# **Activity Report**

## **Deltas Initiative: Developing a Decadal Science Plan for Deltas**

#### August 30-31, 2012

CUNY Environmental CrossRoads Initiative, City College of New York - co-supported by LOICZ

### Delta Decadal Initiative moves forward

Deltas are unquestionably "hot spots" of change in the coastal environment, important for commerce and human habitation, but also vulnerable to human-induced changes from upstream water management, threatened from sea level rise from downstream, and affected by local resource exploration. The importance of deltas for economic development, food security, energy, and mineral exploration, among others, has been articulated in multiple publications, and deltas have been the subject of an increasing number of international meetings over the last decade. In 2011, a group of international researchers proposed to bring deltas to the forefront of public awareness and make them showcases of international collaboration on coastal sustainability by calling for an International Year of Deltas (IYDs) (Foufoula-Georgiou et al., 2011). This effort has been endorsed by several international scientific Unions and academic institutions (http://www. iyds-2013.org/).

Earlier this year, the Belmont Forum, an organization of the world's major and emerging funders of global environmental research, put out a call for proposalsto the international community to foster environmental sustainability research across disciplines and across national borders starting with two main focus themes: freshwater security and coastal vulnerability. A project on "DELTAS" was submitted by a group of researchers from 12 countries and 22 institutions and was invited to be developed to a full proposal which was submitted in December, 2012. In parallel, an effort to develop a Deltas Decadal Initiative (DDI) is currently under way.

The Delta Decadal Initiative (DDI), aims to catalyze the international research and stakeholder communities toward co-developing a framework of research and decision-making based on an integrated modeling approach of the interacting physical-socio-economic factors affecting delta "health". Specifically, a Science Plan to guide the DDI willspell out the integrative research, the data requirements, and the actionable products needed to inform management and decision making for protecting and sustaining the economic and environmental integrity of deltas around the world. Special emphasis will be given on developing: (a) integrated data sets and metrics to assess delta vulnerability; (b) frameworks for data collection and sharing; and (c) models that can be used for scenario building towards informing policy and management. Regional collaboration and engagement with stakeholders is a must and mechanisms for ensuring this will be proposed.



Source: www.tagxedo.com

#### Initial planning workshop New York:

Initial planning for this mid to long-term initiative was the central objective of a meeting co-organized by Efi Foufoula-Georgiou (University of Minnesota, NCED) and Irina Overeem (CSDMS) and hosted by Charlie Vörösmarty at the City College of New York in August 2012.

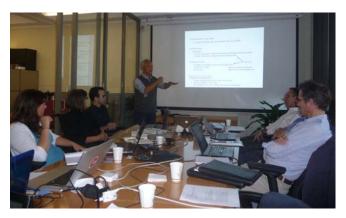
This meeting brought together scientists from the physical, social and biological sciences to formulate the DDI science plan to improve resilience of world deltas over the next decade.

While collecting and synthesizing the key scientific issues at the core of Delta vulnerability a major objective of DDI is to build a framework that allows regional scientists, decision makers and engineers to adapt to increasing pressure from population growth, industrialization and a changing climate in deltas.

Attendees of the DDI Science Plan meeting included Efi Foufoula-Georgiou (U of Minnesota, USA), Irina Overeem (U of Colorado, USA), Yoshi Saito (Geological Society of Japan, Japan), Charles Vörösmarty (City College of New York, USA), Hartwig Kremer (Helmholtz-Zentrum Geesthacht, Germany, LOICZ), Ian Harrison (Conservation International, Canada, DIVERSITAS), Ramesh Ramachandran (National Centre for Sustainable Coastal Management, Chennai, India, LOICZ), Tom Bucx (Deltares, Delft, the Netherlands), Zach Tessler (City College of New York, USA), Phillipe Van Cappellen (U of Waterloo, Canada), Kevin Trenberth (GEWEX, NCAR, USA), Robert Twilley (Louisiana State U, USA), John Day (Louisiana State U, USA), Jorn Scharlemann (United Nations Environment Programme), and Fabrice Renaud (United Nations U, Environment and Human Security, Germany). The variety of issues discussed is reflected in the key presentations listed here below:

- A Vision for a Decadal Delta Initiative (Speaker: Efi Foufoula-Georgiou)
- Ecogeomorphologyof Deltas (Speaker: Robert Twilley)
- Developing a versatile modeling framework for delta sustainability (Speaker: Irina Overeem)
- Changing Water Availability in the Presence of Climate Change (Speaker: Kevin Trenberth)
- Integrated Delta Functioning (incl. ecosystem services valuation) (Speaker: John Day)
- Mapping and assessing vulnerability and resilience (Speaker: Fabrice Renaud)
- Deltas and Ecosystem Services for Sustainability (Speaker: Ian Harrison)
- Carbon and Nutrient Cycles in Deltas (Speaker: Philippe van Cappellen)
- Data needs and delta management in developing countries (Speaker: Yoshi Saito)
- Taking understanding to applied coastal zone management (Speaker: Tom Bucx)
- Building an International Alliance towards Applied Research (Speaker: Hartwig Kremer)
- Assessing the Status and Vulnerability of Deltas Worldwide (Speaker: Charles Vörösmarty)
- Empirical indicators of relative sea level rise in the world's deltas (Speaker: Zachary Tessler)

For LOICZ the further development of the DDI science plan and active collaboration with all institutions involved including UNEP, UNU and hopefully the GEF International Waters is of mutual benefit as part of its scientific hotspot on River Mouth Systems, Estuaries and Deltas. This initiative including the Belmont Forum proposal submitted builds on earlier and collective investments on this topic by LOICZ, CSDMS and the GWSP. We see this as an initial and major contribution into FUTURE EARTH which relies on joint efforts of a variety of Earth system science entities.



*Co Chair, Yoshiki Saito addressing Delta issues in the developing world. (Photo: H. Kremer)* 



Prof. Efi Foufoula-Georgiou (Co-chair) outlining the DDI framework. (Photo: H. Kremer)



Deltas Initiative Expert Group lunch-break at City College of New York. (Photo: LOICZ)

