

BOOK OF ABSTRACTS



International Symposium on
**Integrated Coastal Zone
Management**

Hosted by the Institute of Marine Research, Norway



INSTITUTE OF MARINE RESEARCH
HAVFORSKNINGSINSTITUTTET

ARENDAL, NORWAY, 3-7 JULY 2011

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ICESCIEM



2ND INTERNATIONAL SYMPOSIUM ON
Integrated Coastal Zone Management

Arendal, Norway, 3–7 July 2011

Hosted by

THE INSTITUTE OF MARINE RESEARCH

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Erlend Moksness, Norway

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FOREWORD

Dear participants,

Welcome to Norway and Arendal for this 2nd Symposium on Integrated Coastal Zone Management, which take place approximately four years after the first symposium. Coastal waters around the globe suffer from strain due to a wide range of human activities. The situation calls for a holistic approach, combining expertise from nature science and social science, to reach a balanced and sustainable development of the coastal zone. For this reason, many disciplines are needed to work out the optimal management strategy for the coastal zone, which is reflected in the contributions to this Symposium. This international multi-disciplinary conference intends to promote science and integration of knowledge for the sustainable management of coastal resources. It provided a venue for scientists, engineers, managers and policy-makers to discuss recent advances and innovative ideas, share experiences and develop networks. The strength of the first symposium was that there were no parallel sessions, resulting in that all participants had to learn from each other independent of their own background and interest. However, this is a must to ever obtain the integrated part of ICZM. We decided to continue this strategy also at this present symposium. The contributions reflect the world-wide interest for this issue, by presentations from more than 35 countries. We do realize that the financial situation around the world is difficult and the likely reason for the lower number of participants this time. For this reason approximately 30% of the budget goes to support participation from several countries around the world. Our goal is that this Symposium will give an opportunity for all of us to learn, create new contacts, and improve our future management of the coastal zone.

I hope you will enjoy Arendal and the Symposium and wish you all the best.

Erlend Moksness
(Convener)

WELCOME

Dear participants,

On behalf of the Institute of Marine Research, it is a pleasure for me to welcome you to this 2nd International Symposium on Integrated Coastal Zone Management. Our Institute has for more than 100 years performed studies and monitoring of living resources and environmental conditions, both in the oceans and along the coast. The data collected and knowledge gained has formed the basis for our advices to the authorities, with more and more focus on “an ecosystem or holistic approach” and what is sustainable management, the recent years. Not at least has the increasing and complex pressure from different anthropogenic activities on the coastal zone become a challenge to our role as advisors to authorities. The Institute of Marine Research is owned by the Ministry of Fisheries and Coastal Affairs in Norway, and our vision is “knowledge and advice for rich and clean marine and coastal regions”. We have ambitions to be among the international leaders in marine research and management advice. Our Research Station Flødevigen, located here in Arendal, was established 129 years ago. At present the “The coastal zone ecosystem programme” at the Institute of Marine Research, covering the whole Norwegian coast, is organized from Flødevigen. Fields of responsibilities of the programme include, mapping of marine nature and habitats, monitoring of environment and living resources, studies of introduced species, studies in ecology of fjords and development of environmentally and resources-friendly capture methods. Our overall goal is to establish a sound scientific basis for advice to our authorities, both at national, regional and local levels, for sustainable management of our coastal ecosystems.

The Norwegian coast covers four different eco-regions, from the Skagerrak to the Barents Sea, and the coastal waters along Norway are highly productive and present a high biodiversity. Most Norwegians lives at, or close to, the coast, and “goods” and “services” form the marine coastal waters are essential for residents and wealth creation. Many of the fisheries in Norway are dependent on clean and rich coastal ecosystems, which function as areas for feeding and spawning and as nursery grounds. And the Norwegian aquaculture industry benefits from clean and sheltered sites for their installations. The coastal zone in Norway experiences an increasing pressure due to a wide range of human activities such as transport, fishing, wind farms, aquaculture, different industry and recreation, and involvement from many stakeholders. To address the many and complex issues and challenges in the coastal zone, interdisciplinary research is required to support the ambition of implementing Integrated Coastal Zone Management. Therefore, we see our work in the coastal zone as significantly important to provide information for comparative analysis and exchange of practice in ICZM. I see this Symposium as an important event in our work, and I hope you will experience the same and that the Symposium will be of significant value in your future work.

I hope you will enjoy the town of Arendal and the nearby area. I wish you all the best.

Tore Nepstad
Managing director

OPENING CEREMONY



Kirsten Bråten Berg (born in Arendal), educated as silversmith at Oslo Yrkesskole an Torleiv H. Bjorgums Workshop in Setesdal. Now she has her own workshop in Nomeland, Setesdal. She started to sing traditional folksongs in 1970 and joined a course in Oslo where Agnes Buen Garnas was teaching. Since the late seventies she has given concerts and made many records.

In 1990 she met the bass player Arild Andersen. They had some duo concerts before the cooperation "Sagn", Vossajazz-92. After that Kirsten became a member of Arild Andersen Group. The latest cooperation is "Arv", ordered by Grieg Jubileet and Nattjazzen in Bergen, 1993.

Kirsten has lived in Setesdal 20 years, and has become a part of the traditional folk music there. She also gets inspirations from other districts in southern Norway. She doesn't have any music education, but learned the songs from elder people or tapes. She has spent much time to get knowing old folkmusicians. She also teaches at the Music School in Valle.



Øystein Djupedal has held the office of County Governor of Aust-Agder County since 2009.

Prior to his most recent appointment, he led an active career in politics, as a member of the Socialistic Left Party Member. Between 1993 and 2009 Mr Djupedal was a Member of Parliament and he was also a member of Stoltenberg's second Government. Mr Djupedal was the Minister of Education and Research (2005) and subsequently the Minister of Knowledge following restructuring in 2006 and remained until 2007. This Government is known as The Red-Green Coalition Government and is also the first ever Government to house a majority of women representatives.

Mr Djupedal was also the Deputy party leader of the Socialistic Left Party between 1997 – 2005. He has been involved in several committees, among some as a Member of the Church-, Education- and Research committee between 1997-2005, Member of the Expanded Foreign Affairs Committee from 2001 to 2005 and deputy leader in the Control and Constitutional Committee from 2007 to 2009. Mr Djupedal holds chairs in various Norwegian organizations.

SOCIAL PROGRAMME

SUNDAY 3 JULY

1900–2100 Welcome reception, Host: Arendal municipality and Mayor Torill R. Larsen

MONDAY 4 JULY

1930–2130 Reception at the Institute of Marine Research, Flødevigen Research Station



WEDNESDAY 5 JULY

2000 Banquet at Tyholmen Hotel

KEY NOTE SPEAKERS

Tom Hopkins



Prof. Tom Hopkins is an Emeritus Professor of Oceanography and Environmental Science from North Carolina State University. He has a long career of research and education in these fields both in the United States and in Europe (<http://www.meas.ncsu.edu/03-emeritus.html>). Currently, he is employed as a Senior Scientific Advisor with the CNR Institute of Marine Coastal Environment in Naples, Italy where he is serving as scientific co-coordinator of the Integrated Project SPICOSA (6th FP) that is developing the System Approach Framework for science and policy integration in support of Integrated Coastal Zone Management.

Torjan Bodvin



Torjan Bodvin is senior advicer at Institute of Marine Research, Norway, where he is in charge of mapping and valuation of marine habitats in coastal waters. His main research activity is linked to ICZM, Marine Spatial Planning and active management of coastal resources based on amount and ecological “value” of marine habitats. In addition, he is also in charge of development of management plans for oysters (both *Ostrea edulis* and *Crassostrea gigas*). His main background is as a research manager in aquaculture for 15 years, mainly linked to marine species and “green technology”.

Tron Frede Thingstad



Tron Frede Thingstad is professor in microbiology at the Department of Biology, University of Bergen, Norway where he is head of the research group in marine microbiology. His main research field is the microbial part of the marine pelagic food web (prokaryotes, protists and viruses) in general and a particular interest in how system properties such as nutrient cycles and biodiversity emerges from the interactions between the microorganisms and between the microorganisms and their environment. Experimental work includes investigations on the microbial phosphorous cycle in Norwegian fjords and in the Mediterranean and the relationships between phytoplankton-bacteria competition for mineral nutrients and the system's degradation potential for organic matter in coastal waters waters using mesocosm experiments. Thingstad is listed by ISI as highly cited researcher in the field of plant and animal sciences and has recently received an EU- advanced researcher's grant.to study microbial network organization.

Tim Smith



Professor Tim Smith PhD is the Director of the Sustainability Research Centre at the University of the Sunshine Coast (USC). Prior to his appointment with USC in 2007, Dr Smith was a senior research scientist with the Resource Futures Program of CSIRO Sustainable Ecosystems. Dr Smith has also led the social science research and education portfolios of two national research centres (the Coastal Cooperative Research Centre, and the Catchment Hydrology Cooperative Research Centre). Dr Smith has been a lead or co-chief investigator on complete grants worth over AU\$11m and has published over 100 research papers. Apart from other projects, Dr Smith currently leads the Communities Theme of the National Climate Change Adaptation Research Facility network on Marine Biodiversity and Resources, the Adaptive Learning Theme of the CSIRO Coastal Cluster, and the Adaptive Capacity Theme of the South East Queensland Climate Adaptation Research Initiative. Along with his research partners, Prof Smith was awarded the 2009 Australian Museum Eureka Prize in the category of Innovative Solutions to Climate Change.

Daniel Pauly



Dr. Daniel Pauly is a French citizen who completed his high school and university studies in Germany; his doctorate (1979) is in Fisheries Biology, from the University of Kiel. After many years at the International Center for Living Aquatic Resources Management (ICLARM), in Manila, Philippines, Daniel Pauly became in 1994 a Professor at the Fisheries Centre of the University of British Columbia, of which he was the Director from 2003 to 2003. Since 1999, he is also Principal Investigator of the Sea Around Us Project, funded by the Pew Charitable Trusts, Philadelphia, and devoted to studying the impact of fisheries on the world's marine ecosystems (www.seaaroundus.org). The concepts, methods and software he (co-)developed, documented in over 500 publications, are used throughout the world, following multiple courses and workshops given in four languages on all five continents. This applies especially the Ecopath modeling approach and software (www.ecopath.org) and FishBase, the online encyclopedia of fishes (www.fishbase.org). This work is recognized in various profiles, notably Science, April, 2002; Nature, Jan. 2003; New York Times, Jan, 2003, and by numerous awards, notably the International Cosmos Prize, Japan (2005), the Volvo Environmental Prize, Sweden (2006) and the Excellence in Ecology Prize, Germany (2007).

Peter Burbridge



Peter Burbridge Over the past thirty five years Peter Burbridge has provided technical and management advice on a wide range of resource development and environmental management issues. The majority of his work has been associated with resources development and management in developing countries, including project formulation, development, monitoring and evaluation; applied research; and training. This work has been undertaken for: the United Nations Agencies (World Bank, UNFAO, UNEP, UNDP, UNESCO), the World Conservation Union (IUCN), World Wide Fund for Nature (WWF), International Council for Exploration of the Seas (ICES), international aid agencies, and private consulting firms.

In 1996 Peter was appointed to the Research Development Chair of Coastal Management at the University of Newcastle upon Tyne where he now holds an Emeritus Professorship and continues to teach on the Tropical Coastal management Programme. During 1999-2000 Peter undertook a major assessment of arrangements for achieving sectoral and territorial integration used by Member States for the European Union Integrated Coastal Zone Management Programme. In 2002 he completed an assignment as a consultant to BP for spatial and economic planning, environmental impact assessment, coastal management, and the empowerment of local businesses for the development of a major LNG project in Irian Jaya, Indonesia. He is a member of the Plexus Energy consulting group and has developed a seascape visual impact assessment methodology for oil and gas development projects in Brazil and a guide on oil and gas development in coastal ecosystems.

Andreas Kannen



Dr. Andreas Kannen is Deputy Head of the Department "Human Dimension of Coastal Areas" at the Institute for Coastal Research at the Helmholtz-Zentrum Geesthacht, Germany. His research experience covers research on ICZM, Marine Spatial Planning and Coastal and Marine Governance. He is involved in several large scale national and European research projects, all being highly interdisciplinary, but has also worked with policy makers, e.g. in Germany and Croatia. Dr. Kannen is an active member in several international networks and currently chairs the ICES expert group on Marine Planning and Coastal Management (WGMPCZM).

Denis Bailly



Dr. Denis Bailly is lecturer in economics at the University of Brest, France, and researcher at AMURE, the Center for Law and Economics of the Sea, a joint UBO-IFREMER research unit (www.umr-amure.fr) of the European Institute for Marine Studies (www-iuem.univ-brest.fr). He has conducted research on the economics of aquaculture development and environmental sustainability in Europe and Asia. He is scientific co-coordinator of the Integrated Project SPICOSA (6th FP) that develops and tests the System Approach Framework for science and policy integration in support to Integrated Coastal Zone Management.

SCIENTIFIC PROGRAMME

SUNDAY 3 JULY, 1700–2200

- 1700-1900 Registration
- 1900-2100 Welcome reception, Host: Arendal municipality and Mayor Torill R. Larsen

MONDAY 4 JULY, 0800–1800

- 0800–0900 Registration
- 0900–0920 Opening ceremony
- 0920–0930 Opening by the **County governor Øystein Djupedal**
- 0930–1010 **(26) Thomas Sawyer Hopkins (USA):**The Role of Science in the Transition to Sustainability: Coastal Zone Examples
- 1010–1030 Coffee break

THEME 1: COASTAL HABITATS AND ECOSYSTEM SERVICES

CHAIR: JOSIANNE STØTTRUP (DENMARK) – **CO-CHAIR:** EINAR DAHL (NORWAY)

- 1030–1100 **(27) Key note speaker: Torjan Bodvin (Norway):** Mapping and valuating of marine habitats – a basic knowledge for coastal management and surveillance
- 1100–1115 **(28) Illisriyani Ismail and Kusairi Mohd. Noh (Malaysia) –** A Bio-Economic Model Approach: To Measure the Exploitation of Tuna in Malaysia
- 1115–1130 **(29) Annelise Chapman, Andrzej Osowiecki, Magdalena Blenska, Juliusz Gajewski, Katarzyna Rybka, Trond Haukebø and Knut Sindre Vale (Norway/Poland) –** Vulnerability of coastal environments to oil spills – Applying ‘Dynamic sensitivity mapping’ as a tool for integrated management
- 1130–1145 **(30) Kathryn M. Chartrand, Michael A. Rasheed and Peter J. Ralph (Australia) –** Developing a model for tropical seagrass light requirements in a turbid port environment: guidelines for a dredge mitigation strategy

- 1145–1200 **(31) Joe Lee, Jan-Olaf Meynecke and Wenqing Wang (Australia)** – Fish abundance and diversity relative to tidal inundation in a mangrove forest in northern New South Wales, Australia
- 1200–1215 **(32) Trine Bekkby, Frithjof Moy and Heidi Olsen (Norway)** – The national program for mapping marine habitats – scientific approaches giving coastal zone managers a tool
- 1215–1230 **(33) A. A. Hageberg, A. Ervik, I. Døskeland, Ø. Strand and R. Rosland (Norway)** - AKVAVIS – Decision support system for aquaculture planning
- 1230–1430 Lunch
- CHAIR: ELLEN SOFIE GREFSRUD (NORWAY) – CO-CHAIR: MASAHIDE KAERIYAMA (JAPAN)**
- 1430–1445 **(34) Renata Gonçalves, Radhouan Ben-Hamadou and Luís Chícharo (Portugal)** – Selection of coastal estuarine habitats by larval fish in laboratory mesocosms
- 1445–1500 **(35) Eivind Oug, Gro van der Meeren, Grègoire Certain and Signe Nybø (Norway)** – Monitoring ecological quality of coastal waters by the Nature Index (NI) - an integrated measure of biodiversity
- 1500–1515 **(36) Rachel Long, Tony Charles and Robert Stephenson (Canada)** – The Key elements of Ecosystem-Based Management and an Assessment of their Application in 3 Fisheries in the Bay of Fundy, Canada
- 1515–1530 **(37) Torstein Pedersen, Silje Ramsvatn, Einar Magnus Nilssen, Marianne Nilsen, Trond Ivarjord, Anita Maurstad, Ina Kolsum, Geir Helge Systad and Lyne Morissette (Norway)** – Investigating effects of various harvest regimes on fishery yield and ecosystem health indicators of two coastal ecosystems using ECOPATH modelling
- 1530–1545 Discussion
- 1545–1615 Coffee break
- 1615–1630 **(38) Jesko Hirschfeld, Nardine Stybel and Ralf Scheibe (Germany)** – Linking Economic and Ecological Models for an Integrated Assessment of Water Management in the Oder Estuary Coastal Region
- 1630–1645 **(39) Jun Shoji and Yasuhiro Kamimura (Japan)** – Co-existence of seagrass and algae beds enhances young-of-the-year rockfish *Sebastes cheni* production: toward a habitat conservation based on the phenology of fishery resources and vegetation
- 1645–1700 **(40) Esméralda Longépée (France)** – The effects of environmental degradation on social vulnerability: the case of Kiribati (South Pacific)
- 1700–1715 **(41) Xuegong Xu, Lifen Xu, Zongwen Ma, Xin Zhou and Yaling Lu (China)** – Adaptive Management Based on Vulnerability and Ecological Risk Assessment: a case of the west coast of the Bohai Sea, China

- 1715–1730 **(42) Victoria J. Isaac, Roberto V. E. Santo, Bianca S. Bentes, Keila Mourão and Flavia L. Frédou (Brazil)** - *Scomberomorus brasiliensis* gill net fishery: a case of unmanaged Brazilian small-scale fishery
- 1730–1745 **(43) Yemi Akegbejo-Samsons (Nigeria)** – Development challenges of multi-functional coastal system in the Niger Delta, Nigeria
- 1745–1800 General discussion
- 1930–2130 **Reception at the Institute of Marine Research, Flødevigen**

TUESDAY 5 JULY, 0900–1900

THEME 2: ADAPTION/MITIGATION TO CHANG IN COASTAL SYSTEMS

CHAIR: ANN-LISBETH AGNALT (NORWAY) – CO-CHAIR: MICHEL LAMPLE (FRANCE)

- 0900–0930 **(45) Key note speaker: Frede Thingstad (Norway):** Variable nutrient pathways through the microbial part of the pelagic food web – an insight relevant to management issues?
- 0930–0945 **(46) Shadananan Nair (India)** – Adaptation to Environmental Changes in the Coastal Zones of India
- 0945–1000 **(47) Russell Richards, Marcello Sano, Tim Smith and Rodger Tomlinson (Australia)** – A systems approach to exploring the influence of ‘Ocean Acidification’ on nutrient cycling in coastal zones
- 1000–1015 Discussion
- 1015–1045 Coffee break
- 1045–1100 **(48) Emma Risén, Joseph Santhi Pechsiri, Maria E. Malmström, Nils Brandt and Fredrik Gröndahl (Sweden)** – Quantitative assessment of nutrient removal potential of harvesting macroalgae within the Baltic Sea: The case of Trelleborg, Sweden
- 1100–1115 **(49) Jan-Olaf Meynecke, Silje Vindenes and Danielle Teixeira (Australia)** – Monitoring Humpback Whale (*Megaptera novaeangliae*) behaviour in a highly urbanised coastline, Gold Coast, Australia
- 1115–1130 **(50) Joseph Santhi Pechsiri, Emma Risén, Maria E. Malmström, Nils Brandt, and Fredrik Gröndahl (Sweden)** – Cyanobacteria removal as means of nutrient reduction in the Baltic Sea: Quantitative assessment of potentials in Kalmarsund, Sweden
- 1130–1200 Discussion
- 1200–1330 Lunch

CHAIR: MELISSA NURSEY-BRAY (AUSTRALIA) – CO-CHAIR: RAGNAR SANDBÆK (NORWAY)

- 1330–1400 **(51) Key note speaker: Tim Smith (Australia)** – Enhancing the Ability of Coastal Regions to Respond to Climate Change
- 1400–1415 **(52) M. Shahadat Hossain (Bangladesh)** – Conservation of Mangrove Ecosystem for Livelihood Sustainability and Climate Change Adaptation in the Ganges Basin
- 1415–1430 **(53) Gülsen Avaz, Filiz Küçüksezgin, İbrahim Tan, Leyla Tolun, Çolpan Polat-Beken, Aslı Dönertaş, Ersan Kuzyaka and Süleyman Tuğrul (Turkey)** – Determination of sensitive and less sensitive area along Aegean coastal areas of Turkey
- 1430–1445 **(54) S. Joseph Paimpillil and M. Baba (India)** – Renewable Coastal wave energy utilization along with coastal protection and fisheries development
- 1445–1500 **(55) Jan M. Landman (Germany)** – The aspects of characteristic architecture and townscapes for a sustainable development in coastal resorts at the Baltic Sea, Germany. Results of an empirical case study of tourist perception
- 1500–1515 Discussion
- 1515–1545 Coffee break
- 1545–1600 **(56) Alexandre Magnan (France)** – Better understanding coastal communities' adaptive capacity to climate change
- 1600–1615 **(57) Ann-Lisbeth Agnalt, Egil Karslbakk, Nina Sandlund, Eva Farestveit and Knut E. Jørstad (Norway)** - American lobster (*Homarus americanus*) in Norwegian waters - Environmental impact with emphasis on shell disease and hybridization
- 1615–1630 **(58) Trude Borch, Bjørn Hersoug and Jahn Petter Johnsen (Norway)** – Coastal discourses – protection or production in the Lofoten Islands?
- 1630–1645 **(59) Masahide Kaeriyama, Hyunju Seo and Michio J. Kishi (Japan)** – Sustainability and adaptive capacity of Pacific salmon under the changing climate
- 1645–1700 Discussion
- 1700–1900 POSTER SESSION

THEME 1: COASTAL HABITATS AND ECOSYSTEM SERVICES

- (94) **Pavlov Dimitri A., Emel'yanova Natal'ya G., Vo Thi Ha, Luong Thi Bich Thuan (Russia):** Goatfishes (Mullidae) as indicators of coastal habitats: life history of manybar goatfish *Parupeneus multifasciatus*
- (95) **Emel'yanova Natal'ya G., Pavlov Dimitri A., Luong Thi Bich Thuan, Vo Thi Ha (Russia) -** Goatfishes (Mullidae) as indicators of coastal habitats: assessment of ovarian composition in manybar goatfish *Parupeneus multifasciatus*
- (96) **Rahman Patimar and Asghar Abdoli (Iran) -** Biodiversity and ecosystem functioning in coastal lagoons of southeastern Caspian basin- IRAN
- (97) **Asghar Abdoli and Rahman Patimar (Iran) -** Conservation status of coastal lagoons in Iran, example of southern Caspian lagoons
- (98) **Dubrava kirievskaya and Varvara Ivanova (Russia) -** Assesment of Luga Bay ecosystem as a tool for the future integrated management plan of the Eastern Baltic Sea coastal zone
- (99) **Siddique, M.A.L, S. Zafrin, S. Myers, T. Smith and R.W. Carter (Australia) -** Integrated Coastal Zone Management (ICZM) in Bangladesh: potential challenges for the Department of Fisheries
- (100) **Yoniar Hufan R., F. Anggoro Cahyo, Ratna Sari Dewi, Nurwadjedi and Niendyawati (Indonesia):** Coral Reef Mapping and Valuation : as Basic Knowledge for Marine Resources Monitoring
- (101) **Hartvig Christie and Frithjof E Moy (Norway) -** Distribution of fish in different macrophyte habitats
- (102) **H.M. Jansen, Ø. Strand, M.C.J. Verdegem and A.C. Smaal (Norway) -** The role of suspended mussel farming (*Mytilus edulis*) in nutrient dynamics of oligotrophic systems
- (103) **Abbas Jafari, Mohammad Ghasemi, Komeil Jahanifar and Arezou Jafari (Iran) -** A study of the environmental profile of the southern coasts of the Caspian Sea and related threats
- (104) **A. Ervik, P.K. Hansen, Ø. Strand, I. Døskeland and A. Hageberg (Norway) -** MOLO - A management system integrating environmental effects and area adaptation in Norwegian aquaculture

- (105) **Kourosh Haddadi Moghaddam (Iran)** - Study on natural feeding of Persian sturgeon (*Acipenser persicus* Bordin,1987) in southern part of Caspian Sea (Iranian water) under 10 m depth
- (106) **Tarek Bashir Jdeidi (Libya)** - Fauna of Farwa Island
- (107) **Henning Steen (Norway)** - Five years of kelp monitoring in Western Norway - effects of trawling and sea urchins
- (108) **Terje Thorsnes, Jan Henrik Sandberg, Gjertrud Røyland, Per Arvid Jakobsen, Oddvar Longva and Børge Holte (Norway)** - New data sets and new platforms for knowledge transfer for coastal fishing and management
- (109) **Terje Thorsnes, Alan Stevenson, Anu Kaskela, Ingemar Cato, Jørgen Leth, Sten Suuroja, Tatjana Shadrina, Algimantas Grigelis, Szymon Uscinowicz, Annemiek Vink, Manfred Zeiler, Sytze van Heteren, Vera Van Lancker, Fabien Paquet, Koenraad Verbruggen (Norway)** - EMODNET geology - European Marine Observatory Data Network - making detailed seabed information available for science and management
- (110) **Coz Richard, Fichet D., Le Duigou M. And Radenac Gilles (France)** - What are the potential benefits of a small scale intertidal area closed to anthropic disturbances on a species targeted by shellfish gathering?
- (111) **Mathieu Vaslet and Gilles Radenac (France)** - Recreational fish fishing in the “Pertuis charentais” and the Gironde estuary (France)
- (112) **HakGyoon Kim, ChangKyu Lee, WolAe Lim, YoungTae Park, JeongMin Shim, ChangSu Jung, and YoungSang Suh (Rep. of Korea)** - The feasibility of HAB to assess the health of coastal ecosystem based on three decadal observations in Korean coastal waters
- (113) **E.S. Grefsrud, Ø. Strand, T. Strohmeier, H. Olsen and R. Bøe (Norway)** - Mapping scallop *Pecten maximus* beds in Norwegian coastal areas using interferometric sonar

THEME 2: ADAPTATION/MITIGATION TO CHANGE IN COASTAL SYSTEMS

- (115) **Saulius Gulbinskas, Rosita Mileriene, Sergej Suzdalev and Nerijus Blazauskas (Lithuania)** - Cumulative impacts of the coastal and marine activities: case study of Lithuania and South Eastern Baltic region
- (116) **Subrata Sarker and M. Shahadat Hossain (Bangladesh)** - Coping With Disaster: Insights from a Coastal Community in Bangladesh
- (117) **Kourosh Haddadi Moghaddam (Iran)** - Study impact of climate change on sturgeon in Caspian Sea

THEME 3: COASTAL GOVERNANCE

- (119) **Nicole Pelton (Australia)** - Federalism, Governance Structures and Coastal Management in Australia
- (120) **Knut Bjørn Stokke (Norway)** - Use of new knowledge on marine biological diversity and fisheries in Norwegian local coastal zone planning
- (121) **Juan Pablo Lozoya, Rafael Sardá and José A. Jiménez (Spain)** - Users' expectations in a Mediterranean natural beach: A key factor for sustainable beach management?
- (122) **Arild Buanes (Norway)** - Territory and function reconsidered, in light of ICZM and marine spatial planning
- (123) **Rafael Sardá, Juan Ramis, Juan Pablo Lozoya, Eduardo Ariza and José A. Jiménez (Spain)** - From Managing Responsibilities to Managing Results: towards the sustainable use of beach environments
- (124) **Terje Thorsnes, Liv Plassen, Oddvar Longva, Tone Rasmussen, Børge Arvesen (Norway)** - Geology and derived thematic maps for coastal management – a case study from Northern Norway
- (125) **Martin Lund-Iversen (Norway)** - Data and models for comprehensive planning in marine areas
- (126) **M. Si. Yulius (Indonesia)** - Preliminary study on coastal tourism development recreation category in Bungus Bay, Padang City, West Sumatra province
- (127) **Ira Dillenia and L. P. A. Savitri Chitra Kusuma (Indonesia)** - Maritime archaeological remains preservation in the context of coastal and small islands management in Indonesia
- (128) **Merle Looring (Estonia)** - Development dynamics and impacts of coastal land use of the Pärnu County
- (129) **Leyla G. Tolun, Asli S. Dönertaş, Y. Sinan Hüsrevoğlu, Selda Murat-Hocaoğlu, S. Çolpan Polat-Beken and Ahmet Baban (Turkey)** - Engaging stakeholders for science-policy integration in Izmit Bay: Results of the SPICOSA project
- (130) **Rachel Tiller (Norway)** - Norwegian Aquaculture Expansion and Integrated Coastal Zone Management (ICZM): Simmering Conflicts and Competing Claims; What Can be Learned from the New Zealand Experience?

THEME 4: LINKING SCIENCE AND MANAGEMENT

- (132) **Juan, S., Demestre, M. and Muntadas, A. (Spain)** - Indicators of trawling disturbance on ecosystems to improve management practices
- (133) **Ratna Sari Dewi, Nurwadjadi and Niendyawati (Indonesia)** - Tsunami Risk Assessment to Support Coastal Zone Management
- (134) **Siddique, M.A.L, S. Zafrin, S. Myers, T. Smith, R. Babcock, and R.W. Carter (Australia)** - Co-learning in marine protected area for integrated coastal zone management
- (135) **Even Moland, Esben Moland Olsen, Halvor Knutsen, Alf Ring Kleiven and Jan Atle Knutsen (Norway)** - Lobster reserves in coastal Skagerrak: a field laboratory for science and management
- (136) **Alice Vanhoutte-Brunier, Annie Fiandrino, Rémi Mongruel, Thierry Laugier, Johanna Ballé-Béganton, José A. Pérez Agúndez, Valérie Derolez, Michel Lample and Gilles Brocard (France)** - An integrated modelling approach to mitigate microbiological contamination of the Thau lagoon (France)
- (137) **Knut Torsethaugen (Norway)** - Information architecture for coastal zone development
- (138) **Haugland J. K., Olsen E. M., Kleiven A. R., Moland E., Espeland S. H. and Olsen T. (Norway)** - Identification of potential marine reserves by habitat suitability modelling
- (139) **Alf Ring Kleiven, Esben Moland Olsen and Jon Helge Vølstad (Norway)** - Total catch an order of magnitude above officially reported landings for a red-listed marine species
- (140) **Sri Lestari Munajati, Ati Rahadiati and Suzan N. Gill (Indonesia)** - The prototype of spatial analysis on line to support the development potential of Coastal Zone Management
- (141) **Tomasz Boski, Carlos Sousa, Maria Helena Guimarães, André Mascarenhas and Tomaz Dentinho (Portugal)** - Assessing socioeconomic impact of the changes in water quality, river discharge and sediment budget in the Guadiana Estuary

THEME 3: COASTAL ZONE GOVERNANCE

CHAIR: ROSITA MILERIENE (LITHUANIA) – CO-CHAIR: JESKO HIRSCHFELD (GERMANY)

- 0900–0930 **(61) Key note speaker: Daniel Pauly (Canada):** Small-scale fisheries: an evaluation of their role in the coastal zones of the world
- 0930–0945 **(62) Julien Rochette and Raphaël Billé (France) –** Are ICZM Protocols the new silver bullet for regional seas to promote sustainable coastal development?
- 0945–1000 **(63) Rafael Sardá, Amy Diedrich, Joaquin Tintoré and Roland Cormier (Spain/Canada) –** The Ecosystem-Based Management System: a formal tool for the management of the marine environment
- 1000–1015 **(64) Russell Richards, Marcello Sanon and Tim Smith (Australia) –** Participatory approaches to exploring the adaptive capacity of coastal settlements and ecosystems in South East Queensland
- 1015–1045 Coffee break
- 1045–1100 **(65) Arne Tesli and Håkon Kryvi (Norway) -** The role of public and private institutions in Integrated Coastal Zone Management – Examples from two districts in Indonesia
- 1100–1115 **(66) Michel Lample, Denis Bailly and Johanna Beganton (France) -** The architect and the System Approach Framework
- 1115–1130 **(67) Bjørn Hersoug (Norway) -** The battle for space - the position of Norwegian aquaculture in integrated coastal zone planning
- 1130–1145 **(68) Zoi I. Konstantinou and Yannis N. Krestenitis (Greece) –** An overview of the implementation of SAF methodology regarding the stakeholder response, in the mussel farming area of Chalastra, Thermaikos Gulf
- 1145–1200 Discussion
- 1200–1330 Lunch

CHAIR: LORAIN MCFADDEN (UK) – CO-CHAIR: KNUT BJØRN STOKKE (NORWAY)

- 1330–1400 **(69) Key note speaker: Peter R. Burbridge (UK):** Non-stutory approaches to integrated coastal management based on UK experience
- 1400–1415 **(70) Vincent Gravez, Robert Bensted-Smith and Pippa Heylings (Ecuador) –** Governance systems for marine protected areas in Ecuador
- 1415–1430 **(71) Christine Crawford, Jeff Ross and John Gibson (Australia) –** A Decision Support Tree for Management of Estuaries in Tasmania, Australia
- 1430–1445 **(72) Donata Melaku Canu and Cosimo Solidoro (Italy) –** Governance failure in a deeply investigated coastal system: clam farming in the Lagoon of Venice
- 1445–1500 **(73) Håkan T. Sandersen, Eirik Mikkelsen, Jon Helge Vølstad and Erlend Moksness (Norway) –** Dilemmas in Local Coastal Governance -Local management and development ambitions vs. sectoral and institutional barriers in Risør, Norway
- 1500–1515 **(74) Tone Rasmussen and Børge Arvesen (Norway) –** Interactive coastal management; The Astafjord project
- 1515–1530 **(75) Samantha Murray (USA) -** Applying science to temperate marine protected area network design – perspectives from stakeholders in California’s Marine Life Protection Act process
- 1530–1545 Discussion
- 1545–1615 Coffee break

THEME 4: LINKING SCIENCE AND MANAGEMENT

CHAIR: IRA DILLENIA (INDONESIA) – CO-CHAIR: RAFAEL SARDA (SPAIN)

- 1615–1630 **(77) Paul Tett, Audun Sandberg, Anne Mette, Denis Bailly, Marta Estrada, Tom Hopkins, Maurizio Ribeira d'Alcalà and Loraine McFadden (UK / Norway / Germany / France / Spain / Italy) –** Perspectives of social and ecological systems
- 1630–1645 **(78) Sheku Sei, Edward Aruna, Mohamed B.D. Seisay and Heiko Seilert (Sierra Leone) –** Fishery Dependent Information for the Establishment of Marine Protected Areas in Sierra Leone
- 1645–1700 **(79) Melissa Nursey-Bray (Australia) – Building bridges between science and policy: Adaptive learning and ICZM, Australia**
- 1700–1715 **(80) Scott Bremer (Norway) –** Framing a ‘post-normal’ science-policy interface for Integrated Coastal Zone Management

1715–1730	(81) Anne Blanchard and Scott Bremer (Norway) – Reflexively mapping the science-policy interface for coastal zones
1730–1745	Discussion
2000	Banquet

THURSDAY 7 JULY, 0900–1645

THEME 4: LINKING SCIENCE AND MANAGEMENT

CHAIR: DAGNÝ ARNARSDÓTTIR (ICELAND) – CO-CHAIR: JOSEPH SEBASTIAN PAIMPILLIL (INDIA)

0900–0930	(82) Key note speaker: Andreas Kannen (Germany): Science Policy Interactions: Between policy fragmentation, integration and new paradigms for planning and management
0930–0945	(83) Stephanie Janssen (The Netherlands) – Building with nature: the challenge of integrating nature in coastal engineering design Lessons from a building with nature case study in the Netherlands
0945–1000	(84) Rosita Mileriene and Saulius Gulbinskas (Lithuania) – Sustainable development indicators for the coastal zone management
1000–1015	Discussion
1015–1045	Coffee break
1045–1100	(85) Bormann Helge, Ahlhorn Frank and Klenke Thomas (Germany) – Adaptive water management in coastal areas: From climate and anthropogenic impact assessment to policy recommendations
1100–1115	(86) Loraine McFadden, Sally Priest, Audun Sandberg, Denis Bailly, Johanna D'Heroncourt, Jeanette Reis, Anne Mette (UK / Norway / France / Belgium / Germany) – Hindsight is wonderful: simple lessons for increasing science and policy integration
1145–1130	(87) Xavier Lafon and Yves Henocques (France) – Linking Science and Management through demanding research funding mechanism
1130–1145	(88) Frida Franzén (Sweden) – Measuring social behavior? – A survey of farmers' incentives to contribute to better water quality by creating wetlands
1145–1200	Discussion
1200–1330	Lunch

CHAIR: ALF RING KLEIVEN (NORWAY) – CO-CHAIR: NICI GIBBS (NEW ZEALAND)

- 1330–1400 **(89) Key note speaker: Denis Bailly (France):** The social factor in the system approach for ICZM - challenges and options
- 1400–1415 **(90) Maria Helena Guimarães, Tomaz Dentinho, Tomasz Boski (Portugal) –** The Use Conceptual Models as Tool to Design of a System in a Transdisciplinary Setting, case study application in Terceira Island, Azores
- 1415–1430 **(91) Jeremy Gault (Ireland) –** Educational and Professional training (Building capacity for SAF within an ICZM framework)
- 1430–1445 **(92) Nicholas Kathijotes and Athina Papatheodoulou (Cyprus) -** Integrated Coastal Zone Management - Preview and Evaluation on its Application on the Mediterranean Coast of Cyprus
- 1445–1500 Discussion
- 1500–1530 Coffee break
- 1530–1630 Summing up by Session Chairmen; Synthesis and future directions
- 1630–1645 Awards – closing remarks