

Carlos Rueda Sorted By Project

901009 - CANON

- Some MXM implementation review (Week 29)
- Patch tracking algorithms and software. (Week 45)

901502 - Ocean Soundscape

- Adjusted release workflow with a final step to delete uploaded artifacts; as a safety net, also set retention-days: 1 for the upload step. (Week 1)
- Security related adjustments in pbp-jupyter. (Week 2)
- Group meeting (Week 3)
- PLOS paper accepted, yay! (many thanks and congrats to John R. et al!) (Week 4)
- Group meeting with European collaborators, who are contributing additions to PBP. (Week 6)
- Met with Danelle to discuss PBP status. (Week 8)
- Brent J. and I met Laela Sayigh (WHOI) over zoom to talk about her work on dolphin communication and share some of the work we have been doing in the soundscape project. (Week 8)
- Internship applications review/pre-selection (Week 12)
- More PBP API documentation (Week 12)
- Implemented pre-commit for PBP (Week 13)
- PBP software maintenance (Week 24)
- Group meeting with intern, Franny O. (Week 24)
- Minor PBP code maintenance. (Week 25)
- Worked with IS to have an unexpected mount issue fixed on gizo (Week 25)
- PBP software development / documentation; Python assistance. (Week 29)
- mbari-pbp is now 1.7.3. (Week 31)
- pbp-jupyter now with a more recent quay.io/jupyter/minimal-notebook image, as well as with the latest mbari-pbp package in installation on gizo. (Week 31)
- mbari-pbp 1.7.4 with a regression fix and other adjustments. Jupyter@gizo updated as well. (Week 33)
- Running NOAA/Google humpback song detection model to get the scores for all days starting 2022 until 2025-07. Scores for 2015–2021 have been in place but it was about time to start catching up with the new scores. (Week 34)
- Humpback song detection scores completed until 2025-08-24. John generated this plot of the complete time series for quick inspection: (Week 36)
- Part of the above score generation was done with the use of GPU on doris. I put together some notes here. (Week 36)
- Reviewed revisions to paper led by NOAA (Carrie Wall). (Week 36)

- Looking into enabling a new use case for mbari-pbp. (Week 38)
- Work on mbari-pbp package, new features, and internal code reorganization to facilitate maintainability and enhancement. (Week 39)
- mbari-pbp 1.8.2 with new features as well as significant internal refactoring and code cleanup. (Week 40)
- Meetings (Week 41)
- PBP: GitHub workflow for basic installation verification on macOS, Linux, Windows. (Week 41)
- Group meeting. (Week 42)
- New PBP standalone distributions (for macOS, Linux, and Windows), with initial but satisfactory (internal) testing so far. The main goal is to facilitate use by users that are not very technical, not even needing to have python, conda, pip, or other dependency management tools installed. (Week 43)
- PBP: Branch merged and official 1.8.5 released. (Week 44)
- Jupyter@gizo updated. (Week 44)
- Did adjustments so pbp meta-gen --help does not take several seconds to respond. (Week 44)
- PBP now 1.8.6 (PyPI; standalone releases). (Week 45)

901513 - Targeted Sampling by AUVs

- Modularizing tracking codebase toward incorporating a new implementation for patch tracking. (Week 6)
- Still deciding on a practical approach to incorporate new patch tracking. (Week 7)
- Advancing patch tracking implementation (Week 8)
- Though still needing adjustments, the patch tracking implementation for the wave glider seems to be now in pretty good shape. As part of this I've implemented a waveglider simulator, which has been super useful. (Week 10)
- Exchanges with the team regarding chlorophyll data access on the SMC-2. Data file, format, and formula have been determined. Thanks Chris and Tom. (Week 12)
- Various tests over the last few days, including data access with file ecosamples.txt on the smc-1 (from smc-2) as indicated by Chris. I think we are close to being ready for an actual patch tracking exercise in the field. (Week 13)
- Basic testing of tracking software on the waveglider (smc-2) in preparation for deployment (tentatively, early June). Some ssh connection issues, though. (Week 20)
- LR's looking into issues I'm facing when trying to sign in in WGMS (related to MFA). (Week 20)
- Completed various pending code preparations for chlorophyll patch tracking using a wave glider. Now being exercised in the field for the first time! Looks like the attached as seen in Dash4: a boundary polygon for operations; wave glider trajectory, and the current Chlorophyll-a, MODIS 3-day Composite tile layer for context. (Week 23)
- Very successful first run of new chlorophyll patch tracking exercise using the development wave glider. Thanks much to Chris W. for the assistance. The tracking logic per se behaved as designed. I'm now working on refining the logic for handling boundary conditions (i.e., for when the vehicle gets inside/outside boundary polygon) while also

improving simulation and visualization.

(Week 24)

- Some code cleanup after the successful tracking exercise. (Week 25)
- (overhead) With Yanwu, reviewing the past June patch tracking exercise data and implementation. (Week 39)
- (overhead) With Yanwu, more reviewing of past chlorophyll patch tracking exercise and adjusting some parameters for future exercises. I've proposed improvements to the algorithm. (Week 40)
- (overhead) Some exchanges with the team about possible next window for a tracking exercise and about wave glider capabilities for algorithm adjustments. (Week 42)

901809 - Deep Sea Bioinspiration

- Brief chat with Joost re planning next steps for the CMS UI. (Week 7)
- Group meeting to discuss next additions/adjustments in the CMS UI. (Week 8)
- CMS UI - Advancing image box handling (Week 12)
- Advancing CMS UI for handling of image boxes (selection/filtering, deletion, graphical editing). (Week 13)
- Brief chat with Joost about the status of CMS UI, and future work. (Week 29)
- Met with FathomNet Database group (Kakani, Kevin, Laura) for planning and scoping of UI development later in the year. (Week 31)
- Participated in the last FathomNet Tech Team Meeting, and started exploring fathom-web-ui with the idea of following similar approaches (javascript!, Vuetify, etc.) for the new development in a to-be-created repo. (Week 36)
- Advancing the Fathomnet Bulk Review UI. (Week 37)
- Advancing the Fathomnet Bulk Review UI. (Week 38)
- New API endpoints being put in place by Kevin B., so I'm about to resume work on the Bulk review UI. (Week 40)
- Bulk review UI (Week 41)
- Met with Kevin re status of bulk review UI and associated pending API support. (Week 42)
- Provided updated Bulk Review UI screenshot to Laura. (Week 44)
- Met with Kevin B. toward preparing for deployment of the bulk review UI. (Week 45)
- Completed some previously uncommitted adjustments in the Bulk Review UI. (Week 51)

902101 - LRAUV Technology Development

- TethysL: simplified release workflows, including the removal of the long-unused graalvm-based binary releases. Also added a step to delete uploaded artifacts. Addressed dependabot alerts. (Week 1)
- TethysDash 4.99.21. (Week 1)
- TethysL maintenance release 4.3.5. (Week 2)
- TethysDash: Upgrading libs related to configuration (Week 2)

- Inquiring project lead about open sourcing some of the repos (Week 2)
- Revisiting Firebase for user auth (which I successfully used 6 years ago for the myVan webapp). The goal is to use Firebase as a replacement of the current user authentication mechanism in the Dash4/TethysDash system. (Supabase is one other possible alternative.) (Week 2)
- Advancing Firebase Auth option for user authentication (Week 3)
- Got the green light from the project to open source some repos. Now checking with Basilio before proceeding. (Quinn S. also interested in the discussion.) (Week 3)
- Lots of work on a new authentication mechanism for TethysDash/Dash4. I now feel very close to deploying it into production, but with temporary settings to allow power users and other testers to exercise it for a while so we can make sure it works reliably, while also likely exposing the need for adjustments, etc. Also, worth noting that, especially in consideration for our external TethysDash deployments, both the old and the new mechanisms are intended to be supported. (Week 4)
- TethysDash/Dash4 now able to support Firebase Auth for user authentication. For now this is an opt-in feature for some time while testing/tuning. Emailed core LRAUV folks asking for their help testing, pointing them to this doc, which explains the why and the how. (Week 5)
- (plus overhead?) - Initial implementation in TethysDash and satisfactory testing to support Microsoft 365 for IMAP access. Thanks Peter for the assistance. (Week 5)
- TethysDash now has MBARI SSO as a direct authentication option (still via Firebase). Many thanks Andrew and Travis for the great assistance. The various new auth options are behind special flags to facilitate testing. This kind of change is challenging and tricky to put into production, especially because, while keeping in mind that real testing and verification only happen when using our production server with real users, we also need to support both mechanisms as a safety net (during a transition period). This “mixed” mode in the current version has brought inconveniences to some users. I plan to have a completely separate webapp with the new mechanism, while reverting the usual dash4 to the previous version. Hopefully that will enable a smoother path toward migration. (Week 6)
- TethysDash: As previously indicated, <https://oceanids.mbari.org/dash49/> now as a separate location with the new authentication mechanism in place for testing purposes. Updated google doc with the motivation and the (super easy!) steps on how to test.

Also, reverted <https://oceanids.mbari.org/dash4/> to having the traditional one. Keeping core LRAUV folks up-to-date with all of this. (Week 7)

- TethysL 4.3.6 (maintenance release) (Week 7)
- TethysL C++ translator: Fixed bug about not expanding macro variable in number expression. Thanks, Yanwu, for the report and testing. (Week 8)
- The TethysDash API doc page was down, fixed now, and in a reliable way. Previously this involved a manual step which I forgot to apply at some point after some updates. I also added a status monitor (which would have notified me promptly about the issue in the first place ;)) (Week 10)

- Dash5: Similarly as done for dash4, set up secrets for GitHub release workflow, proxy-pass and compose.yml on tethysdash2, and Watchtower continuous deployment. (Week 12)
- Set up subdomain for dash5-staging. (Week 13)
- TethysDash/Dash4: Initial implementation of tracking by LRAUVs of assets whose positions are maintained in the MBARI tracking database. This implementation is already basically functional, but intended to gather additional feedback to determine next steps for completion. (Week 19)
- TethysDash/Dash4: Adjustments/useability fixes in implementation of the new tracking feature. (Week 20)
- The above has been deployed at <https://oceanids.mbari.org/dash49/>, the version that has had the new user authentication (including MBARI SSO) in place since early this year. Per discussion with Brian K., I understand we can now make it the “official” dash4. I will then be doing the following: (Week 20)
 - Deploy the current dash4 (with the traditional auth mechanism) so it gets accessible at <https://oceanids.mbari.org/dash48/> (note, 48), mainly as a backup in case non-MBARI users encounter sign-in issues (though these are unexpected). (Week 20)
 - Enable the new auth system at the usual location: <https://oceanids.mbari.org/dash4/> (Week 20)
 - Notify users via usual channels. (Week 20)
 - Remove <https://oceanids.mbari.org/dash49/> (Week 20)
- TethysL is now 4.4.1. In particular, I’m revising the generation of LRAUV information that is captured for TethysL purposes. Main goal is to reduce redundancy, while also increasing accuracy/consistency. (Week 20)
- Exchanges on lrauv-ux channel regarding specification of command/vehicle status report from the LRAUV via Dash backend (a 3-year outstanding issue). (Week 20)
- Dash4 4.94.2 and backend 4.94.4: (Week 22)
 - New tracking feature successfully exercised in the field. (“thanks for putting this together Carlos! It’s totally saving us right now on Triton. Definitely one of the strangest issues I’ve seen with acoustics. We’re very happy to have the tracking option.”) (Week 22)
 - Fix in piloting time report. (Week 22)
 - Cell timeout note now includes ID of associated command. (Week 22)
 - Several more users are now exercising the new authentication system (including SSO). No reported issues. (Week 22)
- Dash backend and dash4 frontend: The backend now parses the configuration overrides, that is, the events coming after the most recent Listing configuration overrides from Data/persisted.cfg event. Most of the needed additional information is now in place (and reflected in the Config tab in Dash4), but now waiting for further input from LRAUV folks to determine the final strategy for aggregating it properly. (Week 23)
- Other dash related adjustments/fixes include that returned/displayed events are now (by default) sorted by both descending date and descending eventId. Previously, the order of events with the same timestamp would have been less deterministic. (The eventId

reflects the actual order in which the events are stored in the database, that is, the order in which the events get deserialized from the incoming data/log stream from the vehicle.) (Week 23)

- Dash4: (Week 24)
 - The user can now star ★ stations (info saved in the browser's local storage). Complementary to this, the station list is now ordered by name, with the starred ones at the top. This ordering is also applied in the dropdown when selecting waypoints in the waypoint editor. (Week 24)
 - For better legibility, set some transparency for the display of tile layers on the map. (Week 24)
- Dash system: Two issues have been observed recently, one apparently involving the new authentication system (refresh token related?); the other, delayed responses from the backend, possibly involving a recent adjustment in the default event sorting. Investigating, but some tests will have to wait until some ongoing vehicle deployments are completed. (Week 24)
- Dash4 now 4.94.82. (Week 25)
- Dash backend 4.95.31. (Week 25)
- Slowness in backend responses recently noted by some operators turned out to be a denial-of-service (DoS) attack by some mis-configured (on purpose?) bot out there. We have had a standard robots.txt in place, but the bot simply ignores it. I set up a blocking rule in the proxy server, so any requests from that bot now get an immediate unauthorized response. (Week 25)
 - <https://mbari.slack.com/archives/C4VJ11Q83/p1749863890631179> (Week 25)
 - <https://github.com/scrapy/scrapy/issues/6597#issuecomment-2817396410> (Week 25)
- Dash4 (4.96.5) now has an admin option to generate API keys for client applications/tools. Immediate use of this functionality was to generate a fresh key for Tom's hotspot script in preparation for CANON. (Week 29)
- TethysDash backend: As part of modernization efforts, very significant internal changes (including some database related refactoring, and finally using Maven instead of Ant! 😊) (Week 29)
- TethysDash backend is now 4.97.3 and Dash4 4.96.62. Thanks, Jason A, for the feedback. (Week 31)
- TethysDash backend 4.97.4 with significant internal changes as part of modernization. (Week 33)
- Assistance to WHOI. (Week 33)
- Finally managed to have a functional LRAUV sim after a long time. This is very important in general for LRAUV/TethysDash development/testing, and more recently to test/validate the significant changes going on in TethysDash, which involve the critical dataLink endpoint that vehicles use to connect. (Week 33)
- TethysDash 4.97.43 with use of a new separate service to run LRAUV unserialize jobs. Successful testing in production (<https://oceanids...>) not only using a simulator but also with a real vehicle. Thanks Quinn S. for your help setting up and connecting Pontus for this purpose. (Week 34)

- Met with Tanya Tebcherani (Johns Hopkins U.) to discuss plans for applying LLMs for LRAUV vehicle autonomy and assistance to operators. (Week 34)
- TethysDash 4.98.0 with new unserialize invocation mechanism fully in place. Satisfactory testing during the last several days but still considered under verification. I'll be closely monitoring the upcoming vehicle deployments, and then proceed with merging the branch into main. (Week 36)
- TethysDash modernization: migration to Quarkus is progressing, but not yet ready for prime time. I did some good testing of various functions over the weekend on the production server. (Week 36)
- TethysL is now 4.4.4. (Week 36)
- Dash4 is now 4.97.0; and TethysDash backend 4.98.1. (Week 37)
- Some monitoring of the several deployed LRAUVs these days, with the TethysDash system proving stable and performant AFAICT. (Week 37)
- Ongoing testing of Quarkus-based TethysDash version; so far looking great! Multiple real vehicles connected and no regressions observed; just some minor tweaking mainly involving logging. (Many thanks, Quinn S., for your testing help and observations.) So, we will let this version continue running even when real deployments start this week (Week 40)
- TethysDash/LRAUV: One more attempt to make the /dataLink endpoint (used by the LRAUV) work as a JAX-RS resource, unfortunately still unsuccessful, likely because of more strict HTTP protocol handling under Quarkus. So, this endpoint will need to continue being a servlet, which has been working with no issues. Submitted PRs in lrauv-application to improve the logging of HTTP(s) interactions on the vehicle side, intended to help with diagnostics in the future. (Week 41)
- TethysDash: As an exciting milestone, completed migration of application framework to Quarkus. Tested successfully in production during the last few weeks (with various incremental steps along the way), the code updates have now been merged into the main branch, and the version is now officially 4.99.0. Future work will include converting more endpoints to the new framework as well as taking advantage of more Quarkus features. (Week 42)
- lrauv-application PRs merged (thanks Quinn and Brian). (Week 42)
- Dash4 releases this week: 4.97.2, 4.97.3, 4.97.4. (Week 43)
- TethysDash backend 4.99.10, with a couple of more endpoints migrated to quarkus. (Week 43)
- Prepared some slides for Brett's upcoming project update presentation. (Week 43)
- Implemented and now successfully testing new TethysL CLI program releases that include a Java runtime, so, users won't need to worry about having to have java installed on their machines. (Note that the VSCode extension has always included the automated downloading and use of Java as part of the installation process.) Linux, macOS, and Windows releases are created (the latter one not yet tested). The official installation at /opt/tethysl/ on tethyshub now uses this new scheme. In general, while the new self-contained releases are proved reliable, the usual java based CLI releases will remain in place. (Week 44)

- TethysL language: Discussion with Quinn about accepting literal strings for expression in argument or output definition. (Week 44)
- TethysDash 4.99.12 with various updates, in particular, with a much more user-friendly compile error report when obtaining the description of a faulty mission script. (Week 44)
- Dash4 4.97.6. (Week 44)
- Added this FAQ motivated by a recent exchange about an operator not getting Brizo alerts. (Week 44)
- WHOI: Brief slack exchanges regarding tethysl and lrauv-application makefile. (Week 44)
- Dash4 4.97.7. (Week 51)
- TethysL 4.8.0, a significant release as it removes the prerequisite of having java on the system. VS Code Extension tested on macOS, Linux, and Windows. (Thanks IS for the loaners.) (Week 51)
- LRAUV: Removed the (nightly) XML mission validation cronjob: Not really needed anymore. (Full TethysL mission validation continues to be done as part of the LRAUV nightly build.) (Week 51)

902504 - Scalable Semantic Mapping

- Group meeting (Week 3)
- Brief meeting with GT in preparation to prioritize tasks. (Week 4)
- Dial maintenance—a significant quasar/vite upgrade (always good to keep dependencies up-to-date, this upgrade in particular mainly triggered by dependabot notifications.) (Week 8)
- Demoed Dial in meeting about Arctic expedition organized by Giancarlo. It went very well and we got some good feedback. (Week 10)
- Working on upgrading Rerun for Dial. So far not as straightforward due to incompatible changes and other subtle issues involving Vite and the webassembly version of the rerun library. (Week 10)
- Investigating the issue of RRWS service getting terminated apparently as soon as images are received from LWS. This regression has turned out to be tricky. I've added improved logging and reconnection logic but the issue remains. (Week 12)
- Dial development. Thanks Kevin B. for a fix to the quaternion-to-yaw conversion. (Week 13)
- Met with Sebastián to delineate some tasks. Then, some more reprioritization. (Week 13)
- Dial: Several significant enhancements in the last couple of weeks have been implemented. Latest version is 1.8.02, see <https://docs.mbari.org/internal/dial/changes/>. (Week 19)
 - (Week 19)
- While doing Dial dev, discovered and reported a mission script parsing issue in MOLARS. (Week 20)
- Dial is now 1.8.2, with a key fix in the display of planned missions so it now aligns with the subsequent actual rendering based on notifications from the MOLARS backend. (Week 25)

- Meetings. (Week 25)
- Sprint review/kickoff meetings. Focus on tasks for Arctic expedition (Aug-Sep) (Week 29)
- Dial: Implementing ingestion of (MB-System) RTE files by conversion to the SG format for mission planning purposes. (Week 31)
- Dial 1.8.74. (Week 33)
- Set up and tested Dial on Atuncita in preparation for the Arctic. (Week 33)
- Dial now 1.8.8 with enhancements in the ScriptGoal dialog, which Giancarlo has already installed and will be exercising in the Arctic expedition. He says, "Dial is getting very popular up here with scientists seeing some of the capabilities and with good suggestions to keep improving it. It also has been fundamental for our operations." He sent this screenshot. (Week 36)
- Group meeting (Week 39)
- Resuming work on Dial. Met with Sebastián to review status and prioritize tasks. (Week 42)
- Dial: dependabot alerts addressed, and other various dependency updates (Week 43)
- Dial now 1.9.2, with various adjustments and fixes, in particular, addressing performance issues while providing improved monitoring and inspection features. (Week 45)

Out of Office

- Dec 19, 23–30: vacation
- Jan 2–5: vacation
- Jan 2–6: vacation
- Beginning of June: 4-6 days vacation
- 5/27 - sick
- 5/29 - vacation
- ~~5/29—vacation~~ (didn't happen)
- June 30–July 2: vacation
- Next Tuesday 8/5: vacation
- 7/22: out sick part of the day
- August 26: vacation (family business)
- August 26-28: vacation
- August 29: sick
- Oct 13 - Drs. appointment
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- 2025-10-20: out sick
- Dec 1–11, 22–30: vacation
- Dec 1–11: vacation/sickness/some remote work

Overhead

- More work toward completing tethysdash2 migration to ubuntu. (Week 1)
 - With Peter, troubleshooting and fixed network share read/write access to /LRAUV. (Week 1)

- All TethysDash related services and UIs seem to be in place and functional. Final verification when LRAUV operations resume. (Week 1)
- General revision and update of <https://docs.mbari.org/internal/tethysdash-ops-doc/> . (Week 1)
- Related to the updated release workflows mentioned above, some investigation about the storage quotas for the mbari-org organization at GitHub. (Week 1)
- Overall review of postdoc applications (Week 2)
- Lib/security updates in a few projects (Week 2)
- Tech meeting about user auth (OAuth, Firebase, Allauth). (Week 3)
- Preparing software to support Microsoft 365 for IMAP access. (Week 5)
- Postdoc applications review (Week 6)
- Some technology exploration. Attended ACM TechTalk. (Week 7)
- IE group meeting. (Week 7)
- Postdoc selection committee. (Week 8)
- Dash UIs: Investigated sudden significant increase of charges for Google Elevation API requests. Not only have they increased such charges but there have been recent multiple requests, apparently from developers (domain: localhost), with >10K requests in a single day! Ongoing discussion with Kevin G (and IS), and Brian K. to determine next steps. (Week 19)
- IE meeting - presented a general overview of Context Model Protocol (MCP). Quick demo with a Quarkus based server exposing data from api.weather.gov. Good discussion. (Week 19)
- IE group meeting with Amazon re GenAI and use cases. (Week 20)
- Proposals (Week 29)
- Tech exploration (Week 29)
- Proposal review (Week 31)
- Intern symposium (Week 33)
- Assisted ESIP to correct an issue with the COR, and provide clarification about its general setup. (Week 34)
- IE group meeting (Week 38)
- With Yanwu, reviewing the past June patch tracking exercise data and implementation. (Week 39)
- Setting up docs-u, the Ubuntu VM intended to replace the current Centos7 based docs one. (Week 39)
- Very good progress in setting up the docs-u VM in preparation for the migration to Ubuntu. (Week 40)
- Open Discussion Meeting with Antje (Week 40)
- CentOS 7 EOL migrations (docs-u, tethystest-u, tethysdash2-u (soon)) (Week 41)
- Preparing tethysdash2-u for CentOS 7 EOL migration of tethysdash2. TethysDash system itself is almost ready, and Steve's widget generation scripts/cronjobs are now in place. Next steps are to transfer pending services / static sites, and plan for cutover. (Week 42)
- CentOS 7 EOL: (Week 43)
 - Migration complete for tethystest. (Week 43)

- Advancing tethysdash2 and docs. (Week 43)
- IE Group meeting. (Week 44)
- Completed migration of docs to Ubuntu. Thanks Peter and Kevin G. (Week 45)
- Added a What packages are installed? section in the main meta-doc page (which also points to a new listing of the installed packages). Assisted Kent with his new TRN doc site. (Week 45)
- The Material for MkDocs team just made the official announcement about Zensical, a new “coherent stack” for static site generation. We’ll keep an eye for eventual migration. Also, we could probably restore the cross-site search for docs on top of the new system. (Week 45)
- More preparations of the tethysdash2-u vm that will replace current tethysdash2. (Week 51)