Plan Overview

A Data Management Plan created using DMPonline

Title: ACEP Geophysics and Mapping Platform

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Template: DCC Template

Project abstract:

The South African Institute for Aquatic Biodiversity facilitates marine science platform support for research purposes. The Geophysics and Mapping platform, based in KwaZulu Natal, is one such platform. The following document defines the Terms of Use and Data Agreements associated with the platform. These conditions are to be considered by all parties making use of the platform, and signed off prior to any data acquisition using the platform. This document covers all research, including Open-Call and ad hoc projects.

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Copyright information:

ACEP Geophysics and Mapping Platform

Data Collection

What data will you collect or create?

Raw data
Primary raw data are generated by the Reson 7101 multibeam echosounder and by the SBG Systems Apogee Navsight Inertial Navigation System. These two data streams are combined in HYPACK MAX and stored as raw .7K, .HSX, and .RAW files in HYPACK's native survey project folder tree. Inertial Navigation data streamed to HYPACK MAX, however, the raw data are stored on the Navsight unit in the log directory. These files must be downloaded at the end of each day and added to the HYPACK project directory in a folder named "SBG" and in subfolders named dd_mm_yyy. Sound velocity profiles collected throughout a survey must be stored as HYPACK converted sound velocity. vel files and as raw files (in a "Raw SVP" subfolder) in the main HYPACK Project directory.
At the end of each survey session all the data is backed-up to a 250 GB SSD, and transferred to the processing PC HYPACK project and external HDD.
Processed data
SBG Qinertia and SBG Center are ised to process all inertial data. The working directory must be defined and located in the main HYPACK project folder under the SBG subfolder and by data. Bathymetry data are processed in HYPACK and stored in the native folder tree ("Edit" folder) while in progress, and in the "Sort" folder as a final XYZ dataset. Final products are developed in Golden Software's Surfer package and stored in the main HYPACK Project "Sort" folder under "Final Surfer" subfolder which contains a folder tree of relevant outputs as required by the project (variable options). Changes to data must be backed up daily to an external SSD/HDD which in turn is backed up weekly to the cloud.

How will the data be collected or created?

Data will be collected by the ACEP Geophysics and Mapping platform comprises the following:

i. 1 x Reson SeaBat™ 7101 multi-beam echo-sounder
ii. 1 x Teledyne Digibar-V mini sound velocity profiler
iii. 1 x Teledyne Digibar-S sound velocity profiler
iv. 1 x Reson SeaBat™ 7101 control and data acquisition computer
v. 1 x Full HYPACK Max license and dongle for data acquisition, processing and final products.
vi. 1 x SBG Systems Apogee Navsight

Planning the survey
Survey planning should be in consultation with the GeMaP manager to avoid unnecessary delays and to develop realistic expectations.
The vessel and survey area are of paramount importance when planning a survey. How is the survey area best approach (by coastal craft or large vessel), and are the water depths within the operational limits of the GeMaP? Is the vessel suitable for the task? Vessels are not all made equal; as the vessel becomes integral to the system (it should be considered a component of the GeMaP during survey) it is essential that the vessel be suitable. A suitable vessel will have a cabin with space for two to three monitors, a large processing computer system (including a UPS) while providing clean and reliable power. The vessel will need a strong and secure location to which a pole mount is fitted. The sonar head and pole will likely weigh in excess of 100 kg. This pole must be secure and locate precisely (this is essential) with every deployment. It is strongly advised that the GeMaP components are surveyed to establish leverarms (provided by a third-party).
Prior to any survey the area must be defined (e.g., with a kmz polygon). This will enable a rough survey time to be calculated based on water depth and coverage requirements. These requirements will vary as per the users desired outcome (to be defined by the user or in consultation with the GeMaP manager).

Data acquisition
Data will be acquired during hydrographic surveys at sea according to IHO standards, and only once the SBG Navsight is aligned. Surveys will not commence until the SBG Systems Navsight is aligned, and routine Patch Tests will be completed to ensure system calibration. HYPACK survey data will be stored in the native HYPACK folder tree, namely Project folder (e.g., .ini, .vel, .mtx, .lnw, files) and in the RAW folder (e.g., .7K, .HSX, .RAW files). SBG Navsight data must be logged and will be written to the Navsight internal storage. A minimum of one sound velocity profile per 3 hours, or as required based on local conditions will be collected and named as SURVEY NAME_DATE_TIME in UTC (e.g., Rosie Snowball_30_07_2021_07_32.vel). All these data must must be copied from the acquisition PC to the survey data SSD at the end of each session.

Data will be acquired according to a predetermined line plan as discussed by the project team. Project goals may vary, thus specific data acquisition requirements will be discussed at the project level.

Documentation and Metadata

What documentation and metadata will accompany the data?

Projects will be designed in HYPACK where geodesy, devices and line plans will be defined. Each survey will be attributed to a particular project, and will be logged to a survey log sheet during active surveying and will record:

Date, Survey name, No. of pages, Geodesy, Time (UTC), Start/Stop line, Line name, Direction, Speed, Comments, Sound velocity profile information.

Upon completion of a project/survey, line kilometers and area covered will be calculated and attributed to the project.

The HYPACK metadata tool (Metagen) will be used to generate standardized metadata for individual survey areas (i.e., the culmination of several days survey over an extended period). An account of the captured metadata can be found in the HYPACK user manual.

Ethics and Legal Compliance

How will you manage any ethical issues?

No ethical clearance is required

How will you manage copyright and Intellectual Property Rights (IPR) issues?

All data generated entirely, or in part by the GeMaP system, or instruments incorporated into the system shall remain the property of NRF-SAIAB, this includes all outputs and derivatives from original raw and processed data. Project IP (concepts, design, etc.) shall remain with the originator and associated team. Data will be under embargo for three years from the last project day, however, NRF-SAIAB reserves the right to release data to third parties in consultation with the originator where appropriate and under CC BY-NC-SA license.

Storage and Backup

How will the data be stored and backed up during the research?

Raw data
Primary raw data are generated by the Reson 7101 multibeam echosounder and by the SBG Systems Apogee Navsight Inertial Navigation System. These two data streams are combined in HYPACK MAX and stored as raw .7K, .HSX, and .RAW files in HYPACK's native survey project folder tree. Inertial Navigation data streamed to HYPACK MAX, however, the raw data are stored on the Navsight unit in the log directory. These files must be downloaded at the end of each day and added to the HYPACK project directory in a folder named "SBG" and in subfolders named dd_mm_yyy. Sound velocity profiles collected throughout a survey must be stored as HYPACK converted sound velocity. vel files and as raw files (in a "Raw SVP" subfolder) in the main HYPACK Project directory.
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Data use
Data collected will not be publicly available as they form the basis of a larger project and are under a 3-year data embargo from the last project day. Requests for data access must be via the ACEP GeMaP manager and will be at the discretion of the originator while under the embargo period.

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Processed data (project specific products)will be accompanied by a native metadata file generated by HYPACK. The metadata file along with raw and processed data will be archived with the South African Environmental Observation Network's (SAEON) Open Data Platform (ODP). This metadata repository facilitates the publication, discovery, dissemination, and preservation of earth observation and environmental data in South Africa.

Project: ACEP SMART ZONES MPA

Data status: Raw data backed up on harddrive, solid state drive and Google Cloud. Data examples (partially processed) are available at https://nrfsaiab.wixsite.com/gemapocean/bathymetry.

By the end of May 2022 the data acquired to date will have been processed and made available to the SAEON ODP under embargo until completion of the ACEP SMART ZONES MPA project.

How will you manage access and security?

Data will be available via GeMaP's Google Drive or SAEONs ODP. Bothe repositories are secure and access is controlled. Access to data will be via secure links only, and data under embargo will be administered by the GeMaP manager only.

Data may not be used for commercial gain.

Selection and Preservation

Which data are of long-term value and should be retained, shared, and/or preserved?

All raw data, and final products (in the form of processed xyz data), shall be retained indefinitely both on SSD and cloud storage (Google Drive and SAEON ODP). These data are fundamental to monitoring long-term change.

What is the long-term preservation plan for the dataset?

All raw data, and final products (in the form of processed xyz data) shall be preserved indefinitely both on SSD and cloud storage (Google Drive and SAEON ODP). The SAEON ODP is ideally positioned to preserve these data in the long-term. No additional resources are required at present.

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On-site data storage in Durban may become limited in 2023 at which stage data will be shipped to Makhanda and stored on SAIAB servers. This need will be assessed at the end of 2022. If required, data will be couriered as required (depending on data volume generated) and then uploaded to the cloud and SAEON ODP in a RAW state. Final products will be uploaded to the cloud and SAEON ODP in due course.

Data Sharing

How will you share the data?

Data, retained in perpetuity with SAEON ODP, will be shared via links to the relevant cloud storage folder and data use will be acknowledged appropriately (either cited if published, or acknowledged in text if unpublished). These details will be captured in a project data agreement drawn up for each project.

Are any restrictions on data sharing required?

Data will be under 3-year embargo from the last project day to enable the originator sufficient time to analyze and publish results and conclusions drawn from the data. Data shall be shared under CC BY-NC-SA license terms. Data agreements will be drawn up per project making use of the data, entirely or in part.

Responsibilities and Resources

Who will be responsible for data management?

The GeMaP platform manager will be responsible for ensuring the raw and processed data are appropriately managed.

What resources will you require to deliver your plan?

All resources currently exist to support the needs for 2022.
These include suitable internet connectivity, suitable cloud storage (SAIAB Google Drive), suitable archive storage (SAEON ODP), onsite storage (HDD, SDD).