

KAUST Research Workshop:  
Blue Carbon – the role of coastal ecosystems in climate change mitigation and  
adaptation  
Red Sea Research Center  
King Abdullah University of Science and Technology,  
Thuwal, Saudi Arabia  
20<sup>th</sup> – 21<sup>st</sup> March 2017

Sunday 19<sup>th</sup> March

Arrival and kick-off of KAUST Elementary School Mangrove Program and KAUST  
Secondary School Blue Carbon Program

Monday 20<sup>th</sup> March

Location: Auditorium 0215 (between buildings 2 & 3)

8.30am **Welcome and introduction**

Prof. Jean Frechet, KAUST Vice President for Research

Dr. Osama Faqeeha, Deputy Minister for Environment, Ministry of Environment,  
Water and Agriculture of the Kingdom of Saudi Arabia

8:45 -12:30 **Working session 1**

Blue carbon science: Challenges and opportunities

Chair: Prof. Carlos M. Duarte, Director, Red Sea Research Center, KAUST, Saudi  
Arabia

8:45- 9:15 **Keynote lecture**

Blue carbon science: Challenges and opportunities

Prof. Carlos Duarte RSRC-KAUST

9:15 - 9:35 Accumulation rates of inorganic carbon in sediments of seagrass  
meadows and mangroves forests: a meta-analysis

Dr. Vincent Saderne, RSRC, KAUST

9:35 - 9:55 Effects of disturbance on blue carbon ecosystems

Dr. Peter Macreadie, Deakin University, Australia

9:55 - 10:15 Effect of seagrass species and location in determining carbon  
inventories in seagrass meadows

Prof. Hilary Kennedy, School of Ocean Sciences, University of Wales, Bangor, UK

10:00 - 10:15 Major seagrass carbon sinks worldwide: Shark Bay, Western Australia

Mrs. Ariane Arias, Universidad Autonoma de Barcelona, Barcelona, Spain

10:15 -10:45 Coffee Break

**10:45 - 11:15 Keynote lecture**

Sea level rise and its influence on blue carbon stocks

Prof. Catherine Lovelock, University of Queensland, Brisbane, Australia

**11:15 - 11:35 Evaluating losses of C stocks in seagrass meadows with Pb-210: recent examples**

Prof. Pere Masque, School of Science, Edith Cowan University

**11:35 - 11:55 Seaweed as a blue carbon resource**

Dr. Dorte Krause-Jensen, Aarhus University, Aarhus, Denmark

**11:55 - 12:15 Seaweed farming along coastal China and its associated benefits**

Ms. Zheng Yuhua, Ocean College, Zhejiang University, Hanzhou, China

**12:15 - 12:35 Mediterranean seagrass (*Posidonia oceanica*) carbon sinks under increasing anthropogenic pressures**

Dr. Nuria Marbà, Mediterranean Institute of Advanced Studies, Spanish National Research Council, Mallorca, Spain

**12:35 - 13:45 Lunch**

**13:45-15:30 Working session 2**

Blue carbon in the Arabian Seas

Chair: Prof. Dr. Ziad H. Abu-Ghararah, Secretary General, The Regional Organization for the Conservation of the Environment of the Red Sea and Gulf of Aden (PERSGA)

**13:30- 14:00 Keynote lecture**

Mangrove restoration techniques in the region (Arabian Gulf and Red Sea)

Dr. Ronald Loughland, Marine Protection Unit/Environmental Engineering Division, Environmental Protection Department, Saudi ARAMCO

**14:00 - 14:20 The effect of bioturbation on the mangrove sediment microbiome**

Prof. Danielle Daffoncio, RSRC, KAUST

**14:20 - 14:40 Blue carbon potential and policy options in the Red Sea and Gulf of Aden region**

Dr. Ahmed Khalil, PERSGA

**14:40 – 15:00 Carbon in the Arabian Gulf: the potential of Arabian Gulf ecosystems to act as a carbon sink**

Dr. Michael Cusack, RSRC, KAUST

**15:00 - 15:20 The role of Red Sea seagrass in climate change mitigation and adaptation**

Dr. Oscar Serrano, Edith Cowan University, Perth, Australia

**15:20 - 15:40 Arabian Gulf seagrass** Dr. Krishnakumar P. Kadinjappalli, Center for Environment and Water, King Fahd University of Petroleum and Minerals

15:40 – 16:00 Blue carbon resources and their conservation efforts in Sudan  
Dr. Nahid Osman, Faculty of Marine Science and Fisheries, Red Sea University, Sudan

16:00 – 16:20 Blue carbon resources and their conservation efforts in Egypt  
Dr. Sayed Omer, Egyptian Environmental Affairs Agency, Egypt

16:30- 18:30 **Reception and poster session**  
Sea View area, KAUST Campus Library

Tuesday 21 March

8:30 **Working session 3**  
Blue carbon in action

Chair: Dr. Ali M. Qasem, Marine Protection Unit/Environmental Engineering  
Division Environmental Protection Department, Saudi Aramco

8:30 - 9:00 **Keynote lecture**  
Blue Carbon Initiative: Taking blue carbon from science to action  
Dr. Emily Pidgeon, Conservation International, Leader International Blue Carbon Initiative, Washington DC, USA

9:00 - 9:30 Quantifying adaptation and mitigation co-benefits of coastal marine vegetation functions under a changing climate  
Dr. Iris Hendriks, IMEDEA, Spanish National Research Council, Mallorca, Spain

9:30 - 9:50 Coastal blue carbon opportunity assessment for neutralization of the impact of sea level rise and storm surge in Oman  
Dr. Yassine Al Charaabi, Director, CESAR, Sultan Qaboos University

9:50 - 10:10 Mitigation=Adaptation in restoration of reclaimed (drained) wetlands  
Prof. Gail Chmura, McGill University, Montreal, Canada

10:10 - 10:40 Coffee Break

10:40 -11:00 Australian blue carbon stocks and their incorporation in the national Emissions Reduction Fund  
Prof. Paul Lavery, Edith Cowan University, Perth, Australia

11:00 -11:20 Carbon - the role of coastal ecosystems in climate change mitigation and adaptation  
Dr. Yousra Soliman, Department of Biological and Environmental Sciences, College of Arts and Sciences, Qatar University

11:20- 12:30 **Panel discussion: Towards a regional Blue Carbon Initiative**  
Discussion leaders: Dr. Emily Pigeon, Prof. Carlos M. Duarte, Dr Ali Qasem, Ministry of Environment, Water and Agriculture of Saudi Arabia

12:30- 13:30 Lunch

**13:30 - 14:45 Working session 4**

Blue carbon strategies for climate change mitigation and adaptation co-benefits

Chair: Dr. Radhouan Benhamadou, Qatar University, Doha, Qatar

**13:30- 14:00 Keynote lecture**

Valuing carbon stocks and other ecosystem services from mangroves

Prof. J. Boone Kauffman, Oregon State University, USA

14:00 - 14:20 Algal biorefinery: prospects for CO<sub>2</sub> capture and feedstock production

Dr. Radhouan Benhamadou, Qatar University, Doha, Qatar

14:20 - 14:40 Ongoing project: Valuing climate change mitigation and adaptation by coastal ecosystems

Dr. Tomohiro Kuwae, Port and Airport Research Institute, Yokosuka, Japan

14:40 - 15:00 Opportunities for blue carbon strategies in China

Prof. Jiaping Wu, Ocean College, Zhejiang University, Hanzhou, China

15:00 – 15:30 Coffee Break

**15:30 – Working session 5**

Methods and open questions in blue carbon science

Chair: Prof. Hilary Kennedy, School of Ocean Sciences, University of Wales, Bangor, UK

**15:30 – 16:00 Keynote lecture**

The blue carbon tool box

Dr. Oscar Serrano, Edith Cowan University, Perth, Australia

16:00 – 16:20 Carbon sink capacity of Red Sea mangroves

Dr. Hanan Almahasheer, University of Dammam, Dammam, Saudi Arabia

16:20 - 16:40 The "other" carbon in Blue Carbon habitats: are carbonates a net source or sink of CO<sub>2</sub> from the atmosphere?

Prof. James Fourqurean, Florida International University, Miami, USA

**16:40 – 17:30 Panel discussion: open questions in Blue Carbon Science**

Discussion leaders: Prof. Jim Fourqurean, Dr. Dorte Krause-Jensen, Dr. Peter Macready, Dr. Oscar Serrano, Prof. Hilary Kennedy

17:20 – 17:30 Closing Remarks

END of WORKSHOP