Dissolved and Particulate Mercury Concentration in Seawater collected during the *Discovery* and *Bannock* Cruises (EROS 2000 Project)

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This paper reports data on dissolved and particulate mercury in seawater samples collected during two field studies in the sea region of the Gulf of Lions, performed in the frame of EROS 2000 project (1988-1989).
As regards the study area, sampling station positions and notations, refer to the cruise and scientific reports prepared by Dr. Fauzi-Mantoura (Plymouth Marine Laboratory, UK) and by Dr. R. Ferrara / A. Seritti (CNR-Istituto di Biofisica, Pisa, I) respectively.

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EXPERIMENTAL

Seawater was filtered on 0.45 µm pretreated membrane filter (Sartorius SM11306) in a closed device, under nitrogen pressure.
400 ml of filtered seawater were photooxidized for 15 min by means of a U.V. immersion lamp (90 W), after an addition of 400 µl of an acid solution of $KMNO_4$. The ionic mercury was reduced by tin chloride and transferred on gold trap, as described elsewhere (1). Determination of mercury, electrothermally desorbed, was achieved by an atomic fluorescence spectrometer.
Filters containing particulate suspended matter, were mineralized with 3 ml of HNO_3 (Merck selectipur) in a pressure digestion system for 2 hours at 160°C. Mercury was determined as described for the dissolved form.

RESULTS

Table 1 and table 2 show the mercury concentration measured in the studied area during the two cruises.
From the tables it appears that the mercury levels are quite low and comparable with those measured for other areas of the Mediterranean basin (2,3,4), with the exception of the sampling station 8, where values are very high with respect to the mean value of the other stations. No variation of the metal concentration was noted as a function of the depth and in function of the season of collection.
Rather low values for the mercury associated to the particulate matter have been observed in the station 25 at about 40 miles from the coast.

DISCOVERY CRUISE Leg 1 (13-26 December 1988).

St	Depth	LatN	LongE	Hg D	St	Depth	LatN	LongE	Hg D
MA5	5	43 03.6	04 50.2	3.2	MC2	25	42 22.6	04 01.9	3.0
MA5	20			5.3	MC3	21	42 45.0	04 19.9	4.2
MA5	40			6.1	MD1	31	42 51.9	03 41.9	3.0
MA5	71			4.7	MD2	20	43 01.3	04 04.9	3.6
MA5	89			3.9	ME1	5	43 24.3	04 01.1	4.7
MA5	105			5.3	ME2	4	43 18.8	04 25.4	4.1
MA6	3	43.17.3	04 50.6	4.9	MF1	-	42 44.4	06 00.6	4.9
MA7	-	43 12.8	04 49.6	4.2	MF2	40	42 55.2	05 37.8	2.8
MA8	4	43 07.5	04 48.6	17.4	MF3	50	43 03.0	05 19.6	5.7
MC1	25	41 59.9	03 36.7	7.9	MF4	5	43 10.6	05 07.3	4.8

Table 1 - Dissolved mercury concentration in seawater (ng/l); Depth (m).

BANNOCK CRUISE (1-15 JULY 1989)

St	Depth	LatN	LongE	HgD	HgP	St	Depth	LatN	LongE	HgD	HgP
04	0	43 24.3	04 00.7	4.4	0.4	18	0	43 02.6	05 02.9	3.8	0.7
04	5			2.7	---	18	5			5.1	---
04	16			7.5	0.1	18	15			5.1	---
04	25			4.5	0.1	18	55			5.5	---
						18	145			5.7	0.9
05	0	43 20.3	04 17.9	4.8	8.4	18	295			5.4	0.5
08	0	43 15.9	04 57.4	13.6	13.3	20	0	41 45.4	05 37.1	19.1	0.3
08	5			13.5	2.4						
08	10			10.3	1.9	25	0	42 27.1	05 18.3	5.2	---
08	20			7.1	1.3	25	5			4.1	0.2
08	45			21.5	4.4	25	10			3.7	0.2
08	70			19.4	4.5	25	25			5.7	0.8
						25	35			5.7	0.1
09	0	43 13.5	04 51.1	8.5	3.9	25	50			4.2	0.8
						25	75			5.1	0.2
10	0	43 08.7	04 29.9	4.3	1.7	25	100			5.2	0.3
						25	150			4.2	0.2
11	0	43 02.4	04 09.2	4.7	1.3	25	300			4.3	0.2
						25	480			3.3	0.2
12	0	42 53.0	03 40.6	7.5	1.5						
12	8			8.7	3.5	**Samples in front of Rhone estuary**					
12	20			8.2	1.5	A	0			4.9	0.6
12	50			6.1	2.6	B	0			6.6	0.5
12	70			4.8	0.6	C	0			4.5	1.2

Table 2 - Concentration (ng/l) of dissolved mercury (HgD), mercury associated with particulate suspended matter (HgP) in seawater. Depth (m).

These data confirm the difficulty of finding an explanation for the problem of the high mercury concentrations in pelagic fish in the Mediterranean basin, as the concentration measured in the Mediterranean are quite comparable to those in the oceans (5).

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