

The cruise of the *Marion Dufresne* off the Brazilian coast: account of the scientific results and list of stations

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ABSTRACT

From May 6 to June 2 1987 the *Marion Dufresne* obtained a large series of deep-water samples from off the southeastern Brazilian coast, oceanographic cruise TAAF MD55/Brazil. The MD55 collections include several new species and records from the southwestern Atlantic. Knowledge of the deep water fauna from that region has been broadened as a result of a series of reports published in the last ten years. An account of the scientific results published so far is presented herein.

KEY WORDS

Oceanographic cruise,
deep-water fauna,
southwestern Atlantic,
Brazil.

RÉSUMÉ

La campagne du Marion Dufresne au large de la côte brésilienne : compte-rendu des résultats scientifiques et liste des stations.

Du 6 mai au 2 juin 1987, le *Marion Dufresne* a réalisé une série d'échantillonnages dans les eaux profondes au large du sud-est brésilien : campagne océanographique TAAF MD55/Brésil. Le très riche matériel zoologique récolté, dont une grande partie reste encore à étudier, a donné lieu à une série de publications dans lesquelles plusieurs nouvelles espèces sont décrites et des nombreuses nouvelles répartitions sont établies. À la suite de ces publications, les connaissances sur la faune profonde de l'Atlantique sud-occidental ont considérablement augmenté. Un compte-rendu des résultats scientifiques publiés jusqu'à l'heure actuelle est présenté.

MOTS CLÉS

Campagne océanographique,
faune profonde,
Atlantique sud-occidental,
Brésil.

INTRODUCTION

Not surprisingly, knowledge on the Brazilian deep-sea fauna is still very fragmentary, as much of what has been published about the deep water fauna from that area is largely the outcomes of only a few expeditions conducted occasionally in the late nineteenth century. Three expeditions were responsible for all the deep-sea activities carried out in Brazil during the last century, they are as follow: *Hassler* (1872), *Challenger* (1873), and *Albatross* (1887). Together those three expeditions secured only 30 samples from the deep-sea bed (Tizard *et al.* 1885; Peirce & Patterson 1879; Townsend 1901), yet the *Challenger* reports are a *vade mecum* for those interested in the Southwestern Atlantic deep sea fauna.

No major expeditions were organized to study Brazil's deep-sea macrofauna until 1987, when the *Marion Dufresne* obtained a long series of samples from depths down to 5155 metres. The cruise TAAF MD55/Brazil 1987 was conducted as part of a formal agreement between the Universidade Santa Úrsula, Rio de Janeiro, the Muséum national d'Histoire naturelle, Paris, and the Observatoire océanologique de Banyuls, Banyuls-sur-Mer, Laboratoire Arago, Université de Paris VI.

A detailed description of the cruise general characteristics can be found in Guille & Ramos (1988). Opportunity is taken herein to give an account of the scientific results published so far. Some of the references in the list of the scientific publications based on the MD55 collections were compiled by José Henrique Leal (Bailey-Matthews Shell Museum, Sanibel Island, Florida) and Virginie Heros (Muséum national d'Histoire naturelle, Paris).

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ABBREVIATIONS

CFR	Centre de Faibles Radioactivités, Gif-sur-Yvette;
INCM	Institut national des Sciences de la Mer, Cherbourg;
IST	Institut des Sciences de la Terre, Dijon;
MNHN	Muséum national d'Histoire naturelle, Paris;

MNRJ	Museu Nacional, Rio de Janeiro;
LA	Observatoire océanologique de Banyuls-sur-Mer, Laboratoire Arago;
SME	Station Marine d'Endoume, Marseille;
USP	Universidade de São Paulo;
USU	Universidade Santa Úrsula, Rio de Janeiro.

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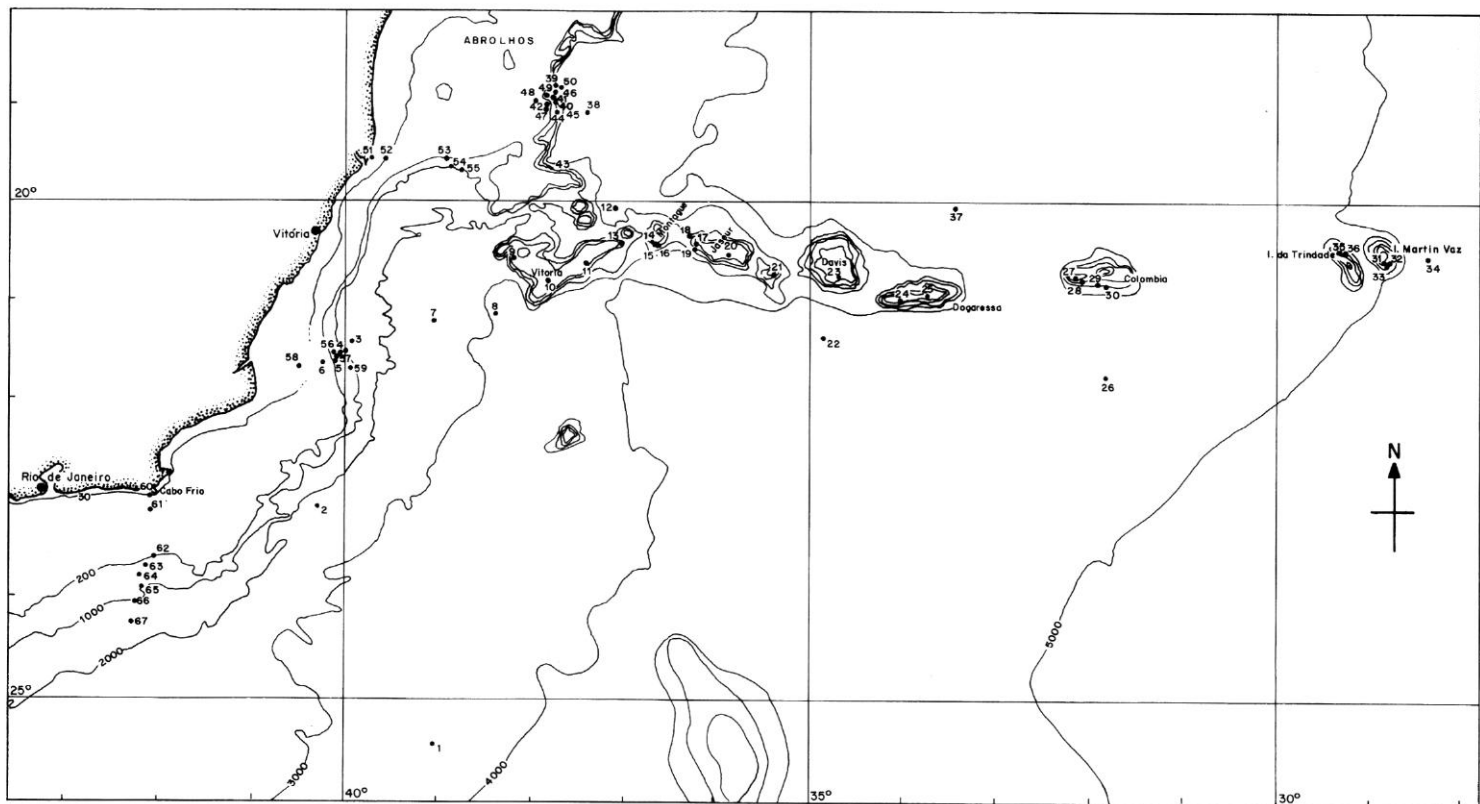


FIG. 1.— Area sampled by the *Marion Dufresne* in 1987.

ITINERARY AND COLLECTING ACTIVITY

The *Marion Dufresne* departed from Rio de Janeiro on May 6 1987. Twenty-eight days and twenty hours were spent between depart and return to Rio de Janeiro on June 2. During this period, 3180 sea-miles were covered to survey 67 stations, where 108 benthic and 143 pelagic operations were conducted between 15 and 5155 meters depth (Fig. 1).

From Rio de Janeiro's harbour the *Marion Dufresne* headed south, straight to the abyssal plain (stn 1). Afterwards the ship moved northward to survey the abyssal plain and the continental margin south of Vitória (stn 2-8). The numerous oceanographic activities carried out in different depths along the seamounts of the Vitória-Trindade chain (stn 9-38) aimed primarily to study the faunistic transition with depth and the effects of insularity in deep waters. Additionally, a number of samples were obtained from the Abrolhos submarine canyons (stn 39-50). In order to compare faunistic transitions with depth on a isolated seamount and along the continental margin, two transects were performed near Rio Doce (stn 51-55) and Cabo Frio (Fig. 1, stn 60-67). While heading from Rio Doce to Cabo Frio, additional surveys were done on the continental margin south of Vitória (stn 56-59).

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Appendix

Stations list of the oceanographic cruise TAAF MD55/BRAZIL 1987

ABBREVIATIONS

CB Blake trawl;
 CP Beam trawl;
 DC Charcot dredge;
 Pk pelagos;
 Stn station;
 SY box core.

Depths are given in metres.

Station	Date	Depth	Latitude	Longitude
Stn 1 Pk	7.V.1987	3975	25°25'3S	39°01'9W
Stn 2 CP01	8.V.1987	2370-2380	23°04'3S	40°19'9W
Stn 2 CP02	9.V.1987	1900-1950	22°57'6S	40°20'5W
Stn 2 SY03	9.V.1987	1835-1872	22°50'9S	40°15'4W
Stn 2 Pk	8.V.1987	2400	23°05'5S	40°20'7W
Stn 3 CP04	9.V.1987	1320-1360	21°24'2S	39°56'2W
Stn 3 DS05	9.V.1987	1400-1420	21°25'5S	39°56'4W
Stn 3 SY06	9.V.1987	1460	21°28'6S	39°55'7W
Stn 3 Pk	9.V.1987	1320	21°24'2S	39°56'3W
Stn 4 CP07	10.V.1987	750-785	21°31'4S	40°06'8W
Stn 4 DS08	10.V.1987	750	21°34'6S	40°05'4W
Stn 4 SY09	10.V.1987	780	21°37'8S	40°03'0W
Stn 4 Pk	10.V.1987	800	21°28'1S	40°08'4W
Stn 5 DC10	10.V.1987	300-307	21°34'5S	40°10'9W
Stn 5 CP11	10.V.1987	248-262	21°35'0S	40°06'2W
Stn 5 DS12	10.V.1987	450-457	21°35'5S	40°02'9W
Stn 5 SY13	11.V.1987	352	21°39'1S	40°05'8W
Stn 5 Pk	11.V.1987	412	21°39'5S	40°05'4W
Stn 6 SY14	11.V.1987	42	21°37'7S	40°15'5W
Stn 6 DC15	11.V.1987	37	21°37'1S	40°18'1W
Stn 6 Pk	11.V.1987	42	21°39'2S	40°16'6W
Stn 7 KU16	11.V.1987	2420	21°14'5S	39°03'7W
Stn 8 CP17	11.V.1987	3250-3270	21°08'4S	38°24'6W
Stn 8 DS18	12.V.1987	3340	21°14'3S	38°16'0W
Stn 8 DS19	12.V.1987	3400	21°16'3S	38°12'0W
Stn 8 SY20	12.V.1987	3335	21°15'9S	38°08'1W
Stn 8 SY21	13.V.1987	3225	21°04'9S	38°13'9W
Stn 8 Pk	13.V.1987	3187	21°04'4S	38°15'6W
Stn 9 DC22	13.V.1987	52	20°32'4S	38°10'5W
Stn 10 CP23	13.V.1987	52	20°43'1S	37°50'1W
Stn 10 DC24	13.V.1987	48-52	20°41'8S	37°49'5W
Stn 11 CP25	14.V.1987	65	20°35'8S	37°27'4W
Stn 11 Pk	14.V.1987	63	20°33'8S	37°26'1W
Stn 12 Pk	14.V.1987	3140	20°09'0S	37°00'1W
Stn 12 Pk	14.V.1987	3150	20°08'9S	37°01'2W
Stn 13 DC26	14.V.1987	97	20°21'1S	36°59'4W
Stn 13 Pk	14.V.1987	97	20°20'6S	36°59'2W
Stn 14 DC27	14.V.1987	81	20°25'6S	36°42'3W
Stn 15 DC28	14.V.1987	525-600	20°26'8S	36°41'9W
Stn 15 Pk	14.V.1987	772	20°26'4S	36°41'7W
Stn 16 DC29	14.V.1987	310-350	20°26'5S	36°41'4W

Station	Date	Depth	Latitude	Longitude
Stn 17 DC30	15.V.1987	60	20°26'8S	36°17'3W
Stn 17 CP31	15.V.1987	60-211	20°26'1S	36°16'3W
Stn 17 Pk	15.V.1987	60	20°26'1S	36°16'3W
Stn 18 CP32	15.V.1987	1417-1440	20°20'9S	36°19'0W
Stn 18 Pk	15.V.1987	1417	20°19'8S	36°18'1W
Stn 19 DC33	15.V.1987	865-900	20°29'5S	36°12'9W
Stn 20 DC34	15.V.1987	54	20°27'7S	35°54'4W
Stn 21 DC35	16.V.1987	82-15	20°42'3S	35°22'0W
Stn 22 CP36	16.V.1987	4410-4440	21°20'8S	34°52'9W
Stn 22 DS37	16.V.1987	4327-4335	21°15'3S	34°53'9W
Stn 22 SY38	16.V.1987	4120	21°09'3S	34°50'5W
Stn 22 SY39	17.V.1987	4200	21°11'4S	34°54'0W
Stn 22 Pk	16.V.1987	4400	21°21'0S	24°50'3W
Stn 23 DC40	17.V.1987	60	20°39'8S	34°41'1W
Stn 23 DC41	17.V.1987	58-70	20°38'5S	34°42'9W
Stn 23 Pk	17.V.1987	60	20°40'1S	34°41'2W
Stn 24 DC42	17.V.1987	60	20°54'7S	34°01'4W
Stn 24 Pk	17.V.1987	60	20°54'3S	34°01'1W
Stn 25 DC43	17.V.1987	63	20°50'9S	33°44'6W
Stn 25 Pk	17.V.1987	82	20°50'7S	33°43'6W
Stn 26 CP44	18.V.1987	4500-4510	21°39'5S	31°47'6W
Stn 26 SY45	18.V.1987	4542	21°43'1S	31°44'3W
Stn 26 DS46	18.V.1987	4540-4545	21°43'6S	31°42'9W
Stn 26 Pk	18.V.1987	4500	21°39'6S	31°50'7W
Stn 27 DC47	19.V.1987	94-105	20°41'6S	32°12'9W
Stn 28 DC48	19.V.1987	250-300	20°44'3S	32°08'0W
Stn 29 DC49	19.V.1987	944-945	20°43'7S	31°56'7W
Stn 29 Pk	19.V.1987	900	20°43'7S	31°57'3W
Stn 30 DC50	19.V.1987	95-120	20°44'2S	31°49'9W
Stn 31 DC51	20.V.1987	48-52	20°29'2S	28°53'7W
Stn 31 Pk	20.V.1987	58	20°29'1S	28°52'8W
Stn 32 DC52	20.V.1987	64-80	20°29'2S	28°51'8W
Stn 32 CP53	20.V.1987	54-69	20°28'8S	28°51'8W
Stn 32 CP54	20.V.1987	120	20°28'9S	28°51'6W
Stn 32 Pk	20.V.1987	105	20°28'9S	28°51'8W
Stn 33 DC55	20.V.1987	780-795	20°32'1S	28°52'3W
Stn 33 Pk	20.V.1987	880	20°31'5S	28°55'1W
Stn 34 CP56	21.V.1987	4990-5092	20°33'8S	28°19'8W
Stn 34 DS57	21.V.1987	5062-5100	20°32'1S	28°27'3W
Stn 34 SY58	21.V.1987	5060-5100	20°23'9S	28°27'3W
Stn 34 Pk	21.V.1987	5155	20°33'9S	28°18'9W
Stn 35 DC59	22.V.1987	52-60	20°30'4S	29°18'5W
Stn 36 DC60	22.V.1987	100	20°30'5S	29°18'5W
Stn 36 DC61	22.V.1987	63	20°29'2S	29°18'2W
Stn 37 CP62	23.V.1987	4185-4192	20°02'1S	33°27'4W
Stn 37 DS63	24.V.1987	4200	20°06'4S	33°22'1W
Stn 37 SY64	24.V.1987	4207	20°06'2S	33°18'0W
Stn 37 Pk	24.V.1987	4207	20°07'7S	33°18'1W
Stn 38 CP65	25.V.1987	3420-3442	19°01'6S	37°29'3W
Stn 38 DS66	25.V.1987	3450	19°08'8S	37°34'8W
Stn 38 SY67	25.V.1987	3450	19°13'3S	37°33'4W
Stn 38 Pk	25.V.1987	3460	19°12'7S	37°31'7W
Stn 39 CP68	26.V.1987	1200-1500	18°55'6S	37°49'1W
Stn 39 SY69	26.V.1987	1515	18°57'4S	37°49'1W
Stn 39 DC70	26.V.1987	1540-1550	18°59'1S	37°47'8W
Stn 39 CP71	26.V.1987	1560-1900	18°58'8S	37°47'0W
Stn 39 Pk	26.V.1987	1350	19°03'1S	37°46'0W
Stn 40 DC72	27.V.1987	950-1050	19°00'4S	37°48'8W

Station	Date	Depth	Latitude	Longitude
Stn 41 DC73	27.V.1987	607-620	18°59'5S	37°48'2W
Stn 41 SY74	27.V.1987	682	18°58'1S	37°48'5W
Stn 41 Pk	27.V.1987	802	18°59'6S	37°48'4W
Stn 42 DC75	27.V.1987	295	18°59'2S	37°50'1W
Stn 42 CB76	27.V.1987	637	18°58'9S	37°49'6W
Stn 42 PK	27.V.1987	570	18°59'5S	37°49'7W
Stn 43 CB77	27.V.1987	790-940	19°40'6S	37°48'1W
Stn 44 CB78	27.V.1987	1200	18°58'8S	37°48'4W
Stn 45 CB79	28.V.1987	1500-1575	19°01'8S	37°47'8W
Stn 45 Pk	28.V.1987	1575	19°03'0S	37°48'7W
Stn 46 CB80	28.V.1987	290-315	18°59'9S	37°49'6W
Stn 46 DC81	28.V.1987	120-135	19°00'3S	37°47'5W
Stn 46 Pk	28.V.1987	367	18°56'8S	37°52'0W
Stn 47 DC82	28.V.1987	85-105	18°56'4S	37°52'1W
Stn 48 DC83	28.V.1987	60	18°49'5S	37°57'3W
Stn 48 CP84	28.V.1987	60	18°49'4S	37°58'1W
Stn 48 Pk	28.V.1987	61	18°49'3S	37°57'3W
Stn 49 KU85	28.V.1987	1245	18°52'5S	37°50'3W
Stn 50 KU86	29.V.1987	2400	18°49'8S	37°46'3W
Stn 51 DC87	29.V.1987	15	19°34'9S	39°42'1W
Stn 51 CP88	29.V.1987	20	19°35'3S	39°40'3W
Stn 51 Pk	29.V.1987	18	19°35'2S	39°41'2W
Stn 52 CP89	29.V.1987	34	19°34'8S	39°32'4W
Stn 52 CB90	29.V.1987	34	19°33'8S	39°34'3W
Stn 52 SY91	29.V.1987	38	19°32'3S	39°33'3W
Stn 52 Pk	29.V.1987	40	19°34'8S	39°32'4W
Stn 53 CB92	29.V.1987	340-360	19°34'2S	38°55'0W
Stn 54 CB93	30.V.1987	640	19°36'0S	38°53'3W
Stn 54 Pk	30.V.1987	712	19°36'5S	38°53'2W
Stn 55 CB94	30.V.1987	900	19°40'6S	38°43'8W
Stn 55 CB95	30.V.1987	960	19°38'4S	38°43'4W
Stn 56 CB96	31.V.1987	295-300	21°31'8S	40°08'7W
Stn 56 Pk	31.V.1987	295	21°34'1S	40°10'9W
Stn 57 CB97	31.V.1987	600	21°33'9S	40°08'4W
Stn 58 CB98	31.V.1987	900	21°35'1S	40°31'0W
Stn 58 Pk	31.V.1987	895	21°35'2S	40°04'5W
Stn 59 CB99	31.V.1987	1190-1205	21°36'2S	39°58'1W
Stn 60 CB100	01.VI.1987	33-45	22°59'5S	42°05'3W
Stn 60 CB101	01.VI.1987	50	22°58'4S	42°06'3W
Stn 60 Pk	01.VI.1987	37	22°59'1S	42°06'4W
Stn 61 CB102	01.VI.1987	100	23°07'4S	42°04'0W
Stn 61 Pk	01.VI.1987	100	23°00'1S	42°03'9W
Stn 62 CB103	01.VI.1987	200-217	23°36'4S	42°01'7W
Stn 62 Pk	01.VI.1987	202	23°37'6S	42°01'5W
Stn 63 CB104	01.VI.1987	430-450	23°41'6S	42°06'5W
Stn 64 CB105	02.VI.1987	610	23°46'7S	42°10'1W
Stn 64 Pk	02.VI.1987	590	23°46'9S	42°09'7W
Stn 65 CB106	02.VI.1987	830	23°54'2S	42°10'5W
Stn 65 Pk	02.VI.1987	800	23°53'8S	42°12'2W
Stn 66 CB107	02.VI.1987	1020	23°00'3S	42°14'4W
Stn 67 CB108	02.VI.1987	1555	24°12'4S	42°15'8W
Stn 67 Pk	02.VI.1987	1550	24°12'6S	42°15'9W