

Improving the Utility of UHDAS ADCP Ocean Current data at NCEI

ADCP: instrument = **A**coustic **D**oppler **C**urrent **P**rofiler

UHDAS: **U**niversity of **H**awaii **D**ata **A**cquisition **S**ystem

Data Product: Ocean currents measured from a ship
created by an [automated at-sea processing system](#)

Part 1:

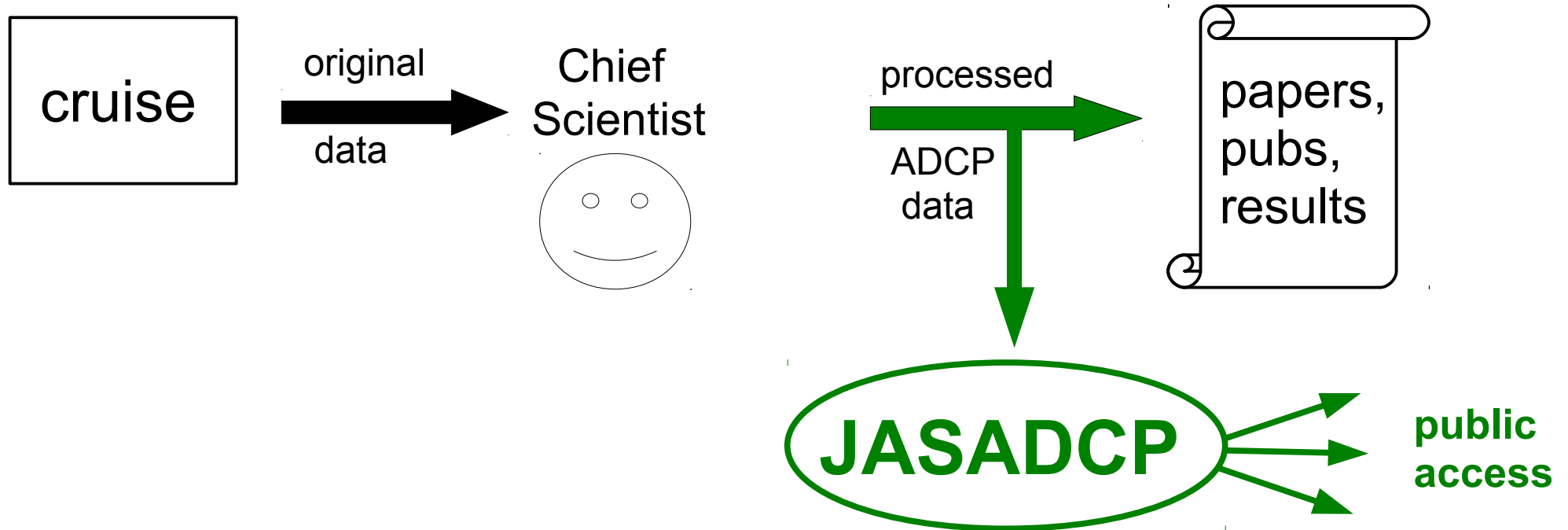
- How do these data get to NCEI?

Part 2:

- What does a user need to know to best use the data?

Part 1: Flow of information

Past and Present



Joint Archive for Shipboard ADCP

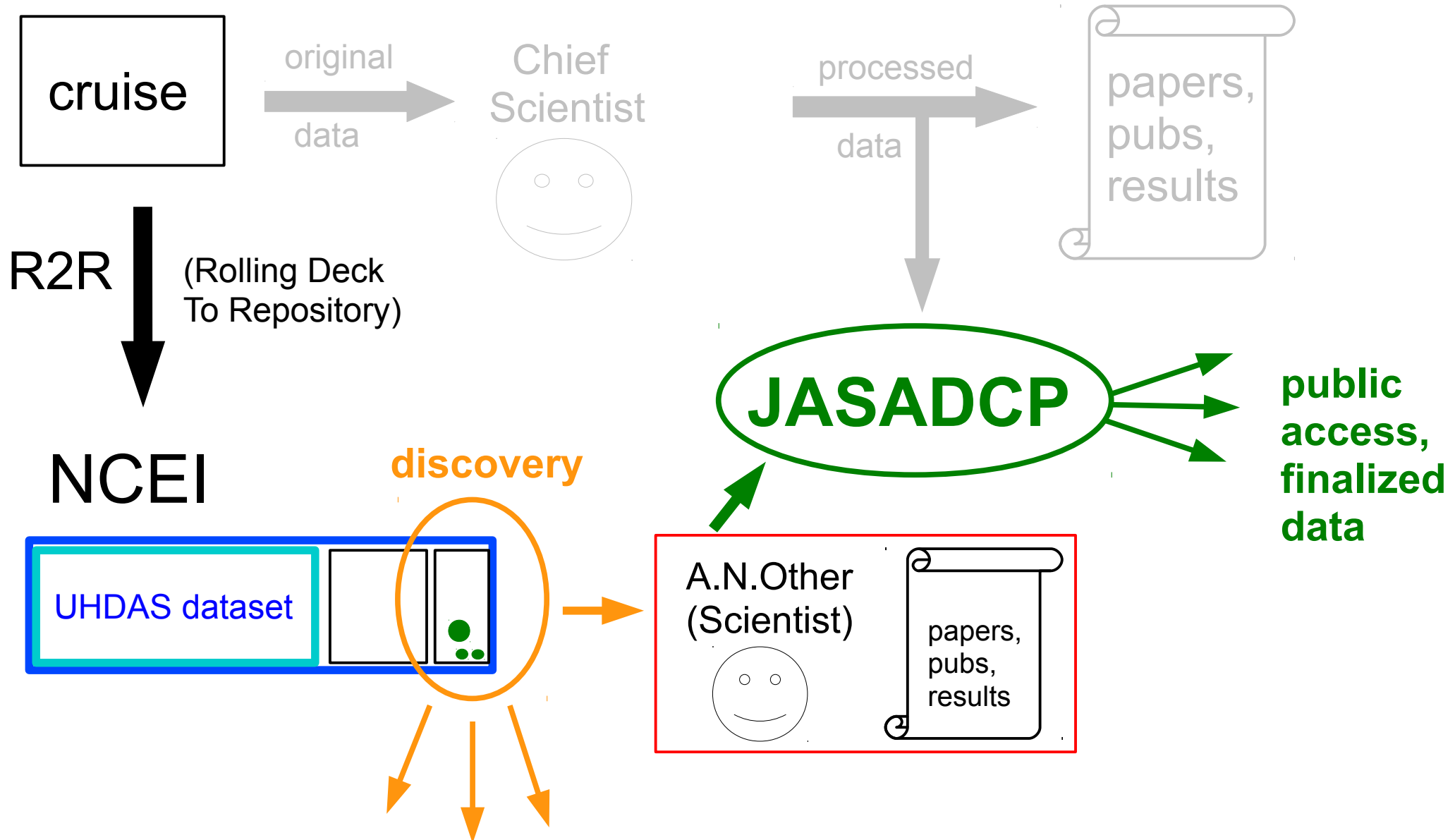
Part of NCEI

Serving science-ready data since 1992.

Over 800 cruises so far...

Present and Future:

- two paths to finalized public data
- more opportunities for original data to be used



NCEI: archiving UHDAS datasets

- UNOLS cruises
 - ship submits **original at-sea data to R2R**
(<http://www.rvdata.us/catalog>)
 - R2R adds metadata, pushes to archive to NCEI
- NCEI creates data accession
- cruises under NCEI
Global Ocean Currents Database
- “originator data”
 - **R2R shipboard ADCP** (652 cruises)
 - other originator channels are under construction

Part 2

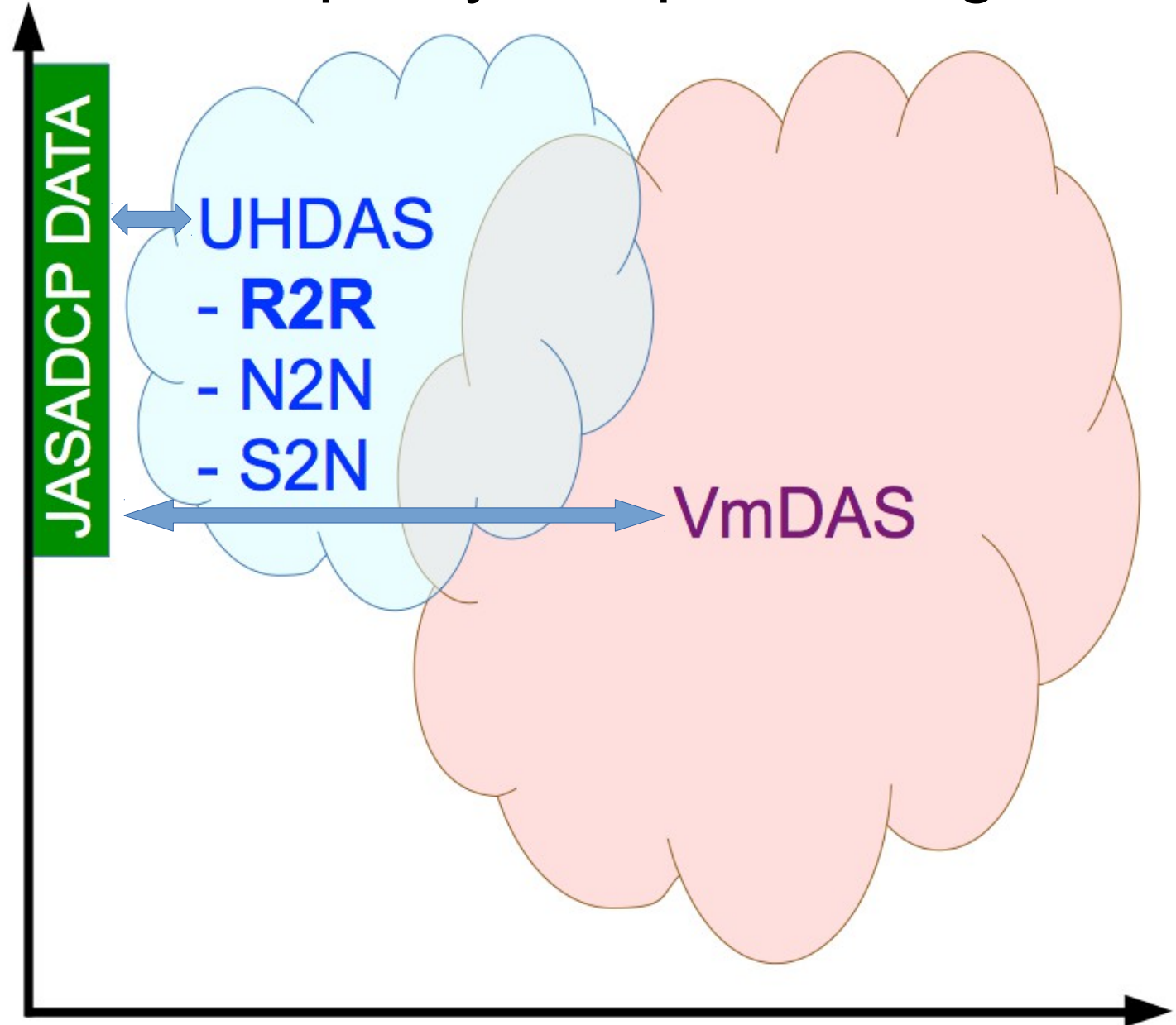
What does a potential user need to know about these data at NCEI?

- The cost/benefit ratio varies from cruise to cruise
i.e. $(\text{post-processing effort}) / (\text{benefit to science})$
- UHDAS designed to minimize this ratio, i.e.
 - minimize processing effort
 - maximize benefit to science

UHDAS vs/ VmDAS data quality and processing effort

JASADCP:
science-ready
shipboard ADCP
ocean currents

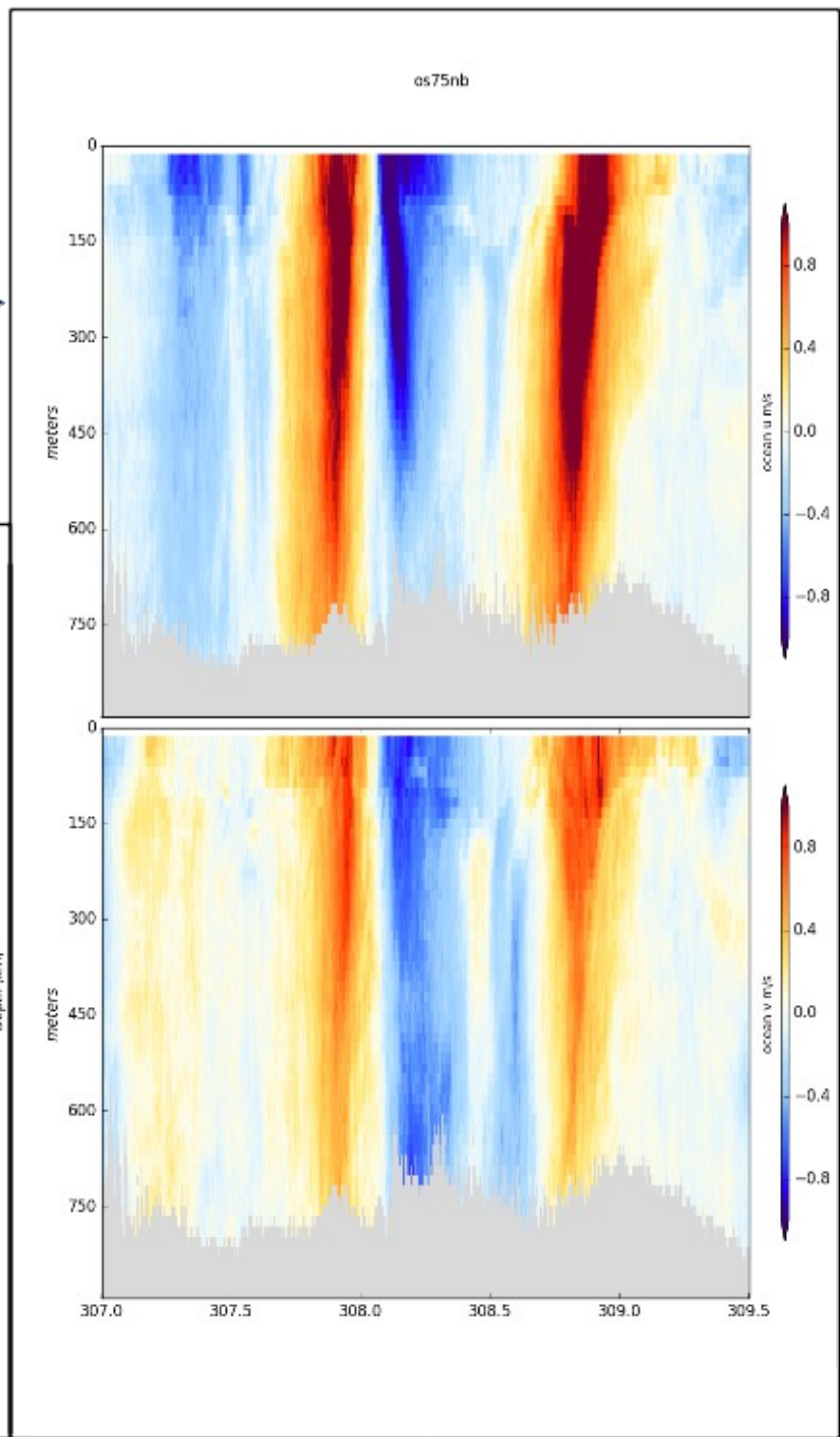
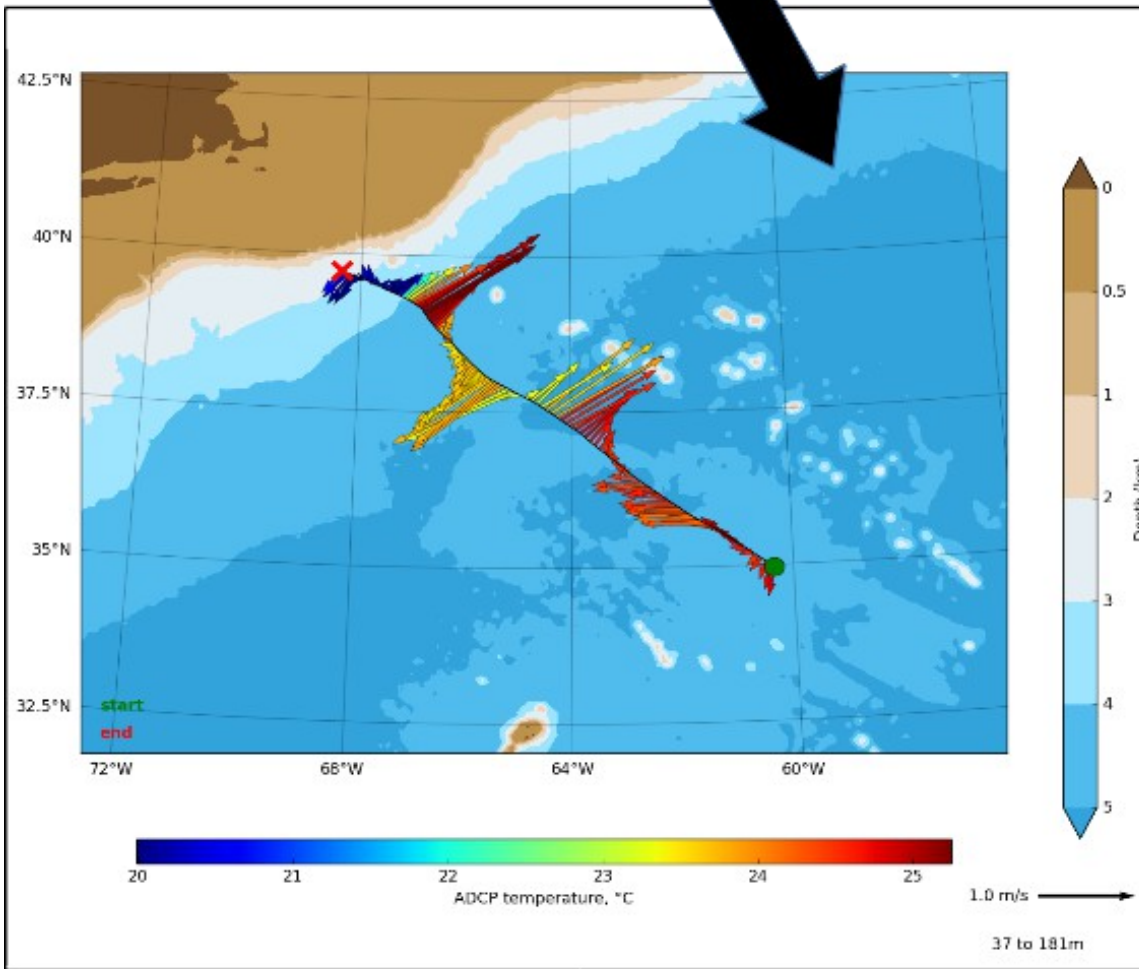
potential
benefit
to
science



- UHDAS designed to:
- maximize raw data quality
 - reduce total processing effort

Example of UHDAS at-sea data:

(processing combines
heading, positions,
and ADCP data)



How UHDAS improves the quality of at-sea data

- acquisition (ADCP, position, heading)
- automated processing (“pre-processing” at sea)
- monitoring
 - on ship: via at-sea web site
 - on land: automated daily emails to UHDAS Team
 - feedback to technicians on the ship

Why human intelligence is needed

- transducer angle correction (new ADCP, re-installation)

- manual editing:
 - shallow water: data below the bottom
 - ringing
 - electrical interference (deep biases)

- identifying and coping with serious instrument problems
 - gaps or failure in accurate heading device
 - gps fails
 - beam fails

Improving Utility of UHDAS data

- Encourage people to do the final processing and submit data to **JASADCP**
- Educate people in the post-processing steps
- Improve metadata to evaluate cost/benefit of NCEI R2R datasets:
 - evaluate “coverage” (more than just the cruise track)
 - depth range
 - evaluate quality (heading, calibration, interference, ...)
 - status
 - is it already in **JASADCP**?

Archiving, Serving, Stewardship

PAST and PRESENT

- **JASADCP** – long-term archive for finalized shipboard ADCP data

PRESENT and FUTURE

- UHDAS, R2R, and NCEI
 - post-processed (science-ready) data are in **JASADCP**
 - Improving the utility of UHDAS R2R data: make a “dashboard” about present (pre-processed) quality and information to help determine effort to make science-ready

NCEI R2R UHDAS data should not be used for science without understanding the quality of the dataset and errors present.

Instead post-process and submit to JASADCP, for all to use

The End