The JERICO-S3 project is funded by the European Commission's H2020 Framework Programme under grant agreement No. 871153. Project coordinator: Ifremer, France.

GRANT N°: 871153
PROJECT ACRONYME : JERICO-S3
PROJECT NAME : Joint European Research Infrastructure for Coastal Observatories - Science, services, sustainability
COORDINATOR : Laurent DELAUNEY - Ifremer, France - jerico-s3@ifremer.fr

JERICO-S3 MILESTONE

Joint European Research Infrastructure network for Coastal Observatory
Science, Services, Sustainability

MS#, WP# and full title	JERICO-S3 MS. 34 – WP6 - Workshop reports for establishing best practices guidelines and strategy for coastal carbonate systems data management
5 Key words	Carbonate systems best practices workshop
Lead beneficiary	FMI
Lead Author	Lauri Laakso (FMI)
Co-authors	Martti Honkanen (FMI)
Contributors	PSS and IRS leads
Submission date	2023 December 12

❑ Report after a workshop or a meeting (TEMPLATE A)

Diffusion list			
Consortium beneficiaries	Third parties	Associated Partners	other

TABLE OF CONTENT

A) TEMPLATE A - report after a workshop or a meeting

1. A – Attendees

Attendee list of the JERICO-S3 JERICO-days in Lisbon 2022 attached.

2.A - Statement of Decisions

The carbonate system workshop held during the JERICO days in Lisbon 2022 identified the key gaps in the successful coastal carbonate data management. Deliverable 6.8 "Data management Best practices and strategy for coastal carbonate system" will elaborate the required standard operating procedures, quality control protocols and appropriate databases for the inorganic carbon observations within the JERICO community.

3.A - Agenda A - Main report

JERICO RI consists of inorganic carbon observations made in largely differing environmental conditions and made for differing scientific purposes. A workshop during the JERICO days 2022 was held as a starting point for the best practices of the carbon measurements within the JERICO community. The carbon measurement protocols used within the Pilot Supersites (PSSs) and Integrated Regional Sites (IRSs) were surveyed. Each institute were asked to provide the information which marine inorganic carbon system variables and supporting variables were measured at their station, in addition to the station's measurement method, accuracy of the measurement, standard operating procedures (SOPs), Quality Control (QC) methods and typical observed range of given measurement. It was found that large range of different systems and protocols were used for observing carbon variables in the PSSs and IRSs. Clear guidelines for the standard Operating Procedures or Best Practices, Quality Control and data submission were found to be needed for the harmonised JERICO carbon system observations.

4.A – Conclusions

The marine inorganic carbon observation protocols used in the JERICO Pilot Super Sites and Integrated Regional Sites were surveyed. Three steps were recognised for the successful carbonate data management: (1) A definition of standard Operating Procedures for relevant carbon observations, (2) Quality Control for these and (3) selection of suitable databases/infrastructures.

5.A - Annexes and references

Workshop presentation given in Lisbon 2022 by Lauri Laakso.

Attendee list of the JERICO days 2022.

Workshop on Best practices strategy for coastal carbonate systems data management

Situation with PSS and IRS, WP6

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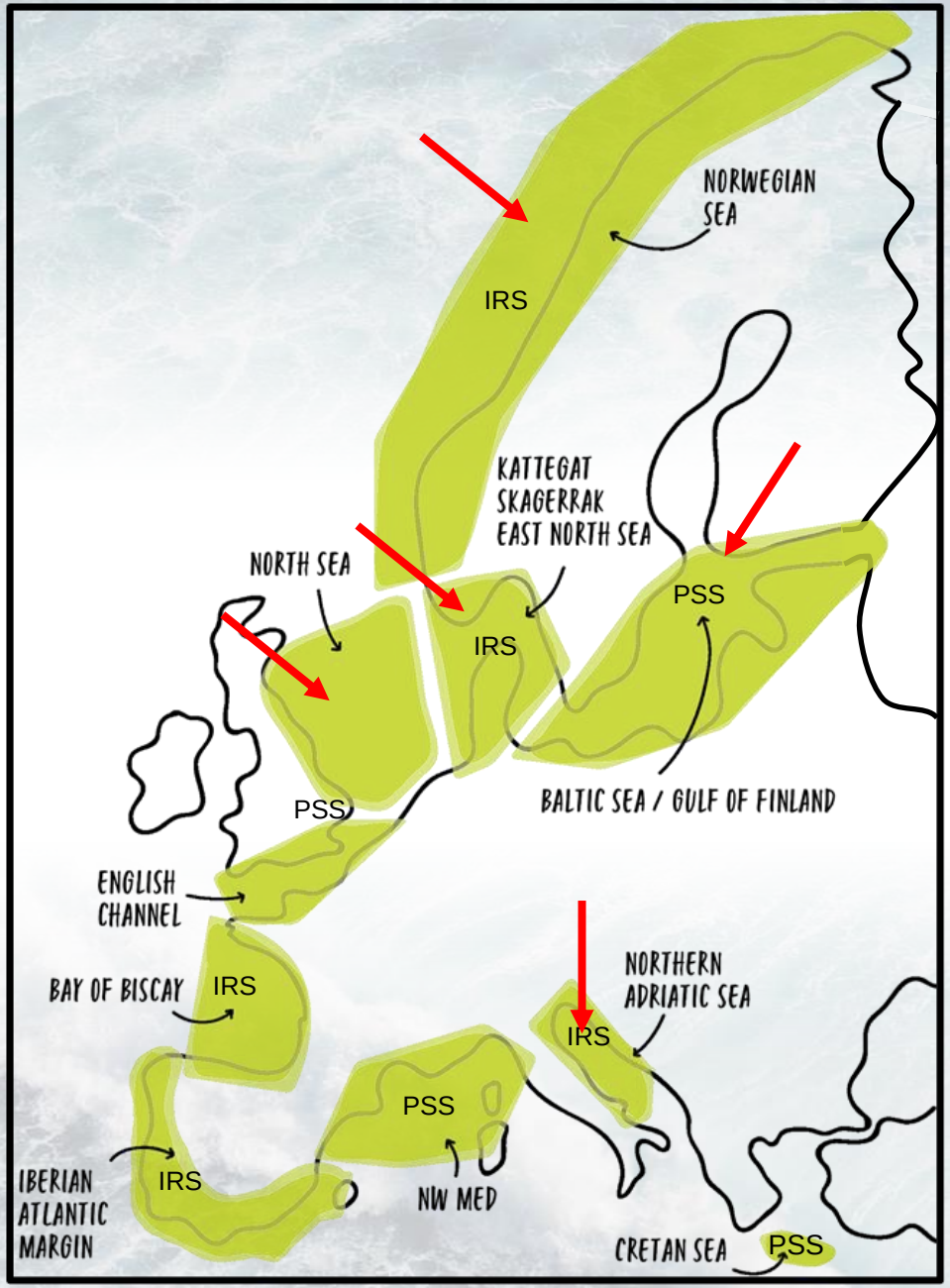
Brief recap of IRSs and PSSs

IRS

- Norwegian Sea
- Kattegat-Skagerrak-Eastern North Sea,
- Bay of Biscay,
- Iberian Atlantic Margin,
- Northern Adriatic Sea

PSS

- Gulf of Finland,
- North Sea/English Channel, NW
- Mediterranean Sea,
- Cretan Sea



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Aim of the workshop

Subtask 6.3.3: Guidelines and strategy for carbonate systems data management (M1-42) (IOW, FMI)

In the coastal seas high biological activity, river discharges, and variations in salinity create technical challenges for measuring various carbonate system components as well as modelling of carbonate system. The behavior of carbonate system differs in ≠ coastal areas, even within regional seas. To understand the role of coastal seas in carbon-fluxes, and to provide data to study the impacts of climate change we need to develop a data management structure for carbonate systems. The task includes:

(a) collection of regional protocols for carbonate system measurements,
(b) identification of gaps; provide coastal observing community recommendations on best practices on carbonate system observations,
(c) interact with ICOS-OTC and SOCAT on knowledge and support for standardization of coastal ecosystem carbonate system observations (published in D6.8).

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ICOS-OTC coordinates marine carbonate system observatios – why this work is needed?

- Focus of ICOS-OTC is on chemistry and sea-atmosphere interphase
- Biogeochemistry and especially ecosystem functioning, including species composition and base of food chain not included in ICOS-OTC

→ The current definition of ICOS does not cover the same aspects we have in JERICO-RI

Table 10a. List of required variables measured at ICOS SOOP stations.

VARIABLE	FREQUENCY	ACCURACY	REQUIRED FOR CLASS
Sea surface fCO_2	Quasi-continuous	± 2 µatm	2
Intake temperature (SST)	Continuous	± 0.05 °C	2
Equilibrator temperature	Continuous	± 0.05 °C	2
ΔT (Intake/Equilibrator temperature difference)	Continuous	< 1.5 °C (normal) < 3 °C (ice-edge)	2
Water vapour pressure*	Continuous	± 0.5 mbar	2
Equilibrator pressure	Continuous	± 2.0 mbar	2
Atmospheric pressure/sea level pressure	Continuous	± 1.0 mbar	2
Sea surface salinity (SSS)	Continuous	± 0.1 PSU	2
Dissolved oxygen	Continuous	± 2%	1
Total alkalinity (TA)**	***	± 10 µmol kg^{-1}	1
Dissolved inorganic carbon (DIC)**	***	± 5 µmol kg^{-1}	1

The JERICO-S3/DS projects are funded by the European Commission's France.

WP6 / MS34

Workshop reports for establishing best practices guidelines and strategy for coastal carbonate systems data management

- Short data summary slides sent to all IRS and PSS PI
- Idea to get information on SOP's, BP and destiny (if any) of data collected
- Starting point for JERICO Carbonate system observation BP

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Carbonate observations at the site: GOF PSS / Utö (FMI & SYKE)

Variable	Platform	Instrument / Sensor	Discrete /continuous	Accuracy / precision	Reference method / cross- validation	SOP / BP used	Data QC method used	Typical observed range
pCO_2	Fixed stat., FT	SuperCO2, Sunburst	Continuous	2 µatm	1. Analyser against calibration gases 2. System validation during campaigns 3. System accuracy on workshops	Dickson et al. (2007)	Range test Automatic and manual QC	100-800 µatm
pH	Fixed stat., FT	AFT pH, Sunburst	Continuous	0.001 units	Comparison to calculated pH	Maintenance and salinity correction according to manufacturer	Range test Automatic and manual QC	7.9-8.6 (total)
Alk	Fixed stat., FT	716 DMS Titrino, Metrohm	Discrete	Error for pH value 0.02	Calibration with pH 4 and 9 buffer solutions		Range test Automatic and manual QC	1300-1700 µmol kg^{-1}
DIC	Fixed stat., FT	AS-C3, Apollo SciTech	Discrete	2 µmol/kg	Using sodium carbonate samples		Range test Automatic and manual QC	1300-1700 µmol kg^{-1}
T	Fixed stat., FT	SBE45, Seabird	Continuous	0.002 C	With secondary FT thermometer	Maintenance according to manufacturer	Range test Automatic and manual QC	0-22 ^oC
S	Fixed stat., FT	SBE45, Seabird	Continuous	0.005 PSU	Water samples measured with laboratory salinometer	Maintenance according to manufacturer	Range test Automatic and manual QC	5-7 PSU
O_2	Fixed stat., FT	Aanderaa 4330,	Continuous	2 µM	One-point calibration at 100 %	Maintenance according to manufacturer	Range test Automatic and manual QC	240-460 µM
Chla	Fixed stat., FT	FLNTU, Wetlabs	Continuous	0.01 µg l^{-1}	Calibration with MilliQ and reference sample	Maintenance according to manufacturer	Range test Automatic and manual QC	0-10 µg l^{-1}

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Additional questions / clarifications

- Main challenges in observations?

  Robust calibration and QC require knowledge, time and man power. Salinity correction for pH.
- What are the data QC methods used and how were they selected?

  Range test, automatic and manual cleaning of the data.
- Are there internationally accepted, local, or no archived SOPs in use.

  Internationally accepted for some measurements, local for some.
- Which database(s) does the data go?

  Automatically to institutional database, QC'd data to different open databases, when using data on publications
- Main challenges related to Open Access data and FAIR

  Manual QC needed before publishing data
- What are the future plans wrt carbonate system data?

  ICOS OTC workshop will bring some new knowledge on the accuracy of widely used pCO_2 sensors
- What is the interaction between Jerico and ICOS-OTC at the site?

  ICOS ATM station located at the same island
- Other comments

  Harmonizing the measurement practices ensures the good quality and comparability of the data

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Carbonate observations at the site: GOF PSS / Silja Serenade (SYKE & FMI)

Variable	Platform	Instrument / Sensor	Discrete /continuous	Accuracy / precision	Reference method / cross- validation	SOP / BP used	Data QC method used	Typical observed range
pCO_2	Ferrybox, FT	SuperCO2, Sunburst	Continuous	2 µatm	1. Analyser against calibration gases 2. System accuracy on workshops	Dickson et al. (2007)	Range test, manual/automatic QC	100-800 µatm
pH	Ferrybox, FT	AFT pH, Sunburst	Continuous	0.001 units	Comparison to calculated pH	Maintenance and salinity correction according to manufacturer	Range test, manual/automatic QC	7.9-8.6 (total)
Alk	Ferrybox, FT							
DIC	Ferrybox, FT							
T	Ferrybox, FT	SBE38, Seabird	Continuous	0.001 C	With secondary FT thermometer	Maintenance according to manufacturer	Range test, manual/automatic QC	0-22 ^oC
S	Ferrybox, FT	SBE45, Seabird	Continuous	0.005 PSU	Water samples measured with laboratory salinometer	Maintenance according to manufacturer	Range test, manual/automatic QC	4-7 PSU
O_2	Ferrybox, FT	4330, Aanderaa	Continuous	2 µM		Maintenance according to manufacturer	Range test, manual/automatic QC	240-460 µM?
Chla	Ferrybox, FT	FLNTU, Wetlabs	Continuous	0.01 µg l^{-1}	Ferrybox workshops to set measurement to common level	Maintenance according to manufacturer	Range test, manual/automatic QC	0-10 µg l^{-1}?

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Additional questions / clarifications

- Main challenges in observations?

  Salinity correction for pH
- What are the data QC methods used and how were they selected?

  Range test, automatic and manual cleaning of the data.
- Are there internationally accepted, local, or no archived SOPs in use.

  Internationally accepted for some measurements, local for some.
- Which database(s) does the data go?

  Automatically to institutional database, QC'd data to different open databases, when using data on publications
- Main challenges related to Open Access data and FAIR

  Manual QC needed before publishing data
- What are the future plans wrt carbonate system data?

  ICOS OTC workshop will bring some new knowledge on the accuracy of widely used pCO_2 sensors
- What is the interaction between Jerico and ICOS-OTC at the site?

  Will be part of ICOS OTC soon
- Other comments

  Ipsum lorem

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Carbonate observations at the site: Baltic Sea, Gulf of Finland / SOO FINNMAID (IOW)

Variable	Platform	Instrument / Sensor	Discrete /continuous	Accuracy / precision	Reference method / cross-validation	SOP / BP used	Data QC method used	Typical observed range
pCO_2	SOOP	Los Gatos eFGGA, PICARRO G2131i	continuous	2 µatm / 0.5 µatm	Calibration, three gstandards, OTC CAL	Pfeil et al., 2013	ICOS OTC	~60 – 1000 µatm
pH	SOOP	HydroFIA	continuous	0.01 / ± 0.002 standard deviation	Calibration	4K Jena, Müller et al., Dickson	ICOS OTC	~7.5 – 8.5
Alk	-	-	-	-	-	-	-	-
DIC	-	-	-	-	-	-	-	-
T	SOOP	Seabird TSG SBE 45, BURSTER4192	continuous	Seabird: 0.0015 K, 0.003 mS/cm, Burster: 56 mK	Calibration	Seabird, IOW Cal-LAB	ICOS OTC	~0 – 25°C
S	SOOP	Seabird TSG SBE 45	continuous	0.003 mS/cm	Calibration	Seabird, IOW Cal-LAB	ICOS OTC	~4 – 20
O_2	SOOP	Presens EOM	continuous	± 0.4 % O2 at 20.9 % O2, ± 0.05 % O2 at 0.2 % O2	calibration	Bittig et al., 2018	ICOS OTC	~70-120 %(sat.)
Chla	-	-	-	-	-	-	-	-
Other	SOOP	Los Gatos N2Oi, eFGGA	CH4, CO, N2O, continuous					

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Additional questions / clarifications

- Main challenges in observations?

  Keeping the system up and running, malfunctions, shipyard times, ice etc.
- What are the data QC methods used and how were they selected?

  ICOS OTC QC guidelines (e.g. for station labelling)
- Are there internationally accepted, local, or no archived SOPs in use.

  ICOS OTC SOPs (Guides on best practice etc.), related papers
- Which database(s) does the data go?

  SOCAT (pCO_2 Data)
- Main challenges related to Open Access data and FAIR

  Ipsum lorem
- What are the future plans wrt carbonate system data?

  Ipsum lorem
- What is the interaction between Jerico and ICOS-OTC at the site?

  Ipsum lorem
- Other comments

  Ipsum lorem

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Carbonate observations at the site: IRS/PSS KASKEN & North Sea / Lysbris & Magnolia Seaways + Funny Girl Ferry + Cuxhaven

Variable	Platform	Instrument / Sensor	Discrete /continuous	Accuracy / precision	Reference method / cross- validation	SOP / BP used	Data QC method used	Typical observed range
pCO_2	FerryBox	4H Jena Engineering flow through membrane sensor	Continuous	+/- 1%	Pre- & post- calibration method / SOCat GO equil. cross-validation	Dickson et al. (2007); SOP4; Macovei et al. 2021	Spike/range tests, overdetermination	200 to 800 µatm
pH	FerryBox	IsFET / Glass electrode	Continuous	+/- 0.001 / +/- 0.01	Tris buffer, pH standards	Dickson et al. (2007); SOP6b	Spike/range tests, pH buffer check & pH post-calibration calculation	7.8 to 8.3 (total scale)
Alk	FerryBox	4H Jena Engineering HydroFIA-TA analyzer	Continuous	+/- 25 µmol/kg	Dickson Certified Reference Materials	Dickson et al. (2007)	Spike/range tests, overdetermination	2200 to 2600 µmol/kg
DIC								
T	FerryBox	Seabird SBE45	Continuous	0.001-0.002 deg C	Reference thermometer	n/a	Spike/range tests	-1 to 20 deg C
S	FerryBox	Seabird SBE45	Continuous	0.005	Optimare	n/a	Spike/range tests	10 to 35
O_2	FerryBox	Aanderaa 4835	Continuous	4 µmol/L	Winkler titration	n/a	Spike/range tests	150 to 320
Chla	FerryBox	TriOS NanoFlu	Continuous	0.1 µg/L	n/a	n/a	Spike/range tests	0.1 to 20
Turbidity	FerryBox	Turner Designs C7	continuous		Hack Turbidimeter	n/a	Spike/range tests	0 to 50

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Additional questions / clarifications

- Main challenges in observations?
  Biofouling & post-calibration
- What are the data QC methods used and how were they selected?
  See table above
- Are there internationally accepted, local, or no archived SOPs in use.
  Ipsum lorem
- Which database(s) does the data go?
  Institutional, national, and CMEMS/EMODnet, ferrybox.org.
- Main challenges related to Open Access data and FAIR
  Ipsum lorem
- What are the future plans wrt carbonate system data?
  Ipsum lorem
- What is the interaction between Jerico and ICOS-OTC at the site?
  Application submitted for Cuxhaven Stationary FerryBox station to become part of ICOS network
- Other comments

  Ipsum lorem

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Carbonate observations at the site: North Sea/ MWTL ship-based monitoring programme

Variable	Platform	Instrument / Sensor	Discrete /continuous	Accuracy / precision	Reference method / cross- validation	SOP / BP used	Data QC method used	Typical observed range
pCO_2		Calculated from other variables	discrete					
pH	Ship	spectrophotometer	discrete	0.005 pH units	Tris buffer and seawater CRMs both from Dickson lab	SOP 06b	WOCECTD	7.68-8.27
Alk	Ship	Marianda Company VINDTA 3C system	discrete	2 µmol kg-1	Dickson CRMs used to calibrate acid concentration	SOP 3b	WOCECTD	2301- 2492
DIC	Ship	Marianda Company VINDTA 3C system	discrete	2 µmol kg-1	Dickson CRMs used to calibrate coulometer	SOP 2	WOCECTD	1986-2330
T	Ship	In-situ sensor	discrete	0.1 degree C				
S	Ship	In-situ sensor	discrete					
O_2	Ship		discrete					
Chla	Ship	HPLC	discrete					
TT, S	Fixed platforms							

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Additional questions / clarifications

- Main challenges in observations?
  ?
- What are the data QC methods used and how were they selected?
  See table
- Are there internationally accepted, local, or no archived SOPs in use.
  internationally accepted procedures
- Which database(s) does the data go?
  SDG-14 database, Dutch database, EMODNET
- Main challenges related to Open Access data and FAIR
  ?
- What are the future plans wrt carbonate system data?
  add continuous monitoring along Ferrybox trajectories and on fixed platforms
- What is the interaction between Jerico and ICOS-OTC at the site?
  ?
- Other comments
  -

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Carbonate observations at the site: Northern Adriatic Sea IRS

Variable	Platform	Instrument / Sensor	Discrete /continuous	Accuracy / precision	Reference method / cross- validation	SOP / BP used	Data QC method used	Typical observed range
pCO_2	PALOMA	”Contros” HydroC-CO2	Continuous every 6 h	Within ICOS standard ± 10 µatm	pCO2 from TA/pH monthly discrete samples	Protocols from manufactor, based on Pre and post cruse calibrations	ICOS-OTC	250 – 500 µatm
pH	PALOMA	Spectrophotometric m-cresol purple	Discrete monthly samples	± 0.003	Dickson’s CRM and certified TRIS buffer	Guide to best prac. For ocean CO2 meas. DOE 2007	Manual controls	7.800 – 8.100
Alk	PALOMA	Open cell titration	Discrete monthly samples	± 2 µmol/kg	Dickson’s CRM	Guide to best prac. For ocean CO2 meas. DOE 2007	Manual controls	2650 – 2750 µmol/kg
DIC	Not yet							
T	PALOMA	SBE 37 - Seabird	Continuous – every 15 min	± 0.002 °C	Factory calibration	Our own	Manual check for outliers	9 - 29
S	PALOMA	SBE 37 - Seabird	Continuous – every 15 min	± 0.002 °C	Factory calibration	Our own	Manual check for outliers	25 – 38.5
O_2	PALOMA	SBE 63	Continuous – every 15 min	± 3 µmol/L	Monthly Winkler samples	Our own	Manual comparison	220 – 290 µmol/L
Chla	Not yet							

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Additional questions / clarifications

- Main challenges in observations?

  Ensure continuity in data
- What are the data QC methods used and how were they selected?
- Are there internationally accepted, local, or no archived SOPs in use.

  ICOS / SOCAT standards for pCO_2. But for fixed stations as PALOMA the protocols are less mature than for underway pCO_2 (with equilibrator) measurements. For other parameters we are using our cleaning and maintenance protocols, keeping track of every maintenance, failure, calibration ecc of every instrument
- Which database(s) does the data go?

  p CO_2 data goes to ICOS and SOCAT
- Main challenges related to Open Access data and FAIR

  correct citation of data and recognition of the work done by all the group
- What are the future plans wrt carbonate system data?

  Implement automated routines for corrections and QC
- What is the interaction between Jerico and ICOS-OTC at the site?

  PALOMA is an ICOS class 1 station since 2018. It delivers regularly pCO_2 data to ICOS-OTC, receives support in data QC (expert advice, data control through SOCAT automated QC routines, secondary carbonate chemistry standards during pandemic shortage), people involved participare regularly to ICOS-OTC meetings
- Other comments

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Summary

- Still very fractured
- Aim is to create a SOP (partly based on ICOS-OTC documents) which helps observations at each site
- SOP/BP for each variable needed
- Help guiding data submission to different databases
- JERICO – more on regular, harmonized observations or development of state-of-the-art methodology and instruments?

D6.8: Data management Best practices and strategy for coastal carbonate system

Requires three steps:

- Creation / adaptation of BP's / SOP's for the relevant observations
- Creation / adaptation of BP QC for the relevant observations
- Selection of a suitable database to submit the data without need to divide it between a number of different databases / data from different databases available with support from a data catalogue, e.g. JERICO-CORE

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41	MARTINS	Inês	Instituto Hidrográfico	marina.martins@hidrografic	AVAILABLE and planning to travel
42	MÖLLER	Klas Ove	HEREON	klas.moeller@hereon.de	AVAILABLE and planning to travel
43	PAPAPOSTOLOU	Athanasia	HCMR	ath.papapostolou@hcmr.gr	AVAILABLE and planning to travel
44	PEARLMAN	Jay	IEEE	jay.pearlman@ieee.org	AVAILABLE and planning to travel
45	PEARLMAN	Francoise	IEEE		AVAILABLE and planning to travel
46	PERIVOLIOTIS	Leonidas	HCMR	lperiv@hcmr.gr	AVAILABLE and planning to travel
47	PETIHAKIS	George	HCMR	gpetihakis@hcmr.gr	AVAILABLE and planning to travel
48	POULAIN	Sebastien	Ifremer	sebastien.poulain@ifremer.f	AVAILABLE and planning to travel
49	PROTSENKO	Elizaveta	NIVA	elizaveta.protsenko@niva.n	AVAILABLE and planning to travel

50	REILLY	Kieran	Marine Institute	kieran.reilly@marine.ie	AVAILABLE and planning to travel
51	REPECAUD	Michel	Ifremer	michel.repecaud@ifremer.fr	AVAILABLE and planning to travel
52	ROMBOUTS	Isabelle	VLIZ	isabelle.rombouts@vliz.be	AVAILABLE and planning to travel
53	RUBIO	Anna	AZTI	Arubio@azti.es	AVAILABLE and planning to travel
54	RÜHL	Saskia	HEREON	saskia.ruehl@hereon.de	AVAILABLE and planning to travel
55	SEPPÄLÄ	Jukka	SYKE	jukka.seppala@syke.fi	AVAILABLE and planning to travel
56	SIMPSON	Pauline	UNESCO/IOC-IODE	p.simpson@unesco.org	AVAILABLE and planning to travel
57	THIJSSE	Peter	MARIS	peter@maris.nl	AVAILABLE and planning to travel
58	VITORINO	Joao	IH	joao.vitorino@hidrografico.p	AVAILABLE and planning to travel
59	VOYNOVA	Yoana	Hereon	Yoana.Voynova@hereon.de	AVAILABLE and planning to travel

TOTAL ATTENDANCE **59**

	BURDEN	joanne	CNRS	joanne.burden@univ-brest.f	Already NOT available - will not travel	1
1	CABRERA	Patricia	VLIZ	patricia.cabrera@vliz.be	Already NOT available - will not travel	2
2	CHARRIA	Guillaume	LOPS/Ifremer	guillaume.charria@ifremer.f	Already NOT available - will not travel	3
3	~~COPPOLA~~	~~Laurent~~	~~LOV CNRS~~	~~laurent.coppola@imev-mer.~~	Already NOT available - will not travel	4
4	DREANNO	catherine	ifremer	catherine.dreanno@ifremer.	Already NOT available - will not travel	5
5	~~EL SERAFY~~	~~Ghada~~	~~Deltares~~	~~ghada.elserafy@deltares.nl~~	Already NOT available - will not travel	6
6	FERNANDEZ	Juan Gabriel	SOCIB	jfernandez@socib.es	Already NOT available - will not travel	7
7	FISCHER	Philipp	AWI	philipp.fischer@awi.de	Already NOT available - will not travel	8
8	FRANGOULIS	Costas	HCMR	cfrangoulis@hcmr.gr	Already NOT available - will not travel	9
9	GORRINGE	Patrick	SMHI	patrick.gorringe@smhi.se	Already NOT available - will not travel	10
10	GRAVES	Carolyn	Cefas	carolyn.graves@cefas.co.ul	Already NOT available - will not travel	11
11	GREENWOOD	Naomi	Cefas	naomi.greenwood@cefas.c	Already NOT available - will not travel	12
12	LANTERI	Nadine	Ifremer	nlanteri@ifremer.fr	Already NOT available - will not travel	13
13	LIZON	Fabrice	CNRS LOG	fabrice.lizon@univ-lille.fr	Already NOT available - will not travel	14
14	MOSTAJIR	Behzad	CNRS-MARBEC	behzad.mostajir@umontpel	Already NOT available - will not travel	15
15	REHDER	Gregor	IOW	gregor.rehder@io-warnemu	Already NOT available - will not travel	16
16	SALTER	Ian	FAMRI	ians@hav.fo	Already NOT available - will not travel	17
17	THYSSEN	Melilotus	CNRS	melilotus.thyssen@mio.osu	Already NOT available - will not travel	18
18	TINTORE	JOAQUIN	SOCIB	jtintore@socib.es	Already NOT available - will not travel	19
19						

JERICO-Days 2022 - IH, Lisbon, Portugal

	LAST NAME	First name	Institute	Tuesday June 28	Wednesday June 29	Thursday June 30
1	**ARTIGAS**	**Luis Felipe**	CNRS-LOG ULCO			
2	**BERRY**	**Alan**	Marine Institute			
3	**BERTA**	**Maristella**	CNR-ISMAR			
4	**BLAUW**	**Anouk**	Deltares			
5	**BORST**	**Kees**	RWS			

6	**BRIX**	**Holger**	HEREON			
7	**BRUNETTI**	**Fabio**	OGS			
8	**CANTONI**	**Carolina**	CNR			
9	**CARVAL**	**Thierry**	Ifremer			
10	**CHARCOS LLORENS**	**Miguel**	SOCIB			
11	**CIANCA**	**Andres**	PLOCAN			
12	**COCQUEMPOT**	**Lucie**	Ifremer			
13	**CREACH**	**Veronique**	cefas			
14	**DEL RIO FERNANDEZ**	**Joaquin**	UPC			
15	**DELORY**	**Eric**	PLOCAN			
16	**DEWEY**	**Richard**	STAC member			
17	**DURAND**	**Dominique**	Covartec			
18	**ENSERINK**	**Lisette**	RWS			
19	**FERNANDEZ**	**Vicente**	EuroGOOS			
20	**FRANÇOIS**	**Bourrin**	CNRS			
21	**FRIGSTAD**	**Helene**	NIVA			

22	**GAUGHAN**	**Paul**	Marine Insitute			
23	**GREMARE**	**ANTOINE**	CNRS-UB			
24	**HONKANEN**	**Martti**	FMI			
25	**KAISER**	**David**	HEREON			
26	**KEEBLE**	**Simon**	Blue Lobster			
27	**KING**	**Andrew**	NIVA			
28	**KOSTNER**	**Nicole**	STAC member			
29	**KRIJGER**	**Tjerk**	MARIS			
30	**LAAKSO**	**Lauri**	FMI			
31	**LEFEBVRE**	**Alain**	Ifremer			
32	**LIBLIK**	**Taavi**	TalTech			
33	**LIMA**	**Vânia**	IH			
34	**LOUGHLIN**	**Christine**	Marine Institute			
35	**MADER**	**Julien**	AZTI			
36	**MAGALDI**	**Marcello**	CNR			
37	**MANTOVANI**	**Carlo**	CNR			

38	**MARINI**	**Simone**	CNR			
39	**MARTINS**	**Inês**	Instituto Hidrográfico			
40	**MÖLLER**	**Klas Ove**	HEREON			
41	**PAPAPOSTOLOU**	**Athanasia**	HCMR			
42	**PEARLMAN**	**Jay**	IEEE			
43	**PEARLMAN**	**Francoise**	IEEE			
44	**PERIVOLIOTIS**	**Leonidas**	HCMR			
45	**PETIHAKIS**	**George**	HCMR			
46	**POULAIN**	**Sebastien**	Ifremer			
47	**PROTSENKO**	**Elizaveta**	NIVA			
48	**REILLY**	**Kieran**	Marine Institute			
49	**REPECAUD**	**Michel**	Ifremer			
50	**ROMBOUTS**	**Isabelle**	VLIZ			
51	**RUBIO**	**Anna**	AZTI			
52	**RÜHL**	**Saskia**	HEREON			
53	**SEPPÄLÄ**	**Jukka**	SYKE			

54	**SIMPSON**	**Pauline**	UNESCO/IOC-IODE			
55	**THIJSSE**	**Peter**	MARIS			
56	**VITORINO**	**Joao**	IH			
57	**VOYNOVA**	**Yoana**	Hereon			
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