Nov 21st, RVTEC, technical session on “Precision Timing”.

No one is quite sure where the idea for this came from, but a number of folks were happy to talk about it. All agreed that good timing is important. And so, in no particular order.....

Lots of ships have NTP. (Network Time Protocol) This was promptly followed up in the discussion by “NTP sucks”. PTP, (Precision Time Protocol), is much better, but needs the correct ethernet switch. Bottom line, PTP is about 1000 times more accuate than NTP, however, NTP is good enough for lots of stuff. (and probably a lot cheaper.) The people who need PTP know that they need it. However, there are people who are not using NTP, but should be.

Ships need the following:

- Time server on the ship. Likely gps based. Probably ntp. One stratum-1 server.
- Synced time is more important the accurate time. (accuracy is still good.)
- All computers and acquisition systems need to be linked/synced to a time server. NTP is good enough for most uses.
- Some stuff needs better time. Use PTP or 1PPS as needed.
- Seismic work needs super accurate time especially if using multiple ships. (But I doubt that this group needs our help.)

Here is a website that tell you how to turn a raspberry pi and a gps into a stratum 1 timeserver:
www.satsignal.eu/ntp/Raspberry-Pi-NTP.html If you have good luck with this, please use the RVTEC maillist to tell the rest of us.

Short discussion about things that don't have good time.

- Video Often no time, or time without date.

Short discussion about things that don't seem to need time, or at least not very good time. (I'm certain that these are debatable.)

- CTD
- XBT
- ADCP done not need sub-second time, but might need it in the future.
- Sound velocity profiles for multibeam

Things that need good time from the ship

- Lowered ADCP

Data that does need good time:

- MET data

How much precision is needed for real-time wind? (i.e., motion compensated wind speeds)

- Time of IMU . Time of wind sensor . It's not clear if this can be done with NTP. (~1ms accuracy)

The midnight problem. (daily files may contain data from more than one day.)

- Data from yesterday may arrive today.
- The signal to create the new file arrives late.

Ways to keep computer clocks accurate:

- Don't use time services that correct time by jumping the time. (no step jumps.) Many so called time services for Windows work this way, don't use them.
- NTP for windows works well, available here: http://www.meinbergglobal.com/english/sw/ntp.htm
- Tardis also works well, here: http://www.kaska.demon.co.uk/ However, it's not clear how up to date Tardis is.
- Also see this website: www.ntp.org

It was decided to do a time survey of the UNOLS fleet.

- Which master clocks are in use.
- How is time distributed.
- What keeps the computers and other time users synced?

Recommendation for minimal decent timekeeping:

- All UNOLS vessels should have a stratum-1 timeserver and run NTP to keep their computers correct and synchronized.

Submitted by:
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