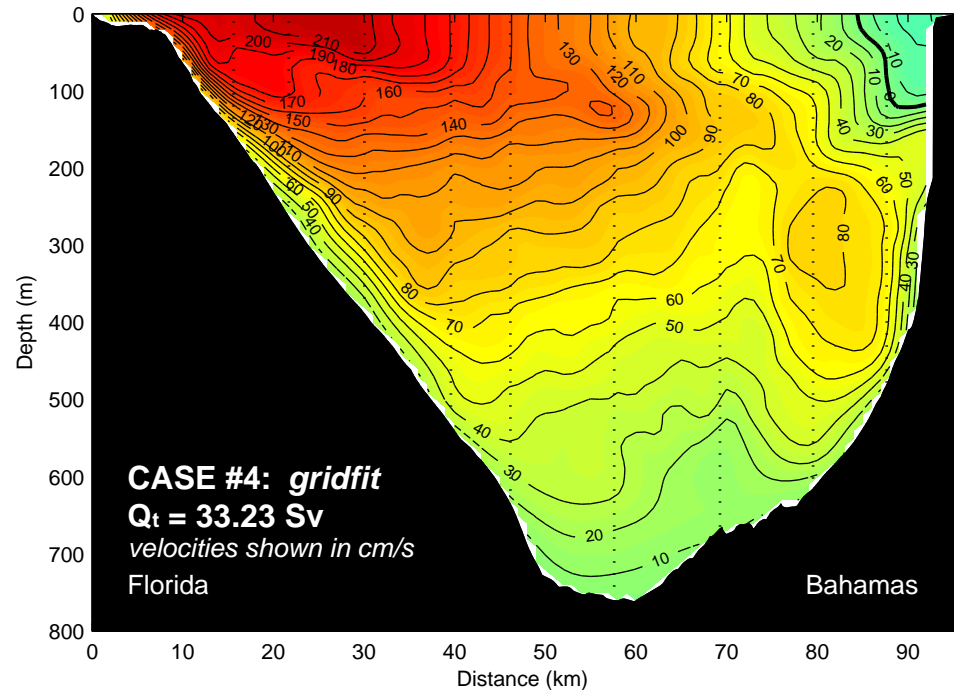
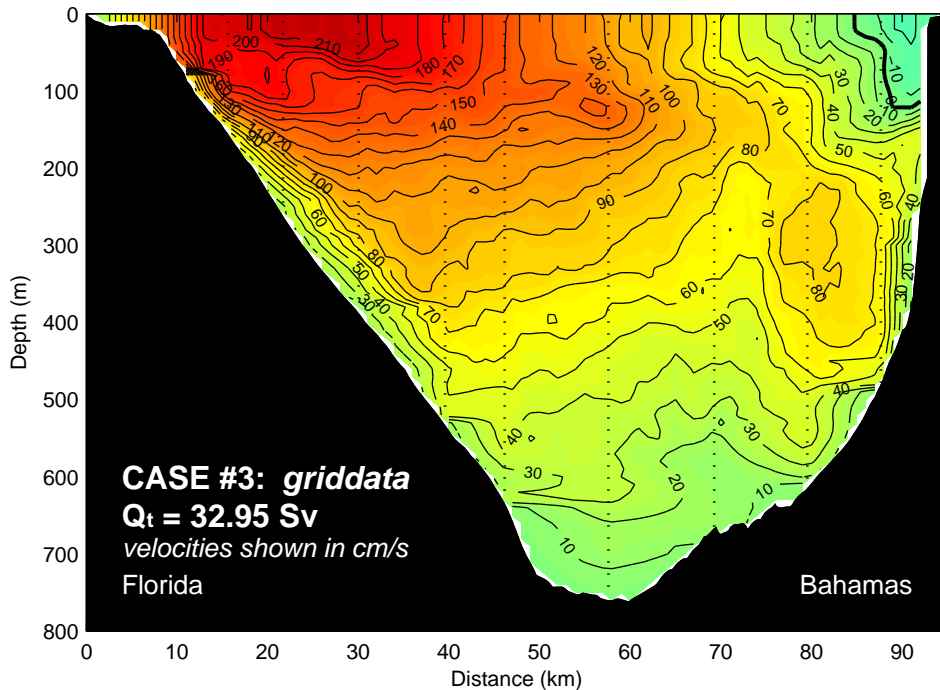
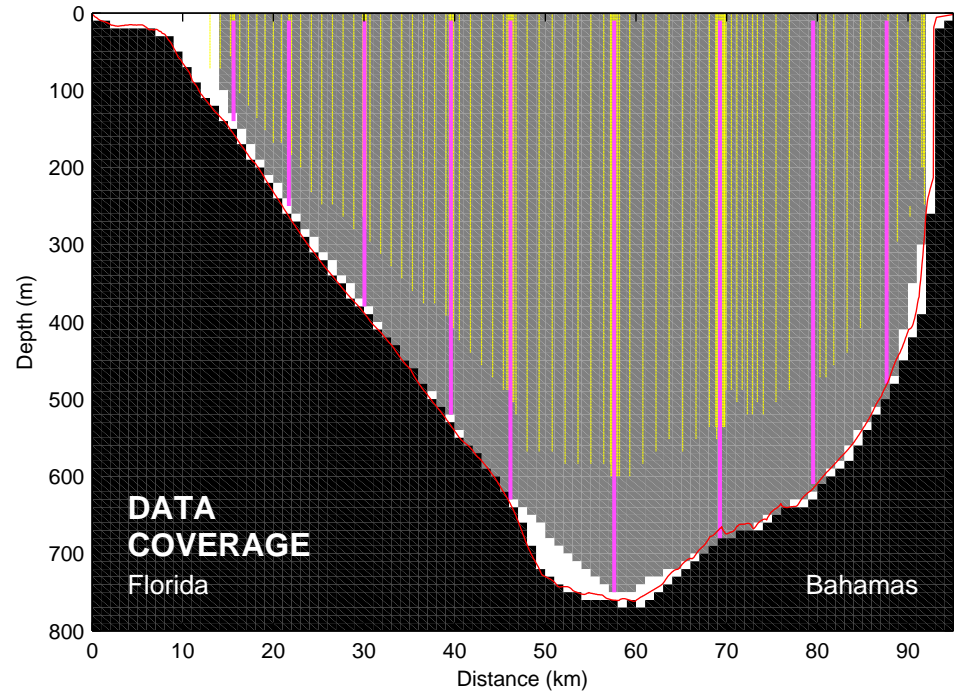
#### CASE #3: interp. and extrap. = *griddata* (linear)

- total detided transport ( $Q_t$ ) = 32.95 Sv (1 Sv = 10<sup>6</sup>m<sup>3</sup>s<sup>-1</sup>)
- extrapolated boundary transport contribution = 1.01 Sv

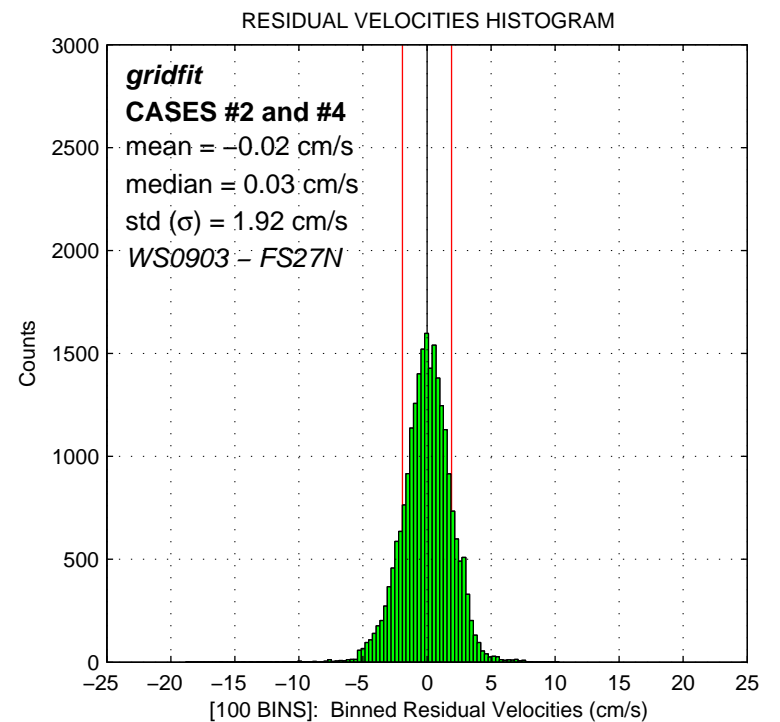
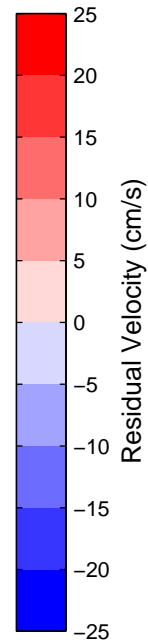
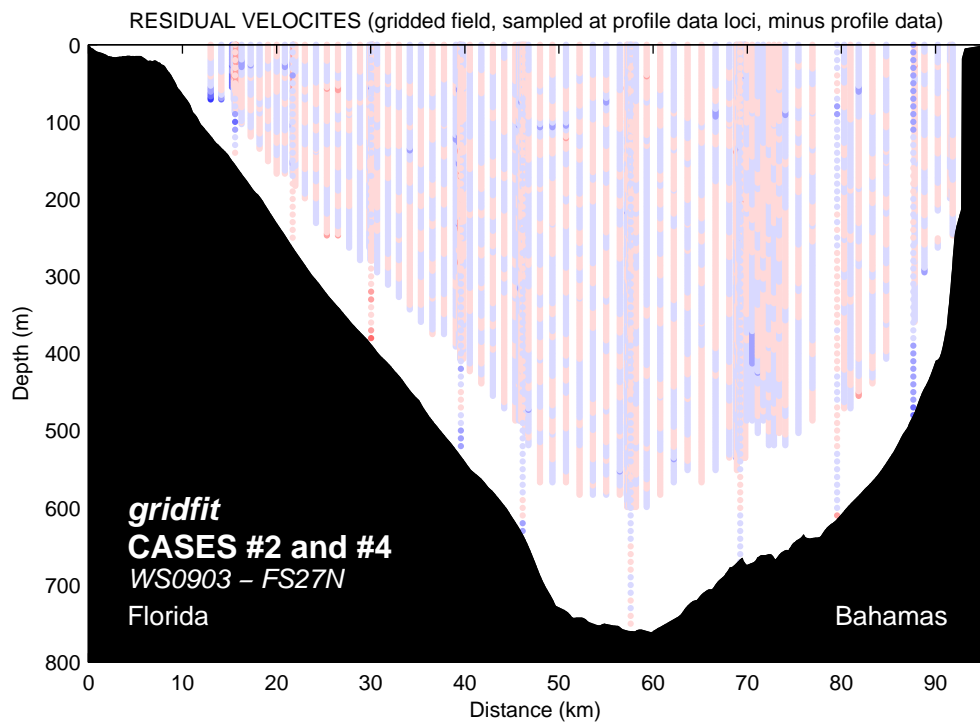
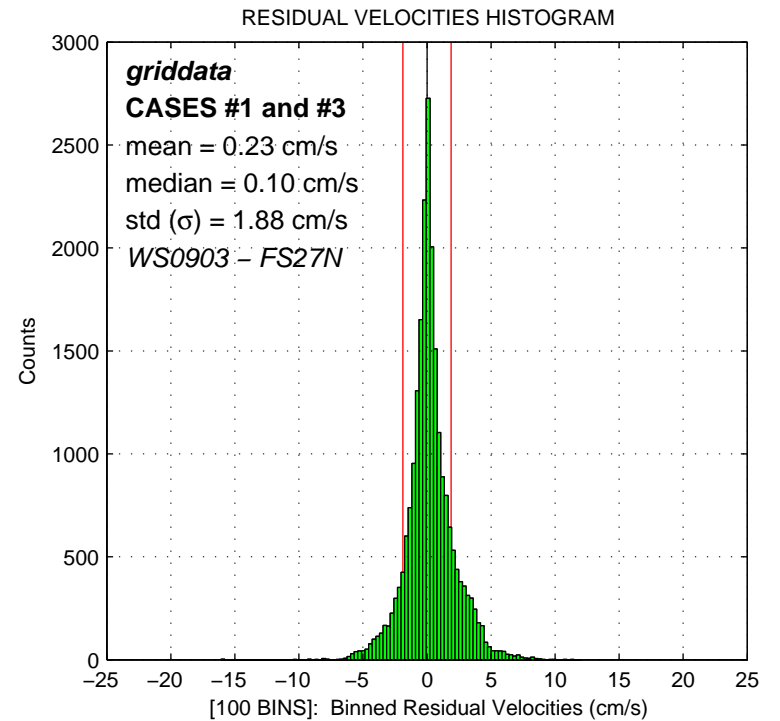
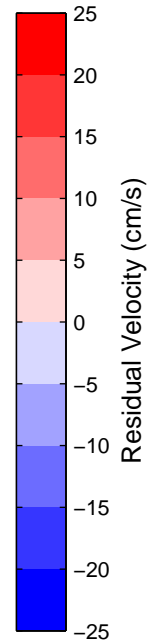
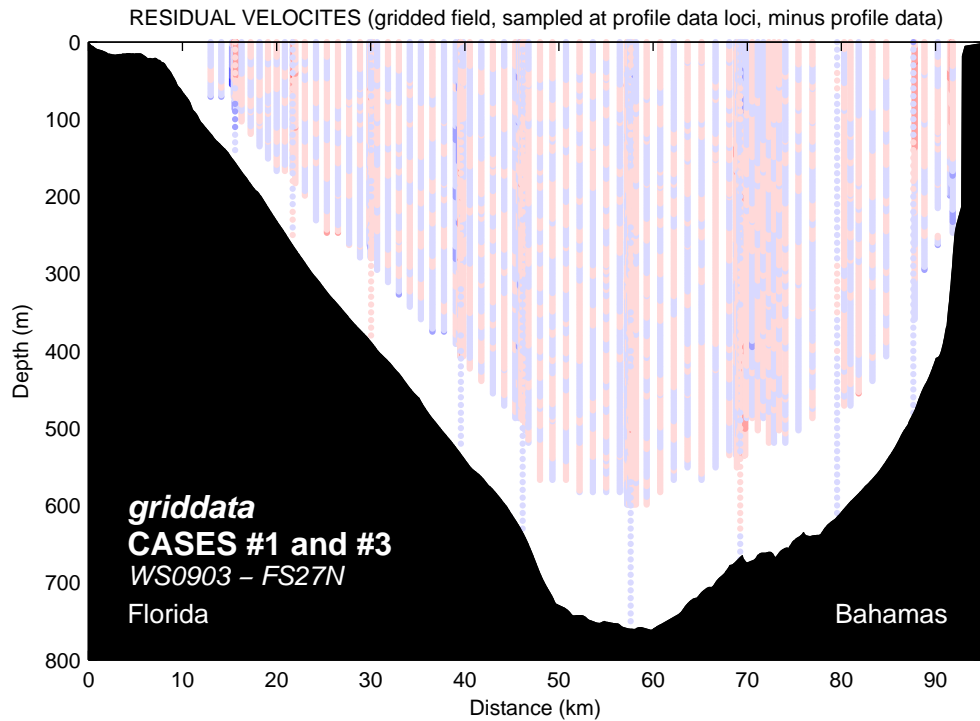
#### CASE #4: interp. and extrap. = *gridfit* (linear/triangles, smoothing = 0.4)

- total detided transport ( $Q_t$ ) = 33.23 Sv
- extrapolated boundary transport contribution = 1.13 Sv

CASE #3  $Q_t$  – CASE #4  $Q_t$  = -0.28 Sv (transport difference)



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



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