Table S1. Physicochemical properties of the water samples

Samples	Weather temperature (ºC)[a]	Water temperature (ºC)[b]	pH	Salinity (%)[c]	NaCl (%)[d]	Organic matter (mg l^{-1})
JAC	30ºC	30°C	8.20	0.2	0.14	65
MAS	30ºC	24°C	8.00	4.0	1.1	27
VER	30ºC	28°C	8.05	5.0	1.5	54

JAC, MAS and VER represent Jacarepiá lagoon, Massambaba beach and Vermelha lagoon, respectively.

[a] The weather temperature was measured during the sampling. The weather temperature in this area varies annually from 19 to 32ºC. In summer, the temperature is usually around 26ºC.

[b] The water temperature was measured during the sampling.

[c] Total salinity was determined by the density method. This area shows an annual negative water balance, with an excess of evaporation over precipitation. Precipitation exceeds evaporation only in summer. In Vermelha lagoon, the salinity can vary annually from 3.5 to 8%.

[d] The amount of NaCl in water was determined by titration.

Table S2. Identification of the bacterial isolates

Strains	**Closest BLAST match**	**% Similarity**	**GenBank accession nº**	**Able to grow using:**
JNB6_JN	*Pseudomonas aeruginosa*	100%	KC137277.1	naphthalene
JNB2_JN	*Cobetia marina*	100%	JX867732.1	naphthalene
C08-88_JH D04-36_JH	*Achromobacter spanius*	99%	JN629044.1	heptadecane
B03-67_JH	*Achromobacter xylosoxidans*	99%	JQ923444.1	heptadecane
D06-95_JO	*Acinetobacter calcoaceticus*	100%	JX010982.1	crude oil
D05-92_JO	*Pseudomonas aeruginosa*	100%	JX469434.1	crude oil
D08-98_JO	*Achromobacter* sp.	100%	JQ901430.1	crude oil
E01-107_JO E05-10_JO	*Pseudomonas* sp.	99%	JQ433932.1	crude oil
D12-106_JO	*Acinetobacter* sp.	100%	HQ289880.1	crude oil
F06-20_JO	*Pseudomonas* aeruginosa	100%	JX469434.1	crude oil
F05-19B_JO	*Achromobacter* sp.	98%	JQ901430.1	crude oil
E06-11B_JO	*Achromobacter* sp.	99%	JQ901430.1	crude oil
F03-18_JO	*Acinetobacter* sp.	100%	JX843792.1	crude oil
F02-115/1_JO	*Acinetobacter* sp.	99%	JN228299.1	crude oil
E12-16_JO E11-15_JO E10-14_JO E09-13_JO	*Pseudomonas* aeruginosa	100%	JX424425.1	crude oil
E08-12_JO	*Pseudomonas* aeruginosa	100%	JX469434.1	crude oil
E07-11C_JO	*Acinetobacter* sp. 19B	100%	HQ289880.1	
MNB5a_MN	*Halomonas* sp. 5CpOI8	99%	JN602239.1	naphthalene

MNB3_MN	*Halomonas cupida*	100%	AB681327.1	naphthalene
MNB2_MN MNB1MN	*Cobetia marina*	100%	JX867732.1	naphthalene
MHM5a_MH	*Muricauda aquimarina*	100%	NR_042909.1	-
MHM1_MH	*Achromobacter xylosoxidans*	97%	JQ923444.1	heptadecane
H08-56_MH	*Achromobacter spanius*	99%	JN629044.1	-
MHM3b_MH A01_51_MH	*Marinobacter* sp.	99%	JX119043.1	heptadecane
H07-53_MH	*Marinobacter hydrocarbonoclasticus*	100%	JQ799097.1	heptadecane
MHM11_MH	*Alcanivorax dieselolei*	99%	GU370129.1	heptadecane
H03-39_MO	*Achromobacter xylosoxidans*	99%	JQ337947.1	crude oil
MOM4_MO A09-115/2_MO A10-116_MO A06-42_MO	*Alcanivorax dieselolei*	99%	GU370129.1	crude oil
A07-43_MO	*Alcanivorax* sp.	99%	HE601937.2	crude oil
MOM3/2_MO	*Muricauda aquimarina*	99%	NR_042909.1	crude oil
MOM6/2_MO	*Marinobacter hydrocarbonoclasticus*	100%	JQ799097.1	crude oil
MOM7/2_MO MOM16_MO	*Marinobacter* sp.	99%	JX515656.1	crude oil
MOM10_MO	*Pseudomonas stutzeri*	99%	JX177707.1	ND
VHB3a_VH	*Marinobacter hydrocarbonoclasticus*	100%	JQ799097.1	heptadecane
F09-148A_VO	*Marinobacter* sp.	99%	GQ200194.3	crude oil
G01-155_VO	*Vitellibacter vladivostokensis*	100%	AB681115.1	crude oil
G02-156_VO	*Alcanivorax dieselolei*	99%	GU370129.1	crude oil
H02-159_VO	*Marinobacter* sp.	98%	JX119043.1	crude oil

G06-163_VO	*Alcanivorax dieselolei*	99%	CP003466.1	crude oil

The strains are denoted as follows: the strain code followed by an underline symbol (_) and a code representing the microcosm from where the strains were isolated from: the first letter corresponds to the origin of each sample (J – Jacarepiá lagoon, M – Massambaba beach and V – Vermelha lagoon), followed by the hydrocarbon used in the different microcosms (H – Heptadecane, N – Naphthalene and O – crude oil).

- no growth observed; ND – not determined

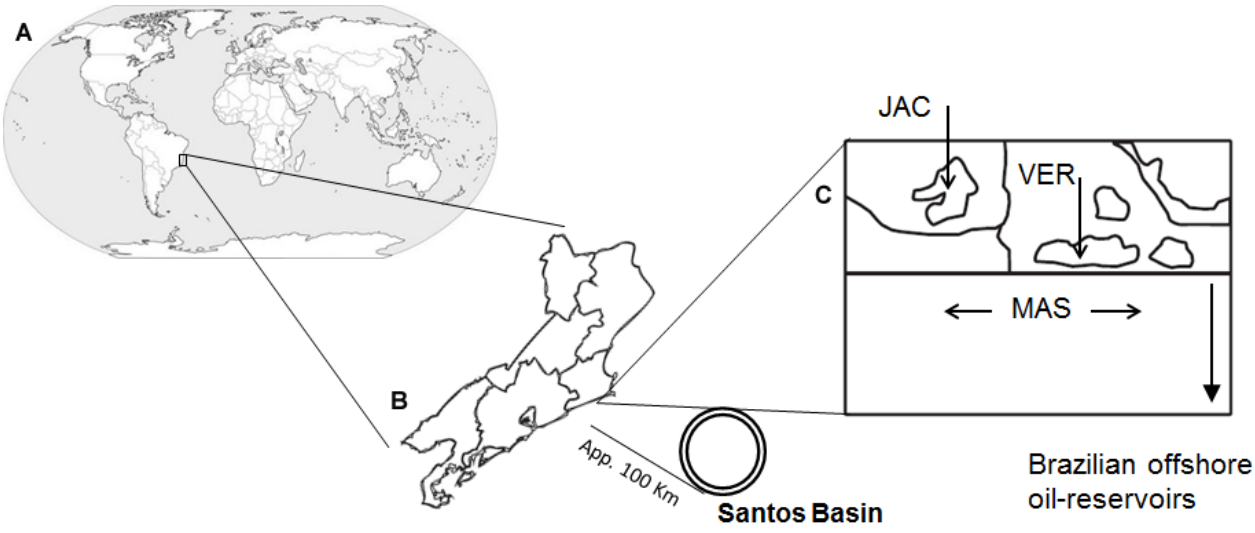
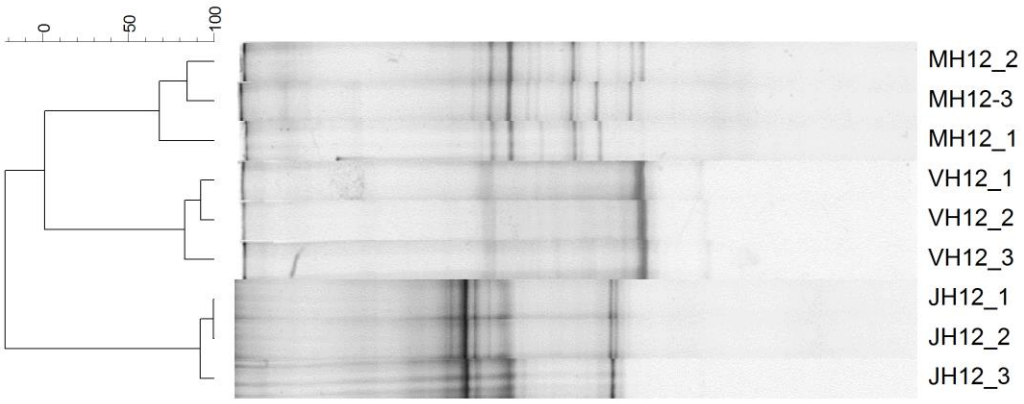


Fig. S1. (A) World map showing the localization of Rio de Janeiro (Brazil). (B) The Rio de Janeiro and primary Brazilian offshore oil-reservoir field (Santos Basin). (C) The Massambaba Environmental Protection Area and the sites sampled are indicated with arrows. JAC, VER and MAS represent Jacarepiá lagoon, Vermelha lagoon and Massambaba beach, respectively.

A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100
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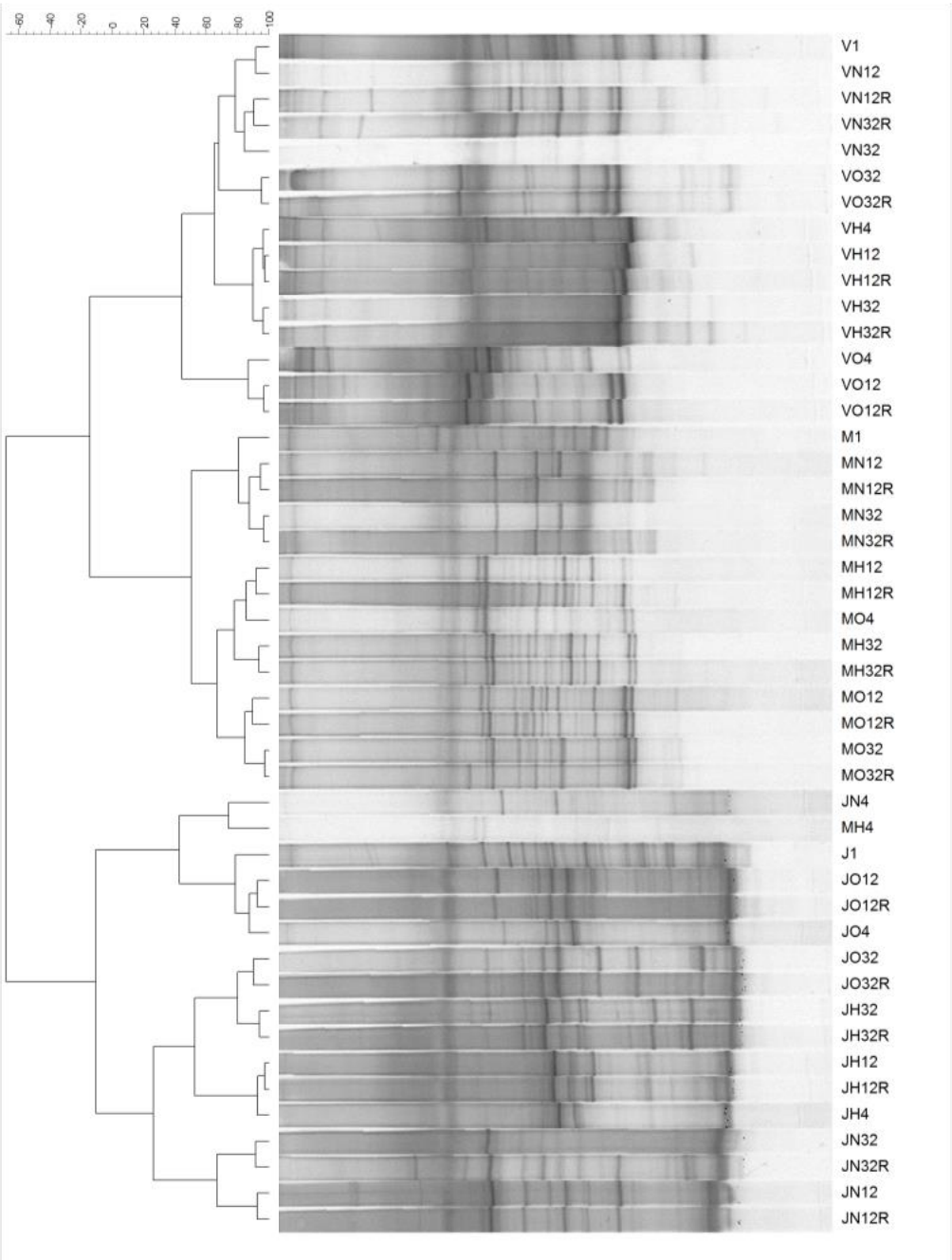
MH12-3
MH12_1
VH12_1
VH12_2
VH12_3
JH12_1
JH12_2
JH12_3

B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-40
-20
0
20
40
60
80
100
V1
VN12
VN12R
VN32R
VN32
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VH4
VH12
VH12R
VH32
VH32R
VO4
VO12
VO12R
M1
MN12
MN12R
MN32
MN32R
MH12
MH12R
MO4
MH32
MH32R
MO12
MO12R
MO32
MO32R
JN4
MH4
J1
JO12
JO12R
JO4
JO32
JO32R
JH32
JH32R
JH12
JH12R
JH4
JN32
JN32R
JN12
JN12R

Fig. S2. Denaturing gradient gel electrophoresis (DGGE) fingerprints and the dendrogram obtained after the cluster analysis using the Ward and similarity Pearson coefficients to compare the structures of the hydrocarbon-enriched bacterial communities from the contaminated microcosms. (A) DGGE of heptadecane-enriched bacterial communities (at 12 days after the microcosms were established) showing the sampling replicates of the different microcosms. (B) DGGE of temporal analyses of contaminated microcosms. The samples are denoted as follows: the first letter corresponds to the origin of the samples (J – Jacarepiá lagoon, M – Massambaba beach and V – Vermelha lagoon), followed by the hydrocarbon used in the different microcosms (H – heptadecane, N – naphthalene and O – crude oil), and the number representing the sampling point (0, 4, 12 and 32 days). The last letter represents either DNA (D)- or RNA (R)-based analyses.

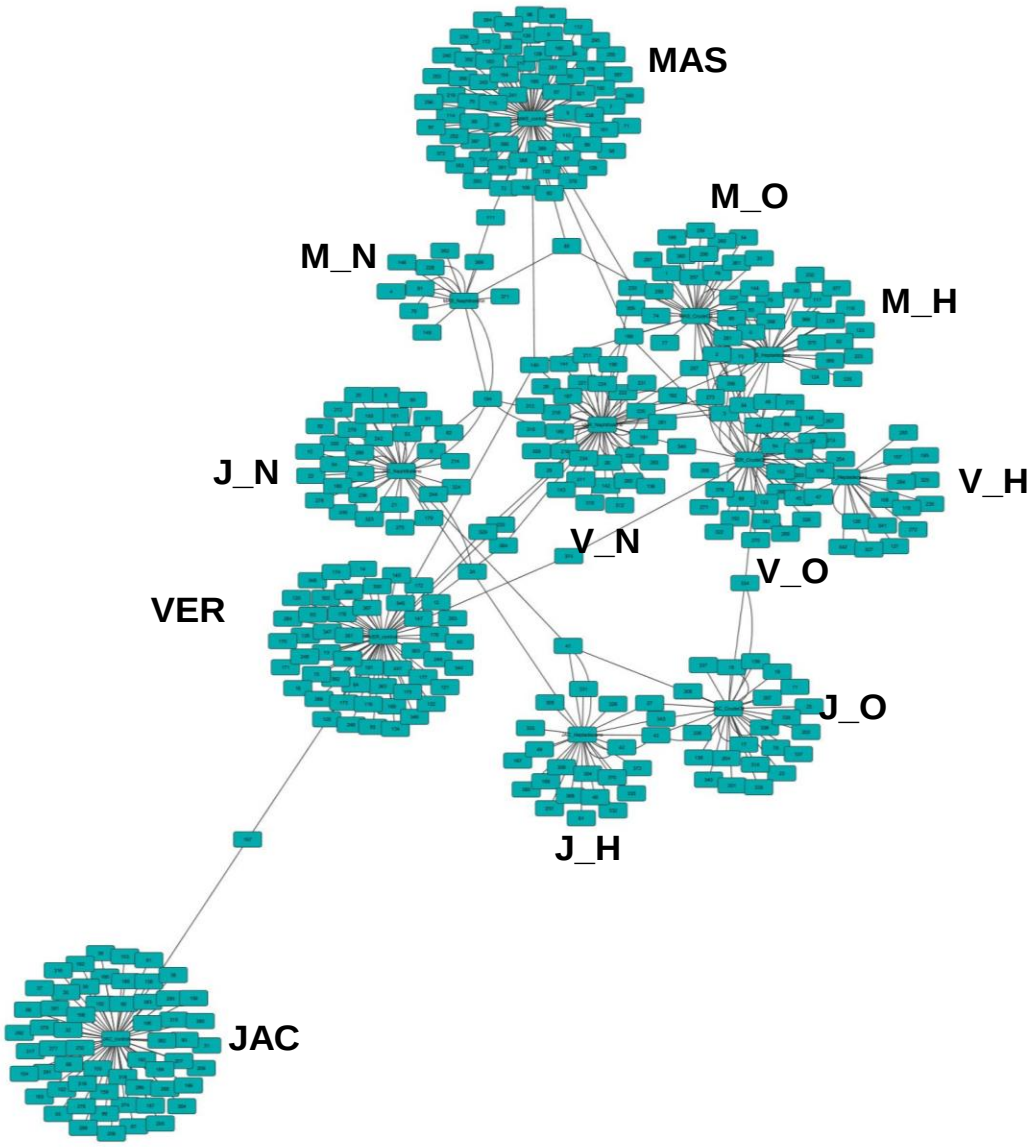

Fig. S3. Network Analysis constructed using the Cytoscape program showing the unique and shared bacterial OTUs among the different samples. The samples are denoted as follows: the first letter represents the origin of the samples (J – Jacarepiá lagoon, M – Massambaba beach and V – Vermelha lagoon), followed by the hydrocarbon used in the different microcosms (H – Heptadecane, N – Naphthalene and O – crude oil). JAC, MAS and VER represent the controls (without contamination) for Jacarepiá lagoon, Massambaba beach and Vermelha lagoon, respectively.

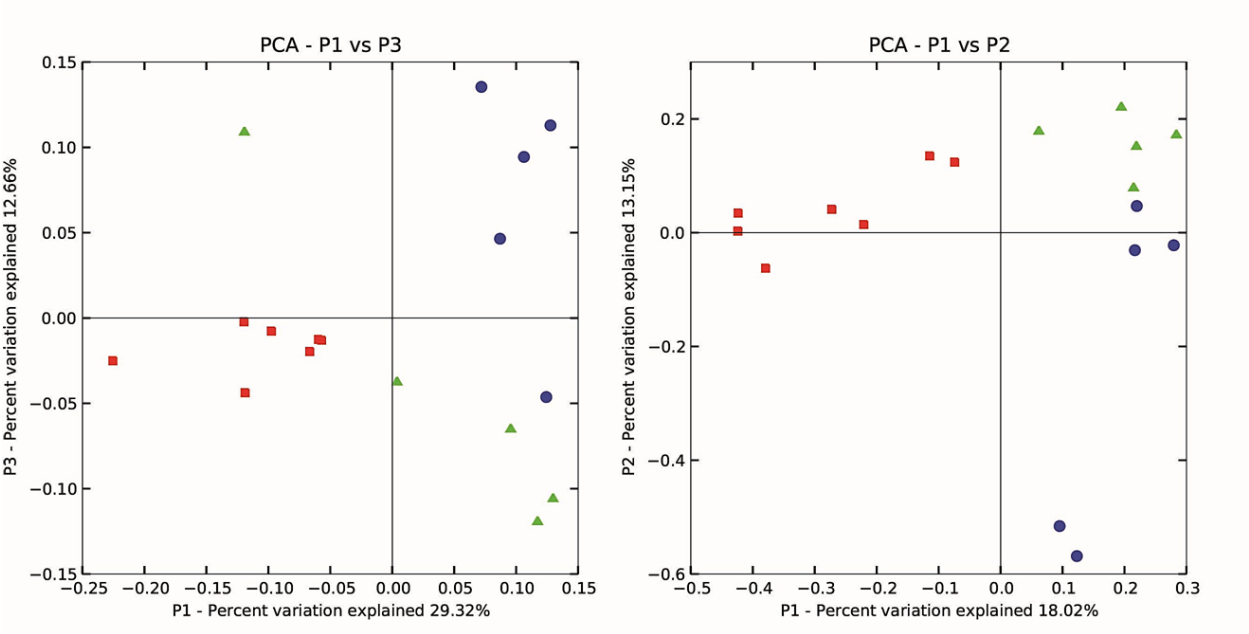

Fig. S4. The unweighted and weighted UniFrac Principal Coordinate Analysis (PCoA) ordination diagram was generated based on data obtained from clone libraries (OTU = 97%). The data were plotted based on the ecosystem type, and the colors chosen for the different sample groups are the same as those used in the Redundancy Analysis (RDA, Fig. 2): green, Vermelha lagoon; blue, Massambaba beach and red, Jacarepiá lagoon.