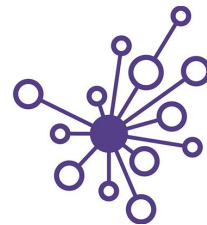




UNIVERSITY *of* WASHINGTON



Updates from Echotype developers: changes and roadmap

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Brandon Reyes¹, Landung “Don” Setiawan², Imran Majeed³,
Valentina Staneva⁴, Kavin Nguyen³

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³Dept of Electrical Engineering, ⁴eScience Institute, UW

2022 WGFAST meeting | April 27, 2022

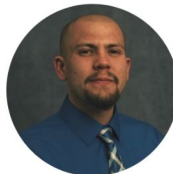
Acknowledgements



Wu-Jung Lee



Emilio Mayorga



Brandon Reyes



Imran Majeed



Don Setiawan



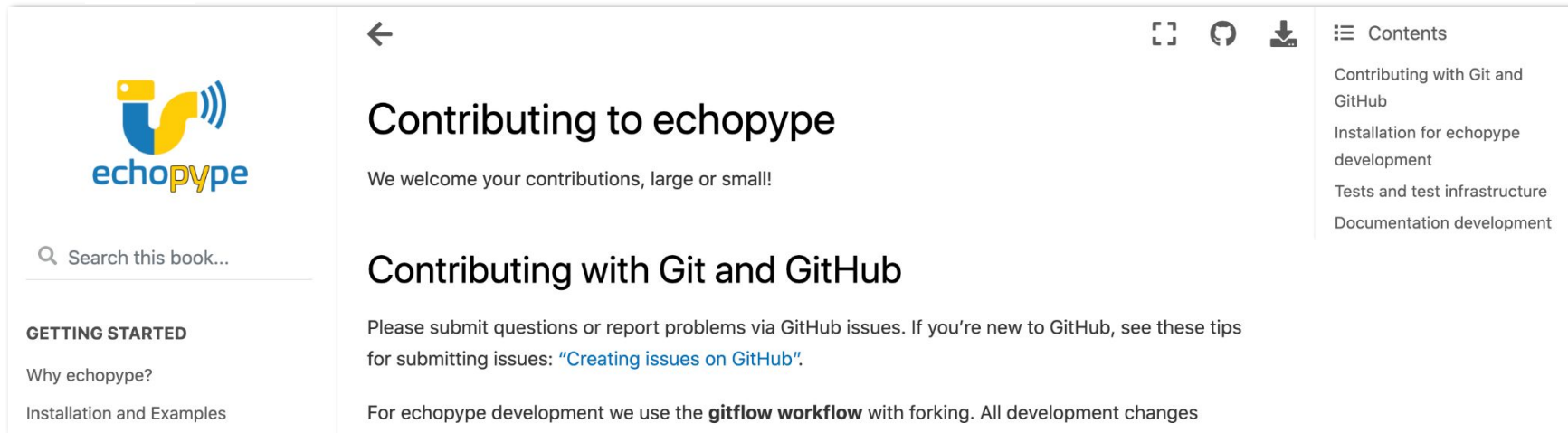
Valentina Staneva

- Echotype developers
- Rick Towler (EK parser), Dave Billenness (AZFP parser - Matlab)
- Gavin Macaulay (convention, parsing and computing details)
- Dezhang Chu, Julia Clemons (processing features)
- Rudy Klucik, Chuck Anderson, Carrie Wall (testing, workflow)
- All contributors to issues, pull requests, and discussions on GitHub
- Funding agencies




Echopype: what / why / where / how

- What: an open-source Python software library for processing water column sonar data
- Why: to enhance data interoperability and processing scalability
- Where: <https://github.com/OSOceanAcoustics/echopype>
- How:



The screenshot shows the documentation page for 'Contributing to echopype'. The page features a navigation sidebar on the left with a search bar and a table of contents. The main content area includes a back arrow, utility icons (refresh, download), and a table of contents. The primary heading is 'Contributing to echopype', followed by a welcome message. Below this is a section titled 'Contributing with Git and GitHub' which provides instructions on how to submit issues and mentions the use of the gitflow workflow.



Search this book...

GETTING STARTED

- Why echopype?
- Installation and Examples

←

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☰ Contents

- Contributing with Git and GitHub
- Installation for echopype development
- Tests and test infrastructure
- Documentation development

Contributing to echopype

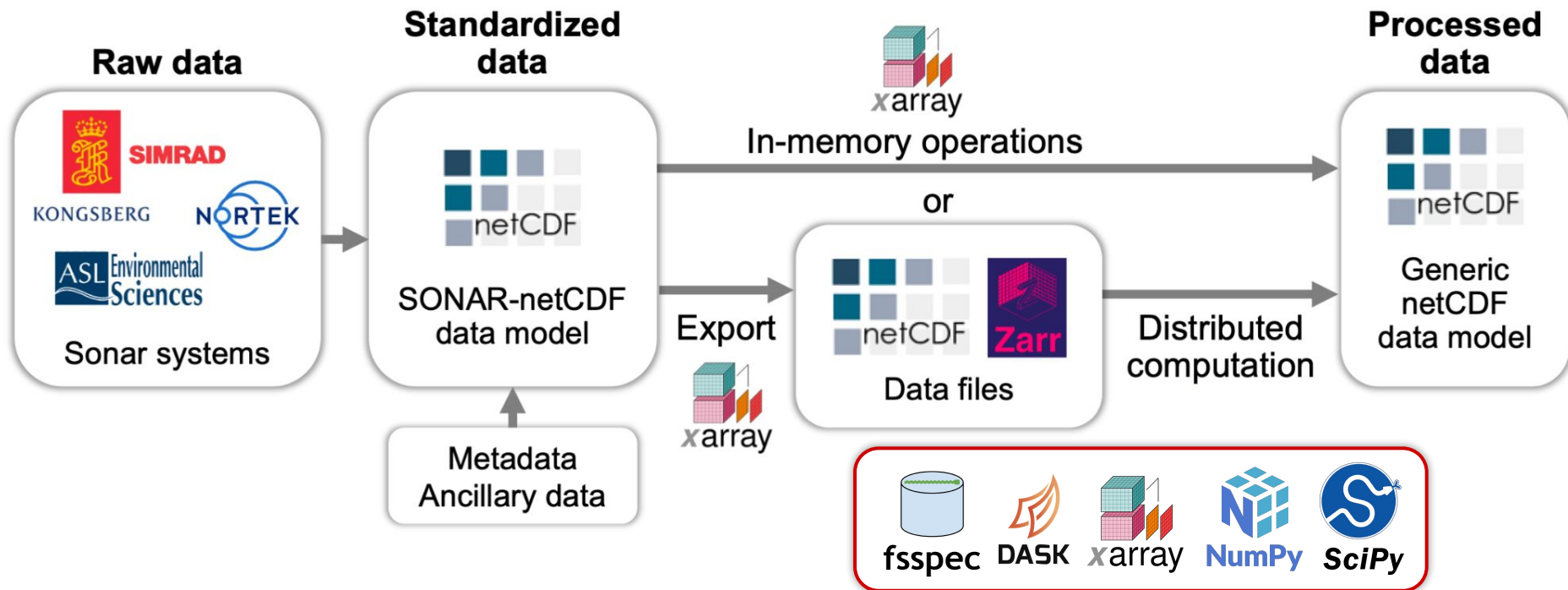
We welcome your contributions, large or small!

Contributing with Git and GitHub

Please submit questions or report problems via GitHub issues. If you're new to GitHub, see these tips for submitting issues: ["Creating issues on GitHub"](#).

For echopype development we use the **gitflow workflow** with forking. All development changes

The Echopype workflow



- Leverage the open-source scientific Python ecosystem!

Updates: programmatic and documentation enhancements

- Major API overhaul at v0.5.0 (May 2021)
 - Cleaner subpackage structure
 - Direct read/write interface with cloud storage
 - Intuitive function calls: `open_raw`, `compute_Sv`, `to_zarr`, etc.
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- Documentation updates
 - Overhauled <https://echotype.readthedocs.io>
 - New companion site <https://osoceanacoustics.github.io/echotype-examples/>
 - arXiv preprint (Oct 2021) <https://arxiv.org/abs/2111.00187>

Updates: data structure enhancements

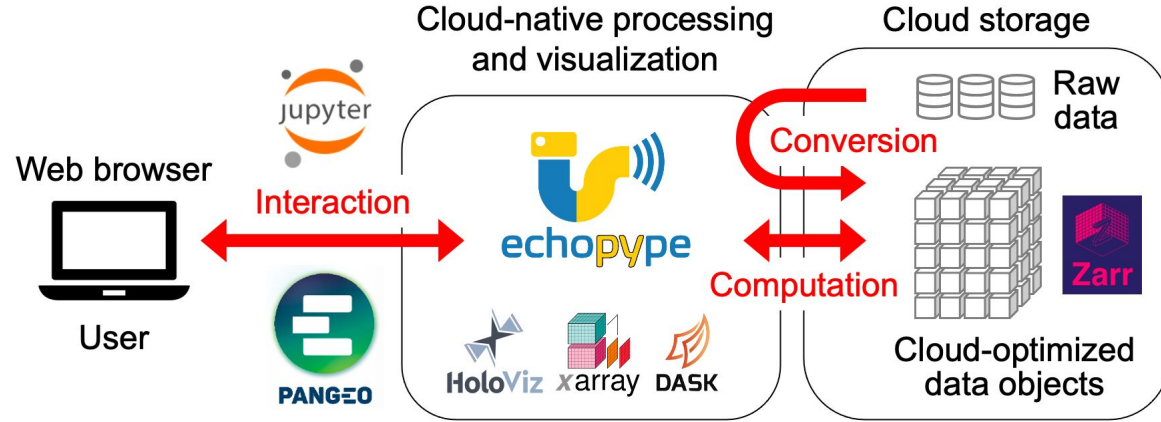
- Upcoming major release v0.6.0 (next week: May 2022)
 - Breaking changes. We are working to ensure backward compatibility
- Improve adherence to SONAR-netCDF4 ver.1
 - Thanks to Gavin Macaulay for discussions
 - SONAR-netCDF4 ver.1 is focused primarily on raw data
 - Overhaul coordinates and variable names and attributes: corrections and adding missing items
 - Restructure Beam netCDF4 groups, eg: `/Beam` → `/Sonar/Beam_group1`

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- Build provenance and standardization framework for processed data
 - Currently: Sv, MVBS, TS, etc
 - References: IMOS BA SOOP, ICES AcMeta (SISPs)

Development roadmap

- Overall goal:



- Upcoming developments after v0.6.0
 - More processing functionalities: QA/QC, interfacing with Echoview files, more broadband processing
 - Pipeline testing with small datasets
 - Distributed computation for large datasets

Companion developments: early stage

- Data processing levels (raw → highly processed)
 - Well defined data processing or product levels fosters broad, productive use of data
 - Leverage experience from satellite remote sensing community and large-scale, long-term ocean and ecological observation programs
- Echoshader
 - Visualization “widgets” for user-configurable dashboards
 - Collaboration with US IOOS in Google Summer of Code (GSoC) 2022
- Echopydantic
 - Package to facilitate and validate SONAR-netCDF4 compliance

We need YOUR help!

- <https://github.com/OSOceanAcoustics/echotype>
- Questions
- Comments
- Bug reports
- Feature requests
- Code (“pull requests”)

Thanks!

