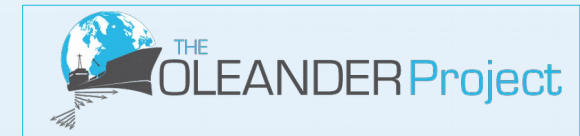
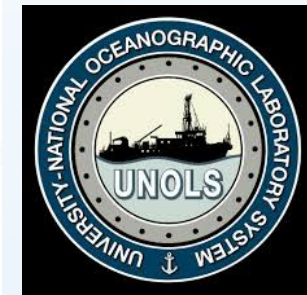
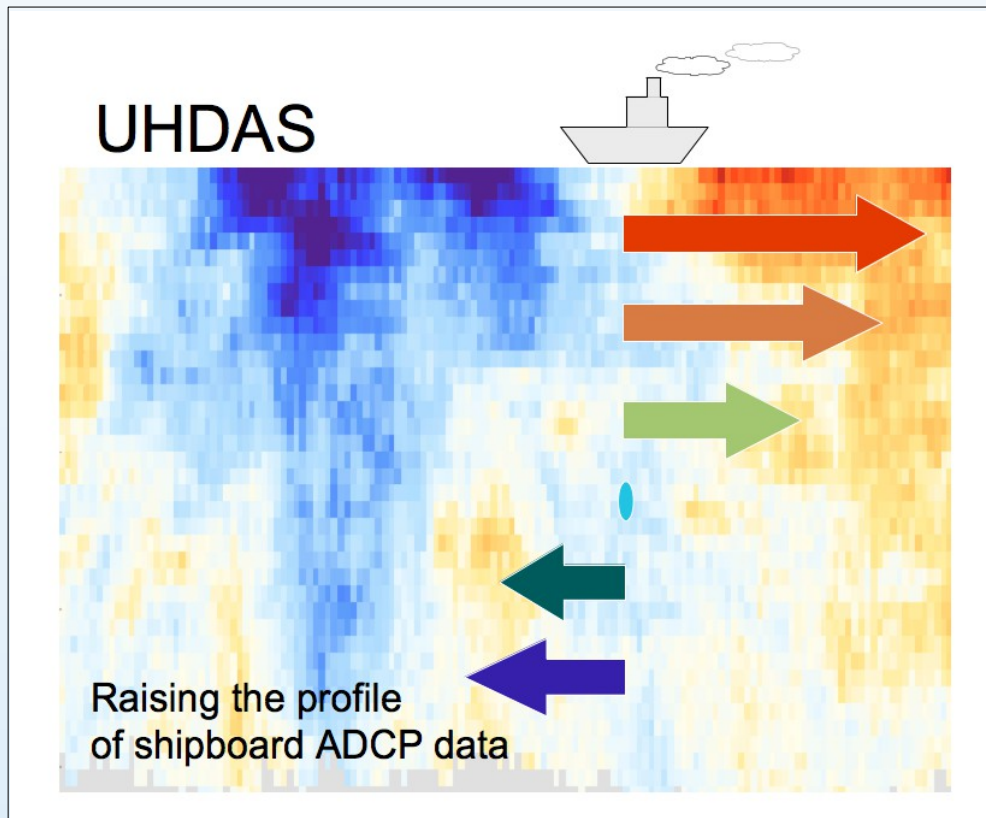


RVTEC 2020 - UHDAS/ADCP

Jules Hummon, University of Hawaii

Acquisition System = "UHDAS": University of Hawaii Data Acquisition System



UHDAS Systems Installed (2020)

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

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+ADCP: what does it do?

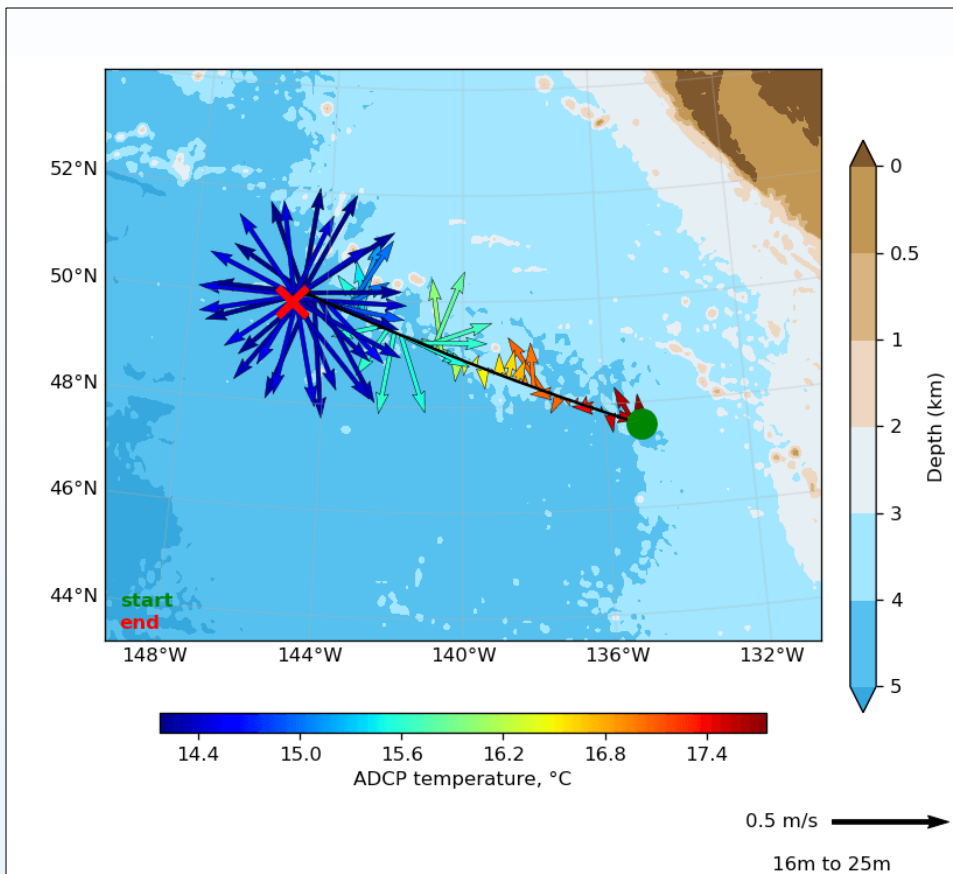
Improvements during 2020:

- GGA time diagnostic plots (now at-sea website)
- speedlog available via website, UDP, or serial (let us know what you want)
- better identification of problems (via custom ticketing system)

Personnel changes:

- Uggo Pinho (left for Norway)
- Thomas Roc (left for France)
- Joseph Gum (joined us from Scripps ODF)

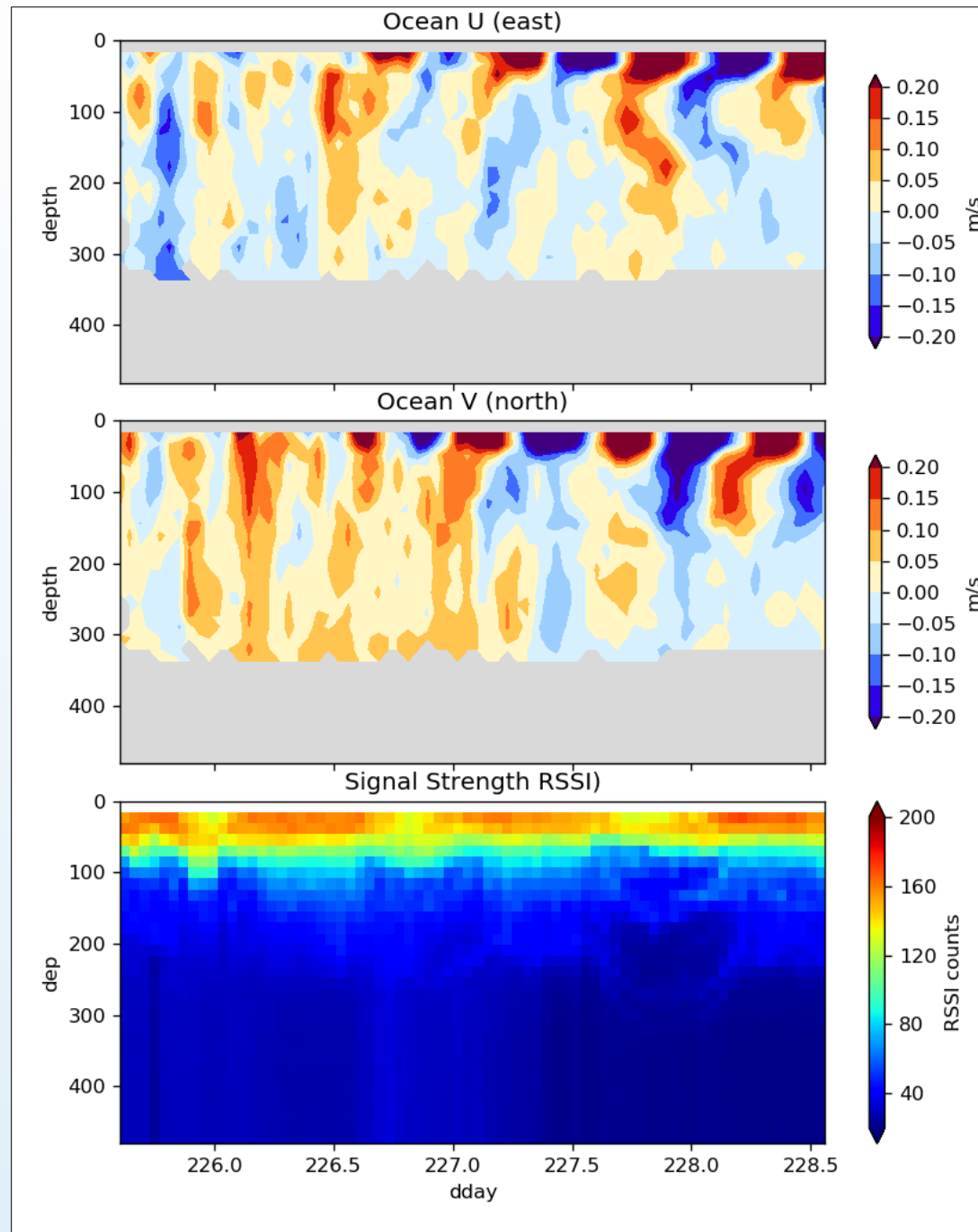




A large storm passed over this area just before Dyson got there.

They stayed in one area for several days.

The currents caused by the storm are changing direction every 8 hours.



At-sea web site diagnostics

GGA time diagnostics:
click here



Diagnostics:

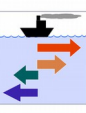
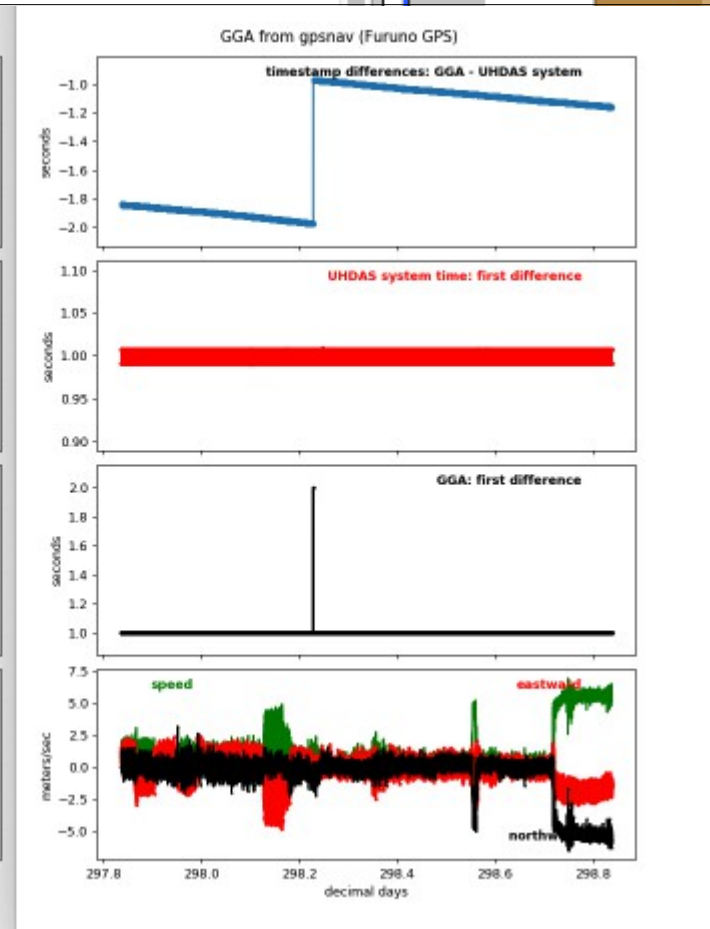
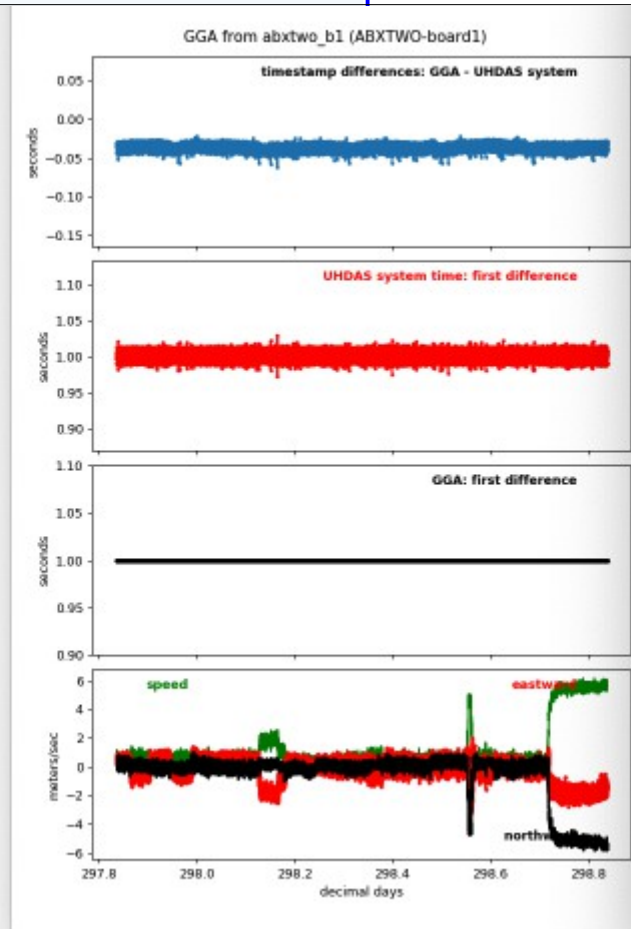
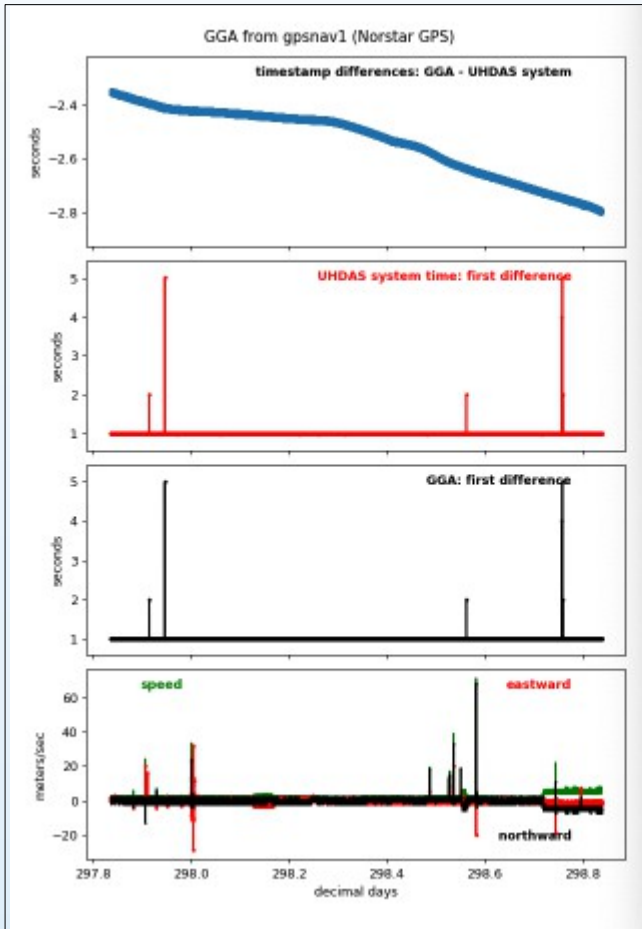
- [speedlog](#)
- <http://192.168.2.35:38082>
- [Beams: Scattering, Velocity](#)
- [\(some\) Ocean Velocity Errors](#)
- [GGA time differences](#)

cruise=EN01

38.4°N
38.2°N
38°N
37.8°N
37.6°N



74.1°W
.50 2
ADCP 1
15 20:1
14 08:1
100



2020: operating system upgrades to 18.04

- **Operating system upgraded to 18.04** (wipe the disk, configuration per ship)
 - **In person:** (2 computers, before covid19)
 - **computer(s) shipped to UH:** (7 computers)
 - **remote** (ship tech does operating system, we do the rest): (6 computers)
 - **build disk at UH, ship disk** (Toby): (4 disks)
 - **new ships:**
 - Dyson (NOAA)
 - **UHDAS code updated on existing 18.04 computers:** (30 computers)
-

At this stage, “all” UNOLS and NOAA ships have been upgraded to 18.04

The next step is to get the install process working with 20.04 and test, move forward



Problems with ADCPs

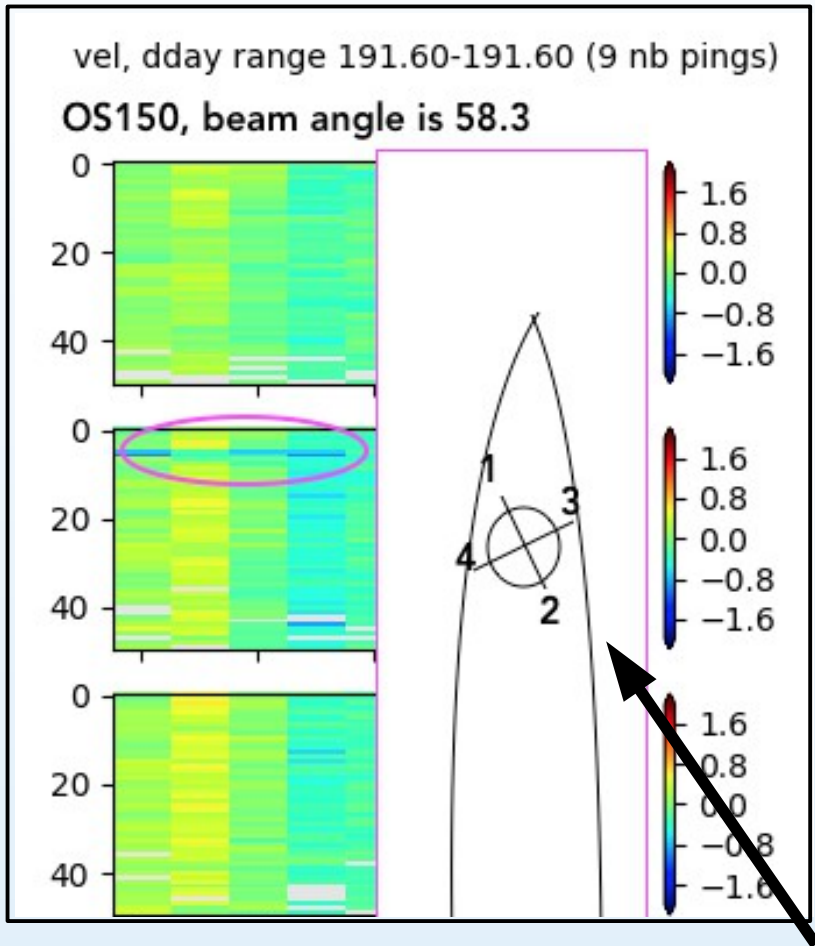
- Kilo Moana : OS38 bad beamformer board
 - repair complicated by covid
- Sikuliaq: new wh300 had biases in 2 beams
 - evaluate, send back for repair
 - returned with less bias (but still there) in 2 beams
 - returned again, finally working
- Endeavor deck unit failed; repaired
- Sproul WH300 - poor performance; unknown cause



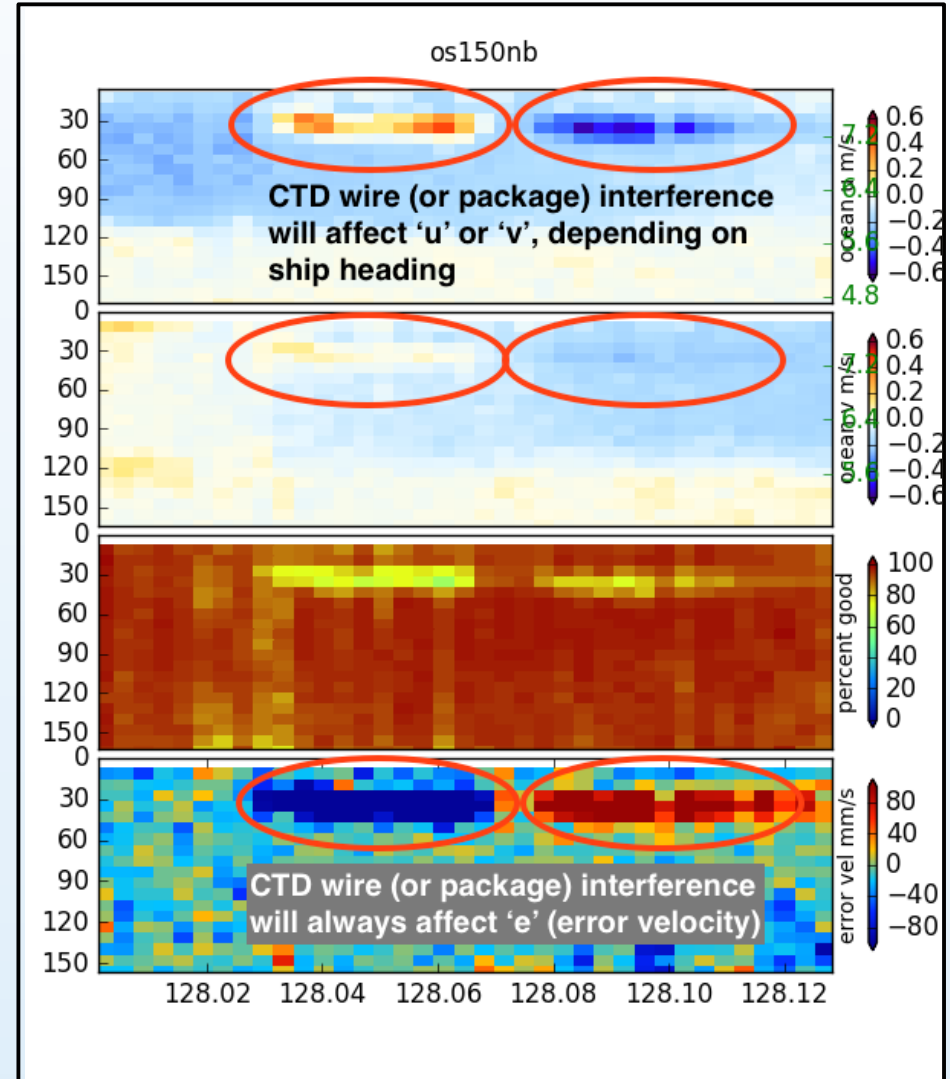
Problem with installation: CTD wire interference

- Sikuliaq wh300
- Armstrong OS150

Solution: next time the instrument is removed and put back in, change the orientation by 30-45deg



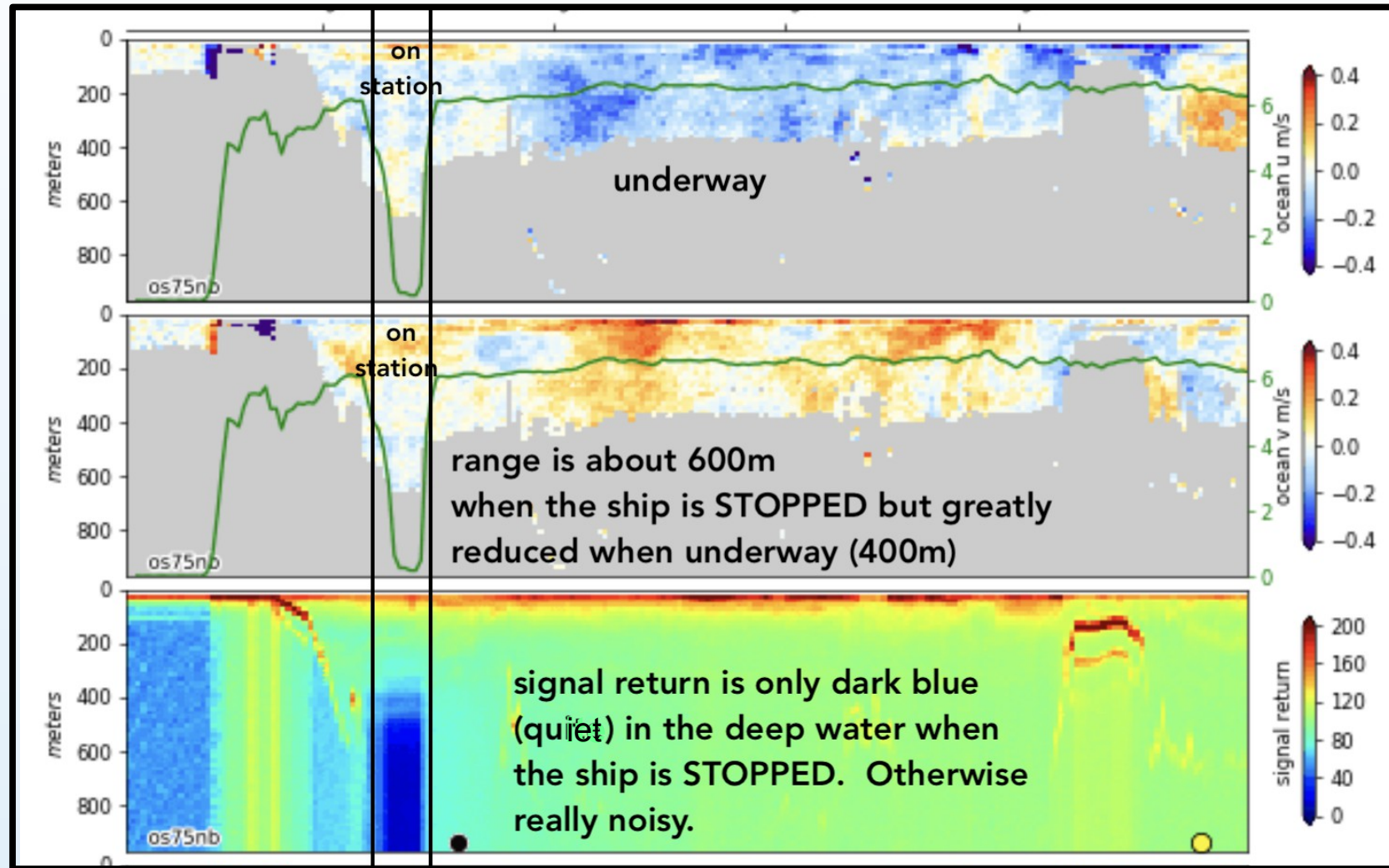
CTD must be going in here?



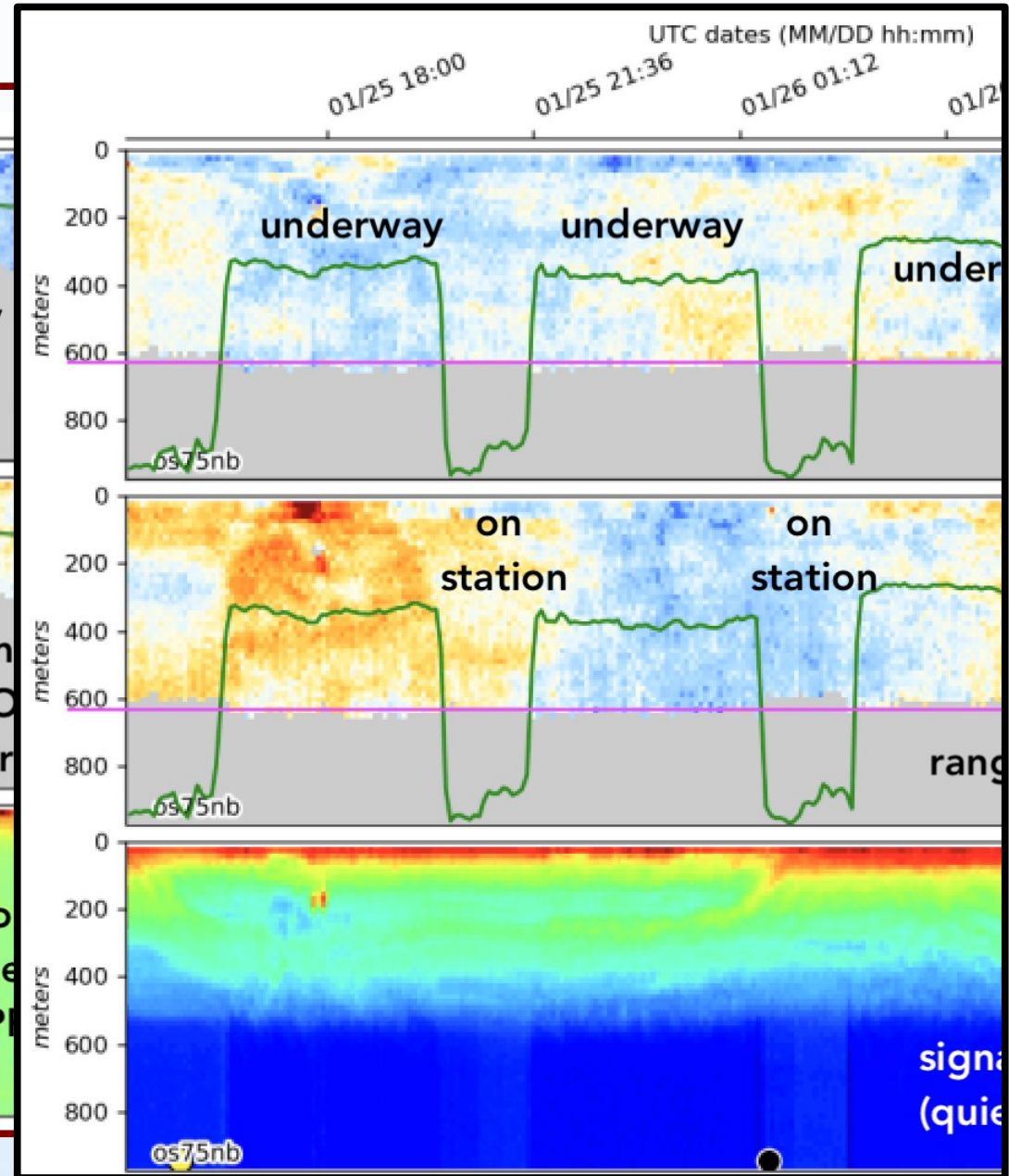
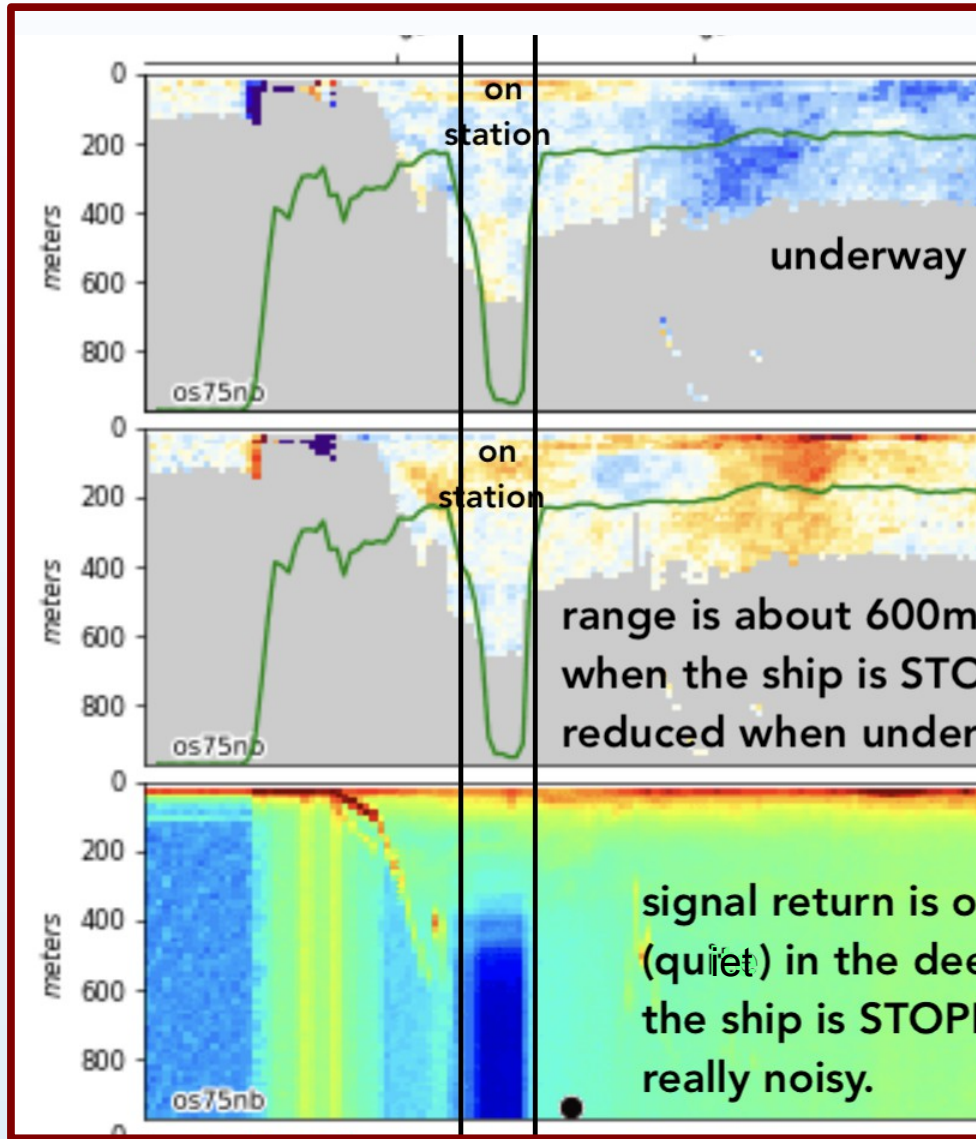
Covid problems: growth on hulls

Poor range due to barnacle growth after covid stand-down:

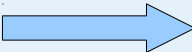
- Palmer
- Endeavor
- Langseth
- Shimada
- Thompson
- Oceanus
- Armstrong



Loss of range: before and after scrubbing



Coming up in 2021

- switch to the next Operating System (Xubuntu 20.04), test
 - start upgrading computers
- Hire one more person
- Continue documentation improvements, software development
- New instruments:
 - test Sentinal V (on loan from Blue Heron)
 - test Pinnacle45 (Sally Ride, early December)
 - further developments with the EC150? 



New Kongsberg instrument

150kHz: EK80 + ADCP = EC150

November 2018:

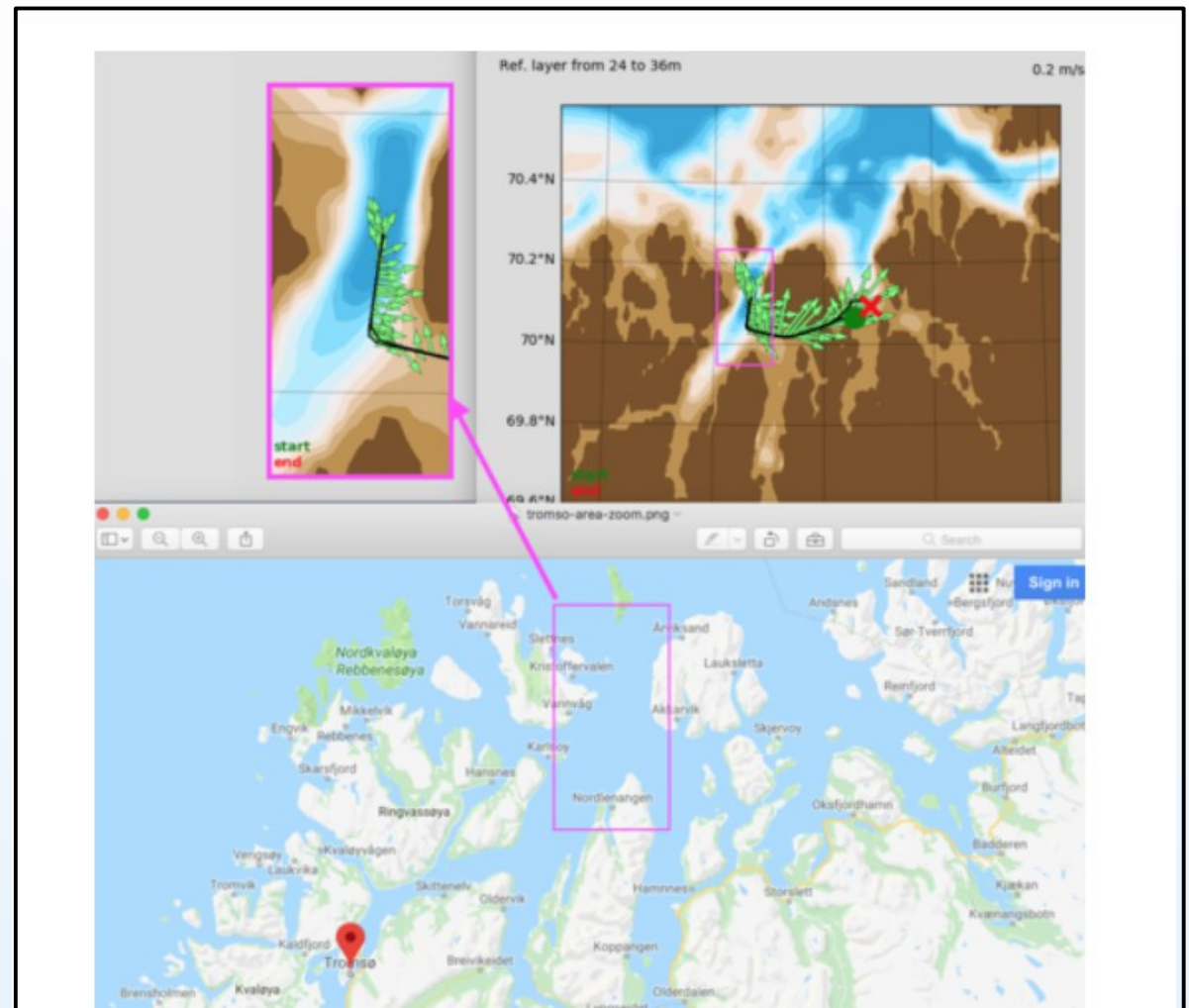
- Norwegian Fisheries Research ship
G.O. Sars
- different raw data format
- EK80 software (modified)
- compared with OS150
- serving EC150 via ZMQ
- triggered: alternate between them
- UHDAS eavesdropped
- used CODAS processing

Apparently a beta-rollout is on

<https://oneoceanexpedition.com>

Meeting with Kongsberg people in 2 weeks.

We'll learn more then.



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)



Protocol

(1) Always run “End Cruise” before archiving

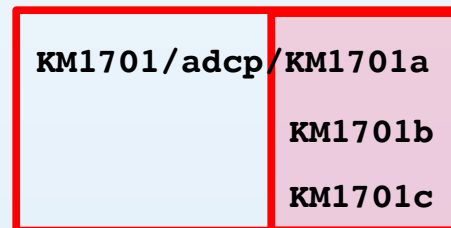
- UHDAS adds final metadata to directory
- UHDAS builds a “reports” directory to help with QA

(2) Cruise names: same sorting order by date or ascii

- use year first: **2019-04-01** not 4-1-2019

(3) Cruise distribution and backup:

- **ALWAYS** use complete cruise names,
- eg. cruise distro:



keep data in original names

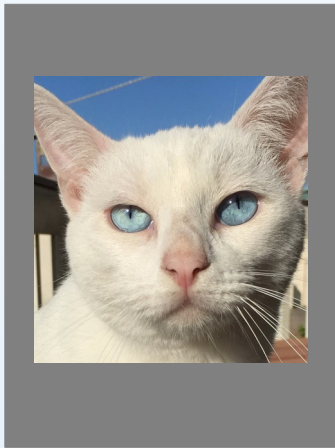
web site: <http://uhdas.org>
email us: uhdas@hawaii.edu
ticketing: askuhdas@hawaii.edu



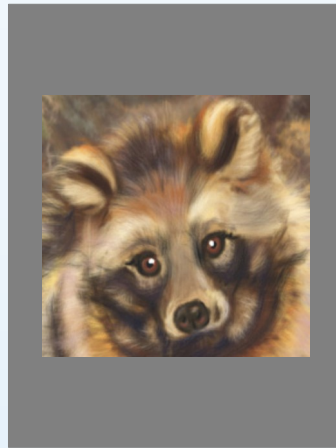
Final request

... as always:

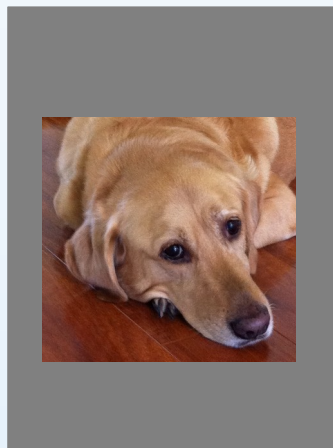
Send your needy scientists to ~~Jules~~



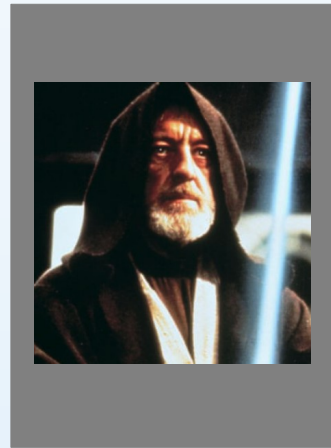
Jules



Toby



Joseph



(Eric)

**The
UHDAS
Team!**



Bonus plots!

Three plots follow:

(1) An example of how the ABXTWo does as a timeserver

(2) new in 18.04 (not present in 16.04) so recent upgrades now get this

Last hour of 5-min vectors at a few depths

(3) new QC plot for ashtech (ADU800, ABXTWO) looking at just the reacquisition number. It's more realistic for QA judgement than the one with red stripes.

It is being made on the UHDAS computer, but at present there's no link to it.

Does anyone want that plot to be something available on the ship on the UHDAS website?



ABXTWO is not a great timeserver

ABXTWO can be an ntp timeserver:
Should you use it?

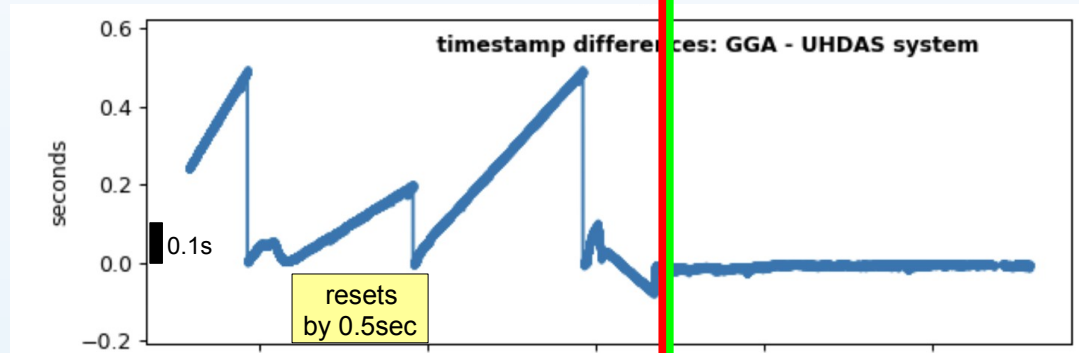
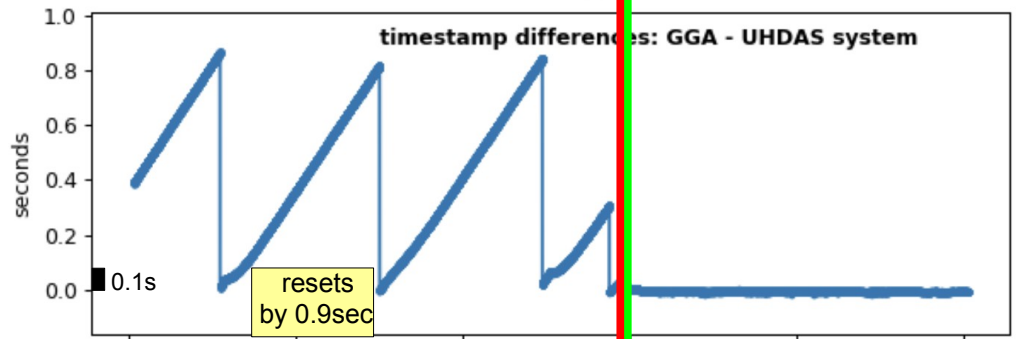
Answer:
Not if you have a real one:
ABXTWO ntp performance varies

Each plot shows 1 day of data
comparing the computer clock
to well-behaved 1Hz GGA messages

Computers using ABXTWO as the
NTP server will get their time
jerked around, it just depends
“by how much”

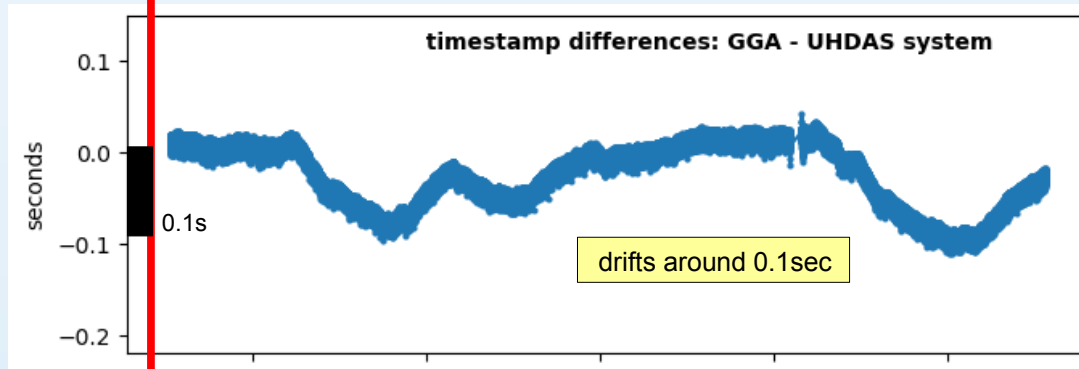
Examples:

ABXTWO drifts,
then resets
(~6x daily).



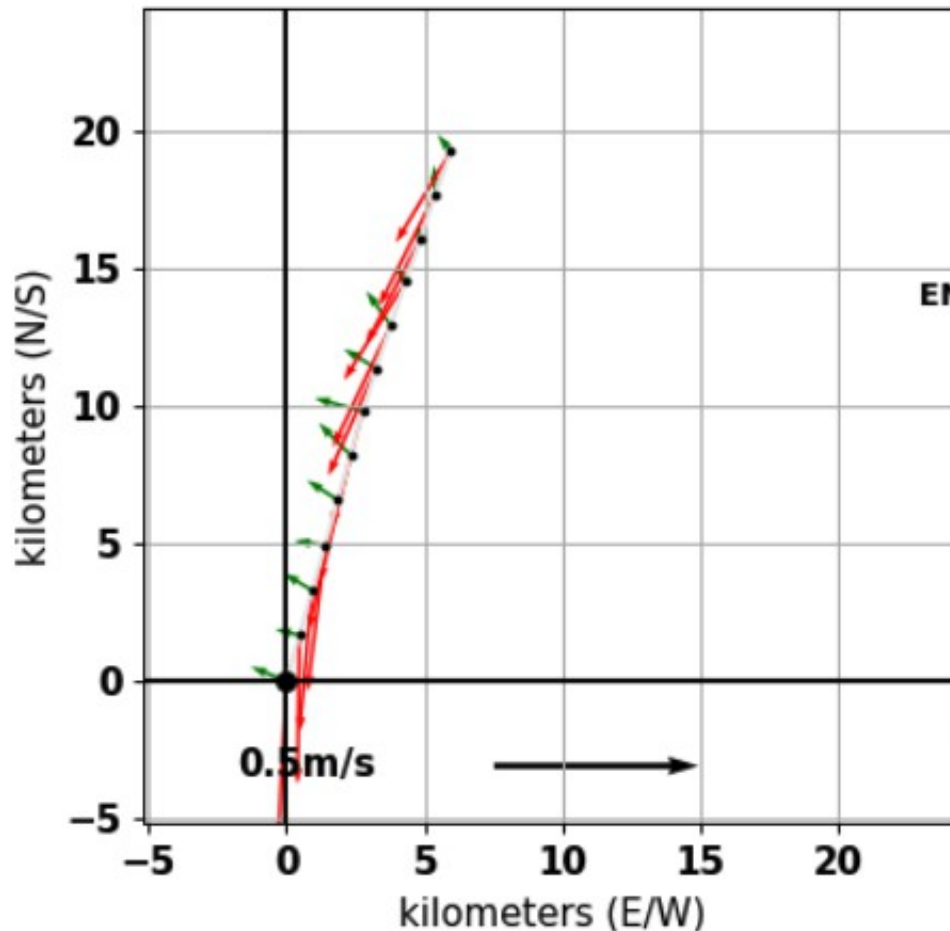
ABXTWO is the timeserver

Symmetricon
or other “real”
ntp timeserver



At-sea web site diagnostics

EN658 os75nb (duration = 1.0 hours);
dday range=(298.80240, 298.84406), last UTC time=2020/10/25 20:15:27



END at origin (0,0):
(37 33.24200 N)
(74 2.31667 W)

bin 2-7
(45m-125m)

bin 30-35
(493m-573m)

speedlog web link

- surface vector :
 - [day](#)
 - [night](#)
- kts and direction profile:
 - [day](#)
 - [night](#)
- kts E/N + scattering [profile](#)

Diagnostics:

- [speedlog:](#)
<http://192.168.2.35:38082>
- [Beams: Scattering, Velocity](#)
- [\(some\) Ocean Velocity Errors](#)
- [GGA time differences](#)

More Science Plots:

- [Vector Profile Plots](#)
- [Last Few Vectors](#)

last hour of vectors
(at different depths)

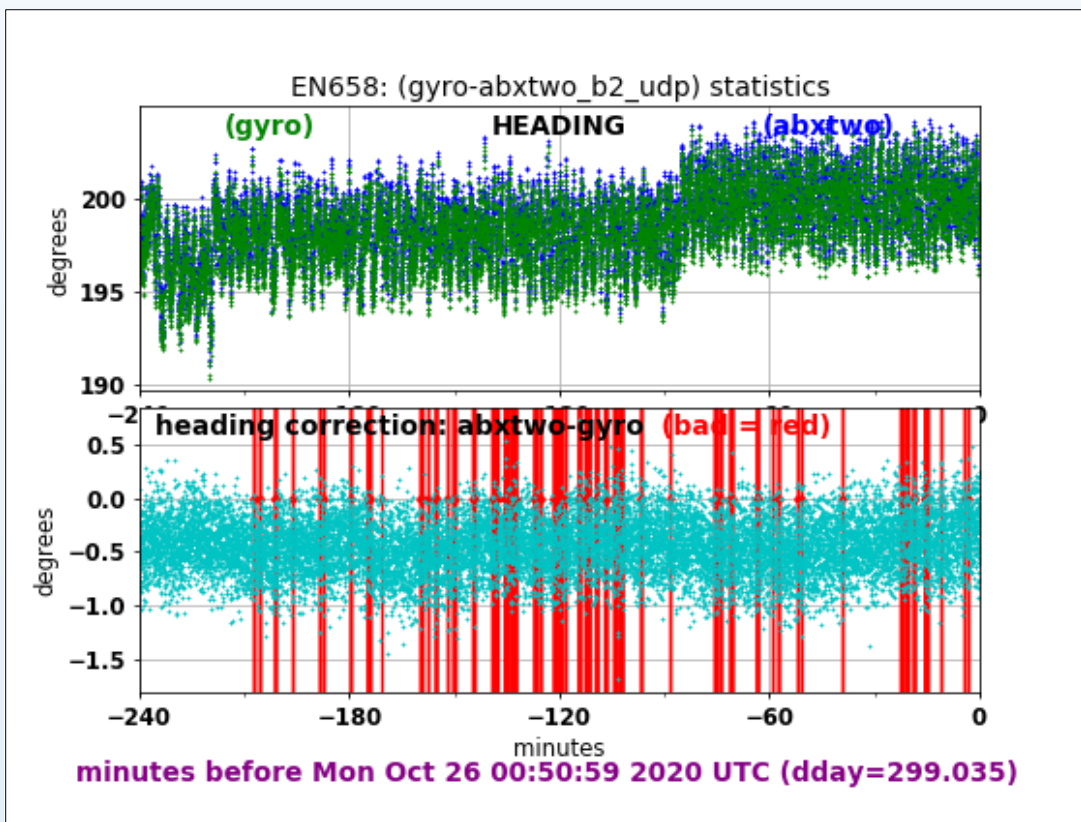


New ABXTWO (ADU800) QC diagnostic plot

On the ship:
good: includes heading
bad: every red stripe is alarming

The plot exists, but no link yet
on the web site
good: not as alarming

last 4 hours



last 24 hours

EN658 abxtwo_b2_udp quality

