

Training courses for students

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1. Introduction

This milestone provides an overview of the training courses that DEVOTES partners have organized during the first 36 months of the project, including the contents and the attendance. The courses have been organized not only to train postgraduate students, but also early career researchers, researchers and managers, as it can be seen in this report. The main objective of these courses has been to disseminate the main findings of DEVOTES project and provide new views for future research. We have divided the typology of the courses into 'Summer schools' and 'Post-graduate training modules and workshops', and both are related to the Task 7.2.5 (Demonstration of developed tools via courses), within Work Package (WP) 7.

2. Summer schools

Based on the DEVOTES DoW, it was expected to organize two summer schools. However, finally, we have organized four. All of them have been organized in San Sebastián (Spain), by AZTI-Tecnalia. The titles, objectives, contents, professors and attendance to each of them are detailed below. The last one will be held in June 2016 and, as such, only the contents are included.

2.1. Summer school 2013

Title: Genomic tools in marine ecosystem monitoring, status assessment and management, within European marine policy legislation and governance

Dates: 15th to 17th July 2013

Participants: 39 attendees from 7 countries: 1 from Portugal, 1 from UK, 1 from Lithuania, 1 from Denmark, 1 from Sri Lanka, 2 from Italy, 1 from Byelorussia and 31 from Spain.

Objectives: Attendees acquired new knowledge on recent trends in marine research, related to management of our oceans. In this way, the increasing interest in marine ecosystem protection and sustainable use of oceans has developed in national ocean policies (e.g. U.S. National Ocean Policy and Australia's Ocean Policy), legislation (e.g. Canada Oceans Act) and regional ocean governance strategies (e.g. the Marine Strategy Framework Directive or the Common Fisheries Policy, in Europe) focusing on integrative tools for marine resources management and assessing environmental status. Genomic technologies come up as an efficient and standardizable alternative to traditional monitoring and analytical methods, providing more comprehensive results or allowing addressing questions that were not possible to address before. This Summer School explored the potential and recent advances in the use of genomic technologies, such as metagenomics, population genomics or transcriptomics in different monitoring and assessment networks and research projects, such as in DEVOTES. Hence, the objectives of the school were to give an overview on the genomic application to ocean and coastal management, assessment and monitoring, supporting informed ocean governance for resilience and sustainability in a changing world.

Programme:

Date: 15th July

9:15 Introduction	European marine policy legislation: opportunities for genomic tools Prof. Angel Borja (AZTI-Tecnalia, Pasaia)
10:45 Lecture	Introduction to marine 'omics': applications and recent advances Prof. Naiara Rodríguez-Ezpeleta (AZTI-Tecnalia, Sukarrieta)
12:15 Lecture	Marine phylogenomics: suitable tools for European directives

Prof. Naiara Rodríguez-Ezpeleta (AZTI-Tecnalia, Sukarrieta)

Date: 16th July

- 9:15 Lecture Review of marine viral ecology and the development of metagenomic approaches to assess viral diversity
Prof. Roberto Danovaro (Polytechnic University of Marche, Italy)
- 10:45 Lecture Uncovering marine microbes through environmental sequencing
Prof. Ramón Massana (Institut de Ciències del Mar, CSIC, Barcelona)
- 12:15 Lecture Population genomics applied to marine fisheries
Prof. Dorte Bekkevold (Technical University of Denmark)

Date: 17th July

- 9:15 Lecture Use of recent metagenetic approaches in ecology: estimating the actual biodiversity of metazoa
Prof. Roberto Danovaro (Polytechnic University of Marche, Italy)
- 10:45 Lecture Genomics in aquaculture and in assessing its impact
Prof. Dorte Bekkevold (Technical University of Denmark)
- 12:15 Lecture Single cell genomics as a tool in microbial ecology
Prof. Ramón Massana (Institut de Ciències del Mar, CSIC, Barcelona)

2.2. Summer school 2014

Title: From Species to Ecosystems: Modelling Marine Ecology for Management Applications

Dates: 15th to 17th July 2014.

Participants: Attendees 69 from 15 countries: 1 from Belgium, 1 from Canada, 3 from Croatia, 2 from Denmark, 1 from Finland, 3 from France, 5 from Germany, 5 from Italy, 1 from Norway, 1 from Poland, 10 from Portugal, 29 from Spain, 1 from Sweden, 1 from The Netherlands and 5 from United Kingdom.

Objectives: Attendees acquired new knowledge on recent trends in marine research, related to management of our oceans. This Summer School explored the potential and recent advances in the use of marine modelling (some of them developed in DEVOTES), at different scales (from species to ecosystems), in management applications, including scenarios of climate change. Hence, the main objective of the school was to give an overview on the marine modelling to ocean and coastal management, with a closer view to the European Marine Strategy Framework Directive (MSFD), especially in descriptors such as: biodiversity, fishing, food-webs and seafloor integrity.

Programme:

Date: 15th July: Modelling species and habitats

- 9:15: Introduction: short introduction on why this course and the applications, including some comments on the DEVOTES project (Angel Borja, AZTI, Spain)
- 9:30: Modelling suitable habitats for species: the case of lobster *Homarus* (Ibon Galparsoro, AZTI, Spain)
- 11:00: Modelling suitable habitats for species: the case of plankton and seagrasses (Guillem Chust, AZTI, Spain)
- 12:00: Integrating food web and bottom up dynamics into top down modelling (Eider Andonegi, AZTI, Spain)

Date: 16th July: Modelling communities and food webs

- 9:00: Modelling benthic and planktonic communities, including connectivity (Guillem Chust, AZTI, Spain)
- 10:00: Understanding the mechanics of marine food webs (Axel Rossberg, Cefas, UK)
- 11:30: Applying food-web theory for management and the Marine Strategy Framework Directive (Axel Rossberg, Cefas, UK)
- 12:30: Taking into account uncertainty when modelling food-webs (Nathalie Niquil, CNRS, France)

Date: 17th July: Modelling ecosystems

- 9:00: Characterizing food-web properties with Ecological network analysis, implications for the MSFD (Nathalie Niquil, CNRS, France)
- 10:45: Climate forced simulations of marine ecosystems (Icarus Allen, Plymouth Marine Laboratory, UK)
- 12:15: Operational Ecology: Marine ecosystem modelling for European directives (Icarus Allen, Plymouth Marine Laboratory, UK)

2.3. Summer school 2015

Title: Integrative assessment of marine systems: the Ecosystem Approach in practice

Dates: 8th to 11th June 2015.

Participants: 92 attendees from 23 countries: 1 from Belgium, 1 from Bulgaria, 1 from Chile, 1 from China, 2 from Denmark, 1 from Equator, 1 from Estonia, 4 from Finland, 3 from France, 5 from Germany, 2 from Greece, 2 from Ireland, 2 from Italy, 1 from Mexico, 1 from Morocco, 3 from Norway, 11 from Portugal, 2 from Saudi Arabia, 39 from Spain, 1 from Netherlands, 1 from Turkey, 6 from United Kingdom, and 1 from USA.

Objectives: The course was included into the first scientific priority and emerging fields identified by the FP7 EuroMarine programme (Understanding marine ecosystems for healthy oceans). Additionally, it was considered one of the six 'emerging fields' identified: "Complex interactions including tipping points, regime shifts and shifting assemblages in marine ecosystems", since the management of marine ecosystems require a deep understanding of: (i) the complex interactions between human pressures and ecosystem responses; (ii) the interactions between the multiple ecosystem components, often non-linear by nature; (iii) the shifting baselines of the targets used to assess environmental status, underlying different components of global change; (iv) the pluridisciplinary dimension of ecosystem management (including the scientific diversity among managers and scientists) and (v) the need to address both socio-economic and environmental issues.

This course addressed technical developments or methodological issues, such as those linked to the different methods needed to assess the marine ecosystem status in an integrative way (under an ecosystem-based approach), approaches needed to aggregate information at multiple scales (spatial, temporal, across ecosystem and biodiversity components, etc.) or new monitoring methods needed to get cost-effective tools to assess the status of marine ecosystems (e.g. using genomic tools, acoustic devices, etc.). This way, the course built across the 3 primary communities included in Euromarine: EUROCEANS (because of the strong management and scientific background of the course), Marine Genomics Europe (because of the important development in DEVOTES linked to genomics at different biodiversity levels, that will be included in the course) and MARBEF (because of the importance of biological components in assessing the status of marine waters, as highlighted in this course). This represented a positive networking role of the summer school, bringing together different members of those communities with a common objective.

The attendees acquired new knowledge on recent trends in marine research, related to management of our oceans. This course explored the potential and recent advances in the integrative assessment of marine systems (based upon strong new monitoring tools, such as genomics), including the various ecosystem components (from plankton to marine mammals), at different scales (from water bodies to regional seas), in management applications (e.g. to the European Marine Strategy Framework Directive (MSFD), the Water Framework Directive (WFD), etc.). Hence, the main objective of the school was to give an overview on the integrative assessment to ocean and coastal management using an ecosystem approach view.

Programme:

Date 9th June: Introduction to the topic

9:00: The need of assessing the status of oceans and seas (Angel Borja, AZTI, Spain).

10:00: Understanding the response of marine systems to human pressures (Mike Elliott, University of Hull, UK)

11:30: Designing cost-effective environmental monitoring for adequate ecosystem assessment (Sabine Cochrane, Akvaplan-NIVA, Norway).

12:30: Monitoring different ecosystem components using innovative genomic approaches (Naiara Rodríguez-Ezpeleta, AZTI, Spain).

16:00: Interactive session with the participants: Workshop on 'what do we mean by marine environmental health, how do we measure that a system is healthy and how do we communicate this to a non-specialised audience'. Chaired by Mike Elliott (UK), and assisted by the remainder professors.

Date: 10th June: Methods to assess the status in marine waters

9:00: The Ocean Health Index at global and regional scale (Julie Stewart, University of California, Santa Barbara, USA).

10:00: Having a look behind the Ocean Health Index curtains (Julie Stewart, University of California, Santa Barbara, USA).

11:30: Ecosystem health of the Baltic Sea: converging tools for eutrophication, biodiversity and chemical status to an integrative assessment of the Environmental Status (Jesper H. Andersen, NIVA-Denmark, Denmark).

12:15: Understanding and using web based tool to assess status of marine biodiversity according to the Marine Strategy Framework Directive developed by MARMONI project (Georg Martin, University of Tartu, Estonia).

13:00: Assessing cumulative anthropogenic impacts on the marine ecosystem: progress in Europe and interesting challenges (Samuli Korpinen, SYKE, Finland).

16:00: Presentation of posters and discussion in the coffee room

17:00: Round-Table with the professors on assessment tools. Open discussion with the attendees

Date: 11th June: Assessing the status and measuring uncertainty

9:00: The DEVOTES tool to assess the biodiversity status within the European seas (Torsten Berg, Marlim, Germany).

10:00: Investigating the uncertainty of assessment methods: from indicators to overall assessments (Jacob Carstensen, Aarhus University, Denmark).

11:30: The interest of assessment tools for stakeholders and managers: the perspective of regional seas (Anna-Stiina Heiskanen, SYKE, Finland).

12:30: Integrating information to assess the status under an ecosystem approach management (Angel Borja, AZTI, Spain).

2.4. Summer school 2016

Title: Marine ecosystem services, management and governance: linking social and ecological research

Dates: it will be held from 7th to 9th June 2016.

Participants: we expect between 70 and 80 attendees

Objectives: The topic proposed for this summer school relates to marine ecosystem services and the links between their assessment, mapping and the need for a socio-ecological framework to address the important management issues related to the governance of the oceans. Governing the oceans and keeping them in a healthy state requires activities at sea to be sustainable, so that the ecosystem services provided by the oceans and the functionality of the ecosystems can be maintained.

The attendees will acquire new knowledge on recent trends in marine research, in relation to the management and governance of our oceans. This summer school will focus on the integration of different sciences (i.e. social, economic and ecological) as a means to enhance the potential of our oceans through adequate management and governance, for which assessment and mapping of ecosystem services is crucial. This course will explore this at different spatial scales and in management and governance applications (e.g. to the European Marine Strategy Framework Directive (MSFD), the Water Framework Directive (WFD), the Biodiversity Strategy 2020; etc.). Hence, the main objective of the school is to give an overview on ecosystem services assessment, and its relationship with ocean and coastal livelihoods, management and governance.

This objective is aligned with current concerns that multiple EU-marine related policies (e.g., new Common Fisheries Policy, Integrated Maritime Policy, MSFD, WFD, Habitats and Birds Directives, Maritime Spatial Planning, etc.), strategies (i.e. Blue Growth, Biodiversity and Smart Growth strategies) and international agreements (E.g. OSPAR, HELCOM, Convention on Biological Diversity, etc.) converge and in some cases overlap, all with the clear objective of maintaining the oceans in a healthy state, but making management of marine ecosystems and resources rather complex.

Together with EU projects which have worked on this topic (e.g. VECTORS, DEVOTES), the training of attendees to the school will promote the implementation of the abovementioned directives and strategies, assisting managers and stakeholders in a better understanding of the oceans and an adequate implementation.

Programme:

Date 7th June: Introduction to the course and ecosystem services in practice (evaluation, mapping, etc.)

9:00: Welcome and introduction to the course (Angel Borja, AZTI, Spain).

9:30: Marine ecosystem services: Linking indicators to their classification (Melanie Austen, Plymouth Marine Laboratory, UK)

11:00: Non-market values for ecosystem services (Kerry Turner, University of East Anglia, UK)

12:00: Market values for ecosystem services (Arantza Murillas, AZTI, Spain).

16:00: Interactive session with the participants: What do you think ecosystem services are? Capacity, flow and benefits. Chaired by Kerry Turner, assisted by the remainder professors.

Date 8th June: Ecosystem services management

9:00: Integrated valuation of ecosystem services (Erik Gómez-Baggethun, Norwegian Institute of Nature Research, Norway).

10:00: Modelling of capacity flow and demand of marine ecosystem services (Camino Liqueste, Joint Research Centre, EU)

11:30: Predicting Ecosystem Services changes in the future: the developing role of socio-ecological modelling (Melanie Austen, Plymouth Marine Laboratory, UK)

12:30: Cost-Benefit Analysis of environmental management measures applying the ecosystem approach (Soile Oinonen, SYKE, Finland)

16:00: Presentation of posters and discussion in the coffee room

17:00: Round-Table with the professors. Open discussion with the attendees

Date 9th June: The science-policy interface and the role of science in governance

9:00: Linking social and ecological sciences in marine governance (Mike Elliott, University of Hull, UK).

10:00: Ecosystem services in the Regional seas' holistic assessments (Anna-Stiina Heiskanen, Finland)

11:30: Gaps and overlaps in the integration of EU marine-related policies (Mike Elliott, University of Hull, UK)
12:30: Beyond EU policies: EU strategies and international agreements (María C. Uyarra, AZTI, Spain)
13:30: Wrap-up of the course (Angel Borja, AZTI, Spain)

3. Post-graduate training modules and workshops

Post-graduate training modules were presented in the context of the EU *Erasmus Mundus* programme. These were especially the *Erasmus Mundus* Master courses (EMMC) in Water and coastal management (WaCoMa) as well as the EMMC in Marine biodiversity and conservation (EMBC). The modules were also open to and attended by participants in other EMMCs, particularly Ecohydrology, EMQAL (Quality in Environmental Analytical Laboratories and ChIR (Chemical Innovation and Regulation).

Workshops were held for Early Career Researchers (ECR) in the context of the EU *Erasmus Mundus* Joint Doctorate (EMJD) in Marine and coastal management (MaCoMA).

3.1. Post-graduate modules and workshops in 2013

Dates	Location	Participants/ Courses	Title and Objectives
28Jan-01Feb 2013	U.Cadiz	10 ECR EMJD MACOMA	Biodiversity and Marine Management The objective of this workshop for Early Career Researchers was to recruit PhD candidates to carry out their Doctoral Research in the framework of DEVOTES. Of the 10 ECR who participated, 5 expressed an interest in pursuing their research in the framework of DEVOTES.
11Feb-15Feb 2013	U.Cordoba	4 ECR EMJD MACOMA	Biodiversity and Marine Management During this workshop, 4 Early Career Researchers presented their plan for Doctoral Research in the framework of DEVOTES, 1 in WP 1 (Sirak Robele), 1 in WP4 (Prabath Jayasingue), 2 in WP5 (Sonia Cristina and Priscila Goela).
18Feb-23Feb 2013	U.Algarve, Sagres	2 ECR EMJD MACOMA	Remote Sensing of Chlorophyll and Chemtax During this field training, 2 Early Career Researchers learned skills necessary for the sea-truthing of satellite products including the analysis of photosynthetic pigments by HPLC and ChemTax necessary for their Doctoral Research in the framework of DEVOTES, in WP5 (Sonia Cristina and Priscila Goela).
1Apr 2013	U.Algarve	8 ECR EMJD MACOMA	Marine Management Workshop During this workshop, Early Career Researchers presented progress on their Doctoral Research to new PhD candidates.
2Apr-5Apr 2013 29Apr-03Mar 2013	U.Algarve U.Cadiz	EMMCs <ul style="list-style-type: none"> • 20 EMBC • 18 Ecohydrology • 15 WaCoMa 	Eutrophication (D5) and Biodiversity (D1) This 2 ECTS postgraduate module was offered to postgraduate students from 3 different Master courses. The course introduced the students to the MSFD, the concept of Good Environmental Status, Descriptor 1 (biodiversity) and Descriptor 5 (Eutrophication). The course explored the links between D1 and D5, adaptive management of Eutrophication and mitigation of eutrophication by ecohydrological approaches.
23Sep-27Sep 2013	U.Bologna	5 ECR EMJD MACOMA 12 EMMC WACOMA	Biodiversity and Marine Management The objective of this workshop for Early Career Researchers was to recruit new PhD candidates and Master students to carry out their Research in the framework of DEVOTES. 2 new PhDs (Bruno Frago and Sergei Danchenko) were recruited, as well as 1 Master student (Miguel Inacio).

3.2. Post-graduate modules and workshops in 2014

Dates	Location	Participants/ Courses	Title and Objectives
27Jan- 31Jan 2014	U. Barcelona	12 EMMC EMQAL	Environmental legislation, monitoring plans and analyses This 2 ECTS postgraduate module was offered to postgraduate students from the Master course in Environmental Quality in Analytical Laboratories. The course introduced the students to different EU legal instruments in environmental policy, such as the bathing water directive, the shellfish water directive, the WFD and the MSFD. Students were trained to develop cost-effective monitoring plans for the assessment of water quality as well as ecological and environmental status for the implementation of the various policies.
05Feb- 07Feb 2014	U.Cadiz	6 ECR EMJD MACOMA 15 EMMC WACOMA	Biodiversity and Marine Management The objective of this workshop for Early Career Researchers was for the PhD candidates and Master students to present the progress of their research in the framework of DEVOTES.
17Feb- 21Feb 2014	U.Algarve	EMMCs • 20 EMBC • 15 Ecohydrology	Eutrophication (D5) and Biodiversity (D1) This 2 ECTS postgraduate module was offered to postgraduate students from 2 different Master courses. The course introduced the students to the MSFD, the concept of Good Environmental Status, Descriptor 1 (biodiversity) and Descriptor 5 (Eutrophication). The course explored the links between D1 and D5, adaptive management of Eutrophication and mitigation of eutrophication by ecohydrological approaches.
10Mar - 14Mar 2014	U.Cadiz	12 EMMC WaCoMa	Adaptive management frameworks and social-ecological systems This 2ECTS postgraduate module was offered to master students of Water and coastal management. The course introduced the students to the ecosystem based approach and adaptive management frameworks (DPSIR, SAF...) applied to coasts and regional seas.
24Mar - 28Mar 2014	U.Algarve	10 EMMC ChIR	Environmental regulation, priority substances and contaminants of seafood This 2 ECTS postgraduate module was offered to master students of Chemical innovation and regulation. The module introduced the students to drivers and activities resulting in pressures of priority substances and contamination of water (D8 of the MSFD) and seafood (D9 of the MSFD). The module then focused on the assessment of environmental and ecological status, adaptive management responses, measures and recommendations, as well as chemical innovation.
21Apr- 23Apr 2014	U.Cadiz	12 EMMC WaCoMa	Coasts of the world and marine management This 2 ECTS postgraduate module was offered to master students of Water and coastal management. The module introduced the students to Drivers, activities and pressures on coasts with a catchment-Regional Seas approach. The module then focused on environmental and ecological status as well as

Dates	Location	Participants/ Courses	Title and Objectives
			adaptive management responses, measures and recommendations.
02Jun-06Jun 2014	U.Cadiz	12 EMMC WaCoMa	Eutrophication (D5) and Biodiversity (D1) This 2ECTS postgraduate module was offered to master students of Water and coastal management. The course introduced the students to the MSFD, the concept of Good Environmental Status, Descriptor 1 (biodiversity) and Descriptor 5 (Eutrophication). The course explored the links between D1 and D5, adaptive management of Eutrophication and mitigation of eutrophication by ecohydrological approaches.
30Jun-01Jul 2014	U.Alg	5ECR EMJD MACOMA	Ocean acidification and Biodiversity This 2 day workshop for Early Career Researchers focused on the effect of ocean acidification as one of the multi-stressors on marine biodiversity.
22Sep-26Sep 2014	U.Bologna	4ECR EMJD MACOMA	Biodiversity and Marine Management The objective of this workshop for Early Career Researchers was to recruit new PhD candidates and Master students to carry out their Research in the framework of DEVOTES. 3 new PhDs (Arthur Tuda, Margaret Owur and Baravi Thaman) were recruited, as well as 2 Master students (Leo Berninsone and Nancy Awuor).
29Sep-30Oct 2014	U.Algarve, Sagres	2 ECR EMJD MACOMA 1 EMMC WACOMA	Adaptive management frameworks and social-ecological systems The objective of this workshop for Early Career Researchers was for 2 PhD candidates (Sirak Robele and Pablo Ramos) and 1 Master student to present the progress of their research on adaptive management frameworks and social-ecological systems.

3.3. Post-graduate modules and workshops in 2015

Dates	Location	Participants/ Courses	Title and Objectives
14Apr-15Apr 2015	U.Algarve	14 ERC EMJD MACOMA 3 EMMC WACOMA	Marine Management Workshop During this workshop, Early Career Researchers and Master students presented progress on their research.
11May-15May 2015	U. Bergen	8 EMMC EMQAL	Environmental legislation, monitoring plans and analyses This 2 ECTS postgraduate module was offered to postgraduate students from the Master course in Environmental Quality in Analytical Laboratories. The course introduced the students to different EU legal instruments in environmental policy, such as the bathing water directive, the shellfish water directive, the WFD and the MSFD. Students were trained to develop cost-effective monitoring plans for the assessment of water quality as well as ecological and environmental status for the implementation of the various policies.

Dates	Location	Participants/ Courses	Title and Objectives
25May- 29May 2015	U.Cadiz	8 EMMC WaCoMa	Adaptive management frameworks and social-ecological systems This 2ECTS postgraduate module was offered to master students of Water and coastal management. The course introduced the students to the ecosystem based approach and adaptive management frameworks (DPSIR, SAF...) applied to coasts and regional seas.
01Jun- 05Jun 2015	U.Barcelona	6 EMMC ChIR	Environmental regulation, priority substances and contaminants of seafood This 2 ECTS postgraduate module was offered to master students of Chemical innovation and regulation. The module introduced the students to drivers and activities resulting in pressures of priority substances and contamination of water (D8 of the MSFD) and seafood (D9 of the MSFD). The module then focused on the assessment of environmental and ecological status, adaptive management responses, measures and recommendations, as well as chemical innovation.
23 Nov- 28Nov	U.Algarve, Sagres	6 ERC EMJD MACOMA	Marine Management Workshop During this workshop, Early Career presented progress on their research in the context of DEVOTES and planned the final year.

3.4. Post-graduate modules and workshops planned for 2016

Dates	Location	Participants/ Countries	Title and Objectives
19Jan	DGRM Lisbon	MSFD managers	Eutrophication (D5) and Biodiversity (D1) This module is offered to marine managers. The module will explore the links between D1 and D5, adaptive management of Eutrophication and mitigation of eutrophication by ecohydrological approaches.
16May- 20May	U. Gdansk	EMMC EMQAL	Environmental legislation, monitoring plans and analyses This 2 ECTS postgraduate module will be offered to postgraduate students from the Master course in Environmental Quality in Analytical Laboratories. The course will introduce the students to different EU legal instruments in environmental policy, such as the bathing water directive, the shellfish water directive, the WFD and the MSFD. Students will be trained to develop cost-effective monitoring plans for the assessment of water quality as well as ecological and environmental status for the implementation of the various policies.
23May- 27May	U.Bologna	EMMC ChIR	Environmental regulation, priority substances and contaminants of seafood This 2 ECTS postgraduate module will be offered to master students of Chemical innovation and regulation. The module will introduce the students to drivers and activities resulting in pressures of priority substances and contamination of water (D8 of the MSFD) and seafood (D9 of the MSFD). The module will then focus on the assessment of environmental and ecological status,

Dates	Location	Participants/ Countries	Title and Objectives
			adaptive management responses, measures and recommendations, as well as chemical innovation.
To be fixed	U.Cadiz	EMMC WaCoMa	Adaptive management frameworks and social-ecological systems This 2ECTS postgraduate module will be offered to master students of Water and coastal management. The course introduces the students to the ecosystem based approach and adaptive management frameworks (DPSIR, SAF...) applied to coasts and regional seas.
To be fixed	Athens	Marine managers Barcelona convention	Training workshop for use of DEVOTES tools for Marine Assessments This workshop will be organized in conjunction with the officers of the Barcelona convention and offered to Marine managers. Prior information will allow the participants to bring their data sets so they can learn to use them with the tools. Example data sets will also be provided if necessary.
To be fixed	Istanbul	Marine managers Bucharest Convention	Training workshop for use of DEVOTES tools for Marine Assessments This workshop will be organized in conjunction with the officers of the Bucharest convention and offered to Marine managers. Prior information will allow the participants to bring their data sets so they can learn to use them with the tools. Example data sets will also be provided if necessary.
To be fixed	London	Marine managers OSPAR	Training workshop for use of DEVOTES tools for Marine Assessments This workshop will be organized in conjunction with the officers of OSPAR and offered to Marine managers. Prior information will allow the participants to bring their data sets so they can learn to use them with the tools. Example data sets will also be provided if necessary.
To be confirmed	Turku or Helsinki	Marine managers HELCOM	Training workshop for use of DEVOTES tools for Marine Assessments This workshop will be organized in conjunction with the officers of HELCOM and offered to Marine managers. Prior information will allow the participants to bring their data sets so they can learn to use them with the tools. Example data sets will also be provided if necessary.
Oct 2016	U.Algarve or U.Cadiz	EMJD MACOMA	Marine Management Workshop During this workshop, Early Career Researchers and Master students presented results of their research in the context of DEVOTES.

4. Summary of the courses organized

This table provides a summary of the number of attendees to the courses and the number of countries the participants of summer schools came from.

	2013	2014	2015	2016
Summer Schools*	Genomics	Modelling	Assessment	Services
Attendees	39	69	92	
Countries	7	15	23	
Modules/Workshops, number offered/planned	6	10	5	9 planned
Post-Grads and Early Career Researchers**	94	115	45	

* Both the number of attendees and countries of origin have increased through the years.

** Some attended more than one module/workshop