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From the Editor: MEAM releasing new compilation of MSP training opportunities

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Dear MEAM readers,

Here at MEAM, we've been seeing a surge in the availability of trainings opportunities for current MSP practitioners and those entering the field. In lieu of a normal lead article for MEAM this month, we worked with the EBM Tools Network and Blue Solutions to gather information on existing MSP training opportunities. We hope this new resource makes it easier for current and future practitioners to find training opportunities that increase their knowledge base and skills and learn from others' experiences. **[Click here to check out the new compilation of training opportunities!](#)**^[2]

Also, we are very pleased to announce that the webinar on the use of InVEST for coastal zone management and marine spatial planning in Belize has been rescheduled for Tuesday, June 7, at 1 pm US EDT/10 am PDT/5 pm UTC. **[Register for the webinar](#)** ^[3]. The webinar was postponed from its original February date for the best of reasons – the Belize government endorsed the integrated coastal zone management plan! **[Read more here](#)** ^[4].

Best wishes for your work,
Sarah Carr
MEAM Editor

Dispatches from the Field: Immersed in the Venice Lagoon ^[5]

By Tundi Agardy, Contributing Editor, MEAM. Email:tundiagardy@earthlink.net

Water is probably the first thing that springs to mind when you hear *Venice*. But the water that underlies the story of EBM in this great aquatic city is not just the seawater that fills Venice's canals and supports the weight of the 20 million tourists who snap selfies with the city's famed gondolieri every year. Safeguarding Venice's future is indeed about managing the sea and the ever more frequent breaching of canals and flooding of plazas brought about by rising tides. But it is also about freshwater, and brackish water, too.

I'm here in Venice again this year to participate in the teaching of the **[Erasmus Mundus Master Course on Maritime Spatial Planning](#)** ^[6]. This year the students are diving deep into the issues of managing the Venice Lagoon – the cradle of this globally significant cultural heritage site, a place thoroughly unique in the world. At 550 km², the lagoon is the largest in the Mediterranean and is important not only for the city of Venice that sits squarely in its center, but also for the many small towns and communities that are scattered across the lagoon seascape, and for the productive fisheries of the Northern Adriatic.

Visions for the lagoon, and the planning and management to achieve such visions, go far back in history – so far that you'd be hard-pressed to find an older example of regional-scale EBM.

Maintaining not only Venice, but also the lagoon

Though the founding of Venice in 451 AD was opportunistic^[1], subsequent centuries showed the Venetians to be careful, forward-thinking planners. And they were convinced they could manage nature.

Once the small islets in the lagoon had been consolidated into settlements, with buildings built on platforms supported by wooden pilings driven into the mud, the Venetians began to erect giant seawalls to tame the waves and tides. This helped modulate the incoming seawater but did little to stabilize the lagoon environment the people used for fishing and navigation. Lagoons are dynamic places, and the Venetians needed to stem the siltation that threatened to make the lagoon a stagnant shallow breeding area for mosquitoes.

Thus in 1507, massive experiments in large-scale ecosystem engineering began with the creation of what was perhaps the first EBM agency in the world – *Magistrato alle Acque*. The *Magistrato's* first intervention was a failed attempt to stabilize the lagoon by diverting freshwater from mainland canals into it, and its second was a more ambitious plan to divert all of the rivers (the Brenta, Musone, Tergola, Marzenego, Piave and Dese) away from it. The second attempt had the intended effect of stemming siltation but set in motion long-term problems from sediment starvation that decreased aquatic habitats such as marsh and seagrass beds and their stabilizing influences.

Over the subsequent centuries Venice accumulated a sophisticated knowledge of ecosystem dynamics and clung to the notion that they could create the lagoon they wanted: a brackish lagoon sheltered from the sea but with open access to it^[2] that provided food security with the fish and shellfish that characterized their cuisine.

New pressures cloud the vision

Modern times have complicated the story. The high waters (*acqua alta*) that had periodically flooded the City began to be more frequent as sea levels rose, and the city began sinking into the mud. Venice also became flooded in another way – tourists descended on it in ever-larger droves with the motorboats (and more recently giant cruise

ships) transporting them creating wakes that exacerbated erosion and added to the sinking.

Yet Venetians continued their age-old tradition of protecting what they and the world so valued. After a disastrous flood that sent water levels to record high levels, a law was passed in 1973 ([special law 171/1973](#)^[7]) that legislated landscape-scale interventions: it required management to protect Venice 'in the lagoon system' in which it is situated. This meant a massive restoration project to recover ailing seagrass beds and disappearing saltmarshes so they could stabilize shorelines and control flooding. To date over 1,600 hectares of salt marsh and 12 km of coastal dunes have been restored in the lagoon, and a massive amount of work has gone into environmental remediation (removing sediments polluted by industrial development, harvesting macroalgal overgrowth, and stabilizing canals). Most dramatically, Venice has almost completed its [MOSE project](#)^[8] – a system of mobile mechanical barriers that can be erected to keep out the sea when major flooding threatens the City.

Whether Venice can be saved from rising tides, cumulative environmental degradation, and the pressures of mass tourism, only time will tell. But this experiment in EBM has been going on for centuries, and the Venetians' struggle to articulate a vision and bring it to fruition informs the whole of our watery world.

[1] The Veneti people who inhabited the coastal areas in the first century AD fled repeatedly into the marshes to hide out in the lagoon's small islands while marauding invaders pillaged the mainland. With the arrival of Attila the Hun, however, they realized that permanent settlement was the only solution.

[2] Throughout the Middle Ages the Republic of Venice was one of the great maritime powers of the world and the heart of trade between the Middle East and Europe.

The EBM Toolbox: Tools and resources for measuring blue carbon^[9]

Editor's note: The goal of The EBM Toolbox is to promote awareness of tools for facilitating EBM and MSP processes. It is brought to you by the EBM Tools Network, a voluntary alliance of tool users, developers, and training providers.

The EBM Tools Network's discussion listserv recently tackled a question about what tools are currently available for quantifying blue carbon. Blue carbon is an area that is developing rapidly, and Network members had many great suggestions for tools and resources for getting started with blue carbon projects.

First of all, what is blue carbon and what are blue carbon projects?

Blue carbon is the carbon sequestered and stored in coastal and marine ecosystems. In particular, tidal marshes, mangroves, and seagrasses extract carbon dioxide (CO₂) from the atmosphere and store carbon within plant biomass. This carbon is eventually transferred to the soil carbon pool, and wetlands that build over time are continually sequestering carbon as they bury old soil with new. When these ecosystems are degraded, the stored carbon can be released into the atmosphere very rapidly.

- [The Science and Management of Coastal Blue Carbon](#)^[10] gives an excellent overview of how wetlands store greenhouse gases (it's not just CO₂!), the climate mitigation benefits of conservation and restoration actions, and how to key considerations for coastal managers thinking about blue carbon projects.
- [Building Blue Carbon Projects – an Introductory Guide](#)^[11] provides a snapshot of common blue carbon project elements based on existing projects and introduces key issues for consideration. [See a webinar about the guide](#)^[12].

What tools are available for quantifying blue carbon?

We learned about two software or online tools that are currently available for estimating blue carbon.

- The [Integrated Valuation of Ecosystem Services and Tradeoffs \(InVEST\) Coastal Blue Carbon Model](#)^[13] provides spatially-explicit information on disturbances to vegetation caused by climate change (e.g., sea level rise) and human activities (e.g., draining of a wetland or shoreline hardening). The Blue Carbon model can also be used to value avoided emissions and identify where on the land or seascape there are net gains or losses in carbon over time. [See a webinar about this tool in action in Galveston Bay, Texas \(US\)](#)^[14]
- The [Blue Carbon Mapping Tool](#)^[15] provides a rapid overview of the approximate total carbon stock value for a selected area of interest. This information is further broken down to provide information on the contribution of each ecosystem to the total carbon stock of the selected area. The tool is currently configured for the United Arab Emirates. [See a webinar about this tool in action](#)^[16].

In addition to the tools above, a number of guides and project reports also provide critical information for quantifying blue carbon.

- [Coastal Blue Carbon: methods for assessing carbon stocks and emissions factors in mangroves, tidal salt marshes, and seagrass meadows](#)^[17] provides scientists and coastal managers with methods for measuring carbon stocks and greenhouse gas emissions in coastal ecosystems.
- [A User-friendly Model for Predicting Greenhouse Gas Fluxes and Carbon Storage in Tidal Wetlands](#)^[18] lays out a preliminary model for estimating greenhouse gases in tidal wetlands using data from Waquoit Bay, Massachusetts, US. The model is currently being expanded for broader application in New England and the US East Coast.
- [Coastal Blue Carbon Opportunity Assessment for the Snohomish Estuary: The Climate Benefits of Estuary Restoration](#)^[19] quantifies the climate mitigation benefits of restoring tidal wetland habitat using examples from the Snohomish Estuary in Puget Sound, Washington State, US. The project approach developed for this assessment is transferable to other estuaries.
- [Protocols for the measurement, monitoring and reporting of structure, biomass and carbon stocks in mangrove forests](#)^[20] describes the approaches necessary for the measurement, monitoring, and reporting of structure, biomass, and carbon stocks in mangrove forests.

Last but definitely not least!

2015 was a big year for blue carbon with the approval of the [VM0033 Methodology for Tidal Wetland and Seagrass Restoration](#)^[21] by Verified Carbon Standard (VCS). This is the first globally applicable greenhouse gas accounting methodology for coastal wetland restoration and allows salt marsh, seagrass, mangrove, and other tidal wetland restoration projects to earn carbon credits. [A manual for project developers considering and planning blue carbon projects using the VCS VM0033 Methodology](#)^[22] is available.

Interested in learning even more? Check out the following resources:

- [Restore America's Estuaries Coastal Blue Carbon page](#)^[23]
- [The Blue Carbon Initiative's website](#)^[24]
- [The Blue Carbon Community's Blue Carbon Portal](#)^[25].

Many thanks to the EBM Tools Network for providing this information! If you are interested in joining the Network to share information about tools and resources for coastal and marine conservation and management, [sign up here](#)^[26].

Latest News and Resources for Ocean Planners^[27]

Belize endorses coastal zone management plan with zoning

In February, the Belize government endorsed Belize's first National Integrated Coastal Zone Management Plan. In a keynote address, Deputy Prime Minister Gaspar Vega called the plan a "pioneering step towards strengthening the governance of coastal resources through the strategic transition from sectoral management to a coordinated, cross-sectoral decision making regime". The plan includes a zoning scheme and policy actions designed to ensure that economic returns from key coastal resources are maximized, environmental impact is minimized, and, where possible, ecological health is enhanced. [Read the full plan](#)^[28]. [Learn more about the use of the Integrated](#)

New tool helps facilitate collaborative processes

Collaborative decision-making approaches help processes deal with complex technical information and reconcile conflicting interests. A new web-based tool developed by the University of Michigan School of Natural Resources and the Environment provides strategies and illustrative video clips based on the California Marine Life Protection Act Initiative for facilitating collaborative decision-making processes. The tool was developed for stakeholders, facilitators, agency officials, and students among others. [Access the tool](#) ^[30].

New online marine planning learning opportunity available

The Natural Capital Project and Duke University are piloting a new online marine planning learning opportunity "Case Studies Integrating Nature's Value into Marine Planning". The course consists of three 90-minute self-paced learning modules. Modules introduce key concepts and in-depth analysis of marine planning processes in Africa, Asia, Latin America, and North America. Participants will be able to interact with real data, legal frameworks, and decision-support tools and will practice engaging stakeholders, managing and synthesizing information, and analyzing tradeoffs. Optional technical assessments are also available for each module for those interested in practicing basic spatial analysis (GIS mapping). The first module is currently available, and the second and third modules will be released in the coming months. Registration is limited to 100 practitioners and is free of charge. [Learn more](#) ^[31] and [register](#) ^[32].

South Africa releases draft of MSP bill for comment

The South African government has released a draft of an MSP bill for public comment. The bill legislates the development of a marine spatial plan informed by maps and spatial data of different sector uses and compatible and incompatible uses within specific ocean planning areas, as well as emerging and future uses, environmental change impacts, and community and cultural values. [Read the draft bill](#) ^[33] and send comments by May 23, 2016, to tmspbill@environment.gov.za.

Ireland publishes draft MSP regulations for comment

In July 2014, EU Directive 2014/89/EU established a framework for maritime spatial planning. The directive obliged all EU coastal Member States to transpose the directive into national law by September 2016 and establish maritime spatial plans by 2021. The Irish Department of the Environment, Community and Local Government has drafted regulations intended to transpose the Directive into Irish law and invites submissions on the draft regulations. [Read the draft regulations and learn more about the consultation process here](#) ^[34]. Comments on the draft regulations should be sent by May 6, 2016, to tmmsp@environ.ie.

From the Archives: Lessons for EBM from the Field of Change Management: Getting Institutions to Accept Change (MEAM Apr-May 2010, Issue 3:5) ^[35]

Editor's Note: From the Archives calls attention to past MEAM articles whose perspectives and insight remain relevant.

One of the main challenges for implementing EBM and MSP approaches is getting individuals and groups to change to a new way of doing things. Change management is a scientific field that studies why and when humans agree to alter how they do things. [Read lessons from the field of change management relevant for implementing EBM and MSP approaches](#) ^[36].

[Printer-friendly version](#) ^[37] [PDF version](#) ^[38]

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