Table DR1. List of samples

Sample	Rock name	Location	Coordinates (UTM 17N, WGS84)		Type of sample	Volcanic stage
		Punta Blanca Group				
DB05-039	Basalt	road Covachón-Cambutal	542597	799476	Lava flow	Shield
DB05-040	Basalt	road Covachón-Cambutal	543705	799360	Lava flow	Shield
DB05-041	Basalt	road Covachón-Cambutal	543705	799360	Lava flow	Shield
DB06-011	Basalt	Río Horcones	548160	800640	Lava flow	Shield
DB07-029	Basalt	Río Progreso	541950	802600	Lava flow	Shield
DB07-033	Basalt	Río Horcones	551200	803250	Lava flow	Shield
DB07-038	Basalt	Río Horcones	550150	804750	Lava flow	Shield
DB07-040	Basalt	Río Horcones	550850	803900	Lava flow	Shield
		Hoya Group				
DB05-006	Picrite	road to Japon	510733	825392	Lava flow	Shield
DB05-008	Basalt	Boca del Quebro	509044	821678	Lava flow	Shield
DB05-010	Picrite	Isleta Restin	510405	799735	Lava flow	Shield
DB05-012	Basalt	Isleta Restin	510405	799735	Lava flow	Shield
DB05-014	Basalt	Varadero	510163	800469	Lava flow	Shield
DB06-005	Basalt	Punta Piro	527700	797300	Lava flow	Shield
DB06-006	Basalt	Puerto Escondido	516250	797300	Lava flow	Shield
DB06-007	Hawaiite	Puerto Escondido	516250	797300	Lava flow	Post-shield
DB06-038	Picrite	El Morillo-Punta Duartes	503935	828410	Lava flow	Shield
DB06-049	Basalt	La Playa	509040	821670	Lava flow	Shield
DB06-076	Basalt	La Playa-Puerto Naranjo	507945	820710	Dyke	Shield
DB06-077	Basalt	La Playa-Puerto Naranjo	507945	820710	Dyke	Shield
DB06-078	Basalt	La Playa-Puerto Naranjo	507515	820020	Lava flow	Shield
DB06-081	Basalt	La Playa-Puerto Naranjo	511235	810160	Lava flow	Shield
DB06-083	Basalt	La Playa-Puerto Naranjo	510610	809625	Lava flow	Shield
DB06-084	Basalt	La Playa-Puerto Naranjo	508065	803695	Lava flow	Shield
DB06-085	Basalt	La Playa-Puerto Naranjo	509055	809195	Lava flow	Shield
DB06-086	Picrite	La Playa-Puerto Naranjo	509055	809195	Lava flow	Shield
DB06-087	Basalt	Quebrada Los Cativos	516025	819289	Lava flow	Shield
DB06-088	Basalt	Quebrada Los Cativos	515585	819270	Lava flow	Shield
DB06-089	Picrite	Quebrada Los Cativos	515585	819270	Lava flow	Shield
DB06-100	Basalt	Road Guerra-Boca de Quebro	516220	824720	Lava flow	Shield
DB06-101	Basalt	Road Guerra-Boca de Quebro	517450	825320	Lava flow	Shield
DB06-108	Basalt	Río Playita	523885	811360	Lava flow	Shield
DB06-128	Basalt	Río Playita	524760	810570	Lava flow	Shield
DB06-130	Rhyolite	Río Playita	524900	810150	Block (sub-in situ)	Rejuvenated
DB06-134	Basalt	Río Pavo	527645	816560	Lava flow	Shield
DB07-001	Basalt	Río Varadero	515650	806900	Lava flow	Shield
DB07-004	Basalt	Quebrada Mala	527367	818511	Lava flow	Shield
DB07-006	Basalt	Quebrada La Barra	527450	813850	Dyke	Shield
DB07-007	Gabbro	Quebrada La Barra	528125	812150	Intrusive	Shield
DB07-008	Picrite	Quebrada La Barra	528350	811750	Lava flow	Shield
DB07-009	Basalt	Río Pavo	532300	810700	Dyke	Shield
DB07-011	Basalt	Río Pavo	531900	812750	Lava flow	Shield
DB07-012	Basalt	Quebrada La Zumbona	524485	821558	Lava flow	Shield

DB07-013	Basalt	Quebrada La Zumbona	523329	819088	Dyke	Shield
DB07-014	Picrite	Quebrada La Zumbona	523238	818861	Lava flow	Shield
DB07-016	Basalt	Río Varadero	521950	807200	Lava flow	Shield
DB07-017	Basalt	Río Ventana	521700	804450	Lava flow	Shield
DB07-021	Hawaiite	Río Colorado	519400	800050	Lava flow	Post-shield
DB07-024	Picrite	Río Varadero	517321	803716	Lava flow	Shield
DB07-027	Monzosyenite	Quebrada La Barra	529211	815327	Block	Post-shield
DB07-028	Basalt	El Cascalloso	513713	817033	Lava flow	Shield
DB07-032	Basalt	Río Porto Velo	542000	806450	Lava flow	Shield
		Quebro Group				
DB05-003	Basalt	Russia	510223	824637	Lava flow	Shield
DB06-036	Basalt	El Morillo	504740	826850	Lava flow	Shield
DB06-037	Basalt	El Morillo	504740	826850	Lava flow	Shield
DB06-040	Basalt	El Morillo-Punta Duartes	503780	828450	Lava flow	Shield
DB06-046	Basalt	El Morillo	506445	826300	Lava flow	Shield

Table DR2. XRF analyses

Sample	SiO_2 wt%	TiO_2 wt%	Al_2O_3 wt%	Fe_2O_3 wt%	MnO wt%	MgO wt%	CaO wt%	Na_2O wt%	K_2O wt%	P_2O_5 wt%	LOI wt%	Total wt%	V ppm	Cr ppm	Ni ppm	Sr ppm	Zr ppm
Punta Blanca Group																	
DB05-039	47.91	2.99	13.75	14.37	0.19	5.73	11.10	2.51	0.21	0.28	-0.21	98.83	348	96	81	288	39
DB05-040	47.15	2.66	13.65	13.57	0.19	6.48	11.66	2.42	0.19	0.27	-0.05	98.19	392	161	104	255	160
DB05-041	48.12	2.67	13.92	13.75	0.19	7.08	11.24	2.56	0.27	0.23	0.05	100.09	348	137	106	245	143
DB06-011	47.24	2.94	13.67	14.41	0.28	6.61	10.17	3.06	0.59	0.29	0.56	99.82					
DB07-029	49.20	2.65	13.79	12.49	0.19	5.96	11.89	2.63	0.19	0.24	0.73	99.95					
DB07-033	47.65	2.46	15.21	13.04	0.20	6.14	12.20	2.22	0.09	0.22	0.37	99.80					
DB07-038	45.55	2.54	13.36	13.20	0.21	8.30	9.38	3.22	0.26	0.22	3.84	100.09					
DB07-040	48.63	2.78	13.20	13.65	0.24	6.46	8.84	4.08	0.21	0.26	1.70	100.04					
Hoya Group																	
DB05-006	43.68	1.59	8.03	13.30	0.17	22.51	6.27	1.20	0.21	0.19	1.78	98.91	210	956	1085	164	84
DB05-008	49.02	3.11	13.89	12.74	0.18	6.65	11.19	2.67	0.35	0.32	-0.06	100.07					
DB05-010	39.78	1.07	5.70	12.70	0.17	27.02	5.46	0.54	0.17	0.12	5.02	97.77	149	1772	1147	99	57
DB05-012	46.89	3.81	14.04	12.83	0.23	5.59	9.92	3.56	0.86	0.48	1.37	99.58	368	54	59	435	322
DB05-014	45.05	3.86	13.67	13.94	0.15	5.58	8.41	3.49	1.30	0.47	3.46	99.39	379	71	74	381	293
DB06-005	45.37	3.98	14.12	13.85	0.20	4.19	11.20	3.40	1.19	0.52	1.91	99.93					
DB06-006	45.56	4.10	14.24	13.76	0.21	5.87	9.99	3.11	0.91	0.51	1.34	99.59					
DB06-007	48.00	3.12	17.07	11.35	0.11	2.46	7.60	4.96	1.29	0.93	2.20	99.09					
DB06-038	44.32	1.47	7.30	13.41	0.18	25.22	6.42	1.13	0.10	0.15	0.38	100.07					
DB06-049	47.46	2.81	13.92	12.50	0.18	7.68	12.18	2.18	0.17	0.28	0.49	99.84					
DB06-076	47.28	3.67	14.44	13.15	0.19	5.82	9.89	3.25	1.36	0.43	0.40	99.88					
DB06-077	48.80	2.88	13.92	12.34	0.17	6.57	11.64	2.56	0.29	0.30	0.03	99.51					
DB06-078	47.92	2.95	13.82	12.34	0.18	7.11	10.32	2.97	1.22	0.29	0.85	99.95					
DB06-081	44.65	3.02	14.16	12.17	0.18	7.44	10.20	2.91	0.85	0.32	3.90	99.80					
DB06-083	46.79	3.29	13.88	13.04	0.20	6.60	9.19	3.30	0.96	0.37	1.76	99.39					
DB06-084	46.26	2.94	13.65	12.33	0.18	7.34	10.32	2.65	1.34	0.27	2.37	99.66					
DB06-085	46.98	3.72	14.05	13.91	0.18	5.62	10.19	3.00	0.89	0.44	0.53	99.50					
DB06-086	45.85	2.39	12.93	11.69	0.16	12.31	10.51	2.09	0.60	0.27	1.23	100.04					
DB06-087	46.64	2.72	13.42	11.90	0.18	7.07	10.46	1.58	2.88	0.28	2.01	99.14					
DB06-088	48.09	2.89	13.71	12.30	0.18	7.78	11.06	2.62	0.28	0.29	0.92	100.12					
DB06-089	38.45	0.82	4.05	12.73	0.17	31.26	2.79	0.01	0.01	0.09	8.96	99.34					
DB06-100	46.96	2.80	13.37	11.96	0.17	7.11	10.19	1.71	2.87	0.29	2.27	99.69					
DB06-101	47.07	2.74	13.31	12.18	0.17	7.55	9.05	3.84	0.94	0.25	2.99	100.10					
DB06-108	46.86	3.06	14.00	12.49	0.18	6.25	11.31	2.46	0.89	0.33	1.34	99.16					
DB06-128	46.74	3.50	13.61	13.64	0.17	5.92	8.93	2.94	1.95	0.39	1.70	99.47					
DB06-130	64.23	0.60	14.69	6.52	0.14	0.71	1.89	6.57	1.91	0.10	1.89	99.24					
DB06-134	47.43	2.55	12.98	12.46	0.17	8.89	10.51	2.52	0.52	0.24	1.67	99.93					
DB07-001	46.63	3.85	14.84	13.15	0.21	5.05	10.48	3.05	0.85	0.54	1.24	99.89					
DB07-004	47.84	3.01	13.48	12.38	0.21	7.30	9.75	3.25	0.82	0.30	1.85	100.20					
DB07-006	45.52	3.86	13.30	13.46	0.18	4.99	9.16	3.62	1.46	0.51	3.43	99.51					
DB07-007	43.35	3.74	17.23	12.54	0.12	5.42	12.16	2.21	1.06	0.16	1.50	99.48					
DB07-008	45.14	1.93	11.02	11.69	0.17	15.13	10.71	0.81	0.61	0.20	2.76	100.19					
DB07-009	50.46	3.40	13.34	11.37	0.20	6.24	9.57	2.19	0.25	0.37	2.64	100.04					
DB07-011	45.57	3.60	14.28	12.90	0.22	5.97	12.01	2.54	0.50	0.45	1.81	99.86					
DB07-012	47.95	3.23	14.12	12.85	0.17	6.39	11.32	2.57	0.71	0.35	0.36	100.02					

DB07-013	47.11	2.94	13.24	12.48	0.18	8.07	11.31	2.27	0.67	0.32	1.08	99.67					
DB07-014	44.59	2.29	11.51	11.86	0.18	11.94	9.87	2.12	0.50	0.24	4.76	99.86					
DB07-016	48.71	3.05	14.12	11.95	0.20	5.97	11.42	2.41	0.40	0.32	1.61	100.15					
DB07-017	45.75	4.11	14.19	14.12	0.20	5.50	10.86	2.68	0.22	0.53	1.71	99.86					
DB07-021	48.92	3.08	15.62	11.15	0.20	3.97	7.67	4.60	1.56	1.32	1.31	99.39					
DB07-024	42.95	1.72	8.90	12.61	0.18	20.91	7.96	0.99	0.35	0.19	3.05	99.81					
DB07-027	48.03	3.72	14.30	12.91	0.20	4.11	7.77	4.41	1.79	0.73	1.53	99.49					
DB07-028	47.80	2.79	13.41	12.06	0.18	6.93	9.63	2.69	1.88	0.28	1.81	99.45					
DB07-032	46.13	3.77	14.09	13.88	0.22	6.25	10.21	2.77	0.90	0.47	1.30	99.99					
Quebro Group																	
DB05-003	46.16	3.25	12.02	14.32	0.21	8.23	10.32	2.25	0.45	0.37	0.61	98.18	406	411	262	258	231
DB06-036	46.76	3.56	13.50	14.14	0.20	6.22	10.58	2.82	0.51	0.41	0.41	99.10					
DB06-037	46.04	2.68	10.69	14.29	0.20	12.37	9.88	1.96	0.39	0.29	0.40	99.20					
DB06-040	47.81	3.26	12.79	14.02	0.20	7.13	9.27	3.71	0.39	0.34	1.20	100.11					
DB06-046	45.67	4.18	12.32	15.28	0.25	5.80	9.13	3.37	0.74	0.50	2.74	99.98					

Analytical procedure following *Buchs et al.* [in press], G3, doi:10.1029/2009GC002901

Table DR3. LA-ICP-MS analyses

Sample	Sc	V	Cr	Co	Ni	Zn	Rb	Sr	Y	Zr	Nb	Cs	Ba	La	Ce	Pr	Nd	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Hf	Pb	Th	U
	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Punta Blanca Group																															
DB07-038	39.30	356	353	52.82	99	450	2.91	323	27.09	130.46	12.48	0.05	103.11	9.92	25.36	3.50	17.39	4.86	1.68	5.58	0.81	5.43	0.98	2.67	0.37	2.43	0.33	3.52	1.43	0.73	0.28
DB05-041	43.78	390	235	62.05	93	102	2.33	242	34.08	165.50	14.10	bdl	57.53	11.30	27.38	4.02	20.20	5.58	1.85	6.55	1.08	6.70	1.27	3.36	0.46	2.64	0.44	4.58	1.18	1.01	0.27
DB06-011	39.12	422	60	57.47	66	51	6.36	244	33.89	171.22	15.62	0.09	105.27	13.02	33.32	4.80	23.40	6.20	2.16	6.90	1.04	6.84	1.25	3.42	0.44	3.06	0.46	4.87	0.98	1.15	0.48
DB07-029	37.87	376	199	61.97	95	656	1.64	259	28.57	137.68	13.04	0.04	54.43	10.30	26.81	3.93	18.32	5.20	1.71	5.75	0.86	5.53	1.20	2.91	0.37	2.71	0.33	3.61	0.75	0.79	0.33
DB07-033	37.34	357	199	60.89	85	337	0.37	261	26.51	127.54	12.08	bdl	31.11	9.87	25.37	3.57	18.23	4.93	1.86	4.94	0.79	5.36	1.12	2.80	0.41	2.40	0.34	3.62	0.72	0.81	0.26
DB07-040	37.86	409	86	69.91	66	129	1.82	317	30.37	152.41	14.31	0.44	121.17	11.78	29.97	4.20	21.49	5.77	2.05	6.32	0.95	6.20	1.21	3.04	0.40	2.53	0.41	4.00	0.81	0.98	0.56
Hoya Group																															
DB05-006	22.05	213	1368	105.21	1087	90	7.00	163	14.25	91.12	11.67	0.22	56.81	9.41	22.15	2.88	14.13	3.39	1.13	3.04	0.50	2.88	0.51	1.34	0.17	1.20	0.15	2.46	0.90	0.74	0.26
DB05-008	32.66	353	184	58.79	92	100	9.14	357	29.12	192.37	26.00	0.08	94.95	19.81	47.10	6.05	28.30	6.61	2.18	7.03	1.04	6.18	1.22	3.03	0.42	2.64	0.34	5.01	1.18	1.84	0.52
DB05-012	34.90	379	101	54.80	54	106	10.60	426	41.73	337.00	41.60	0.10	182.50	32.75	71.23	9.35	43.63	10.09	2.93	9.63	1.48	9.15	1.56	3.75	0.57	2.87	0.45	8.17	1.75	3.16	0.84
DB06-005	30.28	382	52	51.26	57	94	24.60	468	38.71	291.25	40.76	0.38	231.28	30.62	70.32	9.26	39.03	9.23	2.99	9.48	1.25	8.03	1.49	3.77	0.49	3.13	0.43	7.14	1.62	2.90	0.80
DB06-006	31.99	388	351	68.55	54	104	15.13	466	38.84	316.00	43.65	0.13	364.47	32.57	73.42	9.84	43.65	9.48	3.17	9.24	1.41	7.91	1.45	3.77	0.52	3.27	0.45	7.13	2.16	2.93	0.88
DB06-007	20.69	334	131	40.56	48	352	30.19	695	48.96	436.27	59.73	0.87	333.81	54.09	124.68	15.33	67.22	14.38	4.78	13.23	1.85	10.49	1.88	4.65	0.59	3.83	0.51	9.50	5.96	4.83	1.50
DB06-038	20.56	177	1195	110.46	1231	18	2.01	170	13.10	82.86	10.57	0.07	33.77	8.18	19.29	2.51	11.92	2.94	0.97	2.99	0.40	2.79	0.51	1.32	0.15	1.09	0.15	2.04	0.53	0.72	0.21
DB06-049	35.29	330	367	54.43	136	648	1.61	331	25.73	166.42	21.95	0.01	44.18	16.64	39.90	5.33	23.47	6.07	2.05	6.14	0.87	5.35	1.01	2.65	0.33	2.18	0.29	4.24	1.12	1.48	0.46
DB06-076	30.65	348	56	49.64	51	10	19.53	424	33.22	254.18	35.30	0.03	184.87	26.60	62.39	7.88	36.01	8.37	2.62	8.12	1.14	7.23	1.24	3.18	0.47	2.71	0.36	6.31	2.07	2.47	0.70
DB06-077	34.61	342	260	56.35	102	26	9.39	347	27.07	182.17	24.19	0.05	86.01	19.64	45.66	6.13	28.37	6.23	2.12	6.54	0.95	5.73	1.11	2.74	0.38	2.34	0.33	4.64	1.57	1.74	0.50
DB06-078	34.37	337	184	51.19	105	95	14.90	345	27.93	177.87	24.91	0.03	183.27	18.66	42.68	5.77	26.17	6.20	2.19	6.38	0.95	5.70	1.08	2.95	0.39	2.48	0.32	4.82	1.58	1.63	0.51
DB06-081	34.78	349	212	56.04	132	243	9.36	604	29.22	200.96	29.37	0.15	178.31	20.75	48.38	6.21	27.94	6.83	2.19	6.96	1.02	5.94	1.10	2.92	0.37	2.19	0.34	4.95	1.33	1.81	0.37
DB06-083	33.58	350	136	50.76	87	27	17.83	352	32.39	225.68	31.78	0.19	316.24	23.03	52.65	6.73	31.68	7.75	2.33	7.79	1.00	6.79	1.19	3.02	0.40	2.43	0.33	5.63	1.54	2.12	0.62
DB06-084	35.49	344	275	50.20	101	83	16.59	537	25.51	165.22	23.04	0.15	223.84	16.87	39.47	5.20	24.11	6.02	1.87	6.22	0.86	5.47	1.01	2.61	0.34	2.11	0.30	4.32	1.06	1.51	0.46
DB06-085	31.84	362	37	51.74	56	86	13.04	417	34.73	249.37	35.31	0.04	179.67	25.83	59.81	7.70	34.68	7.97	2.60	8.31	1.17	7.32	1.33	3.45	0.48	2.85	0.41	6.01	1.29	2.39	0.69
DB06-086	32.42	251	758	64.02	335	355	11.01	346	22.06	151.51	22.10	0.09	120.16	16.20	38.38	5.02	22.40	5.58	1.73	5.37	0.74	4.73	0.91	2.14	0.31	1.83	0.24	3.86	0.94	1.46	0.45
DB06-087	34.36	342	235	57.44	106	12	21.10	1831	25.18	165.61	24.35	0.06	1008.43	18.09	43.98	5.55	25.09	6.00	1.93	6.20	0.92	5.34	0.96	2.55	0.31	2.36	0.32	4.37	1.50	1.64	0.51
DB06-088	35.79	340	253	51.56	112	441	2.12	405	27.26	171.99	22.21	0.02	96.26	17.24	40.30	5.47	24.62	6.05	2.09	6.02	0.86	5.50	1.06	2.74	0.34	2.32	0.32	4.52	1.50	1.58	0.40
DB06-089	15.36	115	1672	119.82	1711	11	1.19	14	8.19	52.83	6.90	0.11	3.40	5.35	12.37	1.69	7.82	1.76	0.60	2.19	0.28	1.65	0.30	0.74	0.10	0.69	0.09	1.25	0.38	0.50	0.15
DB06-100	33.41	329	249	48.10	94	14	17.69	2534	28.54	177.62	23.22	0.05	763.36	18.33	43.09	5.53	26.59	6.20	2.04	6.19	0.93	5.83	1.01	2.69	0.37	2.25	0.33	4.59	1.19	1.60	0.50
DB06-101	34.32	340	357	67.93	137	24	13.26	323	23.76	150.73	20.98	0.06	144.25	16.13	37.49	4.86	22.89	5.12	1.88	5.50	0.79	4.99	0.92	2.29	0.32	2.02	0.28	3.91	0.68	1.39	0.42
DB06-108	33.50	338	192	51.69	93	30	15.85	384	28.58	194.20	28.59	0.11	157.45	20.94	48.39	6.25	27.59	6.50	2.07	6.81	0.93	5.83	1.07	2.88	0.36	2.31	0.32	4.88	1.22	1.87	0.55
DB06-128	31.97	359	44	51.47	66	81	42.89	349	33.25	225.93	33.20	0.37	229.17	24.33	55.33	6.91	33.13	7.45	2.55	7.95	1.13	6.94	1.24	3.24	0.41	2.56	0.38	5.69	1.45	2.19	0.63
DB06-130	7.07	10	9	14.99	5	134	27.07	24	71.45	973.76	123.13	0.04	457.82	90.86	190.34	21.30	84.61	17.36	4.05	14.70	2.19	14.01	2.69	7.03	0.96	6.72	0.98	21.49	3.76	11.55	3.39
DB06-134	35.64	315	401	56.49	164	76	4.86	389	22.93	139.35	19.58	0.02	151.38	15.20	34.73	4.61	21.44	4.93	1.76	5.41	0.77	4.63	0.87	2.27	0.28	1.86	0.27	3.86	1.03	1.39	0.40
DB07-001	25.96	332	144	46.47	66	295	15.85	540	36.79	323.52	48.43	0.09	265.49	36.11	80.93	10.21	46.33	9.95	3.32	9.53	1.32	7.95	1.42	3.49	0.47	2.91	0.40	8.06	2.02	3.44	0.79
DB07-004	35.99	355	279	49.05	100	79	11.06	551	26.89	172.25	22.32	0.04	233.35	18.17	43.67	5.62	25.73	6.07	2.11	6.31	0.85	5.48	1.04	2.66	0.35	2.19	0.35	4.39	0.96	1.65	0.55
DB07-006	26.58	343	53	48.75	49	87	20.93	445	34.10	287.99	41.59	0.27	315.64	30.89	69.65	8.87	39.50	9.04	2.95	8.57	1.16	7.43	1.26	3.26	0.46	2.61	0.37	7.08	1.60	2.87	0.86
DB07-007	33.70	479	107	55.50	115	281	26.65	565	14.76	94.11	13.71	0.63	133.43	9.56	22.22	2.92	14.35	3.48	1.43	3.74	0.54	3.24	0.58	1.44	0.19	1.16	0.15	2.46	1.00	0.73	0.21
DB07-008	34.49	228	1753	74.63	525	17	18.88	251	21.00	143.67	18.89	0.85	83.20	14.45	33.99	4.29	20.68	4.96	1.45	4.87	0.72	4.25	0.83	1.95	0.27	1.61	0.24	3.72	0.75	1.35	0.41
DB07-009	30.31	338	102	50.56	71	567	1.82	374	27.14	207.99	30.26	0.03	120.47	19.91	48.41	6.38	28.38	6.82	2.14	7.09	1.02	6.11	1.05	2.79	0.39	2.40	0.35	5.41	1.11	2.02	0.62
DB07-011	32.08	356	na	52.88	72	54	6.13	424	35.59	268.49	37.74	0.03	190.92	28.48	65.43	8.49	37.21	9.19	2.73	8.34	1.22	7.37	1.37	3.48	0.47	2.97	0.42	6.70	1.42	2.60	0.77

Table 3. LA-ICP-MS analyses

Sample	Sc	V	Cr	Co	Ni	Zn	Rb	Sr	Y	Zr	Nb	Cs	Ba	La	Ce	Pr	Nd	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Hf	Pb	Th	U
	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
(continued)																															
DB07-012	34.07	359	229	55.50	120	54	12.56	389	30.06	203.21	30.03	0.04	143.84	22.32	51.07	6.81	31.70	7.30	2.25	6.95	1.00	6.26	1.11	3.03	0.40	2.50	0.34	5.23	1.59	2.01	0.56
DB07-013	34.68	344	380	52.72	132	50	8.38	346	27.52	183.04	26.33	0.04	114.79	20.62	47.87	6.41	28.63	6.66	2.20	6.42	0.91	5.75	1.00	2.70	0.37	2.40	0.34	4.77	0.98	1.75	0.54
DB07-014	31.16	288	682	60.55	434	177	10.31	215	24.31	136.90	18.92	0.23	122.89	15.16	35.09	4.81	20.44	5.16	1.59	5.14	0.70	4.44	0.88	2.08	0.27	1.88	0.25	3.56	0.92	1.28	0.45

DB07-016	32.29	325	227	56.28	90	486	3.13	430	27.22	187.44	26.46	0.04	166.53	19.81	44.86	5.80	26.38	6.72	2.25	7.09	0.94	5.92	1.08	2.87	0.34	2.21	0.31	4.64	1.31	1.77	0.51
DB07-017	29.63	376	75	44.43	48	113	1.61	474	37.30	301.91	41.71	0.04	145.04	32.27	74.51	9.46	42.43	9.81	3.09	9.72	1.36	8.07	1.51	3.85	0.53	3.10	0.45	7.40	1.57	2.99	0.83
DB07-021	17.93	163	153	27.96	10	599	25.54	785	55.25	452.26	68.98	0.11	442.63	70.31	156.26	19.49	84.31	17.41	5.80	15.87	2.05	12.09	2.23	5.04	0.67	3.94	0.56	10.55	4.01	5.70	1.69
DB07-024	29.01	192	1568	90.10	728	142	7.08	197	16.94	114.06	15.54	0.21	71.02	11.49	27.54	3.72	16.22	3.88	1.15	3.62	0.54	3.29	0.60	1.61	0.18	1.21	0.17	2.94	0.67	1.05	0.32
DB07-027	21.70	277	63	85.16	9	796	37.84	463	45.34	410.19	59.98	0.16	383.98	46.99	106.46	13.30	58.51	13.02	3.82	12.21	1.60	10.24	1.90	4.49	0.66	3.99	0.53	10.03	2.16	4.65	1.40
DB07-028	32.91	325	260	51.51	91	20	15.11	530	25.84	165.14	23.12	0.27	535.14	18.60	41.95	5.57	24.26	6.33	2.06	5.98	0.86	5.50	1.04	2.59	0.33	2.20	0.30	4.21	1.28	1.68	0.47
DB07-032	31.27	358	65	50.59	51	63	17.12	425	36.18	267.86	37.69	0.12	179.56	28.54	65.84	8.31	38.70	8.84	2.86	8.56	1.28	7.67	1.34	3.44	0.41	2.80	0.42	6.39	1.14	2.63	0.73
Quebro Group																															
DB05-003	39.68	404	536	64.20	228	131	8.54	244	36.93	209.50	19.63	bdl	82.03	16.88	41.73	5.78	27.00	7.97	2.42	7.52	1.22	7.63	1.31	3.67	0.52	3.35	0.44	5.30	1.85	1.34	0.59
DB06-036	37.14	424	288	52.45	98	228	6.30	270	40.22	229.34	22.02	0.03	83.66	17.42	44.03	6.04	28.75	8.07	2.54	9.05	1.25	8.20	1.57	3.98	0.56	3.44	0.49	5.92	1.98	1.53	0.47
DB06-037	35.57	342	690	73.26	356	86	6.84	211	30.23	165.03	15.31	0.08	68.85	12.53	32.13	4.48	21.57	6.04	1.88	6.30	1.02	5.82	1.14	3.04	0.42	2.73	0.37	4.08	1.50	1.11	0.33
DB06-040	38.17	415	237	56.09	109	18	6.42	302	34.53	192.71	18.59	0.07	262.17	14.69	37.01	5.10	25.13	6.96	2.21	7.40	1.13	7.12	1.25	3.34	0.44	3.15	0.40	4.68	0.90	1.25	0.42
DB06-046	38.14	472	93	52.61	69	32	10.42	312	46.62	286.08	27.76	0.04	357.20	22.75	54.89	7.55	36.43	9.58	3.04	10.17	1.44	9.77	1.76	4.94	0.63	4.08	0.55	7.24	1.59	1.96	0.61

bdl= beyond detection limit

na=not analyzed

Analytical procedure following *Buchs et al.* [in press], G3, doi:10.1029/2009GC002901

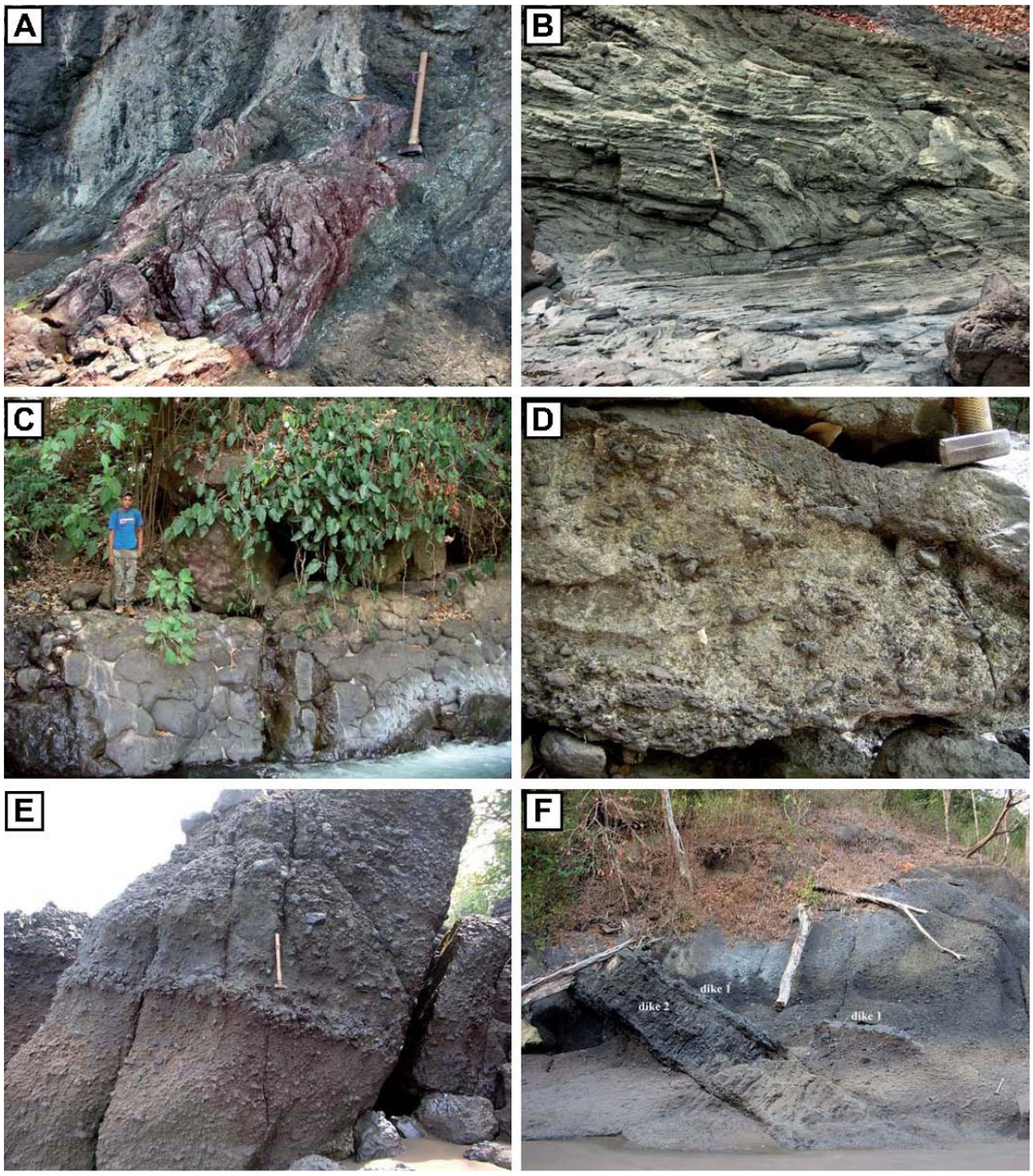

Figure DR1. Illustrations of typical outcrops from the Azuero Mélange and Azuero Accretionary Complex. **(A)** Highly-deformed basalts and red cherts from the arc basement (Azuero Mélange, shoreline close to Punta Duartes, 504605/832000 UTM WGS84 coordinates). **(B)** Fault-bend fold in forearc sediments deposited upon the Azuero Accretionary Complex. The sediments are composed here of bioturbated siliceous-carbonaceous turbiditic sequences with abundant plants debris (mouth of Río Cacao, 511515/810160 UTM WGS84 coordinates). **(C)** Pillowed lavas from the Quebro Goup with interstratified carbonate (Río Progreso, 541950/802600 UTM WGS84 coordinates). **(D)** Hemipelagic limestone interbedded with massive lava flows from the Hoya Group. Well-rounded clasts of vesiculated basalt in the limestone point toward a near-shore environment of deposition (Quebrada Mala, 527300/818700 UTM WGS84 coordinates). **(E)** Volcanoclastic deposits composed of reworked basalts from the Hoya Group. These deposits are interpreted to be part of a clastic apron of the Hoya Volcanic Island (south of the mouth of Río Quebro, 507515/820020 UTM WGS84 coordinates). **(F)** Same as (E), with basaltic dykes from the Hoya Group that display evidence for synvolcanic tectonics (south of the mouth of Río Quebro, 507945/820710 UTM WGS84 coordinates).

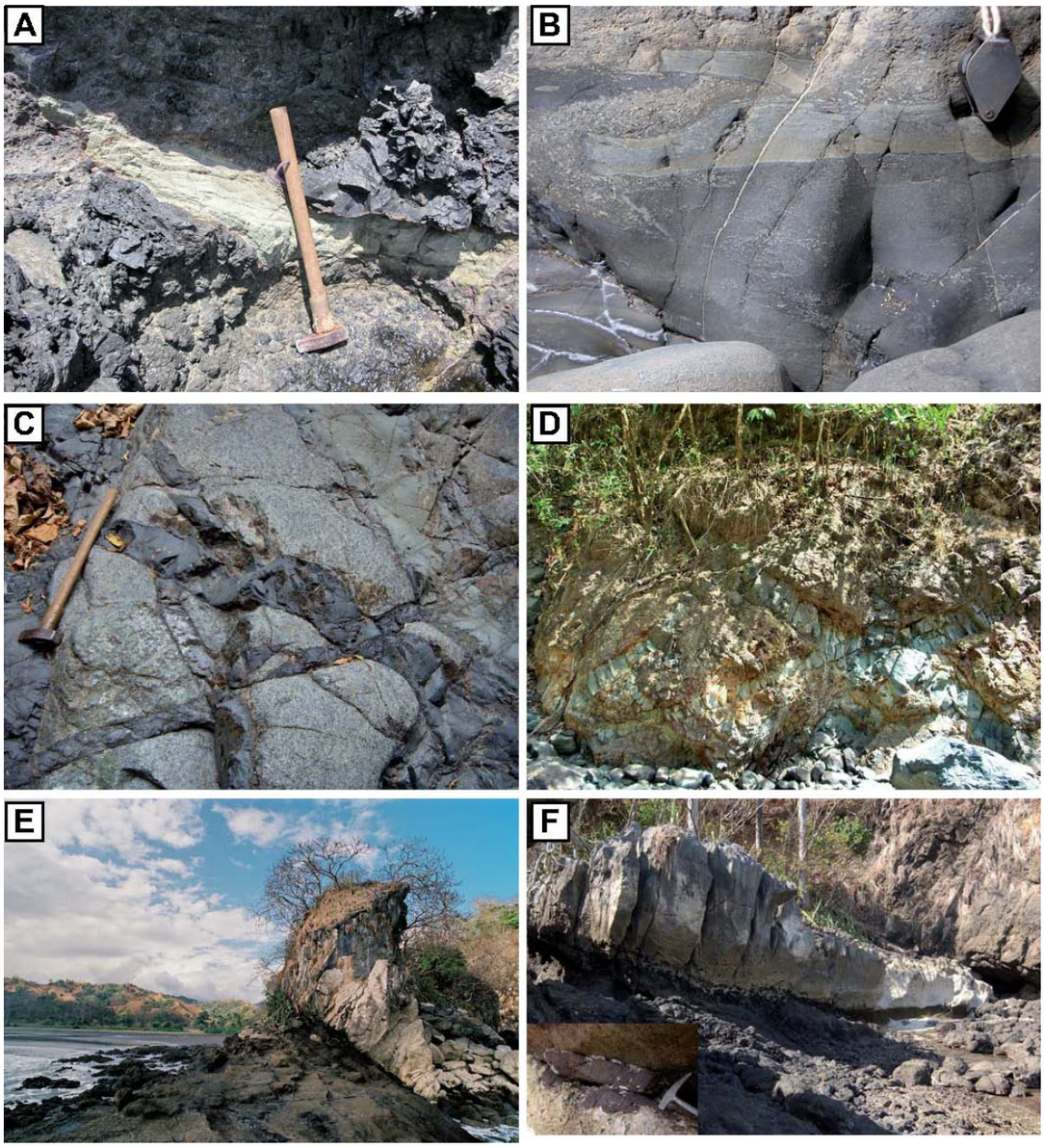

Figure DR2. Illustrations of typical outcrops from the Azuero Accretionary Complex. **(A)** Hemipelagic siliceous limestone interlayered within lava flows of the Quebro Group. Lavas have reddish chilled margins (shoreline at El Morillo, ~506450/826300 UTM WGS84 coordinates). **(B)** Deformed hemipelagic siliceous sediments below a lava flow of the Quebro Group. Deformation and relationship between the sediment and lava suggest the sediments were poorly lithified at the time of lava emplacement (shoreline at El Morillo, ~506450/826300 UTM WGS84 coordinates). **(C)** Gabbroic intrusive crosscut by basaltic dykes from the Hoya Group. This assemblage is interpreted to have emplaced along a rift zone in Hoya Oceanic Island (Quebrada La Barra, ~528100/812100 UTM WGS84 coordinates). **(D)** Swarm of basalt dykes in altered lavas from the Hoya Group. The dykes are interpreted have been emplaced along a rift zone in Hoya Oceanic Island (Río Playita, 525200/809300 UTM WGS84 coordinates). **(E)** Shallow-water limestones in stratigraphic contact on top of a massive lava flow from the Punta Blanca Group. The limestones notably contain fragments of coral and red-algae (Punta Blanca, ~546000/799235 UTM WGS84 coordinates). **(F)** Shallow-water limestone interbedded in a sequence of basalts from the Punta Blanca Group (limestone bed is ~2m thick). The limestone has a composition similar to that at Punta Blanca (cf. E above). Insert displays evidence for primary contact between the upper lava flow and the sediment. Basaltic ejecta can be seen at the base of the limestone bed. This outcrop clearly documents volcanism along the shoreline of an ocean island (Punta Blanca shoreline, ~546500/799400 UTM WGS84 coordinates).

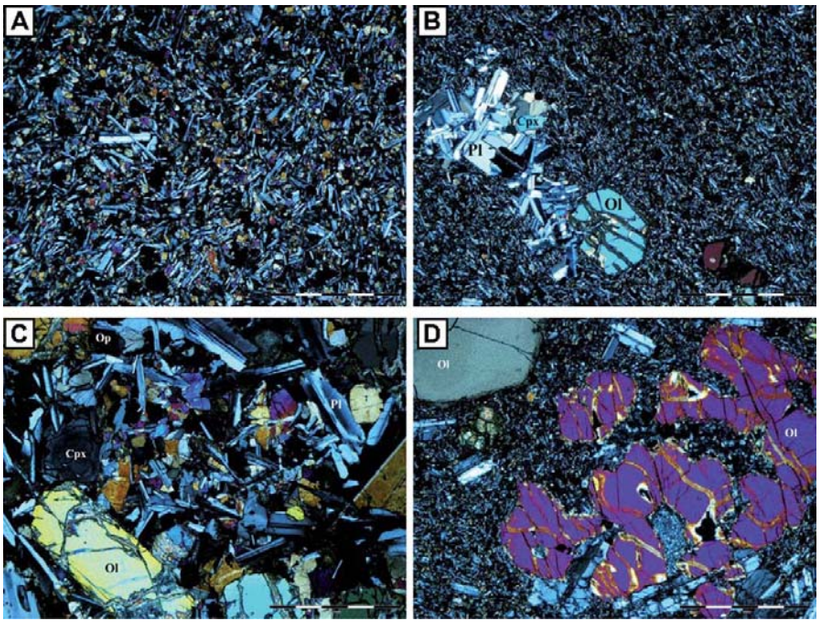

Figure DR3. Illustrations of thin sections of typical igneous rocks from the Azuero Accretionary Complex (double-polarized light, scale bar = 1mm, Ol = olivine, Cpx = clinopyroxene, Pl = plagioclase, Op = opaque minerals). All displayed samples have been analyzed (samples location is provided in tables of the supplementary files). **(A)** Basalt of the Punta Blanca Group (sample DB05-040). **(B)** Basalt of the Hoya Group (sample DB07-012). Ol±Cpx±Pl agglomerates are typical in this group. **(C)** Basalt of the Quebro Group (sample DB06-037). Lava flows of this group are generally coarser. **(D)** Picrite of the Hoya Group (sample DB06-086). Embayment of an olivine mineral is ubiquitous in Hoya picrites and is evidence for mineral-liquid disequilibrium and cumulative nature of the larger minerals.

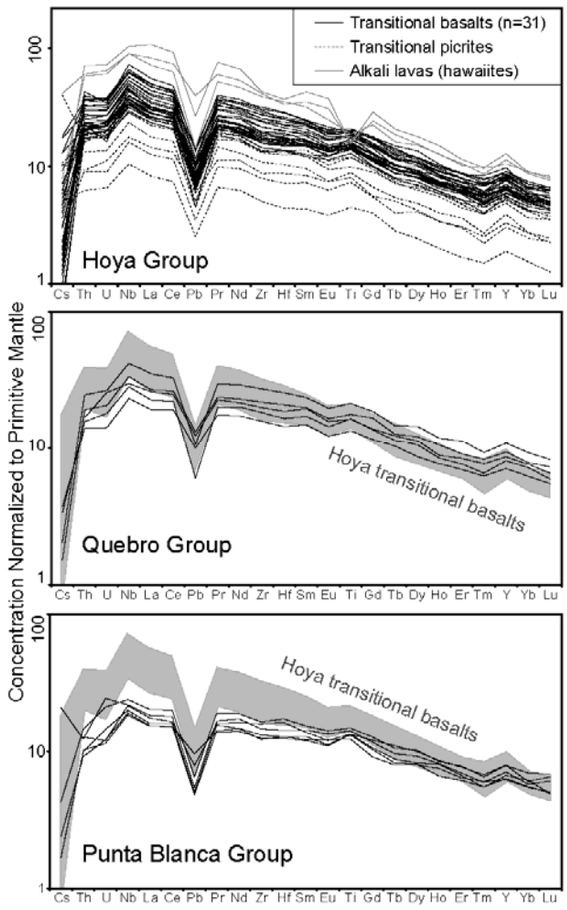

Figure DR4. Primitive mantle-normalized multielementary diagrams of the Hoya, Quebro and Punta Blanca Groups.