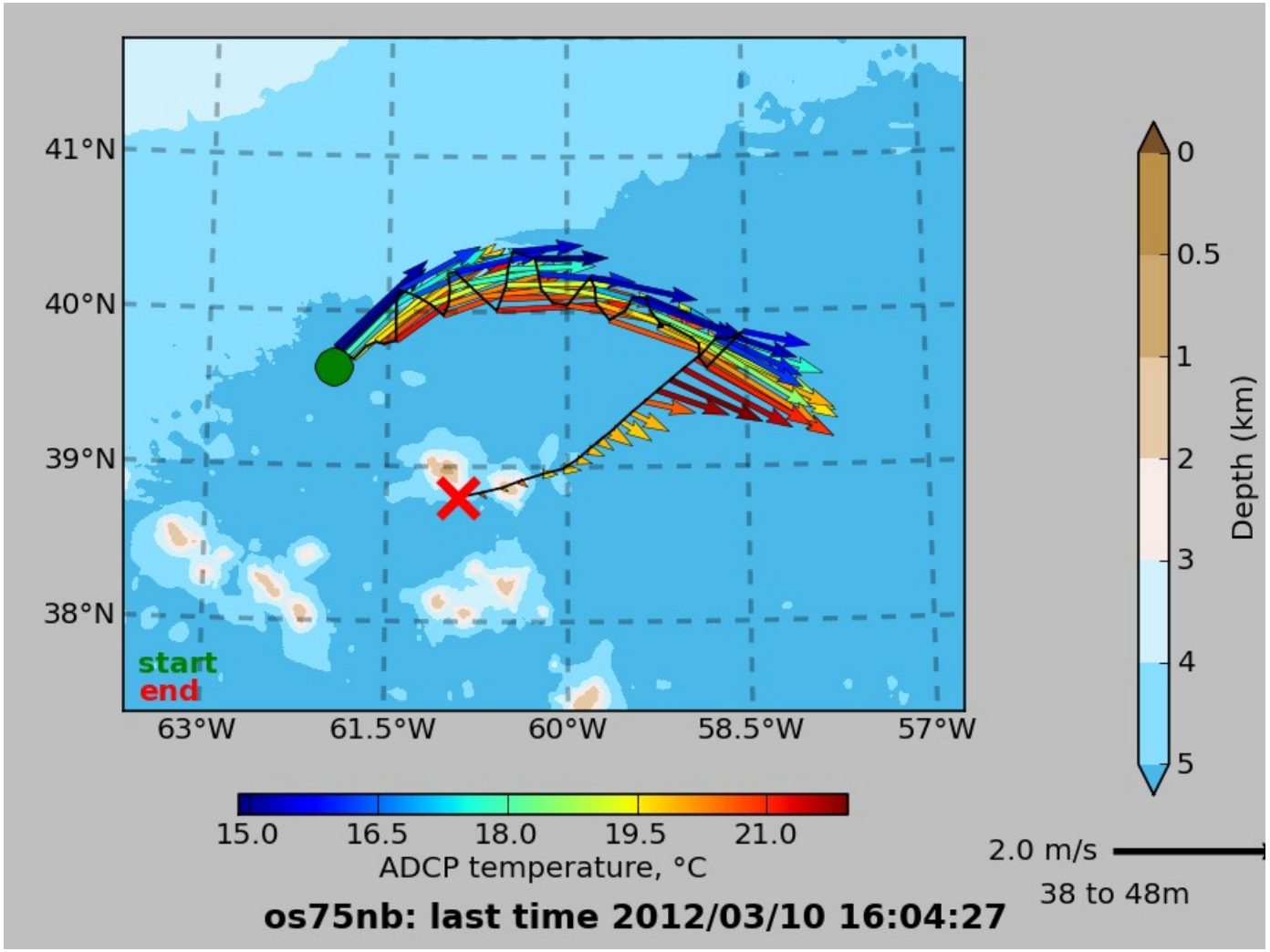
RVTEC Nov 2016 – UHDAS/ADCP

Time,
ADCP
Position
Attitude



primitive data

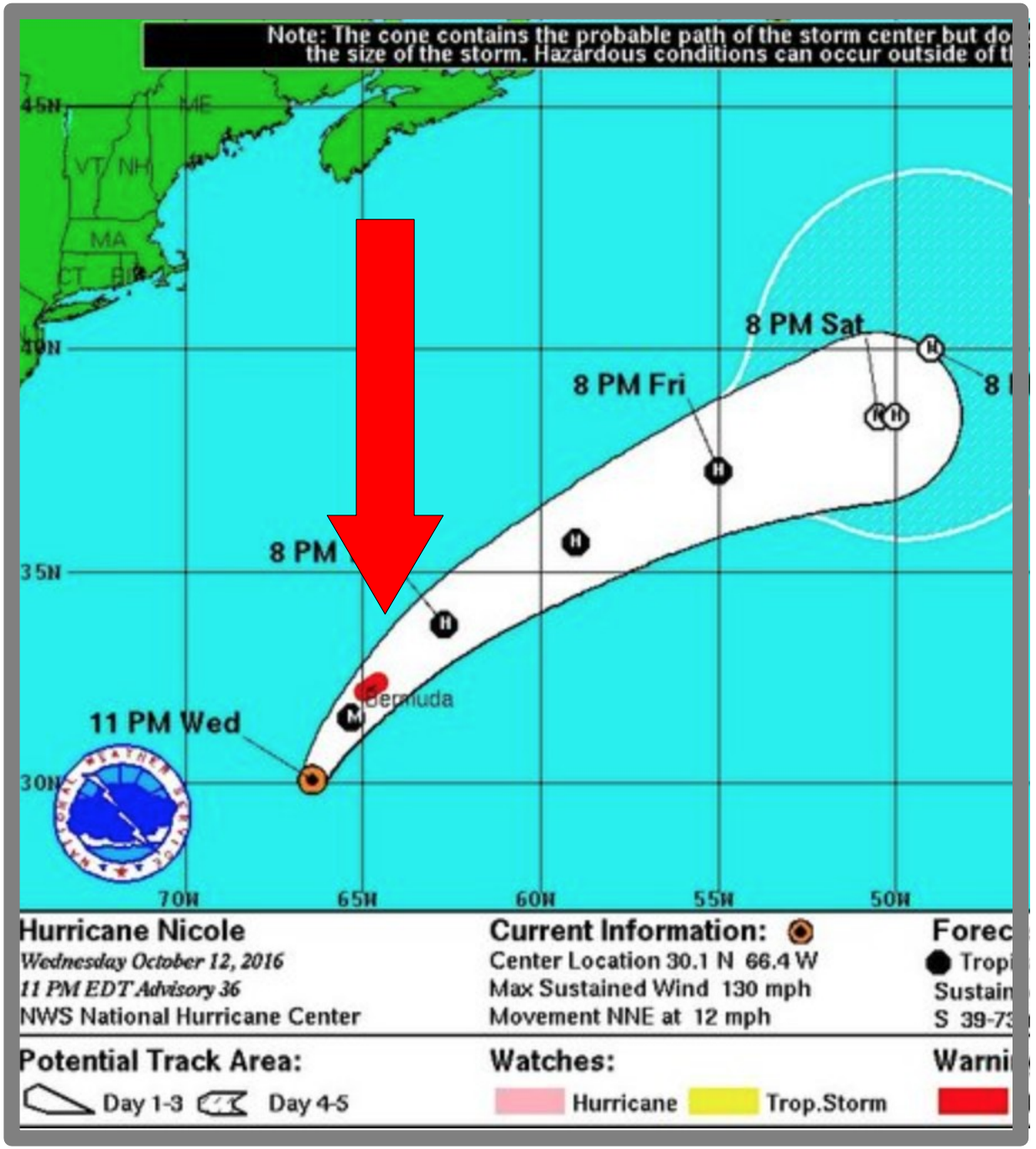
ocean velocities

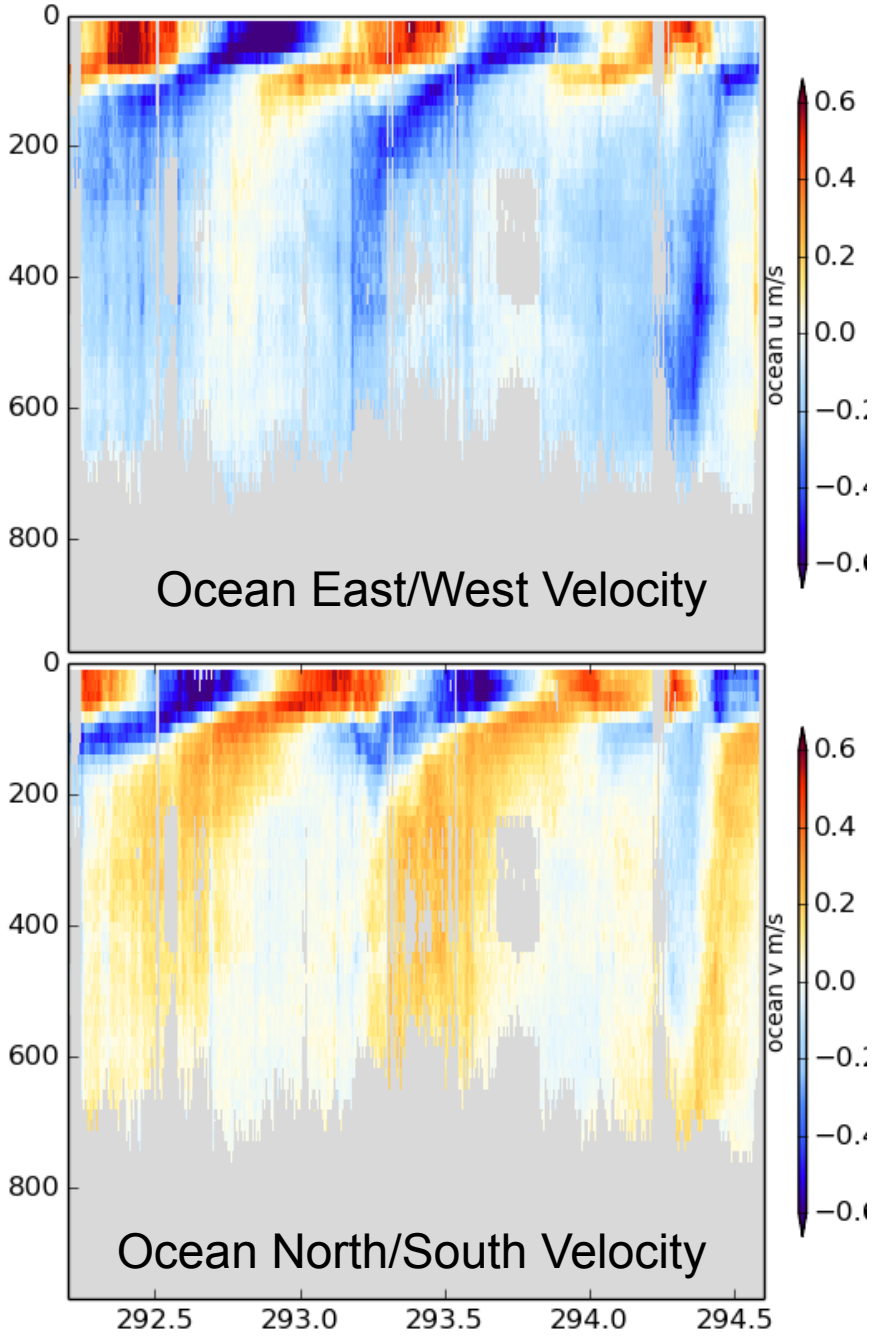
UHDAS/ADCP

Review UHDAS Concept:

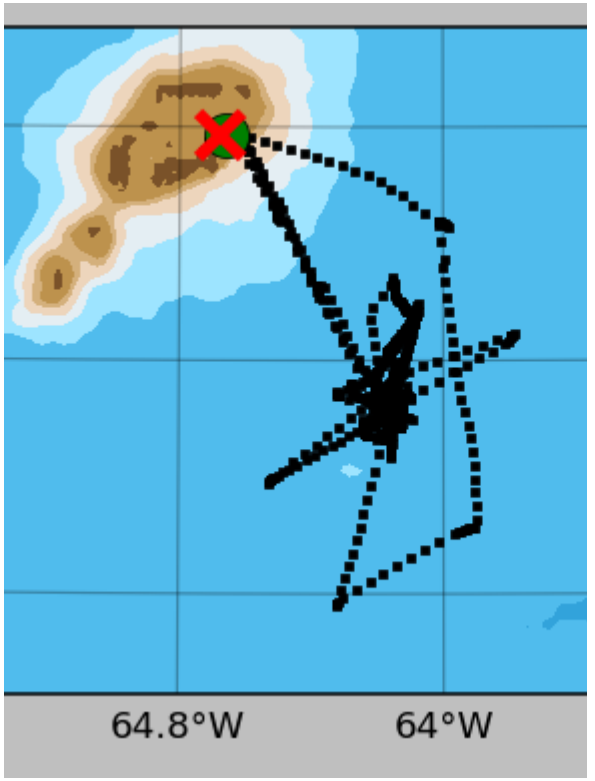
- Acquisition: reliable, robust, duplicate feeds
  - reliable heading, accurate heading
  - 1deg heading error at 10kts ⇨ 10cm/s cross-track error
- Monitoring and remote troubleshooting
- Processing
  - Balance real-time output and post-cruise recovery
  - Minimal effort to “touch up” (if all goes well)
  - Investigate subtle problems and reprocess if necessary
  - Portable code and documentation
- Central location for community knowledge (http://uhdas.org)
- Happy Scientists, Happy Techs

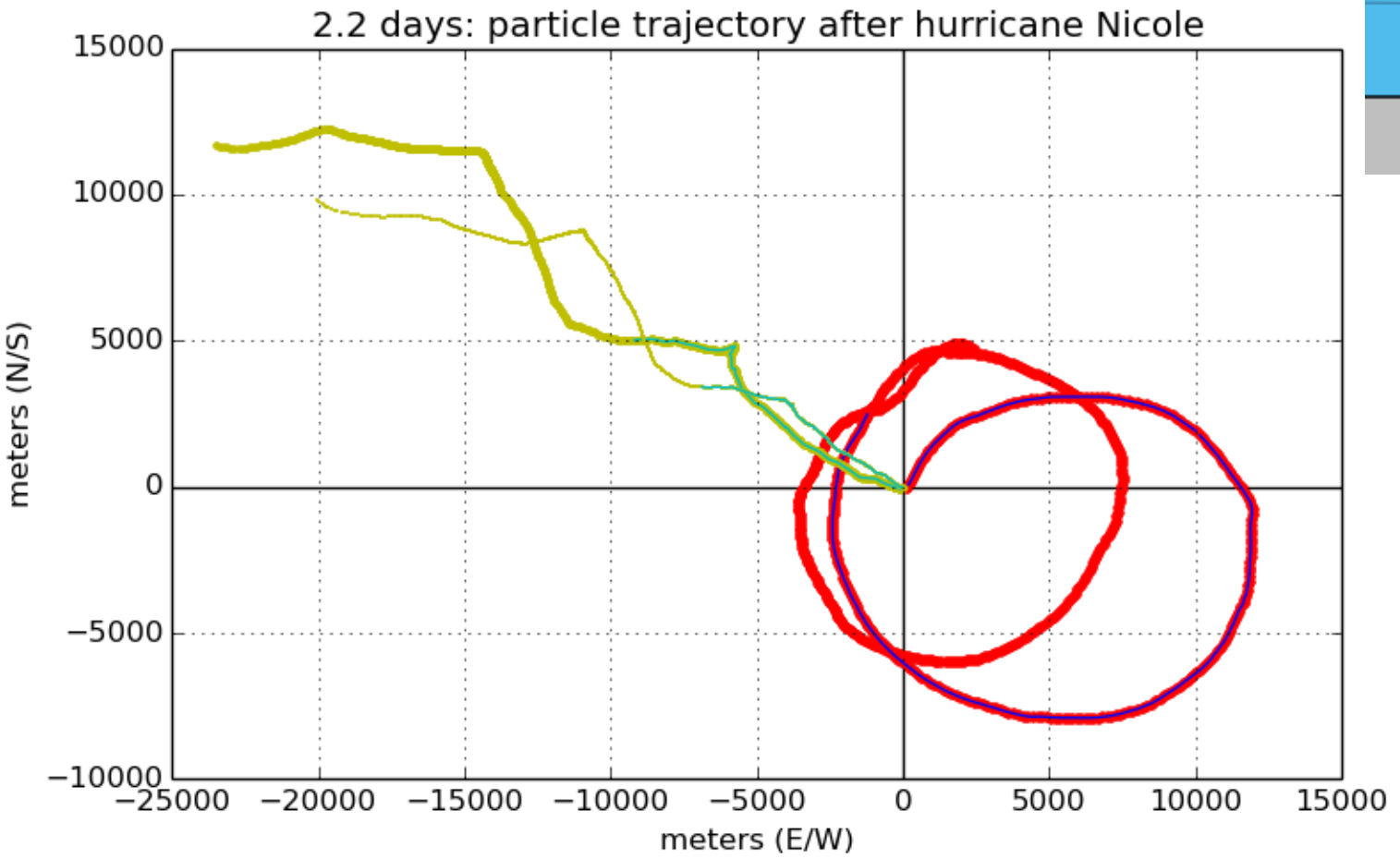
Hurricane Nicole + Bermuda





Hurricane Nicole: Atlantic Explorer





UHDAS Systems (2016)

- **16 UNOLS ships**: Atlantic Explorer, Neil Armstrong, Atlantis, Blue Heron, Endeavor, Hugh Sharp, Kilo Moana, Langseth, Oceanus, Pelican, R.Revelle, Sally Ride, Sikuliaq, R.G.Sproul, T.G.Thompson, F.G.Walton Smith
- 3 polar ships: Healy, L.M.Gould, N.B.Palmer
- 8.0++ NOAA ships: Bell Shimada, Hi`ialakai, Nancy Foster, Oscar M Sette, Ron Brown, Okeanos Explorer, Pisces, Gordon Gunter, Henry Bigelow, Ferdinand Hassler, Thomas Jefferson
- 3 “other” ships: Ka`imikai O Kanaloa, Falkor, Pt Sur,
- 1 Volunteer Observing Ship: Oleander
- 1 “cooperative” installation: Tioga

link: installation status table

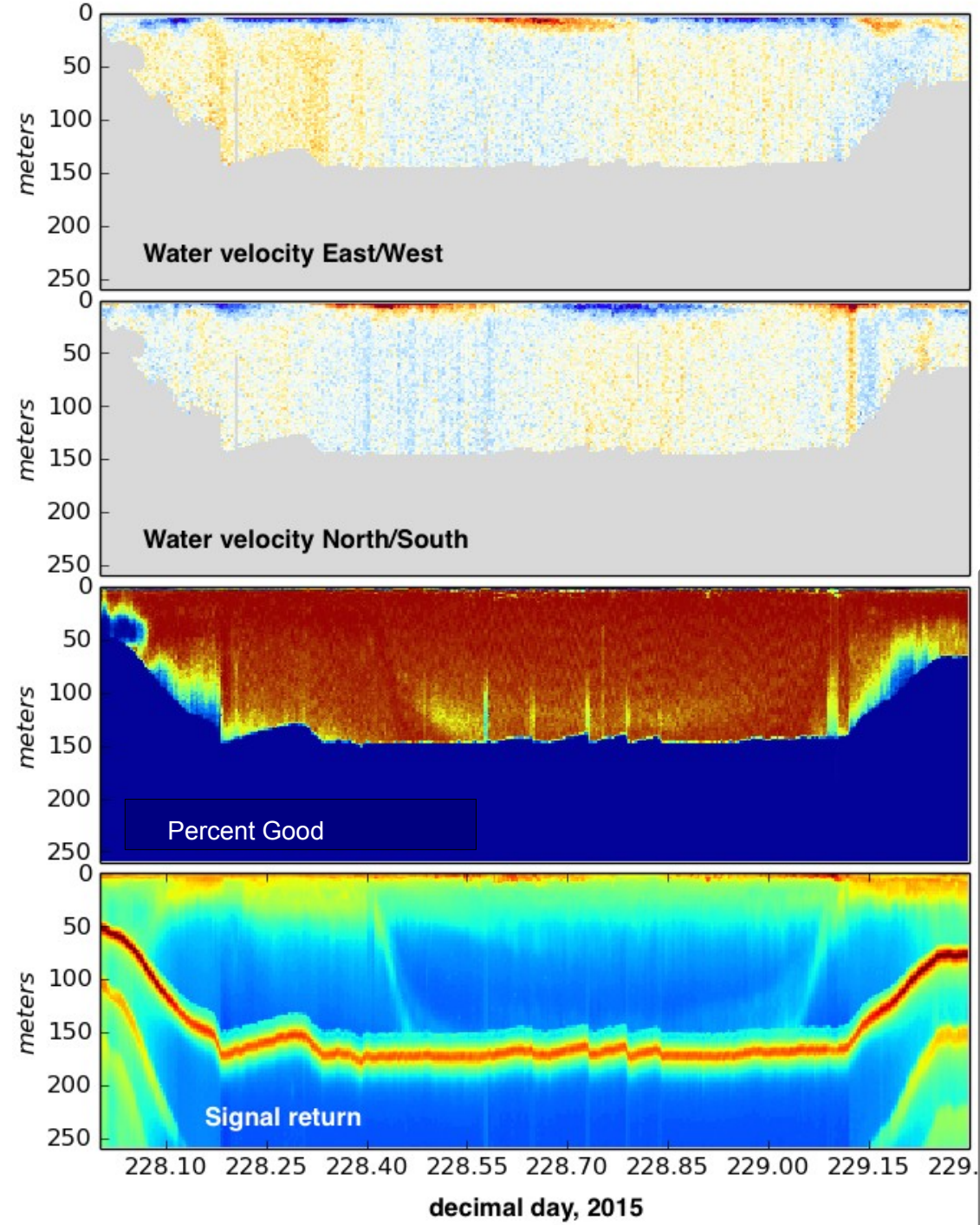
UHDAS: recap of 2016

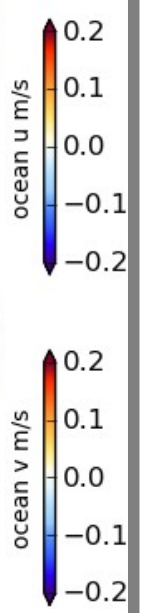
- new installs, refreshed:
- meetings:
  - Environmental Data Management (Wa. DC)
  - Ocean Sciences 2016
  - R2R Advisory Panel
  - INMARTECH (Norway)
- New developments:
  - backscatter (now on panel plots at sea)
  - improvements to email reporting

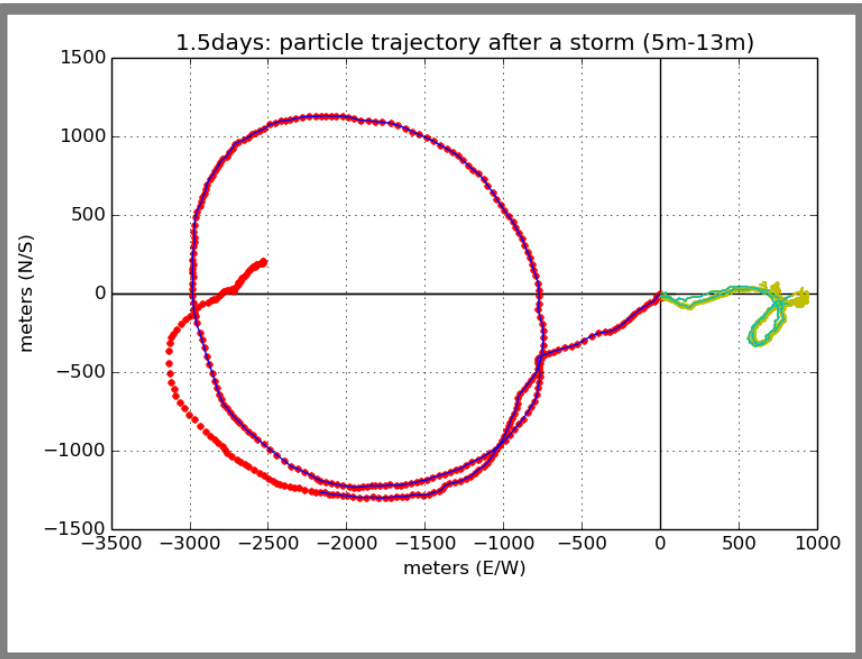
UHDAS installations in 2016

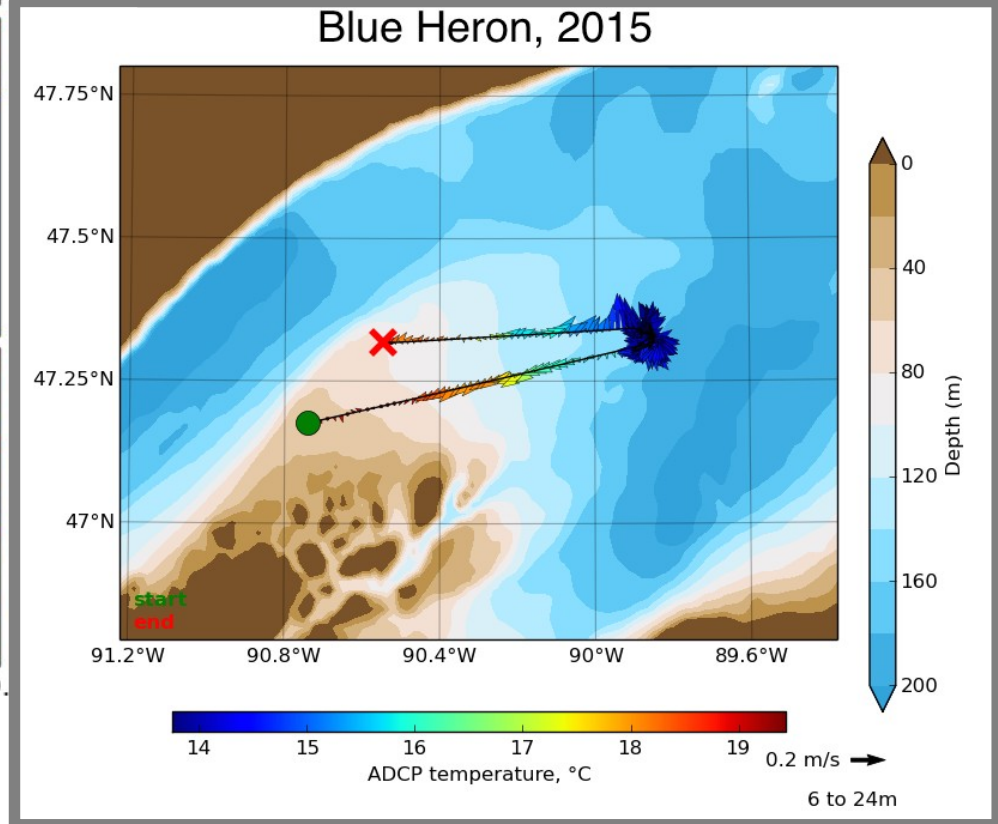
- **Newly installed (new UHDAS ship)**:
  - Hugh Sharp, Neil Armstrong (SAT), Blue Heron, Sally Ride (SAT)
  - Okeanos Explorer, Gordon Gunter, Pisces, Sette, (Hassler, Jefferson)
- **Refreshed in 2016:**
  - Atlantic Explorer, Ron Brown, Nancy Foster, Neil Armstrong, Oceanus, Healy, Kilo Moana, Revelle, LMGould,
- **In process**
  - **new:**
    - Investigator (Australia)
    - RCCL Adventure of the Seas (VOS)

Blue Heron: Lake Superior (after a storm)









Problems: ADCP instruments

ship	instrument	repair
Endeavor	OS75	Jan 2016
Langseth	OS75	Sept 2016
Revelle	OS75	Jan 2016
Sikuliaq	OS150	Dec 2015
N.Foster	OS150	Sept 2015 (*1)
Sikuliaq	OS75	Dec 2016 (*2)
Pt Sur	WH300	on loan (*3)
Sette	OS75	unknown
Pisces	OS150	Feb 2017?
Palmer	OS38	March 2017
Falkor	WH300, OS75	June 2017 (*2)

(*1) nail hole during dry dock

(*2) leaking endcap? temperature pegged at 92; system failed after 4–8 weeks

(*3) incorrect model for shipboard use, required special settings

Accurate Heading

- **POSMV**: (quality plots)
  - **excellent**: Falkor, Hi`ialakai, Kilo Moana, Nancy Foster, Okeanos Explorer, Thompson, Walton Smith, Gordon Gunter, Ron Brown, Blue Heron, Hi`ialakai
  - **poor**: Bell Shimada, Bigelow
  - **fixed**: Ron Brown, Healy
  - **out for repaired**: Falkor
- **Seapath**:
  - **excellent**: L.M.Gould, N.B.Palmer (2), Sikuliaq, Armstrong, Revelle, Ride, Falkor
  - **fixed (presently excellent)**: Healy, Langseth
- **Phins:** Atlantis, Revelle, Ride
- **Ashtech**:
  - **ADU2/ADU5**: Endeavor, Healy, Oceanus, Sproul, Revelle
  - **ADU800**: Atlantic Explorer, Pelican, Pt Sur, Oleander, Adventure
- **Mahrs:** KOK

2017 improvements/projects

- new installations:
  - UNOLS: (Savannah? Barnes?)
  - NOAA ships (for those with transducers)
- directions for improvement:
  - work with R2R to improve QA tools
  - better tracking of serial metadata and history
- further software improvements
- start to leverage http://uhdas.org
- ADCP processing workshop (fall?)
- Question: RVTEC ADCP ‘troubleshooting session’?

Expected Challenges (2017)

- Acoustic Interference:
  - NOAA ships with EK60 mandate
  - Sally Ride, Neil Armstrong, Sikuliaq,
    - Kongsberg = Sonar Integrator (“Ksync”)
    - Large number of modern sonars
- next version of operating system (16.04)
  - operating system working with UHDAS
  - update documentation (CODAS install, demos)
- growth: larger group, more ships, more needs

Continuing Request: Keep us in the loop regarding (**give us lots of warning**)

- New ADCP (requires configuration, calibration)
- Replaced/Reinstalled ADCP
- Changes in serial feeds
- New attitude devices (we like to evaluate them)
- changes in networking
  - route to ship
  - infrastructure on ship
- Science Special Needs (triggering, temporary instrument)

Protocol

- Always run “End Cruise” before archiving
  - UHDAS adds final metadata to directory
  - UHDAS builds a “reports” directory to help with QA
- If rsync (regular backup)
  - **ALWAYS** use complete cruise name

web site: http://uhdas.org
email uhdas@hawaii.edu

Final request

… as always:

Send your needy scientists to Jules