Table S1: DOIs for the CTD data and additional sensors used on the CTDO system sorted by ship. See also https://doi.org/10.1594/PANGAEA.926065.

Cruise-id	DOI	Additional Sensors
M77/3	https://doi.org/10.1594/PANGAEA.803110	Dr. Haardt CHL-a fluorometer
M77/4	https://doi.org/10.1594/PANGAEA.777907	Dr. Haardt CHL-a fluorometer
M80/1	https://doi.org/10.1594/PANGAEA.834424	Dr. Haardt CHL-a fluorometer
M80/2	https://doi.org/10.1594/PANGAEA.834442	Dr. Haardt CHL-a fluorometer
M83/1	https://doi..org10.1594/PANGAEA.834459	Dr. Haardt CHL-a fluorometer
M90	https://doi.org/10.1594/PANGAEA.830245	Wetlabs CHL-a fluorometer, Wetlabs turbidity, Biospherical/Licor PAR
M91	https://doi.org/10.1594/PANGAEA.858090	Wetlabs CHL-a fluorometer, Wetlabs turbidity, Biospherical/Licor PAR
M92	https://doi.org/10.1594/PANGAEA.858070	Wetlabs CHL-a and CDOM fluorometer, Wetlabs turbidity, Biospherical/Licor PAR, Surface PAR
M93	https://doi.org/10.1594/PANGAEA.848017	Wetlabs CHL-a and CDOM fluorometer, Wetlabs turbidity, Biospherical/Licor PAR, Surface PAR
M96	https://doi.org/10.1594/PANGAEA.860342	Dr. Haardt CHL-a fluorometer
M97	https://doi.org/10.1594/PANGAEA.860344	Dr. Haardt CHL-a fluorometer
M105	https://doi.org/10.1594/PANGAEA.858255	Wetlabs CHL-a fluorometer, Wetlabs turbidity
M106	https://doi.org/10.1594/PANGAEA.869361	Wetlabs CHL-a fluorometer, Wetlabs turbidity, Biospherical/Licor PAR, Surface PAR
M107	https://doi.org/10.1594/PANGAEA.860480	Wetlabs CHL-a fluorometer, Wetlabs turbidity
M116/1	https://doi.org/10.1594/PANGAEA.860481	Wetlabs CHL-a fluorometer, Wetlabs turbidity
M119	https://doi.org/10.1594/PANGAEA.860484	Wetlabs CHL-a fluorometer, Wetlabs turbidity, Biospherical/Licor PAR, C-Star transmissometer
M130	https://doi.org/10.1594/PANGAEA.904367	Wetlabs CHL-a fluorometer, Wetlabs turbidity, Biospherical/Licor PAR, C-Star transmissometer, SUNA nitrate sensor
M135	https://doi.org/10.1594/PANGAEA.904009	Wetlabs CHL-a fluorometer, Wetlabs turbidity
M136	https://doi.org/10.1594/PANGAEA.904013	Wetlabs CHL-a fluorometer, Wetlabs turbidity, SUNA nitrate sensor
M137	https://doi.org/10.1594/PANGAEA.902643	Wetlabs CHL-a fluorometer, Wetlabs turbidity, SUNA nitrate sensor
M138	https://doi.org/10.1594/PANGAEA.892575	Wetlabs CHL-a fluorometer, Wetlabs turbidity, Biospherical/Licor PAR, SUNA nitrate sensor
M145	https://doi.org/10.1594/PANGAEA.904382	Wetlabs CHL-a fluorometer, Wetlabs turbidity, Biospherical/Licor PAR,

		SUNA nitrate sensor
MSM08/1	https://doi.org/10.1594/PANGAEA.774702	Dr. Haardt CHL-a fluorometer
MSM10/1	https://doi.org/10.1594/PANGAEA.774713	-
MSM18/2	https://doi.org/10.1594/PANGAEA.834580	Dr. Haardt CHL-a fluorometer
MSM18/3	https://doi.org/10.1594/PANGAEA.783445	Dr. Haardt CHL-a fluorometer
MSM22	https://doi.org/10.1594/PANGAEA.834588	Dr. Haardt CHL-a fluorometer
MMS23	https://doi.org/10.1594/PANGAEA.842225	Dr. Haardt CHL-a fluorometer
ATA_IFMGEOMAR_4	https://doi.org/10.1594/PANGAEA.775387	Dr. Haardt CHL-a fluorometer
SO243	https://doi.org/10.1594/PANGAEA.861388	Dr. Haardt CHL-a fluorometer

Table S2: DOIs for the LADCP data sorted by ship. See also https://doi.org/10.1594/PANGAEA.926517.

Cruise-id	**DOI**
M80/1	https://doi.org/10.1594/PANGAEA.811718
M83/1	https://doi..org/10.1594PANGAEA.820828
M96	https://doi.org/10.1594/PANGAEA.905849
M106	https://doi.org/10.1594/PANGAEA.869634
M119	https://doi.org/10.1594/PANGAEA.877351
M130	https://doi.org/10.1594/PANGAEA.915871
M145	https://doi.org/10.1594/PANGAEA.915873
MSM10/1	https://doi.org/10.1594/PANGAEA.811719
MSM18/2	https://doi.org/10.1594/PANGAEA.846777
MSM22	https://doi.org/10.1594/PANGAEA.846763
MSM23	https://doi.org/10.1594/PANGAEA.847231
ATA_IFMGEOMAR_4	https://doi.org/10.1594/PANGAEA.811565

Table S3: DOIs for the moorings deployed during the SFB 754 together with their deployment time and location. See also https://doi.org/10.1594/PANGAEA.926545.

Mooring-id	DOI	Latitude	Longitude	Start	End
kpo_1005	https://doi.org/10.1594/PANGAEA.904194 https://doi.org/10.1594/PANGAEA.843767	5° 9’ N	23° W	2006-06-18T00:00:00	2008-02-29T20:00:00
kpo_1006	https://doi.org/10.1594/PANGAEA.861222	17° 35.39’ N	24° 15.12’ W	2006-07-08T17:00:00	2008-02-19T08:00:00
kpo_1023	https://doi.org/10.1594/PANGAEA.843539 https://doi.org/10.1594/PANGAEA.843744	0° N	23° 6.8’ W	2008-03-01T20:20:00	2008-03-16T20:20:00
kpo_1025	https://doi.org/10.1594/PANGAEA.843540 https://doi.org/10.1594/PANGAEA.843745	2° 2.5’ N	23° 2’ W	2008-02-28T21:55:00	2009-11-01T12:55:00
kpo_1026	To be submitted				
kpo_1027	https://doi.org/10.1594/PANGAEA.924245	8° 1’ N	22° 59’ W	2008-02-26T13:00:01	2009-11-17T17:30:01
kpo_1028	https://doi.org/10.1594/PANGAEA.861223	17° 36.4’ N	24° 14.98’ W	2008-03-14T12:30:00	2009-10-26T14:59:59
kpo_1041	https://doi.org/10.1594/PANGAEA.861224	17° 36.4’ N	24° 14.98’ W	2009-10-27T16:00:00	2011-05-11T14:30:00
kpo_1044	https://doi.org/10.1594/PANGAEA.843569 https://doi.org/10.1594/PANGAEA.843549 https://doi.org/10.1594/PANGAEA.843499	0° 0.16’ N	23° 6.84’ W	2009-11-05T20:00:00	2011-06-02T15:30:00
kpo_1046	https://doi.org/10.1594/PANGAEA.924248	2° 2.43’ N	23° 1.93’ W	2009-11-02T06:30:00	2011-06-05T10:40:00
kpo_1047	https://doi.org/10.1594/PANGAEA.904196	5° 0.9’ N	23° W	2009-10-31T20:00:00	2011-05-15T08:00:00
kpo_1048	https://doi.org/10.1594/PANGAEA.843497 https://doi.org/10.1594/PANGAEA.843555 https://doi.org/10.1594/PANGAEA.843731	8° 1.06’ N	22° 58.99’ W	2009-11-18T15:00:00	2011-05-14T06:00:00
kpo_1060	https://doi.org/10.1594/PANGAEA.861315	17° 36’ N	24° 14’ W	2011-06-18T23:00:00	2012-10-26T16:00:00
kpo_1061	https://doi.org/10.1594/PANGAEA.843601 https://doi.org/10.1594/PANGAEA.843855 https://doi.org/10.1594/PANGAEA.843496 https://doi.org/10.1594/PANGAEA.843917 https://doi.org/10.1594/PANGAEA.846032	8° 1’ N	22° 58’ W	2011-05-14T20:00:00	2012-10-28T13:00:00
kpo_1062	https://doi.org/10.1594/PANGAEA.904198	5° N	23° W	2011-05-13T16:00:00	2012-10-30T14:00:00
kpo_1063	https://doi.org/10.1594/PANGAEA.923604	0° 0.198’ N	23° 6.6’ W	2011-06-03T10:10:00	2012-11-05T07:50:00
kpo_1089	https://doi.org/10.1594/PANGAEA.923986	0° 0.198’ N	23° 6.78’ W	2012-11-06T10:30:00	2014-05-03T08:52:00
kpo_1090	https://doi.org/10.1594/PANGAEA.904202	5° 0.52’ N	22° 59.87’ W	2012-10-29T18:00:00	2014-04-29T17:10:06
kpo_1091	https://doi.org/10.1594/PANGAEA.876170	11° 2’ N	21° 13’ W	2012-10-27T13:20:00	2014-04-24T15:55:25

kpo_1092	https://doi.org/10.1594/PANGAEA.903843	4° 31.57' N	22° 25.29' W	2012-11-01T13:10:00	2014-04-30T10:01:04
kpo_1093	https://doi.org/10.1594/PANGAEA.903848	4° 36.42' N	23° 25.15' W	2012-10-29T16:00:00	2014-04-28T18:00:00
kpo_1094	https://doi.org/10.1594/PANGAEA.861316	17° 36' N	24° 14' W	2012-10-25T16:30:09	2014-04-19T18:00:00
kpo_1125	https://doi.org/10.1594/PANGAEA.908544	0° 0.19' N	23° 6.575' W	2014-04-26T17:59:00	2015-09-22T14:05:44
kpo_1126	https://doi.org/10.1594/PANGAEA.904203	5° 0.83' N	22° 59.28' W	2014-04-28T15:00:00	2015-09-18T20:36:39
kpo_1127	https://doi.org/10.1594/PANGAEA.876169	10° 56.53' N	21° 10.92' W	2014-04-25T09:52:00	2014-04-25T09:52:00
kpo_1128	https://doi.org/10.1594/PANGAEA.908822	17° 36.37' N	24° 17.565' W	2014-04-18T18:00:00	2015-09-10T17:59:35
kpo_1140	https://doi.org/10.1594/PANGAEA.924247	0° 0.2' N	23° 6.8' W	2015-09-19T20:00:00	2016-09-15T21:02:22
kpo_1141	https://doi.org/10.1594/PANGAEA.904025	5° 1.245' N	22° 59.9' W	2015-09-17T16:00:00	2016-09-11T15:11:48
kpo_1142	https://doi.org/10.1594/PANGAEA.924266 https://doi.org/10.1594/PANGAEA.924270	11° 2.22' N	21° 13.29' W	2015-09-13T21:00:00	2016-09-08T13:07:43
kpo_1143	https://doi.org/10.1594/PANGAEA.924249	17° 36.4' N	24° 14.98' W	2015-09-10T14:44:59	2016-08-30T09:28:04
kpo_1176	https://doi.org/10.1594/PANGAEA.904026	0° 0.803' N	23° 5.605' W	2016-09-12T20:00:00	2018-03-01T14:20:00
kpo_1177	https://doi.org/10.1594/PANGAEA.904028	5° 0.617' N	23° 0.27' W	2016-09-10T14:00:00	2018-02-26T18:20:21
Stratus 13	https://doi.org/10.1594/PANGAEA.892496 https://doi.org/10.1594/PANGAEA.892491 https://doi.org/10.1594/PANGAEA.892483 https://doi.org/10.1594/PANGAEA.892477	19° 37.5' S	84° 57' W	2014-03-07T20:24:00	2015-04-24T10:33:00

Table S4: DOIs for autonomous glider data sorted by glider. See also https://doi.org/10.1594/PANGAEA.926547.

Deployment-id	Area	Time	DOI	Observed Parameters
ifm02_depl09	Tropical Atlantic	3/2008	https://doi.org/10.1594/PANGAEA.920203	CTD, Oxygen, CHL-a, Turbidity
ifm02_depl10	Tropical Atlantic	11/2009	https://doi.org/10.1594/PANGAEA.920225	CTD, Oxygen, CHL-a, Turbidity, Turbulence Sensor
ifm02_depl11	Tropical Atlantic	11/2009	https://doi.org/10.1594/PANGAEA.920226	CTD, Oxygen, CHL-a, Turbidity, Turbulence Sensor
ifm02_depl13	Tropical Atlantic	11/2010	https://doi.org/10.1594/PANGAEA.920585	CTD, Oxygen, CHL-a, Turbidity, Turbulence Sensor
ifm02_depl14	Tropical Atlantic	5/2011	https://doi.org/10.1594/PANGAEA.920586	CTD, Oxygen, CHL-a, Turbidity, Turbulence Sensor
ifm02_depl15	Tropical Atlantic	6/2011	https://doi.org/10.1594/PANGAEA.920587	CTD, Oxygen, CHL-a, Turbidity, Turbulence Sensor
ifm02_depl16	Tropical Atlantic	7/2011	https://doi.org/10.1594/PANGAEA.920588	CTD, Oxygen, CHL-a, Turbidity, Turbulence Sensor
ifm02_depl17	Tropical Atlantic	10/2012	https://doi.org/10.1594/PANGAEA.876556	CTD, Oxygen, CHL-a, Turbidity, Turbulence Sensor
ifm02_depl18	Tropical Atlantic	11/2012	https://doi.org/10.1594/PANGAEA.876557	CTD, Oxygen, CHL-a, Turbidity, Turbulence Sensor
ifm02_depl21	Tropical Atlantic	4/2014	https://doi.org/10.1594/PANGAEA.920589	CTD, Oxygen, CHL-a, Turbidity, Turbulence Sensor
ifm02_depl22	Tropical Atlantic	6/2014	https://doi.org/10.1594/PANGAEA.877392	CTD, Oxygen, CHL-a, Turbidity, Turbulence Sensor
ifm03_depl03	Tropical Atlantic	2/2008	https://doi.org/10.1594/PANGAEA.920762	CTD, Oxygen, CHL-a, Turbidity
ifm03_depl04	Tropical Atlantic	10/2008	https://doi.org/10.1594/PANGAEA.920764	CTD, Oxygen, CHL-a, Turbidity
ifm03_depl05	Tropical Atlantic	11/2009	https://doi.org/10.1594/PANGAEA.920765	CTD, Oxygen, CHL-a, Turbidity
ifm03_depl06	Tropical Atlantic	3/2010	https://doi.org/10.1594/PANGAEA.920767	CTD, Oxygen, CHL-a, Turbidity
ifm03_depl08	Tropical Pacific	1/2013	https://doi.org/10.1594/PANGAEA.892545	CTD, Oxygen, CHL-a, Turbidity, CDOM
ifm03_depl09	Tropical Pacific	1/2013	https://doi.org/10.1594/PANGAEA.887703	CTD, Oxygen, CHL-a, Turbidity, CDOM
ifm03_depl10	Tropical Atlantic	3/2014	https://doi.org/10.1594/PANGAEA.880144	CTD, Oxygen, CHL-a, Turbidity, CDOM
ifm03_depl11	Tropical Atlantic	6/2014	https://doi.org/10.1594/PANGAEA.877389	CTD, Oxygen, CHL-a, Turbidity, CDOM
ifm03_depl14	Tropical Pacific	5/2017	https://doi.org/10.1594/PANGAEA.920768	CTD, Oxygen, CHL-a, Turbidity, Turbulence Sensor
ifm05_depl02	Tropical Pacific	1/2009	Submitted to Pangaea	CTD, Oxygen, CHL-a, Turbidity
ifm05_depl06	Tropical Atlantic	10/2012	https://doi.org/10.1594/PANGAEA.876558	CTD, Oxygen, CHL-a, Turbidity
ifm05_depl08	Tropical Atlantic	6/2013	https://doi.org/10.1594/PANGAEA.860768	CTD, Oxygen, CHL-a, Turbidity
ifm06_depl01	Tropical Atlantic	3/2010	https://doi.org/10.1594/PANGAEA.920775	CTD, Oxygen, CHL-a, Turbidity
ifm06_depl02	Tropical Pacific	1/2013	https://doi.org/10.1594/PANGAEA.892546	CTD, Oxygen, CHL-a, Turbidity
ifm07_depl02	Tropical Atlantic	3/2010	https://doi.org/10.1594/PANGAEA.920776	CTD, Oxygen, CHL-a, Turbidity
ifm07_depl06	Tropical Atlantic	6/2011	Submitted to Pangaea	CTD, Oxygen, CHL-a, Turbidity

ifm07_depl07	Tropical Atlantic	7/2011	https://doi.org/10.1594/PANGAEA.920777	CTD, Oxygen, CHL-a, Turbidity
ifm07_depl08	Tropical Pacific	1/2013	https://doi.org/10.1594/PANGAEA.892548	CTD, Oxygen, CHL-a, Turbidity, CDOM
ifm07_depl09	Tropical Atlantic	6/2014	https://doi.org/10.1594/PANGAEA.877390	CTD, Oxygen, CHL-a, Turbidity, CDOM
ifm07_depl10	Tropical Pacific	6/2017	https://doi.org/10.1594/PANGAEA.920778	CTD, Oxygen, CHL-a, Turbidity, CDOM
ifm08_depl04	Tropical Atlantic	7/2011	https://doi.org/10.1594/PANGAEA.920780	CTD, Oxygen, CHL-a, Turbidity
ifm08_depl05	Tropical Pacific	1/2013	https://doi.org/10.1594/PANGAEA.892547	CTD, Oxygen, CHL-a, Turbidity
ifm08_depl07	Tropical Atlantic	2/2018	https://doi.org/10.1594/PANGAEA.920781	CTD, Oxygen, CHL-a, Turbidity
ifm09_depl01	Tropical Atlantic	4/2011	https://doi.org/10.1594/PANGAEA.920782	CTD, Oxygen, CHL-a, Turbidity
ifm09_depl04	Tropical Atlantic	7/2011	https://doi.org/10.1594/PANGAEA.920783	CTD, Oxygen, CHL-a, Turbidity
ifm09_depl05	Tropical Atlantic	11/2012	https://doi.org/10.1594/PANGAEA.876555	CTD, Oxygen, CHL-a, Turbidity
ifm09_depl09	Tropical Pacific	4/2017	https://doi.org/10.1594/PANGAEA.920784	CTD, Oxygen, CHL-a, Turbidity, Turbulence Sensor
ifm09_depl10	Tropical Pacific	5/2017	https://doi.org/10.1594/PANGAEA.920785	CTD, Oxygen, CHL-a, Turbidity, Turbulence Sensor
ifm09_depl11	Tropical Pacific	6/2017	https://doi.org/10.1594/PANGAEA.920786	CTD, Oxygen, CHL-a, Turbidity, Turbulence Sensor
ifm10_depl01	Tropical Atlantic	3/2010	https://doi.org/10.1594/PANGAEA.920789	CTD, Oxygen, CHL-a, Turbidity
ifm10_depl03	Tropical Pacific	1/2013	https://doi.org/10.1594/PANGAEA.892544	CTD, Oxygen, CHL-a, Turbidity, CDOM
ifm11_depl01	Tropical Atlantic	3/2010	https://doi.org/10.1594/PANGAEA.860774	CTD, Oxygen, CHL-a, Turbidity
ifm11_depl02	Tropical Atlantic	10/2010	https://doi.org/10.1594/PANGAEA.920790	CTD, Oxygen, CHL-a, Turbidity
ifm11_depl03	Tropical Atlantic	7/2011	https://doi.org/10.1594/PANGAEA.920791	CTD, Oxygen, CHL-a, Turbidity
ifm11_depl04	Tropical Pacific	1/2013	https://doi.org/10.1594/PANGAEA.892550	CTD, Oxygen, CHL-a, Turbidity
ifm11_depl05	Tropical Atlantic	3/2014	https://doi.org/10.1594/PANGAEA.920792	CTD, Oxygen, CHL-a, Turbidity
ifm12_depl01	Tropical Pacific	1/2013	https://doi.org/10.1594/PANGAEA.892549	CTD, Oxygen, CHL-a, Turbidity, CDOM
ifm12_depl02	Tropical Atlantic	1/2014	https://doi.org/10.1594/PANGAEA.860775	CTD, Oxygen, CHL-a, Turbidity, CDOM
ifm12_depl03	Tropical Atlantic	4/2014	https://doi.org/10.1594/PANGAEA.920793	CTD, Oxygen, CHL-a, Turbidity, CDOM
ifm12_depl04	Tropical Atlantic	6/2014	https://doi.org/10.1594/PANGAEA.877387	CTD, Oxygen, CHL-a, Turbidity, CDOM
ifm12_depl05	Tropical Atlantic	3/2015	https://doi.org/10.1594/PANGAEA.904659	CTD, Oxygen, CHL-a, Turbidity, CDOM
ifm12_depl06	Tropical Pacific	4/2017	https://doi.org/10.1594/PANGAEA.920787	CTD, Oxygen, CHL-a, Turbidity, CDOM, Nitrate
ifm12_depl07	Tropical Pacific	4/2017	https://doi.org/10.1594/PANGAEA.920788	CTD, Oxygen, CHL-a, Turbidity, CDOM, Nitrate
ifm13_depl01	Tropical Atlantic	3/2014	https://doi.org/10.1594/PANGAEA.860776	CTD, Oxygen, CHL-a, Turbidity, Nitrate
ifm13_depl02	Tropical Atlantic	6/2014	https://doi.org/10.1594/PANGAEA.877388	CTD, Oxygen, CHL-a, Turbidity, Nitrate

ifm13_depl05	Tropical Pacific	5/2017	Submitted to Pangaea	CTD, Oxygen, CHL-a, Turbidity, Nitrate
ifm14_depl01	Tropical Atlantic	6/2014	https://doi.org/10.1594/PANGAEA.877391	CTD, Oxygen, CHL-a, Turbidity, CDOM
ifm14_depl03	Tropical Atlantic	2/2017	https://doi.org/10.1594/PANGAEA.920794	CTD, Oxygen, CHL-a, Turbidity, CDOM
ifm14_depl04	Tropical Atlantic	3/2017	To be submitted	CTD, Oxygen, CHL-a, Turbidity, CDOM

Table S5: DOIs for Turbulence Measurements. See also https://doi.org/10.1594/PANGAEA.926518.

Cruise-id	**DOI**
MSM17/4	https://doi.org/10.1594/PANGAEA.845923
M92	https://doi.org/10.1594/PANGAEA.858896
MSM 23	https://doi.org/10.1594/PANGAEA.858700
M136	https://doi.org/10.1594/PANGAEA.890121
MSM10/1	https://doi.org/10.1594/PANGAEA.819221
M93	https://doi.org/10.1594/PANGAEA.868400
M80/2	https://doi.org/10.1594/PANGAEA.819220
ATA_IFMGEOMAR_4	https://doi.org/10.1594/PANGAEA.823043
MSM 22	https://doi.org/10.1594/PANGAEA.846946
M83/1	https://doi.org/10.1594/PANGAEA.819235
MSM08/1	To be submitted
MSM18/3	To be submitted
M80/1	To be submitted
M91	To be submitted
M97	To be submitted
M106	https://doi.org/10.1594/PANGAEA.920591
M107	https://doi.org/10.1594/PANGAEA.918861
M119	https://doi.org/10.1594/PANGAEA.920592
M130	https://doi.org/10.1594/PANGAEA.918280
M135	https://doi.org/10.1594/PANGAEA.918860
M137	To be submitted
M138	To be submitted

Table S6: DOIs for the SADCP data (velocities and backscatter). See also https://doi.org/10.1594/PANGAEA.926521.

Cruise-id	DOI
M77/1	https://doi.org/10.1594/PANGAEA.777978
M77/2	https://doi.org/10.1594/PANGAEA.778021
M77/3	https://doi.org/10.1594/PANGAEA.803110
M77/4	https://doi.org/10.1594/PANGAEA.803108
M80/1	https://doi.org/10.1594/PANGAEA.877364
M80/2	https://doi.org/10.1594/PANGAEA.819308
M83/1	https://doi.org/10.1594/PANGAEA.819310
M90	https://doi.org/10.1594/PANGAEA.861861
M91	To be submitted
M92	https://doi.org/10.1594/PANGAEA.860717 https://doi.org/10.1594/PANGAEA.860718
M93	https://doi.org/10.1594/PANGAEA.860725 https://doi.org/10.1594/PANGAEA.860726
M96	https://doi.org/10.1594/PANGAEA.870638
M97	https://doi.org/10.1594/PANGAEA.870639
M105	https://doi.org/10.1594/PANGAEA.887130
M106	https://doi.org/10.1594/PANGAEA.901421 https://doi.org/10.1594/PANGAEA.887783 backscatter data
M107	https://doi.org/10.1594/PANGAEA.897534
M116/1	https://doi.org/10.1594/PANGAEA.901423 https://doi.org/10.1594/PANGAEA.887784
M119	https://doi.org/10.1594/PANGAEA.877375 https://doi.org/10.1594/PANGAEA.887784 backscatter data
M130	https://doi.org/10.1594/PANGAEA.904389
M135	https://doi.org/10.1594/PANGAEA.887131
M136	https://doi.org/10.1594/PANGAEA.901425
M137	https://doi.org/10.1594/PANGAEA.904281
M138	https://doi.org/10.1594/PANGAEA.887127

M145	https://doi.org/10.1594/PANGAEA.899170
MSM08/1	https://doi.org/10.1594/PANGAEA.777116 https://doi.org/10.1594/PANGAEA.777117
MSM10/1	https://doi.org/10.1594/PANGAEA.819279
MSM17/4	https://doi.org/10.1594/PANGAEA.911724
MSM18/2	https://doi.org/10.1594/PANGAEA.877352
MSM18/3	https://doi.org/10.1594/PANGAEA.844007
MSM22	https://doi.org/10.1594/PANGAEA.841476 https://doi.org/10.1594/PANGAEA.882532 backscatter data
MSM23	https://doi.org/10.1594/PANGAEA.911726
ATA_IFMGEOMAR_4	https://doi.org/10.1594/PANGAEA.877362
SO243	https://doi.org/10.1594/PANGAEA.864442 https://doi.org/10.1594/PANGAEA.864445 https://doi.org/10.1594/PANGAEA.864444 https://doi.org/10.1594/PANGAEA.864446

Table S7: DOIs for the UCTD and Rapidcast data collected during SFB 754 cruises. See also https://doi.org/10.1594/PANGAEA.926529.

Cruise-id	**DOI**
M96	https://doi.org/10.1594/PANGAEA.870642
M97	https://doi.org/10.1594/PANGAEA.869773
M107	https://doi.org/10.1594/PANGAEA.917456
M116	https://doi.org/10.1594/PANGAEA.907765
M135	https://doi.org/10.1594/PANGAEA.917462
M136	https://doi.org/10.1594/PANGAEA.904288
M137	https://doi.org/10.1594/PANGAEA.917464
M138	https://doi.org/10.1594/PANGAEA.917465
MSM18/2	https://doi.org/10.1594/PANGAEA.916158

Table S8: DOIs for Thermosalinograph data collected during SFB 754 cruises. See also https://doi.org/10.1594/PANGAEA.926530.

Cruise-id	DOI
M77/1	https://doi.org/10.1594/PANGAEA.913872
M77/2	https://doi.org/10.1594/PANGAEA.913873
M77/3	https://doi.org/10.1594/PANGAEA.913874
M77/4	https://doi.org/10.1594/PANGAEA.913875
M80/1	https://doi.org/10.1594/PANGAEA.913881
M80/2	https://doi.org/10.1594/PANGAEA.913882
M83/1	https://doi.org/10.1594/PANGAEA.913883
M90	https://doi.org/10.1594/PANGAEA.913910
M91	https://doi.org/10.1594/PANGAEA.913911
M92	https://doi.org/10.1594/PANGAEA.913912
M93	https://doi.org/10.1594/PANGAEA.913927
M96	https://doi.org/10.1594/PANGAEA.869770
M97	https://doi.org/10.1594/PANGAEA.869771
M98	https://doi.org/10.1594/PANGAEA.869772
M105	https://doi.org/10.1594/PANGAEA.876429
M106	https://doi.org/10.1594/PANGAEA.913916
M107	https://doi.org/10.1594/PANGAEA.913918
M116/1	https://doi.org/10.1594/PANGAEA.907764
M119	https://doi.org/10.1594/PANGAEA.902332
M130	https://doi.org/10.1594/PANGAEA.913952
M135	https://doi.org/10.1594/PANGAEA.913953
M136	https://doi.org/10.1594/PANGAEA.913954
M137	https://doi.org/10.1594/PANGAEA.913955
M138	https://doi.org/10.1594/PANGAEA.913956
M145	https://doi.org/10.1594/PANGAEA.913957
MSM08/1	https://doi.org/10.1594/PANGAEA.913856
MSM10/1	https://doi.org/10.1594/PANGAEA.913857

MSM18/2	https://doi.org/10.1594/PANGAEA.843080
MSM18/3	https://doi.org/10.1594/PANGAEA.843082
MSM 22	https://doi.org/10.1594/PANGAEA.913977
MSM 23	https://doi.org/10.1594/PANGAEA.913979
ATA_IFMGEOMAR_4	https://doi.org/10.1594/PANGAEA.913855
SON_243	https://doi.org/10.1594/PANGAEA.913858

Table S9: Deployments of oxygen-sensor equipped Argo floats. See also https://doi.org/10.1594/PANGAEA.926544.

WMO-id	DOI	Deployment Date	Deployment Latitude	Deployment Longitude
6900627	https://doi.org/10.17882/42182	2008-02-06	16° 9.71’ N	18° 0.11’ W
6900631	https://doi.org/10.17882/42182	2008-02-13	19° 59.37’ N	18° 0.23’ W
6900632	https://doi.org/10.17882/42182	2008-02-16	17 ° 59.91’ N	17° 0.0’ W
6900628	https://doi.org/10.17882/42182	2008-02-17	19° 0.01’ N	18° 0.10‘ W
6900630	https://doi.org/10.17882/42182	2008-02-19	24° 20.23’ N	17° 30.15’ W
6900524	https://doi.org/10.17882/42182	2008-04-24	8° 03.90' N	22° 58.65' W
6900525	https://doi.org/10.17882/42182	2008-04-26	8° 10.79' N	22°50.98' W
6900629	https://doi.org/10.17882/42182	2008-04-26	08° 10.84' N	22°50.96' W
3901075	https://doi.org/10.17882/42182	2009-02-02	9° 59.99' S	85° 50.00' W
3901076	https://doi.org/10.17882/42182	2009-02-02	10° 0.05' S	85° 49.94' W
3901077	https://doi.org/10.17882/42182	2009-02-03	8° 0.01' S	85° 49.99' W
3901078	https://doi.org/10.17882/42182	2009-02-03	8° 0.09' S	85° 49.96' W
3901079	https://doi.org/10.17882/42182	2009-02-09	6° 0.01' S	85° 50.00' W
3901080	https://doi.org/10.17882/42182	2009-02-09	6° 0.03' S	85° 49.98' W
3901081	https://doi.org/10.17882/42182	2009-02-10	4° 0.10' S	85° 50.03' W
3901082	https://doi.org/10.17882/42182	2009-02-10	4° 0.10' S	85° 50.03' W
3901083	https://doi.org/10.17882/42182	2009-02-11	2° 0.16' S	85° 50.02' W
3901084	https://doi.org/10.17882/42182	2009-02-11	2° 0.21' S	85° 50.03' W
6900868	https://doi.org/10.17882/42182	2011-04-02	19° 34.20’ S	75° 34.80’ W
6900872	https://doi.org/10.17882/42182	2011-04-02	19° 34.20’ S	75° 31.20’ W
6900869	https://doi.org/10.17882/42182	2011-04-02	19° 45.00’ S	76° 29.40’ W
6900873	https://doi.org/10.17882/42182	2011-04-02	19° 46.80’ S	76° 28.40’ W
6900870	https://doi.org/10.17882/42182	2011-04-02	19° 45.00’ S	77° 0.60’ W
6900874	https://doi.org/10.17882/42182	2011-04-02	19° 45.00’ S	77° 0.60’ W
6900871	https://doi.org/10.17882/42182	2011-04-10	19° 40.80’ S	85° 40.80’ W
6900875	https://doi.org/10.17882/42182	2011-04-11	19° 40.80’ S	85° 40.80’ W
6900526	https://doi.org/10.17882/42182	2014-03-11	19° 36.02’ S	84° 58.19’ W
6900527	https://doi.org/10.1594/PANGAEA.892458	2014-03-11	19° 36.02’ S	84° 58.19’ W

6900532	https://doi.org/10.1594/PANGAEA.892467	2014-03-13	18° 58.95’ S	76° 59.46’ W
6900529	https://doi.org/10.1594/PANGAEA.892462	2014-03-12	19° 27.32’ S	83° 01.48’ W
6900530	https://doi.org/10.1594/PANGAEA.892466	2014-03-12	19° 15.54’ S	80° 30.36’ W
6900528	https://doi.org/10.17882/42182	2014-03-11	19° 27.32’ S	83° 01.48’ W
6900531	https://doi.org/10.17882/42182	2014-03-12	19° 15.54’ S	80° 30.36’ W

Table S10: DOIs for hydrochemical measurements from water samples. See also https://doi.org/10.1594/PANGAEA.926609.

Cruise-id	DOI	Nutrients	Tracers	TON	DIC and AT	other
M77/3	https://doi.org/10.1594/PANGAEA.801925	•				•
	https://doi.org/10.1594/PANGAEA.806268	•				•
	https://doi.org/10.1594/PANGAEA.793154	•				•
	https://doi.org/10.1594/PANGAEA.843322					N2O
M77/4	https://doi.org/10.1594/PANGAEA.793153	•				•
	https://doi.org/10.1594/PANGAEA.843450	•				
	https://doi.org/10.1594/PANGAEA.843428					•
	https://doi.org/10.1594/PANGAEA.806262	•				•
M80/1						
M80/2	https://doi.org/10.1594/PANGAEA.808287	•	•			•
	https://doi.org/10.1594.PANGAEA.821923					•
	https://doi.org/10.1594/PANGAEA.843370					N2O
M83/1	https://doi.org/10.1594/PANGAEA.821729	•	•			•
M90	https://doi.org/10.1594/PANGAEA.857751	•				
	https://doi.org/10.1594/PANGAEA.894194					•
	https://doi.org/10.1594/PANGAEA.908007					•
	https://doi.org/10.1594/PANGAEA.894195					•
	https://doi.org/10.1594/PANGAEA.857760					N2O
M91	https://doi.org/10.1594/PANGAEA.904304	•				
	https://doi.org/10.1594/PANGAEA.817174	•				
	https://doi.org/10.1594/PANGAEA.908006					•
M92	https://doi.org/10.1594/PANGAEA.862046	•				
	https://doi.org/10.1594/PANGAEA.860382					N2O
M93	https://doi.org/10.1594/PANGAEA.862055	•				•
	https://doi.org/10.1594/PANGAEA.860387					N2O
M96	https://doi.org/10.1594/PANGAEA.854028	•				
M97	https://doi.org/10.1594/PANGAEA.863119	•	•			•
M105	https://doi.org/10.1594/PANGAEA.864810	•	•			•
M106	To be submitted	•		•		
M107	https://doi.org/10.1594/PANGAEA.885109	•				
	https://doi.org/10.1594/PANGAEA.896321					•
M116/1	https://doi.org/10.1594/PANGAEA.886191	•	•		•	

M119	To be submitted	•		•		
M130	https://doi.org/10.1594/PANGAEA.913986	•	•	•		
M135	https://doi.org/10.1594/PANGAEA.890441	•	•			
M136	https://doi.org/10.1594/PANGAEA.904404	•				
M137	https://doi.org/10.1594/PANGAEA.904405	•				
M138	https://doi.org/10.1594/PANGAEA.914948					N2O
M145	To be submitted	•		•		
MSM08/1	https://doi.org/10.1594/PANGAEA.774842	•				
MSM10/1	https://doi.org/10.1594/PANGAEA.775074	•	•			•
MSM18/2	https://doi.org/10.1594/PANGAEA.843373 https://doi.org/10.1594/PANGAEA.900984	•				 N2O
MSM18/3	https://doi.org/10.1594/PANGAEA.843374	•				
MSM22	https://doi.org/10.1594/PANGAEA.842498	•				
MMS23	https://doi.org/10.1594/PANGAEA.842187		•		•	
ATA_IFMGEOMAR_4	https://doi.org/10.1594/PANGAEA.793119	•				
SO243	https://doi.org/10.1594/PANGAEA.861391	•				

Table S11: DOIs for stable isotope measurements. See also https://doi.org/10.1594/PANGAEA.926610.

Cruise-id	Isotope	DOI	References	Contact
M77/3	Seawater $d^{15}NO_3/d^{15}NO_2$ Seawater $d^{30}Si$	https://doi.org/10.1594/PANGAEA.801925 https://doi.org/10.1594/PANGAEA.819966	Altabet et al.(2012), Ryabenko et al.(2012), Grasse et al. (2013)	Ryabenko
M77/4	Seawater $d^{15}NO_3/d^{15}NO_2$ Seawater $d^{30}Si$	https://doi.org/10.1594/PANGAEA.793153 https://doi.org/10.1594/PANGAEA.819966	Ryabenko et al. (2012), Grasse et al. (2016)	Ryabenko Grasse
M90	Seawater $d^{15}NO_3/d^{15}NO_2$	https://doi.org/10.1594/PANGAEA.927728	Bourbonnais et al. (2015, 2017)	Altabet
M91	Seawater $d^{15}NO_3/d^{15}NO_2$	https://doi.org/10.1594/PANGAEA.927732	Hu et al. (2016), Bourbonnais et al. (2015)	Altabet
M92	Seawater $d^{15}NO_3/d^{15}NO_2$	https://doi.org/10.1594/PANGAEA.927737	Bourbonnais et al., (2017)	Altabet
M93	Seawater $d^{30}Si$	https://doi.org/10.1594/PANGAEA.905552		
M83/1	Zooplankton $d^{15}NO_3/d^{15}NO_2$	https://doi.org/10.1594/PANGAEA.821908	Hauss et al. (2013)	
MSM22	Zooplankton $d^{15}NO_3/d^{15}NO_2$	https://doi.org/10.1594/PANGAEA.842500	Sandel et al. (2015)	

References

Altabet, M., Ryabenko, E., Stramma, L., Wallace, D., Frank, M., Grasse, P., and Lavik, G.: An eddy-stimulated hotspot for fixed nitrogen-loss from the Peru oxygen minimum zone, Biogeosciences, 9(12), 4897-4908, doi:10.5194/bg-9-4897-2012, 2012.

Bourbonnais, A., Altabet, M. A., Charoenpong, C. N., Larkum, J., Hu, H., Bange, H. W., and Stramma, L.: N-loss isotope effects in the Peru oxygen minimum zone studied using a mesoscale eddy as a natural tracer experiment, Global Biogeochem. Cy., 29(6), 793-811, doi:10.1002/2014GB005001, 2015.

Bourbonnais, A., Letscher, R. T., Bange, H. W., Echevin, V., Larkum, J., Mohn, J.,Yoshida, N. and Altabet, M. A.: N2O production and consumption from stable isotopic and concentration data in the Peruvian coastal upwelling system, Global Biogeochem. Cy., 31(4), 678-698, doi:10.1002/2016GB005567, 2017.

Grasse, P., Ehlert, C. and Frank, M.: The influence of water mass mixing on the dissolved Si isotope composition in the Eastern Equatorial Pacific, Earth Planet. Sci. Lett., 380, 60-71, doi:10.1016/j.epsl.2013.07.033, 2013.

Grasse, P., Ryabenko, E., Ehlert, C., Altabet, M. A., and Frank, M.: Silicon and nitrogen cycling in the upwelling area off Peru: A dual isotope approach, Limnol. Oceanogr., 61(5), 1661-1676., doi:10.1002/lno.10324, 2016.

Grasse, P., Bosse, L., Hathorne, E. C., Böning, P., Pahnke, K., and Frank, M.: Short-term variability of dissolved rare earth elements and neodymium isotopes in the entire water column of the Panama Basin, Earth Planet. Sci. Lett., 475, 242-253, doi:10.1016/j.epsl.2017.07.022, 2017.

Hauss, H. M., Franz, J., Hansen, T., Struck, U., and Sommer, U.: Relative inputs of upwelled and atmospheric nitrogen to the eastern tropical North Atlantic food web: Spatial distribution of δ15N in mesozooplankton and relation to dissolved nutrient dynamics, Deep-Sea Res. Pt. I: Oceanographic Research Papers, 75, 135-145, doi:10.1016/j.dsr.2013.01.010, 2013.

Hu, H., Bourbonnais, A., Larkum, J., Bange, H. W. and Altabet, M. A.: Nitrogen cycling in shallow low oxygen coastal waters off Peru from nitrite and nitrate nitrogen and oxygen isotopes, Biogeosciences, 13(5),1453-1468, doi:10.5194/bg-13-1453-2016, 2016.

Ryabenko, E., Kock, A., Bange, H. W., Altabet, M. A., and Wallace, D. W.: Contrasting biogeochemistry of nitrogen in the Atlantic and Pacific Oxygen Minimum Zones, Biogeosciences, 9(1), 203-215, doi:10.5194/bg-9-203-2012, 2012.

Sandel, V., Kiko, R., Brandt, P., Dengler, M., Stemmann, L., Vandromme, P., Sommer, U., and Hauss, H.: Nitrogen Fuelling of the Pelagic Food Web of the Tropical Atlantic, PloS One, 10, e0131258, doi:10.1371/journal.pone.0131258, 2015.

Table S12: DOIs for radiogenic isotope measurements. See also https://doi.org/10.1594/PANGAEA.926610.

Cruise-id	Isotope	DOI	References	Contact
M77/3	Seawater Nd isotopes	https://doi.org/10.1594/PANGAEA.806270	Grasse et al. (2012)	Grasse
M77/4	Seawater Nd Isotopes	https://doi.org/10.1594/PANGAEA.806270	Grasse et al. (2012)	Grasse
M90	Seawater Nd Isotopes REEs	https://doi.org/10.1594/PANGAEA.894196	Grasse et al. (2017)	Grasse

References

Grasse, P., Stichel, T., Stumpf, R., Stramma, L., and Frank, M.: The distribution of neodymium isotopes and concentrations in the Eastern Equatorial Pacific: Water mass advection versus particle exchange, Earth Planet. Sci. Lett., 353, 198-207, doi:10.1016/j.epsl.2012.07.044, 2012.

Grasse, P., Bosse, L., Hathorne, E. C., Böning, P., Pahnke, K., and Frank, M.: Short-term variability of dissolved rare earth elements and neodymium isotopes in the entire water column of the Panama Basin, Earth Planet. Sci. Lett., 475, 242-253, doi:10.1016/j.epsl.2017.07.022, 2017.

Table S13: DOIs for the underway trace gases data. See also https://doi.org/10.1594/PANGAEA.926611.

Cruise-id	DOIs	Setup
M90	https://doi.org/10.1594/PANGAEA.900988 https://doi.org/10.1594/PANGAEA.900990	Arévalo-Martínez et al. (2013)
M91	https://doi.org/10.1594/PANGAEA.900996 https://doi.org/10.1594/PANGAEA.900995	Arévalo-Martínez et al. (2013)
M93	https://doi.org/10.1594/PANGAEA.901008 https://doi.org/10.1594/PANGAEA.901007	Arévalo-Martínez et al. (2013)
M135	To be submitted	
M136	To be submitted	Arévalo-Martínez et al. (2019)
M137	To be submitted	Arévalo-Martínez et al. (2019)
M138	To be submitted	Arévalo-Martínez et al. (2019)
MSM18/2	https://doi.org/10.1594/PANGAEA.894112 https://doi.org/10.1594/PANGAEA.894111	Arévalo-Martínez et al. (2013)
MSM18/3	https://doi.org/10.1594/PANGAEA.894792 https://doi.org/10.1594/PANGAEA.894793	Arévalo-Martínez et al. (2013)

References

Arévalo-Martínez, D. L., Beyer, M., Krumbholz, M., Piller, I., Kock, A., Steinhoff, T., Körtzinger, A., and Bange, H. W.: A new method for continuous measurements of oceanic and atmospheric N_2O, CO and CO_2: Performance of off-axis integrated cavity output spectroscopy (OA-ICOS) coupled to non-dispersive infrared detection (NDIR), Ocean Sci., 9, 1071–1087, doi:10.5194/os-9-1071-2013, 2013.

Arévalo-Martínez, D. L., Steinhoff, T., Brandt, P., Körtzinger, A., Lamont, T., Rehder, G., and Bange, H. W.: N_2O emissions from the northern Benguela upwelling system, Geophys. Res. Lett., 46, 3317–3326, doi:10.1029/2018GL081648, 2019.

Table S14: DOIs for trace chemical data. See also https://doi.org/10.1594/PANGAEA.928126.

Cruise-id	Parameters targeted	DOI	Related publications
M77/1	Fe(II), H_2O_2	https://doi.org/10.1594/PANGAEA.907432	Croot et al. (2019)
M77/3	Aerosols, dTMs, Cd-L, Zn-L, Fe(II), H_2O_2, Cd isotopes	https://doi.org/10.1594/PANGAEA.898031 https://doi.org/10.1594/PANGAEA.900713	Schlosser et al. (2018) Xie et al. (2019)
M80/2	dTMs, Co-L	https://doi.org/10.1594/PANGAEA.808440 https://doi.org/10.1594/PANGAEA.836145	Baars and Croot (2015)
M83/1	Superoxide/ROS, Mn(III), dTMs, H_2O_2, Fe(II), Cu-L	https://doi.org/10.1594/PANGAEA.823279	Wuttig et al. (2013a, 2013b)
M92	dTMs, Fe(II)	https://doi.org/10.1594/PANGAEA.867609	Scholz et al. (2016)
M107	dTMs, TdTMs, iodine	https://doi.org/10.1594/PANGAEA.907160	Rapp et al. (2019)
SO243	dTMs, TdTMs, iodine, Fe(II), H_2O_2	https://doi.org/10.1594/PANGAEA.913798	Hopwood et al. (2017 Rapp et al. (2020)
M135	dTMs, labile/total particulates, H_2O_2	https://doi.org/10.1594/PANGAEA.928117	
M136	dTMs, Fe(II), Fe-L, aerosols, Cd isotopes	https://doi.org/10.1594/PANGAEA.928118	
M137	dTMs, aerosols, Cd isotopes, Fe isotopes	https://doi.org/10.1594/PANGAEA.928121	
M138	dTMs, Cd isotopes, Fe isotopes	https://doi.org/10.1594/PANGAEA.928122	

References

Baars, O. and Croot, P. L.: Dissolved cobalt speciation and reactivity in the eastern tropical North Atlantic, Mar. Chem., doi:10.1016/j.marchem.2014.10.006, 2015.

Croot, P. L., Heller, M. I., and Wuttig, K.: Redox Processes Impacting the Flux of Iron(II) from Shelf Sediments to the OMZ along the Peruvian Shelf, ACS Earth Sp. Chem., doi:10.1021/acsearthspacechem.8b00203, 2019.

Hopwood, M. J., Rapp, I., Schlosser, C., and Achterberg, E. P.: Hydrogen peroxide in deep waters from the Mediterranean Sea, South Atlantic and South Pacific Oceans, Sci. Rep., 7, 43436, doi:10.1038/srep43436, 2017.

Rapp, I., Schlosser, C., Menzel Barraqueta, J. L., Wenzel, B., Lüdke, J., Scholten, J., Gasser, B., Reichert, P., Gledhill, M., Dengler, M., and Achterberg, E. P.: Controls on redox-sensitive trace metals in the Mauritanian oxygen minimum zone, Biogeosciences, 16, 4157–4182, doi:10.5194/bg-16-4157-2019, 2019.

Rapp, I., Schlosser, C., Browning, T. J., Wolf, F., Le Moigne, F. A. C., Gledhill, M., and Achterberg, E. P.: El Niño-Driven Oxygenation Impacts Peruvian Shelf Iron Supply to the South Pacific Ocean, Geophys. Res. Lett., 47(7), doi:10.1029/2019GL086631, 2020.

Schlosser, C., Streu, P., Frank, M., Lavik, G., Croot, P. L., Dengler, M., and Achterberg, E. P.: H2S events in the Peruvian oxygen minimum zone facilitate enhanced dissolved Fe concentrations, Sci. Rep., 8(1), 12642, doi:10.1038/s41598-018-30580-w, 2018.

Scholz, F., Löscher, C. R., Fiskal, A., Sommer, S., Hensen, C., Lomnitz, U., Wuttig, K., Göttlicher, J., Kossel, E., Steininger, R., and Canfield, D. E.: Nitrate-dependent iron oxidation limits iron transport in anoxic ocean regions, Earth Planet. Sci. Lett., 454, 272–281, doi:10.1016/j.epsl.2016.09.025, 2016.

Wuttig, K., Heller, M. I., and Croot, P. L.: Pathways of superoxide (O_2-) decay in the Eastern Tropical North Atlantic, Environ. Sci. Technol., 47(18), 10249–10256, doi:10.1021/es401658t, 2013a.

Wuttig, K., Heller, M. I., and Croot, P. L.: Reactivity of inorganic Mn and Mn desferrioxamine B with O_2, O_2-, and H_2O_2 in seawater, Environ. Sci. Technol., 47(18), 10257–10265, doi:10.1021/es4016603, 2013b.

Xie, R. C., Rehkämper, M., Grasse, P., van de Flierdt, T., Frank, M., and Xue, Z.: Isotopic evidence for complex biogeochemical cycling of Cd in the eastern tropical South Pacific, Earth Planet. Sci. Lett., doi:10.1016/j.epsl.2019.02.001, 2019.

Table S15: DOIs for Particulate Organic Matter and Pigment Analysis. See also https://doi.org/10.1594/PANGAEA.926612.

Cruise-id	Method	DOI
MSM17/4	Discrete water sampling	https://doi.org/10.1594/PANGAEA.843436
M77/3	Discrete water sampling pump-CTD	https://doi.org/10.1594/PANGAEA.821980 https://doi.org/10.1594/PANGAEA.843414
M80/2	Discrete water sampling	https://doi.org/10.1594/PANGAEA.821923
M83/1	Discrete water sampling	https://doi.org/10.1594/PANGAEA.819953
M105	Sediment trap Sediment trap Sediment trap Sediment trap Sediment trap Sediment trap	https://doi.org/10.1594/PANGAEA.874317 https://doi.org/10.1594/PANGAEA.874316 https://doi.org/10.1594/PANGAEA.874318 https://doi.org/10.1594/PANGAEA.874315 https://doi.org/10.1594/PANGAEA.874267 https://doi.org/10.1594/PANGAEA.874267

Table S16: DOIs for Dissolved Organic Matter, Cell Abundance, Extracellular Enzyme Rates, and Bacterial Production. See also https://doi.org/10.1594/PANGAEA.926780.

Cruise-id	Method	DOI
M91	Sea-surface microlayer Sea-surface microlayer	https://doi.org/10.1594/PANGAEA.859853 https://doi.org/10.1594/PANGAEA.861947
M93	Discrete water sampling pump-CTD	https://doi.org/10.1594/PANGAEA.900924 https://doi.org/10.1594/PANGAEA.900928
M107	Discrete water sampling	https://doi.org/10.1594/PANGAEA.896321
M136	BIGO	https://doi.org/10.1594/PANGAEA.913476
M136 and M137	multicorer	https://doi.org/10.1594/PANGAEA.913477
M136 and M138	Discrete water sampling	https://doi.org/10.1594/PANGAEA.891247
CV12	mesocosm	https://doi.org/10.1594/PANGAEA.847693

Table S17: DOIs for nitrogen and carbon fixation and N-cycle gene abundance. See also https://doi.org/10.1594/PANGAEA.926781.

Cruise-id	**Method**	**DOI**
M77/3	N_2 / C fixation, gene abundance	https://doi.org/10.1594/PANGAEA.833791 https://doi.org/10.1594/PANGAEA.833788 https://doi.org/10.1594/PANGAEA.833789 https://doi.org/10.1594/PANGAEA.816158
M77/4	N_2 / C fixation, gene abundance	https://doi.org/10.1594/PANGAEA.816158 https://doi.org/10.1594/PANGAEA.833790
M80/2	N_2 / C fixation, gene abundance	https://doi.org/10.1594/PANGAEA.843370
M83/1	N_2 / C fixation, gene abundance	https://doi.org/10.1594/PANGAEA.843371
M90, M91, M93	N_2 / C fixation, gene abundance	https://doi.org/10.1594/PANGAEA.860733 https://doi.org/10.1594/PANGAEA.884928
M97	N_2 / C fixation, gene abundance	https://doi.org/10.1594/PANGAEA.883657
M105	C fixation	https://doi.org/10.5194/bg-12-7467-2015

Table S18: DOIs for Microbial Oxygen Consumption and Nitrogen Loss Processes. See also https://doi.org/10.1594/PANGAEA.926785.

Cruise-id	**Process**	**DOI**
M77/3	N loss and O_2 consumption	https://doi.org/10.1594/PANGAEA.843457 https://doi.org/10.1594/PANGAEA.843459 https://doi.org/10.1594/PANGAEA.843461 https://doi.org/10.1594/PANGAEA.833791 https://doi.org/10.1594/PANGAEA.843414
M77/4	N loss and O_2 consumption	https://doi.org/10.1594/PANGAEA.833790 https://doi.org/10.1594/PANGAEA.843460
M90	N loss and O_2 consumption	https://doi.org/10.1594/PANGAEA.870514
M93	N loss and O_2 consumption	https://doi.org/10.1594/PANGAEA.884928 https://doi.org/10.1594/PANGAEA.894324

Table S19: Metagenomics including NCBI accession numbers and MG-Rast accession numbers (*). Data has been submitted to https://www.ncbi.nlm.nih.gov.

Cruise-id	Metagenomes	Metatranscriptomes	16S rDNA or nifH amplicon sequencing	Sanger sequencing of N cycle key genes or 16S rDNA
ATA_IFMGEOMAR_4				JF796145- JF796179
M77/3	SUB910041, SUB910044, SUB910045, SUB910046, 4460677.3*, 4450892.3*, 4450891.3*, 4460736.3*, 4461588.3*, 4460676.3*	4452038.3*, 4460734.3*, 4452039.3*, 4452042.3*, 4460735.3*, 4460734.3*, 4452043.3*		KU899562-KU899704
M90	SRP064135			KX090448-KX090515
M91	SRP064135			
M92			SRP072293	KU312264-KU312267 KU899867–KU899990 KU302519 – KU302594
M93	SRP064135			
M107	SRS1482538, SRS1482539		PRJNA288724 SUB3036872	

Table S20: DOIs for Multinet Zooplankton Distribution. See also https://doi.org/10.1594/PANGAEA.926794

Cruise-id	Location	DOI
MSM22, M97, M105	CVOO	https://doi.org/10.1594/PANGAEA.858321

Table S21: DOIs for UVP5 (Zooplankton and Particle Distribution). See also https://doi.org/10.1594/PANGAEA.927040 and https://doi.org/10.1594/PANGAEA.924375.

Cruise-id	Method	DOI
M92	UVP5 Particles	https://doi.org/10.1594/PANGAEA.885756
M96	UVP5 Particles + Zooplankton	https://doi.org/10.1594/PANGAEA.846153
M106	UVP5 Particles	https://doi.org/10.1594/PANGAEA.874870
M107	UVP5 Particles	https://doi.org/10.1594/PANGAEA.885759
M119	UVP5 Particles	https://doi.org/10.1594/PANGAEA.874872
MSM22	UVP5 Particles	https://doi.org/10.1594/PANGAEA.874871 https://doi.org/10.1594/PANGAEA.842405 https://doi.org/10.1594/PANGAEA.858321
MSM23	UVP5 Particles	https://doi.org/10.1594/PANGAEA.846229
MSM22, M97,M105, M106	UVP5 Particles + Zooplankton	https://doi.org/10.1594/PANGAEA.858322

Please note that UVP5 particle data has undergone further quality controls and was merged with data from other international collaborators to yield a global dataset. This dataset, to be found at https://doi.org/10.1594/PANGAEA.924375 supersedes the here mentioned UVP5 particle datasets and should be used for further research, whereas the original datasets are still available for reference.

Table S22: DOIs for Zooplankton Respiration and Ammonium Excretion. See also https://doi.org/10.1594/PANGAEA.927041.

Cruise-id/Location	Species	DOI
M93	*Pleuroncodes monodon*	https://doi.org/10.1594/PANGAEA.847805 https://doi.org/10.1594/PANGAEA.847788 https://doi.org/10.1594/PANGAEA.847789
MSM22, M97, M93	Euphausiids and copepods	https://doi.org/10.1594/PANGAEA.853919 https://doi.org/10.1594/PANGAEA.853912 https://doi.org/10.1594/PANGAEA.853916
Cape Verde	Copepods	https://doi.org/10.1594/PANGAEA.816158

Table S23: DOIs for Nutrient amendment experiments. See also https://doi.org/10.1594/PANGAEA.927042.

Cruise-id/Location	**Method**	**DOI**
M77/3	Shipboard mesocosm (75 L)	https://doi.org/10.1594/PANGAEA.823278 https://doi.org/10.1594/PANGAEA.821880
M80/2	Shipboard mesocosm (150 L)	https://doi.org/10.1594/PANGAEA.821968 https://doi.org/10.1594/PANGAEA.821888
M83/1	Shipboard mesocosm (150 L)	https://doi.org/10.1594/PANGAEA.821882 https://doi.org/10.1594/PANGAEA.821880
M116	Bottle incubation	https://doi.org/10.1594/PANGAEA.907393 https://doi.org/10.1594/PANGAEA.907394
Cape Verde Mesocosms 2012	Mesocosm (150L)	https://doi.org/10.1594/PANGAEA.855440 https://doi.org/10.1594/PANGAEA.855441 https://doi.org/10.1594/PANGAEA.855442
KOSMOS 2017	Large-scale mesocosm (54 m3)	https://doi.org/10.1594/PANGAEA.923395

Table S24: Position, water depth and recovery of the long gravity cores (LGC) and piston cores (PC) retrieved during the SFB 754. See alo https://doi.org/10.1594/PANGAEA.927043.

Cruise-id	Event label	Alternative label	Gear	Latitude	Longitude	Water Depth (m)	Recovery (cm)	References
M77/1	M77/1_413	M77/1_413	LGC	17° 47.078' S	72° 4.423' W	2168	295	
M77/1	M77/1_414	M77/1_414	LGC	17° 38.606' S	71° 58.382' W	928	94	
M77/1	M77/1_415	M77/1_415	LGC	17° 34.391' S	71° 56.199' W	793	110	
M77/1	M77/1_416	M77/1_416	LGC	17° 28.135' S	71° 52.621' W	505	388	Erdem et al. (2016); Erdem and Schönfeld (2017)
M77/1	M77/1_417	M77/1_417	LGC	17° 26.026' S	71° 51.718' W	329	575	
M77/1	M77/1_418	M77/1_418	LGC	17° 25.98' S	71° 51.82' W	339	313	
M77/1	M77/1_422	M77/1_422	LGC	15° 11.42' S	75° 34.86' W	517	333	Erdem et al. (2016)
M77/1	M77/1_493	M77/1_493	LGC	11° 00.01' S	78° 44.81' W	2025	323	
M77/1	M77/1_494	M77/1_494	LGC	11° 0.01' S	78° 44.81' W	2024	352	
M77/1	M77/1_495	M77/1_495	LGC	11° 0.01' S	78° 34.39' W	1194	85	
M77/1	M77/1_496	M77/1_496	LGC	11° 0.01' S	78° 34.38' W	1197	70	
M77/1	M77/1_497	M77/1_497	LGC	11° 0.01' S	78° 30.05' W	930	371	
M77/1	M77/1_502	M77/1_502	LGC	11° S	78° 30.05' W	930	178	
M77/1	M77/1_503	M77/1_503	LGC	11° S	78° 25.65' W	698	437	
M77/1	M77/1_504	M77/1_504	LGC	11° 0.01' S	78° 25.65' W	700	422	
M77/1	M77/1_505	M77/1_505	LGC	11° 0.004' S	78° 25.652' W	699	441	
M77/1	M77/1_506	M77/1_506	LGC	11° S	78° 21.13' W	523	566	
M77/1	M77/1_507	M77/1_507	LGC	11° 0.01' S	78° 21.13' W	522	476	
M77/1	M77/1_508	M77/1_508	LGC	11° 0.03' S	78°14.19' W	379	220	

M77/1	M77/1_509	M77/1_509	LGC	11° 0.04' S	78° 14.17' W	397	64	
M77/1	M77/1_510	M77/1_510	LGC	11° 0.023' S	78° 13.314' W	365		
M77/1	M77/1_511	M77/1_511	LGC	11° 0.05' S	77° 56.61' W	146	324	
M77/1	M77/1_512	M77/1_512	LGC	11° 0.05' S	77° 56.61' W	144	559	
M77/2	M77/2_002-6	M77/2_002-6	PC	15° 4.75'S	75° 44.00' W	285	1248	
M77/2	M77/2_003-2	M77/2_003-2	PC	15° 6.21' S	75° 41.28'W	271	1497	Fleury et al. (2015a); Fleury et al. (2015b); Larsen et al. (2015); Schönfeld et al. (2015); Erdem et al. (2016); Doering et al. (2016a, 2016b); Mollier et al. (2019); Salvatteci et al. (2019)
M77/2	M77/2_005-1	M77/2_005-1	PC	12° 5.64' S	77° 39.91' W	209	1474	
M77/2	M77/2_005-3	M77/2_005-3	PC	12° 5.66' S	77° 40.07' W	214	1336	Fleury et al. (2015b); Salvatteci et al. (2019)
M77/2	M77/2_022-1	M77/2_022-1	PC	10° 53.22' S	78° 46.38' W	1929	97	
M77/2	M77/2_024-5	M77/2_024-5	PC	11° 5.01' S	78° 0.91' W	210	1492	Scholz et al. (2014a); Fleury et al. (2015b); Scholz et al. (2017)
M77/2	M77/2_026-1	M77/2_026-1	PC	10° 45.13' S	78° 28.43' W	425	1129	
M77/2	M77/2_028-3	M77/2_028-3	PC	9° 17.69' S	79° 53.86' W	1104	1096	
M77/2	M77/2_029-1	M77/2_029-1	PC	9° 17.70' S	79° 37.11' W	444	1490	
M77/2	M77/2_029-3	M77/2_029-3	PC	9° 17.70' S	79° 37.11' W	433	1354	Schönfeld et al. (2015); Erdem et al. (2016); Doering et al. (2016b); Mollier et al. (2019); Salvatteci et al. (2019)
M77/2	M77/2_045-4	M77/2_045-4	PC	7° 59.99' S	80° 20.51' W	359	1280	
M77/2	M77/2_047-2	M77/2_047-2	PC	7° 52.01' S	80° 31.36' W	626	1305	Erdem et al. (2016);

								Erdem and Schönfeld (2017); Erdem et al. (2020)
M77/2	M77/2_050-4	M77/2_050-4	PC	8° 1.01' S	80° 30.10' W	1013	1776	Schönfeld et al. (2015); Erdem et al. (2016); Erdem and Schönfeld (2017); Erdem et al. (2020)
M77/2	M77/2_052-2	M77/2_052-2	PC	5° 29.01' S	81° 27.00' W	1249	1307	Schönfeld et al. (2015); Erdem et al. (2016); Doering et al. (2016b); Erdem and Schönfeld (2017); Glock et al. (2018); Erdem et al. (2020)
M77/2	M77/2_053-2	M77/2_053-2	PC	5° 29.02' S	81° 43.00' W	2591	1239	
M77/2	M77/2_054-1	M77/2_054-1	PC	5° 29.00' S	81° 18.35' W	299	1215	
M77/2	M77/2_056-3	M77/2_056-3	PC	3° 44.99' S	81° 7.25' W	350	1101	
M77/2	M77/2_056-5	M77/2_056-5	PC	3° 44.99' S	81° 7.48' W	355	1061	Mollier et al. (2013); Nürnberg et al. (2015); Seillès et al. (2015); Erdem et al. (2016); Mollier et al. (2019)
M77/2	M77/2_059-1	M77/2_059-1	PC	3° 57.01' S	81° 19.23' W	997	1359	Mollier et al. (2013); Nürnberg et al. (2015); Erdem et al. (2016); Erdem and Schönfeld (2017); Erdem et al. (2020); Mollier et al. (2019)
M77/2	M77/2_060-3	M77/2_060-3	PC	3° 50.98' S	81° 15.50' W	699	1426	
M77/2	M77/2_062-1	M77/2_062-1	PC	2° 29.98' S	81° 14.72' W	1675	1227	
M77/2	M77/2_064-3	M77/2_064-3	PC	1° 53.49' S	81° 11.76' W	523	1116	
M77/2	M77/2_065-1	M77/2_065-1	PC	1° 57.01' S	81° 7.23' W	204	424	
M77/2	M77/2_067-4	M77/2_067-4	PC	1° 45.18' S	82° 37.50' W	2080	1179	

M77/2	M77/2_069-1	M77/2_069-1	PC	3° 16.00' S	80° 56.86' W	338	780	
M77/2	M77/2_072-3	M77/2_072-3	PC	2° 49.00' S	81° 0.53' W	425	1283	
M77/2	M77/2_075-1	M77/2_075-1	PC	0° 13.00' N	80° 39.44' W	1316	1032	
M77/2	M77/2_076-4	M77/2_076-4	PC	0° 5.45' N	80° 33.40' W	291	396	
M92	ME920/254-1	254 GC 3	LGC	12° 27.191' S	77° 29.490' W	407	206	(i) Porewater geochemistry https://doi.org/10.1594/PANGAEA.867651 (ii) Particulate geochemistry Maltby et al. (2016) Sommer et al. (2014)
M92	ME920/255-1	255 GC 4	LGC	10° 59.995' S	78° 0.914' W	118	561	(i) Porewater geochem.istry https://doi.org/10.1594/PANGAEA.867652 (ii) Particulate geochemistry https://doi.org/10.1594/PANGAEA.867686
M92	M920/263-1	263 GC 6	LGC	10° 59.998' S	78° 12.605' W	361	287	(i) Porewater geochemistry https://doi.org/10.1594/PANGAEA.867653 (ii) Particulate geochemistry https://doi.org/10.1594/PANGAEA.867687
M92	M920/265-1	265 GC 7	LGC	10° 59.989' S	78° 38.011' W	1485	418	(i) Porewater geochemistry https://doi.org/10.1594/PANGAEA.867654 (ii) Particulate geochemistry https://doi.org/10.1594/PANGAEA.867688
M92	ME920/268-1	268 GC 8	LGC	12° 14.500' S	77° 9.611' W	78	400	(i) Porewater geochemistry https://doi.org/10.1594/PANGAEA.922469 (ii) Particulate geochemistry https://doi.org/10.1594/PANGAEA.922476 Maltby et al. (2016)

M135	M1350/219-3	M135-001-3	LGC	18° 47.394' S	70° 51.387' W	1412	583	
M135	M1350/249-3	M135-002-3	LGC	17° 29.05' S	71° 43.088' W	466	420	
M135	M1350/249-4	M135-002-4	LGC	17° 29.054' S	71° 43.090' W	465	429	
M135	M1350/250-3	M135-003-3	LGC	17° 28.963' S	71° 41.012' W	470	561	
M135	M1350/252-3	M135-004-3	LGC	17° 24.598' S	71° 44.416' W	229	746	Salvatteci et al. (2019)
M135	M1350/254-3	M135-005-3	LGC	17° 25.228' S	71° 46.139' W	197	916	Salvatteci et al. (2019)

References

Doering, K., Ehlert, C., Grasse, P., Crosta, X., Fleury, S., Frank, M., and Schneider, R.: Differences between mono-generic and mixed diatom silicon isotope compositions trace present and past nutrient utilisation off Peru, Geochim. Cosmochim. Acta, 177, 30–47, doi:10.1016/j.gca.2015.12.029, 2016a.

Doering, K., Erdem, Z., Ehlert, C., Fleury, S., Frank, M., and Schneider, R.: Changes in diatom productivity and upwelling intensity off Peru since the Last Glacial Maximum: Response to basin-scale atmospheric and oceanic forcing, Paleoceanography, 31, doi:10.1002/2016PA002936, 2016b.

Erdem, Z., Schönfeld, J., Glock, N., Dengler, M., Mosch, T., Sommer, S., Elger, J., and Eisenhauer, A.: Peruvian sediments as recorders of an evolving hiatus for the last 22 thousand years, Quat. Sci. Rev., 137, 1-14, doi:10.1016/j.quascirev.2016.01.029, 2016.

Erdem, Z., and Schönfeld, J.: Pleistocene to Holocene benthic foraminiferal assemblages from the Peruvian continental margin, Palaeontol. Electronica, 20, 1-32, doi:10.26879/764, 2017.

Erdem, Z., Schönfeld, J., Rathburn, A. E., Pérez, M.-E., Cardich, J., and Glock, N.: Bottom-water deoxygenation at the Peruvian margin during the last deglaciation recorded by benthic foraminifera, Biogeosciences, 17, 3165–3182, doi:10.5194/bg-17-3165-2020, 2020.

Fleury, S., Crosta, X., Schneider, R., Blanz, T., Ther, O., and Martinez, P.: Centennial-scale variations in diatom productivity off Peru over the last 3000 years, Holocene, 26, 520-531, doi:10.1177/0959683615612589, 2015a.

Fleury, S., Martinez, P., Crosta, X., Charlier, K., Billy, I., Hanquiez, V., Blanz, T., and Schneider, R.,: Pervasive multidecadal variations in productivity within the Peruvian Upwelling System over the last millennium, Quat. Sci. Rev., 125, 78-90, doi:10.1016/j.quascirev.2015.08.006, 2015b.

Glock, N., Erdem, Z., Wallmann, K., Somes, C.J., Liebetrau, V., Schönfeld, J., Gorb, S., and Eisenhauer, A.: Coupling of oceanic carbon and nitrogen facilitates spatially resolved quantitative reconstruction of nitrate inventories, Nat. Commun., 9, doi:10.1038/s41467-018-03647-5, 2018.

Larsen, T., Bach, L. T., Salvatteci, R., Wang, Y. V., Andersen, N., Ventura, M., and McCarthy, M. D.: Assessing the potential of amino acid ^{13}C patterns as a carbon source tracer in marine sediments: effects of algal growth conditions and sedimentary diagenesis, Biogeosciences, 12, 4979–4992, doi:10.5194/bg-12-4979-2015., 2015.

Maltby J., Sommer S., Dale A. W. and Treude T.: Microbial methanogenesis in the sulfate-reducing zone of surface sediments traversing the Peruvian margin, Biogeosciences 13, 283-299, doi:10.5194/bg-13-283-2016, 2016.

Mollier-Vogel, E., Leduc, G., Böschen, T., Martinez, P., and Schneider, R.: Rainfall response to orbital and millennial forcing in northern Peru over the last 18 ka, Quat. Sci. Rev., 76, 29-38, doi:10.1016/j.quascirev.2013.06.021, 2013.

Mollier-Vogel, E., Martinez, P., Blanz, T., Robinson, R., Desprat, S., Etourneau, J., Charlier, K., and Schneider, R.: Mid-Holocene deepening of the Southeast Pacific oxycline, Glob. Planet. Change, 172, 365–373, doi:10.1016/j.gloplacha.2018.10.020, 2019.

Nürnberg, D., Böschen, T., Doering, K., Mollier-Vogel, E., Raddatz, J., and Schneider, R.: Sea surface and subsurface circulation dynamics off equatorial Peru during the last ~17kyr, Paleoceanography, 30, 984–999, doi:10.1002/2014PA002706, 2015.

Salvatteci, R., Schneider, R.R., Blanz, T., and Mollier-Vogel, E.: Deglacial to Holocene Ocean Temperatures in the Humboldt Current System as Indicated by Alkenone Paleothermometry, Geophys. Res. Lett., 46, doi:10.1029/2018gl080634, 2019.

Scholz, F., Siebert, C., Dale, A. W., and Frank, M.: Intense molybdenum accumulation in sediments underneath a nitrogenous water column and implications for the reconstruction of paleo-redox conditions based on molybdenum isotopes, Geochim. Cosmochim, Acta, 213, 400-417, doi:10.1016/j.gca.2017.06.048, 2017.

Schönfeld, J., Kuhnt, W., Erdem, Z., Flögel, S., Glock, N., Aquit, M., Frank, M., and Holbourn, A.: Records of past mid-depth ventilation: Cretaceous ocean anoxic event 2 vs. Recent oxygen minimum zones, Biogeosciences, 12, 1169-1189, doi:10.5194/bgd-11-13343-2014, 2015.

Seillès, B., Sánchez-Goñi, M.-F., Ledru, M.-P., Urrego, D. H., Martinez, P., Hanquiez, V., and Schneider, R.: Holocene land–sea climatic links on the equatorial Pacific coast (Bay of Guayaquil, Ecuador), Holocene, 26, 567-577, doi:10.1177/0959683615612566, 2016.

Sommer, S., Dengler, M., and Treude, T.: Benthic element cycling, fluxes and transport of solutes across the benthic boundary layer in the Peruvian oxygen minimum zone, (SFB 754) - Cruise No. M92 – January 05 – February 03, 2013 – Callao (Peru) – Callao (Peru). METEOR-Berichte, M92, 55 pp., DFG-Senatskommission für Ozeanographie, doi:10.2312/cr_m92, 2014.

Table S25: DOIs for the age models and sedimentation rates of sediment cores. See also https://doi.org/10.1594/PANGAEA.927046.

Cruise-id	Description	DOI	References
M77/1	Age model and sedimentation rate of sediment core M77/1_449-1	https://doi.org/10.1594/PANGAEA.866927	Ehlert et al. (2016)
M77/1	Age model and sedimentation rate of sediment core M77/1_470-1	https://doi.org/10.1594/PANGAEA.866930	Ehlert et al. (2016)
M77/1	Age model and sedimentation rate of sediment core M77/1_549-1	https://doi.org/10.1594/PANGAEA.866931	Ehlert et al. (2016)
M77/2	Age model and sedimentation rate of sediment core M77/2_029-3	https://doi.org/10.1594/PANGAEA.877425	Doering et al. (2016)
M77/2	Age model and sedimentation rate of sediment core M77/2_052-2	https://doi.org/10.1594/PANGAEA.877426	Doering et al. (2016)
M77/1	Age models for sediment cores M77/1-470-MUC29, M77/1-449-MUC19 and M77/1-459-MUC53 from the Peruvian shelf at 11° S	https://doi.org/10.1594/PANGAEA.866932	Ehlert et al. (2016)
M77/1	Age model of sediment core M77/1_416	https://doi.org/10.1594/PANGAEA.902614	Erdem et al. (2020)
M77/2	Age model of sediment core M77/2_047-2	https://doi.org/10.1594/PANGAEA.902615	Erdem et al. (2016; 2020)
M77/2	Age model of sediment core M77/2_050-4	https://doi.org/10.1594/PANGAEA.902616	Erdem et al. (2016; 2020)

References

Doering, K., Erdem, Z., Ehlert, C., Fleury, S., Frank, M., and Schneider, R.: Changes in diatom productivity and upwelling intensity off Peru since the Last Glacial Maximum: Response to basin-scale atmospheric and oceanic forcing, Paleoceanography, 31(10), 1453-1473, doi:10.1002/2016PA002936, 2016.

Ehlert, C., Doering, K., Wallmann, K., Scholz, F., Sommer, S., Grasse, P., Geilert, S., and Frank, M.: Stable silicon isotope signatures of marine pore waters – Biogenic opal dissolution versus authigenic clay mineral formation, Geochim. Cosmochim. Acta, 191, 102-117, doi:10.1016/j.gca.2016.07.022, 2016.

Erdem, Z., Schönfeld, J., Glock, N., Dengler, M., Mosch, T., Sommer, S., Elger, J., and Eisenhauer, A.: Peruvian sediments as recorders of an evolving hiatus for the last 22 thousand years, Quat. Sci. Rev., 137, 1-14, doi:10.1016/j.quascirev.2016.01.029, 2016.

Erdem, Z., Schönfeld, J., Rathburn, A. E., Pérez, M.-E., Cardich, J., and Glock, N.: Bottom-water deoxygenation at the Peruvian margin during the last deglaciation recorded by benthic foraminifera, Biogeosciences, 17, 3165–3182, doi:10.5194/bg-17-3165-2020, 2020.

Table S26: DOIs for downcore X-Ray Fluorescence (XRF) measurements on sediment cores. See also https://doi.org/10.1594/PANGAEA.927047.

Cruise-id	Description	DOI	References
	XRF core scanning data from Core LB1 (La Bedoule, southern France)	https://doi.org/10.1594/PANGAEA.912478	Beil et al. (2020)
	XRF core scanning data from Core LB3 (La Bedoule, southern France)	https://doi.org/10.1594/PANGAEA.912479	Beil et al. (2020)
	XRF core scanning data from Cores LB1 and LB3 (La Bedoule, southern France)	https://doi.org/10.1594/PANGAEA.912681	Beil et al. (2020)
M77/2	XRF-scanned elemental concentrations from sediment cores off Peru	https://doi.org/10.1594/PANGAEA.824573	Mollier-Vogel et al. (2013)
M77/2	XRF-scanned Ti, Fe and Ca of piston core M77/2_056-5	https://doi.org/10.1594/PANGAEA.824571	Mollier-Vogel et al. (2013)
M77/2	XRF-scanned Ti, Fe and Ca of piston core M77/2_059-1	https://doi.org/10.1594/PANGAEA.824572	Mollier-Vogel et al. (2013)
M77/1	XRF measurements on sediment core M77/1_397-1	https://doi.org/10.1594/PANGAEA.885171	Pfannkuche et al. (2011)
M77/1	XRF measurements on sediment core M77/1_406-1	https://doi.org/10.1594/PANGAEA.885174	Pfannkuche et al. (2011)
M77/1	XRF measurements on sediment core M77/1_421-1	https://doi.org/10.1594/PANGAEA.885175	Pfannkuche et al. (2011)
M77/1	XRF measurements on sediment core M77/1_445-1	https://doi.org/10.1594/PANGAEA.885176	Pfannkuche et al. (2011)
M77/1	XRF measurements on sediment core M77/1_455-1	https://doi.org/10.1594/PANGAEA.885177	Pfannkuche et al. (2011)
M77/1	XRF measurements on sediment core M77/1_460-1	https://doi.org/10.1594/PANGAEA.885178	Pfannkuche et al. (2011)
M77/1	XRF measurements on sediment core M77/1_462-1	https://doi.org/10.1594/PANGAEA.885179	Pfannkuche et al. (2011)
M77/1	XRF measurements on sediment core M77/1_464	https://doi.org/10.1594/PANGAEA.885180	Pfannkuche et al. (2011)
M77/1	XRF measurements on sediment core M77/1_470-1	https://doi.org/10.1594/PANGAEA.885181	Pfannkuche et al. (2011)
M77/1	XRF measurements on sediment core M77/1_474	https://doi.org/10.1594/PANGAEA.885182	Pfannkuche et al. (2011)
M77/1	XRF measurements on sediment core M77/1_481-1	https://doi.org/10.1594/PANGAEA.885183	Pfannkuche et al. (2011)
M77/1	XRF measurements on sediment core M77/1_487-1	https://doi.org/10.1594/PANGAEA.885184	Pfannkuche et al. (2011)
M77/1	XRF measurements on sediment core M77/1_516-1	https://doi.org/10.1594/PANGAEA.885185	Pfannkuche et al. (2011)
M77/1	XRF measurements on sediment core M77/1_519-1	https://doi.org/10.1594/PANGAEA.885186	Pfannkuche et al. (2011)
M77/1	XRF measurements on sediment core M77/1_526	https://doi.org/10.1594/PANGAEA.885187	Pfannkuche et al. (2011)
M77/1	XRF measurements on sediment core M77/1_535	https://doi.org/10.1594/PANGAEA.885188	Pfannkuche et al. (2011)
M77/1	XRF measurements on sediment core M77/1_543-1	https://doi.org/10.1594/PANGAEA.885189	Pfannkuche et al. (2011)

M77/1	XRF measurements on sediment core M77/1_549-1	https://doi.org/10.1594/PANGAEA.885190	Pfannkuche et al. (2011)
M77/1	XRF measurements on sediment core M77/1_553-1	https://doi.org/10.1594/PANGAEA.885191	Pfannkuche et al. (2011)
M77/1	XRF measurements on sediment core M77/1_564-1	https://doi.org/10.1594/PANGAEA.885193	Pfannkuche et al. (2011)
M77/1	XRF measurements on sediment core M77/1_573-1	https://doi.org/10.1594/PANGAEA.885194	Pfannkuche et al. (2011)
M77/1	XRF measurements on sediment core M77/1_584-1	https://doi.org/10.1594/PANGAEA.885195	Pfannkuche et al. (2011)
M77/1	XRF measurements on sediment core M77/1_586	https://doi.org/10.1594/PANGAEA.885196	Pfannkuche et al. (2011)
M77/1	XRF measurements on sediment core M77/1_601-1	https://doi.org/10.1594/PANGAEA.885197	Pfannkuche et al. (2011)
M77/1	XRF measurements on sediment core M77/1_607-1	https://doi.org/10.1594/PANGAEA.885198	Pfannkuche et al. (2011)
M77/1	XRF measurements on sediment core M77/1_610-1	https://doi.org/10.1594/PANGAEA.885199	Pfannkuche et al. (2011)
M77/1	XRF measurements on sediment core M77/1_614-1	https://doi.org/10.1594/PANGAEA.885200	Pfannkuche et al. (2011)
M77/1	XRF measurements on sediment core M77/1_619-1	https://doi.org/10.1594/PANGAEA.885201	Pfannkuche et al. (2011)
M77/2	XRF measurements on sediment core M77/2_009	https://doi.org/10.1594/PANGAEA.885219	Pfannkuche et al. (2011)
M77/2	XRF measurements on sediment core M77/2_013	https://doi.org/10.1594/PANGAEA.885220	Pfannkuche et al. (2011)
M77/2	XRF measurements on sediment core M77/2_022-3	https://doi.org/10.1594/PANGAEA.885221	Pfannkuche et al. (2011)
M77/2	XRF measurements on sediment core M77/2_025	https://doi.org/10.1594/PANGAEA.885222	Pfannkuche et al. (2011)
M77/2	XRF measurements on sediment core M77/2_026-3	https://doi.org/10.1594/PANGAEA.885223	Pfannkuche et al. (2011)
M77/2	XRF measurements on sediment core M77/2_028-2	https://doi.org/10.1594/PANGAEA.885225	Pfannkuche et al. (2011)
M77/2	XRF measurements on sediment core M77/2_029-4	https://doi.org/10.1594/PANGAEA.885226	Pfannkuche et al. (2011)
M77/2	XRF measurements on sediment core M77/2_031-2	https://doi.org/10.1594/PANGAEA.885227	Pfannkuche et al. (2011)
M77/2	XRF measurements on sediment core M77/2_045-2	https://doi.org/10.1594/PANGAEA.885228	Pfannkuche et al. (2011)
M77/2	XRF measurements on sediment core M77/2_047-3	https://doi.org/10.1594/PANGAEA.885229	Pfannkuche et al. (2011)
M77/2	XRF measurements on sediment core M77/2_048	https://doi.org/10.1594/PANGAEA.885230	Pfannkuche et al. (2011)
M77/2	XRF measurements on sediment core M77/2_050-1	https://doi.org/10.1594/PANGAEA.885231	Pfannkuche et al. (2011)
M77/2	XRF measurements on sediment core M77/2_052-3	https://doi.org/10.1594/PANGAEA.885232	Pfannkuche et al. (2011)
M77/2	XRF measurements on sediment core M77/2_053-1	https://doi.org/10.1594/PANGAEA.885233	Pfannkuche et al. (2011)
M77/2	XRF measurements on sediment core M77/2_054-2	https://doi.org/10.1594/PANGAEA.885234	Pfannkuche et al. (2011)
M77/2	XRF measurements on sediment core M77/2_056-2	https://doi.org/10.1594/PANGAEA.885235	Pfannkuche et al. (2011)
M77/2	XRF measurements on sediment core M77/2_059-2	https://doi.org/10.1594/PANGAEA.885236	Pfannkuche et al. (2011)
M77/2	XRF measurements on sediment core M77/2_060-1	https://doi.org/10.1594/PANGAEA.885237	Pfannkuche et al. (2011)

M77/2	XRF measurements on sediment core M77/2_062-2	https://doi.org/10.1594/PANGAEA.885238	Pfannkuche et al. (2011)
M77/2	XRF measurements on sediment core M77/2_064-2	https://doi.org/10.1594/PANGAEA.885239	Pfannkuche et al. (2011)
M77/2	XRF measurements on sediment core M77/2_067-2	https://doi.org/10.1594/PANGAEA.885240	Pfannkuche et al. (2011)
M77/2	XRF measurements on sediment core M77/2_069-2	https://doi.org/10.1594/PANGAEA.885241	Pfannkuche et al. (2011)
M77/2	XRF measurements on sediment core M77/2_072-1	https://doi.org/10.1594/PANGAEA.885243	Pfannkuche et al. (2011)
M135	XRF measurements on sediment core M135_252-3	https://doi.org/10.1594/PANGAEA.897238	Salvatteci et al. (2019)

References

Beil, S., Kuhnt, W., Holbourn, A., Scholz, F., Oxmann, J., Wallmann, K., Lorenzen, J., Aquit, M., and Chellai, E. H.: Cretaceous oceanic anoxic events prolonged by phosphorus cycle feedbacks, Clim. Past, 16, 757–782, doi:10.5194/cp-16-757-2020, 2020.

Mollier-Vogel, E., Leduc, G., Böschen, T., Martinez, P., and Schneider, R.: Rainfall response to orbital and millennial forcing in northern Peru over the last 18 ka, Quat. Sci. Rev., 76, 29-38, doi:10.1016/j.quascirev.2013.06.021, 2013.

Pfannkuche, O., Schneider, R., Frank, M., and Stramma, L.: Climate-biogeochemistry interactions in the tropical ocean of the SE-American oxygen minimum zone – Cruise No. M77 – October 22, 2008 – February 18, 2009 – Talcahuano (Chile) -Colon (Panama). Meteor-Berichte, M77, 163 pp. DFG-Senatskommission für Ozeanographie, doi:10.2312/cr_m77, 2011.

Salvatteci, R., Schneider, R.R., Blanz, T., and Mollier-Vogel, E.: Deglacial to Holocene Ocean Temperatures in the Humboldt Current System as Indicated by Alkenone Paleothermometry, Geophys. Res. Lett., 46(1), 281-292, doi:10.1029/2018gl080634, 2019.

Table S27: DOIs of downcore proxy records. See also https://doi.org/10.1594/PANGAEA.927048.

Description	DOI	References
New insights into Cenomanian paleoceanography and climate evolution from the Tarfaya Basin, southern Morocco	https://doi.org/10.1594/PANGAEA.889137	Beil et al. (2018)
Elemental raw data, analysed with XRF core scanner on core SN4 in Tarfaya Basin, southern Morocco	https://doi.org/10.1594/PANGAEA.889143	Beil et al. (2018)
Geochemical analysis of core SN4 in Tarfaya Basin, southern Morocco	https://doi.org/10.1594/PANGAEA.889133	Beil et al. (2018)
Natural Gamma Ray of core SN4 in Tarfaya Basin, southern Morocco	https://doi.org/10.1594/PANGAEA.889136	Beil et al. (2018)
Stable isotope analysis (bulk carbonate) of core SN4 in Tarfaya Basin, southern Morocco	https://doi.org/10.1594/PANGAEA.889134	Beil et al. (2018)
Stable isotope analysis (organic material) of core SN4 in Tarfaya Basin, southern Morocco.	https://doi.org/10.1594/PANGAEA.889135	Beil et al. (2018)
Cretaceous Oceanic Anoxic Events prolonged by phosphorus cycle feedbacks, data from SN4 and La Bedoule	https://doi.org/10.1594/PANGAEA.912375	Beil et al. (2020)
Stable isotope analysis (bulk carbonate) of core SN4 in Tarfaya Basin, southern Morocco	https://doi.org/10.1594/PANGAEA.912278	Kuhnt et al. (2017)
Stable isotope analysis (organic material) of core SN4 in Tarfaya Basin, southern Morocco	https://doi.org/10.1594/PANGAEA.912279	Kuhnt et al. (2017)
Borehole log derived Natural Gamma Ray (NGR) data from Core LB3 (La Bedoule, southern France)	https://doi.org/10.1594/PANGAEA.912372	Beil et al. (2020)
Borehole log derived Natural Gamma Ray (NGR) data from Cores LB1 (La Bedoule, southern France)	https://doi.org/10.1594/PANGAEA.912369	Beil et al. (2020)
Borehole log derived Natural Gamma Ray (NGR) data from Cores LB1 and LB3 (spliced) (La Bedoule, southern France)	https://doi.org/10.1594/PANGAEA.912480	Beil et al. (2020)
Phosphorus concentration and speciation data of core SN4 (Tarfaya Basin)	https://doi.org/10.1594/PANGAEA.912277	Beil et al. (2020)
Stable isotope data (bulk carbonates) from Core LB1 (La Bedoule, southern France)	https://doi.org/10.1594/PANGAEA.912378	Beil et al. (2020)
Stable isotope data (bulk carbonates) from Core LB3 (La Bedoule, southern France)	https://doi.org/10.1594/PANGAEA.912377	Beil et al. (2020)
Stable isotope data (bulk carbonates) from Cores LB1 and LB3 (La Bedoule, southern France)	https://doi.org/10.1594/PANGAEA.912379	Beil et al. (2020)
Diatom assemblage of core M77/2_003-2	https://doi.org/10.1594/PANGAEA.927604	Doering et al (2016a)

Stable Silicon Isotopes data, biogenic opal concentrations and bulk sediment nitrogen isotope data of Trigger cores M772-024, 005 and 003 off Peru	https://doi.org/10.1594/PANGAEA.901858	Doering et al. (2019)
14C and age models for cores M772-052 and M772-029; diatom assemblages and biogenic opal and organic carbon data	https://doi.org/10.1594/PANGAEA.877432	Doering et al (2016b)
Concentrations of biogenic opal and organic carbon of sediment core M77/2_029-3	https://doi.org/10.1594/PANGAEA.877427	Doering et al (2016b)
Downcore records of the diatom assemblage counts from the small-mixed diatom fraction (11-32 µm) of sediment core M77/2_003-2	https://doi.org/10.1594/PANGAEA.877428	Doering et al. (2016a)
Downcore records of the diatom assemblage counts from the small-mixed diatom fraction (11-32 µm) of sediment core M77/2_029-3	https://doi.org/10.1594/PANGAEA.877590	Doering et al. (2016a)
Downcore records of the diatom assemblage counts from the small-mixed diatom fraction (11-32 µm) of sediment core M77/2_052-2	https://doi.org/10.1594/PANGAEA.877430	Doering et al. (2016b)
Downcore records of the diatom assemblage counts from the small-mixed diatom fraction (11-32 µm) of sediment core SO147_106KL	https://doi.org/10.1594/PANGAEA.877431	Doering et al. (2016b)
Peruvian Margin living benthic foraminiferal distributions in percentage	https://doi.org/10.1594/PANGAEA.901840	Erdem et al. (2020)
Downcore data for sediment core M77/2_52-2	https://doi.org/10.1594/PANGAEA.900467	Glock et al. (2018)
Stable isotopes, Mg/Ca ratios and sea surface temperatures on foraminifera from sediment cores off equatorial Peru during the last ~17kyr	https://doi.org/10.1594/PANGAEA.848849	Nürnberg et al. (2015)
Stable isotopes, Mg/Ca ratios and sea surface temperatures on planktonic and benthic foraminifera of sediment core M77/2_056-5	https://doi.org/10.1594/PANGAEA.848847	Nürnberg et al. (2015)
Stable isotopes, Mg/Ca ratios and sea surface temperatures on planktonic and benthic foraminifera of sediment core M77/2_059-1	https://doi.org/10.1594/PANGAEA.848848	Nürnberg et al. (2015)
Fish scale deposition rates and export production from 1860 to 2005 AD off Peru	https://doi.org/10.1594/PANGAEA.888404	Salvatteci et al. (2018)
Deglacial to Holocene Ocean Temperatures in the Humboldt Current System as Indicated by Alkenone Paleothermometry	https://doi.org/10.1594/PANGAEA.897239	Salvatteci et al. (2019b)
Age, TOC and deposition rates measured on cores B04 and B05 off Peru	https://doi.org/10.1594/PANGAEA.888398	Salvatteci et al. (2018)
Alkenone derived SST from sediment core M135_252-3 (M135-004-3)	https://doi.org/10.1594/PANGAEA.897236	Salvatteci et al. (2019b)
Alkenone derived SST from sediment core M135_254-3 (M135-005-3)	https://doi.org/10.1594/PANGAEA.897237	Salvatteci et al. (2019b)
Alkenone derived SST from sediment core M77/2_003-2	https://doi.org/10.1594/PANGAEA.897232	Salvatteci et al. (2019b)

Alkenone derived SST from sediment core M77/2_005-3	https://doi.org/10.1594/PANGAEA.897233	Salvatteci et al. (2019b)
Alkenone derived SST from sediment core M77/2_024-5	https://doi.org/10.1594/PANGAEA.897234	Salvatteci et al. (2019b)
Alkenone derived SST from sediment core M77/2_029-3	https://doi.org/10.1594/PANGAEA.897235	Salvatteci et al. (2019b)
Anchovy and sardine scaled depostion rates in the Humboldt Current System off Peru during the last 150 years	https://doi.org/10.1594/PANGAEA.888402	Salvatteci et al. (2018)
Fish debris in the Humboldt Current for the last 25 kyr	https://doi.org/10.1594/PANGAEA.917873	Salvatteci et al. (2019a)
Fish debris in the Humboldt Current for the last 25 kyr: Fish debris concentrations and fluxes of unidentified vertebrae	https://doi.org/10.1594/PANGAEA.917869	Salvatteci et al. (2019a)
Fish debris in the Humboldt Current for the last 25 kyr	https://doi.org/10.1594/PANGAEA.917871	Salvatteci et al. (2019a)
Fish debris in the Humboldt Current for the last 25 kyr: Proxies for environmental conditions and fish debris preservation	https://doi.org/10.1594/PANGAEA.917867	Salvatteci et al. (2019a)
Fish debris in the Humboldt Current for the last 25 kyr: Time series of the main 3 principal components	https://doi.org/10.1594/PANGAEA.917872	Salvatteci et al. (2019a)
Redox sensitive metals, d15N, hydrogen index and TOC measured on a composite record (B14-G10-G14) off Peru covering the last 25 kyr	https://doi.org/10.1594/PANGAEA.887109	Salvatteci et al. (2016)
SST gradients in the Humboldt Current System off Peru during the last 150 years	https://doi.org/10.1594/PANGAEA.888401	Salvatteci et al. (2018)
Nitrogen isotope, total organic carbon and element concentration data for piston core M77/2-024-5 from the Peruvian continental margin	https://doi.org/10.1594/PANGAEA.830777	Scholz et al. (2014a)
Iron speciation measured on core Tarfaya SN4	https://doi.org/10.1594/PANGAEA.906319	Scholz et al. (2019)
Nitrogen isotope and element concentration data for core Tarfaya SN4	https://doi.org/10.1594/PANGAEA.906318	Scholz et al. (2019)
Nitrogen isotope and element concentration data for piston core M77/2-024-5 from the Peruvian continental margin	https://doi.org/10.1594/PANGAEA.830775	Scholz et al. (2014a)
Proxy records for iron, sulfur and nitrogen cycling in the Tarfaya upwelling system.	https://doi.org/10.1594/PANGAEA.906320	Scholz et al. (2019)
The sedimentary fingerprint of an open-marine iron shuttle	https://doi.org/10.1594/PANGAEA.831730	Scholz et al. (2014b)
Total organic carbon data for piston core M77/2-024-5 from the Peruvian continental margin	https://doi.org/10.1594/PANGAEA.830776	Scholz et al. (2014a)
Records of past mid-depth ventilation: Cretaceous ocean anoxic event 2 vs. recent oxygen minimum zones.	https://doi.org/10.1594/PANGAEA.844808	Schönfeld et al. (2015)
Accumulation rates of Site S13 (SW Morocco)	https://doi.org/10.1594/PANGAEA.844807	Schönfeld et al. (2015)

References

Beil, S., Kuhnt, W., Holbourn, A. E., Aquit, M., Flögel, S., Chellai, E. H., and Jabour, H.: New insights into Cenomanian paleoceanography and climate evolution from the Tarfaya Basin, southern Morocco, Cretac. Res., 84, 451–473. doi:10.1016/j.cretres.2017.11.006, 2018.

Beil, S., Kuhnt, W., Holbourn, A., Scholz, F., Oxmann, J., Wallmann, K., Lorenzen, J., Aquit, M., and Chellai, E. H.: Cretaceous oceanic anoxic events prolonged by phosphorus cycle feedbacks, Clim. Past, 16, 757–782, doi:10.5194/cp-16-757-2020, 2020.

Doering, K., Ehlert, C., Grasse, P., Crosta, X., Fleury, S., Frank, M., and Schneider, R.: Differences between mono-generic and mixed diatom silicon isotope compositions trace present and past nutrient utilisation off Peru, Geochim. Cosmochim. Acta, 177, 30–47, doi:10.1016/j.gca.2015.12.029, 2016a.

Doering, K., Erdem, Z., Ehlert, C., Fleury, S., Frank, M., and Schneider, R.: Changes in diatom productivity and upwelling intensity off Peru since the Last Glacial Maximum: Response to basin-scale atmospheric and oceanic forcing, Paleoceanography, 31(10), 1453-1473, doi:10.1002/2016PA002936, 2016b.

Doering, K., Ehlert, C., Martinez, P., Frank, M., and Schneider, R.: Latitudinal variations in δ 30 Si and δ 15 N signatures along the Peruvian shelf: quantifying the effects of nutrient utilization versus denitrification over the past 600 years, Biogeosciences 16, 2163–2180, doi:10.5194/bg-16-2163-2019, 2019.

Erdem, Z., Schönfeld, J., Rathburn, A. E., Pérez, M.-E., Cardich, J., and Glock, N.: Bottom-water deoxygenation at the Peruvian margin during the last deglaciation recorded by benthic foraminifera, Biogeosciences, 17, 3165–3182, doi:10.5194/bg-17-3165-2020, 2020.

Glock, N., Erdem, Z., Wallmann, K., Somes, C.J., Liebetrau, V., Schönfeld, J., Gorb, S., and Eisenhauer, A.: Coupling of oceanic carbon and nitrogen facilitates spatially resolved quantitative reconstruction of nitrate inventories, Nat. Commun., 9, doi:10.1038/s41467-018-03647-5, 2018.

Kuhnt, W., Holbourn, A., Beil, S., Aquit, M., Krawczyk, T., Flögel, S., el hassane, C., and Jabour, H.: Unraveling the onset of Cretaceous Oceanic Anoxic Event 2 in an extended sediment archive from the Tarfaya-Laayoune Basin, Morocco, Paleoceanography, 32, doi:10.1002/2017pa003146, 2017.

Nürnberg, D., Böschen, T., Doering, K., Mollier-Vogel, E., Raddatz, J., and Schneider, R.: Sea surface and subsurface circulation dynamics off equatorial Peru during the last ~17kyr, Paleoceanography, 30, 984–999, doi:10.1002/2014PA002706, 2015.
Salvatteci, R., Gutierrez, D., Sifeddine, A., Ortlieb, L., Druffel, E., Boussafir, M., and Schneider, R.: Centennial to millennial-scale changes in oxygenation and productivity in the Eastern Tropical South Pacific during the last 25 000 years, Quat. Sci. Rev., 131, 102-117, doi:10.1016/j.quascirev.2015.10.044, 2016.
Salvatteci, R., Field, D., Gutiérrez, D., Baumgartner, T., Ferreira, V., Ortlieb, L., Sifeddine, A., Grados, D., and Bertrand, A.: Multifarious anchovy and sardine regimes in the Humboldt Current System during the last 150 years, Glob. Change Biol., 24, 1055–1068, doi:10.1111/gcb.13991, 2018.
Salvatteci, R., Gutierrez, D., Field, D., Sifeddine, A., Ortlieb, L., Caquineau, S., Baumgartner, T., Ferreira, V., and Bertrand, A.: Fish debris in sediments from the last 25 kyr in the Humboldt Current reveal the role of productivity and oxygen on small pelagic fishes, Prog. Oceanogr., 176, 102–114, doi:10.1016/j.pocean.2019.05.006, 2019a.
Salvatteci, R., Schneider, R.R., Blanz, T., and Mollier-Vogel, E.: Deglacial to Holocene Ocean Temperatures in the Humboldt Current System as Indicated by Alkenone Paleothermometry, Geophys. Res. Lett., 46(1), 281-292, doi:10.1029/2018gl080634, 2019b.
Scholz, F., McManus, J., Mix, A., Hensen, C., and Schneider, R.: The impact of ocean deoxygenation on the ocean's iron supply, Nat. Geosci., 7, 433-437, doi:10.1038/ngeo2162, 2014a.
Scholz, F., Severmann, S., McManus, J., and Hensen, C.: Beyond the Black Sea paradigm: The sedimentary fingerprint of an open-marine iron shuttle, Geochim. Cosmochim. Acta, 127, 368–380, doi:10.1016/j.gca.2013.11.041, 2014b.
Scholz, F., Beil, S., Flögel, S., Lehmann, M.F., Holbourn, A., Wallmann, K., and Kuhnt, W.: Oxygen minimum zone-type biogeochemical cycling in the Cenomanian-Turonian Proto-North Atlantic across Oceanic Anoxic Event 2, Earth Planet. Sci. Lett., 517, 50–60, doi:10.1016/j.epsl.2019.04.008, 2019.
Schönfeld, J., Kuhnt, W., Erdem, Z., Flögel, S., Glock, N., Aquit, M., Frank, M., and Holbourn, A.: Records of past mid-depth ventilation: Cretaceous ocean anoxic event 2 vs. Recent oxygen minimum zones, Biogeosciences, 12, 1169-1189, doi:10.5194/bgd-11-13343-2014, 2015.

Table S28: DOIs for core-top calibrations of paleo-proxies. See also https://doi.org/10.1594/PANGAEA.927049.

Cruise-id	Description	DOI	References
M77/1	Nitrogen and carbon concentrations and isotopic ratios off Peru and Ecuador surface sediments	https://doi.org/10.1594/PANGAEA.801886 https://doi.org/10.1594/PANGAEA.801889 https://doi.org/10.1594/PANGAEA.801890	Mollier-Vogel et al. (2012)
M77/2	Nitrogen and carbon concentrations and isotopic ratios off Peru and Ecuador surface sediments	https://doi.org/10.1594/PANGAEA.801886 https://doi.org/10.1594/PANGAEA.801889 https://doi.org/10.1594/PANGAEA.801890	Mollier-Vogel et al. (2012)
M77/1	Mn/Ca and Fe/Ca ratios of benthic foraminifera from the Peruvian OMZ from core-top samples (Q-ICP-MS and SIMS data)	https://doi.org/10.1594/PANGAEA.807234 https://doi.org/10.1594/PANGAEA.807235 https://doi.org/10.1594/PANGAEA.807236 https://doi.org/10.1594/PANGAEA.807237 https://doi.org/10.1594/PANGAEA.807238 https://doi.org/10.1594/PANGAEA.816157	Glock et al. (2012)
M77/1	I/Ca ratios in benthic foraminifera from the Peruvian OMZ from core top samples (Q-ICP-MS data)	https://doi.org/10.1594/PANGAEA.919740	Glock et al. (2014)
M77/2	I/Ca ratios in benthic foraminifera from the Peruvian OMZ from core top samples (Q-ICP-MS data)	https://doi.org/10.1594/PANGAEA.919740	Glock et al. (2014)
M77/1	I/Ca ratios in benthic foraminifera from the Peruvian OMZ from core top samples (SIMS data)	https://doi.org/10.1594/PANGAEA.919742	Glock et al. (2016)
M77/2	I/Ca ratios in benthic foraminifera from the Peruvian OMZ from core top samples (SIMS data)	https://doi.org/10.1594/PANGAEA.919742	Glock et al. (2016)
M77/1	I/Ca ratios in benthic foraminifera from the Peruvian OMZ from core top samples (NanoSIMS data)	https://doi.org/10.1594/PANGAEA.919761	Glock et al. (2019a)
M77/1	Abundances of living foraminifera	https://doi.org/10.1594/PANGAEA.757092 https://doi.org/10.1594/PANGAEA.901840	Mallon et al. (2011) Glock et al. (2013; 2019b) Erdem et al. (2020)
M77/2	Abundances of living foraminifera	https://doi.org/10.1594/PANGAEA.757092 https://doi.org/10.1594/PANGAEA.901840	Mallon et al. (2011) Glock et al. (2013; 2019b) Erdem et al. (2020)
M137	Abundances of living foraminifera	https://doi.org/10.1594/PANGAEA.901840	Erdem et al. (2020)
SO241	Elemental and Mo isotope data (solid phase) of multicorer samples from the Guaymas Basin (Gulf of California; SONNE)	https://doi.org/10.1594/PANGAEA.911064 https://doi.org/10.1594/PANGAEA.911074	Eroglu et al. (2020)

References

Erdem, Z., Schönfeld, J., Rathburn, A. E., Pérez, M.-E., Cardich, J., and Glock, N.: Bottom-water deoxygenation at the Peruvian margin during the last deglaciation recorded by benthic foraminifera, Biogeosciences, 17, 3165–3182, doi:10.5194/bg-17-3165-2020, 2020.

Eroglu, S., Scholz, F., Frank, M., and Siebert, C.: Influence of particulate versus diffusive molybdenum supply mechanisms on the molybdenum isotope composition of continental margin sediments, Geochim. Cosmochim. Acta 273, 51-69, doi:10.1016/j.gca.2020.01.009, 2020.

Glock, N., Eisenhauer, A., Liebetrau, V., Wiedenbeck, M., Hensen, C., and Nehrke, G.: EMP and SIMS studies on Mn/Ca and Fe/Ca systematics in benthic foraminifera from the Peruvian OMZ: a contribution to the identification of potential redox proxies and the impact of cleaning protocols, Biogeosciences, 9, 341-359, doi:10.5194/bg-9-341-2012, 2012.

Glock, N., Schönfeld, J., Eisenhauer, A., Hensen, C., Mallon, J. and Sommer, S.: The role of benthic foraminifera in the benthic nitrogen cycle of the Peruvian oxygen minimum zone, Biogeosciences, 10, 4767-4783, doi:10.5194/bg-10-4767-2013, 2013.

Glock, N., Liebetrau, V., and Eisenhauer, A.: I/Ca ratios in benthic foraminifera from the Peruvian oxygen minimum zone: analytical methodology and evaluation as a proxy for redox conditions, Biogeosciences, 11, 7077–7095, doi:10.5194/bg-11-7077-2014, 2014.

Glock, N., Liebetrau, V., Eisenhauer, A., and Rocholl, A.: High resolution I/Ca ratios of benthic foraminifera from the Peruvian oxygen-minimum-zone: A SIMS derived assessment of a potential redox proxy, Chem. Geo., 447, 40-53, doi:10.1016/j.chemgeo.2016.10.025, 2016.

Glock, N., Liebetrau, V., Vogts, A., and Eisenhauer, A.: Organic Heterogeneities in Foraminiferal Calcite Traced Through the Distribution of N, S, and I Measured With NanoSIMS: A New Challenge for Element-Ratio-Based Paleoproxies?, Front. Earth Sci., 7:175, doi:10.3389/feart.2019.00175, 2019a.

Glock, N., Roy, A.-S., Romero, D.,Wein, T.,Weissenbach, J., Revsbech, N. P., Høgslund, S., Clemens, D., Sommer, S., and Dagan, T.: Metabolic preference of nitrate over oxygen as an electron acceptor in foraminifera from the Peruvian oxygen minimum zone, P. Natl. Acad. Sci. USA, 116, 2860–2865, doi:10.1073/pnas.1813887116, 2019b.

Mallon, J., Glock, N., and Schönfeld, J.: The response of benthic foraminifera to low-oxygen conditions of the Peruvian oxygen minimum zone, in: ANOXIA: Evidence for eukaryote survival and paleontological strategies, Cellular Origin, Life in Extreme Habitats and Astrobiology 21, edited by: Altenbach, A. V., Bernhard, J. M., and Seckbach, J., Springer Science+Business Media, 305-321, doi:10.1007/978-94-007-1896-8_16, 2012.

Mollier-Vogel, E., Ryabenko, E., Martinez, P., Wallace, D., Altabet, M. A., and Schneider, R.: Nitrogen isotope gradients off Peru and Ecuador related to upwelling, productivity, nutrient uptake and oxygen deficiency, Deep-Sea Res. Pt. I, 70, 14-25, doi:10.1016/j.dsr.2012.06.003, 2012.

Table 29: DOIs for benthic fluxes and surface sediments from M77. See also https://doi.org/10.1594/PANGAEA.928199.

Station labelling for BIGOs: #/#: The first number is the station number of the lander deployment, the second is the recovery number. Either of these could have been used in PANGAEA or in published papers. Use of the deployment number is preferred. Related publications are listed in the footnote.

Cruise-id	**Event label**	**Analysis**	**DOI**
		Benthic Landers (BIGO)	
M77-1	451/464 BIGO 1 K1	(i) Particulate geochemistry (ii) Porewater geochemistry (iii) Benthic fluxes/syringes (iv) Opal (SiO_2)	(i) https://doi.org/10.1594/PANGAEA.923314 (ii) https://doi.org/10.1594/PANGAEA.923277 (iii) https://doi.org/10.1594/PANGAEA.923344 (iv) https://doi.org/10.1594/PANGAEA.922645
M77-1	451/464 BIGO 1 K2	(i) Particulate geochemistry (ii) Porewater geochemistry (iii) Benthic fluxes/syringes (iv) Opal (SiO_2)	(i) https://doi.org/10.1594/PANGAEA.923315 (ii) https://doi.org/10.1594/PANGAEA.923278 (iii) https://doi.org/10.1594/PANGAEA.923344 (iv) https://doi.org/10.1594/PANGAEA.922645
M77-1	474/489 BIGO 2 K1	(i) Particulate geochemistry (ii) Porewater geochemistry (iii) Benthic fluxes/syringes (iv) Opal (SiO_2)	(i) https://doi.org/10.1594/PANGAEA.923317 (ii) https://doi.org/10.1594/PANGAEA.923279 (iii) https://doi.org/10.1594/PANGAEA.923345 (iv) https://doi.org/10.1594/PANGAEA.922645
M77-1	474/489 BIGO 2 K2	(i) Particulate geochemistry (ii) Porewater geochemistry (iii) Benthic fluxes/syringes (iv) Opal (SiO_2)	(i) https://doi.org/10.1594/PANGAEA.923318 (ii) https://doi.org/10.1594/PANGAEA.923280 (iii) https://doi.org/10.1594/PANGAEA.923345 (iv) https://doi.org/10.1594/PANGAEA.922645
M77-1	526/535 BIGO 3 K2	(i) Particulate geochemistry (ii) Porewater geochemistry (iii) Benthic fluxes/syringes (iv) Opal (SiO_2)	(i) https://doi.org/10.1594/PANGAEA.923319 (ii) https://doi.org/10.1594/PANGAEA.923281 (iii) https://doi.org/10.1594/PANGAEA.923346 (iv) https://doi.org/10.1594/PANGAEA.922645
M77-1	544/557 BIGO T3K1	(i) Particulate geochemistry (ii) Porewater geochemistry (iii) Benthic fluxes/syringes (iv) Opal (SiO_2)	(i) https://doi.org/10.1594/PANGAEA.923320 (ii) https://doi.org/10.1594/PANGAEA.923283 (iii) https://doi.org/10.1594/PANGAEA.923347 (iv) https://doi.org/10.1594/PANGAEA.922645
M77-1	566/576 BIGO T4 K1	(i) Particulate geochemistry (ii) Porewater geochemistry (iii) Benthic fluxes/syringes (iv) Opal (SiO_2)	(i) https://doi.org/10.1594/PANGAEA.923321 (ii) https://doi.org/10.1594/PANGAEA.923284 (iii) https://doi.org/10.1594/PANGAEA.923348 (iv) https://doi.org/10.1594/PANGAEA.922645
M77-1	568/577 BIGO 5 K1	(i) Particulate geochemistry	(i) https://doi.org/10.1594/PANGAEA.923322

		(ii) Porewater geochemistry (iii) Benthic fluxes/syringes (iv) Opal	(ii)https://doi.org/10.1594/PANGAEA.923285 (iii) https://doi.org/10.1594/PANGAEA.923349 (iv) https://doi.org/10.1594/PANGAEA.922645
M77-1	568/577 BIGO 5 K2	(i) Porewater geochemistry (ii) Benthic fluxes/syringes (iii) Opal (SiO_2)	(i)https://doi.org/10.1594/PANGAEA.923286 (ii) https://doi.org/10.1594/PANGAEA.923349 (iii) https://doi.org/10.1594/PANGAEA.922645
M77-1	586/598 BIGO T5 **	(i) Particulate geochemistry (ii) Porewater geochemistry (iii) Benthic fluxes/syringes (iv) Opal (SiO_2)	(i) https://doi.org/10.1594/PANGAEA.923323 (ii) https://doi.org/10.1594/PANGAEA.923551 (iii) https://doi.org/10.1594/PANGAEA.923350 (iv) https://doi.org/10.1594/PANGAEA.922645
M77-2	007/013 BIGO 6	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Benthic fluxes/syringes	(i) https://doi.org/10.1594/PANGAEA.909496 (ii) https://doi.org/10.1594/PANGAEA.909554 (iii) https://doi.org/10.1594/PANGAEA.909603
M77-2	010/016 BIGO T6 **	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Benthic fluxes/syringes (iv) Opal (SiO_2)	(i) https://doi.org/10.1594/PANGAEA.909497 (ii) https://doi.org/10.1594/PANGAEA.909555 (iii) https://doi.org/10.1594/PANGAEA.909608 (iv) https://doi.org/10.1594/PANGAEA.922645
M77-2	021/025 BIGO 7	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Benthic fluxes/syringes	(i) https://doi.org/10.1594/PANGAEA.909557 (ii) https://doi.org/10.1594/PANGAEA.909499 (iii) https://doi.org/10.1594/PANGAEA.909609
Multiple-corer (MUC)			
M77-1	397 MUC 2	(i) Porewater geochemistry (ii) Particulate geochemistry	(i) https://doi.org/10.1594/PANGAEA.817851 (ii) https://doi.org/10.1594/PANGAEA.817851
M77-1	406 MUC 6	(i) Porewater geochemistry (ii) Particulate geochemistry	(i) https://doi.org/10.1594/PANGAEA.817875 (ii) https://doi.org/10.1594/PANGAEA.817875
M77-1	421 MUC 13	(i) Porewater geochemistry (ii) Particulate geochemistry	(i) https://doi.org/10.1594/PANGAEA.817881 (ii) https://doi.org/10.1594/PANGAEA.817881
M77-1	445 MUC 15	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Opal (SiO_2)	(i) https://doi.org/10.1594/PANGAEA.817882 (ii) https://doi.org/10.1594/PANGAEA.817882 (iii) https://doi.org/10.1594/PANGAEA.922645
M77-1	449 MUC 19	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Excess ^{210}Pb (iv) Opal (SiO_2)	(i) https://doi.org/10.1594/PANGAEA.817883 (ii) https://doi.org/10.1594/PANGAEA.817883 (iii) https://doi.org/10.1594/PANGAEA.922650 (iv) https://doi.org/10.1594/PANGAEA.922645
M77-1	455 MUC 21	(i) Porewater geochemistry (ii) Particulate geochemistry	(i) https://doi.org/10.1594/PANGAEA.817884 (ii) https://doi.org/10.1594/PANGAEA.817884

		(iii) Opal (SiO_2)	(iii) https://doi.org/10.1594/PANGAEA.922645
M77-1	459 MUC 25	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Excess ^{210}Pb (iv) Opal (SiO_2)	(i) https://doi.org/10.1594/PANGAEA.817885 - (ii) https://doi.org/10.1594/PANGAEA.817885 - (iii) https://doi.org/10.1594/PANGAEA.922650 (iv) https://doi.org/10.1594/PANGAEA.922645
M77-1	470 MUC 29	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Excess ^{210}Pb (iv) Opal (SiO_2)	(i) https://doi.org/10.1594/PANGAEA.817887 (ii) https://doi.org/10.1594/PANGAEA.817887 (iii) https://doi.org/10.1594/PANGAEA.922650 (iv) https://doi.org/10.1594/PANGAEA.922645
M77-1	481 MUC 33	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Opal (SiO_2)	(i) https://doi.org/10.1594/PANGAEA.817891 (ii) https://doi.org/10.1594/PANGAEA.817891 (iii) https://doi.org/10.1594/PANGAEA.922645
M77-1	487 MUC 38***	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Opal (SiO_2)	(i) https://doi.org/10.1594/PANGAEA.817892 (ii) https://doi.org/10.1594/PANGAEA.817892 (iii) https://doi.org/10.1594/PANGAEA.922645
M77-1	488 MUC 39	(i) Excess ^{210}Pb	(i) https://doi.org/10.1594/PANGAEA.922650
M77-1	516 MUC 40	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Excess ^{210}Pb (iv) Opal (SiO_2)	(i) https://doi.org/10.1594/PANGAEA.817896 (ii) https://doi.org/10.1594/PANGAEA.817896 (iii) https://doi.org/10.1594/PANGAEA.922650 (iv) https://doi.org/10.1594/PANGAEA.922645
M77-1	519 MUC 43	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Opal (SiO_2)	(i) https://doi.org/10.1594/PANGAEA.817897 (ii) https://doi.org/10.1594/PANGAEA.817897 (iii) https://doi.org/10.1594/PANGAEA.922645
M77-1	543 MUC 52	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Excess ^{210}Pb (iv) Opal (SiO_2)	(i) https://doi.org/10.1594/PANGAEA.817900 (ii) https://doi.org/10.1594/PANGAEA.817900 (iii) https://doi.org/10.1594/PANGAEA.922650 (iv) https://doi.org/10.1594/PANGAEA.922645
M77-1	549 MUC 53	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Excess ^{210}Pb (iv) Opal (SiO_2)	(i) https://doi.org/10.1594/PANGAEA.817901 (ii) https://doi.org/10.1594/PANGAEA.817901 (iii) https://doi.org/10.1594/PANGAEA.922650 (iv) https://doi.org/10.1594/PANGAEA.922645
M77-1	553 MUC 54	(i) Porewater geochemistry (ii) Particulate geochemistry	(i) https://doi.org/10.1594/PANGAEA.817902 (ii) https://doi.org/10.1594/PANGAEA.817902
M77-1	564 MUC 59	(i) Porewater geochemistry (ii) Particulate geochemistry	(i) https://doi.org/10.1594/PANGAEA.817903 (ii) https://doi.org/10.1594/PANGAEA.817903
M77-1	573 MUC 61	(i) Porewater geochemistry	(i) https://doi.org/10.1594/PANGAEA.817906

		(ii) Particulate geochemistry	(ii) https://doi.org/10.1594/PANGAEA.817906
M77-1	584 MUC 66	(i) Porewater geochemistry (ii) Particulate geochemistry	(i) https://doi.org/10.1594/PANGAEA.817907 (ii) https://doi.org/10.1594/PANGAEA.817907
M77-1	601 MUC 71	(i) Porewater geochemistry (ii) Particulate geochemistry	(i) https://doi.org/10.1594/PANGAEA.817909 (ii) https://doi.org/10.1594/PANGAEA.817909
M77-1	607 MUC 75	(i) Porewater geochemistry (ii) Particulate geochemistry	(i) https://doi.org/10.1594/PANGAEA.817910 (ii) https://doi.org/10.1594/PANGAEA.817910
M77-1	610 MUC 77	(i) Porewater geochemistry (ii) Particulate geochemistry	(i) https://doi.org/10.1594/PANGAEA.817911 (ii) https://doi.org/10.1594/PANGAEA.817911
M77-1	614 MUC 79	(i) Porewater geochemistry (ii) Particulate geochemistry	(i) https://doi.org/10.1594/PANGAEA.817912 (ii) https://doi.org/10.1594/PANGAEA.817912
M77-1	619 MUC 83	(i) Porewater geochemistry (ii) Particulate geochemistry	(i) https://doi.org/10.1594/PANGAEA.817913 (ii) https://doi.org/10.1594/PANGAEA.817913
M77-2	002-4 MUC	(i) Porewater geochemistry (ii) Particulate geochemistry	(i) https://doi.org/10.1594/PANGAEA.909522 (ii) https://doi.org/10.1594/PANGAEA.909553
M77-2	005-4 MUC	(i) Porewater geochemistry (ii) Particulate geochemistry	(i) https://doi.org/10.1594/PANGAEA.909526 (ii) https://doi.org/10.1594/PANGAEA.909552
M77-2	022-3 MUC	(i) Porewater geochemistry (ii) Particulate geochemistry	(i) https://doi.org/10.1594/PANGAEA.909498 (ii) https://doi.org/10.1594/PANGAEA.922654
M77-2	026-3 MUC	(i) Porewater geochemistry (ii) Particulate geochemistry	(i) https://doi.org/10.1594/PANGAEA.909532 (ii) https://doi.org/10.1594/PANGAEA.909558
M77-2	028-2 MUC	(i) Porewater geochemistry (ii) Particulate geochemistry	(i) https://doi.org/10.1594/PANGAEA.909501 (ii) https://doi.org/10.1594/PANGAEA.909559
M77-2	029-4 MUC	(i) Porewater geochemistry (ii) Particulate geochemistry	(i) https://doi.org/10.1594/PANGAEA.909502 (ii) https://doi.org/10.1594/PANGAEA.909560
M77-2	031-2 MUC	(i) Porewater geochemistry (ii) Particulate geochemistry	(i) https://doi.org/10.1594/PANGAEA.909503 (ii) https://doi.org/10.1594/PANGAEA.909561
M77-2	045-2 MUC	(i) Porewater geochemistry (ii) Particulate geochemistry	(i) https://doi.org/10.1594/PANGAEA.909505 (ii) https://doi.org/10.1594/PANGAEA.909562
M77-2	047-3 MUC	(i) Porewater geochemistry (ii) Particulate geochemistry	(i) https://doi.org/10.1594/PANGAEA.909494 (ii) https://doi.org/10.1594/PANGAEA.909563
M77-2	050-1 MUC	(i) Porewater geochemistry	(i) https://doi.org/10.1594/PANGAEA.909507

		(ii) Particulate geochemistry	(ii) https://doi.org/10.1594/PANGAEA.909565
M77-2	052-3 MUC	(i) Porewater geochemistry (ii) Particulate geochemistry	(i) https://doi.org/10.1594/PANGAEA.909508 (ii) https://doi.org/10.1594/PANGAEA.909566
M77-2	053-1 MUC	(i) Porewater geochemistry (ii) Particulate geochemistry	(i) https://doi.org/10.1594/PANGAEA.909509 (ii) https://doi.org/10.1594/PANGAEA.909567
M77-2	054-2 MUC	(i) Porewater geochemistry (ii) Particulate geochemistry	(i) https://doi.org/10.1594/PANGAEA.909510 (ii) https://doi.org/10.1594/PANGAEA.909568
M77-2	056-2 MUC	(i) Porewater geochemistry (ii) Particulate geochemistry	(i) https://doi.org/10.1594/PANGAEA.909511 (ii) https://doi.org/10.1594/PANGAEA.909569
M77-2	059-2 MUC	(i) Porewater geochemistry (ii) Particulate geochemistry	(i) https://doi.org/10.1594/PANGAEA.909512 (ii) https://doi.org/10.1594/PANGAEA.909570
M77-2	060-1 MUC	(i) Porewater geochemistry (ii) Particulate geochemistry	(i) https://doi.org/10.1594/PANGAEA.909513 (ii) https://doi.org/10.1594/PANGAEA.909571
M77-2	062-2 MUC	(i) Porewater geochemistry (ii) Particulate geochemistry	(i) https://doi.org/10.1594/PANGAEA.909514 (ii) https://doi.org/10.1594/PANGAEA.909572
M77-2	064-2 MUC	(i) Porewater geochemistry (ii) Particulate geochemistry	(i) https://doi.org/10.1594/PANGAEA.909515 (ii) https://doi.org/10.1594/PANGAEA.909573
M77-2	065-2 MUC	(i) Porewater geochemistry (ii) Particulate geochemistry	(i) https://doi.org/10.1594/PANGAEA.909516 (ii) https://doi.org/10.1594/PANGAEA.909574
M77-2	067-2 MUC	(i) Porewater geochemistry (ii) Particulate geochemistry	(i) https://doi.org/10.1594/PANGAEA.909492 (ii) https://doi.org/10.1594/PANGAEA.909575
M77-2	069-2 MUC	(i) Porewater geochemistry (ii) Particulate geochemistry	(i) https://doi.org/10.1594/PANGAEA.909519 (ii) https://doi.org/10.1594/PANGAEA.909576
M77-2	071-1 MUC	(i) Porewater geochemistry (ii) Particulate geochemistry	(i) https://doi.org/10.1594/PANGAEA.909520 (ii) https://doi.org/10.1594/PANGAEA.909577
M77-2	072-1 MUC	(i) Porewater geochemistry (ii) Particulate geochemistry	(i) https://doi.org/10.1594/PANGAEA.909521 (ii) https://doi.org/10.1594/PANGAEA.909578

* Mislabelled as 626 BIGO 3 in Bohlen et al. [2011]

**BIGO-T was equipped with only one chamber. The chamber was flushed half way through the incubation to obtain two fluxes

***Incorrectly labelled as 487 MUC 39 in some published studies.

References

Bohlen L., Dale A. W., Sommer S., Mosch T., Hensen C., Noffke A., Scholz F. and Wallmann K.: Benthic nitrogen cycling traversing the Peruvian oxygen minimum zone, Geochim. Cosmochim. Acta 75, 6094–6111, doi:10.1016/j.gca.2011.08.010, 2011.

Dale, A. W. , Paul, M., Clemens, D. , Scholz, F., Schroller-Lomnitz, U., Wallmann, K. , Geilert, S. , Hensen, C. , Plass, A., Liebetrau, V., Grasse, P. and Sommer, S.: Recycling and burial of biogenic silica in an open margin oxygen minimum zone, Global Biogeochemical Cycles, 35(2), e2020GB006583, doi:10.1029/2020GB006583, 2021.

Mallon, J., Glock, N., and Schönfeld, J.: The response of benthic foraminifera to low-oxygen conditions of the Peruvian oxygen minimum zone, in: ANOXIA: Evidence for eukaryote survival and paleontological strategies, Cellular Origin, Life in Extreme Habitats and Astrobiology 21, edited by: Altenbach, A. V., Bernhard, J. M., and Seckbach, J., Springer Science+Business Media, 305-321, doi:10.1007/978-94-007-1896-8_16, 2012.

Noffke, A., Hensen, C., Sommer S., Scholz, F., Bohlen, L., Mosch, T., Graco, M., and Wallmann, K.: Benthic iron and phosphorus fluxes across the Peruvian oxygen minimum zone, Limnol. Oceanogr., 57, 851-867, doi:10.4319/lo.2012.57.3.0851, 2012.

Pfannkuche, O., Schneider, R., Frank, M., and Stramma, L.: Climate-biogeochemistry interactions in the tropical ocean of the SE-American oxygen minimum zone – Cruise No. M77 – October 22, 2008 – February 18, 2009 – Talcahuano (Chile) -Colon (Panama). Meteor-Berichte, M77, 163 pp. DFG-Senatskommission für Ozeanographie, doi:10.2312/cr_m77, 2011.

Table 30: DOIs for benthic fluxes and surface sediments from MSM17/4. See also https://doi.org/10.1594/PANGAEA.835700.

Station labelling for BIGOs: #/#: The first number is the station number of the lander deployment, the second is the recovery number. *Either of these could have been used in PANGAEA or in published papers*. Use of the deployment number is preferred. Related publications are listed in the footnote.

Cruise-id	Event label	Analysis	DOI
Benthic Landers (BIGO)			
MSM17/4	409/425 BIGO 1-2	(i) Sediment geochemistry (ii) Benthic fluxes/syringes	(i) https://doi.org/10.1594/PANGAEA.835700 (ii) https://doi.org/10.1594/PANGAEA.835700
MSM17/4	422/438 BIGO 2-1	(i) Sediment geochemistry (ii) Benthic fluxes/syringes	(i) https://doi.org/10.1594/PANGAEA.835700 (ii) https://doi.org/10.1594/PANGAEA.835700
MSM17/4	453/471 BIGO 1-3	(i) Sediment geochemistry (ii) Benthic fluxes/syringes	(i) https://doi.org/10.1594/PANGAEA.835700 (ii) https://doi.org/10.1594/PANGAEA.835700
MSM17/4	466/476 BIGO 2-2	(i) Sediment geochemistry (ii) Benthic fluxes/syringes	(i) https://doi.org/10.1594/PANGAEA.835700 (ii) https://doi.org/10.1594/PANGAEA.835700
MSM17/4	485/498 BIGO 1-4	(i) Sediment geochemistry (ii) Benthic fluxes/syringes	(i) https://doi.org/10.1594/PANGAEA.835700 (ii) https://doi.org/10.1594/PANGAEA.835700
MSM17/4	494/513 BIGO 2-3	(i) Sediment geochemistry (ii) Benthic fluxes/syringes	(i) https://doi.org/10.1594/PANGAEA.835700 (ii) https://doi.org/10.1594/PANGAEA.835700
MSM17/4	530/544 BIGO 1-5	(i) Sediment geochemistry (ii) Benthic fluxes/syringes	(i) https://doi.org/10.1594/PANGAEA.835700 (ii) https://doi.org/10.1594/PANGAEA.835700
MSM17/4	539/552 BIGO 2-4	(i) Sediment geochemistry (ii) Benthic fluxes/syringes	(i) https://doi.org/10.1594/PANGAEA.835700 (ii) https://doi.org/10.1594/PANGAEA.835700
Multiple-corer (MUC)			
MSM17/4	330 MUC 4	(i) Sediment geochemistry	(i) https://doi.org/10.1594/PANGAEA.835700
MSM17/4	335 MUC 7	(i) Sediment geochemistry	(i) https://doi.org/10.1594/PANGAEA.835700
MSM17/4	366 MUC 15	(i) Sediment geochemistry	(i) https://doi.org/10.1594/PANGAEA.835700
MSM17/4	378 MUC 20	(i) Sediment geochemistry	(i) https://doi.org/10.1594/PANGAEA.835700
MSM17/4	406 MUC 25	(i) Sediment geochemistry	(i) https://doi.org/10.1594/PANGAEA.835700
MSM17/4	421 MUC 28	(i) Sediment geochemistry	(i) https://doi.org/10.1594/PANGAEA.835700
MSM17/4	448 MUC 31	(i) Sediment geochemistry	(i) https://doi.org/10.1594/PANGAEA.835700
MSM17/4	463 MUC 35	(i) Sediment geochemistry	(i) https://doi.org/10.1594/PANGAEA.835700

MSM17/4	483 MUC 36	(i) Sediment geochemistry	(i) https://doi.org/10.1594/PANGAEA.835700
MSM17/4	506 MUC 44	(i) Sediment geochemistry	(i) https://doi.org/10.1594/PANGAEA.835700
MSM17/4	521 MUC 46	(i) Sediment geochemistry	(i) https://doi.org/10.1594/PANGAEA.835700
MSM17/4	528 MUC 48	(i) Sediment geochemistry	(i) https://doi.org/10.1594/PANGAEA.835700
MSM17/4	536 MUC 50	(i) Sediment geochemistry	(i) https://doi.org/10.1594/PANGAEA.835700
MSM17/4	560 MUC 52	(i) Sediment geochemistry	(i) https://doi.org/10.1594/PANGAEA.835700
MSM17/4	584 MUC 53	(i) Sediment geochemistry	(i) https://doi.org/10.1594/PANGAEA.835700

References

Dale A. W., Sommer S., Ryabenko E., Noffke A., Bohlen L., Wallmann K., Stolpovsky K., Greinert J. and Pfannkuche O: Benthic nitrogen fluxes and fractionation of nitrate in the Mauritanian oxygen minimum zone (Eastern Tropical North Atlantic), Geochim. Cosmochim. Acta, 134, 234–256, doi:10.1016/j.gca.2014.02.026, 2014.

Pfannkuche, O.: Climate-Biogeochemistry interactions in the tropical ocean of the NW-African oxygen minimum zone (SFB754) - Cruise No. MSM17/4 – March 10 – April 11, 2011 – Dakar (Senegal) – Las Palmas (Spain). MARIA S. MERIAN-Berichte, MSM17/4, 59 pp., DFG- Senatskommission für Ozeanographie, doi:10.2312/cr_msm17_4, 2014.

Table 31: DOIs for benthic fluxes and surface sediments from M92. See also https://doi.org/10.1594/PANGAEA.928204.

Station labelling for BIGOs: #/#: The first number is the station number of the lander deployment, the second is the recovery number. *Either of these could have been used in PANGAEA or in published papers*. Use of the deployment number is preferred. Related publications are listed in the footnote.

Cruise-id	Event label	Analysis	DOI
Benthic Landers (BIGO)			
M92	030/44 BIGO 2-1	(i) Porewater geochem. (ii) Particulate geochem. (iii) Benthic fluxes/syringes (iv) N and O isotopes	(i) https://doi.org/10.1594/PANGAEA.867623 (ii) https://doi.org/10.1594/PANGAEA.867664 (iii) https://doi.org/10.1594/PANGAEA.867713 (iv) https://doi.org/10.1016/j.gca.2018.10.025 (Supplement)
M92	057/85 BIGO 1-1	(i) Porewater geochem. (ii) Particulate geochem. (iii) Benthic fluxes/syringes (iv) N and O isotopes	(i) https://doi.org/10.1594/PANGAEA.867627 (ii) https://doi.org/10.1594/PANGAEA.867667 (iii) https://doi.org/10.1594/PANGAEA.867714 (iv) https://doi.org/10.1016/j.gca.2018.10.025 (Supplement)
M92	074/97 BIGO 2-2	(i) Porewater geochem. (ii) Particulate geochem. (iii) Benthic fluxes/syringes (iv) N and O isotopes	(i) https://doi.org/10.1594/PANGAEA.867629 (ii) https://doi.org/10.1594/PANGAEA.867669 (iii) https://doi.org/10.1594/PANGAEA.867715 (iv) https://doi.org/10.1016/j.gca.2018.10.025 (Supplement)
M92	110/131 BIGO 1–2	(i) Porewater geochem. (ii) Particulate geochem. (iii) Benthic fluxes/syringes (iv) N and O isotopes (v) Freeze /thaw nutrients (vi) $\delta^{15}N$, $\delta^{18}O$ of NO_3 in freeze/thaw sediment	(i) https://doi.org/10.1594/PANGAEA.867633 (ii) https://doi.org/10.1594/PANGAEA.867672 (iii) https://doi.org/10.1594/PANGAEA.867716 (iv) https://doi.org/10.1016/j.gca.2018.10.025 (Supplement) (v) https://doi.org/10.1594/PANGAEA.918339 (vi) https://doi.org/10.1016/j.gca.2018.10.025 (Supplement)
M92	124/143 BIGO 2-3	(i) Porewater geochem. (ii) Particulate geochem. (iii) Benthic fluxes/syringes (iv) N and O isotopes	(i) https://doi.org/10.1594/PANGAEA.867635 (ii) https://doi.org/10.1594/PANGAEA.867673 (iii) https://doi.org/10.1594/PANGAEA.867717 (iv) https://doi.org/10.1016/j.gca.2018.10.025 (Supplement)
M92	159/173 BIGO 1-3	(i) Porewater geochem. (ii) Particulate geochem. (iii) Benthic fluxes/syringes (iv) N and O isotopes	(i) https://doi.org/10.1594/PANGAEA.867638 (ii) https://doi.org/10.1594/PANGAEA.867675 (iii) https://doi.org/10.1594/PANGAEA.867718 (iv) https://doi.org/10.1016/j.gca.2018.10.025 (Supplement)
M92	165/187 BIGO 2-4	(i) Porewater geochem. (ii) Particulate geochem. (iii) Benthic fluxes/syringes	(i) https://doi.org/10.1594/PANGAEA.867640 (ii) https://doi.org/10.1594/PANGAEA.867676 (iii) https://doi.org/10.1594/PANGAEA.867719

		(iv) N and O isotopes (v) Freeze /thaw nutrients	(iv) https://doi.org/10.1016/j.gca.2018.10.025 (Supplement) (v)https://doi.org/10.1594/PANGAEA.918339
M92	201/217 BIGO 1-4	(i) Porewater geochem. (ii) Particulate geochem. (iii) Benthic fluxes/syringes (iv) N and O isotopes	(i) https://doi.org/10.1594/PANGAEA.867643 (ii) https://doi.org/10.1594/PANGAEA.867678 (iii) https://doi.org/10.1594/PANGAEA.867720 (iv) https://doi.org/10.1016/j.gca.2018.10.025 (Supplement)
M92	207/232 BIGO 2-5	(i) Porewater geochem. (ii) Particulate geochem. (iii) Benthic fluxes/syringes (iv) N and O isotopes	(i) https://doi.org/10.1594/PANGAEA.867644 (ii) https://doi.org/10.1594/PANGAEA.867679 - (iii) https://doi.org/10.1594/PANGAEA.867721 (iv) https://doi.org/10.1016/j.gca.2018.10.025 (Supplement)
M92	249/267 BIGO 1-5	(i) Porewater geochem. (ii) Particulate geochem. (iii) Benthic fluxes/syringes (iv) N and O isotopes	(i) https://doi.org/10.1594/PANGAEA.867650 (ii) https://doi.org/10.1594/PANGAEA.867685 (iii) https://doi.org/10.1594/PANGAEA.867722 (iv) https://doi.org/10.1016/j.gca.2018.10.025 (Supplement)
Multiple-corer (MUC)			
M92	006 MUC 1	(i) Porewater geochem.	(i) https://doi.org/10.1594/PANGAEA.867621
M92	017 MUC 5	(i) Porewater geochem. (ii) Particulate geochem. (iii) $\delta^{15}N$ of porewater NH_4	(i) https://doi.org/10.1594/PANGAEA.867622 (ii) https://doi.org/10.1594/PANGAEA.867663 (iii) https://doi.org/10.1016/j.gca.2018.10.025 (Supplement)
M92	026 MUC 9	(i) Porewater geochem. (ii) Particulate geochem. (iii) Opal (SiO_2) (iv) Excess ^{210}Pb	(i) https://doi.org/10.1594/PANGAEA.922468 (ii) https://doi.org/10.1594/PANGAEA.922476 (iii) https://doi.org/10.1594/PANGAEA.920702 (iv) https://doi.org/10.1594/PANGAEA.922194
M92	036 MUC 10	(i) Porewater geochem. (ii) Particulate geochem. (iii) Opal (SiO_2)	(i) https://doi.org/10.1594/PANGAEA.867624 (ii) https://doi.org/10.1594/PANGAEA.867665 (iii) https://doi.org/10.1594/PANGAEA.920702
M92	037 MUC 11	(i) Excess ^{210}Pb	(i) https://doi.org/10.1594/PANGAEA.922194
M92	042 MUC 12	(i) Excess ^{210}Pb	(i) https://doi.org/10.1594/PANGAEA.922194
M92	054 MUC 13	(i) Porewater geochem. (ii) Particulate geochem. (iii) $\delta^{15}N$ of porewater NH_4	(i) https://doi.org/10.1594/PANGAEA.867625 (ii) https://doi.org/10.1594/PANGAEA.867666 (iii) https://doi.org/10.1016/j.gca.2018.10.025 (Supplement)
M92	055 MUC 14	(i) Porewater geochem.	(i) https://doi.org/10.1594/PANGAEA.867626
M92	069 MUC 16	(i) Porewater geochem. (ii) Particulate geochem. (iii) Opal (SiO_2)	(i) https://doi.org/10.1594/PANGAEA.867628 (ii) https://doi.org/10.1594/PANGAEA.867668 (iii) https://doi.org/10.1594/PANGAEA.920702

M92	086 MUC 17	(i) Porewater geochem. (ii) Particulate geochem. (iii) Opal (SiO_2)	(i) https://doi.org/10.1594/PANGAEA.867630 (ii) https://doi.org/10.1594/PANGAEA.867670 (iii) https://doi.org/10.1594/PANGAEA.920702
M92	087 MUC 18	(i) Excess ^{210}Pb	(i) https://doi.org/10.1594/PANGAEA.922194
M92	107 MUC 23	(i) Porewater geochem. (ii) Particulate geochem. (iii) Opal (SiO_2) (iv) Excess ^{210}Pb	(i) https://doi.org/10.1594/PANGAEA.867631 (ii) https://doi.org/10.1594/PANGAEA.867671 (iii) https://doi.org/10.1594/PANGAEA.920702 (iv) https://doi.org/10.1594/PANGAEA.922194
M92	108 MUC 24	(i) Porewater geochem. (ii) $\delta^{15}N$ of porewater NH_4	(i) https://doi.org/10.1594/PANGAEA.867632 (ii) https://doi.org/10.1016/j.gca.2018.10.025 (Supplement)
M92	121 MUC 26	(i) Porewater geochem.	(i) https://doi.org/10.1594/PANGAEA.867634
M92	136 MUC 27	(i) Freeze/thaw nutrients (ii) $\delta^{15}N$, $\delta^{18}O$ of NO_3 in freeze/thaw sediment	(i) https://doi.org/10.1594/PANGAEA.918339 (ii) https://doi.org/10.1016/j.gca.2018.10.025 (Supplement)
M92	155 MUC 28	(i) Porewater geochem. (ii) Particulate geochem. (iii) Opal (SiO_2)	(i) https://doi.org/10.1594/PANGAEA.867637 (ii) https://doi.org/10.1594/PANGAEA.867674 (iii) https://doi.org/10.1594/PANGAEA.920702
M92	163 MUC 30	(i) Porewater geochem. (ii) Excess ^{210}Pb	(i) https://doi.org/10.1594/PANGAEA.867639 (ii) https://doi.org/10.1594/PANGAEA.922194
M92	178 MUC 33	(i) Freeze/thaw nutrients (ii) $\delta^{15}N$, $\delta^{18}O$ of NO_3 in freeze/thaw sediment	(i) https://doi.org/10.1594/PANGAEA.918339 (ii) https://doi.org/10.1016/j.gca.2018.10.025 (Supplement)
M92	198 MUC 34	(i) Porewater geochem. (ii) Particulate geochem. (iii) Opal (SiO_2)	(i) https://doi.org/10.1594/PANGAEA.867642 (ii) https://doi.org/10.1594/PANGAEA.867677 (iii) https://doi.org/10.1594/PANGAEA.920702
M92	208 MUC 36	(i) Porewater geochem. (ii) Particulate geochem. (iii) Freeze /thaw nutrients	(i) https://doi.org/10.1594/PANGAEA.867645 (ii) https://doi.org/10.1594/PANGAEA.867680 (iii) https://doi.org/10.1594/PANGAEA.918339
M92	220 MUC 39	(i) Porewater geochem. (ii) Particulate geochem. (iii) Opal (SiO_2) (iv) Freeze/thaw nutrients	(i) https://doi.org/10.1594/PANGAEA.867646 (ii) https://doi.org/10.1594/PANGAEA.867681 (iii) https://doi.org/10.1594/PANGAEA.920702 (iv) https://doi.org/10.1594/PANGAEA.918339
M92	235 MUC 42	(i) Porewater geochem. (ii) Particulate geochem.	(i) https://doi.org/10.1594/PANGAEA.867647 (ii) https://doi.org/10.1594/PANGAEA.867682
M92	247 MUC 45	(i) Porewater geochem. (ii) Particulate geochem. (iii) Opal (SiO_2) (iv) Excess ^{210}Pb	(i) https://doi.org/10.1594/PANGAEA.867648 (ii) https://doi.org/10.1594/PANGAEA.867683 (iii) https://doi.org/10.1594/PANGAEA.920702 (iv) https://doi.org/10.1594/PANGAEA.922194

		(v) Freeze /thaw nutrients	(v) https://doi.org/10.1594/PANGAEA.918339
M92	248 MUC 46	(i) Porewater geochem. (ii) Particulate geochem. (iii) Opal (SiO_2) (iv) Excess ^{210}Pb (v) Freeze /thaw nutrients	(i) https://doi.org/10.1594/PANGAEA.867649 (ii) https://doi.org/10.1594/PANGAEA.867684 (iii) https://doi.org/10.1594/PANGAEA.920702 (iv) https://doi.org/10.1594/PANGAEA.922194 (v) https://doi.org/10.1594/PANGAEA.918339
M92	289 MUC 50	(i) Porewater geochem. (ii) Particulate geochem.	(i) https://doi.org/10.1594/PANGAEA.867656 (ii) https://doi.org/10.1594/PANGAEA.867690

References

Dale, A. W., Sommer, S., Lomnitz, U., Montes, I., Treude, T., Liebetrau, V., Gier, J., Hensen, C., Dengler, M., Stolpovsky, K., Bryant, L. D., and Wallmann, K.: Organic carbon production, mineralisation and preservation on the Peruvian margin, Biogeosciences 12, 1537–1559, doi:10.5194/bg-12-1537-2015, 2015.

Dale, A. W., Sommer, S., Lomnitz, U., Bourbonnais, A., and Wallmann, K.: Biological nitrate transport in sediments on the Peruvian margin mitigates benthic sulfide emissions and drives pelagic N loss during stagnation events, Deep-Sea Res. Pt. I, 112, 123–136, doi:10.1016/j.dsr.2016.02.013, 2016.

Dale, A. W., Graco, M., and Wallmann, K.: Strong and dynamic benthic-pelagic coupling and feedbacks in a coastal upwelling system (Peruvian shelf), Front. Mar. Sci., 4(29), doi:10.3389/fmars.2017.00029, 2017.

Dale, A. W., Bourbonnais, A., Altabet, M., Wallmann, K., and Sommer, S.: Isotopic fingerprints of benthic nitrogen cycling in the Peruvian oxygen minimum zone, Geochim. Cosmochim. Acta, 245, 406–425, doi:10.1016/j.gca.2018.10.025, 2019.

Dale, A. W. , Paul, M., Clemens, D. , Scholz, F., Schroller-Lomnitz, U., Wallmann, K. , Geilert, S. , Hensen, C. , Plass, A., Liebetrau, V., Grasse, P. and Sommer, S.: Recycling and burial of biogenic silica in an open margin oxygen minimum zone, Global Biogeochem. Cy., 35(2), e2020GB006583. DOI 10.1029/2020GB006583, 2021.

Gier, J., Sommer, S., Löscher, C. R., Dale, A. W., Schmitz, R. A., and Treude, T.: Nitrogen fixation in sediments along a depth transect through the Peruvian oxygen minimum zone, Biogeosciences, 13, 4065-4080, doi:10.5194/bg-13-4065-2016, 2016.

Lomnitz, U., Sommer, S., Dale, A. W., Löscher, C. R., Noffke, A., Wallmann, K., and Hensen, C.: Benthic phosphorus cycling in the Peruvian oxygen minimum zone, Biogeosciences, 13, 1367-1386, doi:10.5194/bg-13-1367-2016, 2016.

Maltby, J., Sommer, S., Dale, A. W., and Treude, T.: Microbial methanogenesis in the sulfate-reducing zone of surface sediments traversing the Peruvian margin, Biogeosciences 13, 283-299, doi:10.5194/bg-13-283-2016, 2016.

Scholz, F., Löscher, C. R., Fiskal, A., Sommer, S., Hensen, C., Lomnitz, U., Wuttig, K., Göttlicher, J., Kossel, E., Steininger, R., and Canfield, D. E.: Nitrate-dependent iron oxidation limits iron transport in anoxic ocean regions, Earth Planet. Sci. Lett., doi:10.1016/j.epsl.2016.09.025, 2016.

Scholz, F., Siebert, C., Dale, A. W., and Frank, M.: Intense molybdenum accumulation in sediments underneath a nitrogenous water column and implications for the reconstruction of paleo-redox conditions based on molybdenum isotopes, Geochim. Cosmochim, Acta, 213, 400-417, doi:10.1016/j.gca.2017.06.048, 2017.

Sommer, S., Dengler, M., and Treude, T.: Benthic element cycling, fluxes and transport of solutes across the benthic boundary layer in the Peruvian oxygen minimum zone, (SFB 754) - Cruise No. M92 – January 05 – February 03, 2013 – Callao (Peru) – Callao (Peru). METEOR-Berichte, M92, 55 pp., DFG-Senatskommission für Ozeanographie, doi:10.2312/cr_m92, 2014.

Sommer, S., Gier, J., Treude, T., Lomnitz, U., Dengler, M., Cardich, and Dale, A. W.: Depletion of oxygen, nitrate and nitrite in the Peruvian oxygen minimum zone cause an imbalance of benthic nitrogen fluxes, Deep-Sea Res. Pt. I, 112, 113-122, doi:10.1016/j.dsr.2016.03.001, 2016.

Table 32: DOIs for benthic fluxes and surface sediments M107. See also https://doi.org/10.1594/PANGAEA.928206.

Station labelling for BIGOs: #/#: The first number is the station number of the lander deployment, the second is the recovery number. *Either of these could have been used in PANGAEA or in published papers*. Use of the deployment number is preferred. Related publications are listed in the footnote.

Cruise-id	**Event label**	**Analysis**	**DOI**
Benthic Landers (BIGO)			
M107	527/544 BIGO 2-1	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Benthic fluxes/syringes	(i) https://doi.org/10.1594/PANGAEA.884195 (ii) https://doi.org/10.1594/PANGAEA.884155 (iii) https://doi.org/10.1594/PANGAEA.884214
M107	547/569 BIGO 1-1	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Benthic fluxes/syringes	(i) https://doi.org/10.1594/PANGAEA.884193 (ii) https://doi.org/10.1594/PANGAEA.884157 (iii) https://doi.org/10.1594/PANGAEA.884215
M107	557/580 BIGO 2-2	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Benthic fluxes/syringes	(i) https://doi.org/10.1594/PANGAEA.884198 (ii) https://doi.org/10.1594/PANGAEA.884160 (iii) https://doi.org/10.1594/PANGAEA.884216
M107	598/614 BIGO 1-2	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Benthic fluxes/syringes	(i) https://doi.org/10.1594/PANGAEA.884200 (ii) https://doi.org/10.1594/PANGAEA.884162 (iii) https://doi.org/10.1594/PANGAEA.884213
M107	617/642 BIGO 2-3	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Benthic fluxes/syringes	(i) https://doi.org/10.1594/PANGAEA.884202 (ii) https://doi.org/10.1594/PANGAEA.884163 (iii) https://doi.org/10.1594/PANGAEA.884218
M107	630/660 BIGO 1-3	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Benthic fluxes/syringes	(i) https://doi.org/10.1594/PANGAEA.884204 (ii) https://doi.org/10.1594/PANGAEA.884165 (iii) https://doi.org/10.1594/PANGAEA.884219
M107	665/683 BIGO 2-4	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Benthic fluxes/syringes	(i) https://doi.org/10.1594/PANGAEA.884206 (ii) https://doi.org/10.1594/PANGAEA.884167 (iii) https://doi.org/10.1594/PANGAEA.884220
M107	673/698 BIGO 1-4	(i) Benthic fluxes/syringes	(i) https://doi.org/10.1594/PANGAEA.884221
M107	688/710 BIGO 2-5	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Benthic fluxes/syringes	(i) https://doi.org/10.1594/PANGAEA.884210 (ii) https://doi.org/10.1594/PANGAEA.884171 (iii) https://doi.org/10.1594/PANGAEA.884222
Multiple-corer (MUC)			
M107	524 MUC 1	(i) Porewater geochemistry (ii) Particulate geochemistry	(i) https://doi.org/10.1594/PANGAEA.884194 (ii) https://doi.org/10.1594/PANGAEA.884154

M107	534 MUC 3	(i) Porewater geochemistry (ii) Particulate geochemistry	(i) https://doi.org/10.1594/PANGAEA.884196 (ii) https://doi.org/10.1594/PANGAEA.884156
M107	554 MUC 5	(i) Porewater geochemistry (ii) Particulate geochemistry	(i) https://doi.org/10.1594/PANGAEA.884197 (ii) https://doi.org/10.1594/PANGAEA.884158
M107	583 MUC 7 [a]	(i) Porewater geochemistry (ii) Particulate geochemistry	(i) https://doi.org/10.1594/PANGAEA.884199 (ii) https://doi.org/10.1594/PANGAEA.884161
M107	612 MUC 8	(i) Porewater geochemistry	(i) https://doi.org/10.1594/PANGAEA.884201
M107	628 MUC 10	(i) Porewater geochemistry (ii) Particulate geochemistry	(i) https://doi.org/10.1594/PANGAEA.884203 (ii) https://doi.org/10.1594/PANGAEA.884164
M107	658 MUC 13	(i) Porewater geochemistry	(i) https://doi.org/10.1594/PANGAEA.884205
M107	659 MUC 14	(i) Particulate geochemistry	(i) https://doi.org/10.1594/PANGAEA.884166
M107	669 MUC 15	(i) Porewater geochemistry (ii) Particulate geochemistry	(i) https://doi.org/10.1594/PANGAEA.884207 (ii) https://doi.org/10.1594/PANGAEA.884168
M107	672 MUC 17	(i) Porewater geochemistry (ii) Particulate geochemistry	(i) https://doi.org/10.1594/PANGAEA.884208 (ii) https://doi.org/10.1594/PANGAEA.884169
M107	686 MUC 19	(i) Porewater geochemistry (ii) Particulate geochemistry	(i) https://doi.org/10.1594/PANGAEA.884209 (ii) https://doi.org/10.1594/PANGAEA.884170
M107	697 MUC 20	(i) Porewater geochemistry (ii) Particulate geochemistry	(i) https://dois.org/10.1594/PANGAEA.884211 (ii) https://doi.org/10.1594/PANGAEA.884172

[a] Three cores for ex situ incubation experiments (Schroller-Lomnitz et al., 2019)

References

Gier, J., Löscher, C. R., Dale, A. W., Sommer, S., Lomnitz, U., and Treude, T.: Benthic Dinitrogen Fixation traversing the Oxygen Minimum Zone off Mauritania (NW Africa), Front. Mar. Sci. 4, 390, doi:10.3389/fmars.2017.00390, 2017.

Schroller-Lomnitz, U., Hensen, C., Dale, A. W., Scholz, F., Clemens, D., Sommer, S., Noffke, A., and Wallmann, K.: Dissolved benthic phosphate, iron and carbon fluxes in the Mauritanian upwelling system and implications for ongoing deoxygenation, Deep-Sea Res. Pt. I, 143, 70-84, doi:10.1016/j.dsr.2018.11.008, 2019.

Sommer, S., Dengler, M., and Treude, T.: Benthic element cycling, fluxes and transport of solutes across the benthic boundary layer in the Mauritanian oxygen minimum zone, (SFB754) – Cruise No.

M107 – May 30 – July 03, 2014 – Fortaleza (Brazil) – Las Palmas (Spain). METEOR- Berichte, M107, 54 pp., DFG-Senatskommission für Ozeanographie, doi:10.2312/cr_m107, 2015.

Table 33: DOIs for benthic fluxes and surface sediments from M136. See also https://doi.org/10.1594/PANGAEA.928280.

Station labelling for BIGOs: #/#: The first number is the station number of the lander deployment, the second is the recovery number. *Either of these could have been used in PANGAEA or in published papers*. Use of the deployment number is preferred. Related publications are listed in the footnote.

Cruise-id	**Event label**	**Analysis**	**DOI**
		Benthic Landers (BIGO)	
M136	415/440 BIGO 2-1	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Benthic fluxes/syringes (iv) DOC fluxes	(i) https://doi.org/10.1594/PANGAEA.922509 (ii) https://doi.org/10.1594/PANGAEA.922531 (iii) https://doi.org/10.1594/PANGAEA.910021 (iv) https://doi.org/10.1594/PANGAEA.913476
M136	430/455 BIGO 1-1	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Benthic fluxes/syringes	(i) https://doi.org/10.1594/PANGAEA.922511 (ii) https://doi.org/10.1594/PANGAEA.922533 (iii) https://doi.org/10.1594/PANGAEA.910024
M136	460/469 BIGO 2-2	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Benthic fluxes/syringes	(i) https://doi.org/10.1594/PANGAEA.922512 (ii) https://doi.org/10.1594/PANGAEA.922534 (iii) https://doi.org/10.1594/PANGAEA.910026
M136	471/497 BIGO 1-2	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Benthic fluxes/syringes (iv) DOC fluxes	(i) https://doi.org/10.1594/PANGAEA.922513 (ii) https://doi.org/10.1594/PANGAEA.922535 (iii) https://doi.org/10.1594/PANGAEA.910027 (iv) https://doi.org/10.1594/PANGAEA.913476
M136	488/513 BIGO 2-3	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Benthic fluxes/syringes (iv) DOC fluxes	(i) https://doi.org/10.1594/PANGAEA.922515 (ii) https://doi.org/10.1594/PANGAEA.922537 (iii) https://doi.org/10.1594/PANGAEA.910028 (iv) https://doi.org/10.1594/PANGAEA.913476
M136	503/526 BIGO 1-3	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Benthic fluxes/syringes (iv) DOC fluxes	(i) https://doi.org/10.1594/PANGAEA.922516 (ii) https://doi.org/10.1594/PANGAEA.922538 (iii) https://doi.org/10.1594/PANGAEA.910029 (iv) https://doi.org/10.1594/PANGAEA.913476
M136	533/553 BIGO 2-4	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Benthic fluxes/syringes (iv) DOC fluxes	(i) https://doi.org/10.1594/PANGAEA.922517 (ii) https://doi.org/10.1594/PANGAEA.922539 (iii) https://doi.org/10.1594/PANGAEA.910030 (iv) https://doi.org/10.1594/PANGAEA.913476
M136	545/562 BIGO 1-4	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Benthic fluxes/syringes	(i) https://doi.org/10.1594/PANGAEA.922519 (ii) https://doi.org/10.1594/PANGAEA.922541 (iii) https://doi.org/10.1594/PANGAEA.910031

Multiple-corer (MUC)			
M136	338 MUC 1	(i) Porewater geochemistry (ii) Particulate geochemistry	(i) https://doi.org/10.1594/PANGAEA.922504 (ii)https://doi.org/10.1594/PANGAEA.922526
M136	342 MUC 2	(i) Porewater geochemistry (ii) Particulate geochemistry	(i) https://doi.org/10.1594/PANGAEA.922505 (ii) https://doi.org/10.1594/PANGAEA.922528
M136	409 MUC 4	(i) Porewater geochemistry (ii) Particulate geochemistry	(i) https://doi.org/10.1594/PANGAEA.922507 (ii) https://doi.org/10.1594/PANGAEA.922529
M136	412 MUC 5	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Excess ^{210}Pb (iv) DOC	(i) https://doi.org/10.1594/PANGAEA.922508 (ii) https://doi.org/10.1594/PANGAEA.922530 (iii) https://doi.org/10.1594/PANGAEA.922545 (iv) https://doi.org/10.1594/PANGAEA.913477
M136	426 MUC 6	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Excess ^{210}Pb (iv) DOC	(i) https://doi.org/10.1594/PANGAEA.922510 (ii) https://doi.org/10.1594/PANGAEA.922532 (iii) https://doi.org/10.1594/PANGAEA.922545 (iv) doi.org/10.1594/PANGAEA.913477
M136	483 MUC 8	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Excess ^{210}Pb (iv) DOC	(i) https://doi.org/10.1594/PANGAEA.922514 (ii) https://doi.org/10.1594/PANGAEA.922536 (iii) https://doi.org/10.1594/PANGAEA.922545 (iv) https://doi.org/10.1594/PANGAEA.913477
M136	543 MUC 9	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Excess ^{210}Pb	(i) https://doi.org/10.1594/PANGAEA.922518 (ii)https://doi.org/10.1594/PANGAEA.922540 (iii) https://doi.org/10.1594/PANGAEA.922545
M136	574 MUC 10A	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Excess ^{210}Pb	(i) https://doi.org/10.1594/PANGAEA.922520 (ii) https://doi.org/10.1594/PANGAEA.922542 (iii) https://doi.org/10.1594/PANGAEA.922545
M136	574 MUC 10B	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Excess ^{210}Pb	(i) https://doi.org/10.1594/PANGAEA.923364 (ii) https://doi.org/10.1594/PANGAEA.923362 (iii) https://doi.org/10.1594/PANGAEA.922545
M136	577 MUC 11	(i) Particulate geochemistry (i)i Excess ^{210}Pb (iii) DOC	(i)https://doi.org/10.1594/PANGAEA.922543 (ii) https://doi.org/10.1594/PANGAEA.922545 (iii) https://doi.org/10.1594/PANGAEA.913477
M136	588 MUC 12A	(i) Porewater geochemistry (ii) Particulate geochemistry	(i) https://doi.org/10.1594/PANGAEA.922521 (ii)https://doi.org/10.1594/PANGAEA.922544
M136	588 MUC 12B	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Excess ^{210}Pb	(i) https://doi.org/10.1594/PANGAEA.923367 (ii) https://doi.org/10.1594/PANGAEA.922544 (iii) https://doi.org/10.1594/PANGAEA.922545

References

Dale, A. W. , Paul, M., Clemens, D. , Scholz, F., Schroller-Lomnitz, U., Wallmann, K. , Geilert, S. , Hensen, C. , Plass, A., Liebetrau, V., Grasse, P. and Sommer, S.: Recycling and burial of biogenic silica in an open margin oxygen minimum zone, Global Biogeochem. Cy., 35(2), e2020GB006583, doi:10.1029/2020GB006583, 2021.

Dengler, M. and Sommer, S.: Coupled benthic and pelagic oxygen, nutrient and trace metal cycling, ventilation and carbon degradation in the oxygen minimum zone of the Peruvian continental margin (SFB 754): Cruise No. M136, 11.04. – 03.05.2017 Callao (Peru) – Callao Solute-Flux Peru I. GEOMAR, Kiel, Germany, 43 pp, doi:10.3289/CR_M136, 2017.

Loginova, A. N., Dale, A. W., LeMoigne, F. A. C., Thomsen, S., Sommer, S., Wallmann, K., and Engel, A.: Sediment release of dissolved organic matter to the oxygen minimum zone off Peru, Biogeosciences, 17, 4663-4679, doi:10.5194/bg-17-4663-2020, 2020.

Plass, A., Schlosser, C., Sommer, S., Dale, A. W., Achterberg, E. P., Scholz, F., and Helmholtz, G.: The control of hydrogen sulfide on benthic iron and cadmium fluxes in the oxygen minimum zone off Peru, Biogeosciences, 17, 3685-3704, doi:10.5194/bg-17-3685-2020, 2020.

Table 34: DOIs for benthic fluxes and surface sediments from M137. See also https://doi.org/10.1594/PANGAEA.928281.

Station labelling for BIGOs: #/#: The first number is the station number of the lander deployment, the second is the recovery number. *Either of these could have been used in PANGAEA or in published papers*. Use of the deployment number is preferred.

Cruise-id	**Event label**	**Analysis**	**DOI**
Benthic Landers (BIGO)			
M137	596/626 BIGO 2-1	(i) Porewater geochemistry (ii) Benthic fluxes/syringes	(i) https://doi.org/10.1594/PANGAEA.923172 (ii) https://doi.org/10.1594/PANGAEA.923157
M137	614 BIGO 1-1	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Benthic fluxes/syringes	(i) https://doi.org/10.1594/PANGAEA.923173 (ii) https://doi.org/10.1594/PANGAEA.922715 (iii) https://doi.org/10.1594/PANGAEA.923158
M137	642/666 BIGO 2-2	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Benthic fluxes/syringes	(i) https://doi.org/10.1594/PANGAEA.923174 (ii) https://doi.org/10.1594/PANGAEA.922717 (iii) https://doi.org/10.1594/PANGAEA.923159
M137	656/680 BIGO 1-2 K1	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Benthic fluxes/syringes	(i) https://doi.org/10.1594/PANGAEA.923176 (ii) https://doi.org/10.1594/PANGAEA.922719 (iii) https://doi.org/10.1594/PANGAEA.923160
M137	656/680 BIGO 1-2 K2	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Benthic fluxes/syringes	(i) https://doi.org/10.1594/PANGAEA.923493 (ii) https://doi.org/10.1594/PANGAEA.923503 (iii) https://doi.org/10.1594/PANGAEA.923160
M137	684/702 BIGO 2-3 K1	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Benthic fluxes/syringes	(i) https://doi.org/10.1594/PANGAEA.923177 (ii) https://doi.org/10.1594/PANGAEA.922727 (iii) https://doi.org/10.1594/PANGAEA.923161
M137	684/702 BIGO 2-3 K2	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Benthic fluxes/syringes	(i) https://doi.org/10.1594/PANGAEA.923494 (ii) https://doi.org/10.1594/PANGAEA.923504 (iii) https://doi.org/10.1594/PANGAEA.923161
M137	696/717 BIGO 1-3 K1	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Benthic fluxes/syringes	(i) https://doi.org/10.1594/PANGAEA.923179 (ii) https://doi.org/10.1594/PANGAEA.922728 (iii) https://doi.org/10.1594/PANGAEA.923162
M137	696/717 BIGO 1-3 K2	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Benthic fluxes/syringes	(i) https://doi.org/10.1594/PANGAEA.923495 (ii) https://doi.org/10.1594/PANGAEA.923505 (iii) https://doi.org/10.1594/PANGAEA.923162
M137	739/755 BIGO 2-4 K1	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Benthic fluxes/syringes	(i) https://doi.org/10.1594/PANGAEA.923180 (ii) https://doi.org/10.1594/PANGAEA.922729 (iii) https://doi.org/10.1594/PANGAEA.923163

M137	739/755 BIGO 2-4 K1	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Benthic fluxes/syringes	(i) https://doi.org/10.1594/PANGAEA.923496 (ii) https://doi.org/10.1594/PANGAEA.923506 (iii) https://doi.org/10.1594/PANGAEA.923163
M137	754/770 BIGO 1-4 K1	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Benthic fluxes/syringes	(i) https://doi.org/10.1594/PANGAEA.923181 (ii) https://doi.org/10.1594/PANGAEA.922730 (iii) https://doi.org/10.1594/PANGAEA.923164
M137	754/770 BIGO 1-4 K2	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Benthic fluxes/syringes	(i) https://doi.org/10.1594/PANGAEA.923497 (ii) https://doi.org/10.1594/PANGAEA.923485 (iii) https://doi.org/10.1594/PANGAEA.923164
M137	777/799 BIGO 2-5	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Benthic fluxes/syringes	(i) https://doi.org/10.1594/PANGAEA.923182 (ii) https://doi.org/10.1594/PANGAEA.922732 (iii) https://doi.org/10.1594/PANGAEA.923165
M137	791/812 BIGO 1-5 K1	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Benthic fluxes/syringes	(i) https://doi.org/10.1594/PANGAEA.923184 (ii) https://doi.org/10.1594/PANGAEA.922734 (iii) https://doi.org/10.1594/PANGAEA.923166
M137	791/812 BIGO 1-5 K2	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Benthic fluxes/syringes	(i) https://doi.org/10.1594/PANGAEA.923498 (ii) https://doi.org/10.1594/PANGAEA.923486 (iii) https://doi.org/10.1594/PANGAEA.923166
M137	817/836 BIGO 2-6 K1	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Benthic fluxes/syringes	(i) https://doi.org/10.1594/PANGAEA.923185 (ii) https://doi.org/10.1594/PANGAEA.922735 (iii) https://doi.org/10.1594/PANGAEA.923167
M137	817/836 BIGO 2-6 K2	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Benthic fluxes/syringes	(i) https://doi.org/10.1594/PANGAEA.923499 (ii) https://doi.org/10.1594/PANGAEA.923487 (iii) https://doi.org/10.1594/PANGAEA.923167
M137	830/854 BIGO 1-6 K1	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Benthic fluxes/syringes	(i) https://doi.org/10.1594/PANGAEA.923186 (ii) https://doi.org/10.1594/PANGAEA.922736 (iii) https://doi.org/10.1594/PANGAEA.923168
M137	830/854 BIGO 1-6 K2	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Benthic fluxes/syringes	(i) https://doi.org/10.1594/PANGAEA.923500 (ii) https://doi.org/10.1594/PANGAEA.923488 (iii) https://doi.org/10.1594/PANGAEA.923168
Multiple-corer (MUC)			
M137	595 MUC 1	(i) Porewater geochemistry (ii) Particulate geochemistry	(i) https://doi.org/10.1594/PANGAEA.923171 (ii) https://doi.org/10.1594/PANGAEA.922709
M137	651 MUC 8	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Excess ^{210}Pb	(i) https://doi.org/10.1594/PANGAEA.923175 (ii) https://doi.org/10.1594/PANGAEA.922718 (iii) https://doi.org/10.1594/PANGAEA.923238

		(iv) DOC	(iv) https://doi.org/10.1594/PANGAEA.913477
M137	692 MUC 15	(i) Porewater geochemistry (ii) Particulate geochemistry (iii) Excess ^{210}Pb (iv) DOC	(i) https://doi.org/10.1594/PANGAEA.923178 (ii) https://doi.org/10.1594/PANGAEA.922725 (iii) https://doi.org/10.1594/PANGAEA.923238 (iv) https://doi.org/10.1594/PANGAEA.913477
M137	721 MUC 22	(i) Freeze /thaw nutrients	(i) https://doi.org/10.1594/PANGAEA.918339
M137	751 MUC 26	(i) Freeze /thaw nutrients	(i) https://doi.org/10.1594/PANGAEA.918339
M137	787 MUC 33	(i) Porewater geochemistry (ii) Particulate geochemistry	(i) https://doi.org/10.1594/PANGAEA.923183 (ii) https://doi.org/10.1594/PANGAEA.922733

References

Dale, A. W., Paul, M., Clemens, D., Scholz, F., Schroller-Lomnitz, U., Wallmann, K., Geilert, S., Hensen, C., Plass, A., Liebetrau, V., Grasse, P., and Sommer, S. :Recycling and burial of biogenic silica in an open margin oxygen minimum zone, Global Biogeochem. Cy., 35(2), e2020GB006583, doi:10.1029/2020GB006583, 2021.

Glock, N., Roy, A.-S., Romero, D.,Wein, T.,Weissenbach, J., Revsbech, N. P., Høgslund, S., Clemens, D., Sommer, S., and Dagan, T.: Metabolic preference of nitrate over oxygen as an electron acceptor in foraminifera from the Peruvian oxygen minimum zone, P. Natl. Acad. Sci. USA, 116, 2860–2865, doi:10.1073/pnas.1813887116, 2019b.

Glock, N., Romero, D., Roy, A. S., Woehle, C., Dale, A. W. Schönfeld, J., Wein, T., Weissenbach, J., and Dagan, T. A hidden sedimentary phosphate pool inside benthic foraminifera from the Peruvian upwelling region might nucleate phosphogenesis, Geochim. Cosmochim. Acta, 289, 14-32, doi:10.1016/j.gca.2020.08.002, 2020.

Loginova, A. N., Dale, A. W., LeMoigne, F. A. C., Thomsen, S., Sommer, S., Wallmann, K., and Engel, A.: Sediment release of dissolved organic matter to the oxygen minimum zone off Peru, Biogeosciences, 17, 4663-4679, doi:10.5194/bg-17-4663-2020, 2020.

Plass, A., Schlosser, C., Sommer, S., Dale, A. W., Achterberg, E. P., Scholz, F., and Helmholtz, G.: The control of hydrogen sulfide on benthic iron and cadmium fluxes in the oxygen minimum zone off Peru, Biogeosciences, 17, 3685-3704, doi:10.5194/bg-17-3685-2020, 2020.

Sommer, S., Dengler, M., and Shipboard Scientific Party: Benthic element cycling, fluxes and transport of nutrients and trace metals across the benthic boundary layer in the Peruvian oxygen minimum zone (SFB 754), Cruise No. 137, 06.05. - 29.05.2017, Callao (Peru) – Callao. METEOR-Berichte, M137, 52 pp., doi:10.2312/cr_m137, 2019.

Table 35: DOIs for Denitrification and Respiration Rates of Foraminifera.

Cruise-id	Method	DOI	References
M137 M77/1	Denitrification and oxygen respiration rates of foraminifera	https://doi.org/10.1594/PANGAEA.919751	Glock et al. (2019)
Field trip to Gullmar Fjord (Sweden) 2017	Denitrification and oxygen respiration rates of foraminifera	https://doi.org/10.1594/PANGAEA.919839	Woehle & Roy et al. (2018) Glock et al. (2019)

References

Glock, N., Roy, A.-S., Romero, D.,Wein, T.,Weissenbach, J., Revsbech, N. P., Høgslund, S., Clemens, D., Sommer, S., and Dagan, T.: Metabolic preference of nitrate over oxygen as an electron acceptor in foraminifera from the Peruvian oxygen minimum zone, P. Natl. Acad. Sci. USA, 116, 2860–2865, doi:10.1073/pnas.1813887116, 2019b.

Woehle, C., Roy, A.-S., Glock, N. , Wein, T., Weissenbach, J., Rosenstiel, P., Hiebenthal, C., Michels, J., Schönfeld, J., and Dagan, T.: A novel eukaryotic denitrification pathway in foraminifera, Curr. Biol., 28, 2536-2543, doi:10.1016/j.cub.2018.06.027, 2018.