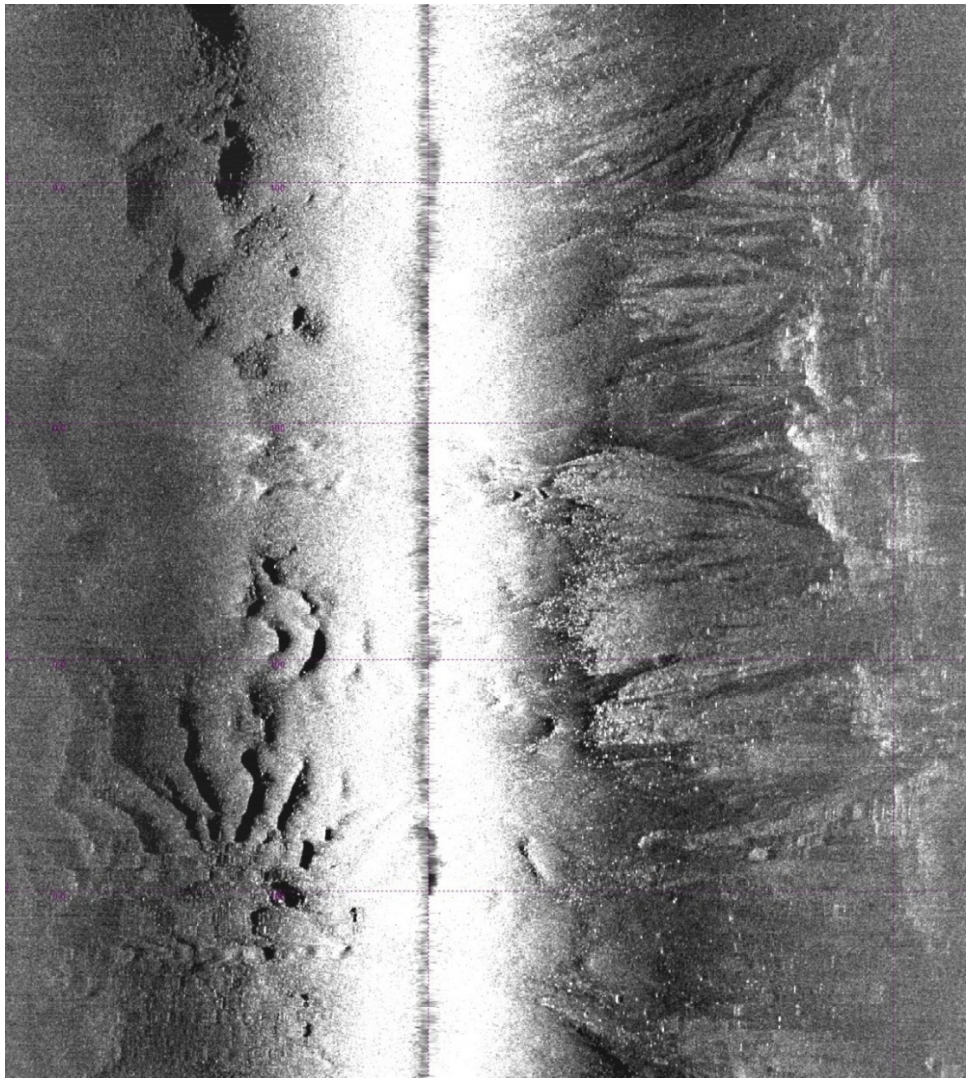
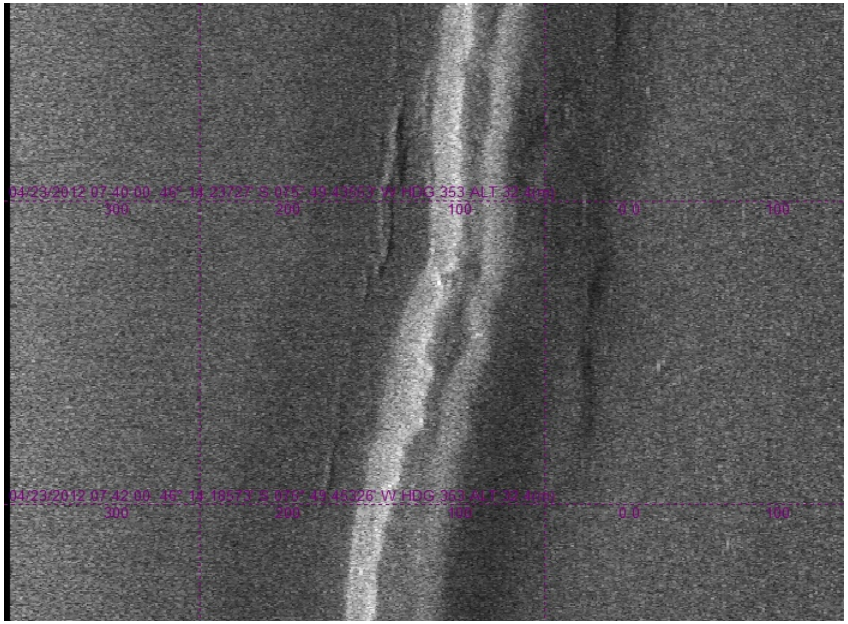
Personnel

- Expedition Leader – Now three, four by August
  - Dana Yoerger
  - Carl Kasier
  - James Kinsey
  - Michael Jakuba – needs 1 cruise to be up to speed
- Mechanical – Now two, three by July
  - Andy Billings
  - Justin Fujii – will solo August 2012
  - Rod Catanach – fully qualified emergency drop in
- Electrical – Specific plans – Now one, two by end of 2013
  - Al Duester
  - Additional quickly-trainable candidate identified – available Jan 2013
  - Korey Verhein – now has one cruise, could be emergency drop in
- Data – Branching out
  - Dana, James, Carl all able to do most pieces
  - Greg Kurras will join us as a contractor this fall – training in June
- Shoreside Software
  - Stefano Suman – should add affordable low to mid-level coding to get many latent issues resolved
- Documentation – large investments = critical for interchangeability

Sidescan



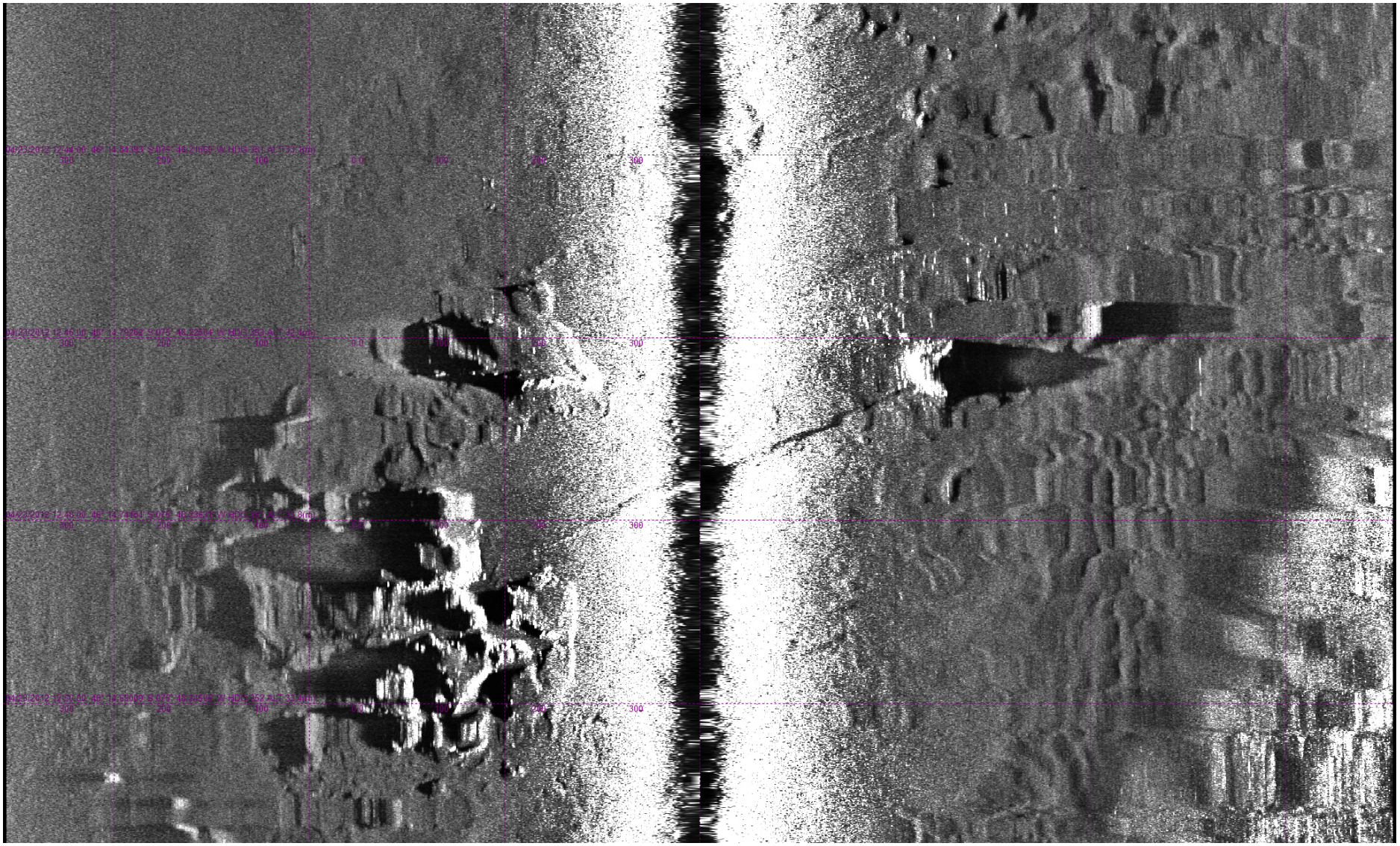
- Semi-automated pipeline ~ 20:1 time
- Standard data products
- Should be able to add 50 – 80% to swath width over the next year



410 kHz ~ 100m usable swath

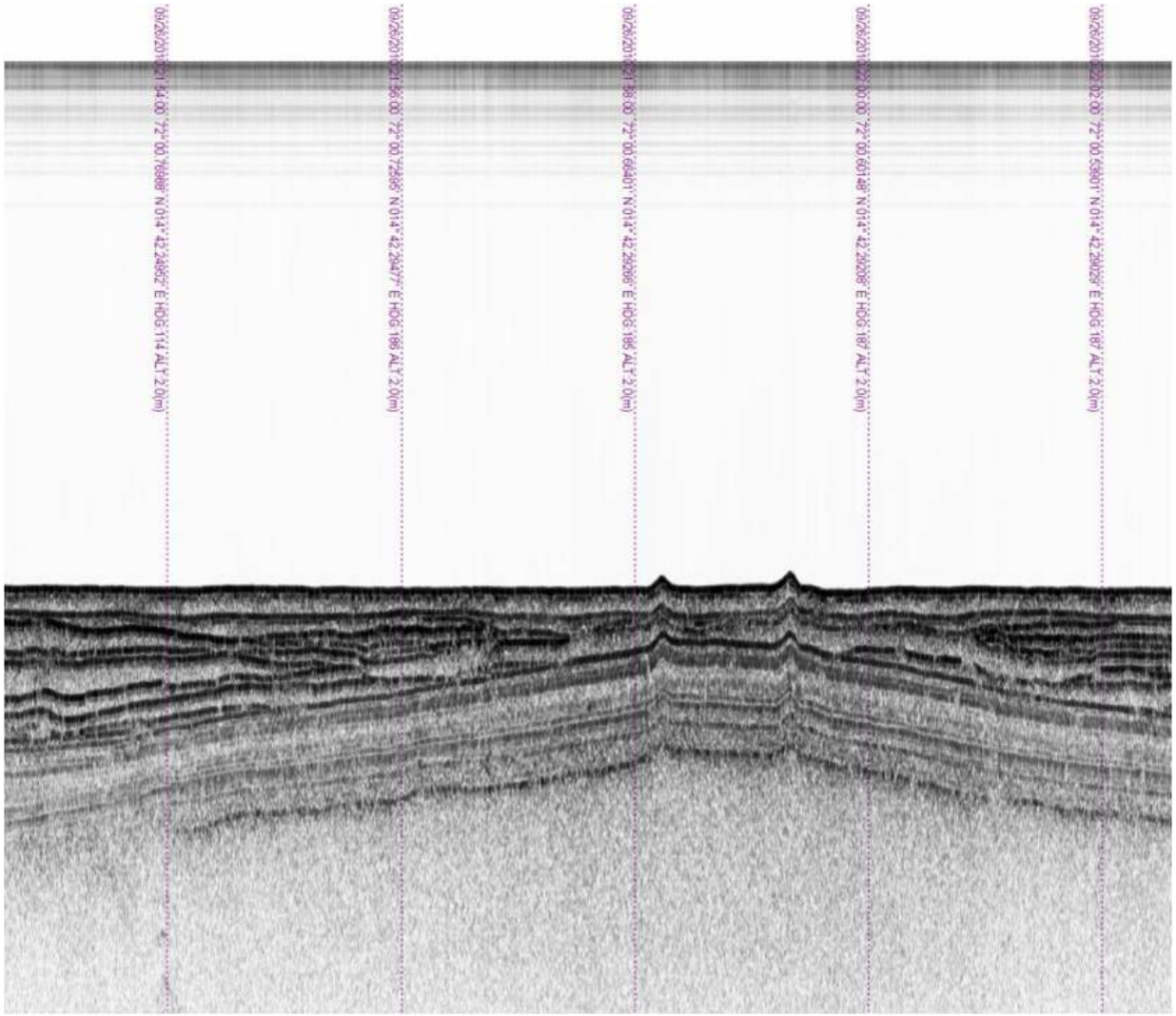
120 kHz ~ 600m usable swath (200m shown)

Sidescan



120 kHz ~ 600m usable swath

Sub-Bottom Profiler



4-24 kHz ~ 600m along track shown

Deep Water

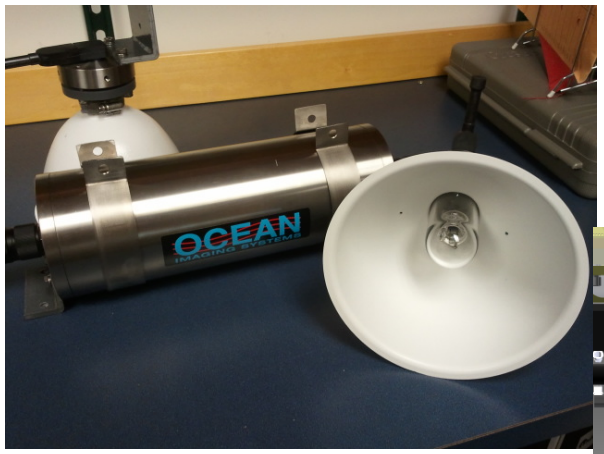
Two problems *(Actuation & Navigation):*

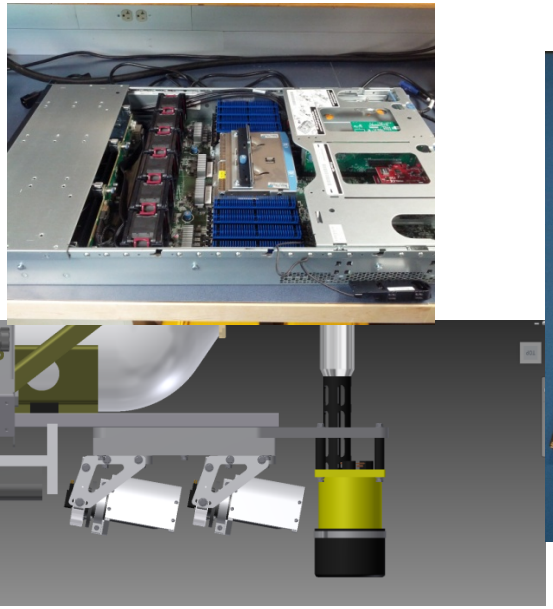
- Actuators fixed after finding several systematic problems, now tested in pressure tank to 7,500m
  - Working on long term replacement as well

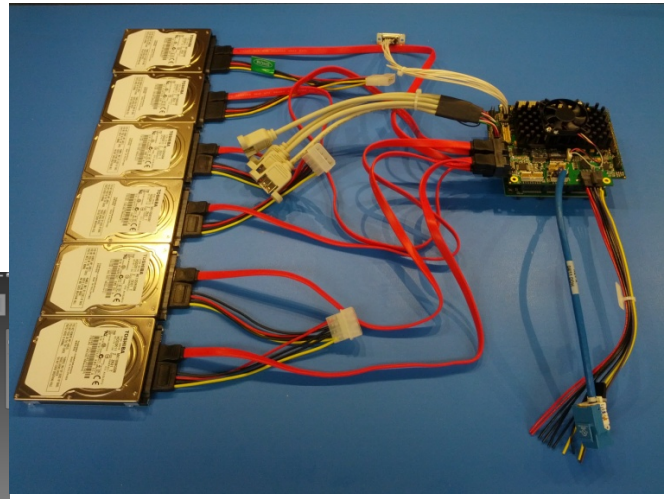
- Navigation
  - Several significant problems were found/fixed
  - Slow failures that could only be detected when pushed to the limit
  - Grounding problems significantly worsened by electrical noise
  - Testing in 3 weeks in 5,400m depth

Strobe & Camera

- Specific new camera identified: 12MP, dome housing, water corrected, low light, high rep rate, cost ~$50K
- New imaging stack under test now – required to handle 36 hours of larger pictures at 2x the rep rate
- New topside processing machine required to handle new data rates and helpful for current system
- Strobe assembled, tested, and being mounted on the vehicle next week







Cradle

- Similar to old but….
  - Safer for personnel and equipment
  - Reopens the smaller weather window we had incurred by adding the sidescan
- Built, will be used on next cruise

Diet

- Every time we add payload to *Sentry*, we find good ways to use it so currently short on payload (~ 120 lbs) despite being almost double the original design!

- Replaced wing bearings with new high tech plastic – 16 lbs savings – built and being installed this week

- Working on design for 17 lbs additional buoyancy

- Looking to add buoyancy into wings

Thrusters & Fairings

- Old thrusters are nearly original ABE design = 20 years old

- New thrusters – full use of industrial best practice
  - More efficient = longer mission times
  - Less electrical noise = better data
  - Higher top speed (~ 3 kts when batteries replaced ~ 2014)
  - Much higher reliability = fewer lost dives/less maintenance

- Should be ready ~ mid-2013 since a bit back burner

- New fairings being added
  - Less drag = longer mission times

Timing & Powering

Complete integration of PPS signal

- Installed this winter
- One-way travel navigation = fallback when USBL won't work
- All sonars and other instruments will be better time synced = better data

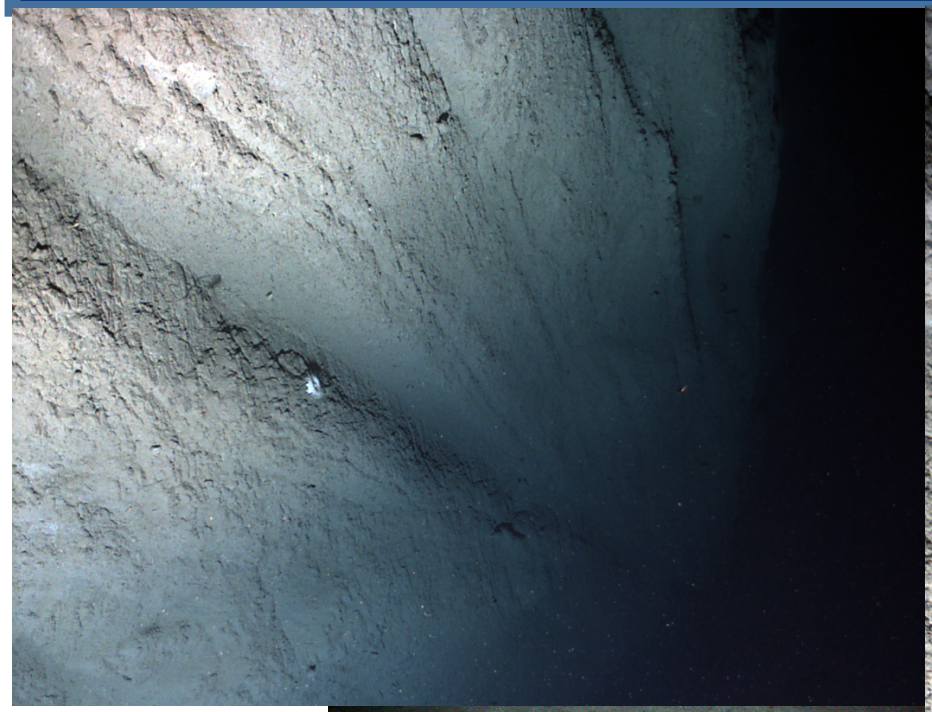
New triggering card

- Installed this overhaul
- 2x the Reson and sidescan along track data
- Ability to gather ADCP water column data without compromising navigation

Power-up, power-down of sensors in the water

- Being tested on engineering dives
- Significant power savings = longer endurance = more flexibility in dive plans
- Fewer configuration errors

Unique Photographic Capabilities



~ 270m scarp
~ 100m horizontal