

cDRAKE Status Report

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- deploy 11/2007
- 3-yr telem data
'08-'10
- recov to be 11/2011

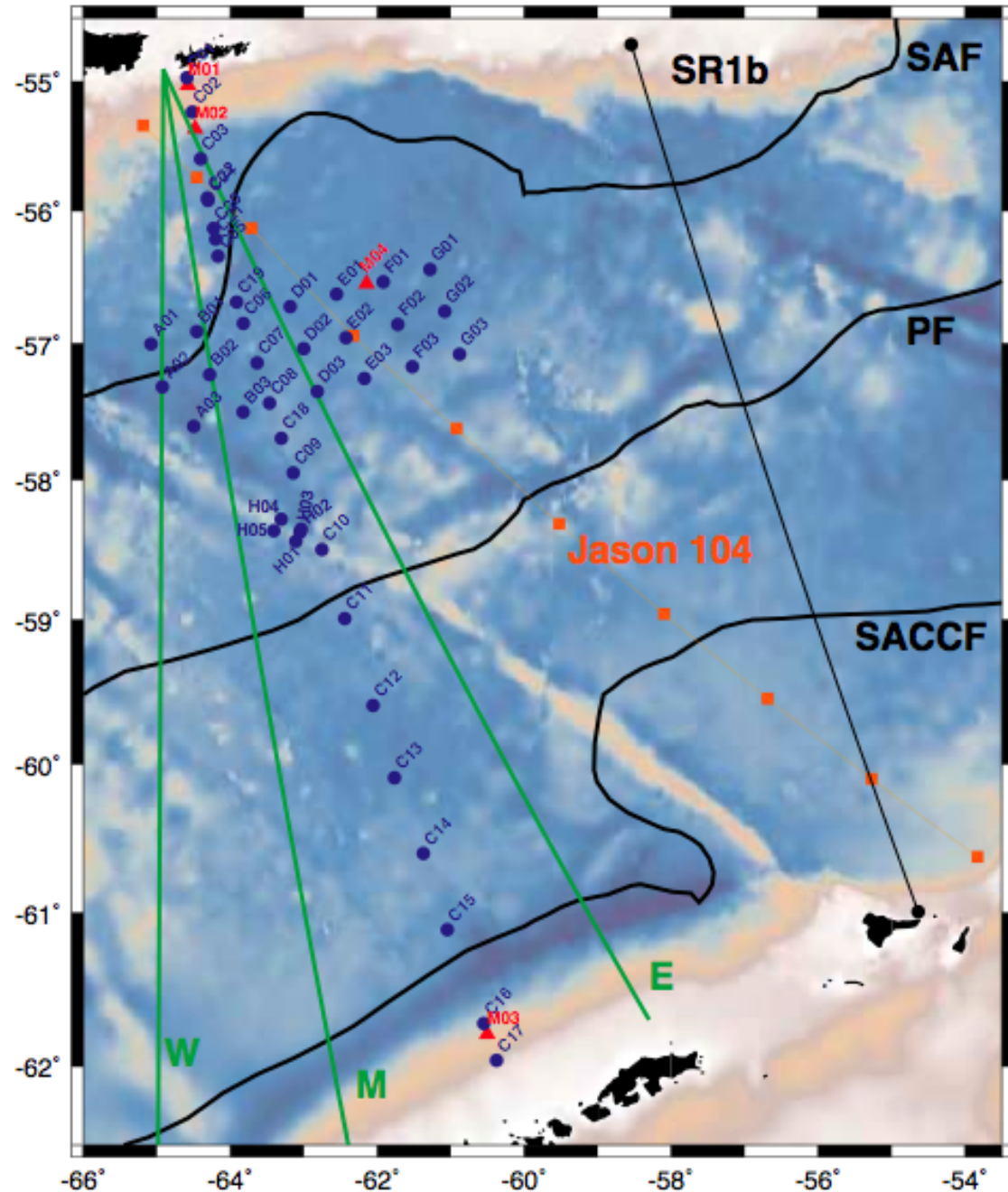
Transport line

- coincide ERS & SADCP
- 21 CPIES + 3 CMM (slope)

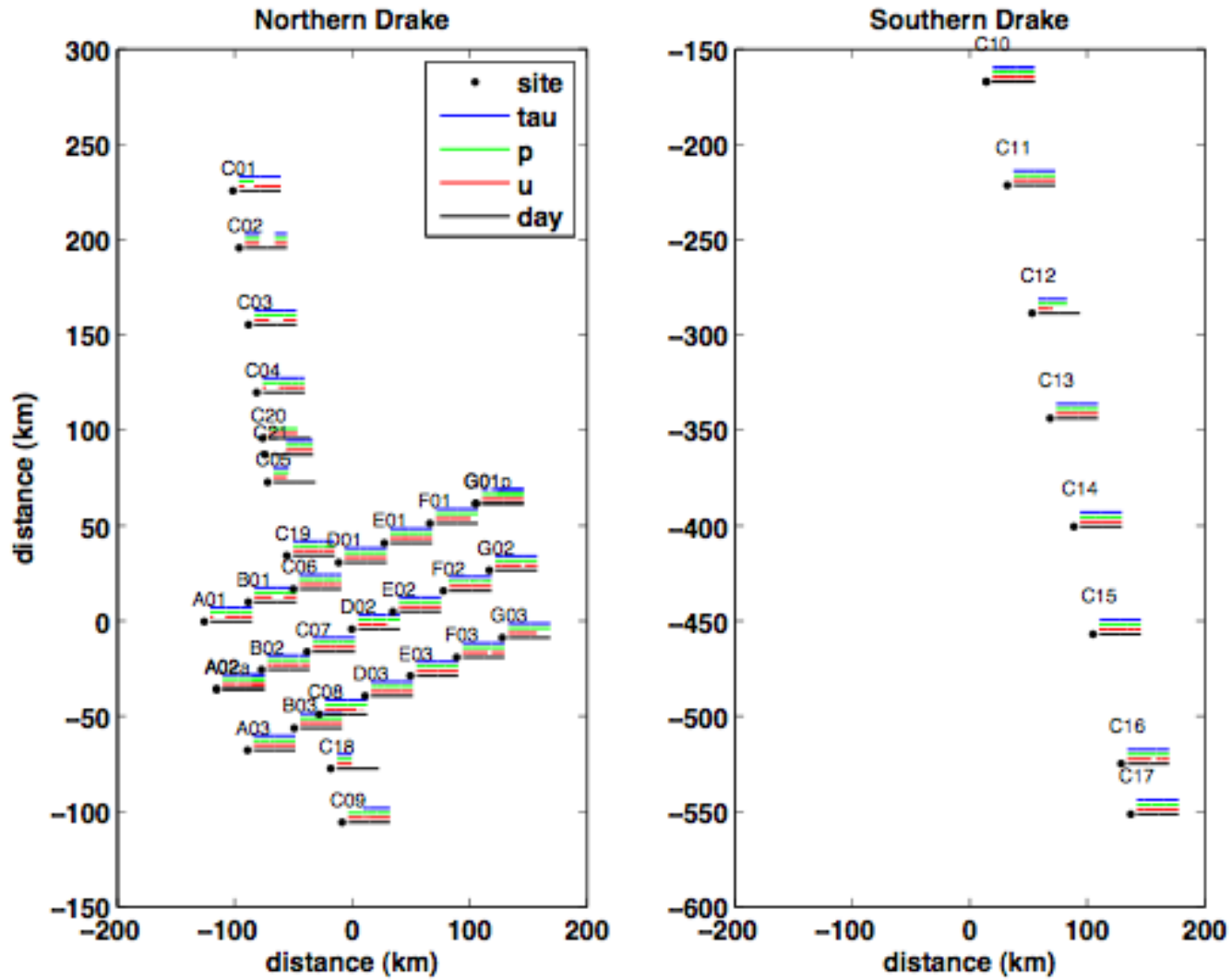
Local Dynamics Array

- at EKE max,
- SAF, PF, eddies

- Form-drag array (1 yr)
- Shackleton Fract Zone



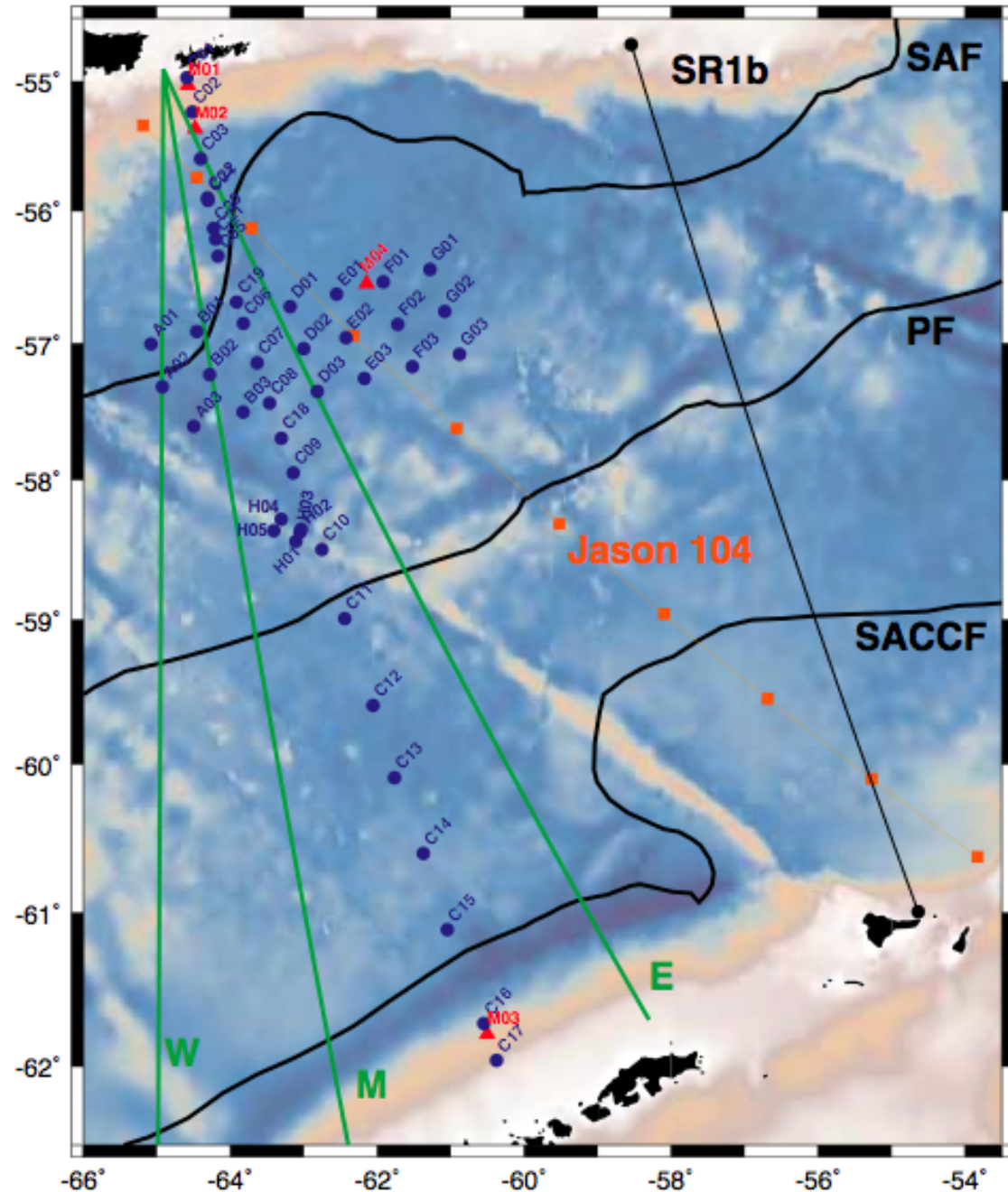
DATA-RETURN has been good: 96% TT; 97% pressure; 92% current



Ship: R/VIB Palmer (5 cruises)

CPIES ...

1. acoustic travel time to estimate density profiles
2. from lateral gradients calculate geostrophic vel
3. deep P, (u,v) provide reference to render the velocity profiles absolute
4. deep P' s are leveled by laterally-coherent u,v measurements



BOTTOM CURRENTS (YR-1)

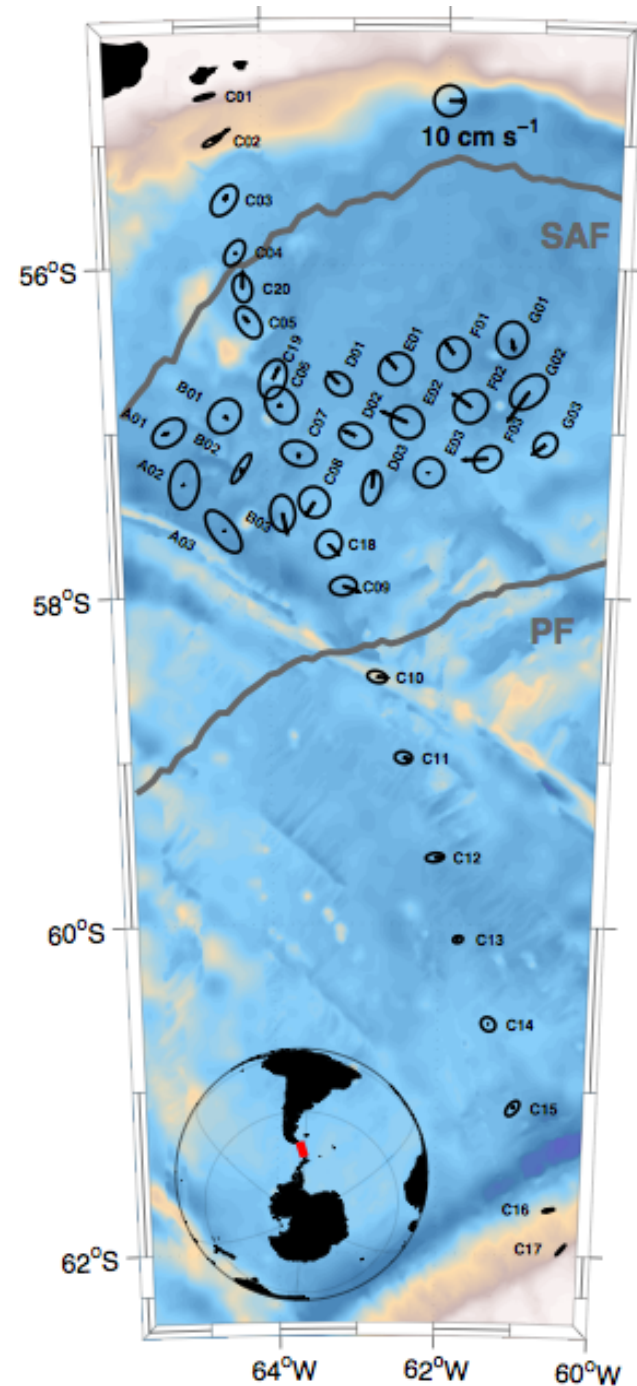
Means & Standard-deviation ellipses

-- extremely large ($>10\text{cm/s}$) mean velocities at 15 sites north of the PF

-- Not in general aligned with the surface fronts in LDA

--high EKE (max $\sim 200\text{cm}^2/\text{s}^2$) assoc with 5-6 cyclogenesis events in YR-1

--Chereskin, et al., 2009 GRL

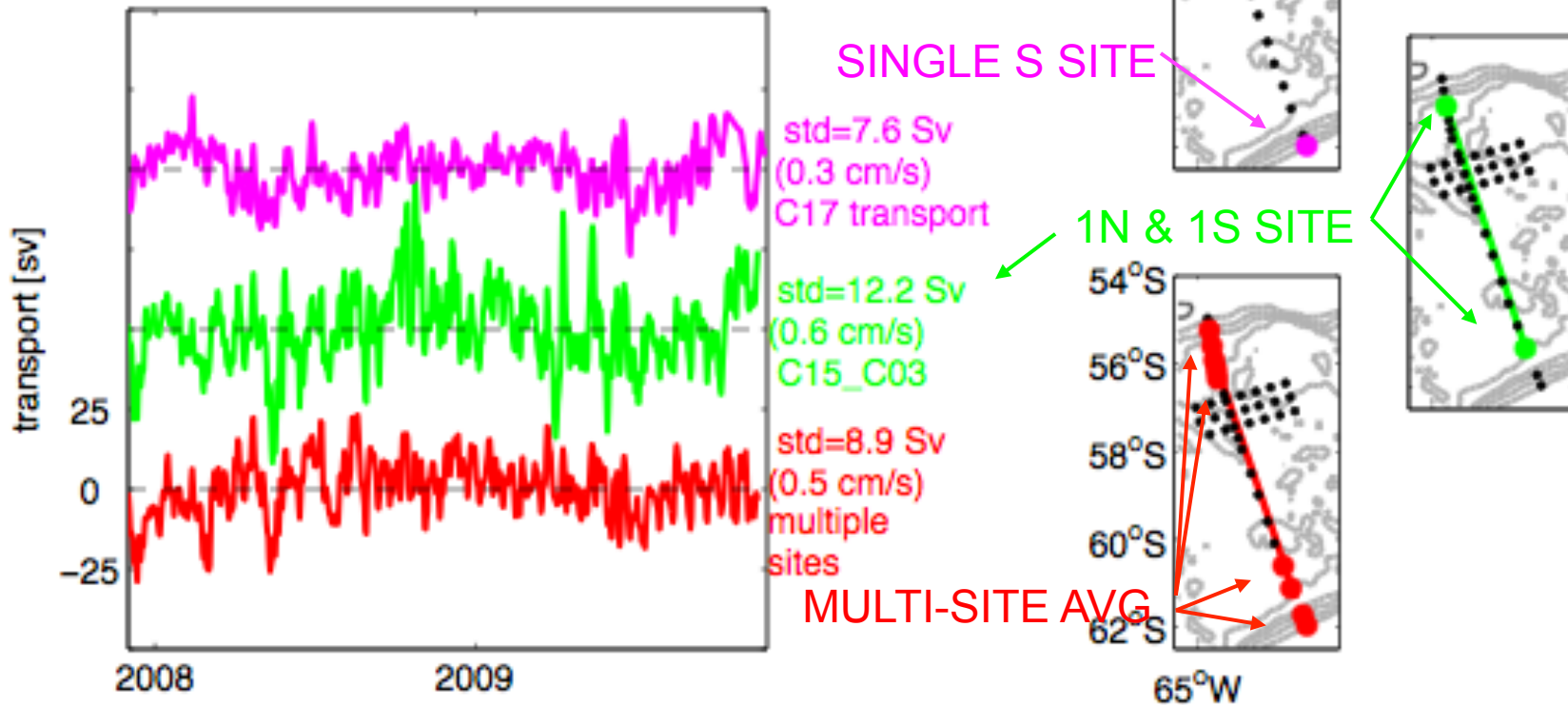


BAROTROPIC TRANSPORT VARIABILITY

examine suite of end-point choices:

-Standard deviations all ~ 10 Sv

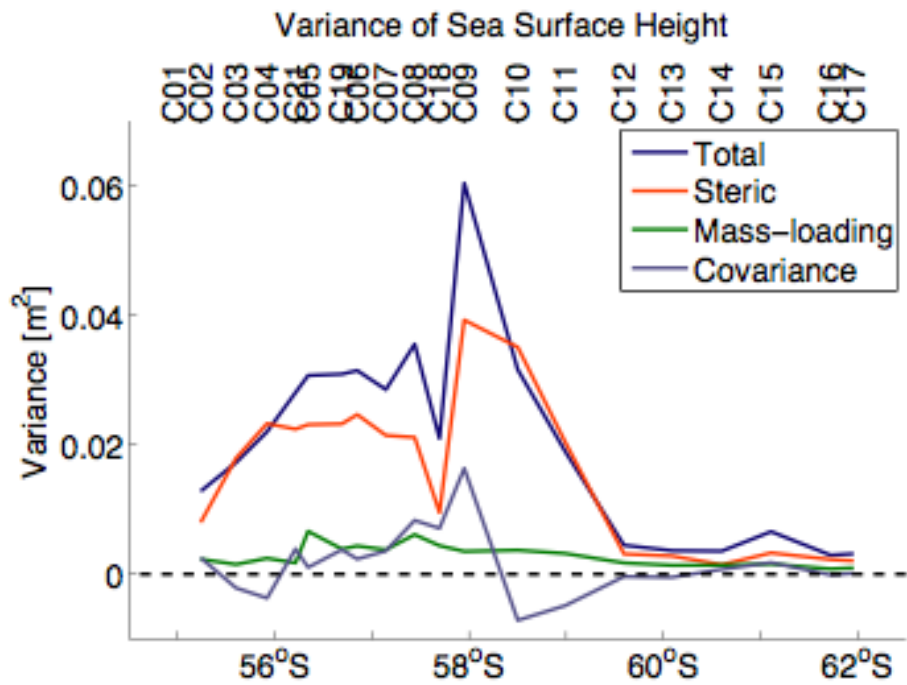
-- up to 30 Sv fluctuations in days-to-weeks



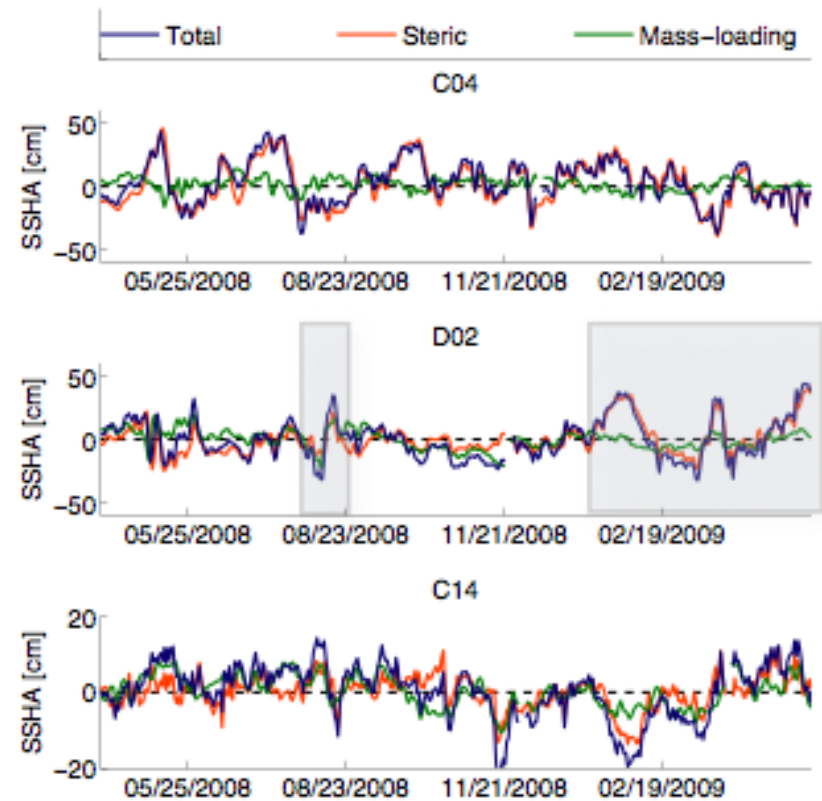
Donohue, et al., (in prep. 2011)

SEA-SURFACE HEIGHT ANOMALY

steric and mass-loading components varied along the transport line
 --north of 57S steric SSHA > 60%; south of 59S mass-loading >40%
 --mass-loading and steric components are uncorrelated,
 except in LDA during deep cyclogenesis events



A.Cutting, (2010)



>20% of variance is at short periods (<20d), so aliased in altimetry

NSF-OPP proposal for June 2012:

Goal of future field work is to address cDrake-identified unresolved issues:

- wave processes along N,S boundaries
- topographic ridge and form-drag processes
- heat- and freshwater flux partitioning
across the ACC
- location choices...
 - West, upstream of Shackleton Fracture Zone (SFZ)
 - mid-passage, near cDRAKE line
 - East, near SR1 and UK pressure records

Popup data capsules - “Pop-eyes”

- For multi-year deployments in remote locations, we need an inexpensive and reliable method to report data home
- * envision that each PIES or CPIES has a suite of data-capsules
 - each gathers all the data via a wireless underwater link
 - pops up to sea-surface at independently-programmed date
 - relays the data home via Iridium
- * URI and NOAA-AOML and others are actively developing “popup capsules” for various purposes