Joint European Research Infrastructure network for Coastal Observatory – Novel European eXpertise for coastal observaTories - **JERICO-NEXT**

Deliverable title	Summer school 1
Work Package Title	WP 8: Outreach, communication and engagement
Deliverable number	D8.5
Description	Enhance European human capacity building in operational marine sciences (engaging with education)
Lead beneficiary	Deltares
Lead Authors	Anouk Blauw (Deltares)
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Submitted by	Anouk Blauw (Deltares)
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Revision	**Date**	**Modification**	**Author**
1.1	15 August 2017		Blauw
1.2	4 September 2017	Revision following comments by S. Keeble	Blauw
1.3	5 September 2017	Revision following comments by A. Drago	Blauw

Approvals				
	Name	**Organisation**	**Date**	**Visa**
Coordinator	P. Farcy	IFREMER	05/09/2017	PF
WP Leaders	S. Keeble	Blue Lobster	05/09/2017	SK

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1. Executive Summary

From 19 – 23 June the first jerico-next summer school was held near The Hague (the Netherlands). Twenty-one early career scientists from various disciplines learned about multi-disciplinary monitoring and data analysis. The nearby Sand Motor pilot project area was used as an illustration of the multi-disciplinary approach during the field work and hands-on exercises. Lectures addressed the JERICO-NEXT research infrastructure for coastal waters, monitoring methods, data management and the application of multi-disciplinary data for MSFD and research projects. Several multi-disciplinary research projects were presented in more detail: NatureCoast (on coastal defence), SEACAMS (on tidal renewable energy) and JMP-EUNOSAT (on MSFD eutrophication descriptor). The summer school inspired the students to use multi-disciplinary sensor data in their work and provided the skills and methods for doing this.

2. Introduction

Objectives of the course

The objectives of the course were to:

- Teach young professionals about the capabilities of multi-disciplinary monitoring infrastructures, such as the JERICO-NEXT RI;
- Train them in the use of multi-disciplinary monitoring data.

Selection process

The announcement of the summer school (see Annex A) was distributed in February and March in various ways:

- the JERICO-NEXT network
- the JERICO-NEXT website
- JERICO-NEXT social media
- the Eurocean newsletter
- the coastal-list group
- Deltares Linked-in.

At the deadline for registration at March 15th, 28 students had applied. We selected 24 students with, based on their interest and background. Applications with a vague or unclear relation to the subject of the summer school were rejected. Out of the 24 selected, 5 applicants withdrew, due to other obligations or lack of support from their organisation. We admitted two additional late applicants, resulting in a final number of 21 participants.

Preparation process

During the preparation of the summer school, the scope, announcement and programme have been discussed between the organisers at Deltares (Anouk Blauw, Arjen Luijendijk and Kees den Heijer) and other JERICO-NEXT partners involved in WP8. Also Nicky Villars (Deltares) was involved, since she was involved in the preparation of the summer school in the JERICO project.

Name	Affiliation
Simon Keeble	Blue Lobster
Veronique Creach	CEFAS
Michelle Devlin	CEFAS
Kate Collingridge	CEFAS
Aldo Drago	University of Malta
Adam Gauci	University of Malta
Nicky Villars	Deltares

3. Main report

Course programme

The course programme aimed to have approximately 50% of time dedicated to lectures and 50% to hands-on activities by the students. We started on Sunday afternoon with an icebreaker at a nearby beach club.

Table 3.1: Course programme

Time	Activity	Speaker
Monday	**Introduction**	
9:00 – 9:45	Welcome Introduction to course	Arjen Luijendijk (Deltares)
9:45 – 10:30	Introduction to JERICO-NEXT	Anouk Blauw (Deltares)
	Coffee break	
11:00 – 11:45	Introduction to NatureCoast	Arjen Luijendijk (Deltares)
11:45 – 12:30	Introduction to coastal observatories	Stefan Aarninkhof (Delft University)
	Lunch	
13.30 – 14:45	Students introduce themselves	
	Coffee break	students
15:15 - 16:00	Objectives of marine monitoring	
16:00 - 17:00	Introduction into MSFD and monitoring	Marcel Taal (Deltares) Theo Prins (Deltares)
Tuesday	**Monitoring**	
8:45 – 9:30	HF-radar, Xband radar and ARGUS	Rinus Schroevers (Deltares)
9:30 – 10:30	Phytoplankton analysis	Felipe Artigas (CNRS-France)
	Walk to the beach	
10.45 - 12.15	Drifter measurements	
	Lunch	
13.00 - 14.00	Presentation working with instruments and Sand Motor monitoring	Roeland de Zeeuw (monitoring company: Shore)
14:00 - 17:00	Multidisciplinary monitoring at Sand Motor site and data processing	
Wednesday	**Data interpretation**	
9:15 – 10:00	Introduction into data processing	Fedor Baart (Deltares)
10:00 – 10:45	MSFD - eutrophication	Anouk Blauw (Deltares)
	Coffee break	
11:15 – 12:00	Example of SEACAMS project (Wales) on marine renewable energy	Dave Mills (Bangor University)
	Lunch	
14.00 - 14.45	Introduction in the use of google earth engine for data analysis	Gennadii Donchyts (Deltares)
14.45 – 17:00	Hands-on exercise Google Earth engine	
Thursday	**Data management**:	
9:00 – 9:45	European data landscape	Belen Martín Míguez (EMODNET)
9:45 – 10:30	Data management and sharing	Gerben de Boer (van Oord)
	Coffee break	

Time	Activity	Speaker
11:00 – 11:45	Archiving and publishing citable data	
11:45 – 12:30	Portals for data dissemination	Sharif Islam (SURF SARA)
	Lunch	Willem Stolte (Deltares)
14:00 – 17:00	Hands-on exercise integration of multi-disciplinary data, using data from the Sand Motor monitoring	Arjen Luijendijk (Deltares)
Friday	**Wrap up**	
9:00 – 10:30	Summary of the summer school	Kees den Heijer (Deltares)
	Coffee break	
11.00 - 12.30	Wrap- up & evaluation	Kees den Heijer (Deltares)
	Lunch	

Participants

The participants came from a wide range of disciplines and countries.

Table 3.2: participant list

Gender	Name	Surname	Country	Title	Affiliation
F	Noelia	Fajar	Spain	Postdoc	Spanish Oceanographic Institute (IEO)
F	June	Gainza Thalamas	Spain	Phd-candidate	Hydraulic Institute of Cantabria
M	Eduardo	Gomez	Spain	MSc, Trainee	DG MARE (European Commission)
F	Lucia	Lado Cacheiro	Spain	MSc. trainee	Spanish Oceanographic Institute (IEO)
F	Louise	Lindroos	Finland	Phd-candidate	Åbo Akademi University
M	Victor	Malagon Santos	Spain	Research Associate	Universität Siegen, Germany
M	Diogo	Silva Mendes	Portugal	Phd-candidate	Instituto Superior Tenice (IST)
M	Karel	Buizer	NL	Hydrographer, MSc	Dienst der Hydrografie
M	Matias	Carandell Widmer	Spain	Research engineer	Sarti at Universitat Polictècnica de Catalunya
F	Samantha	Godfrey	UK	Phd-candidate	Univ of Liverpool

Gender	Name	Surname	Country	Title	Affiliation
F	Noora	Haavisto	Finland	Research assistant, MSc	Finnish Meteorological Institute
M	Ben	Phillips	UK	Phd-candidate	Univ of Liverpool
F	Christy	Swann	USA	Scientist, Dr.	Naval Research Laboratory
F	Liliana	Velasquez Montoya	USA	Phd-candidate	North Carolina State University
F	Inne	Withouck	Belgium	Phd-candidate	eCoast
F	Johanna	Wolbring	Germany	Research Associate, MSc	Braunschweig
M	Bob	Smits	Netherlands	Advisor, MSc	Deltares
M	Edward	Salameh	France	Phd-candidate	University of Rouen
F	Charlene	Guillaumot	Brussels	Research Assistant, MSc.	ULB
M	Arnaud	Louchard	France	Phd-candidate	CNRS UMR 8187 LOG
M	Stijn	Bruneel	Belgium	Research Associate, Dr.	University of Gent

Accommodation

The summer school was held in the coastal resort Roompot Kijkduin in the Hague, within walking distance of the Sand Motor beach area. The students stayed in summer cottages that were shared by 3 students. They paid a contribution in the accommodation costs of 150 euro per person.

The lectures were given in a room next to the resort restaurant at the resort.

Evaluations

The summer school was evaluated very positively by the students. They particularly appreciated the hands-on exercises: the monitoring at the Sand Motor area, the use of the Google Earth engine and the use of multi-disciplinary data. Negative points were mostly related to the venue for the lectures: the lunches with Dutch sandwiches were not much appreciated and the room became very hot in the afternoons, especially at the first day. We had exceptionally nice weather during the summer school. Later during the week the lectures were moved to a room downstairs with better temperatures.

Table 3.3: Average scores on aspects of the summer school evaluation

Aspect	Average score
Summer school advertisements	7.7
Application procedure	9.1
Travel information	8.8
Ice breaker & dinner	9.0
Kijkduin location overall	8.0
Kijkduin lodging (bungalows, park)	8.5
Kijkduin lecture room	5.9
Kijkduin lunches (food, length)	7.2
Kijkduin coffee/tea breaks	8.2
Overall theme of summer school:	9.1
Balance topics (1 topic / day)	8.5
Balance lectures / exercises	7.4
Length of summer school (1 or 2 wk)	8.1
Number of participants (21)	9.4
Participant population (domain, sex, land, age)	9.3
Social activities (formally organized)	8.3
Social activities (spontaneous)	9.2
Quality of lectures	8.4

The scores of the individual lectures by individual students were generally high (8 – 10) but also some lower scores were given (Figure 3.1). Reasons given for low scores were mostly the subject (policy-oriented talks scored lower than monitoring oriented lectures) and pace of the talk (some went too fast). Reasons for high scores included the enthusiasm of the speaker and the subject. Individual preferences of students also played a role: some lectures were evaluated with a low score (5-6) by some students and a high score (9-10) by others. No lecture scored lower than 7 on average.

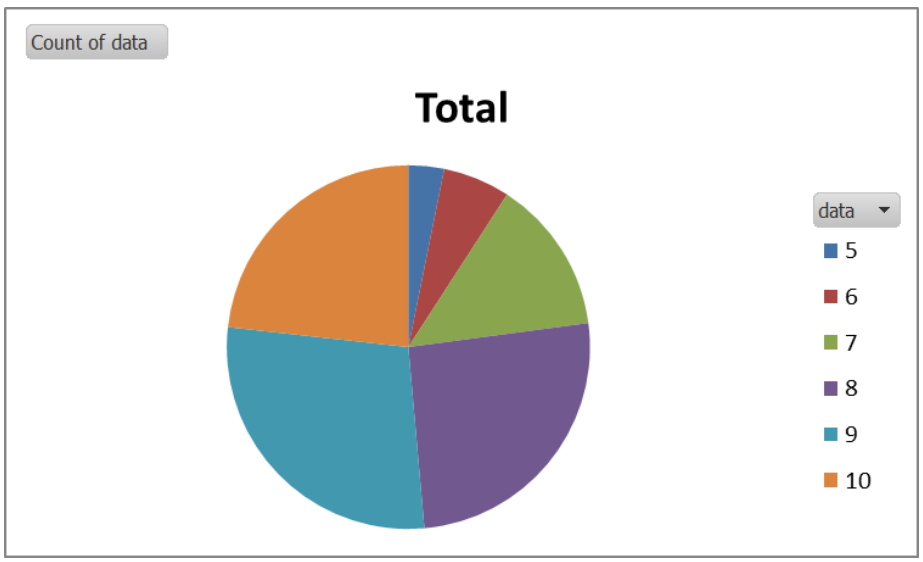

Figure 3.1: Distribution of scores of individual lectures by individual students

Contact after summer school

A Dropbox folder has been created for the students with all the presentations of the summer school. Also a LinkedIn group was formed to stay in contact after the summer school. The students received a certificate of participation in the summer school.

Dissemination

We aim to re-work the presentations of the summer school to online teaching materials in WP8, providing the presenters agree with that.

After the summer school the news item below was published in the JERICO-NEXT newsletter and the Deltares LinkedIn account:

From 19 – 23 June the first JERICO-NEXT summer school was held near The Hague (the Netherlands). Twenty-one early career scientists from various disciplines learned about multi-disciplinary monitoring and data analysis. The nearby Sand Motor pilot project area was used as an illustration of the multi-disciplinary approach during the field work and hands-on exercises. Lectures addressed the JERICO-NEXT research infrastructure for coastal waters, monitoring methods, data management and the application of multi-disciplinary data for MSFD and research projects. Several multi-disciplinary research projects were presented in more detail: NatureCoast (on coastal defence), SEACAMS (on tidal renewable energy) and JMP-EUNOSAT (on MSFD eutrophication descriptor). All-in-all, the students spent an inspiring and pleasant week together by the sea.

Figure 3.2: Group picture of summer school participants at the start of the field work (Credit: Anouk Blauw, Deltares)

Figure 3.3: Going out for water sampling and measurements during field work (Credit: Kees den Heijer, Deltares)

Figure 3.4: Discussion of Cytosense flowcytometry results at the end of the field work (Credit: Anouk Blauw, Deltares)

4. Conclusions

The summer school has created great enthusiasm among a group of young professionals for the multi-disciplinary research infrastructures. We expect this will promote the use of these infrastructures and multi-disciplinary collaboration. Furthermore, the presentations will be used as the basis for online course materials, to be distributed through JERICO-NEXT.

Lessons learned from organizing this summer school include:

- Choice of the lecture room: it should also be convenient at high temperatures
- Students would be willing to pay more for better lunches
- Students would prefer less lectures and more hands-on exercises.

5. Annexes and references

Annex A: summer school announcement

Announcement

From multidisciplinary data to integrated information for coastal areas

The H2020 project JERICO-next will organize a summer school on the use of integrated physical and biological monitoring with novel sensor methods for water management issues such as the Marine Strategy Framework Directive.

The JERICO-next project develops the European network of coastal observatories, including novel sensor methods such as HF radar (for current patterns) and imaging flow cytometry (for phytoplankton functional types and species determination). During this summer school, students will get an introduction and overview on the current state of the art of European coastal observatories and on-going new developments in this field. The new developments include sensor development for a range of ocean variables, the data management and dissemination of large amounts of sensor data, the integration between different types of data and variables and the final use to answer policy questions in coastal waters.

Students will do hands-on exercises on the use of multidisciplinary data in an integrated way, including morphology, hydrodynamics, ecology, chemistry, meteorology, governance. The Sand Motor (see photo) will be used as central showcase and visited for field work during the week.

The summer school will be held from 19-23 June 2017 (Monday – Friday) in a coastal resort near The Hague in the Netherlands. The Sand Motor coastal observatory is close by and will be used for field work in integrated physical and biological monitoring.

The course is geared for early career scientists and scientifically oriented early career marine spatial planners (MSP). There will be a maximum of 30 participants. The summer school programme has no course fees. However, students are expected to arrange for their own funding for accommodation (150 Euro per student for the week), travel and meals.

If you are interested in attending this summer school, please send an application letter with your motivation for joining the course along with your CV and letter of recommendation to jericonext-summerschool-2017@deltares.nl before March 15th 2017. Notifications for admission will be sent before April 1st 2017. Please mind timely visa procedures.

Indicative programme

Time	Subject
Monday - morning	• Welcome • Introduction to course • Introduction to JERICO-next • Introduction to NatureCoast • Introduction to coastal observatories (ICON)
Monday - afternoon	• Students introduce themselves • Objectives of marine monitoring • Introduction into MSFD and monitoring
Tuesday - morning	**Monitoring,** introduction • drone for vegetation and dune development • ARGUS video • HF-radar (incl. Xband radar?) • Flowcytometry • Bathymetry by jetski
Tuesday - afternoon	**Field measurements**: monitoring at beach Sand Motor: jetski, quad and RTK-carrier practical
Wednesday - morning	**Data interpretation** • Introduction with interesting examples • NatureCoast effects observed • MSFD - eutrophication • Analysis of multi-disciplinary data
Wednesday – afternoon	**Integration** of multidisciplinary data: • Introduction • Exercise integration of satellite data with google earth engine • Hands-on exercise
Thursday - morning	Introduction to **data management**: • European data landscape • Data management and sharing • Archiving and publishing citable data • Portals for data dissemination
Thursday - afternoon	Hands- on practice access and use of coastal observatory data
Friday – morning	**Integration** of multidisciplinary data • Introduction • Hands-on exercise
Friday - afternoon	Look into the future Wrap- up & evaluation