PASS-SWIO

Portagauge and Satellite Sea Level Monitoring System for the Southwest Indian Ocean

Training Material

April 2024

ESA Contract: 4000136883/21/I-DT-lr

Project reference: PASS-SWIO_ESA_D1.1

Issue: 1.1

Change Record

Date	Issue	Section	Pages	Comment
08/03/24	1.0			V1
07/05/24	1.1	2		Minor changes after ESA Review
28/05/24	1.1		2	Added contents page

Control Document

Process	Name		Date
Written by:	David Cotton, Amani Becker		15/04/24
Checked by:	Amani Becker		23/04/24
Approved by:	Amani Becker		28/05/24

Subject	Portagauge and Satellite Sea Level Monitoring System for the Southwest Indian Ocean	Project	PASS-SWIO
Author	Organisation	Internal references	
David Cotton	SatOC Ltd	PASS-SWIO_ESA_D1.1	
Amani Becker	National Oceanography Centre		

	Signature	Date
For PASS-SWIO team		30/05/24
For ESA		

Contents

1.   Introduction

This document provides an overview of the training material developed and provided for the PASS-SWIO project and download links via the Training page of the project website (https://www.satoc.eu/projects/pass-swio/).

2.   Training Delivered

The following training was delivered during the PASS-SWIO project:

- Training of DGM staff in Portagauge installation and operation.
    - Delivered in person to DGM staff during the Portagauge installation at Toamasina Port on 12 to 16 June 2023.

- Training in Satellite and tide gauge data processing and validation
    - Delivered online to DGM staff on 12 and 18 October, 2023.
    - Delivered face to face at DGM offices in Antananarivo, Madagascar on 13 and 14 February 2024.

3.   Access to Training Material

3.1.   Portagauge installation and operation

The Portagauge installation and operation manual is available online in English and in French

3.2.   Tide Gauge and Satellite Altimeter Data Processing and Validation

The objective of the training was to ensure Portagauge end users (DGM) are fully trained in the processing of satellite altimeter and tide gauge data, and in cross-validating these data against each other.

We summarise the contents of the training and provide links to the material below:

Contents

- Checking and Validation of Tide Gauge sea level data.
    - This module covers the pre-processing and checking of data of raw tide gauge data as received from the PASS-SWIO Portagauge, and then the validation and analysis to generate tidal constituents and other key parameters.

    - This requires the use of the TASK tidal analysis software, available from the National Oceanography Centre.

- Processing and Submission of Portagauge GNSS position data.

    - This module covers the pre-processing and checking of the GNSS data as received from the PASS-SWIO Portagauge, to provide precise location information.

- Satellite altimeter data: Accessing and pre-processing.

    - This module covers accessing the Level 3 along-track satellite altimeter data from CMEMS and processing them into a format for processing with python code developed for the PASS-SWIO project.

    - For this you will need the python code written for the project (see below)

- Satellite altimeter data: Validation and analysis of sea level variability.

    - This module covers using python code to cross-validate the satellite altimeter and tide gauge sea level data, and to generate plots to support analysis of sea level variability.

    - For this you will need the python code written for the project (see below)

Preparation
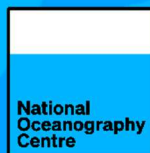We list some other resources below, which are needed for data processing.

- Guidelines for preparation of laptops
- Download python code archive

4. Links to resources

Training Material	Link
Portagauge installation and operation manual (English)	https://www.satoc.eu/projects/pass-swio/documents/PortagaugeinstructionsforMadagascarV3.3ENGLISH.pdf
Portagauge installation and operation manual (French)	https://www.satoc.eu/projects/pass-swio/documents/PortagaugeinstructionsforMadagascarV3.3FRENCH.pdf
Checking and Validation of Tide Gauge sea level data	https://www.satoc.eu/projects/pass-swio/documents/TideGaugeDataAndProcessingFeb2024.pdf
Processing and Submission of Portagauge GNSS position data	https://www.satoc.eu/projects/pass-swio/documents/Portagauge_GNSS_Feb2024.pdf
Satellite altimeter data: Accessing and preprocessing	https://www.satoc.eu/projects/pass-swio/documents/CMEMSDataprocessing.pdf
Satellite altimeter data: Validation and analysis of sea level variability	https://www.satoc.eu/projects/pass-swio/documents/ValidatingSeaLeveldata.pdf
Additional Resources	
TASK	https://noc-innovations.com/services/tide-prediction-software/tidal-data-analysis/
Guidelines for preparation of laptops	https://www.satoc.eu/projects/pass-swio/documents/laptoppreparation.pdf
Download python code archive	https://www.satoc.eu/projects/pass-swio/documents/python_code.zip

National Oceanography Centre