

The Bouvet Triple Junction Region (south Atlantic): a report on two geological expeditions

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SUMMARY

The Bouvet Triple Junction is located where the Antarctic, south American and African plates meet in the south Atlantic. Two oceanographic expeditions were carried out in this region in 1994 and 1996 by the Institute of Marine Geology, CNR (Bologna), and the Geology Institute of the Russian Academy of Science (Moscow) under the sponsorship of the Italian Antarctic Research Program (PNRA). The main objectives of these expeditions were to define the structural, morphological and petrographical differences of the three divergent margins that meet in the Bouvet region, and to clarify the evolution in space and time of the geometry of the Triple Junction. Single and multichannel seismic reflection, gravimetric and magnetometric profiles were obtained during the first cruise, with the R/V Akademik Strakhov, in addition to medium resolution multibeam bathymetry of the Bouvet island area and in the southern portion of the Mid Atlantic Ridge. The second cruise, carried out with the R/V Gelendzhik, completed the bathymetric survey of the entire Triple Junction region using an high resolution multi-beam system. Seafloor sampling was carried out by dredging in both cruises. Some of the data obtained during these two expeditions are reported in this paper.

Key words:

1 INTRODUCTION

The Antarctic plate is almost completely surrounded by divergent margins and meets the south American and African plates in the south Atlantic (Fig. 1a and b) at the Bouvet Triple Junction (BTJ). The BTJ was studied by Johnson et al.

(1973) and Forsyth (1975), who estimated its location at about 54:50'S, 00:40'W, based on ocean floor topography, and the distribution of earthquake epicenters, respectively. Sclater et al. (1976) and Apotria & Gray (1985) studied the evolution in space and time of the BTJ, and suggested that its configuration has been of Ridge-Transform-

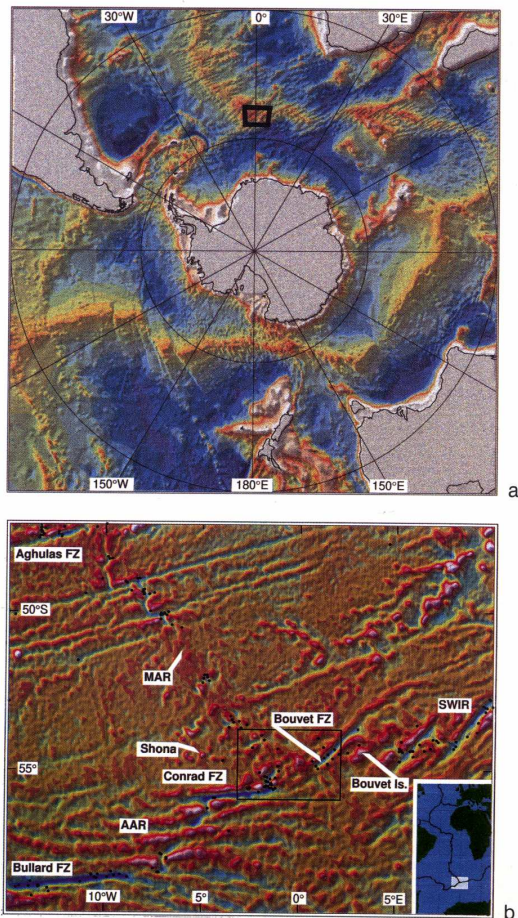


Figure 1.

Transform (RFF)-type during the last 20 m.y., except for episodic shifts to a Ridge-Ridge-Ridge (RRR)-type configuration.

The Mid Atlantic Ridge (MAR), the American/Antarctic Ridge (AAR) and the South-West Indian Ridge (SWIR) converge in the Triple Junction. They are among the slowest ridges on Earth, with half-spreading rates of 1.6, 0.9 and 0.83 cm/yr, respectively (Sclater et al. 1976). The island of Bouvet, located close to the Triple Junction, has been considered to be the surficial expression of a mantle plume (Morgan 1972) that may have influenced the topography and composition of the westernmost SWIR and easternmost AAR (Le Roex 1987). The geology of the southernmost MAR segment may also have been influenced by plumes, such as the hypothetical Shona plume and/or the Discovery plume (Le Roex 1987; Douglass et al. 1995; Small 1995).

Two expeditions were carried out in 1994 and 1996 to the Bouvet Region by the Istituto di Geologia Marina of the Italian Research Council (CNR) and the Moscow's Geology Institute of the Russian Academy of Science, under the sponsorship of the Italian Antarctic Research Program (Fig. 2a). The

main objectives of this work were to define the structural, morphological and petrographical differences of the three divergent margins that meet in the Bouvet region, and to determine the evolution in space and time of the Triple Junction.

Our first 1994 cruise to the Bouvet region was carried out with the R/V Akademik Strakhov; the second took place in 1996 with the R/V Gellendzhik. We present here a report on both cruises, including some preliminary results obtained by on-board data processing and analysis of high resolution swath bathymetry, heat flow measurements, magnetometric, gravimetric and seismic reflection profiles. Rock samples were also dredged in both our cruises (Fig. 2b).

2 METHODS

Navigation was tracked with a Global Positioning System (GPS) Navstar satellite navigation system, with an uncertainty of ~ 50 m. Morphobathymetry was obtained during the 1994 cruise with a 15-beams Finnyard Echos 625 multibeam, covering an area of sea floor roughly equal to 2/3 of water depth. During the 1996 cruise we employed a Simrad EM12S, 81-beams system, with a swath approximately 3 to 4 times water depth. Processing of the multibeam data was carried out with the NEPTUNE-IRAP software by SIMRAD. The data underwent several cleaning and filtering steps before production of final grids and maps. In addition, we used the GMT (Wessel & Smith 1998) and PLOTMAP (Ligi & Bortoluzzi 1989) programs to produce other grids and maps.

Gravity was measured by a set of 4 quartz thermally stabilized MOD GMN-K gravimeters assembled by Vniigeofizika in Gelendzhik, Russia, mounted on gyroscopic platforms close to the ship's center of gravity, 0.7 m above sea level. Resolution was of 0.04 mGal. The instruments were calibrated on known reference points with a portable Lacoste and Romberg G-327 gravimeter. Two sets of magnetic data were recorded continuously by two towed magnetometers, one a Mod GSM-19MD of GEM, Ontario, the other a Proton Precession model MPM-7 built by NIPI Okeangeofizika.

Multichannel seismic reflection profiles were obtained during the 1994 cruise, employing two Soderia GI guns as sound source and a 24 channel streamer, with a group interval of 25 m. The near-offset was 150 m and shot interval was 50 m, allowing sixfold coverage. Digital acquisition was carried out with a Geometrics 2420, with a sampling rate of 1 ms, a record length of 11 s and an antialias filter of 180 Hz. This system operated at speed of between 4 and 5 knots. A single channel, 50 meters-long streamer was operated during multibeam surveys at 10 knots. Multichannel seismic data were processed at the Istituto di Geologia

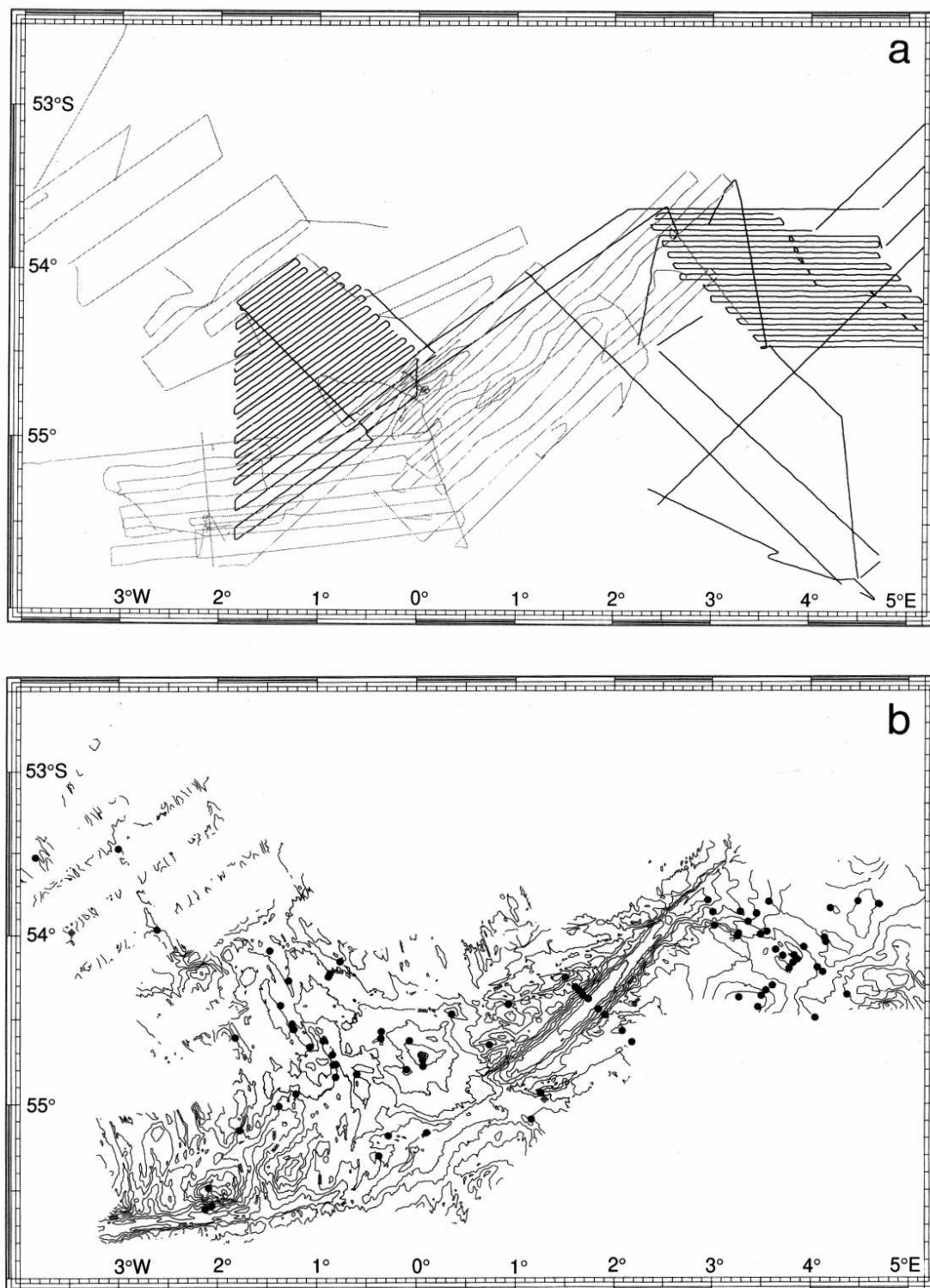


Fig. 2 - a, navigation tracks (black lines belong to 1994 cruise; gray ones the 1996 cruise); b, location of dredge and heat-flow stations. Isobaths every 500 meters.

Figure 2.

Marina, CNR Bologna, using an industry-standard package (DISCO by Cogniseis).

Heat flow measurements were performed by core sampling with the system GRUNT, designed and assembled at the Thermal Exploration Laboratory (NIPI Okeangeofizika), Gelendzhik, Russia. The sea-going part (KADR-1M) incorporates: a) a corer that ensures the recovery of undisturbed sediments, b) a self-recording thermogradiometer (ACTM-1), c) deepwater camera and bathometer for nearbottom water sampling. The shipboard module consists of a programmable control and recording unit ensuring programming of self recording instruments, readout, visualization, processing, and storage of measurements results. An automated geotechnical module (NGM-1) was also available for engineering and physical parameter measurements on the cores.

Rock sampling was carried out by conventional dredging.

3 GEOLOGICAL SETTING

Bathymetry and satellite gravimetry from the literature, i.e., Johnson et al. (1973), Sclater et al. (1976) and Sandwell & Smith (1997) already highlighted the main morphological structure of the south Atlantic around the Bouvet Triple Junction. Our new high-resolution morphobathymetry data cover the area from about 53S to 55:50'S, and 4W to 5:40E (Fig. 3). The Bouvet region can be divided into four main areas, namely (a) the southernmost segment of the MAR, (b) the westernmost segment of the SWIR, (c) the easternmost segment of the AAR and (d) the Triple Junction area s.s.

(A) THE SOUTHERNMOST SEGMENT OF THE MAR

The Mid Atlantic Ridge south of 54S was surveyed during both the 1994 and 1996 expeditions (Fig. 3). It is characterized by three short and partially overlapping spreading segments. The axial topography of these segments is more elevated than that of "normal" portions of the MAR further to the north; moreover, a well formed axial rift valley is absent. The distribution of the magnetic anomalies suggests that these segments are presently active (Fig. 4); therefore, deformation in the overlapping areas is to be expected. Basaltic glass was sampled at the axis of these MAR segments; preliminary analyses suggest that they are of N-MORB type, with low concentration in Na₂O, K₂O and TiO₂. Samples collected to the north-east, i.e. well into the African plate, are instead of the E-MORB type (Simonov et al. 1996).

(b) The westernmost SWIR

The SWIR is offset by 200 km at the Bouvet Fracture Zone, which is marked by a northeast-southwest trending transform valley, as deep as 5000 m below sea level, and characterized by steep walls with an average gradient of 37%. Samples dredged from the walls are mainly basalts, gabbros and peridotites with variable degree of serpentinization. The northern wall is bounded by east-west striking structural highs, that may be related to intense block faulting resulting from complex interaction between the Antarctic and African plate. The short segment of the SWIR north of Bouvet island is characterized by anomalously low depths, probably related to the presence of the Bouvet hot-spot, which induces a generalized swelling in the ocean floor. The Bouvet F. Z. ends abruptly towards the southwest, against the Spiess volcanic system, that constitutes the anomalous westernmost segment of the SWIR.

The Spiess volcanic system (Fig 3) rises up to 320m below sea level and has on its summit an elliptical east-west oriented caldera; the overall volcanic complex is also elliptical but oriented roughly perpendicular to the Bouvet FZ., and is characterized by an intense positive axial magnetic anomaly (Fig. 4). The presence of enriched ferrobasalts (Roex et al. 1982; Le Roex 1987) may contribute to the strong axial anomaly. We argue that the Spiess volcanic system is a young (~ 1 my old) NW-propagating ridge resulting from major magmatic events, that have modified the plate boundary geometry in the triple Junction region (Ligi et al. 1997).

(c) The easternmost AAR

The easternmost segment of the AAR connects the Conrad F.Z. with the Triple Junction area. The Conrad FZ. offsets the AAR by roughly 200 km; it runs almost in E-W direction at 55S (Fig 3). Its east end intersects the AAR axis at 1:45'W forming a well developed nodal basin (> 5000 m deep) and a prominent high inside corner (~ 1000 m b.s.l.). On the opposite (eastern) side of the AAR axis another broad relief occurs (~ 2000 m b.s.l.), perhaps a relict high inside corner. The N-S direction of the AAR axis at the eastern Conrad FZ. intersection changes to a SW-NE orientation toward the Triple Junction area. This oblique AAR segment forms a broad depression (4000 m deep, 5 km wide) that may be interpreted as a transtensional basin. The presence of strike slip tectonics may be inferred from the curved segments of seafloor relative to the MAR axis in this area.

Two dredge stations, performed on the high inside corner, recovered basalts, gabbros and peridotites,

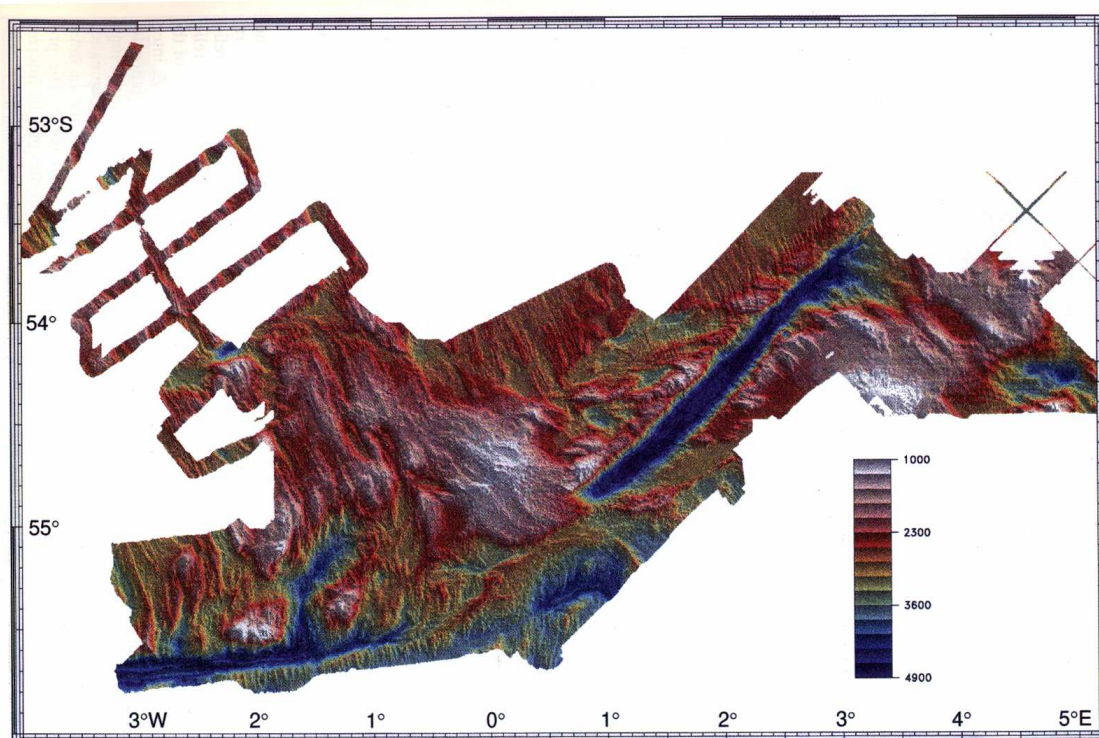


Fig. 3 - Shaded-relief morphostructural image of the Bouvet Triple Junction region, based on 1994 and 1996 multibeam surveys.

Figure 3.

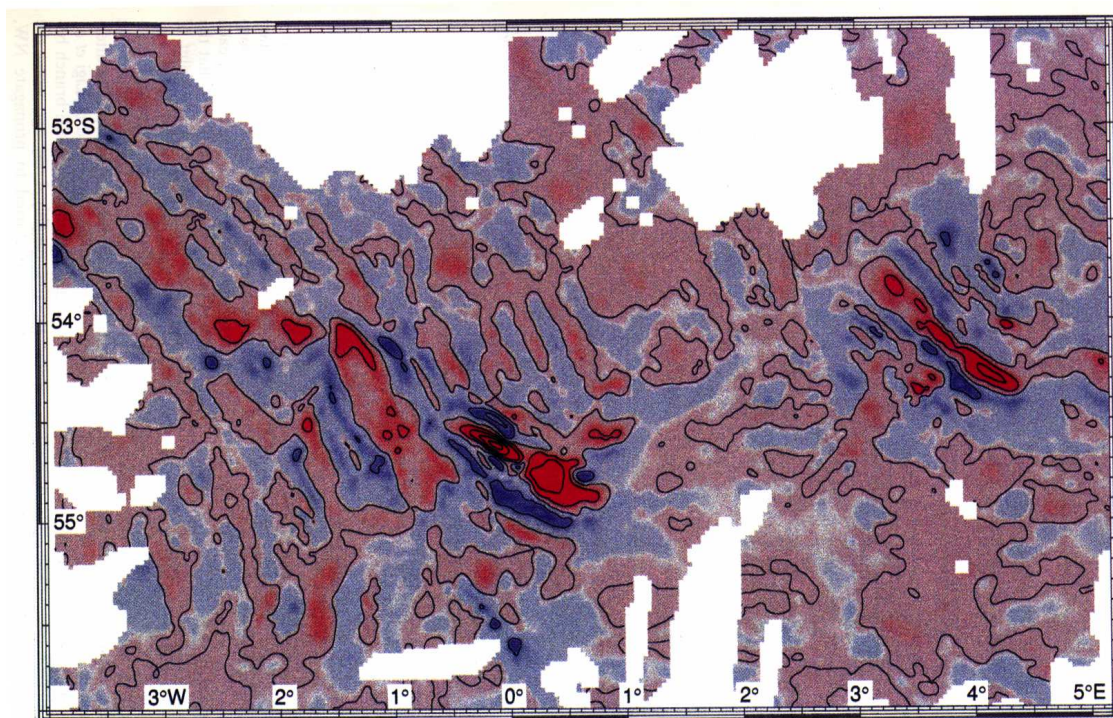


Fig. 4 - Distribution of magnetic anomalies in surveyed area.

Figure 4.

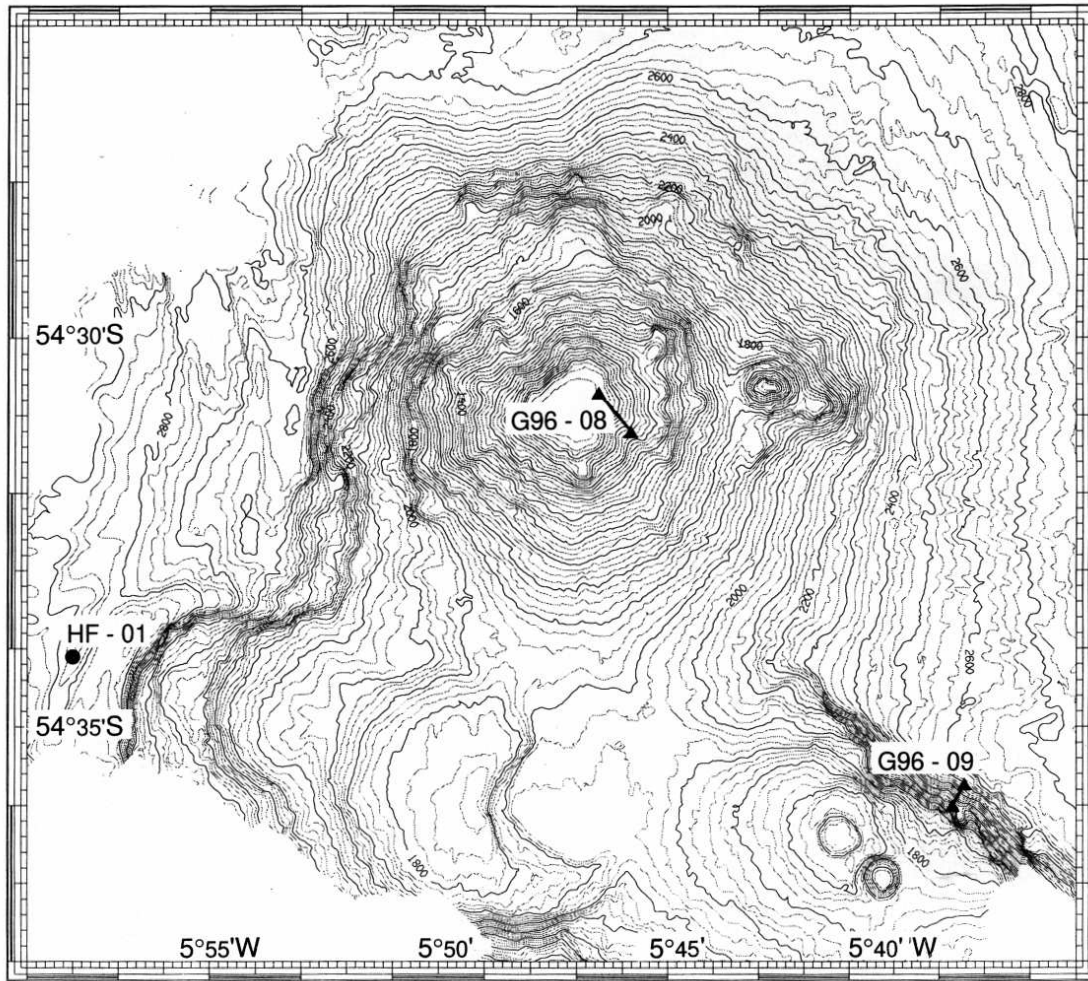


Fig. 5 - Bathymetric map of Shona Seamount and location of dredge and heat-flow stations.

Figure 5.

(d) The Triple Junction area s.s.

Multibeam data show that the southernmost segment of MAR axis bifurcates approximately at the Triple Junction location as suggested by (Sclater et al. 1976), forming a sort of reversed Y. These two southern axial branches are elongated depressions oriented NW-SE and N-S, respectively. Recent accretionary activity in both branches is suggested by high acoustic reflectivity in back-scatter data, (indicating the absence of sedimentary cover within these throughs), and by a positive magnetic anomaly associated with each branch. A possible interpretation is that the Triple Junction is presently at the point of bifurcation of the southernmost MAR segment (Figs. 3 and 4). If we accept this interpretation, the Bouvet Triple Junction is presently of RRR type. An alternative interpretation, discussed by Ligi et al. (1997), suggests that the NW-SE branch became inactive roughly 1 my ago when the Spiess segment started

to propagate NW, disrupting the previous geometry of the plate boundaries converging towards the Triple Junction.

Shona Seamount

The Shona seamount region, located roughly at 54:32'S, 5:50'W (Small 1995; Douglass et al. 1995) was mapped and sampled during our 1996 cruise (Fig. 6). The investigated area shows two distinct volcanic seamounts. The main seamount is a circular, flat-topped volcano, 9 km in diameter at the base, that reaches 925 m b.s.l. It is flanked to the east by two small adventive cones (less than 1 km in diameter) that reach about 1500 m b.s.l. Altered aphyric and fresh vesicular phyric basalts, dolerites and basaltic breccias have been dredged on the southeastern flank. The second seamount, 1650 m deep, is located SE of the main one. Its summit has two craters, less than 1 km in diame-

ter and 100 m deep. This southern volcanic structure is bordered by a NW-SE trending steep scarp where rocks similar to those sampled on the main seamount have been dredged.

We performed two heat flow measurements near the Shona seamount. The first (HF01) is located south-west of the main cone (Fig. 5). The second one (HF-02) is located north east of the seamount, and the gravity core recovered diatomitic layers interbedded with volcanoclastic levels and is showed in Fig. 6.

4 ROCK SAMPLING

A total of ninetyone dredge stations were carried out during the 1994 and 1996 cruises, of which seventysix were successful, the others being empty or lost. The recovered rocks represent a broad spectrum of oceanic crust and the upper mantle samples, including phyric and aphyric basalts, dolerites, fine and coarse grained gabbros, more or less serpentinized peridotites, tectonized basalts, basaltic breccias and glacial erratics (intrusive and metamorphic rocks) from the Antarctic continent. Fresh glasses were recovered from spreading axial zones. Locations, depths and a brief description of the dredged material is presented in the Appendix (Tables 2, 3, 5, 6).

Data analysis from S18 cruise (Tables 8 and 9 by Simonov et al. (1996)) are reported in Appendix 7.2.

5 HEAT FLOW

We performed five heat-flow measurements at locations shown in Fig. 2. Heat flow data were obtained by the separate measurements of the geothermal gradient g (K/m) and conductivity $\gamma W m^{-2} K$ in the sediment. After penetrating the sediment the system was held in position at least 15 minutes to reach equilibrium. The heat flow q is calculated as:

$$q = -\gamma\lambda(mWm^{-2})$$

Coordinates, depths and calculated values of q are shown in Tab.1, whereas a simplified sketch of the sediment cores collected during the heatflow measurements are shown in Fig. 6.

6 CONCLUSIONS

Processing and evaluation of our geophysical data, presently in progress, will clarify the complex interactions between the African, South-American and Antarctic lithospheric plates in the Bouvet region. The variability in space and time of the geometry of the plate boundaries and the anomalous topography of the three ridge systems, may be explained in part by the presence of widespread melting/thermal anomalies in the upper mantle below

Station	Lat	Lon	Depth	q (mW m ⁻²)
HF-01	-5434.1	-0559.0	1860	116.0
HF-02	-5415.1	-0500.1	2640	49.0
HF-03	-5358.7	-0328.8	2157	89.1
HF-04	-5443.0	-0004.0	811	>430*
HF-05	-5458.5	-0118.0	3270	116

Table 1. Coordinates (ddmm.x) and depths of heat-flow measurements performed during cruise G96 in the Bouvet region. * no probe penetration, heat-flow values was estimated using near bottom water temperature gradient ($\gamma_{w,b}$) and effective thermal conductivity ($\lambda_{eff,w}$).

the Bouvet region, as discussed in the first paper produced by our project (Ligi et al. 1997).

Southern MAR and northwestern SWIR segments, for example, show some features similar to those of fast spreading ridges (overlapping spreading centers, absence of an axial valley, anomalous shallow topography). Bouvet island is considered the surficial expression of a mantle plume (Morgan 1972) an interpretation supported by the geochemistry of basalts from this region (Le Roex 1987).

Geochemical and isotopic work on basaltic glass and ultramafic rock samples is in progress in order to obtain information on the thermal structure and composition of the upper mantle below the entire Triple Junction area.

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Fig. 6 - Simplified sketch of the sediment cores associated to the heat-flow measurements. Thermal conductivity (λ , W/m²K), Vane shear strength (P, hPa) and humidity (W%) of the sediments were measured on board.

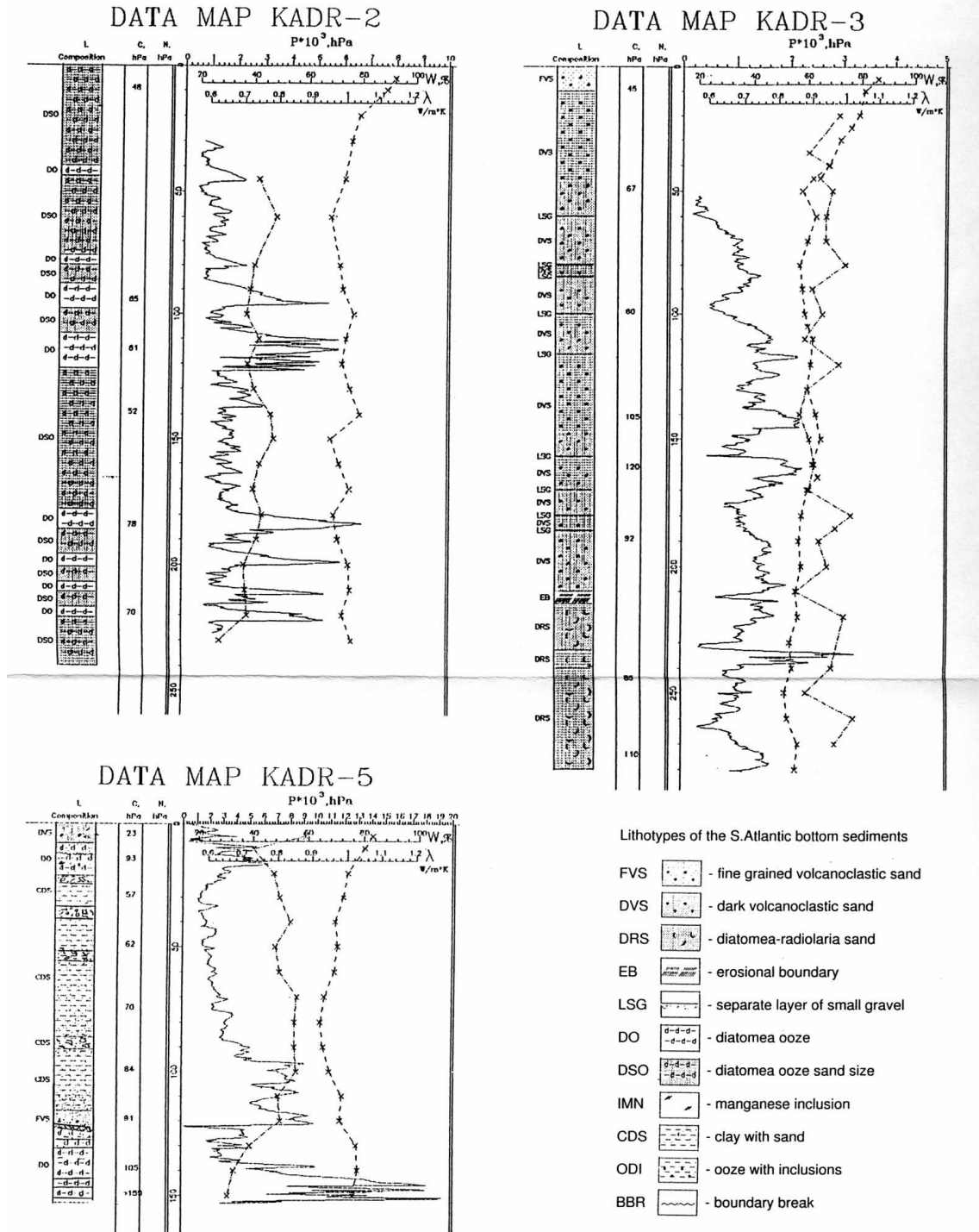


Figure 6.

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7 APPENDIX

7.1 Samples

Table 2: Cruise S18. Samples position.

CRUISE	STATION	DATE	LAT LON START END ddmm.xx	DEPTH START END m	RECOVERY Kg
S18	01	20-feb-94	0047.60 -1309.40 00046.60 -1309.60	4400 4900	60
S18	02	21-feb-94	0107.60 -1123.80 00107.60 -1123.80	4150 4150	0.35
S18	03	23-mar-94	-5415.20 0130.70 -5416.60 00131.50	2200 3000	0.1
S18	04	24-mar-94	-5419.90 0138.60 -5419.40 00138.50	2100 2200	0.1
S18	05	24-mar-94	-5420.40 0140.10 -5420.40 00140.00	2900 3100	0.2
S18	06	24-mar-94	-5422.80 0144.60 -5422.60 00144.00	4900 5200	12
S18	07	24-mar-94	-5421.70 0141.30 -5421.60 00141.30	4000 4200	15
S18	08	24-mar-94	-5418.60 0136.50 -5419.00 00136.80	1500 1550	0.05
S18	09	24-mar-94	-5426.60 0150.70 -5427.40 00150.90	4000 4300	9
S18	10	25-mar-94	-5428.60 0154.70 -5429.20 00154.20	2500 2600	400
S18	11	25-mar-94	-5434.30 0205.30 05434.60 00205.10	2300 2400	10
S18	12	25-mar-94	-5438.20 0211.00 -5438.50 00211.30	2500 2200	5
S18	13	30-mar-94	-5422.30 0316.60 -5422.40 00316.60	150 170	1
S18	14	30-mar-94	-5421.80 0330.20 -5422.20 00329.40	190 420	12
S18	15	31-mar-94	-5408.70 0352.00 -5408.60 00352.10	1680 1780	25
S18	16	31-mar-94	-5409.90 0349.50 -5409.90 00349.90	1640 1700	300
S18	17	31-mar-94	-5412.00 0347.20 -5412.50 00347.40	1450 1500	2.5
S18	18	31-mar-94	-5418.10 0336.90 -5418.40 00336.20	1180 1270	0
S18	19	31-mar-94	-5419.80 0333.00 -5420.30 00332.00	740 900	25
S18	20	31-mar-94	-5425.80 0328.10 -5425.30 00327.40	35 140	2.5
S18	21	31-mar-94	-5429.60 0402.60 -5429.60 00402.00	2600 2830	30
S18	22	1-apr-94	-5421.30 0422.10 -5421.00 00423.50	3000 3200	12
S18	23	1-apr-94	-5413.30 0407.40 -5412.80 00403.90	2000 2200	Empty
S18	24	1-apr-94	-5411.60 0404.10 -5411.10 00401.80	1800 2050	11
S18	25	1-apr-94	-5405.20 0339.20 -5405.20 00338.00	1600 1800	40
S18	26	1-apr-94	-5358.70 0334.00 -5358.80 00333.90	2300 2340	1.5
S18	27	1-apr-94	-5351.50 0317.80 -5351.90 00317.00	3480 3600	5
S18	28	2-apr-94	-5347.30 0257.90 -5348.80 00257.00	4170 4350	2
S18	29	08-apr-94	-5347.90 0335.20 -5348.20 00337.20	2400 2950	500
S18	30	8-apr-94	-5352.20 0327.50 -5351.80 00328.10	2775 2900	120
S18	31	8-apr-94	-5355.10 0322.50 -5355.50 00322.10	2800 3080	200
S18	32	8-apr-94	-5359.60 0316.50 -5359.70 00316.60	2100 2200	20
S18	33	9-apr-94	-5400.40 0315.90 -5400.50 00315.90	1450 1550	8
S18	34	9-apr-94	-5356.50 0302.00 -5356.70 00302.10	1900 2030	Empty
S18	35	9-apr-94	-5351.60 0300.90 -5352.20 00300.10	3100 3380	200
S18	36	09-apr-94	-5359.70 0329.90 -5400.90 00330.90	2000 2200	6
S18	37	09-apr-94	-5407.30 0350.20 -5406.90 00349.70	1380 1500	130
S18	38	09-apr-94	-5407.50 0343.40 -5407.70 00342.30	1700 1890	Empty
S18	39	10-apr-94	-5348.90 0442.10 -5348.90 00441.90	1450 1500	Lost
S18	40	10-apr-94	-5347.70 0429.10 -5348.30 00430.40	1300 1580	4
S18	41	10-apr-94	-5348.70 0441.70 -5348.90 00440.80	1350 1540	30
S18	42	10-apr-94	-5350.20 0412.30 -5349.90 00412.50	1400 1600	80
S18	43	11-apr-94	-5402.40 0409.10 -5401.60 00409.00	1700 2000	1
S18	44	11-apr-94	-5400.90 0408.60 -5359.90 00408.40	1380 1600	3
S18	45	11-apr-94	-5404.30 0356.00 -5404.90 00354.90	1900 2200	6
S18	46	19-apr-94	-5436.80 -021.00 -5436.30 -0020.00	1650 1800	
S18	47	19-apr-94	-5434.40 -020.90 -5434.70 -0021.30	1630 1680	0.1
S18	48	20-apr-94	-5450.40 -048.40 -5450.50 -0048.70	2600 2660	300
S18	49	20-apr-94	-5446.00 -048.10 -5445.80 -0049.10	2200 2300	
S18	50	20-apr-94	-5446.10 -049.80 -5446.20 -0050.50	2000 2100	40
S18	51	20-apr-94	-5442.50 -050.20 -5442.70 -0050.60	2300 2400	500
S18	52	20-apr-94	-5437.70 -055.90 -5437.10 -0057.10	2450 2150	150
S18	53	20-apr-94	-5439.80 -103.80 -5440.00 -0104.90	2550 2700	40
S18	54	20-apr-94	-5456.40 -112.30 -5456.10 -0111.80	2750 3150	300
S18	55	21-apr-94	-5500.80 -122.70 -5500.80 -0123.20	3200 3500	110
S18	56	21-apr-94	-5509.20 -146.50 -5509.00 -0149.10	1700 2800	140
S18	57	21-apr-94	-5436.50 -149.40 -5436.90 -0150.30	2000 2700	70

S18	58	21-apr-94	-5433.60 -113.90 -5433.80 -0115.80	2100 2440	Empty
S18	59	22-apr-94	-5433.60 -113.60 -5433.70 -0114.20	2400 2500	Empty
S18	60	22-apr-94	-5425.10 -121.70 -5425.30 -0121.70	2000 2100	0.3
S18	61	22-apr-94	-5431.60 -114.70 -5431.90 -0117.80	1700 2500	0.1
S18	62	22-apr-94	-5416.20 -116.80 -5415.90 -0117.20	2560 2620	25
S18	63	22-apr-94	-5410.30 -123.40 -5410.20 -0124.40	2700 2750	120
S18	64	22-apr-94	-5405.50 -128.40 -5405.80 -0129.10	2800 2900	0.5
S18	65	23-apr-94	-5413.80 -052.00 -5413.20 -0054.90	2300 2500	Empty
S18	66	23-apr-94	-5414.90 -052.90 -5414.60 -0051.90	2400 2300	0.4
S18	67	23-apr-94	-5409.40 -045.70 -5407.90 -0047.00	2050 2600	3

Table 3: Cruise S18. Samples description.

CRUISE	STATION	WHERE	DESCRIPTION ; NOTES
S18	01	Romanche FZ	Basalts 50%; Fe-Mn concretions 48%; gabbro-dolerites 2% ;
S18	02		; Sand, mud
S18	03	Bouvet FZ ,N transverse ridge, N slope	; Sand
S18	04	Bouvet FZ, N slope	; Sand
S18	05		Sandstone pebble (0.5cm) ; Sand
S18	06		Basalts 60%; dolerites, gabbro-dolerites 30%; sedimentary breccia 7%; glacial erratics 3% ;
S18	07		Basalts, dolerites 50%; sandstones 40%; glacial erratics 10% ;
S18	08		Basalt (1.5cm), dolerite (2cm) ;
S18	09	Bouvet FZ, S slope	Peridotites 60%; basalts 30%; glacial erratics 10% ;
S18	10		Basalts, dolerites 70%; peridotite 20%; sandstones 1%; glacial erratics 9% ; Mud
S18	11	Antarctic plate near Bouvet FZ	Basalts, dolerites 50%; sandstones 2%; sedimentary breccia 2%; Fe-Mn cores on peridotites 2%; glacial erratics 44% ;
S18	12		Consolidated clay with basalt particles, sandstones ;
S18	13	N-E slope of Bouvet Is.	Rounded basalts 98%; sedimentary breccia (4 cm); glacial erratic (3 cm) ;
S18	14		Basalts, some are rounded 95%; sedimentary conglomerate of basalt particles 5% ;
S18	15	W slope of neovolcanic rise in rift valley	Basalts, some are rounded 95%; volcanic breccia (3 cm); sandstone (3 cm); glacial erratics (10 cm) ;
S18	16	E slope of rift valley (bottom)	Basalts ;
S18	17	E slope of rift valley (top)	Rounded basalts 97%; sandstone (4 cm); glacial erratics 3% ;
S18	18	N-E slope of Bouvet Is.	; Sand
S18	19		Basalts, some are rounded 70%;coarse grained sandstones 30% ;
S18	20		Rounded basalts 99%; sandstones 1% ;
S18	21	Scarp 25 miles to the S-E from Bouvet Is.	Basalts, some are rounded 80%; consolidated clay 18%; glacial erratics 2% ;
S18	22	W slope of rift valley	Basalts ;
S18	23		;
S18	24		Basalts, some are rounded 94%; consolidated clay (15 cm); glacial erratics 5% ;
S18	25		Basalts 75%; consolidated clay 25% ;
S18	26	Bottom of rift valley	Dolerite (12 cm) ;
S18	27	E slope of neovolcanic rise in rift valley	Basalts ;
S18	28	Inside ridge-transform corner, low part of the slope	Peridotite (10 cm); siltstone (5 cm) ;
S18	29	Ridge 10 miles E from rift valley, W slope	Basalts 95%; sedimentary breccia 3%; glacial erratics 2% ;
S18	30	E slope of rift valley	Basalts 99%; glacial erratics 1% ;
S18	31	W slope of rift valley	Basalts ;
S18	32	Ridge 10 miles W from the rift valley, E slope	Basalts, dolerites 95%; sedimentary breccia 5% ;
S18	33		Sedimentary breccia, sandstones 100% ;
S18	34	Inside ridge-transform corner, middle-upper part of the slope	;

S18	35		Dolerites 90%; peridotites 9%; gabbro (20 cm) ;
S18	36	W slope of rift valley	Rounded gabbro (15 cm); basalt (4 cm) ;
S18	37	E slope of rift valley	Basalts 98%; sedimentary breccia 2% ;
S18	38	W slope of rift valley	;
S18	39	Hill 32 miles E from rift valley, E slope	;
S18	40	Hill 32 miles E from rift valley, W slope	Basalts, most are rounded 98%; glacial erratics 2% ;
S18	41	Hill 32 miles E from rift valley, E slope	Basalts, some are rounded 80%; sedimentary breccia, tuff, rounded 8%; gabbrodolerite (20 cm); glacial erratics 2% ;
S18	42	Hill 23 miles E from rift valley, W slope	Basalts ;
S18	43	Ridge 12 miles E from rift valley, W slope	Rounded basalts 98%; sulfide ore breccia (5 cm); glacial erratics 1% ;
S18	44		Basalts, some are rounded 20%; sandstones 80% ;
S18	45	Ridge E side of rift valley, E slope	Basalts, some are rounded 95%; sedimentary breccia (5 cm); gabbro (4 cm); glacial erratics 2% ;
S18	46	Spiess ridge, E slope	;
S18	47	Spiess ridge. E top	Basalt glass ;
S18	48	W slope of rift valley	Basalts ;
S18	49		Plagiogranite pebble ;
S18	50		Basalts ;
S18	51		Basalts ;
S18	52		Basalts ;
S18	53		Basalts ;
S18	54	Valley 30 miles W from rift valley, W slope	Basalts, dolerites 99%; sedimentary breccia 1%; glacial erratics 0.5% ;
S18	55	Valley 40 miles W from rift valley, W slope	Basalts, dolerites 70%; gabbros 30% ;
S18	56	Hill 35 miles E from rift valley, E slope	Basalts, dolerites ;
S18	57	Hill 30 miles E from rift valley, E slope	Basalts, dolerites 95%; glacial erratics 5% ;
S18	58	W slope of rift valley	;
S18	59		;
S18	60		Basalt glass (4 cm); granite pebble ;
S18	61		Basalts, basalt glass ;
S18	62		Basalts ;
S18	63		Basalts ;
S18	64		Basalt glass ;
S18	65		;
S18	66	Ridge E side of rift valley, E slope	Basalts ;
S18	67	Ridge 25 miles E from rift valley, W slope	Basalts; glacial erratics ;

Table 4: Cruise S18. Subsamples description.

CRUISE	SAMPLE	SUB	DESCRIPTION
S18	1	1	Basalto afirico
S18	1	13-18	Nodulo di ferromanganese con nucleo di Basalto
S18	1	19	Eccezionale campione di noduli di ferromanganese: si tratta di diverse sfere unite assieme dalla matrice carbonatica e dagli ossidi
S18	1	20	Breccia basaltica coperta da una crosta di ferromanganese (da tale campione sono stati
S18	1	22-24	Nodulo di ferromanganese
S18	6	1-3	Basalto (2 campioni)
S18	6	4	Basalto
S18	6	5	Campione destinato ai Russi
S18	6	6	Basalto
S18	6	7	Campione destinato ai Russi
S18	6	8	Basalto
S18	6	9	Campione destinato ai Russi
S18	6	10	Campione destinato ai Russi
S18	6	11	Basalto (2 campioni)
S18	6	12	Campione destinato ai Russi
S18	6	13-16	Basalto
S18	6	17	Basalto (2 campioni)
S18	6	18	Basalto
S18	6	19	Campione destinato ai Russi
S18	6	20-23	Basalto
S18	6	24	Campione destinato ai Russi
S18	6	25-29	Basalto
S18	6	30	Gabbro norite
S18	6	31-32	Campione destinato ai Russi
S18	6	33-34	Gabbro dolerite
S18	6	35	Gabbro
S18	6	36-37	Campione destinato ai Russi
S18	6	38	Metagabbro
S18	6	39	Scisto verde
S18	6	40	Gabbro dolerite
S18	6	41	Campione destinato ai Russi
S18	6	42	Sedimenti compattati
S18	7	1-2	Basalto vascolato (pillow?)
S18	7	3	Campione destinato ai Russi (* Basalto)
S18	7	4	Basalto vascolato (pillow ?)
S18	7	5	Basalto (*)
S18	7	6-7	Basalto
S18	7	8	Campione destinato ai Russi (* Basalto)
S18	7	9	Basalto (*)
S18	7	10	Basalto metasomatizzato (*)
S18	7	11-12	MetaBasalto
S18	7	13	Basalto (*)
S18	7	14	Basalto
S18	7	15	Basalto (\$)
S18	7	16	Basalto
S18	7	17	Metagabbro
S18	7	18	Metagabbro (*)
S18	7	19-20	Basalto
S18	7	21	Metagabbro (*)
S18	7	22	Quarzite
S18	7	23	Basalto (*)
S18	7	24	Metasomatite
S18	7	25	Metagabbro
S18	7	26	Aplite ?
S18	7	27	Granito alterato (*)

S18	7	28	Granito (*)
S18	7	29	Porfiroide
S18	7	30	Granito (* interessante)
S18	7	31	Gneiss (*)
S18	7	32	Gneiss a granati (*)
S18	7	33-34	Arenaria
S18	7	35-38	Scisto nero
S18	7	39-41	Sedimenti (torbidite ?)
S18	7	42	porzione extra di sedimenti
S18	8	1	Arenaria
S18	8	2	Basalto (*)
S18	9	1-2	Harzburgite alterata (*)
S18	9	3	Harzburgite alterata (con stress tettonico)
S18	9	4-6	Harzburgite alterata (*)
S18	9	7-8	Campione destinato ai Russi
S18	9	9	Harzburgite alterata (*)
S18	9	10-11	Campione destinato ai Russi
S18	9	12	Harzburgite alterata
S18	9	13-14	Campione destinato ai Russi
S18	9	15	Harzburgite alterata
S18	9	16	Harzburgite serpentizzata (campione doppio) (*)
S18	9	17	Harzburgite serpentizzata (* interessante)
S18	9	18-19	Campione destinato ai Russi
S18	9	20	Harzburgite poco serpentizzata
S18	9	21	Campione destinato ai Russi
S18	9	22	Harzburgite poco serpentizzata
S18	9	23-26	Campione destinato ai Russi
S18	9	27	Serpentinite
S18	9	28-31	Campione destinato ai Russi
S18	9	32	Serpentinite
S18	9	33	Serpentinite metasomatizzata
S18	9	34-37	Serpentinite
S18	9	38	Campione destinato ai Russi
S18	9	39	Basalto (campione doppio) (* alterato)
S18	9	40	Basalto (* alterato)
S18	9	41	Basalto (*)
S18	9	42-43	Basalto
S18	9	44	Arenaria fine
S18	9	45	Arenaria grossolana
S18	9	46	Riolite
S18	9	47	Aplite (*)
S18	9	48	Gneiss (*)
S18	9	49	Campione destinato ai Russi
S18	9	50	Gneiss
S18	10	1-6	Pillow lava
S18	10	7	Vetro vulcanico
S18	10	8	Pillow lava
S18	10	9	Campione destinato ai Russi
S18	10	10-11	Pillow lava
S18	10	12-18	Vetro vulcanico
S18	10	19	Basalto
S18	10	20	Pillow lava + Glass
S18	10	21	Vetro vulcanico
S18	10	22-23	Basalto
S18	10	24	Basalto (*)
S18	10	25	Basalto
S18	10	26	Basalto (*)
S18	10	27-30	Basalto
S18	10	31	Basalto (*)
S18	10	32-44	Basalto
S18	10	45	Basalto (*)

S18	10	46-49	Basalto
S18	10	50	Basalto (*)
S18	10	51	Basalto (*)
S18	10	52-57	Basalto
S18	10	59-61	Basalto
S18	10	62	Lavabasaltica (Pillow ?)
S18	10	63	Lava basaltica (Pillow ?) (*)
S18	10	64-65	Lava basaltica (Pillow ?)
S18	10	66	Basalto (* alterato)
S18	10	67	Basalto
S18	10	68	Campione destinato ai Russi
S18	10	69-70	Basalto
S18	10	71	Breccia basaltica (* alterata)
S18	10	72-76	Basalto
S18	10	77	Basalto (pillow)
S18	10	78	Basalto
S18	10	79	Basalto (* interessante)
S18	10	80-82	Basalto
S18	10	83	Basalto (*)
S18	10	84-89	Basalto
S18	10	90	Basalto (* serpentinite! !??)
S18	10	91-104	Basalto
S18	10	105	Basalto (*)
S18	10	106	Basalto (* roccia metamorfica !!??)
S18	10	107	Basalto (* interessante)
S18	10	108-111	Basalto
S18	10	112	Basalto (*)
S18	10	113-119	Basalto
S18	10	120	Breccia basaltica
S18	10	121-123	Basalto
S18	10	124	Breccia basaltica
S18	10	125	Basalto
S18	10	126	Basalto (* alterato con forse inizio retrometamorfismo)
S18	10	127-129	Basalto
S18	10	130	Basalto (*)
S18	10	131-133	Basalto
S18	10	134-135	Campione destinato ai Russi
S18	10	136	Basalto
S18	10	137-141	Basalto
S18	10	142	Basalto (* alterato)
S18	10	143	Basalto (*)
S18	10	144	Basalto
S18	10	145	Basalto con fenocristalli (*)
S18	10	146	Basalto
S18	10	147	Basalto (*)
S18	10	148	Basalto
S18	10	149	Basalto (*)
S18	10	150	Basalto
S18	10	151	Campione destinato ai Russi
S18	10	152	Basalto con fenocristalli (*)
S18	10	153	Basalto (*)
S18	10	154	Basalto (\$)
S18	10	155-156	Basalto
S18	10	157	Campione destinato ai Russi
S18	10	158	Basalto (\$)
S18	10	159-160	Basalto (*)
S18	10	161	Breccia basaltica (*)
S18	10	162	Basalto
S18	10	163	Basalto livinico (\$)
S18	10	164	Basalto (*)
S18	10	165	Basalto

S18	10	166	Campione destinato ai Russi
S18	10	167	Basalto
S18	10	168	Basalto con fenocristalli (*)
S18	10	169	Basalto con fenocristalli (*)
S18	10	170	Basalto (*)
S18	10	171-173	Basalto
S18	10	174	Basalto (contatto con dolerite) (*)
S18	10	175	Brecciadi Basalto
S18	10	176	Basalto
S18	10	177	Breccia serpentinitica
S18	10	178-179	Basalto
S18	10	180	Breccia basaltica
S18	10	181-184	Serpentinite
S18	10	185	Serpentinite (*)
S18	10	186-193	Serpentinite
S18	10	194	Serpentinite (* con tracce di stress tettonico)
S18	10	195-197	Serpentinite
S18	10	198	Peridotite
S18	10	199	Serpentinite (*)
S18	10	200	Serpentinite
S18	10	201	Serpentinite (*)
S18	10	202-203	Serpentinite
S18	10	204	Harzburgite
S18	10	205	Serpentinite (* con tracce di stress tettonico)
S18	10	206-210	Serpentinite
S18	10	211	Peridotite
S18	10	212	Serpentinite
S18	10	213	Serpentinite tettonizzata
S18	10	214-215	Serpentinite
S18	10	216	Serpentinite (*)
S18	10	217	Peridotite per meta' alterata
S18	10	218	Serpentinite (*)
S18	10	219-223	Serpentinite
S18	10	224-227	Granito
S18	10	228	roccia metasomatizzata
S18	10	229	Arenaria a composizione vulcanica
S18	10	230	Arenaria
S18	10	231-232	Breccia
S18	10	233	Campione destinato ai Russi
S18	11	1	Serpentinite (*)
S18	11	2-3	Basalto (*)
S18	11	4	Basalto
S18	11	5	Basalto (*)
S18	11	6	Los Breccia basaltica (*)
S18	11	7	Quarzite
S18	11	8	Gneiss (2 pezzi)
S18	11	9	Granito
S18	11	10-12	Granito
S18	11	13	Breccia
S18	11	14	Breccia basaltica
S18	11	15	Lava vulcanica (Pillow?)
S18	11	16	Peridotite + crostone di manganese
S18	11	17	Sedimento grossolano
S18	13	1	Basalto
S18	13	2-3	Campione destinato ai Russi
S18	13	4	Basalto
S18	13	5	Campione destinato ai Russi
S18	13	6-8	Basalto
S18	13	9	Campione destinato ai Russi
S18	13	10	Basalto
S18	13	11-12	Campione destinato ai Russi

S18	13	13	Basalto
S18	13	14	Basalto (*)
S18	13	15	Basalto (*)
S18	13	16	Campione destinato ai Russi
S18	13	17-20	Basalto
S18	13	21-24	Basalto (*)
S18	13	25	Basalto
S18	13	26	Basalto (*)
S18	13	27-28	Basalto
S18	13	29	Campione destinato ai Russi (* Basalto)
S18	13	30-31	Basalto (*)
S18	13	32	Basalto
S18	13	33-35	Basalto (*)
S18	13	36-38	Basalto
S18	13	39	Pillow lava ?
S18	13	40-42	Basalto
S18	13	43	Pomice
S18	13	44	Breccia
S18	13	45	Granito
S18	13	46	Basalto (*)
S18	13	47	Basalto s assortiti e piccola pomice
S18	14	1	Basalto (* interessante, cristallo di olivina incluso in plagioclasio)
S18	14	2	Basalto (*)
S18	14	3	Basalto
S18	14	4-6	Basalto (*)
S18	14	7	Basalto
S18	14	8	Basalto (*)
S18	14	9	Basalto (*)
S18	14	10-13	Basalto
S18	14	14	Basalto (*)
S18	14	15	Basalto (*)
S18	14	16-17	Basalto
S18	14	18-19	Campione destinato ai Russi
S18	14	20-21	Basalto
S18	14	22	Basalto (*)
S18	14	23-24	Basalto
S18	14	25-26	Campione destinato ai Russi
S18	14	27-28	Basalto
S18	14	29	Basalto (*)
S18	14	30-31	Basalto
S18	14	32	Campione destinato ai Russi
S18	14	33	Basalto
S18	14	34	Campione destinato ai Russi
S18	14	35	Basalto
S18	14	36	Campione destinato ai Russi
S18	14	37-38	Basalto
S18	14	39-40	Campione destinato ai Russi
S18	14	41-42	Basalto
S18	14	43	Campione destinato ai Russi
S18	14	44	Basalto (\$)
S18	14	45-46	Basalto
S18	14	47	Basalto (* interessante)
S18	14	48	Basalto (* fresco)
S18	14	49	Basalto (* alterato con strutture scheletriche in pasta di fondo)
S18	14	50	Basalto
S18	14	51	Basalto (* alterato)
S18	14	52-55	Basalto
S18	14	56	Campione destinato ai Russi
S18	14	57	Basalto
S18	14	58	Campione destinato ai Russi (* breccia basaltica)

S18	14	59-68	Breccia
S18	15	1	Basalto pillow + Glass
S18	15	2-3	Basalto pillow + Glass (*)
S18	15	4	Basalto pillow + Glass
S18	15	5	Basalto pillow (* interessante)
S18	15	6-7	Basalto pillow
S18	15	8-10	Basalto
S18	15	11	Basalto (*)
S18	15	12-13	Basalto
S18	15	15-16	Basalto
S18	15	17	Basalto (*)
S18	15	18	Basalto rossastro (*)
S18	15	19	Quarzite rosa
S18	16	1	Basalto pillow + campione di Basalto pillow del peso di circa 60 Kg destinato a museo
S18	16	2	Basalto
S18	16	3	Basalto (*)
S18	16	4-6	Basalto
S18	16	7	Basalto (*)
S18	16	8	Basalto (*)
S18	16	9	Basalto
S18	16	10	Basalto (*)
S18	16	11	Basalto
S18	16	12	Basalto (*)
S18	16	13-14	Basalto
S18	16	15	Basalto (*)
S18	16	16	Basalto + Glass (*)
S18	16	17-30	Basalto
S18	16	31	Campione destinato ai russi
S18	16	32	Basalto
S18	16	33	Basalto
S18	16	34	Campione destinato ai russi
S18	16	35-36	Basalto
S18	16	37	Basalto (\$)
S18	16	38-52	Basalto
S18	16	53	Campione destinato ai russi
S18	16	54-57	Basalto
S18	16	57	Basalto (*)
S18	16	58	Campione destinato ai russi
S18	16	59	Basalto
S18	17	1-2	Basalto
S18	17	3	Basalto (*)
S18	17	4-9	Basalto
S18	17	10	Campione destinato ai russi
S18	17	11	Basalto
S18	17	12	Campione destinato ai russi
S18	17	13	Basalto
S18	17	14	Campione destinato ai russi
S18	17	15	Basalto
S18	17	16	Campione destinato ai russi
S18	17	17	Basalto
S18	17	18	Basalto
S18	17	19	Campione destinato ai russi
S18	17	20-21	Basalto
S18	17	23	Campione destinato ai russi
S18	17	24	Basalto
S18	17	25	Campione destinato ai russi
S18	17	26-27	Basalto
S18	17	28-30	Basalto (*)
S18	17	31-34	Campione destinato ai russi
S18	17	35	Basalto

S18	17	36	Basalto (\$)
S18	17	37-38	Basalto
S18	17	39	Basalto (*)
S18	17	40-46	Basalto
S18	17	47-48	pomice
S18	19	1-4	Basalto
S18	19	5	Basalto (*)
S18	19	6-14	Basalto
S18	19	15-17	Basalto (*)
S18	19	18	Basalto
S18	19	19	Basalto (*)
S18	19	20-22	Basalto
S18	19	23	Basalto (\$)
S18	19	24	Basalto (*)
S18	19	25	Basalto
S18	19	26-27	Basalto (*)
S18	19	28	Basalto
S18	19	29	Basalto (*)
S18	19	30-31	Basalto
S18	19	32	Basalto con minerali secondari
S18	19	33-35	Basalto
S18	20	1	Basalto (*)
S18	20	2	Campione destinato ai russi (*)
S18	20	3-5	Basalto
S18	20	6	Campione destinato ai russi
S18	20	7-8	Basalto
S18	20	9	Basalto (*)
S18	20	10-13	Basalto
S18	20	14	Campione destinato ai russi
S18	20	15-17	Basalto
S18	20	18	Campione destinato ai russi
S18	20	19	Basalto
S18	20	20-21	Campione destinato ai russi (*)
S18	20	22-25	Basalto (*)
S18	20	26	Basalto
S18	20	27	Arenaria
S18	20	28	Breccia (*)
S18	20	29	Campioni extra
S18	21	1	Basalto (*)
S18	21	2	Basalto
S18	21	3	Basalto
S18	21	4	Basalto
S18	21	5	Basalto
S18	21	6	Basalto (*)
S18	21	7	Basalto
S18	21	8	Basalto (*)
S18	21	9	Basalto
S18	21	10	Basalto (*)
S18	21	11	Campione destinato ai russi
S18	21	12	Basalto (*)
S18	21	13	Basalto
S18	21	14	Basalto (*)
S18	21	15-16	Basalto
S18	21	17	Basalto (*)
S18	21	18-20	Basalto
S18	21	21	Basalto (*)
S18	21	22-24	Basalto
S18	21	25	Basalto (*)
S18	21	26	Basalto
S18	21	27-30	Basalto (*)
S18	21	31	Basalto

S18	21	32	Basalto (due campioni)
S18	21	33	Campione destinato ai russi
S18	21	34	Gabbro
S18	21	35	Sedimento + scisto (due campioni)
S18	21	36-37	Granito
S18	21	38	Sedimento
S18	22	1	Pillow lava + Glass (*)
S18	22	2	Pillow lava + Glass
S18	22	3-5	Pillow lava + Glass (*)
S18	22	6	Glass (*)
S18	22	7-8	Campione destinato ai russi
S18	22	9	Basalto
S18	22	10	Basalto + Glass
S18	22	11	Glass (*)
S18	22	12-14	Campione destinato ai russi
S18	22	15	Basalto
S18	22	16	Campione destinato ai russi
S18	22	17	Basalto
S18	22	18	Campione destinato ai russi
S18	22	19	Basalto
S18	22	20	Basalto + Glass
S18	22	21-22	Basalto
S18	22	23-24	Basalto + Glass
S18	22	25-26	Basalto
S18	24	1-5	Basalto (*)
S18	24	6-9	Basalto
S18	24	10-13	Basalto (*)
S18	24	14	Campione destinato ai russi
S18	24	15-21	Basalto
S18	24	22	Campione destinato ai russi
S18	24	23-25	Basalto
S18	24	26	Basalto (*)
S18	24	27	Basalto
S18	24	28	Riolite
S18	24	29	Basalto
S18	24	30-31	Riolite
S18	24	32	Pomice
S18	24	33	Riolite
S18	24	34	Basalto
S18	24	35	Scisto ?
S18	24	36-39	Scisto
S18	24	40	Breccia
S18	24	41-42	Sedimento
S18	25	1-2	Basalto + Glass (*)
S18	25	3	Glass (2 campioni) + Basalto (*)
S18	25	4-5	Basalto (*)
S18	25	6-7	Basalto
S18	25	8	Basalto (*)
S18	25	9-14	Vetro
S18	25	15	Basalto (*)
S18	25	16	Campioni destinati ai russi (*)
S18	25	17	Basalto (*)
S18	25	18	Basalto
S18	25	19-22	Sedimenti
S18	26	1	Basalto (*)
S18	27	1	Campione destinato ai russi (*)
S18	27	2	Basalto (*)
S18	27	3	Basalto
S18	27	4	Basalto (\$)
S18	27	5-6	Basalto
S18	28	1	Harzburgite alterata

S18	28	2	Sedimenti
S18	29	1	Basalto (*)
S18	29	2	Basalto
S18	29	3	Basalto + Glass
S18	29	4	Basalto (*)
S18	29	5	Basalto + Glass (*)
S18	29	6-8	Basalto (*)
S18	29	9-12	Basalto
S18	29	13	Campione destinato ai russi (*)
S18	29	14	Basalto (*)
S18	29	15	Basalto
S18	29	16	Basalto (*)
S18	29	17	Basalto
S18	29	18-23	Basalto (*)
S18	29	24	Campione destinato ai russi
S18	29	25	Basalto (*)
S18	29	26-27	Basalto
S18	29	28	Basalto (*)
S18	29	29-30	Basalto
S18	29	31-32	Basalto (*)
S18	29	33	Basalto
S18	29	34	Basalto (*)
S18	29	35-36	Basalto
S18	29	37-40	Basalto (*)
S18	29	41	Basalto
S18	29	42	Basalto (*)
S18	29	43	Basalto
S18	29	44-48	Basalto (*)
S18	29	49	Basalto
S18	29	50-51	Basalto (*)
S18	29	52	Basalto
S18	29	53-54	Basalto (*)
S18	29	55-57	Basalto
S18	29	58-60	Basalto (*)
S18	29	61	Basalto
S18	29	62	Basalto (*)
S18	29	63	Basalto
S18	29	64	Basalto (\$)
S18	29	65	Basalto
S18	29	66	Basalto (*)
S18	29	67-68	Basalto
S18	29	69	Basalto (*)
S18	29	70-72	Basalto
S18	29	73	Campione destinato ai russi
S18	29	74	Granito
S18	29	75-79	Breccia
S18	29	80	Pomice
S18	29	81	Vulcanite
S18	29	82	Breccia
S18	29	83	Riolite ?
S18	30	1	Basalto (*)
S18	30	2	Basalto + Glass (*)
S18	30	3	Basalto (*)
S18	30	4-9	Basalto
S18	30	10-13	Vetro
S18	30	14-18	Basalto (*)
S18	30	19	Basalto
S18	30	20	Basalto (*)
S18	30	21-26	Basalto
S18	30	27	Basalto (*)
S18	30	28	Basalto

S18	30	29	Basalto (*)
S18	30	30	Basalto
S18	30	31	Basalto (*)
S18	30	32	Campione destinato ai russi
S18	30	33	Basalto (\$)
S18	30	34-36	Campione destinato ai russi
S18	30	37	Basalto
S18	30	38-41	Basalto (*)
S18	30	42	Basalto
S18	30	43	Basalto (\$)
S18	30	44	Basalto
S18	30	45	Breccia (* riolite?)
S18	31	1-6	Basalto
S18	31	7	Basalto (*)
S18	31	8-10	Basalto
S18	31	11	Basalto (*)
S18	31	12	Campione destinato ai russi
S18	31	13	Basalto + Glass
S18	31	14-15	Vetro
S18	31	16	Campione destinato ai russi
S18	31	17	Basalto
S18	31	18	Campione destinato ai russi
S18	31	19	Basalto + Glass
S18	31	20	Campione destinato ai russi
S18	31	21	Basalto + Glass
S18	31	22	Campione destinato ai russi
S18	31	23	Basalto + Glass
S18	31	24-25	Campione destinato ai russi
S18	31	26	Basalto + Glass
S18	31	27	Campione destinato ai russi
S18	31	28	Basalto + Glass
S18	31	29-30	Campione destinato ai russi
S18	31	31	Basalto + Glass
S18	31	32-33	Campione destinato ai russi
S18	31	34-35	Basalto + Glass
S18	31	36	Basalto (*)
S18	31	37-40	Basalto
S18	31	41-42	Basalto (*)
S18	31	43	Basalto (* tre sezioni)
S18	31	44	Basalto (* con olomerofiri interessanti)
S18	31	45-48	Basalto
S18	31	49	Basalto (\$)
S18	31	50-57	Basalto
S18	31	58	Basalto (*)
S18	31	59	Basalto
S18	31	60	Basalto (*)
S18	31	61	Basalto
S18	31	62-64	Basalto (*)
S18	31	65	Basalto
S18	31	66	Arenaria e Basalto (due campioni) (*)
S18	31	67	Basalto (*)
S18	32	1-5	Basalto (*)
S18	32	6	Basalto
S18	32	7-9	Basalto (*)
S18	32	10-11	Basalto
S18	32	12	Basalto (\$)
S18	32	13-17	Basalto
S18	32	18-20	Basalto (*)
S18	32	21	Basalto (* interessante)
S18	32	22	Basalto (*)
S18	32	23	Basalto

S18	32	24-27	Basalto (*)
S18	32	28	Basalto (* interessante)
S18	32	29	Basalto (*)
S18	32	30-31	Basalto
S18	32	32	Basalto (*)
S18	32	33-34	Basalto
S18	32	35	Basalto (*?)
S18	32	36	Basalto (*)
S18	32	37	Campione destinato ai russi
S18	32	38-41	Breccia
S18	33	1-6	Sedimento compattato
S18	33	7	Breccia
S18	33	8-11	Sedimento compattato
S18	35	1	Peridotite (*)
S18	35	2	Peridotite (*)
S18	35	3	Campione destinato ai russi (*)
S18	35	4-5	Peridotite
S18	35	6	Peridotite (*)
S18	35	7	Peridotite (* nella sezione S. un granito?)
S18	35	8	Gabbro ? (* Basalto)
S18	35	9	Basalto (*)
S18	35	10	Basalto (\$)
S18	35	11	Basalto (*)
S18	35	12	Basalto
S18	35	13	Basalto (*)
S18	35	14	Basalto
S18	35	15-17	Basalto (*)
S18	35	18	Basalto
S18	35	19	Basalto (*)
S18	35	20	Basalto
S18	35	21	Basalto (*)
S18	35	22	Basalto
S18	35	23-24	Basalto (*)
S18	35	25	Basalto
S18	35	26	Basalto (*)
S18	35	27-28	Basalto
S18	35	29	Basalto (*)
S18	35	30	Basalto
S18	35	31-32	Basalto (*)
S18	35	33	Basalto
S18	35	34	Basalto (*)
S18	35	35-37	Basalto
S18	35	38	Basalto (*)
S18	35	39	Basalto
S18	35	40	Basalto (*)
S18	35	41	Basalto
S18	35	42	Basalto (*)
S18	35	43-44	Basalto
S18	35	45-46	Basalto (*)
S18	35	47	Basalto
S18	35	48	Basalto (*)
S18	36	1	Gabbro (*)
S18	36	2	Vetro (*)
S18	37	1	Basalto + Glass
S18	37	2	Basalto
S18	37	3	Basalto + Glass
S18	37	4	Basalto (*)
S18	37	5	Basalto (\$)
S18	37	6-7	Basalto + Glass
S18	37	8-10	Basalto
S18	37	11	Basalto + Glass

S18	37	12	Campione destinato ai russi
S18	37	13	Basalto + Glass
S18	37	14	Campione destinato ai russi
S18	37	15-21	Basalto
S18	37	22	Campione destinato ai russi
S18	37	23	Basalto
S18	37	24	Campione destinato ai russi
S18	37	25-28	Basalto
S18	37	29	Campione destinato ai russi
S18	37	30-37	Basalto
S18	37	38	Basalto (*)
S18	37	39	Basalto + Glass (*)
S18	37	40-42	Basalto (*)
S18	37	43	Riolite
S18	37	44	Sedimenti
S18	37	45	Campione destinato ai russi
S18	37	46	Sedimenti
S18	40	3-5	Campione destinato ai russi
S18	40	6-9	Basalto
S18	40	10	Basalto (*)
S18	40	11	Basalto
S18	40	12	Basalto (*)
S18	40	13	Granito
S18	41	1	Basalto (due campioni diversi)
S18	41	2	Basalto (*)
S18	41	3	Monzonite? (*)
S18	41	4	Basalto
S18	41	5	Basalto (*)
S18	41	6	Basalto
S18	41	7	Basalto (*)
S18	41	8	Basalto
S18	41	9	Basalto (*)
S18	41	10-17	Basalto
S18	41	18	Riolite
S18	41	19	Campione destinato ai russi (*)
S18	41	20	Scisto blu (*)
S18	41	21-22	Gneiss
S18	41	23-24	Pomice
S18	41	25	Basalto
S18	42	1-13	Basalto
S18	42	14	Basalto (\$)
S18	42	15-22	Basalto
S18	43	1	Solfuro
S18	43	2	Campione destinato ai russi
S18	43	3	Basalto
S18	43	4	Basalto (*)
S18	43	5	Basalto
S18	43	6	Basalto (*)
S18	43	7	Basalto
S18	43	8	Basalto (*)
S18	43	9	Arenaria
S18	44	1	Basalto (*)
S18	44	2	Basalto
S18	44	3	Basalto (*)
S18	44	4	Basalto
S18	44	5	Basalto (*)
S18	44	6	Basalto
S18	44	7	Basalto (*)
S18	44	8	Basalto (*)
S18	44	9	Riolite
S18	44	10	Basalto

S18	44	11	Breccia? (*)
S18	44	12-16	Sedimenti
S18	45	1	Basalto (*)
S18	45	2	Basalto (*)
S18	45	3	Basalto (* importanti glomerofiri)
S18	45	4	Basalto (*)
S18	45	5	Basalto (* importante osservare presenza carbonati)
S18	45	6-8	Basalto
S18	45	9-10	Basalto (*)
S18	45	11	Basalto (* importante)
S18	45	12-13	Basalto (*)
S18	45	14	Basalto
S18	45	15	Basalto (*)
S18	45	16	Basalto
S18	45	17	Basalto (*)
S18	45	18-19	Basalto
S18	45	20	Basalto (*)
S18	45	21-23	Basalto
S18	45	24	Pomice
S18	45	25	Granito
S18	45	26	tre campioni Arenaria - Granito - Breccia
S18	46	1-4	Basalto
S18	47	1	Vetro
S18	48	1-3	Basalto
S18	48	2	Basalto
S18	48	3	Basalto
S18	48	4	Basalto + Glass
S18	48	5-7	Basalto
S18	48	8	Basalto + Glass
S18	48	9	Basalto
S18	48	10	Basalto
S18	48	11-15	Vetro
S18	48	16	Campione destinato ai Russi
S18	48	17	Vetro
S18	48	18	Campione destinato ai Russi
S18	48	19	Vetro
S18	48	20	Campione destinato ai Russi
S18	48	21	Basalto + Glass
S18	48	22-27	Basalto
S18	48	28	Basalto + Glass
S18	48	29-33	Basalto
S18	48	34-35	Basalto + Glass
S18	48	36	Basalto
S18	48	37-38	Basalto + Glass
S18	48	39	Basalto
S18	48	40	Basalto + Glass
S18	48	41	Basalto
S18	49	1	Granito
S18	50	1-8	Basalto
S18	50	9	Vetro
S18	50	10-11	Vetro
S18	50	12-13	Campione destinato ai Russi
S18	50	14	Basalto + Glass
S18	50	15	Campione destinato ai Russi
S18	50	16-21	Basalto
S18	51	1-2	Basalto
S18	51	3	Basalto + Glass
S18	51	4	Basalto
S18	51	5	Basalto + Glass
S18	51	6	Basalto
S18	51	7-9	Basalto + Glass

S18	51	10-12	Basalto
S18	51	13-14	Basalto + Glass
S18	51	15	Basalto
S18	51	16	Basalto + Glass
S18	51	17	Basalto
S18	51	18-20	Basalto + Glass
S18	51	21	Basalto
S18	51	22-24	Basalto + Glass
S18	51	25-26	Basalto
S18	51	27-28	Basalto + Glass
S18	51	29	Basalto
S18	51	30-32	Basalto + Glass
S18	52	1-3	Basalto
S18	52	4-5	Basalto + Glass
S18	52	6	Basalto
S18	52	7	Basalto + Glass
S18	52	8-9	Basalto
S18	52	10-11	Basalto + Glass
S18	53	1	Basalto + Glass
S18	53	2	Campione destinato ai Russi
S18	53	3	Basalto + Glass
S18	53	4	Basalto
S18	53	5	Basalto + Glass
S18	53	6-7	Vetro
S18	54	1-9	Basalto
S18	54	10-11	Basalto + Glass
S18	54	12-17	Basalto
S18	54	18	Campione destinato ai Russi
S18	54	19-52	Basalto
S18	54	53	Pomice + Arenaria
S18	54	54	Basalto
S18	55	1-20	Gabbonorite
S18	55	21-31	Basalto
S18	55	32	Campione destinato ai Russi
S18	55	33	Basalto
S18	55	34-36	Breccia
S18	55	37	Gabbonorite + Basalto
S18	55	38-40	Gabbonorite
S18	55	41	Campione destinato ai Russi
S18	55	42	Basalto
S18	55	43-50	Basalto
S18	55	51-54	Campione destinato ai Russi
S18	55	55	Sedimenti
S18	55	56	Breccia
S18	56	1-17	Basalto
S18	56	18	Gabbro ?
S18	56	19-31	Basalto
S18	56	32	Campione destinato ai Russi
S18	56	33-43	Basalto
S18	57	1	Basalto
S18	57	2	Campione destinato ai Russi
S18	57	3-11	Basalto
S18	57	12	Basalto + Glass
S18	57	13-30	Basalto
S18	57	31	Basalto + breccia
S18	57	32-35	Basalto
S18	57	36	Riolite
S18	57	37-38	Campione destinato ai Russi
S18	57	39	Basalto
S18	57	40-45	Campione destinato ai Russi
S18	57	46-48	Basalto

S18	57	49	Arenaria
S18	57	50-51	Granito
S18	57	52	Campione destinato ai Russi
S18	57	53-56	Granito
S18	57	57	Granito e Gneiss
S18	57	58-62	Granito
S18	60	1	Vetro
S18	60	2	Gneiss
S18	61	1-3	Vetro
S18	62	1-11	Basalto
S18	63	1	Tre campioni da museo
S18	63	2	Basalto
S18	63	3	Basalto + Glass
S18	63	4-7	Basalto
S18	63	8	Campione destinato ai Russi
S18	63	9	Basalto
S18	63	10	Basalto
S18	63	11	Basalto + Glass
S18	64	1-2	Vetro
S18	66	1-4	Basalto
S18	67	5	Scisto
S18	67	6-7	Basalto
S18	67	8	Granito
S18	67	9	Sedimento compattato

Table 5: Cruise G96. Samples position.

CRUISE	STATION	DATE	LAT LON START END ddmm.xx	DEPTH START END m	RECOVERY Kg
G96	01	19-Mar-1996	-5536.20 -5533.20 -0155.40 -0051.40	4200 2600	0.0
G96	02	19-Mar-1996	-5536.50 -5535.20 -0207.40 -0205.30	4300 3500	0.5
G96	03	20-Mar-1996	-5532.40 -5531.80 -0200.70 -0200.60	1350 800	0.0
G96	04	23-Mar-1996	-5529.20 -5529.70 -0205.30 -0205.70	1370 1080	50
G96	05	24-Mar-1996	-5535.40 -5533.10 -0203.50 -0211.40	3250 2400	0.05
G96	06	27-Mar-1996	-5511.15 -5510.80 -0130.04 -0135.10	4100 3000	0
G96	07	27-Mar-1996	-5518.30 -5520.78 -0131.48 -0127.80	3800 2500	
G96	08	31-Mar-1996	-5431.20 -5430.70 -0546.80 -0547.50	1100 920	15
G96	09	31-Mar-1996	-5435.73 -5436.00 -0539.45 -0539.70	2500 2150	30
G96	10	13-Apr-1996	-5449.35 -5450.15 -0035.60 -0036.48	2184 1970	60
G96	11	14-Apr-1996	-5442.65 -5442.46 00003.20 00002.86	610 401	80
G96	12	14-Apr-1996	-5444.40 -5444.00 00004.20 00003.80	570 410	30
G96	13	14-Apr-1996	-5446.65 -5446.60 00004.40 00004.25	1050 1035	50
G96	14	14-Apr-1996	-5447.80 -5448.00 -0005.50 -0006.00	1170 953	150
G96	16	14-Apr-1996	-5428.20 -5427.70 00021.60 00022.80	1400 1130	10
G96	17	15-Apr-1996	-5424.85 -5424.20 00056.00 00054.90	3025 2340	150
G96	18	15-Apr-1996	-5439.10 -5438.70 00044.50 00044.90	2270 1960	1
G96	19	18-Apr-1996	-5518.10 -5518.40 -0022.30 -0024.90	2758 2317	15
G96	20	18-Apr-1996	-5511.10 -5510.24 -0016.60 -0016.70	3200 2613	100
G96	21	18-Apr-1996	-5510.10 -5510.25 00006.40 00006.38	2926 3020	15
G96	24	22-Apr-1996	-5357.90 -5357.00 -0236.80 -0237.00	2650 1620	250
G96	25	23-Apr-1996	-5328.40 -5328.33 -0300.34 -0302.04	2332 2147	10
G96	26	23-Apr-1996	-5331.73 -5331.60 -0350.95 -0352.02	2860 2650	30

Table 6: Cruise G96. Samples description.

CRUISE	STATION	WHERE	DESCRIPTION ; NOTES
G96	01	Conrad F.Z.	empty ; empty
G96	02		basalts 80%; gabbro dolerites 10%; gabbro 5%; Fe-Mn crusts 5% ;
G96	03	Conrad F.Z.	empty ; empty
G96	04		peridotites 30%; gabbros 30%; calcarenites 30%; basalts 5%; glacial erratics 5% ;
G96	05	Conrad F.Z.	one sample of basaltic breccia ;
G96	06	Conrad F.Z. (Axial valley)	empty ; empty
G96	07	Conrad F.Z. (Axial valley)	lost ; lost
G96	08	Shona Smt	basalts 60%; sandstones 30%; glacial erratics 10% ;
G96	09		basalts 60%; glacial erratics 40% ;
G96	10	Area SW of Spiess complex	olivine basalt 85%; fresh glasses 5%; vesicular lavas 10%, one big sample (50 kg) of olivine tholeite ;
G96	11	Spiess ridge	pillow basalt with thin Fe-Mn crust, vesicular basalts, glassy crusts, Fe-hydroxide alteration ;
G96	12		fresh high vesicular basalt, flow lavas with Pahoe-hoe structures, big amount of fresh glass ;
G96	13	Spiess ridge	pillow fragments and flow lavas with glassy crust, fresh glass, 1 mm max Fe-Mn coating ;
G96	14		big pillow fragments, basaltic breccia, lavas with thin glassy crust, lightly altered ;
G96	16	Spiess ridge	pillow fragments basalts with thick Fe-Mn crust, high vesicular fresh basalts with thin Fe-Mn patina ;
G96	17	Area N of Bouvet F.Z.	pillow fragments with fresh glass, tectonized basalts, different degrees of hydrothermal alteration, Fe-Mn patina, sulphides ;
G96	18		basalts and fresh glasses with thin Fe-Mn coating ;
G96	19	Area SW of Spiess complex	basaltic breccia, including glass, with thick Fe-Mn crust, up to 2 cm, small basaltic samples ;
G96	20		pillow fragments with thick Fe-Mn crust, fresh vesicular basalts, interesting big vitrobasalt sample, sandstone in situ, erratics ;
G96	21	Area SW of Spiess complex	fresh and different alteration rate basalts, thick Fe-Mn crust ;
G96	24	Mid Atlantic Ridge	fresh pillow basalt sectors, with glassy crust, no erratics, no Fe-Mn crust, abundant fresh glasses ;
G96	25		1 pillow fragment, little basalts with glass, thin Fe-Mn patina ;
G96	26	Mid Atlantic Ridge	One big very fresh lava burr, Cpx-Ol-Pl porphyric, with thick glassy crust and fragments of glassy crust ;

Table 7: Cruise G96. Subsamples description.

CRUISE	SAMPLE	TYPE	DESCRIPTION
G96	02-00	sediments	sand composed by clasts of Qtz, Opx, Ol, Pl, glass (?), Di, secondary minerals, bastite, basaltic clasts, globigerinoides
G96	02-01	basalt	sample cm 2x4, rounded, Pl-Ol porphyric, pyrite alteration inside vesicles
G96	02-02	basalt	sample cm 4, rounded, Pl-Ol porphyric 1 mm, microphenocrysts replaced by iddingsite
G96	02-03	basalt	sample cm 3x4, rare olivine crystals, lightly altered
G96	02-04	aphyric basalt	sample cm 2.5x3, fluidal texture
G96	02-05	aphyric basalt	sample cm 1.5x1.5, rare olivine and plagioclase crystals, vesicular
G96	02-06	aphyric basalt	sample cm 1x1.5, rare olivine and plagioclase crystals, vesicular
G96	02-07	aphyric basalt	sample cm 1.5x2, rare olivine and plagioclase crystals, vesicular
G96	02-08	aphyric basalt	sample cm 1.5x3, fresh
G96	02-09	aphyric basalt	sample cm 1.5x2, fresh
G96	02-10	aphyric basalt	sample cm 1.5x2, fluidal texture by deformation of vesicles
G96	02-11	basalt	sample cm 3, Pl-Ol porphyric, Ol replaced by iddingsite
G96	02-12	basalt	sample cm 3, Pl-Ol porphyric, fine vesicles
G96	02-13	aphyric basalt	rare olivine crystals
G96	02-14	basalt	sample cm 1.5x2, Pl porphyric, altered plagioclase
G96	02-15	dolerite	sample cm 1.5x1.5, bastite
G96	02-16	microgabbro	sample cm 1x2
G96	02-17	microgabbro	sample cm 1x3
G96	02-18	microgabbro	sample cm 2x2
G96	02-19	granitoid	sample cm 2x2.5, erratic pebble
G96	02-20	metasomatite	sample cm 2x1.5
G96	02-21	sandstone	few fragments, clasts by Pl, Ol, Opx (0.1-5 mm), carbonatic cement
G96	02-22	Fe-Mn crust	sample cm 1.5x3.5
G96	04-00	sediments	sand composed by clasts of Qtz, Opx, Pl, glass, bastite, globigerinoides
G96	04-01	serpentinized peridotite	sample cm 10x16 (two pieces), orthopyroxene 6 mm, altered bastite, thin veins of Fe hydroxide
G96	04-02	serpentinite	sample cm 8x5, lightly smoothed, jagged shape relicts of orthopyroxene, undulate cleavage, bastite
G96	04-03	serpentinized peridotite	sample cm 5x2, big crystals of bastite
G96	04-04	serpentinized peridotite	sample cm 4x5, lightly smoothed, isorientation of pyroxene, clinopyroxene, relicts of orthopyroxene with undulate cleavage, veins of white minerals
G96	04-05	serpentinite	sample cm 7x5, smoothed, distorted orthopyroxene, bastite
G96	04-06	serpentinite	sample cm 2x2
G96	04-07	serpentinite	sample cm 5x5, lightly smoothed
G96	04-08	serpentinite	sample cm 2x3, big crystals of bastite
G96	04-09	serpentinite	sample cm 5x5, lightly smoothed, orthopyroxene, bastite
G96	04-10	serpentinite	sample cm 3x3
G96	04-11	serpentinite	sample cm 4x4, lightly smoothed
G96	04-12	serpentinite	sample cm 2x2
G96	04-13	serpentinite	sample cm 6x4, smoothed, relicts of orthopyroxene
G96	04-14	serpentinite	sample cm 3x2
G96	04-15	serpentinite	sample cm 5x4, lightly smoothed, isoriented veins
G96	04-16	serpentinite	sample cm 3x2, bastite
G96	04-17	serpentinite	sample cm 5x4, smoothed. orthopyroxene
G96	04-18	serpentinite	sample cm 3x3
G96	04-19	serpentinite	sample cm 7x5, rounded, Fe-hydroxide
G96	04-20	serpentinite	sample cm 1x1
G96	04-21	serpentinized peridotite	sample cm 3x2, lightly smoothed, orthopyroxene
G96	04-22	serpentinite	sample cm 3.5x2, smoothed, orthopyroxene

G96	04-23	serpentinite	sample cm 4x4, lightly smoothed
G96	04-24	serpentinite	sample cm 2x4, lightly smoothed, Fe-hydroxide alteration, relicts of orthopyroxene
G96	04-25	serpentinite	sample cm 5x3, lightly smoothed, relicts of orthopyroxene, Fe-hydroxide
G96	04-26	serpentinite	sample cm 3x3
G96	04-27	serpentinite	sample cm 3x3.5, lightly smoothed, relicts of orthopyroxene
G96	04-28	serpentinite	sample cm 1x2
G96	04-29	serpentinite	sample cm 2x2.5, lightly smoothed, relicts of orthopyroxene
G96	04-30	serpentinite	sample cm 2.5x3, lightly smoothed
G96	04-31	serpentinite	sample cm 1.5x3, smoothed, white vein
G96	04-32	serpentinite	sample cm 2.5x4.5, lightly smoothed
G96	04-33	serpentinite	sample cm 2.5x3, lightly smoothed, Fe-hydroxide
G96	04-34	serpentinite	sample cm 1x3, lightly smoothed, white veins
G96	04-35	serpentinite	sample cm 2x3.5
G96	04-36	serpentinite	sample cm 1.5x3
G96	04-37	gabbro	sample cm 10x30x50, orthopyroxene, clinopyroxene, large size of crystals
G96	04-38	gabbro	sample cm 10x20x25, clinopyroxene, light Fe-Mn crust, large size of crystals
G96	04-39	gabbro	sample cm 5x10x30, clinopyroxene, large size of crystals
G96	04-40	gabbro	sample cm 7x7, lightly smoothed, altered, fractured
G96	04-41	gabbro	sample cm 8x4, smoothed, altered, medium size of crystals, clinopyroxene
G96	04-42	gabbro	sample cm 4x4, smoothed, altered, medium size of crystals
G96	04-43	gabbro	sample cm 4x3, lightly rounded, jagged shape Pl, Px with red alteration
G96	04-44	gabbro	sample cm 3x6, medium size of crystals, altered
G96	04-45	gabbro	sample cm 3x3, medium size of crystals, foliated, (milonite ?)
G96	04-46	gabbro	sample cm 3.5x4, rounded, foliated, complete alteration of pyroxene
G96	04-47	gabbro	sample cm 5x6.5, smoothed, Fe-hydroxide alteration
G96	04-48	gabbro	sample cm 2.5x4, smoothed, altered, fractured
G96	04-49	aphyric basalt	sample cm 3x3, microphenocrysts of Ol and Pl, fresh, lightly vesicular, empty vesicles
G96	04-50	aphyric basalt	sample cm 2x2, microphenocrysts of Ol
G96	04-51	aphyric basalt	sample cm 1.5x3.5, lightly altered, vesicular, Fe-hydroxide
G96	04-52	aphyric basalt	sample cm 2.5x3, vesicular, fresh, Fe-hydroxide inside the vesicles
G96	04-53	basalt	sample cm 2x2.5, millimetric phenocrysts, Cpx, fluidal texture by Pl microliths
G96	04-54	basalt	sample cm 2x4, altered, Fe-hydroxide, smectites
G96	04-55	microphyric basalt	sample cm 2x3, microliths of Pl, Cpx, smectites
G96	04-56	aphyric basalt	sample cm 1x3.5, alteration veins, microliths of Pl, Cpx
G96	04-57	metasomatic serpentinite	sample cm 3.5x4, veins of serpentine, white veins (brucite?)
G96	04-58	metasomatic serpentinite	sample cm 3x4, relicts of primary serpentine
G96	04-59	metasomatic serpentinite	sample cm 2.5x4
G96	04-60	metasomatic serpentinite	sample cm 2.5x4.5
G96	04-61	breccia	sample cm 15x30, carbonatic cement 3-5%, clasts from pale green in the center to pale brown-brown on outer rim, clasts rounded, with fine concentric or flat layering, soft mineral unreactive to HCl (smectite?)
G96	04-62	breccia	like description of sample G9604-61
G96	04-63	breccia	like description of sample G9604-61
G96	04-64	breccia	like description of sample G9604-61
G96	04-65	milonite	erratic pebble, sample cm 3x5, foliated

G96	04-66	milonite	erratic pebble, sample cm 4x6, fine texture
G96	04-67	sandstone	erratic pebble, sample cm 4x4, dark coloured
G96	04-68	sandstone	erratic pebble, sample cm 2.5x3, fossil of trilobite, clast of limestone
G96	04-69	sandstone	erratic pebble, sample cm 3x5.5
G96	04-70	sandstone	erratic pebble, sample cm 3x5
G96	04-71	sandstone	erratic pebble, sample cm 3x4
G96	04-72	dolerite	erratic pebble, sample cm 2.5x6, Fe-ore
G96	04-73	greenschist	erratic pebble, sample cm 2.5x3.5, chlorite
G96	04-74	sandstone	erratic pebble, sample cm 2x2
G96	04-75	fine breccia	erratic pebble, sample cm 2x2.5
G96	04-76	volcanic bomb	erratic pebble, sample cm 5x6, vesicular
G96	04-77	volcanic bomb	erratic pebble, sample cm 3x4, vesicular with clay minerals
G96	04-78	gneiss	erratic pebble, sample cm 4.5x6
G96	04-79	gneiss	erratic pebble, sample cm 3x5
G96	04-80	granitoid	erratic pebble, sample cm 3x4
G96	04-81	gneiss	erratic pebble, sample cm 2.5x3
G96	04-82	granitoid	erratic pebble, sample cm 3.5x4
G96	04-83	granitoid	erratic pebble, sample cm 2.5x4
G96	04-84	gneiss	erratic pebble, sample cm 3x6, fine texture
G96	04-85	granitoid	erratic pebble, sample cm 2.5x5
G96	04-86	granitoid	erratic pebble, sample cm 1.5x2.5
G96	04-87	granitoid	erratic pebble, sample cm 2x3
G96	04-88	breccia	fragments 4-15 cm, like description of sample G9604-61
G96	04-89	volcanic bomb	erratic pebble, sample cm 6x12, vesicular
G96	05-01	breccia	sample cm 4x8, cement by fine sandstone no carbonatic, basaltic or andesitic rounded clasts 1-3 cm
G96	08-00	sediments	sand
G96	08-01	aphyric basalt	sample cm 3x5, rounded, thin isoriented Pl microliths
G96	08-02	limestone	sample cm 3x3, rounded
G96	08-03	basalt	sample cm 3x4x1, Cpx-Pl-Ol porphyric; Ol <1%, size 1 mm, Pl 1%, size 1mm, Cpx 3-4%, size 1-4 mm
G96	08-04	basalt, dolerite	sample cm 5x3x1, high crystallized basalt
G96	08-05	aphyric basalt	sample cm 2x2x3, rare Pl-Ol, Fe-hydroxide bands
G96	08-06	basalt	sample cm 3x3x1, well crystallized basalt, Pl glomeroporphyric, (Ol ?), fine disperse Ti-magnetite
G96	08-07	basalt	sample cm 4x2x1, lightly smoothed, rare Ol porphyric
G96	08-08	siltstone	no acid reactive
G96	08-09	aphyric basalt	sample cm 2x1x1, Fe-hydroxide
G96	08-10	basalt	sample cm 1.5x2x1, altered, carbonatic veins, pyrite, phenocrysts of Pl
G96	08-11	basalt	microphenocrysts Pl-Ol (3%)
G96	08-12	aphyric basalt	sample cm 5x1x1.5, vesicles 15-20%, 0.5-1 mm, little amount of clay minerals on the walls of vesicles
G96	08-13	aphyric basalt	sample cm 2x1x1, wide stretched vesicles 3x8 mm, 20-25%, fluidal texture
G96	08-14	aphyric basalt	sample cm 3x1.5x1, vesicles 30-40%, 1-4 mm, one vesicle filled by sandstone
G96	08-15	aphyric basalt	sample cm 5x1.5x1.5, vesicles 0.2-0.5 mm, 25-30%
G96	08-16	aphyric basalt	sample cm 5x2x2, rare Pl porphyric, magnetite in groundmass, little round vesicles 0.2-1 mm and large amoeboidal vesicles 3-8 mm, 25-30%, on the walls thin diopside patina plus magnetite
G96	08-17	vesicular glass	microphenocrysts of Pl, concentric palagonitization
G96	08-18	basalt	sample cm 4x2x1.5, Pl-Ol porphyric, Cpx
G96	08-19	basalt	sample cm 2x2x2, Pl-Ol-Cpx porphyric, Cpx 0.5-2 mm, 1-2%; Pl up to 10 mm, 25%, Pl include Ol; Ol 1-4 mm, 4-5%, one Ol crystal include spinel; vesicular 0.5-5 mm, 25%

G96	08-20	aphyric basalt	sample cm 4x2.5x1, Pl-(Cpx) macrophenocrysts, vesicles 3-4 mm
G96	08-21	aphyric basalt	sample cm 2x1x1, microvesicles 0.1-0.2 mm, fluidal texture by stretching of vesicles, microphenocrysts of Pl
G96	08-22	basalt	sample cm 3.5x3x2, rare vesicles with heterogeneous distribution
G96	08-23	basalt	sample cm 1x2x3, Pl-Ol-Cpx microphenocrysts, fluidal texture, small vesicles
G96	08-24	basalt	sample cm 1.5, Pl-Ol porphyric, Pl 1-3 mm, 1-2%; Ol 4 mm, 1-2%, vesicles 3 mm, 5%
G96	08-25	basalt	sample cm 1.5, Pl phenocrysts; vesicles 1-8 mm, 25%, Fe-hydroxide alteration
G96	08-26	basalt	sample cm 1x2x2.5, Pl-(Cpx) porphyric, Pl 1-2 mm, vesicles 1-4 mm
G96	08-27	basalt	sample cm 1.5x1.5, Pl-Ol porphyric, Pl 1-2 mm, vesicles 80%
G96	08-28	basalt	sample cm 1.5x1.5, rare Cpx microphenocrysts 1 mm, fine vesicles 20%,
G96	08-29	basalt	sample cm 1.5x1.5, Pl-Ol-Cpx porphyric, Pl 1-4 mm; vesicles 1-5 mm, 50%
G96	08-30	basalt	sample cm 2.5x1.5x1, Pl-Ol-Cpx porphyric; vesicles 1-3 mm, 80%
G96	08-31	basalt	sample cm 2x5, Pl porphyric, Pl 1-3 mm, vesicles 1-3 mm, 70%
G96	08-32	basalt	sample cm 1.5x2.5, Pl-Ol-Cpx porphyric; vesicles 1-2 mm, 50%, pelagic sediment inside vesicles
G96	08-33	basalt	sample cm 2x2x1, Pl porphyric, deep heterogeneous alteration, red colour, magnetite, small vesicles
G96	08-34	aphyric basalt	sample cm 2x2x0.5, altered, high vesicular, Fe-Mn patina
G96	08-35	aphyric basalt	altered, high vesicular, Fe-Mn patina
G96	08-36	aphyric basalt	sample cm 3x2.5x2, vesicles 0.2-3 mm, 60-70%, thin walls sometimes covered by Fe-hydroxide
G96	08-37	aphyric basalt	vesicles 0.2-3 mm, 60-70%, thin walls sometimes covered by Fe-hydroxide
G96	08-38	aphyric basalt	sample cm 5x3x2, vesicles 0.2-3 mm, 60-70%, thin walls sometimes covered by Fe-hydroxide
G96	08-39	aphyric basalt	vesicles 0.2-3 mm, 60-70%, thin walls sometimes covered by Fe-hydroxide
G96	08-40	basalt	sample cm 3x2x1, rounded, Cpx porphyric, diffuse small vesicles and rare big stretched vesicles 1-3 mm
G96	08-41	aphyric basalt	sample cm 3x3x1, vesicular with rare Cpx phenocrysts
G96	08-42	aphyric basalt	sample cm 3x1.5x1.5, rare Pl phenocrysts, fine diffuse vesicles, 60-70%, rare big vesicles up to 3 mm
G96	08-43	aphyric basalt	sample cm 3x3x1.5, heterogeneous diffuse vesicles, rare Pl phenocrysts, fine basaltic hair like needles
G96	08-44	aphyric basalt	sample cm 3x1.5, heterogenous vesicles size, fluidal texture, xenoliths 2 mm
G96	08-45	metabasalt	sample cm 3x3x2, Pl phenocryst and microliths, chlorite, zeolite
G96	08-46	basalt	sample cm 3x2x1, fresh basalt
G96	08-47	basalt	sample cm 1x1x2, Pl-Ol porphyric, fresh Ol
G96	08-48	aphyric basalt	sample cm 1x0.5x2, fresh basalt
G96	08-49	aphyric basalt	sample cm 2x1x0.5, rare Pl phenocrysts, skeletal Ol cryst replaced by iddingsite
G96	08-50	basalt	sample cm 3x2x1, Pl-Cpx-(Ol) porphyric basalt, strongly altered, clay minerals in groundmass
G96	08-51	basalt	sample cm 3x2x1, strongly altered basalt, Pl porphyric
G96	08-52	metabasalt	greenschist facies, Pl porphyric
G96	08-53	dolerite	sample cm 3x3x1, aphyric, pyrite
G96	08-54	dolerite	sample cm 3x3x1, rare Pl phenocrysts, Qtz vein, foliation
G96	08-55	basalt	sample cm 2x1x1, Pl-Ol-Cpx porphyric
G96	08-56	metasomatite	sample cm 3x3, chloritic groundmass, Qtz (xenocryst?), altered Pl, Fe hydroxide, xenolite with doleritic structure, amphibole (?)
G96	08-57	rhyolite	sample cm 0.5x4x3, effusive acid rock, Qtz
G96	08-58	acid effusive	Qtz, Pl, (Cpx), glass groundmass
G96	08-59	acid effusive	Qtz, glass groundmass

G96	08-60	acid effusive	feldspar crystal 8 mm, on glass rhyolitic groundmass
G96	08-61	acid effusive	sample cm 1x1x1, Qtz, glass groundmass
G96	08-62	breccia	Fe-Mn crust cement, silt of clay minerals, grains with bimodal size, big rounded grains and little interstitial no rounded grains, clasts of vesicular basalt, acid effusive rocks, and their separated minerals
G96	08-63	breccia	like description of sample G9608-62
G96	08-64	breccia	like description of sample G9608-62
G96	08-65	breccia	like description of sample G9608-62
G96	08-66	breccia	like description of sample G9608-62
G96	08-67	breccia	like description of sample G9608-62
G96	08-68	breccia	like description of sample G9608-62
G96	08-69	breccia	like description of sample G9608-62
G96	08-70	breccia	glass clasts strongly palagonitized, cemented by Fe-Mn crust
G96	08-71	breccia	like description of sample G9608-70
G96	08-72	breccia	like description of sample G9608-70
G96	08-73	breccia	like description of sample G9608-70
G96	08-74	breccia	like description of sample G9608-70
G96	08-75	sandstone	sample cm 8x6x3, erratic pebble, Qtz, feldspars, micas, rock clasts, strongly cemented
G96	08-76	sandstone	sample cm 4x2x1, erratic pebble, Qtz, feldspars, micas, rock clasts, strongly cemented
G96	08-77	sandstone	sample cm 4x2, erratic pebble, Qtz, feldspars, micas, rock clasts, strongly cemented, with layers at high concentration of Fe-hydroxides
G96	08-78	sandstone	sample cm 6x4x3, erratic pebble, Qtz vein
G96	08-79	sandstone	sample cm 6x3x2, erratic pebble
G96	08-80	sandstone	sample cm 3x2x1, erratic pebble, leucocratic Qtz dominant coarse grained sandstone
G96	08-81	siltstone	sample cm 3x2x1, erratic pebble, layered with sandstone levels (1-5 mm), carbonatic cement
G96	08-82	siltstone	erratic pebble, layered with sandstone levels (1-5 mm), carbonatic cement
G96	08-83	siltstone	erratic pebble, layered with sandstone levels (1-5 mm), carbonatic cement
G96	08-84	limestone	erratic pebble, stylolite
G96	08-85	quartzite	sample cm 7x5x3, erratic pebble
G96	08-86	sandstone	sample cm 5x4x1, erratic pebble, Qtz, feldspars, micas, rock clasts, strongly cemented
G96	08-87	schist	sample cm 2.5x1,5x0,5, erratic pebble, wavy schistosity, Qtz-Amph-Chl
G96	08-88	schist	sample cm 3.5x2.5x0.5, erratic pebble, wavy schistosity, Qtz-Amph-Chl
G96	08-89	metamorphite	sample cm 4x1x0.5, erratic pebble, Qtz, feldspars, boudinage of Qtz aggregates, strong deformation
G96	08-90	granitoid	sample cm 4x2x0.5, fine texture, erratic pebble
G96	08-91	anorthosite	erratic pebble, ore minerals
G96	08-92	gneiss	erratic pebble
G96	08-93	granitoid	erratic pebble
G96	08-94	granitoid	erratic pebble
G96	08-95	granitoid	erratic pebble
G96	08-96	Ms-metamorphite	erratic pebble
G96	08-97	gneiss	erratic pebble
G96	08-98	granitoid	erratic pebble
G96	08-99	granitoid	erratic pebble
G96	08-n100	granitoid	erratic pebble
G96	08-n101	granitoid	erratic pebble
G96	08-n102	granitoid	erratic pebble
G96	08-n103	glass	glass description will be performed more completely on separated database

G96	08-n104	glass	glass description will be performed more completely on separated database
G96	08-n105	glass	glass description will be performed more completely on separated database
G96	08-n106	glass	glass description will be performed more completely on separated database
G96	09-00	sediments	sand
G96	09-01	breccia	sample cm 30x15x15, clasts made by micropillows, basaltic clasts and hyaloclastite, cemented by Fe-Mn crust, pillows 10-15 cm with quench fractures and chilled margins
G96	09-01a	basalt	sample cm 10x6x5, Fe-Mn crust
G96	09-01b	hyaloclastic breccia	covered by Fe-Mn crust, fresh glass clasts (2-10 mm), cemented by palagonitized glass and phillipsite
G96	09-01c	pillow basalt	like description of sample G9609-01
G96	09-01d	pillow basalt	like description of sample G9609-01
G96	09-02	pillow basalt	sample cm 10x15, chilled margin, glass, quench fractures with phillipsite, Pl porphyric, vesicles (0.1-1 mm), 5-10%
G96	09-03	aphyric basalt	rare Pl porphyric, vesicles 0.1-1 mm
G96	09-04	aphyric basalt	sample cm 4x2,5x1.5, lightly rounded, Ol microphenocrysts, vesicles 0.1 mm
G96	09-05	aphyric basalt	sample cm 5x6x3, smoothed, Pl microphenocrysts
G96	09-06	aphyric basalt	sample cm 1.5x1.5, lightly smoothed, rare Pl-Ol phenocrysts
G96	09-07	aphyric basalt	sample cm 1.5x1.5x1.5, Pl phenocrysts
G96	09-08	dolerite	sample cm 3x3x0.5, foliated
G96	09-09	micropillow basalt	sample cm 1.5x1.5, Fe-Mn crust, palagonitized glass, variolitic texture, fresh relict of basalt with Pl phenocrysts and Fe-hydroxide, vesicles 1-2%
G96	09-10	basalt	Pl-porphyric, Pl size 0.1-1 mm, 1-2 %; Ol microphenocrysts, vesicular
G96	09-11	basalt	sample cm 6x6x3, Ol-Cpx-Pl phenocrysts, Pl 1-2%, Ol-iddingsite 3%, Cpx 2-3%, vesicles (0.5-1 mm), 50%
G96	09-12	basalt	sample cm 5x5x2, vesicles (0.2-2 mm), 15-20%; Pl porphyric, light alteration patina, vesicular 15-20%, Fe-hydroxide on the vesicle walls
G96	09-13	basalt	sample cm 5x4x2, rare Cpx-Pl porphyric, Ol-phenocrysts surrounded by Pl
G96	09-14	basalt	sample cm 3.5x3x2, smoothed, heterogeneous vesicles size, Pl rounded phenocrysts 8-10%, Ol 2%
G96	09-15	basalt	sample cm 3x3, rounded, rare large vesicles 2x5 mm, stretched, Pl-(Cpx) porphyric
G96	09-16	basalt	sample cm 1.5x1.5x1, smoothed, vesicles (0.5-3 mm), 10%; diffuse Fe-hydroxide alteration, Ol-Pl microphenocrysts
G96	09-17	basalt	sample cm 2x1.5x1, smoothed, low vesicular Pl-Cpx porphyric basalt
G96	09-18	basalt	sample cm 4x2x1.5, vesicles (0.5-2 mm), 50%; Pl-Ol phenocrysts
G96	09-19	basalt	sample cm 3x2x1.5, small diffuse vesicles (0.5-2 mm), 50%; Pl-Ol-Cpx phenocrysts
G96	09-20	basalt	sample cm 3x2x2, altered, smoothed, vesicles (0.5-2 mm), 50%; Ol-(Pl) phenocrysts
G96	09-21	basalt	sample cm 2x1.5x1.5, altered, smoothed, small vesicles, 50%; Ol-(Pl) phenocrysts
G96	09-22	basalt	sample cm 3x2x1.5, altered, smoothed, vesicles (0.5-2 mm), 50%; Ol-(Pl) phenocrysts
G96	09-23	basalt	sample cm 2.5x2.5x1, rounded empty vesicles 70%, rare Pl phenocrysts
G96	09-24	basalt	sample cm 4x2x1.5, smoothed, large stretched vesicles size 4x1 mm; patina of pelagic sediments that sometimes fill up the vesicles
G96	09-25	metagabbro	sample cm 6x4x3, smoothed, Pl phenoblasts in Chl-Amph groundmass, little pyritic masses, Pl up to 7 mm, 50-60%

G96	09-26	metagabbro	sample cm 2.5x2x1.5, lightly rounded, size of grains 3-4 mm, Pl 50%, Amph-Chl 50%, Ti-magnetite masses
G96	09-27	altered gabbro	sample cm 1.5x1.5x1.5, lightly smoothed
G96	09-28	gabbro-dolerite	sample cm 6x3x0.5, lightly smoothed, altered
G96	09-29	sandstone	sample cm 7x7x4, erratic pebble, carbonatic clasts, fine sand, calcitic veins, abundant Qtz clasts, strongly cemented
G96	09-30	sandstone	sample cm 6x4x2.5, erratic pebble, rounded, carbonatic clasts, fine sand, calcitic veins, abundant Qtz clasts, strongly cemented, fine grained dark masses poorly cemented
G96	09-31	sandstone	sample cm 3.5x2x1.5, erratic pebble
G96	09-32	sandstone	sample cm 3.5x2x1.5, erratic pebble, size of grains like fine sand, abundant calcitic clasts, Qtz
G96	09-33	sandstone	sample cm 2x2x1.5, erratic pebble, rounded, Qtz clasts, carbonatic cement
G96	09-34	sandstone	sample cm 9x5x2, rounded, erratic pebble
G96	09-35	siltstone	sample cm 5x3x2, smoothed, erratic pebble
G96	09-36	siltstone	sample cm 3x3x2, lightly smoothed, erratic pebble
G96	09-37	siltstone	sample cm 3x3x1.5, rounded, erratic pebble
G96	09-38	siltstone	sample cm 3.5x1.5x1.5, lightly smoothed, erratic pebble
G96	09-39	granitoid	sample cm 4x3x1.5, erratic pebble
G96	09-40	granitoid	sample cm 1.5x1.5x1.5, smoothed, erratic pebble
G96	09-41	garnet metamorphite	sample cm 9x9x4, rounded from one side, erratic pebble
G96	09-42	granitoid	sample cm 5x4x2, smoothed, erratic pebble
G96	09-43	quartzite	sample cm 10x10x6, rounded, erratic pebble
G96	09-44	quartzite	sample cm 6x4x2, lightly rounded, erratic pebble
G96	09-45	erratic pebble	sample cm 12x9x5, rounded pebble with parallel ice marks
G96	09-46	Qtz-Ms schist	sample cm 22x30x9, sericitic metamorphite, erratic pebble
G96	10-01	aphyric basalt	sample cm 70x60x50, fresh, Pl microphenocrysts, lightly vesicular
G96	10-02	aphyric basalt	sample cm 25x10x6, fresh, Pl microphenocrysts, lightly vesicular
G96	10-03	aphyric basalt	sample cm 3x5x6, fresh, lightly vesicular, 1-2%, size of vesicles 0.5 mm
G96	10-04	aphyric basalt	sample cm 4x5x7, lightly vesicular, 2-5%, glauconite on the walls of vesicles, xenolite
G96	10-05	aphyric basalt	sample cm 3x4x5, fresh, Pl microphenocrysts, vesicular 5%
G96	10-06	basalt	sample cm 3x4x5, fresh, Pl porphyric, variolitic texture, few small vesicles
G96	10-07	basalt	sample cm 3x4x4, fresh, Pl porphyric, Ol microphenocrysts, variolitic texture, small vesicles, 5-8%
G96	10-08	basalt	sample cm 3x4x4, fresh, Cpx-Ol-Pl porphyric, titanomagnetite, few round vesicles (1-3 mm)
G96	10-09	basalt	sample cm 3x3x2, fresh, Ol-Pl porphyric, round vesicles (0.1-3 mm)
G96	10-10	aphyric basalt	sample cm 4x4x5, altered, Pl microphenocrysts and Fe-hydroxide in groundmass, amoeboidal vesicles, glassy crust
G96	10-11	aphyric basalt	sample cm 3x3x4, strongly altered, Pl microphenocrysts and Fe-hydroxide in groundmass, amoeboidal vesicles, glassy crust
G96	10-12	aphyric basalt	sample cm 10x6x6, fresh, Pl microphenocrysts in groundmass, little vesicles (0.1-0.5 mm)
G96	10-13	aphyric basalt	sample cm 15x7x5, altered, Pl microphenocrysts, Fe-hydroxide, few vesicles
G96	10-14	basalt	sample cm 15x10x6, altered, well crystallized
G96	10-15	basalt	sample cm 9x4x3, fresh, Pl-Ol porphyric, Pl microphenocrysts in groundmass, variolitic texture, little vesicles
G96	10-16	basalt	sample cm 15x7x10, altered, Ol porphyric, Cpx, Pl microphenocrysts, variolitic texture, vesicular
G96	10-17	basalt	sample cm 12x7x7, fresh, Ol-Pl porphyric, small vesicles, variolitic heterogeneous structure separate by aphyric zones

G96	10-18	basalt	sample cm 12x6x10, fresh, Pl-Ol porphyric, Pl size up to 5 mm, acicular Pl microphenocrysts in groundmass
G96	10-19	basalt	sample cm 15x7x8, fresh, Ol porphyric, Ol grains up to 4 mm, small vesicles
G96	10-20	basalt	sample cm 10x5x7, lightly altered, Ol porphyric, Ol grains up to 5 mm
G96	10-21	basalt	sample cm 17x6x7, fresh, Pl-Ol-Cpx porphyric
G96	10-22	basalt	sample cm 11x7x6, altered, Ol porphyric, diffuse Fe-hydroxide alteration
G96	10-23	basalt	sample cm 6x4x5, lightly altered, Pl-Ol porphyric, variolitic texture, Fe-hydroxide alteration, small vesicles
G96	10-24	basalt	sample cm 6x4x5, altered, Ol-Pl porphyric, variolitic texture, Fe-hydroxide alteration, small vesicles, 10%
G96	10-25	basalt	sample cm 10x7x7, altered, pillow fragment with glassy crust, Ol porphyric, Fe-hydroxide
G96	10-26	basalt	sample cm 8x6x5, lightly altered, Pl-Ol porphyric
G96	10-27	basalt	sample cm 3x3x4, altered, Ol-Pl porphyric, diffuse Fe-hydroxide alteration, variolitic texture, lightly vesicular
G96	10-28	basalt	sample cm 4x4x1.5, altered, Ol-Pl porphyric, diffuse Fe-hydroxide alteration, variolitic texture, lightly vesicular
G96	10-29	basalt	sample cm 5x4x2.5, strongly altered, dark altered Pl, diffuse Fe-hydroxide alteration, big rounded vesicles filled by zeolites
G96	10-30	basalt	sample cm 10x7x7, deeply altered, variolitic texture, lightly vesicular, rounded vesicles (0.5-2 mm) filled by zeolites pink coloured
G96	10-31	basalt	sample cm 12x7x4, altered, Ol porphyric, Ti-magnetite, Fe-hydroxide, heterogeneous distribution of vesicles 20%, vesicles size 1-5 mm
G96	10-32	basalt	sample cm 12x7x5, altered, vesicles (4-8 mm), 20%, filled up by zeolites, Fe-hydroxide in groundmass
G96	10-33	basalt	sample cm 7x4x5, altered, vesicles (4-8 mm), 20%, filled up by zeolites, Fe-hydroxide in groundmass
G96	10-34	basalt	sample cm 7x4x4, altered, vesicles (4-8 mm), 20%, filled up by zeolites, Fe-hydroxide in groundmass
G96	10-35	basalt	sample cm 6x4x3, altered, Pl microliths and Fe-hydroxide in groundmass, large vesicles filled by zeolites
G96	10-36	basalt	sample cm 6x5x3, deeply altered, Pl porphyric, Fe-hydroxide in groundmass, little vesicular, glassy crust
G96	10-37	glasses	glass description will be performed more completely on separated database
G96	10-38	glasses	glass description will be performed more completely on separated database
G96	11-01	aphyric basalt	sample cm 70x40x30, fresh pillow sector, heterogeneous distribution of vesicles, 15-20%, massive non vesicular core, glassy crust, Fe-Mn patina on the surface
G96	11-02	aphyric basalt	sample cm 40x30x20, partly altered with Fe-hydroxide, Fe-Mn patina on the surface, rare Ol phenocrysts, heterogeneous distribution of vesicles (2-3 mm)
G96	11-03	basalt	sample cm 45x15x15, partly altered by Fe-hydroxide, Ol-Pl porphyric, variolitic texture, vesicles (0.1-3 mm), rare glass fragments
G96	11-04	aphyric basalt	sample cm 60x30x10, fresh, vesicles (0.1-5 mm) sometimes with Fe-hydroxide on the walls
G96	12-01	aphyric basalt	sample cm 16x10x10, fresh, flow lava fragment with glassy crust, vesicular 20%, bimodal size of vesicles, small rounded 1-4 mm, big stretched vesicles 0.5x5 cm that show fluidal texture, sub-parallel to the surface, hematitic alteration on vesicles walls
G96	12-02	aphyric basalt	sample cm 12x11x7, like G9612-01 plus big amoeboidal vesicles, contraction cracks
G96	12-03	aphyric basalt	sample cm 14x10x10, like G9612-02

G96	12-04	aphyric basalt	sample cm 16x8x7, like G9612-02, red concretions probably due to fumarolic activity
G96	12-05	aphyric basalt	sample cm 14x10x8, Pl microliths, deeper portion of the flow lava, less vesicular than G9612-01/04, small undeformed vesicles 1-5 mm
G96	12-06	aphyric basalt	sample cm 18x10x10, like G9612-01
G96	12-07	aphyric basalt	sample cm 14x7x5, like G9612-01 plus very elongated vesicles with strong fluidal texture
G96	12-08	aphyric basalt	sample cm 8x7x5, like G9612-01 plus Pahoe-hoe structures on lava's surface, microcorrugated surface, fresh glassy crust
G96	12-09	aphyric basalt	sample cm 7x7x6, like G9612-08 plus very big vesicles subparallel to lava's surface, up to 6-8 cm
G96	12-10	aphyric basalt	sample cm 7x7x5, like G9612-09
G96	12-11	aphyric basalt	sample cm 7x6x5, like G9612-09
G96	12-12	aphyric basalt	sample cm 6x5x4, like G9612-09
G96	12-13	aphyric basalt	sample cm 7x6x4, like G9612-09
G96	12-14	aphyric basalt	sample cm 7x7x2, like G9612-09
G96	12-15	aphyric basalt	sample cm 8x7x2, like G9612-09
G96	12-16	aphyric basalt	sample cm 8x4x3, like G9612-09, few fragments
G96	12-17	aphyric basalt	few fragments, medium size: 4 cm, like G9612-09
G96	12-18	aphyric basalt	sample cm 6x4x3, vesicular 30%
G96	12-19	basalt	sample cm 6x6x5, Pl-Ol-Cpx porphyric, rounded vesicles 15-20%
G96	12-20	aphyric basalt	fragment of volcanic bomba, high vesicular with bimodal size, fine diffuse vesicles 0.5-2 mm, rare big vesicles 1-3 cm
G96	12-21	aphyric basalt	like G9612-20
G96	12-22	aphyric basalt	like G9612-20
G96	12-23	aphyric basalt	like G9612-20
G96	12-24	aphyric basalt	like G9612-20
G96	12-25	aphyric basalt	like 12-01 with superficial alteration by Fe-hydroxide
G96	12-26	aphyric basalt	like G9612-25
G96	12-27	breccia	basaltic clasts, 2-10 mm, cemented by Fe- hydroxide
G96	12-28	breccia	like G9612-27
G96	12-29	metasomatite	sample cm 6x3x2, highly vesicular altered basalt, groundmass replaced by white soft mineral, vesicles filled probably with the same mineral but we can see clay minerals near walls, no HCl reaction
G96	12-30	breccia	sample cm 6x5x5, completely altered basalt clasts, fresh basalt clasts with vesicles filled up by secondary minerals, clasts size 5-15 mm
G96	12-31	breccia	like G9612-30, but basalt clasts are more fresh and more wide size distribution, vesicles partially filled
G96	12-32	breccia	like G9612-31, but with smaller clasts
G96	12-33	breccia	like G9612-31 but more altered clasts, one fresh clast, small pyrite grains
G96	12-34	breccia	like G9612-30 plus chlorite alteration of basaltic clasts, pyrite grain 0.3 mm, high cement rate
G96	12-35	metasomatite	altered basalt
G96	13-00	sediment	sand
G96	13-01	aphyric basalt	sample cm 20x30x15, fresh, fragment of lava with complex flow texture, glassy crust is present on surface and on internal structures, Pl microphenocrysts, rare Pl phenocrysts sometimes intergrowt with Ol, lightly heterogeneous vesicular 1-2%
G96	13-02	aphyric basalt	round sample cm 17 diameter, like G9613-01 more developed glassy portion
G96	13-03	aphyric basalt	sample cm 20x10x10, pillow fragment, lightly diffuse vesicular, high vesicular layer under glassy crust, big cavity with Fe-hydroxide deposits
G96	13-04	aphyric basalt	sample cm 25x20x15, fresh, like G9613-03
G96	13-05	aphyric basalt	sample cm 20x16x15, like G9613-03, plus rare Pl phenocrysts
G96	13-06	aphyric basalt	sample cm 15x15x10, like G9613-03

G96	13-07	aphyric basalt	sample cm 15x10x10, like G9613-03, with complex fluidal structures like cord lavas
G96	13-08	aphyric basalt	sample cm 15x15x10, like G9613-03
G96	13-09	aphyric basalt	sample cm 13x6x6, like G9613-03
G96	13-10	aphyric basalt	sample cm 5x4x4, like G9613-03 with rare Pl phenocrysts, microcorrugated surface
G96	13-11	aphyric basalt	sample cm 11x8x5, like G9613-01, with rare Pl phenocrysts
G96	13-12	aphyric basalt	sample cm 10x9x6, like G9613-01, with rare Pl phenocrysts, Fe-hydroxide
G96	13-13	aphyric basalt	sample cm 8x8x6, like G9613-01, with rare Pl phenocrysts
G96	13-14	aphyric basalt	sample cm 7x7x5, like G9613-01, with rare Pl phenocrysts
G96	13-15	aphyric basalt	sample cm 9x8x5, like G9613-01
G96	13-16	aphyric basalt	sample cm 8x6x4, like G9613-15
G96	13-17	basalt	sample cm 6x5x2, Cpx-Pl porphyric, Fe-hydroxide, high vesicular
G96	14-00	sediment	sand
G96	14-01	aphyric basalt	sample cm 15x10x10, fresh, vesicles 20%, 5 mm
G96	14-02	aphyric basalt	sample cm 10x7x5, like G9614-01
G96	14-03	aphyric basalt	sample cm 10x5x5, pillow fragment, vesicles (1-3 mm) 15%, partially filled by clay minerals, vesicular rate increase coreward
G96	14-04	aphyric basalt	sample cm 10x5x5, pillow fragment, empty vesicles (1-3 mm), 10%
G96	14-05	aphyric basalt	sample cm 6x5x4, pillow fragment, empty vesicles (1-3 mm), 15-20%
G96	14-06	aphyric basalt	sample cm 6x4x3, like G9614-04
G96	14-07	aphyric basalt	sample cm 12x10x5, like G9614-04, with vesicles up to 7 mm
G96	14-08	aphyric basalt	sample cm 12x10x5, pillow fragment, small empty vesicles, up to 2 mm, 10%
G96	14-09	aphyric basalt	sample cm 7x5x4, like G9614-08
G96	14-10	aphyric basalt	sample cm 8x8x5, like G9614-08
G96	14-11	aphyric basalt	sample cm 13x12x6, like G9614-08
G96	14-12	aphyric basalt	sample cm 7x5x5, like G9614-08
G96	14-13	aphyric basalt	sample cm 14x10x5, like G9614-08 with rare Pl phenocrysts, fluidal texture shown by elongation of vesicles, these are partially filled by clay minerals
G96	14-14	aphyric basalt	sample cm 7x5x5, fresh, pillow fragment, vesicles (1 mm) 10%, glass and basaltic clasts cemented by Fe-Mn crust on external surface
G96	14-15	aphyric basalt	sample cm 11x5x6, rounded, like G9614-14
G96	14-16	aphyric basalt	sample cm 10x10x4, rounded, like G9614-14
G96	14-17	aphyric basalt	sample cm 10x10x5, microvesicular, up to 0,5 mm
G96	14-18	basalt	sample cm 15x15x10, Pl porphyric, phenocryst (2-5 mm) 3%, round empty vesicles (1-3 mm) 20-35%
G96	14-19	basalt	sample cm 30x20x20, like G9614-18, probable Ol
G96	14-20	aphyric basalt	sample cm 15x15x10, well crystallized, vesicular 5-10%, vesicles with different size and shape, small round ones 1-5 mm, big amoeboid ones, alteration minerals on vesicles walls
G96	14-21	dolerite	sample cm 15x15x15, fresh core surrounded by large alteration band with Fe-hydroxide, (6-7 cm)
G96	14-22	basalt	sample cm 15x13x8, like G9614-08, Ol-(Cpx) porphyric, sometimes Ol is altered, vesicles (0.1-3 mm) 10%
G96	14-23	tufo?	sample cm 15x13x7, clasts of variolitic basalt, glass, zeolites
G96	14-24	basalt	sample cm 33x29x23, altered, Pl porphyric, large diffuse Fe-hydroxide replacement, vesicles (8%) filled by phillipsite, clasts of basalt and glass cemented upon surface
G96	14-25	aphyric basalt	sample cm 12x15x5, altered, big vesicles with fibrous zeolites
G96	14-26	aphyric basalt	sample cm 10x9x5, altered, high vesicular with big vesicles up to 2 cm, rare glass
G96	14-27	aphyric basalt	sample cm 7x5x3, like G9614-26
G96	14-28	glasses	glass description will be performed more completely on separated database

G96	14-29	aphyric basalt	sample cm 5x4x4, erratic basalt, rounded, 30-40% vesicular with bimodal size of vesicles, small ones 0.1-0.5 mm, big ones 1-5 mm, Fe-hydroxide patina on walls of vesicles
G96	14-30	aphyric basalt	sample cm 5x5x4, like G9614-29, but 50-60% vesicular
G96	14-31	aphyric basalt	sample cm 4x3x2, like G9614-29
G96	14-32	basaltic pumice breccia	sample cm 6x5x4, rounded, 80% vesicular
G96	14-33	breccia	sample cm 6x4x3, lightly cemented, sharp jagged clasts of very high vesicular (80%) fresh vitro basalt (1-10 mm), size of vesicles 0.1-0.5 mm, cemented by alteration products
G96	14-34	breccia	sample cm 2x1x1, fragments, like G9614-33
G96	14-35	breccia	sample cm 5x3x2, like G9614-33, rounded, smaller clasts (0.5-3 mm)
G96	14-36	breccia	sample cm 6x5x3, one basaltic clast, size 2-3 cm, plus vesicular glass clasts, size 1-10 mm, 10-15% vesicular, fresh glass, cement composed by alteration products of glass
G96	14-37	tufo?	sample cm 4x4x3, small clasts of fresh basaltic glasses, volcanic ash like
G96	14-38	tufo?	sample cm 3x2x1, like G9614-37, smaller dimension of clasts
G96	14-39	dolerite	sample cm 4x3x2, rounded, erratic pebble, Ol replaced by iddingsite, rare big grains of Pl
G96	14-40	erratics	7 samples of different kind: sandstone, schist, gneiss, granitoid
G96	15-01	basalt	sample cm 20x15x15, big pillow fragment, thin Fe-Mn crust, fresh glass, Pl porphyric, Pl grains up to 5 mm, 10-15%, vesicles 0.3-1 mm
G96	15-02	basalt	sample cm 15x10x10, pillow fragment with thin glassy crust, thin Fe-Mn patina, rare Pl phenocrysts, big vesicles
G96	15-03	basalt	sample cm 12x5x4, like G9615-01, Pl 3-5%, size 0.3-2 mm
G96	15-04	basalt	sample cm 29x8x8, like G9615-01
G96	15-05	basalt	sample cm 12x10x8, like G9615-01, triangular pillow sector, big cavities
G96	15-06	basalt	sample cm 12x7x5, like G9615-01
G96	15-07	basalt	sample cm 15x10x8, like G9615-01
G96	15-08	basalt	sample cm 10x7x5, like G9615-01
G96	15-09	basalt	sample cm 15x5x5, like G9615-01
G96	15-10	aphyric basalt	sample cm 12x5x5, flow lava fragment, with breccia zone including basaltic clasts, flow structures Pahoe-hoe like
G96	15-11	aphyric basalt	sample cm 30x10x8, more vesicular lava fragment
G96	15-12	aphyric basalt	sample cm 25x10x8, like G9615-10
G96	15-13	aphyric basalt	sample cm 20x10x7, flow lava fragment, rare Pl phenocrysts, 15% vesicular, size of vesicles 0.5-3 mm
G96	15-14	glass	glass description will be performed more completely on separated database
G96	15-15	glass	glass description will be performed more completely on separated database
G96	15-16	glass	glass description will be performed more completely on separated database
G96	15-17	glass	glass description will be performed more completely on separated database
G96	15-18	glass	glass description will be performed more completely on separated database
G96	15-19	glass	glass description will be performed more completely on separated database
G96	15-20	glass	glass description will be performed more completely on separated database
G96	15-21	glass	glass description will be performed more completely on separated database
G96	15-22	glass	glass description will be performed more completely on separated database
G96	15-23	aphyric basalt	flow lava fragments with fresh glass

G96	15-25	aphyric basalt	sample cm 16x12x8, like G9615-24 with double glassy crust inside and on the surface
G96	15-26	aphyric basalt	sample cm 6x12x5, like G9615-24
G96	15-27	aphyric basalt	sample cm 6x6x5, like G9615-24
G96	16-01	basalt	sample cm 10x8x8, Pl-Ol porphyric, Pl and rare big Pl-Ol glomero porphyric, rounded with Fe-Mn crust, vesicles size 0.1-3 mm with fluidal deformation, round vesicles filled by phyllipsite, irregular ones have clay minerals and Fe-hydroxides on walls
G96	16-02	aphyric basalt	sample cm 10x6x4, Pl-Ol microphenocrysts, Ol size 0.1-0.3 mm homogeneously distributed in groundmass, Fe-Mn crust, vesicular and variolitic texture, bimodal size of vesicles, small up to 0.5 mm, big 1 to 3 mm, generally empty
G96	16-03	aphyric basalt	sample cm 4x3x2, sharpened, no Fe-Mn crust, fluidal texture shown by elongation of vesicles, intensive alteration of Fe-hydroxides (atypic)
G96	16-04	aphyric basalt	sample cm 6x5x2, rare Ol-Pl microphenocrysts, thin Fe-Mn crust (1 mm), high vesicular, 50% filled by phyllipsite,
G96	16-05	basalt	sample cm 5x3x2, Ol-Pl porphyric, rare Pl phenocrysts, size 2 mm, thin Fe-Mn crust, 20% vesicular, size 1-2 mm, vesicles partially filled by phyllipsite
G96	16-06	basalt	sample cm 4x3x2, Ol-Pl porphyric, thin Fe-Mn crust, 30% vesicular, size 2-3 mm, vesicles partially filled by phyllipsite,
G96	16-07	basalt	sample cm 4x3x2, Ol-Pl porphyric, 50 % vesicular
G96	16-08	pomice	sample cm 2x2x1.5, Pl-Cpx porphyric, vitrobasalt, vesicular brown glass, Cpx size 1 mm, Pl size 4 mm
G96	16-09	pomice	sample cm 3x2x1.5, fluidal texture, basaltic xenolites, rare Qtz phenocrysts, pale brown glass
G96	16-10	breccia	sample cm 4x3x2 with clasts of basalt and deeply altered glasses, cemented by products of alteration
G96	16-11	breccia	sample cm 6x4x4, like G9616-10, with big strongly altered clasts, inside cement we can see grains of Pl, Ol and Qtz (?)
G96	16-12	breccia	sample cm 5x3x3, like G9616-10, with small acid effusive clasts and Fe-Mn minerals
G96	16-13	breccia	sample cm 3x2x2, like G9616-12
G96	16-14	breccia	sample cm 5x3x2, like G9616-12, sand granulometry
G96	16-15	metasomatite	sample cm 8x3x2, erratic pebble, Qtz
G96	16-16	gneiss	sample cm 20x15x10, erratic pebble, Qtz, mica
G96	17-01	basalt	sample cm 20x10x7, pillow fragment with fresh glassy crust 3-6 mm, rare Pl grains size (0.3-3 mm), 2,5%, vesicles 5% up to 4 mm, groundmass partially altered
G96	17-02	aphyric basalt	sample cm 7x5x4, rounded, part of volcanic bomba, covered by 1 mm glass
G96	17-03	hyaloclastic breccia	few pieces of breccia with glass
G96	17-04	hyaloclastic breccia	like G9617-03
G96	17-05	aphyric basalt	sample cm 10x8x8, centimetric cleavage, Fe-hydroxide along fractures, chlorite
G96	17-06	aphyric basalt	sample cm 17x15x15, vesicles (0.2-0.5 mm) 1-3%, empty, Fe-hydroxide on walls, Fe-hydroxide alteration on the external side of sample
G96	17-07	aphyric basalt	sample cm 10x8x6, fresh
G96	17-08	aphyric basalt	sample cm 8x8x6, like G9617-07
G96	17-09	aphyric basalt	sample cm 10x10x8, like G9617-05 with chilling zone with glass replaced by clay minerals
G96	17-10	aphyric basalt	sample cm 8x6x5, like G9617-05
G96	17-11	aphyric basalt	sample cm 8x7x5, like G9617-05
G96	17-12	aphyric basalt	sample cm 25x20x15, pillow fragment, calcitic and Chl veins developed along cleavage fractures, microlithic structure, sulphides on fractures and smaller in groundmass

G96	17-13	aphyric basalt	sample cm 25x25x20, like G9617-12 with chilling zone, variolitic texture, groundmass completely replaced by Chl
G96	17-14	aphyric basalt	sample cm 20x20x10, pillow fragment, mandelstein type, vesicles filled up by Chl; calcite, Chl and sulphides developed on contraction cracks and cleavage, glassy crust replaced by brown clay minerals
G96	17-15	aphyric basalt	sample cm 10x15x15, pillow fragment, like G9617-12
G96	17-16	aphyric basalt	sample cm 12x10x10, pillow fragment, like G9617-12
G96	17-17	aphyric basalt	sample cm 10x10x8, like G9617-05
G96	17-18	aphyric basalt	sample cm 10x8x7, like G9617-12, higher amount of sulphides (Bornite)
G96	17-19	aphyric basalt	sample cm 18x11x6, pillow fragment, like G9617-05
G96	17-20	aphyric basalt	sample cm 12x8x6, like G9617-12, chalcopyrite ore
G96	17-21	aphyric basalt	sample cm 6x6x4, pillow fragment, like G9617-12
G96	17-22	aphyric basalt	sample cm 5x4x3, pillow fragment, like G9617-12
G96	17-23	aphyric basalt	sample cm 8x6x4, like G9617-12, with sulphides in calcitic vein
G96	17-24	aphyric basalt	sample cm 10x8x5, like G9617-12, with sulphides
G96	17-25	aphyric basalt	sample cm 6x5x4, like G9617-12, with thin sulphides ore along branched fractures
G96	17-26	aphyric basalt	sample cm 7x6x2, like G9617-12, with sulphides in groundmass
G96	17-27	aphyric basalt	sample cm 8x6x5, like G9617-12, with cleavage and sulphides in groundmass
G96	17-28	aphyric basalt	sample cm 9x7x5, like G9617-12
G96	17-29	basalt	sample cm 30x17x8, cleavage fractures, intensively chloritized cooling glass zone, randomly oriented fractures filled by calcitic veins
G96	17-30	metasomatite	sample cm 6x4x4, metasomatized glassy crust, glass completely replaced by Chl
G96	17-31	basalt	sample cm 15x10x6, altered, mandelstein type, vesicles filled up by zeolites
G96	17-32	breccia	sample cm 8x6x4, clasts composed by basalts, glass fragments, cemented by palagonite and Fe-hydroxide, probable hyaloclastite
G96	17-33	aphyric basalt	sample cm 6x5x5, like G9617-12 with veins with dark minerals, cleavage
G96	17-34	basalt	sample cm 7x7x5, mandelstein type, highly vesicular 10-15%, vesicles size 1-2 mm filled up by Chl
G96	17-35	metasomatite	sample cm 6x6x6, wide Qtz cemented, Chl clasts probably from altered basalt 2-30 mm, sulphides masses in Chl and Qtz
G96	17-36	basalt	sample cm 7x6x1.5, rare Ol porphyric (1mm), 1%, 5-7% vesicular, round empty vesicles 1-3 mm, exotic similar to Spiess basalts
G96	17-37	basalt	sample cm 5x3x3, Pl-Cpx porphyric, Cpx 1%, 1-2 mm, Pl 2-3%, 2-6 mm, 70% vesicular, bimodal size of vesicles 0.1-0.5 mm; 1-3 mm, similar to Spiess basalt
G96	17-38	quartzite	erratic
G96	18-00	sediment	sand
G96	18-01	basalt	sample cm 2x4x2, Pl porphyric (2-10 mm) 5-8%, vesicles 70% with bimodal size distribution 0.5-1.5 mm and 2-5 mm, Fe-hydroxides on walls of vesicles,
G96	18-02	basalt	sample cm 5x7x1, like G9618-01, cooling crust, diffuse palagonitization on the surface
G96	18-03	basalt	sample cm 5x4x1, like G9618-02
G96	18-04	basalt	sample cm 4x3x1, like G9618-02
G96	18-05	basalt	sample cm 3x2x1, like G9618-02
G96	18-06	basalt	fragments, like G9618-02
G96	18-07	basalt	sample cm 2x1x0.5, Pl porphyric
G96	18-08	siltstone	sample cm 4x3x2
G96	18-09	siltstone	sample cm 8x4x4
G96	19-00	sediment	sand

G96	19-01a	basalt	sample cm 15x15x10, Pl-Ol porphyric, Pl 10% (1-4 mm), lightly altered, glassy palagonitized crust covered by Fe-Mn crust, thickness 1-1.5 cm
G96	19-01b	basalt	sample cm 15x10x5, Pl porphyric, like G9619-01a
G96	19-01c	basalt	sample cm 7x5x4, rare Pl porphyric, empty vesicles, 3%
G96	19-02	basalt	sample cm 3x2x2, Pl porphyric like G9619-01c, Pl 10% sometimes altered, rare Ol phenocrysts
G96	19-03	basalt	sample cm 3x2x1, altered
G96	19-04	basalt	sample cm 2x1x1.5, altered, vesicular
G96	19-05	basalt	sample cm 5x5x4, rounded, vesicular, Cpx-Ol-Pl porphyric
G96	19-06	basalt	sample cm 4x3x2, Ol-Cpx-Pl porphyric
G96	19-07	basalt	sample cm 4x3x2, Ol-Cpx-Pl porphyric
G96	19-08	basalt	sample cm 3x3x2, Pl porphyric, Pl 7-10%, vesicular, altered
G96	19-09	basalt	sample cm 3x4x1.5, rare Cpx-Pl porphyric, vesicular
G96	19-10	aphyric basalt	sample cm 5x7x4, fresh, vesicular
G96	19-11	aphyric basalt	sample cm 5x5x7, fresh, vesicular
G96	19-12	aphyric basalt	sample cm 3x2x1, fresh, vesicular
G96	19-13	aphyric basalt	sample cm 2x2x1, fresh, vesicular, rare Pl phenocrysts
G96	19-14	aphyric basalt	sample cm 2x2x1, lfresh, vesicular, rare Pl phenocrysts
G96	19-15	basalt	sample cm 4x3x0.5, Pl-Cpx porphyric, vesicular
G96	19-16	aphyric basalt	few small pieces like G9619-13
G96	19-17	Fe-Mn crust	few small pieces
G96	19-18	basalt	sample cm 6x5x1.5, Pl-Ol Cpx porphyric, inclusions of Ol in Pl grains, highly vesicular
G96	19-19	basalt	sample cm 4x3x2, Cpx-Pl porphyric, vitrobasalt with pale brown glass, vesicular 60-70%, size of vesicles 0.5-1 mm
G96	19-20	basalt	sample cm 3x2x1.5, like G9619-19
G96	19-21	aphyric basalt	sample cm 3x2x1, Pl-rare Cpx porphyric, vitrobasalt with pale brown glass, vesicular 60-70%, size of vesicles 0.5-1 mm
G96	19-22	basalt	sample cm 3x2x1.5, altered, very fine texture, with globes of Qtz, epidote, Chl, to form a paragenesis probably replacing phenocrysts, sometimes in veins
G96	19-23	basalt	sample cm 4x3x2, altered, Pl porphyric, smectite replace groundmass
G96	19-24	erratics	3 samples of sandstone and siltstone, rounded, 4-5 cm, with calcitic veins and sedimentary structures
G96	19-25	erratics	3 samples of quartzite, gneiss, granitoid, rounded, 4-5 cm
G96	20-00	sediments	sand
G96	20-01	basalt	sample cm 20x12x15, Ol porphyric (2-3 mm), Pl glomeroporphyric, Ol and Pl intergrowt, probable spinel inside Ol, lightly vesicular,
G96	20-02	basalt	sample cm 20x15x15, Pl-Ol porphyric, with glassy band thickness 5 mm, and thick Fe-Mn crust, thickness 2 cm
G96	20-03	basalt	sample cm 15x12x12, Ol-Pl porphyric, size of grains up to 8-10 mm, lightly vesicular, thick Fe-Mn crust
G96	20-04	basalt	sample cm 20x12x10, Ol-Pl glomeroporphyric, grains up to 1.5 cm, dark mineral, may be spinel, in grains and in groundmass, size 2 mm, thick Fe-Mn crust
G96	20-05	basalt	sample cm 15x10x12, like G9620-04
G96	20-06	basalt	sample cm 14x10x8, like G9620-03 with more crystallized groundmass
G96	20-07	basalt	sample cm 16x15x10, Ol-Pl porphyric, cleavage fractures with clay minerals and pelagic sediments along fractures, Fe-Mn crust
G96	20-08	basalt	sample cm 6x7x7, Ol-Pl porphyric, pillow fragment with thin glassy crust quite fresh
G96	20-09	basalt	sample cm 20x10x10, Ol-Pl porphyric, fresh glassy crust 5-7 mm, with 2 mm palagonitized band
G96	20-10	aphyric basalt	sample cm 12x12x10, thick Fe-Mn crust
G96	20-11	aphyric basalt	sample cm 15x10x7, well crystallized, lightly vesicular, thick Fe-Mn crust
G96	20-12	aphyric basalt	sample cm 18x10x7, thick Fe-Mn crust

G96	20-13	basalt	sample cm 10x8x7, like G9620-01
G96	20-14	basalt	sample cm 12x7x5, like G9620-04, plus big Pl glomeroporphyric grain surrounded by Ol, size 1 cm, Ol microphenocrysts
G96	20-15	basalt	sample cm 15x10x10, rare Pl-Ol phenocrysts, Fe-Mn crust 1-2 cm
G96	20-16	basalt	sample cm 15x6x6, Pl-Ol porphyric, ore mineral mass, 0.5x1.5 cm intergrowt with Pl
G96	20-17	basalt	sample cm 7x6x5, Pl-Ol glomeroporphyric, 1 cm, dark minerals (Cpx, spinel)
G96	20-18	aphyric basalt	sample cm 8x7x6, like G9620-10
G96	20-19	aphyric basalt	sample cm 10x8x7, rare Pl-Ol phenocrysts
G96	20-20	aphyric basalt	sample cm 16x10x8, rare Pl phenocrysts, cleavage fractures with Fe-hydroxide alteration
G96	20-22	basalt	few fragments, size 2-3 cm, like G9620-21
G96	20-23	basalt	sample cm 25x25x25, rare Cpx-Pl porphyric, vitrobasalt, high vesicular, pomice-like structure
G96	20-24	basalt	sample cm 3x2x1, rounded, vitrobasalt, like G9620-23
G96	20-25	basalt	sample cm 3x2x1, Pl porphyric, round vesicles 1-5 mm, 50-60%
G96	20-26	aphyric basalt	sample cm 3x1.5x1.5, strongly altered red sample by developing of Fe-hydroxide, 70-80% vesicular, vesicle size 0.5-1 mm
G96	20-27	aphyric basalt	sample cm 2x2x1.5, Pl porphyric, 1-3%, strongly altered red sample by developing of Fe-hydroxide, 70-80% vesicular, vesicle size 0.5-1 mm
G96	20-28	pomice	sample cm 5x1.5x1, acid effusive, pomice, one dark euhedral xenocryst 8 mm
G96	20-29	sandstone	sample cm 20x12x12, lightly cemented sandstone, probably formed in situ, sharp clasts of Qtz, Pl (0.5-1 mm), cemented by clay minerals and Fe-hydroxide
G96	20-30	erratic pebble	sample cm 4x4x5, Qtz and Pl phenocrysts, sulphides
G96	20-31	erratic gabbro	sample cm 6x5x4, Amph-Qtz, quartz and Pl veins
G96	20-32	erratic dolerite	sample cm 6x4x3
G96	20-33	sandstone	3 samples of sandstone, 2 dark, 1 red
G96	20-34	quartzite	30x15x15, quartzitic sandstone, clast size 0.2-1 mm
G96	20-35	gneiss	sample cm 20x15x15, garnet gneiss
G96	20-36	gneiss	sample cm 20x15x10, feldspars-biotite gneiss
G96	20-37	gneiss	sample cm 15x10x8, biotite-feldspar-garnet gneiss
G96	20-38	gneiss	sample cm 15x10x8, Qtz-Bt
G96	21-01	aphyric basalt	sample cm 12x10x5, altered, heterogeneous vesicular, 0.1-1 mm, 10-15%, Fe-Mn crust
G96	21-02	aphyric basalt	sample cm 6x4x3, lightly altered, heterogeneous vesicular, size of vesicles 0.1-1 mm. probable pyrite in vesicles
G96	21-03	basalt	sample cm 5x3x3, Ol-Pl porphyric, highly vesicular, size of vesicles 1-2 mm
G96	21-04	basalt	sample cm 7x5x4, fresh, Pl-Ol porphyric, Fe-Mn patina, Pl (0.5-3 mm), 15%, Ol (0.3-0.5 mm), 5-7%
G96	21-05	aphyric basalt	sample cm 11x9x7, fractured, altered, Pl microphenocrysts, Fe-hydroxides, Fe-Mn crust thickness 1-1.5 cm
G96	21-06a	aphyric basalt	sample cm 24x17x8, lighthly altered, Pl microphenocrysts, lighthly vesicular, round vesicles 0.5 mm, small Fe-Mn crust
G96	21-06b	aphyric basalt	sample cm 10x7x3, altered, Pl microphenocrysts, Fe-hydroxides, Fe-Mn crust
G96	21-07	aphyric basalt	sample cm 2x1.5x1.5
G96	21-08	basalt	sample cm 3x1.5x1.5, altered, Pl-Ol porphyric, Ol sometimes altered, lighthly vesicular, vesicles up to 3 mm, Pl (0.5-2 mm), 10-15%, Fe-hydroxides
G96	21-09	basalt	sample cm 3x2x2, altered, Pl porphyric, Fe-hydroxides, Fe-Mn crust thickness 1,5 cm
G96	21-10	basaltic breccia	sample cm 12x9x9, Fe-Mn crust thickness 1 cm, clasts of aphyric basalt with Pl microphenocrysts, lightly vesicular, very small vesicles

G96	21-11	aphyric basalt	sample cm 9x6x5, like G9621-10
G96	21-12	aphyric basalt	sample cm 6x5x3, like G9621-10
G96	21-13	gabbro dolerite	(e-Mn crust, Pl replaced by Cpx, Pl 2-4 mm
G96	21-14	sandstone	sample cm 7x5x3, rounded pebble
G96	21-15	metasomatite	sample cm 4x3x1.5, Fe-Mn patina
G96	21-16	Fe-Mn crust	
G96	22-01	aphyric basalt	sample cm 20x10x10, fresh pillow fragment, lamellar shaped Ol microphenocrysts, highly vesicular, 20-25%, round empty vesicles size 0.5-1.5 mm
G96	22-02	aphyric basalt	sample cm 20x10x10, like G9622-01, with cooling zone with glassy crust, thickness 5 mm, superficial palagonitization, 1 mm
G96	22-03	aphyric basalt	sample cm 15x10x8, like G9622-01
G96	22-04	aphyric basalt	sample cm 4x3x2, fresh, vesicular 30%, size of vesicles 0.5-2 mm
G96	22-05	aphyric basalt	sample cm 5x4x3, like G9622-04
G96	22-06	basalt	sample cm 5x4x2, Pl-Ol porphyric, Ol (0.5-1 mm) 1%, Pl (1-3 mm) 1-2% ; 5-10% vesicular, empty vesicles 0.5-7 mm
G96	22-07	aphyric basalt	sample cm 2x1.5x1.5, 70-80% vesicular heterogeneous distribution and size, glassy pale brown groundmass
G96	22-08	dacite	sample cm 6x5x4, pale grey groundmass, Pl-Qtz-Amph, Fe-Mn patina
G96	22-09	metasomatite	sample cm 3x2x1, Qtz, sulphides
G96	22-10	limestone	sample cm 5x4x1, flattened
G96	22-11	metasomatite	sample cm 4x4x1.5, rounded, Qtz
G96	22-12	siltstone	sample cm 5x4x2
G96	23-01	basaltic breccia	sample cm 4x2x2, clasts of fresh and palagonitized basaltic glass, small grains 1-4 mm, clasts of Pl and basalt, sample covered by Fe-Mn crust thickness 1 cm
G96	23-02	hyaloclastic breccia	sample cm 8x6x2, palagonitized glass grains 1-4 mm, little amount of fresh glass in the middle of alteration zone, thick Fe-Mn crust 1 cm
G96	23-03	Fe-Mn crust	2 pieces 11x5x1.5; 6x7x1.5
G96	24-01	basalt	sample cm 25x15x15, fresh pillow fragment, Pl-Ol porphyric, Pl (1-5 mm), 5%, rare Ol grains intergrowt with Pl, lightly vesicular 5-7%, size of vesicles 1 mm
G96	24-02	basalt	sample cm 30x20x15, fresh triangular pillow sector, Pl-Ol-Cpx porphyric, Pl (8 mm) 5-7% with inclusions of glass (or spinel), Cpx 1 grain growt with Pl, heterogeneous distribution of phenocrysts, concentrate in glassy crust, 7% vesicular
G96	24-03	basalt	sample cm 25x20x15, like G9624-02, more vesicular up to 10%, 2 mm
G96	24-04	basalt	sample cm 25x25x10, big Pl glomeroporphyric grains 15 mm, intergrowt with big Cpx grains 5 mm, and Ol 2-3 mm, Pl 10-15%, rare vesicles
G96	24-05	basalt	sample cm 30x20x10, like G9624-04 less developed Pl phenocrysts, up to 10 mm, 10%, less amount of Ol and Cpx, Ol grain with glass inclusion, vesicles 2%, 5 mm,
G96	24-06	basalt	sample cm 25x20x10, Pl-Ol porphyric, rare Ol grains (2-3 mm), 1%; Pl (5-7 mm), 10%; vesicles 2-3%, 5 mm
G96	24-07	basalt	sample cm 20x10x5, Pl-(Ol) porphyric, Pl (0.5-2 mm), 5%, rare Ol (0.5-1 mm), <1%, vesicles 0.2-2 mm, 5%
G96	24-08	basalt	sample cm 20x15x8, Pl-Ol-Cpx porphyric, Pl (1-4 mm), 5%; Ol (0.5 mm), <1%; one aggregate with glomeroporphyric structure is present, 1.5x1 cm, Cpx 40%, up to 2 mm; Pl 45%, Ol 15%, maybe gabbro xenolite
G96	24-09	basalt	sample cm 25x20x15, Pl-(Ol) porphyric, Pl (1-3 mm), 3-4%; rare Ol grains 2-5 mm
G96	24-10	basalt	sample cm 20x15x8, like G9624-09 with rare Cpx phenocrysts
G96	24-11	basalt	sample cm 15x20x7, like G9624-10
G96	24-12	basalt	sample cm 12x10x6, like G9624-10, with Cpx grains intergrowt with Pl

G96	24-13	basalt	sample cm 15x10x8, Pl porphyric (10 mm), 7%; rare Ol grains, included in Pl
G96	24-14	basalt	sample cm 12x10x7, like G9624-06, more altered Ol-Pl porphyric
G96	24-15	basalt	sample cm 10x8x6 Ol-Pl porphyric, Ol (0.5-3 mm), 2%; Pl 0,5 mm <1%
G96	24-16	glasses	glass description will be performed more completely on separated database
G96	25-01	aphyric basalt	sample cm 25x10x10, rare Pl-Ol phenocrysts, lightly vesicular 1-2% (0.5-1 mm); Ol microphenocrysts (0.2-0.5 mm), 1-2%; Fe-Mn patina
G96	25-02	basalt	sample cm 6x4x5, Ol-Pl porphyric, glassy cooling margin thickness 5 mm
G96	25-03	basalt	Ol-Pl porphyric, glassy cooling margin thickness 5 mm
G96	25-04	aphyric basalt	sample cm 6x6x6, rare Ol porphyric, Ol (0.1-2 mm) 1-2%, ; glassy cooling margin
G96	25-05	glasses	3 samples of glassy crust, size 3-4 cm, glass description will be performed more completely on separated database
G96	26-01	glassy basalt	sample cm 50x30x20, very fresh and particular shaped lava burr, glassy porphyric basalt, Pl-Ol-Cpx porphyric, Ol-Pl glomeroporphyric, glass inclusions in Ol, Pl (3-30 mm) 30%, anhedral; Ol (2-5 mm) 2-3 %, euhedral; Cpx light green color (7 mm) euhedral

7.2 Data

Table 8: ROCKS ANALYSIS S18 BOUVET. Average composition
(wt.%) Bouvet Region.

SAMPLE	SiO2	TiO2	Al2O3	Fe2O3	MnO	MgO	CaO	Na2O	K2O	P2O5	BA	LOI
S18-09/1	40.24	0.03	1.15	7.23	0.12	37.07	0.63	0.3	0.05	0.03	0.006	12.79
S18-09/2	40.1	0.03	1.21	7.5	0.12	36.68	0.58	0.3	0.06	0.03	0.006	13.31
S18-09/5	40.38	0.04	1.39	7.6	0.13	36.08	0.82	0.3	0.06	0.03	0.007	13.05
S18-10/145	46.5	1.23	19.51	8.19	0.19	6.98	9.7	3.89	0.43	0.11	0.012	3
S18-10/147	44.08	1.36	21.44	11.07	0.2	6.3	6.27	3.63	0.27	0.13	0.01	5.12
S18-10/158	46.8	1.21	18.59	8.76	0.15	7.77	10.7	2.95	0.12	0.12	0.003	2.64
S18-10/169	46.28	1.21	20.09	7.89	0.18	6.51	9.69	3.55	0.34	0.11	0.003	3.8
S18-10/170	46.53	0.98	20.53	7.35	0.12	7.34	11.58	2.62	0.31	0.1	0.003	2.66
S18-10/178	45.64	0.75	18.09	9.01	0.15	9.87	11.18	2.02	0.09	0.06	0.003	2.88
S18-10/191	40.34	0.03	1.32	7.92	0.1	36.44	0.83	0.3	0.07	0.03	0.006	12.1
S18-10/205	39.48	0.03	1.07	7.39	0.11	36.97	0.44	0.3	0.05	0.03	0.005	13.74
S18-10/216	45.27	0.03	1.35	7.25	0.07	33.03	1.4	0.3	0.08	0.03	0.003	10.93
S18-22/1	49.37	2.21	15.52	10.52	0.18	7.01	10.76	2.88	0.78	0.35	0.017	0.16
S18-22/2	49.47	2.18	15.63	10.53	0.18	7	10.68	2.59	0.72	0.35	0.019	0.04
S18-22/3	49.74	2.16	15.46	10.44	0.18	7.07	10.55	2.65	0.72	0.33	0.018	0.12
S18-22/4	49.37	2.16	15.57	10.37	0.18	7.18	10.73	2.44	0.72	0.34	0.017	0.2
S18-22/5	49.63	2.19	15.51	10.51	0.18	7.14	10.81	2.38	0.74	0.34	0.016	0.14
S18-35/7	39.71	5.62	12.17	21.27	0.24	6.79	9.45	2.47	0.27	0.04	0.041	0.98
S18-35/10A	48.06	1.91	16.76	9.32	0.16	7.2	9.49	2.69	1.74	0.24	0.048	1.88
S18-35/11	47.9	1.95	16.4	9.48	0.16	7.08	9.47	2.61	1.78	0.26	0.05	2.56
S18-35/15	48.77	1.99	15.73	9.31	0.18	7.83	6.93	2.12	3.35	0.29	0.182	2.72
S18-35/16	48.14	2.07	16.95	9.49	0.15	6.97	9.18	2.82	0.97	0.31	0.041	2.22
S18-35/23	49.19	2.02	15.41	11	0.19	7.08	7.92	3.38	1.1	0.27	0.053	2.26
S18-41/1	47.7	2.54	16.14	11.31	0.2	5.8	9.9	3.28	0.76	0.37	0.031	1.52
S18-41/2	48.44	2.39	16.55	10.47	0.16	5.54	9.92	2.89	0.91	0.46	0.029	1.56
S18-41/3	53.04	0.55	17.89	7.59	0.16	6.6	9.41	2.17	0.69	0.41	0.012	1.06
S18-41/5	48.95	3.67	14.47	12.43	0.21	4.2	9.06	3.16	1.32	0.54	0.05	1.24
S18-41/9	49.26	3.48	14.51	13.08	0.21	4.75	8.43	3.42	1.27	0.56	0.042	-0.18
S18-43/2	49.23	3.66	14.5	13.7	0.21	4.59	8.56	3.03	1.3	0.54	0.046	-0.18
S18-43/4	48.68	3.54	14.68	12.88	0.19	4.55	8.64	3.12	1.17	0.52	0.039	0.54
S18-43/5	49.12	3.02	15.57	11.29	0.18	4.91	9.4	3.24	1.12	0.45	0.031	0.12
S18-44/1	49.07	3.81	14.52	13.71	0.22	4.76	8.58	3.49	1.31	0.56	0.045	-0.62
S18-44/3	49.02	3.61	14.61	13.44	0.21	4.44	8.53	3.55	1.29	0.55	0.046	0
S18-51/1	50.04	1.51	15.31	10.93	0.19	7.72	11.28	2.56	0.23	0.13	0.003	-0.4
S18-51/2	49.72	1.52	15.2	11.3	0.2	7.89	11.43	2.41	0.23	0.12	0.003	-0.34
S18-51/3	49.5	1.54	15.28	11.32	0.2	7.88	11.37	2.56	0.25	0.14	0.003	-0.42
S18-51/4	49.67	1.55	15.39	11.43	0.2	7.79	11.21	2.56	0.24	0.13	0.003	-0.38
S18-51/7	50.13	1.5	15.22	10.93	0.2	7.96	11.31	2.28	0.26	0.12	0.003	-0.34
S18-55/2	49.08	0.63	14.49	11.4	0.24	9.05	8.91	2.32	0.5	0.03	0.011	2.36
S18-55/3	51.66	0.88	12.01	9.11	0.2	9.66	12.27	2.55	0.31	0.03	0.004	0.96
S18-55/8	51.41	0.98	15.23	9.54	0.2	7.8	7.59	4.19	0.36	0.03	0.007	2.24
S18-55/9	51.17	1.1	12.42	9.63	0.22	9.39	11.32	2.81	0.34	0.05	0.008	1.08
S18-55/13A	48.91	2.34	16.31	11.52	0.16	5.9	10.35	3.59	0.26	0.13	0.018	0.44
S18-55/18	48.06	1.82	14.84	11.14	0.25	7.88	9.4	3.56	0.27	0.19	0.014	1.97
S18-55/19	48.67	1.84	14.69	11.23	0.27	7.8	9.38	3.4	0.28	0.19	0.015	1.86
S18-55/41	48.28	1.53	18.3	9.55	0.15	6.62	11.51	2.3	0.39	0.18	0.011	0.9
S18-55/42	48.32	1.77	15.81	11.13	0.19	6.05	11.01	2.96	0.43	0.2	0.013	1.42
S18-55/43	47.26	1.69	18.03	10.12	0.21	6.97	8.55	3.2	0.74	0.17	0.044	2.6
S18-55/44	48.37	0.86	20.64	6.63	0.09	6.03	11.14	3.26	0.27	0.08	0.003	2.38

Table 9: GLASS ANALYSIS S18 BOUVET. Average composition (wt.%) of basaltic glasses with H₂O contents from Bouvet Region.

SAMPLE	SiO ₂	TiO ₂	Al ₂ O ₃	Cr ₂ O ₃	FeO	MnO	MgO	CaO	Na ₂ O	K ₂ O	N	H ₂ O	Sum
S18-10/1	49.63	1.33	15.97	0.03	8.99	0.12	8.71	11.10	2.92	0.21	3	0.33	99.34
S18-10/2	49.63	1.40	15.90	0.03	9.01	0.11	8.80	11.07	2.93	0.26	3	0.16	99.30
S18-10/3	49.72	1.35	15.98	0.03	9.18	0.12	8.23	11.03	2.98	0.20	3	0.19	99.01
S18-10/5	49.87	1.39	15.94	0.01	9.19	0.13	8.35	11.15	2.89	0.22	3	0.25	99.39
S18-10/7	49.52	1.40	15.87	0.03	8.99	0.12	8.82	11.13	2.88	0.24	3	0.33	99.33
S18-19/5	58.67	1.55	14.53	0.00	9.30	0.16	1.50	4.33	4.16	3.05	3	0.93	98.18
S18-19/6	58.93	1.55	14.48	0.00	9.28	0.16	1.50	4.33	3.71	3.03	3	0.96	97.93
S18-19/13	59.01	1.56	14.48	0.00	9.54	0.15	1.53	4.40	3.58	2.99	3	0.95	98.19
S18-19/16	50.05	3.42	14.09	0.00	11.82	0.13	4.66	9.01	3.37	1.15	3	0.75	98.45
S18-19/17	50.12	3.40	14.03	0.00	11.76	0.12	4.70	9.13	3.46	1.15	3	0.73	98.60
S18-16/1	51.47	2.27	14.37	0.00	11.15	0.13	5.32	9.42	3.18	0.82	3	0.81	98.94
S18-16/5	51.56	2.24	14.30	0.01	11.18	0.13	5.25	9.29	3.08	0.81	3	0.82	98.67
S18-16/6	51.43	2.20	14.28	0.00	10.92	0.14	5.37	9.31	3.18	0.79	3	0.75	98.37
S18-22/1	50.00	2.32	14.66	0.00	9.97	0.13	6.04	10.54	3.15	0.76	3	0.78	98.35
S18-22/2	49.78	2.41	14.65	0.00	9.90	0.10	6.04	10.55	2.95	0.80	3	0.83	98.01
S18-22/3	49.90	2.47	14.69	0.00	10.00	0.12	6.02	10.61	3.05	0.77	3	0.81	98.44
S18-22/4	49.55	2.31	14.63	0.01	9.82	0.12	6.04	10.54	2.95	0.78	3	0.82	97.57
S18-22/5	49.86	2.29	14.68	0.01	10.26	0.11	6.01	10.44	3.14	0.79	3	0.85	98.44
S18-25/1	49.39	2.28	16.52	0.01	8.73	0.10	6.39	9.01	3.46	1.38	3	0.82	98.09
S18-25/2	49.48	2.20	16.46	0.00	8.77	0.10	6.34	9.10	3.55	1.36	3	0.79	98.15
S18-25/3	49.39	2.30	16.43	0.01	8.71	0.10	6.36	9.10	3.50	1.38	3	0.76	98.04
S18-27/1	51.77	2.31	15.12	0.00	10.26	0.12	5.83	9.86	1.69	0.94	3	0.99	98.89
S18-27/2	51.25	2.53	14.70	0.00	10.22	0.13	5.74	9.63	2.06	0.91	1	1.04	98.21
S18-27/3	51.71	2.47	14.95	0.00	10.46	0.12	5.74	9.86	1.78	0.91	2	1.04	99.04
S18-31/1	51.92	2.51	14.21	0.00	11.78	0.16	4.66	8.95	2.02	1.18	3	1.25	98.64
S18-31/2	51.73	2.49	14.05	0.00	11.84	0.15	4.61	8.73	1.89	1.05	3	1.55	98.09
S18-31/3	51.86	1.86	14.90	0.01	10.05	0.13	6.40	10.91	1.32	0.70	3	0.64	98.78
S18-36/1	49.70	2.15	14.82	0.01	10.32	0.13	6.82	9.88	3.20	0.79	3	0.71	98.53
S18-46/1	50.01	2.26	14.20	0.00	11.21	0.14	6.13	10.53	3.40	0.54	3	0.31	98.73
S18-46/2	50.02	2.26	14.32	0.00	11.15	0.15	6.20	10.57	3.32	0.54	3	0.33	98.86
S18-46/3	49.76	2.21	14.28	0.00	11.16	0.12	6.29	10.72	3.36	0.51	3	0.47	98.88
S18-47/1	49.28	2.39	13.99	0.00	11.32	0.17	5.89	10.37	3.41	0.59	3	0.47	97.88
S18-47/2	50.37	2.39	14.78	0.00	11.16	0.13	5.20	9.76	3.47	0.65	3	0.58	98.49
S18-47/3	50.13	2.41	14.17	0.00	11.06	0.14	5.94	10.26	3.40	0.60	3	0.56	98.67
S18-48/1	50.69	0.98	14.76	0.04	9.54	0.12	8.06	12.41	2.63	0.08	3	0.15	99.46
S18-48/2	50.62	2.06	14.40	0.01	11.64	0.14	6.62	9.87	2.61	0.53	3	0.59	99.09
S18-48/3	50.06	1.14	14.83	0.04	9.44	0.12	8.23	12.25	2.56	0.08	3	0.15	98.90
S18-50/1	50.98	1.27	14.58	0.01	10.05	0.11	7.42	11.33	2.81	0.17	3	0.19	98.92
S18-50/2	50.91	1.33	14.62	0.01	10.06	0.12	7.48	11.30	2.80	0.17	3	0.13	98.93
S18-50/3	51.53	1.38	14.64	0.01	10.15	0.12	7.44	11.21	2.84	0.17	3	0.14	99.63
S18-51/1	51.52	1.37	14.36	0.02	10.48	0.12	7.09	11.25	2.93	0.17	3	0.19	99.50
S18-51/2	51.36	1.29	14.51	0.02	10.38	0.13	7.32	11.26	2.87	0.17	3	0.18	99.49
S18-51/3	50.38	1.35	14.58	0.03	10.36	0.14	7.31	11.18	2.87	0.17	3	0.14	98.51
S18-52/1	50.14	1.05	15.53	0.03	9.70	0.12	8.20	11.42	2.78	0.11	3	0.15	99.23
S18-52/2	50.08	1.36	15.44	0.03	9.72	0.11	8.09	11.40	2.77	0.11	3	0.15	99.26
S18-52/3	49.30	1.44	15.87	0.04	9.67	0.12	8.48	11.02	2.96	0.12	3	0.20	99.22
S18-53/1	49.75	2.07	14.69	0.03	10.82	0.13	7.16	10.44	3.02	0.27	3	0.20	98.58
S18-53/2	49.25	2.06	14.69	0.02	11.01	0.13	7.37	10.44	3.10	0.27	3	0.26	98.60
S18-53/3	49.07	2.11	14.65	0.02	10.86	0.14	7.22	10.43	3.08	0.26	3	0.18	98.02
S18-60/1	56.03	0.80	14.62	0.05	7.81	0.07	8.65	6.55	3.62	0.04	3	0.12	98.36
S18-61/2	50.29	1.71	14.37	0.01	10.19	0.12	7.09	11.40	2.84	0.33	3	0.26	98.61
S18-61/3	50.24	1.74	14.38	0.00	10.16	0.13	7.13	11.33	2.89	0.31	3	0.33	98.64
S18-61/4	50.57	1.32	14.31	0.00	10.07	0.12	7.11	11.42	2.91	0.32	3	0.27	98.42
S18-62/2	49.59	2.04	14.58	0.00	11.12	0.15	7.07	10.58	2.95	0.22	3	0.17	98.47
S18-62/3	49.76	2.05	14.61	0.00	11.07	0.15	7.10	10.65	3.04	0.23	3	0.19	98.85
S18-62/4	49.50	2.02	14.59	0.00	11.07	0.15	7.11	10.66	2.95	0.24	3	0.13	98.42
S18-63/1	50.29	1.83	14.42	0.01	10.48	0.14	6.98	11.19	2.81	0.22	3	0.20	98.57

S18-63/2	50.45	2.35	13.66	0.00	11.61	0.16	6.22	10.40	2.98	0.36	3	0.23	98.42
S18-63/3	50.52	2.31	13.84	0.00	11.40	0.14	6.39	10.54	2.96	0.35	3	0.18	98.63
S18-63/4	50.56	2.26	13.77	0.00	11.30	0.15	6.32	10.57	2.99	0.35	3	0.20	98.47
S18-64/1	49.97	2.64	13.64	0.00	12.17	0.14	5.94	9.89	3.06	0.37	3	0.25	98.07
S18-64/2	50.32	2.62	13.68	0.00	12.17	0.16	5.93	9.82	3.08	0.37	3	0.25	98.40
S18-17/1	68.39	0.33	14.94	0.00	4.29	0.1	0.09	1.37	3.69	5.17	-9	0.13	98.5
S18-37/1	50.56	3.12	13.89	0.01	12.68	0.15	4.4	8.41	3.49	1.12	-9	0.68	98.51
S18-37/2	50.45	3.24	13.69	0.00	12.61	0.15	4.2	8.56	3.25	1.22	-9	0.78	98.15
S18-37/3	50.64	3.08	13.85	0.00	12.52	0.15	4.42	8.45	3.43	1.15	-9	0.62	98.31
S18-41/1	50.59	2.72	14.62	0.00	10.43	0.11	4.9	9.09	3.21	1.22	-9	0.79	97.68
S18-41/2	51.49	2.72	14.50	0.01	10.42	0.13	4.95	8.98	3.26	1.23	-9	0.63	98.32
S18-54/1	49.99	1.98	14.69	0.01	10.47	0.13	7.11	10.8	2.93	0.34	-9	0.22	98.67
S18-54/2	50.36	2.28	14.32	0.00	10.65	0.14	6.36	10.51	3.21	0.49	-9	0.44	98.76
S18-56/1	49.57	1.95	15.10	0.00	9.97	0.14	7	10.66	3.44	0.45	-9	0.25	98.53
S18-57/1	50.12	2.18	14.80	0.00	10.73	0.15	6.42	10.28	3.49	0.49	-9	0.63	99.29
S18-66/3	51.16	2.07	14.60	0.00	10.58	0.14	6.45	10.09	3.17	0.46	-9	0.51	99.23