

GC Sea Level/CLIVAR-ODC Joint Summer School

Past, present and Future Sea level changes

25-30 June 2018, Qingdao-China

Summer school is aimed at Early Career Scientists (expected number 30-40 participants)

Goal: The Summer School has the objective to provide early career scientists and engineers specializing in sea level research with an update in observations, knowledge, and understanding for the study of global and regional sea level change and their impacts in coastal areas.

Scope: This Summer School will cover a wide range of physical processes contributing to global and regional sea level change: from observations to modelling of the main physical processes of global and regional sea level rise and variability. In addition, there is a specific focus on impact studies in coastal areas.

Day 1

Module	Time	Activity	Name
1	9-10:30	Opening, Introduction, Self-introduction by participants	Local organisers
	10:30-11:00	Break	
2	11:00-12:30	Introduction to Sea Level Science	John Church
	12:30-14:00	Lunch	
3	14:00-15:30	Past sea level changes. (geological scale briefly, tide gauge observations, observing systems, use of tide gauge data for climate research, use of altimeter data)	S. Jevrejeva
Part 1	15:30-16:00	break	
4	16:00-17:30	Modern observations. (including brief info about satellite altimetry, GRACE and others, energy budget, sea level budget components, the role of the ocean component in sea level budget)	Detlef Stammer
	*****	Dinner	
	19:00-20:00	Poster presentation by participants, group 1	

Day 2

Module	Time	Activity	Name
5	9:00-10:30	Ocean observations, heat uptake, thermosphere sea level (including ocean in situ temperature, thermosteric sea level, observing systems: past, present and future, detection and attribution). Part 1	Karina von Schuckmann
	10:30-11:00	Break	
6	11:00-12:30	Ocean observations, heat uptake, thermosphere sea level (including ocean in situ temperature, thermosteric sea level, observing systems: past, present and future, detection and attribution). Part 2	Karina von Schuckmann
	12:30-14:00	Lunch	
7	14:00-15:30	Observed and modelled Sea level variability: Observations (including role of climate modes, role of the ocean in SL variability, time series analysis, use of statistical methods for SL studies)	Catia Domingues
	15:30-16:00	Break	
8	16:00-17:30	Observed and modelled sea level variability: Modelling (including global, regional and coastal), use of altimeter data	Detlef Stammer
	*****	Dinner	
	19:00-20:00	Poster presentation by participants, group 2	

Day 3

Module	Time	Activity	Name
9	9:00-10:30	Development of new climate model	Fangli Qiao
	10:30-11:00	Break	
10	11:00-12:30	Sea level components. Contribution from Glaciers, observations and modelling	Cunde Xiao
	12:30-14:00	Lunch	
11	14:00-15:30	Visit to labs of FIO	Local organisers
	15:30-16:00	Break	
12	16:00-17:30	Visit to labs of FIO (Cont.)	Local organisers
	*****	Dinner	
	19:00-20:00	Poster presentation by participants, group 3	

Day 4

Module	Time	Activity	Name
13	9:00-10:30	Vertical land movement. (GPS observations, observing systems for geophysical signals, including GIA and local subsidence, include GRACE here or in the next lecture)	Matt King
	10:30-11:00	Break	
14	11:00-12:30	Practical Applications: GIA model corrections to tide gauges, computing trends from individual gauges, sea-level fingerprints etc. Observed contributions from ice sheets	Matt King
	12:30-14:00	Lunch	
15	14:00-15:30	Ice sheet contributions – dynamics (Formation and evolution of ice sheets, contemporary evolution of Greenland and Antarctic mass balance, processes behind observed changes in the dynamics of outlet glaciers)	Gael Durand
	15:30-16:00	Break	
16	16:00-17:30	Ice sheet contributions – modelling and projections (Brief history of ice sheet modelling, current challenges in numerical developments, projections of ice sheets' evolution)	Gael Durand
	*****	Dinner	
	19:00-20:00	Lecture about WCRP activity	Detlef Stammer

Day 5

Module	Time	Activity	Name
17	9:00-10:30	Sea level projections. (Global & regional, local approaches, comparison with 20 th century observations/modelling; introduction to fingerprints, patterns, e.g. the role of land water, glaciers)	S. Jevrejeva, J. Church
	10:30-11:00	Break	
18	11:00-12:30	Projections for the 21 st century and beyond	S. Jevrejeva, J. Church
	12:30-14:00	Lunch	
19	14:00-15:30	Session 1: understanding and managing coastal hazards (including flooding, erosion with some references to groundwater salinization): (1) examples of impacts from current events; (2) the physical phenomena driving the hazards; (3)	Gonéri Le Cozannet

		current management of coastal risks (prevention, preparedness, crisis management, response, adaptation)	
	15:30-16:00	Break	
20	16:00-17:30	Session 2: coastal impacts of sea level rise (shoreline changes, extreme water levels and flooding): (1) impacts from sea level rise from a global to local perspective; (2) managing uncertainties in sea level rise impact assessments; (3) evaluating the expected benefits of adaptation and mitigation; (4) services to support adaptation in coastal areas	Gonéri Le Cozannet
	*****	Dinner	
	19:00-20:00	Extra activity	

Day 6

Module	Time	Activity	Name
21	9:00-10:30	Challenges for sea level science	J. Church
	10:30-11:00	Break	
22	11:00-12:30	Closing Ceremony	Local organisers
	12:30-14:00	Lunch	