

DETAILED AGENDA

DAY 1 – Wednesday April 11

0900-0915	Welcome and meeting outline 0900-0910 Welcome and objectives for workshop – Workshop Chairs Nicolas Metzl and Bronte Tilbrook 0910-0915 Sponsors welcome and logistics IOCCP (Maria Hood), SOLAS (Emily Breviere), IMBER (Sylvie Roy), GCP (Pep Canadell) Logistics & information (Roger Dargaville)
	Vulnerabilities in the Ocean Carbon-Climate System Chairs: Corinne Le Quéré and Nicolas Gruber
0915-1000	State of knowledge on vulnerability of the oceanic CO ₂ sink Speakers: Corinne Le Quéré and Nicolas Gruber
1000-1030	Possible long term impacts of anthropogenic carbon emissions on climate, ocean circulation, ecosystems and biogeochemical cycles in model simulations Speaker: Andreas Schmittner
1030-1100	Coffee break
1100-1130	Results from coupled carbon-climate models. Speaker: Laurent Bopp
	What are the maximum impacts of projected environmental changes on marine biology and the carbon cycle? Chairs: Corinne Le Quéré and Nicolas Gruber
1130-1200	Potential impact of changes in marine ecosystems from laboratory/mesocosm experiments. Speaker: Ulf Riebesell
1200-1325	Lunch
1325-1355	Lessons from the geological past. Speaker: Ken Caldeira (30 min)
1355-1415	Potential impact of changes in marine ecosystems from model simulations. Speaker: Scott Doney
1415-1430	Surface Ocean CO ₂ Variability and Vulnerabilities in the Southern Ocean and the Arctic Ocean. Speaker: Liqi Chen
1430-1445	CO ₂ flux variability in the North Atlantic: Exploring physical and ecological drivers. Speaker: Galen McKinley
1445-1500	Exploring the impact of changes in oceanic dust deposition on CO ₂ fluxes and marine productivity between 1860 and 2100. Speaker: Alessandro Tagliabue
1500-1530	Coffee

	Ocean Carbon Sources and Sinks session I Chair: Nicolas Metzl
1530-1600	Decadal changes in chlorophyll a. Speaker: David Antoine
1600-1630	Decadal Changes in ecosystems Speaker: Gregory Beaugrand
1630-1700	Ocean CO ₂ inversions on pre-industrial / contemporary air-sea flux estimates Speaker: Sara Mikaloff-Fletcher
1700-1730	Poster set up
1730-2000	Poster session and welcome reception (7th floor restaurant)

DAY 2 Thursday April 12

	Ocean Carbon Sources and Sinks session II Chair: Scott Doney
0900-0945	Global Climatology of Air-Sea Fluxes Speaker: Rik Wanninkhof
0945-1000	Discussion
1000-1030	Regional View 1: North Atlantic Speaker: Ute Schuster
1030-1100	Coffee Break
1100-1130	Regional View 2: Arctic Ocean and Nordic Seas Speaker: Are Olsen
1130-1200	Regional View 3: North Pacific Speaker: Yukihiro Nojiri
1200-1330	Lunch
	Ocean Carbon Sources and Sinks session III Chair: Roger Dargaville
1330-1400	Regional View 4: Equatorial and South Pacific Speaker: Richard Feely
1400-1430	Regional View 5: Southern and Indian Oceans Speaker: Nicolas Metzl
1430-1500	Regional view 6: Coastal areas Speaker: Arthur Chen
1500-1530	Simulating interannual/decadal CO ₂ flux variability; underlying mechanisms and agreement with observations. Speaker: Scott Doney
1530-1600	Coffee
1600-1630	Estimating decadal variability of ocean carbon fluxes from atmospheric inversions Speaker: Christian Rödenbeck

1630-1700	Estimating ocean-atmosphere carbon fluxes from atmospheric oxygen measurements Speaker: Mark Battle
1700-1800	Open Discussion: Can we identify from field observations and model outputs the most likely regions of the ocean where the large-scale air-sea CO ₂ fluxes have changed in the recent past and are most susceptible to change in the future (i.e. most vulnerable) ? Can we identify the underlying processes? Can we assess the content and quality of the models that are used to quantify the observed and projected changes? (<i>Plenary discussion to guide Working Group I</i>). Discussion Leader / WG1 leader: Corinne Le Quéré Rapporteur: Chris Sabine
1800-1900	5x10 minutes activities overview presentations based on the national program written reports (note these are to be technical, not scientific). See list of national reports at the end of this agenda. <ul style="list-style-type: none"> • North Atlantic and Arctic Seas (Truls Johannessen/Ute Schuster) • North Pacific (Masao Ishii) • Equatorial and South Pacific (Feely) • Indian and Southern Ocean (Jacqueline Boutin) • Coastal (Arthur Chen)

DAY 3 Friday April 13

	Strategies to Estimate Air-Sea Fluxes of CO₂ session I Chair: Bronte Tilbrook
0900-0930	What do we learn from the use and/or assimilation of ocean CO ₂ data in coupled models Speaker: Reiner Schlitzer
0930-1000	Moorings: New results and new technology overview Speaker: Chris Sabine
1000-1030	Overview of proxy techniques for data extrapolation and interpolation Speaker: Chris Sabine
1030-1100	Coffee
1100-1130	Neural network approaches to data extrapolation and interpolation for surface pCO ₂ Speaker: Cyril Moulin
1130-1200	Air-sea gas exchange: State of knowledge and Southern Ocean GasEx Speaker: David Ho
1200-1330	Lunch
	Strategies to Estimate Air-Sea Fluxes of CO₂ session II Chair: David Ho
1330-1400	Combining satellite observations and in situ CO ₂ data with models to quantify air-sea flux (CASIX work) Speaker: Nick Hardman-Mountford
1400-1430	Using surface pCO ₂ decorrelation length scales to determine sampling

	resolution Speaker: Joellen Russell
1430-1500	Using biogeochemical models to develop sampling strategies Speaker: Andrew Lenton
1500-1530	Coffee
1530-1550	Overview of current global ocean pCO ₂ observations, new data releases, and data center / data flow issues. Speaker: Alex Kozyr
1550-1610	pCO ₂ Data base and synthesis efforts Speaker: Benjamin Pfeil
1610-1800	Open Discussion: Part I (1610-1705): Considering our largest unknowns, data and gas exchange uncertainties, interpolation / extrapolation techniques, new measurement technology, and observing system experiments, what have we learned and where do we go from here to develop observation strategies to meet research objectives? (<i>Plenary discussion to guide WG 2</i>). Discussion Leader / WG 2 Leader: Bronte Tilbrook Rapporteur: Roger Dargaville Part II (1705-1800): Considering existing projects, new results, and recent data releases, what needs are there for coordination and data synthesis activities? Should we begin developing a “GlobalView Ocean CO ₂ ” database? Should we develop scientific synthesis groups? (<i>Plenary discussion to guide WG 3</i>). Discussion Leader / WG 3 Leader: Dorothee Bakker Rapporteur: Helmuth Thomas

DAY 4 Saturday April 14

	Working Groups – in parallel & plenary 3 rooms – Room II (capacity of 200+ people), Room IX (80) and Room V (20)
0900-0930	Plenary session: Overview of Working Group Goals and Assignment of Rooms (Room II)
0930-1130	Working Groups 1, 2 and 3 in parallel
1130-1200	Plenary to report on progress, get feedback from whole group Working group 1 (10 minutes) Working group 2 (10) Working group 3 (10)
1200-1400	Lunch – extra long to allow for getting to local restaurants
1400-1600	Working groups 1, 2 and 3 in parallel
1600-1700	Plenary discussion to report on final recommendations Working group 1 (20 minutes) Working group 2 (20) Working group 3 (20)
1700-1730	Summary and actions
1730	End of meeting