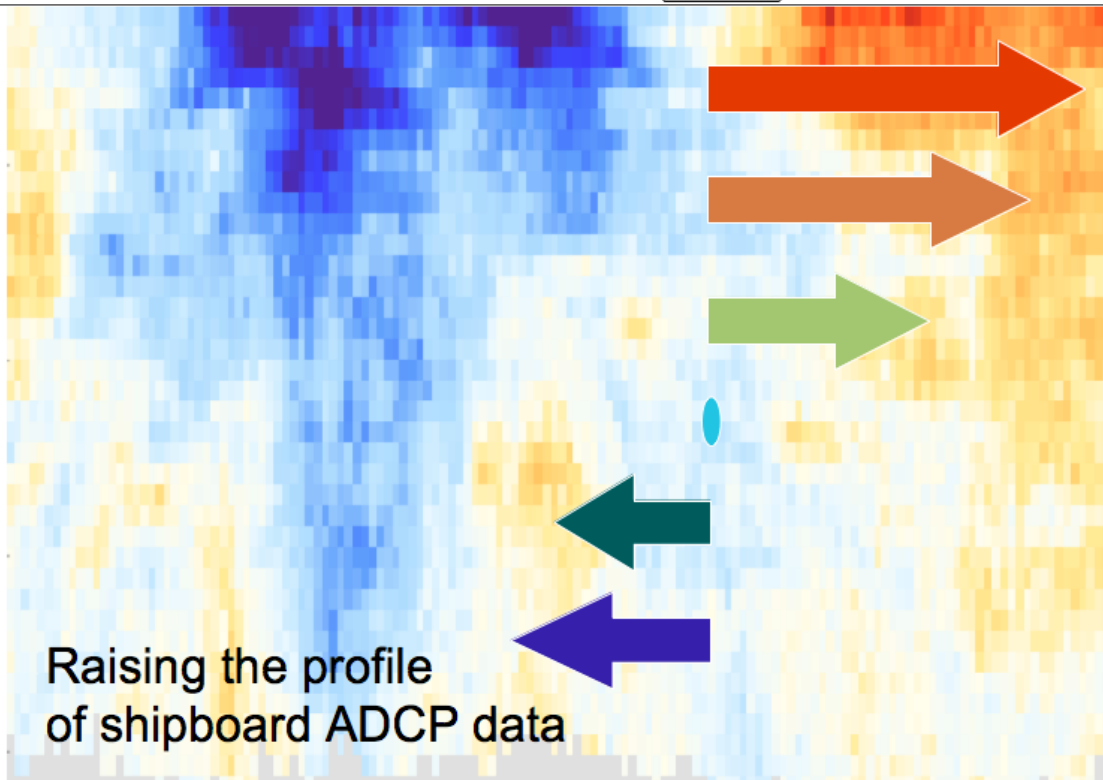
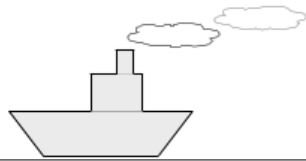


RVTEC 2021 - UHDAS/ADCP

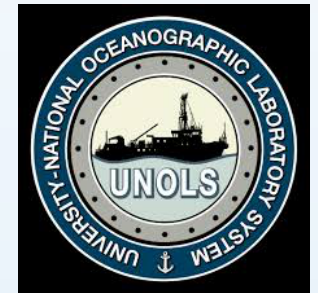
Jules Hummon, University of Hawaii

University of Hawaii Data Acquisition System

UHDAS



Raising the profile
of shipboard ADCP data



UHDAS Systems Installed (2021)

- Academic Research Fleet:
 - 17 UNOLS ships
 - 3 polar ships
 - NOAA: 11 (+/-)
 - “other” research ships: 6
 - (Volunteer Observing Ships: 2)
- 78 ADCPs

UHDAS What does it do?

- **Acquisition:** collect GPS, gyro, accurate heading, ADCPs
- **Monitoring:** daily email (UHDAS computer on ship), [at-sea web site](#)
- **Automated Processing:** [at-sea web site](#)
- **Stewardship:** improve QA, visibility



UHDAS Systems Installed (2021)

- **17 UNOLS ships:** Atlantic Explorer, Neil Armstrong, Atlantis, Blue Heron, Endeavor, Hugh Sharp, Kilo Moana, Langseth, Oceanus, Pelican, R.Revelle, Sally Ride, Savannah, Sikuliaq, R.G.Sproul, T.G.Thompson, F.G.Walton Smith
- **3 polar ships:** Healy, L.M.Gould, N.B.Palmer
- **11 (+/-) NOAA ships:** Okeanos Explorer, F.Hassler, G.Gunter, H.Bigelow, N.Foster, Pisces, R.Brown, R.Lasker, Sette, B.Shimada, Dyson
- **6 (+) “other” research ships:** Falkor, Pt Sur, Investigator, Kristine Bonnevie, Discovery, James Cook
- **2 Volunteer Observing Ships** (on hold)

Improvements in 2021

- Bridge Plot now has a “ghost ship” showing ship's orientation
- new on UHDAS shipboard web site and daily email:
 - **Temperature diagnostic plot** Suggests future ADCP failure
 - **GGA time diagnostics** GPS problems, POSMV thrashing
- Speedlog available via website, UDP, or serial (let us know what you want)
- New calibration number: horizontal offset between ADCP and GPS
- Better-organized Documentation, including **Best Practices** page
- New: daily netcdf files updated near-real-time for cruises requiring frequent data transmission to shore

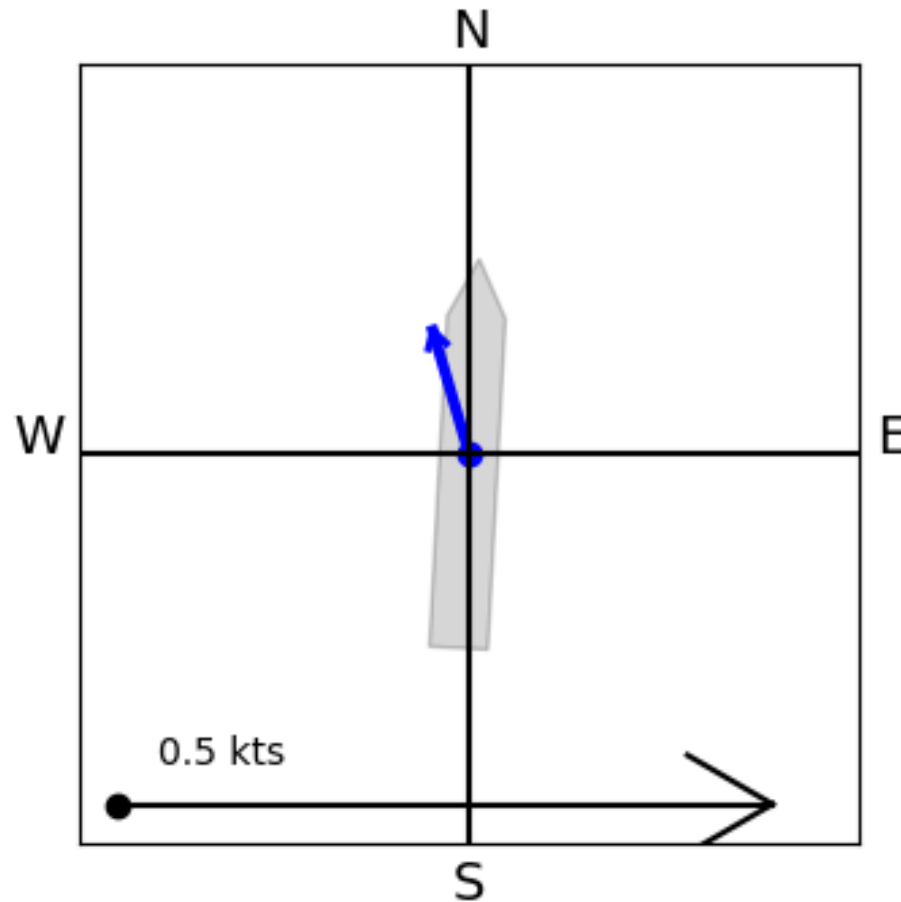
Personnel changes:

- Joseph Gum (joined us from Scripps ODF)
- Drew Frambach joined from Colorado (storm-chasing radar) and U.Hawaii
- We're hiring: there's still time to [apply](#) (closes Nov 1)



New! Bridge Plot includes ship outline and heading

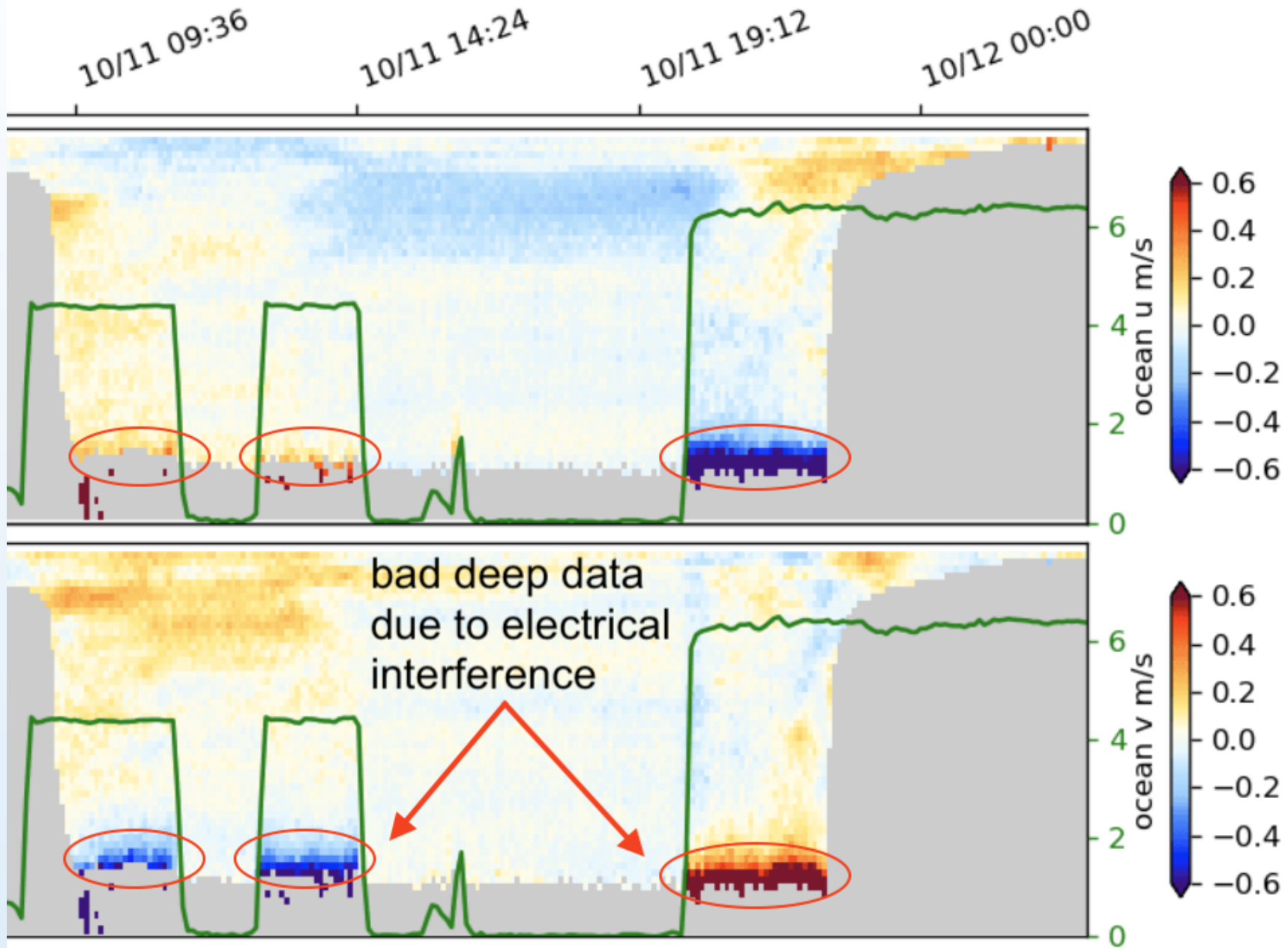
**0.1 kts, 343 degT
ship heading 3 degT**



**Title Ocean Velocity (47-63 m)
2021/02/07 00:25:32 UTC**



Electrical interference: biases at the bottom of the range



2021: operating system upgrades

- Operating systems upgraded to 18.04 (wipe the disk, configuration per ship)
 - In person: (none)
 - otherwise: computer(s) shipped to UH, remote, build disk at UH, ship disk
 - 6 ships upgraded to 18.04
- Got UHDAS running under 20.04, updated installation scripts
- Operating systems upgraded to 20.04 (wipe the disk, configuration per ship)
 - 4 ships (8 computers) - all remote
- UHDAS code updated on existing 18.04 computers: (9 ships)

2022: operating system upgrades

- Continue to roll out Xubuntu 20.04 via these schemes:
 - you ship the UHDAS computer to us, we build, ship back
 - you install Xubuntu 20.04 (our instructions), we remote in and do the rest
 - later in 2022 we come visit!!

**We will be in
touch about
upgrades**



Problems with ARF ADCPs

- Fouled cables/connectors
 - corrosion at the transducer end: 1x ocean surveyor, 1x wh300
 - chafing on over-the-side temporary installation (2x)
- Electrical noise
 - 1x deep biases, after shipyard
- Temperature warning (new plot) 2x ocean surveyor followed by failure
- Intermittent high temperature variability and loss of range (1x ocean surveyor)
- Two beams swapped, cable termination at the deck unit (1x ocean surveyor)
- low signal from one beam (requires transducer repair) 1x ocean surveyor
- low signal overall (2x ocean surveyor)
- high background noise, loss of range due to barnacles (many more in 2020)



Problems with ARF Ancillary systems

- ABXTWO - bad antenna (1x)
- Seapath “reduced quality” or “dead reckoning” (2x)
- networked data transmission
 - gaps and duplicate messages (2x)
 - UDP feed duplicated on one port, not as advertised (1x)
- Serial noise due to poor connections (1x)
 - Pelican
- Virtual Computer
 - computer time is jumpy
 - vulnerable to network problems



Coming up in 2022

- start testing Xubuntu 22.04 Summer 2022 (due out April 2022)
 - start upgrading computers to 22.04 maybe fall 2022
- Hire one more person ([closes Nov 1](#))
- Continue documentation improvements, software development
- New instruments:
 - test Pinnacle45 (Neil Armstrong, Jan 2022)
 - further developments with the EC150 (testing 2022 Sally Ride)
- CyberSecurity impacts: UCSD forbidding automated email early 2022
- Virtual UHDAS training



Continuing Request:

Keep us in the loop regarding (give us lots of warning)

- New ADCP (requires configuration, calibration)
- Replaced/Reinstalled ADCP (requires calibration)
- Changes in serial feeds
- Moving a GPS antenna we use, especially for processing
- New attitude devices (we like to evaluate them)
- Changes in networking
 - route to ship
 - infrastructure on ship
- Science Special Needs (triggering, temporary instrument)



The UHDAS Team

Drew Frambach

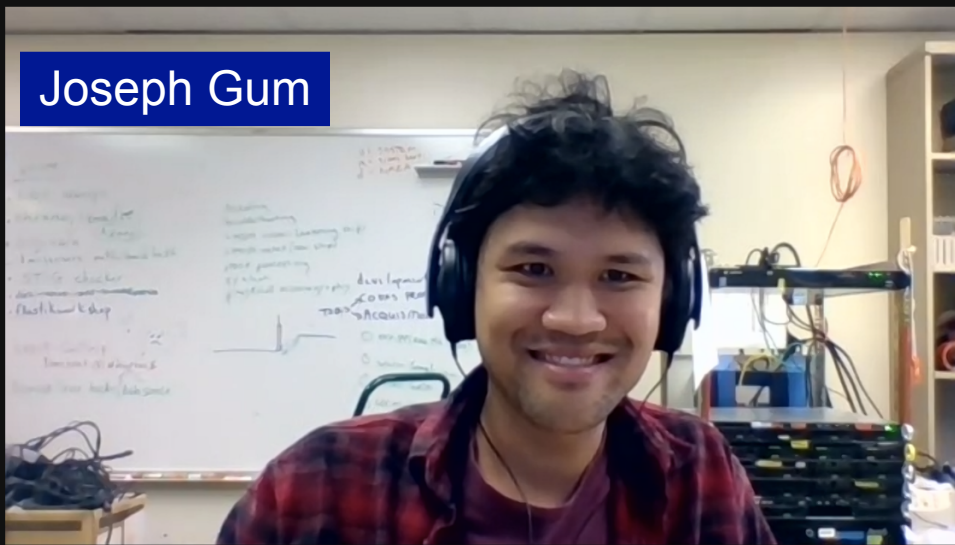


Jules Hummon



Jules Hummon

Joseph Gum



Toby Martin



Raising the profile of ADCP data!

