RVTEC Nov 2016 – UHDAS/ADCP

Time, ADCP Position Attitude

primitive data

os75nb: last time 2012/03/10 16:04:27

ocean velocities
UHDAS/ADCP

Review UHDAS Concept:

- Acquisition: reliable, robust, duplicate feeds
  - reliable heading, accurate heading
  - 1deg heading error at 10kts $\rightarrow$ 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

Note: The cone contains the probable path of the storm center but does not contain the size of the storm. Hazardous conditions can occur outside of the cone.

Current Information:
- Center Location: 30.1 N 66.4 W
- Max Sustained Wind: 130 mph
- Movement: NNE at 12 mph

Potential Track Area:
- Day 1-3
- Day 4-5

Ocean East/West Velocity

Ocean North/South Velocity
Hurricane Nicole:
Atlantic Explorer

2.2 days: particle trajectory after hurricane Nicole
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)
## Problems: ADCP instruments

<table>
<thead>
<tr>
<th>ship</th>
<th>instrument</th>
<th>repair</th>
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<tbody>
<tr>
<td>Endeavor</td>
<td>OS75</td>
<td>Jan 2016</td>
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<td>Langseth</td>
<td>OS75</td>
<td>Sept 2016</td>
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<td>Revelle</td>
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<td>OS150</td>
<td>Dec 2015</td>
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<td>N. Foster</td>
<td>OS150</td>
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<tr>
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<td>OS75</td>
<td>Dec 2016 (*2)</td>
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<td>Sette</td>
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<td>Pisces</td>
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<tr>
<td>Palmer</td>
<td>OS38</td>
<td>March 2017</td>
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<tr>
<td>Falkor</td>
<td>WH300, OS75</td>
<td>June 2017 (*2)</td>
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(*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), Sikulialaq, 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](http://uhdas.org)
email uhdas@hawaii.edu
Final request

... as always:

Send your needy scientists to Jules