

# CARBON TIME SERIES STATIONS: ATLANTIC & the MED

International Ocean Carbon Coordination Project ([www.ioccp.org](http://www.ioccp.org))

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Mooring/Station/ Ship name	Period of operation	Location	Basic description	Measurements frequency	PI	Country
<b>Atlantic Ocean</b>						
<b>Stations monitored from SHIPS</b>						
Barrow Strait (Arctic)	2004- present	Canadian Arctic Archipelago	TIC, TA, nutrients, $^{18}\text{O}$	1/year	K. Azetsu-Scott	Canada
BATS/OFP/BTM (NW Atlantic)	1988- present	31°40'N, 64°10'W	Time-series profile DIC and TA, and surface pCO <sub>2</sub> ; hydrography and biogeochemical measurements	monthly; bimonthly (January to April)	N. Bates (carbon) A. Knap, N. Bates, M. Lomas, R. Johnson (hydrography and biogeochemistry)	USA
CARIACO station	1995- present	10°30'N, 64°40'W	Water column core measurements up to 1310 m, including carbon measurements: POC, DOC, CO <sub>2</sub> , TOC	monthly	L. Lorenzoni	USA- Venezuela
Davis Strait (Arctic)	2004- present	From Baffin Island to Greenland	TIC, TA, pH, nutrients, $^{18}\text{O}$	1/year	K. Azetsu-Scott	Canada
ESTOC (European Station for Time series in the Ocean at the Canary Islands)	1995 - present	29°10'N, 15°30'W	3670m depth. Seasonal water column discrete pH, AT and CT including dissolved O <sub>2</sub> and nutrients	bi-daily surface pH and pCO <sub>2</sub>	M. González, M. Santana	Spain
E1/Plymouth Quest (English Channel)	2005- present	W English Channel	CT and AT since 2009, pCO <sub>2</sub> from 2005-2009 and 2011-present	monthly	N. Hardman- Mountford,	UK
GIFT (Strait of Gibraltar)	2005- present	35°52'N, 5°59'W	Seasonal water column discrete AT and CT including dissolved O <sub>2</sub> and nutrients	seasonal	E. Huertas	Spain
Gulf of Maine	2004- present	42°50'N, 70°20'W	pCO <sub>2</sub> , DIC, O <sub>2</sub> , nutrients	2009: monthly, currently: 4/year	J. Salisbury D. Vandemark	USA

Hydrostation S (NW Atlantic)	1983-present	32°10'N, 64°30'W	surface DIC and TA; hydrography and biogeochemical measurements	monthly	A. Dickson A. Knap	USA
Iceland Sea	1983-present	68°N 12°40'W	Profile, pCO <sub>2</sub> and TIC, O <sub>2</sub> and nutrients	seasonal	J. Olafsson	Iceland
Irminger Sea	1983-present	64°20'N, 28°W	Profile, pCO <sub>2</sub> and TIC, O <sub>2</sub> and nutrients	seasonal	J. Olafsson	Iceland
L4/Plymouth Quest (English Channel)	2005-present	W English Channel	CT and AT since 2009, pCO <sub>2</sub> from 2005-2009 and 2011-present	weekly	N. Hardman-Mountford,	UK
Labrador Sea	1993-present	from Labrador to Greenland	TIC, TA, pH, O <sub>2</sub> , nutrients, CFCs, Chlorophyll (a)	1/year	K. Azetsu-Scott	Canada
Station M (Norwegian Sea)	1948 – 2009* 2010-present	66°N, 2°E	*weather ship 2000m depth. plankton 1948 - present; dissolved oxygen 1953 - present; biogeochemistry (chlorophyll, nitrate 10-1000m) 2000 -present.	bi-monthly	I. Skjelvan, T.Johannessen	Norway
TENATSO (Tropical Eastern North Atlantic Time Series Observatory)	2006-present	17°25'N, 24°30'W	3600m depth. Water column discrete AT and CT including dissolved O <sub>2</sub> and nutrients, and TOC	monthly	C. Santos, I. Monteiro, D. Wallace	Cape Verde, Germany
<b>Stations monitored by MOORINGS</b>						
Appledore Island (Gulf of Maine)	2006-present	43°N, 70°30'W	MAPCO2 system, SAMI pH, water column	continuous	D. Vandemark C. Sabine J. Salisbury	USA
Baltic Sea	2000-present	59°27'N, 18°59'E	pCO <sub>2</sub> , T and air-sea CO <sub>2</sub> flux	continuous	A. Rutgersson	Sweden
BATS (NW Atlantic)	1988-present	31°40'N, 64°10'W	surface pCO <sub>2</sub>	continuous	N. Bates (carbon), A. Knap, N. Bates, M. Lomas, R. Johnson (hydrography and biogeochemical measurements)	USA
CIS (Central Irminger Basin)	2002 - present	59°24'N, 39°24'W	2800m depth. Multidisciplinary full-depth mooring: 45m: pCO <sub>2</sub> , O <sub>2</sub> , chlorophyll, nitrate.	continuous	J. Karstensen	Germany
Coastal Mississippi	May 2009-present	32°N, 88°36'W	MAPCO2 system	continuous	C. Sabine	USA

Crescent Reef Bermuda	Dec 2010- present	32°24'N, 64°48'W	MAPCO2 system	continuous	C. Sabine, A. Anderson	USA
ESTOC (European Station for Time series in the Ocean at the Canary Islands)	2010- present	29°03'N, 15°30'W	Multidisciplinary full-depth mooring: Surface (1.5m): chlorophyll, dissolved oxygen, pCO <sub>2</sub> , pH, hydrocarbon. 150m: Nitrate/nitrite, chlorophyll.	seasonal	M. González, M. Santana	Spain
GIFT (Strait of Gibraltar)	2011- present	35°52'N, 5°59'W	Multidisciplinary full-depth mooring: Surface (1.5m): pCO <sub>2</sub> , pH	continuous	E. Huertas	Spain
Grays Reef (Coastal USA)	2006- present	31°24'N, 80°54'W	pCO <sub>2</sub> (MAPCO2) and pH (SAMI pH)	continuous	C. Sabine, W.-J. Cai, S. Noakes	USA
Hog Reef Bermuda	Dec 2010- present	32°28'N, 64°50'W	MAPCO2 system	continuous	C. Sabine, A. Anderson	USA
NE Channel (Gulf of Maine)	2008- present	42°18'N, 65°06'W	SAMI pCO <sub>2</sub> , O <sub>2</sub> , water column	continuous	D. Vandemark M. DeGrandpre	USA
PAP-SO (Porcupine Abyssal Plain - Sustained Observatory)	1989 - present	49°N, 16°30'W	4800m depth. Multidisciplinary full- depth mooring: pCO <sub>2</sub> , O <sub>2</sub> , chlorophyll, nitrate/nitrite (25m), particle flux (3000, 3050, 4700 m), time-lapse photography (seafloor).	continuous	R. Lampitt	UK
PIRATA mooring	2006- present	6°S, 10°W	CARIOCA buoy	hourly fCO <sub>2</sub>	N. Lefevre	France
PIRATA mooring	2008- present	8°N, 38°W	CARIOCA buoy	hourly fCO <sub>2</sub>	N. Lefevre	France
Station M (Norwegian Sea)	2010- present	66°N, 2°E	Battelle subsurface pCO <sub>2</sub> , oxygen	continuous	I. Skjelvan, T. Johannessen	Norway
Ste Anna (Scheldt estuary, North Sea)	2002- present	Upper Scheldt estuary	pCO <sub>2</sub> , salinity and temperature	continuous	A. Borges	Belgium
TENATSO (Tropical Eastern North Atlantic Time Series Observatory)	2006- present	17°24'N, 24°30'W	Multidisciplinary sub-surface mooring: pCO <sub>2</sub> (181m), O <sub>2</sub> (54, 182m), DIC/TOC from water samples from cruises.	continuous	C. Santos, I. Monteiro, D. Wallace	Cape Verde, Germany
<b>Mediterranean Sea</b>						
<b>Stations monitored from SHIPS</b>						
BBMO (Blanes Bay Microbial Observatory)	2008- present	41°40'N, 2°48'E	Discrete Alkalinity, pH, Chlorophyll, nutrients (surface)	monthly	E. Calvo C. Pelejero	Spain

DYFAMED	1991-2001; 2003 – present	43°15'N, 7°31'E	2300m depth. Biogeochemistry (nutrients, O2 and AT-CT and pH) from water bottles	monthly	C. Goyet, L. Coppola	France
Medes Islands	2008-present	42°03'N, 03°15'E	Discrete Alkalinity, pH, Chlorophyll, nutrients (0 - 80m, 4 layers )	monthly	E. Calvo C. Pelejero	Spain
Point B	2007-present	43°41'N, 7°19'E	Temperature, salinity, alkalinity and dissolved inorganic carbon	monthly	J.-P. Gatusso	France
<b>Stations monitored by MOORINGS</b>						
DYFAMED	1991-2001; 2003 – present	43°15'N, 7°31'E	Subsurface mooring: Particle flux (200, 1000m).	monthly	C. Goyet, L. Coppola	France
Medes Islands	2009-present	42°03'N, 03°13'E	SAMI-pH instrument at 20m depth	continuous	E. Calvo C. Pelejero	Spain
STARESO	2006-2007; 2011-present	Calvi (Corsica)	Shallow mooring for pCO <sub>2</sub> and temperature measurements (Pro-Oceanus) over a Posidonia seagrass meadow (water column depth 10m)	continuous	A. Borges	Belgium