LITTORAL 2016
BIARRITZ  25-29 October
THE CHANGING LITTORAL. ANTICIPATION
AND ADAPTATION TO CLIMATE CHANGE


LITTORAL 2016 is funded by the EUROPEAN UNION with ERDF,
the Region Aquitaine-Limousin-Poitou-Charentes, the French Ministry of Environment, the Department
of Pyrénées-Atlantiques, the City of Biarritz; the Agglomeration of Côte Basque-Adour, the Agglomeration
of Sud-Pays Basque and the Lloyd's France

Bellevue Center  "Grande Plage" of Biarritz
VENUE: BELLEVUE CONGRESS CENTER IN BIARRITZ

Littoral 2016 will include several scientific sessions, 7 keynotes, 6 thematic workshops, 2 post-Conference field-trips
Official language: English (with simultaneous translation English ↔ French when necessary)

REGISTRATION AND SUBMISSION OF ABSTRACTS

See the instructions on the site http://littoral2016.univ-pau.fr/
Submission of abstracts is closed and the process of validation by the scientific committee has been completed. The authors of validated abstracts are invited to submit a full paper before the 15th of November, to be published in special issues of the Journal of Coastal Conservation or in "Géomorphologie. Relief, Processes, Environnement".

Registration fees:
€ 400 for EUCC members
€ 550 for non-members
€ 140 for members students
€ 200 for non-members students
The fee includes:
3 days of Conference (25-27th October)
Lunches and coffee breaks during the Conference
Visit of the Sea Museum of Biarritz (25th October)
Littoral 2016 abstract book and programme
Conference materials (bag, pen & writing pad, tourist documentation)
It does not include Gala dinner (27th October, € 35) and both field trips (€ 85 and € 95)

AIM AND CONTEXT OF LITTORAL 2016

Littoral 2016 "The changing littoral. Anticipation and adaptation to climate change" is the 13th conference of the traditional biennial international event of the Coastal & Marine Union (EUCC). This NPO/NGO was founded in 1989 to promote coastal and marine conservation and sustainable development. It wanted to bridge the gap between scientists, environmentalists, site managers, planners and policy makers. It is presently the largest network of coastal experts in Europe with 15 national branches and several regional offices (the last one "EUCC-Atlantic Center" was created in July 2015 in Biarritz). EUCC-France, the French branch, is proud to organize this conference in Biarritz in collaboration with the “Centre de la Mer de Biarritz” and the “Université de Pau et des Pays de l’Adour”.

Littoral 2016 will focus on the necessary adaptation and anticipation of coastal management to global change. It concerns the shoreline mobility, sea-land interactions but also the biodiversity response, in a context of increasing human pressure in coastal areas. It is important to anticipate the future in any management strategy. A "good" strategy considers the long term evolution and not the short term profitability, an idea somewhat difficult to impose not only to policy makers and managers but also to a wide part of the population.

In any case, the first step to choose the good management strategy in coastal areas is to have a good knowledge of natural processes and take into account the socio-economical and political context as well. Nothing can be done properly if the population does not feel concerned and is not correctly informed and aware of the main stakes. The goal of Littoral 2016 is to take stock
of the current knowledge, new tools and approaches and also to emphasize the lack of knowledge in some cases and propose new research areas.

All aspects of coastal research will be presented during the ordinary sessions. The topics of the workshops have been chosen to address some important stakes that managers, state, regional and local services, elective representatives and after all the whole civil society have to surmount.

Littoral 2016 is funded by the European Union (European Regional Development Fund), the great Region Aquitaine-Limousin-Poitou-Charentes, the French Ministry of Environment, the Department of Pyrénées Atlantiques, the City of Biarritz, the "Agglomération Côte Basque Adour", the "Agglomération Sud Pays Basque" and the Lloyd's France. All of them are greatly acknowledged.

We thank also the Coastal & Marine (EUCC) network and all our partners (scientific and institutional) in France and Europe for their involvement and support to make a success of this international conference. We especially thank the Centre de la Mer of Biarritz which presently hosts EUCC-France.

KEYNOTE SPEAKERS (PLENARY LECTURES)

- Gerald Schernewski, Prof. Dr. habil., head of the group Coastal Research & Management at the Leibniz-Institute for Baltic Sea Research in Warnemünde (Germany).
- Per Sørensen, Danish Coastal Authority, Head of Coastal Research (Denmark).
- Nicolas Castay, director of the “Groupement d’intérêt public” (GIP) Aquitaine Littoral, France.
- Jochen Hinkel, Senior researcher at the Global Climate Forum (GCF) in Berlin, lecturer at the Division of Resource Economics at Humboldt University (Germany).
- Andrew Cooper, Professor of Coastal Studies at Ulster University in Northern Ireland.
- Gregory Beaugrand, Senior researcher at CNRS, leader of the team “Biodiversity and Climate” at the Laboratory of Oceanography and Geosciences (LOG), France.
- François Schmitt, Research Professor, director of the Laboratory of Oceanology and Geosciences (CNRS, University of Lille and University of Opal Coast Littoral), France.

See detailed CV and keynote abstracts on line (http://littoral2016.univ-pau.fr)

SCIENTIFIC SESSIONS

128 abstracts were submitted to the scientific committee (62 experts from 16 different European countries). 86 oral communications and 25 posters have been organized in 14 oral sessions and 2 poster sessions. For logical reasons some oral communications have been inserted in special sessions and thematic workshops.

The authors of validated abstracts are invited to submit a full paper before the 15th of November, to be published in special issues of the Journal of Coastal Conservation and "Géomorphologie. Relief, Processes, Environnement". More information will be given during the conference.

The main topics which will be addressed are listed below:

EUCC-France Réseau Européen des Littoraux  contact: euccfrance@centredelamer.fr
- Knowledge on Coastal environment: state of the art, new tools and approaches in the context of climate change

- Governance: coastal environment protection, integrated coastal zone management (ICZM) and adaptation to climate change

- Sustainable development and technical approaches in the coastal zone and adaptation to climate change ("Blue Growth")

WORKSHOPS AND SPECIAL THEMATIC SESSIONS

- Strategic choices of coastal management on different scales (from European to local scale)
  (scheduled on Tuesday afternoon 25 October)

- Thematic session and workshop on dune geomorphology, biodiversity and management in relationship with climate change
  Coordinators: Marie-Hélène Ruz, Professor of the University of Littoral-Opal Coast and Albert Salman, Coastal & Marine/EUCC, the Netherlands (scheduled on Wednesday morning 26 October)

- Coastal hazards and governance. Problems of responsibility and insurance in the strategies of integrated coastal management on European and national scales.
  Coordinator: Fanny Puppinck (EUCC-France) (scheduled on Wednesday afternoon 26 October)
  With the participation of:
  - Guy-Antoine de La Rochefoucauld: Country Manager of Lloyd’s France
  - Guy Lengagne: Former Minister of the French Government, initiator of the French Littoral Law
  - Laurent Montador: Deputy General Manager of the French Central Reinsurance Fund.
  - Jochen Hinkel, Senior researcher at the Global Climate Forum (GCF) in Berlin, lecturer at the Division of Resource Economics at Humboldt University (Germany).
  - Representatives of the SMACL (Société mutuelle d’assurance des collectivités locales)

- Preparing to Adapt with Young Professionals
  Coordinators: Robbert Misdorp, YPCC Programme Coordinator, and Albert Salman, Coastal & Marine/EUCC (scheduled on Wednesday afternoon 26 October).

- Nature, impacts and uncertainties of climate change in coastal areas
  Coordinator: Eric Brun, Ministry of Environment - DGEC/SCEE/ONERC (National Observatory on warming climate effects) (scheduled on Thursday morning 27 October).
  With the participation of:
  - Martin Beniston (University of Geneva): Storms and cyclones; recent development and projections on regional scale
  - Gaël Durand (Laboratoire de Glaciologie et Géophysique de l’Environnement, Grenoble): sea-level rise in the future. IPCC projections, risks and uncertainties linked with polar icecaps and ice shelves (Greenland and Antarctic)
  - Jean-Pierre Gattuso (Oceanological observatory of Villefranche-sur-Mer): ocean acidification; state of knowledge, projections and possible impacts
  - William Llovel (CERFACS, Toulouse): sea-level rise in the past; observations and causes
- **Climate change and extreme events: few examples from Aquitaine coastal research (workshop and thematic session)**
  Coordinators: Iker Castège, director of the "Centre de la Mer de Biarritz" (ERMMA programme), Stéphane Abadie, Professor at the University UPPA (“Université de Pau et des Pays de l’Adour”)
  (Scheduled on Thursday afternoon 1-27 October)

**FIELD TRIPS**

- 1st post-conference one day field trip starting from Biarritz and ending in Biarritz: *the coast of the Basque country, from the Adour estuary to San Sebastián*. Geomorphology, biodiversity and landscape diversity, coastal hazards, management strategies (28th October) Fee: € 85

- 2nd post-conference one day field trip: *the Aquitaine coast dune fields, the Pilat dune (the highest European dune) and Arcachon Basin*. Geomorphology, biodiversity, history of management.
  Starting from Biarritz, arrival in Bordeaux, with possible return to Biarritz in the evening (29th October) Fee: € 95

See the detailed programme of both field trips at the end of the document
Note that for both trips a field-guide will be given to the participants

- **Visit of the Sea-Museum of Biarritz** Tuesday evening (25th October) (included in the conference fee)

**SIDE EVENTS**

- Conference gala dinner in the Bellevue Center (Thursday 27th) with local and regional specialties (fee: € 35)

- Several trips could be arranged by "Biarritz tourisme" or local partners in and around Biarritz with discovery of the Basque culture and gastronomy (see information on Littoral 2016 web site)

**EXHIBITION**

All the professionals concerned by the changing coast (engineers, consultants, publishers, environmental business...) will be able to rent a stand in the venue building of the Conference to expose their skills, tools and activities.

For any information contact euccfrance@centredelamer.fr

**ORGANIZERS**

- EUCC-France
- The "Centre de la Mer" of Biarritz
- The "Université de Pau et des Pays de l’Adour"
FUNDING

LITTORAL 2016 is funded by the
- European Union with the ERDF (European Regional development Fund)
- Region Nouvelle Aquitaine (Aquitaine-Limousin-Poitou-Charentes)
- French Ministry of Environment, Energy and Sea
- Department of Pyrénées-Atlantiques
- City of Biarritz
- Agglomération Côte Basque Adour (ACBA)
- Agglomération Sud Pays Basque (ASPB)
- Lloyd's France

OTHER PARTNERSHIP

- French institutions members of EUCC-France:
  - ONF (Office National des Forêts)
  - BRGM (French Geological Survey)
  - CONSERVATOIRE DU LITTORAL
  - CEREMA
  - ANEL (French national association of elected representatives of coastal cities)
  - EID-Méditerranée
  - Rivages de France
  - Conservatoire Botanique National de Bailleul

- GIP Littoral Aquitain
- The Coastal & Marine Union (EUCC)
- EUCC- Mediterranean Center
- EUCC- Atlantic Center

EUCC-France Réseau Européen des Littoraux contact: euccfrance@centredelamer.fr
- **Scientific Partners**
  
  University of Pau-Pays de l’Adour (Federation MIRA)
  Centre de la Mer of Biarritz
  Laboratory of Oceanology and Geosciences UMR 8187 LOG CNRS/Lille /ULCO
  UMR LIENs 7266- University of La Rochelle/CNRS
  University of West Brittany - LETG Brest- Géomer- UMR 6554 CNRS
  The Observatory of the Aquitaine Coast (OCA)
  University of Bordeaux - CNRS EPOC UMR 5805 and Lab. of Applied Physical Geography
  University of Caen Normandy
  Groupement d’Intérêt Scientifique (GIS) Littoral Basque
  Réseau de Recherches Littoral Aquitain (RRLA)
  AZTI-Tecnalia
Field trip along the Basque Coast (French and Spanish) - 28th October
From the Adour estuary to San Sebastián
Departure and return: Biarritz
Leaders: Cyril Mallet and Christophe Garnier (BRGM)

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<th>Time-table</th>
<th>Duration</th>
<th>Stops, topics and main contributors</th>
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<td>8:00</td>
<td>0h10</td>
<td>Start from Biarritz – route to stop 1</td>
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| 8:15       | 0h30     | **Stop 1: Biarritz Light’s house, Cap St Martin**
Overall presentation of Anglet and Biarritz beaches and cliffs. Issues on coastal management.
Contributors: BRGM, University of Pau & Pays Adour, stake holders of ACBA |
| 8:45       | 0h10     | Route in bus |
| 9:00       | 0h30     | **Stop 2: Côte des Basques, car park Beaurivage. point of view from the top of the urbanized cliffs**
Historical and recent cliffs protections management and concerned stakes.
- Contribution of an elected representative to explain the local authority strategy past and future
- Presentation of the geotechnical parades by the municipality or engineering consultant |
| 9:30       | 0h20     | Route in bus |
| 10:00      | 0h45     | **Stop 3: Guéthary, Alcyons, walk along the Harotzen Costa beach**
Landslides and beaches erosion strategies adopted by local authorities along the small harbor, coastal pathways, cliffs and pocket beaches.
- Geological presentation by BRGM
- Contribution of an elected representative to explain the local authority strategy
- Natural marine reserve presentation by the Marine Biarritz Museum |
| 10:45      | 0h20     | Route in bus to Hendaye, Corniche road |
| 11:05      | 0h25     | **Stop 4: The Basque “Corniche road”, “Viviers Basques”**
Description of the cliffs, beaches and moor landscape
- Presentation by the Pyrénées Atlantiques Council concerning the biodiversity, the road and landslide hazards
- Contribution by CPIE, NGO in charge of the presentation and valorization of the Basque Coast to the public. |
| 11:30      | 0h10     | Route in bus to Hendaye, Abadia’s domain |
| 11:40      | 0h50     | **Stop 5: The Basque “Corniche”, Abadia’s domain, Asporotsttipi Farm, Hendaye**
Walk to the cliffs and sea view, description of the geology and moor landscape
History of the Abbadia’s Domain.
- Presentation by the Coastal Conservatory
- Contribution by CPIE, NGO in charge of the presentation and valorization of the Basque Coast to the public. |
| 12:30      | 1h00     | Picnic lunch - welcome area at the Asporotsttipi Farm (toilet)
In case of strong rain possible shelter in the Asporotsttipi Farm |
| 13:30      | 0h45     | Route in bus to San Sebastián |
| 14:15      | 1h15     | **Stop 5: Visit of the San Sebastián Bay**
Sea view from the top of the cable car
Brief history of the town and harbor |
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<tr>
<td>15:30</td>
<td>0h45</td>
<td>Route in bus to Saint Jean de Luz</td>
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| 16:15 | 1h15     | **Stop 6: Visit of Saint Jean de Luz**
Brief visit of the historical center and walk to the bay.
Presentation of marine hazards concerning the seawall protection and historical marine submersions
  - Contribution of the tourism office (to be confirmed) |
| 17:30 | 0h30     | Route in bus. Arrival expected in Biarritz at 18:00 |

*Note that a field-guide will be given to the participants*
# Field trip along the Aquitaine sandy coast - 29th October

**Capbreton - Pilat dune - Arcachon Basin**

From Biarritz to Bordeaux (with possible return to Biarritz)

Leaders: Loïc Gouguet (ONF) and Marie-Claire Prat (University of Bordeaux)

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| 9:00 | 0h30 | **Stop 1: Capbreton Car park of the "estacade"**  
Overall presentation of Capbreton. Erosion issues and by-pass  
Contributors: *Marie Claire Prat* (University of Bordeaux) and *BRGM* (French Geological Survey) |
| 9:30 | 0h10 | Route in bus |
| 9:40 | 1h00 | **Stop 2: Beausoleil car park**  
Site of dune restoration in 2016  
Walk along the dune footpath  
(from Beausoleil to the CCAS holiday residence – 1900 m length) 60-90'  
- Contribution of an *elected representative* to explain the municipal stakes  
- The story (vineyard...)  
- Presentation of the plan by *ONF* (Office National des Forêts)  
  o Technical terms brought into play  
  o Results  
  o the citizen participation |
| 10:40 | 1h | Route in bus |
| 11:40 | 0h30 | **Stop 3: Especier (south of Mimizan)** |
| 12:10 | 1h15 | Route in bus to the Pilat dune |
| 13:30 | 1h00 | Picnic lunch - welcome area of Pilat  
In case of strong rain possible shelter in the room of Point Glisse de La Salie |
| 14:30 | 1h30 | **Stop 4: Visit of the Pilat dune (the highest European dune) with wonderful view over the Arcachon Basin**  
Start from the staircase  
Walk on the dune to the central area  
Return down the staircase  
- Presentation of the site: passes and channels of Arcachon Basin, Pilat dune, history (**Marie Claire Prat**)  
- Development of the dune: *BRGM*  
- The "Great Site", public welcome: contributions of the "*Syndicat mixte*" and "*Conservatoire du littoral*" |
| 16:00 | 0h10 | Route in bus |
| 16:10 | 0h30 | **Stop 5: the Gaillouneys site: restoration of the south area of the Pilat dune (depending on available time)**  
Presentation of the current works by the "*Conservatoire du littoral*" and *ONF* |
| 17:40 | 1h15 | Two options: route by bus to the railway station and airport of Bordeaux or return by bus to Biarritz |
| 18:00 | 2h00 | Arrival expected in Bordeaux at 19:00  
Arrival expected in Biarritz at 19:40 |

Note that a field-guide (in French and English) will be given to the participants.
KEYNOTE SPEAKERS (PLENARY LECTURES)

- **Gerald Schernewski**, Prof. Dr. habil. Gerald Schernewski is head of the group Coastal Research & Management at the Leibniz-Institute for Baltic Sea Research in Warnemünde. He was Guest-professor at St. Petersburg State University, Russia, the University of the Algarve, Faro, Portugal, the International Ocean Institute, Malta, and presently has a professorship at Klaipeda University, Lithuania. He is author of 100+ publications on coastal and marine issues. He is coordinator of national projects, has and had coordination tasks in international projects like CHARM, OURCOAST, SPICOSA, AMBER, SUSTAIN, GENESIS and is co-ordinator of the BONUS-project BaltCoast. He serves an international expert on ICZM for many organisations, like, EU, EEA, UNEP, UNESCO and HELCOM and is president of the international NGO EUCC-Coastal and Marine Union, Leiden, The Netherlands. **Topic:** ‘Integrated Coastal Zone Management - State and Perspectives’.

  **Abstract:**
  The presentation starts with an overview about history and development of Integrated Coastal Zone Management (ICZM) and reflects on recent developments in Europe. The relationship and interaction between ICZM and Spatial Planning especially Marine Spatial Planning as well as future perspectives are discussed. The second part focuses on the compilation of over 350 ICZM best practice examples in Europe, documented in the EC OurCoast database. Using different criteria, several case studies are analysed, strength and weaknesses of the present ICZM in practice are discussed and deficits are outlined. The third part presents the Systems Approach Framework (SAF) as a guiding concept to improve coastal management and to overcome the observed deficits. Several case studies shows its application and benefit in practice.

- **François Schmitt**, is research Professor at CNRS (Directeur de recherche). He has co-authored over 150 papers, among which more than 110 in international journals. He got an engineer diploma from ENSTA Paris Tech and has a PhD and habilitation degree from University of Pierre and Marie Curie (Paris). He has been director of the Laboratory of Oceanology and Geosciences (CNRS, University of Lille and Université du Littoral Côte d’Opale) since 2006. He is regularly organizing sessions in the European Geoscience Union (EGU) general assemblies, in the nonlinear processes in geophysics (NPG) division and is Science officer at NPG division for scaling and stochastic processes. His general research topics include turbulence, complexity in the ocean, stochastic and scaling processes and methods in geosciences. He is also editor for *Earth System Science Data* (Copernicus Publications), *PLoS ONE*, and *Springer Plus* journals. He recently published with his former student Yongxiang Huang (Xiamen University, China) a book: Schmitt, F.G. and Huang Y. *Stochastic analysis of scaling times series: from turbulence theory to applications*, Cambridge University Press (2015).
**Topic: "Multiscale analysis of water level time series (modeled and measured) and the dynamics of return times"**

**Abstract:**

We consider here water level time series recorded in the Eastern English Channel and the North sea by the SHOM (Service Hydrographique et Océanographique de la Marine, France) in the ports of Boulogne-sur-mer, Calais and Dunkerque, every hour from 1956 to 2010. Water level is a complex quantity, influenced by deterministic astronomic forcing (tides, daily cycle, etc.) and also by stochastic forcing: water temperature, atmospheric pressure, turbulence. The deterministic forcing are strong and can be used to reconstruct synthetic water level predictions, also provided hourly by the SHOM. Stochastic forcing exist at all scales from minutes to centuries. Here we use the 2 datasets (measurements and model reconstruction) to explore their statistical and dynamical properties.

We estimate power spectra, and perform analyses using Empirical Mode Decomposition approach. We also consider return times statistics for different water level thresholds. We show that the measured time series has some scaling properties (between day and year) that are not shown by the synthetic series, indicating that this is a signature of the stochastic forcing. We also show that, for large thresholds, return time statistics between synthetic series and measured ones, are markedly different, since return times for measured data are much smaller than for modeled data. This indicates that the measurements and not the model, should be taken into account for risk assessments.

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**Andrew Cooper** is Professor of Coastal Studies at Ulster University in Northern Ireland. He has a BSc Honours degree in geology from Queen’s University, Belfast and MSc and PhD degrees in geology from the University of Natal, Durban. He is a specialist in coastal geomorphology and coastal zone management and in particular, understanding and adapting to coastal change. He has published more than 200 journal articles, 50 book chapters and ten books. His recent books include Sand and Gravel Spits (Springer (2015), The Last Beach (Duke University Press, 2014), The World’s Beaches (University of California Press, 2011) and Pitfalls of Shoreline Stabilization (Springer, 2012). He is Honorary Research Professor at the University of KwaZulu-Natal in South Africa and CNPq Special Visiting Professor at the Federal Universities of Rio Grande do Sul and Santa Catarina in Brazil.

**Topic: "Possible consequences of sea-level rise for the shoreline mobility on different time scales"**

**Abstract:**

The world’s coasts are dynamic at various timescales and they respond morphologically to a variety of drivers (wind, waves, sea level). Global climate change and sea level rise are important drivers of present and near-future coastal changes, most of which are manifest as landward shoreline migration and coastal erosion. The nature and rate of coastal change is, however, mediated by non-dynamic factors related to the surrounding geological framework, the nature of the coast itself and sediment supply. These factors interact with the dynamic elements to create a system whose future change cannot be predicted with the degree of accuracy demanded by coastal managers. No numerical coastal morphodynamics model can accommodate the degree of complexity that exists in nature. Consequently, adaptation to future climate change must proceed in the acknowledgement that future shoreline configuration can only be predicted qualitatively. Rather than developing ever more complex models of coastal evolution, it is much more important to adopt proactive policies that will determine the human response to whatever coastal change happens.
- **Per Sørensen**, Danish Coastal Authority, Head of Coastal Research.

Per Sørensen holds a M.Sc. in Civil Engineering from Aalborg University with a specialization in coastal dynamics. He has more than 25 years of experience in research and practical projects in Denmark in practically all coastal research aspects. The focus has been on sediment transport, and sand nourishment. He has been participating in many international project, especially Interreg projects. Per has been author or co-author on more than 20 scientific papers, and co-author of the book Coastal erosion in Europe.

Per act as an advisor for the Ministry for Environment and food in issues relating to the coastal zone. Per is the project leader for the form national coastal assessment in Denmark. Per advices the municipalities and landowners in coastal zone management projects, and is used as expert in several projects addressing coastal protection, climate change adaptation and coastal zone management. Per is censor at Technical University, Denmark and University of Copenhagen. Per is a member of the North Sea Coastal Managers Group, which discuss strategic approaches to protect the North Sea Coasts against erosion and flooding. He is a member of the board in Danish Society for hydraulic engineering.

**Topic:** "Challenges in the coastal area in Denmark in today and future climate"

**Abstract:**

Denmark has a 7,300 km long coastline, of which most of it suffers from erosion that causes a retreat of the active coastal profile up to 8 m per year. A seaview is also very attractive to houseowners in Denmark. So many houses are located in areas that suffers from erosion or is flood prone. This has increased the risk of erosion and flooding and the coastal squeeze.

This has resulted in a relatively high frequency of house falling off the cliff or flooded by the sea. Many of the houses at the coast are protected by coastal protection, which is the landowners own responsibility. But nature shows that the coastal protection are not sufficient. In the future climate change result in rising waterlevel and increasing hydraulic load on the coastal protection, which will decrease the safety level.

It is likely that the risk also increases in the future due to increased housing at the coast. This is despite the Planning act that states that houses must not be placed in flood prone areas.

Most of the coastal protection against erosion is not sustainable, because most of it is passive coastal protection like revetments, groins or shoreparallel breakwaters, and only on 150 km active coastal protection like sand nourishment is the primarily erosion protection.

There is a rising demand among houseowners for larger flood protection schemes like storm surge barriers to control the waterlevel in larger areas. This is mainly because insufficient knowledge of the maintenances costs of storm surge barriers compared to more local flood protection like dikes or dunes.

The Danish government has initiated an assessment of the coastal protection in Denmark and the regulation that controls the coastal protection. Based on the assessment the government will decide whether changes should be made. The assessment is due in 2016.

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- **Jochen Hinkel**

Dr. Jochen Hinkel is senior researcher at the Global Climate Forum (GCF) in Berlin, a lecturer at the Division of Resource Economics at Humboldt University in Berlin and a member of the Berlin Workshop in Institutional Analysis of Social-Ecological Systems (WINS). He has also been a Lead Author on the coastal chapter of the Working Group II contribution to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change.
(IPCC). He obtained his PhD in environmental system analysis from Wageningen University with a thesis on the integration of knowledge from natural and social sciences for assessing coastal vulnerability. At GCF Hinkel leads the research process on Adaptation and Social Learning. His current research focuses on the governance of human-environment interactions in the context of climate change impacts, vulnerability and adaptation, with a particular focus on coastal systems. Dr. Hinkel leads the development of the DIVA model, an integrated model for assessing coastal impacts and adaptation, which is jointly developed by a number of leading European coastal research institutions. Prior to his academic engagement Dr. Hinkel has worked as a development practitioner, software developer and information technology consultant. For more information see: http://www.globalclimateforum.org/index.php?id=dr-jochen-hinkel

**Topic: "Can we adapt to sea level rise?"

**Abstract:**

Sea-levels may rise substantially due to climate change. According to recent literature, global mean sea-level rises of 2 or more meters are possible during the 21st century, albeit being unlikely. Against this background, an important policy questions is, to what extent humans are able to adapt to substantial rises of sea-levels. Controversial answers are given to this question. News headlines suggest that sea-level rise may wipe out entire islands and threatens millions of people living in low-lying areas. Other studies suggest that protecting densely populated coastal areas against sea-level rise is highly cost-efficient and will be widespread during the 21st century, even under substantial sea-level rise. This paper explores this controversy and tries to give a more nuanced answer. The question of whether we can adapt to sea-level rise will be made operational through the concepts of limits and barriers to adaptation, which have recently emerged in the literature. I focus on the following four limits and barriers that have found to be most important for coastal adaptation: i) technological limits, which arise when there are no technological measures available to effectively mitigate the impacts of sea-level rise; ii) profitability barriers, which arise if the implementation and maintenance of adaptation options is more costly than the impacts avoided through the options; iii) financing barriers, which arise if it is difficult or impossible to access financial resources for adaptation; and iv) institutional barriers, which arise whenever stakeholders' conflicting interests impede or exacerbate adaptation.

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**- Gregory Beaugrand**, is a senior scientist at the Centre National de la Recherche Scientifique (CNRS), currently based in Wimereux, France. He is the leader of the team “Biodiversity and Climate” at the Laboratory of Oceanography and Geosciences (LOG). He works in collaboration with the Sir Alister Hardy Foundation for Ocean Science (SAHFOS). His research is about the impact of Global Change on the biodiversity, structure and functioning of marine ecosystems. He is the author of "Marine biodiversity, climatic variability and global change" (2015, Routledge, London).

**Topic: "Marine biodiversity and climate change"

**Abstract:**

The effects of climate change on marine biodiversity are unequivocal, affecting species phenology and distribution, local responses of species and communities as well as biodiversity and ecosystem goods and services. This talk focusses on past, contemporary and future changes in the biodiversity, its different components, and the putative consequences on ecosystem functioning and both regulating and provisioning services. Examples will be taken by using observed and modelled data. Our knowledge on
life distribution in the ocean can still be improved and the MacroEcological Theory on the Arrangement of Life (METAL) theory will be introduced. This talk will stress that theorising the implications of climate change on species is an important pre-requisite in order to improve our understanding of the effects of climate change on biodiversity and to anticipate future biological and ecological alterations.

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Topic: “Current experimentation of integrated coastal zone management on a regional scale: the case of the Aquitaine coast”

Abstract:
Created in 2006, the Public Interest Group (GIP) Littoral Aquitain is the fruit borne of a long process: the state, the Region, the coastal departments and the intercommunalities wished to protect the Aquitaine coast while ensuring its development within the framework of a structured partnership.

The main mission of the GIP Littoral Aquitain is to design and implement the PDDLA (Plan de Développement Durable du Littoral Aquitain - Aquitaine Coastline Sustainable Development Plan). A central element of the shared development strategy of the territory by 2020, the PDDLA relies on the 3 pillars of sustainable development and on the principles of the integrated management of coastal zones.

By drawing up the plan in close collaboration with its members and through its governing bodies, the group fulfilled the first part of its mission.
To help bring about the implementation of the PDDLA, the GIP Littoral Aquitain put in place a system of expertise, technical support and access to knowledge, shared by all of its members.

The GIP constitutes a tool of reflection, coordination and support for the development and management of coastal areas.

It enables the creation of partnerships and coastal projects and reinforces the coherence of local actions.

It has ties with :
- the Observatoire de la Côte Aquitaine (Aquitaine Coast Observatory), an observation and expertise tool for the management and development of the Aquitaine coastline;
- the RRLA (Réseau de Recherche du Littoral Aquitain – Aquitaine Coastline Research Network) which brings together 900 researchers who assist with decision-making and are at the service of fundamental research;
- and the regional delegation of the Conservatoire de l’Espace Littoral et des Rivages Lacustres (Conservatory of the Coastal Areas and Lakehore).

Thanks to this high level of organization, innovative actions have been possible and are experienced in Aquitaine. The presentation will detail some of them: the sustainable management of beaches and resorts, and local strategies for managing the erosion for example.