SUPPLEMENTARY MATERIAL to the paper

Feeding and growth of a dyke-laccolith system (Elba Island, Italy) from AMS and mineral fabric data

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AMS methods

Determination of the internal fabric of the San Martino laccolith system was done by measuring the anisotropy of magnetic susceptibility (AMS). AMS primarily provides the orientation of crystals of the mineral(s) dominating the magnetic signal. AMS is a technique that gives a quantitative description of the crystalline fabric of a rock by determining the variation of magnetic susceptibility with direction. AMS is the tensor (K_{ij}) that relates the intensity of the applied field (H) to the acquired magnetization (M) (Tarling & Hrouda 1993). This tensor is expressed by its principal eigenvalues (susceptibility magnitudes) and eigenvectors $K_1>K_2>K_3$ whose orientations represent the maximum, intermediate and minimum axes of susceptibility, respectively. The K_1 axis represents the magnetic lineation while K_3 is the pole of the magnetic foliation (the plane defined by the K_1 and K_2 axes).
Several parameters are commonly used to define AMS fabric of the rock (Tab. 2S). These parameters deal with the magnitude and shape of the susceptibility ellipsoid and orientation of the principal axes of the ellipsoid**.** The parameter used in our work to define the magnitude of the anisotropy is the *corrected anisotropy degree* P_j = exp $((2*((n_1-n_m)^2 + (n_2-n_m)^2 + (n_3-n_m)^2))^{1/2})$, where n_i= ln K_i (with i=1, 2, 3) and n_m= $(n_1+n_2+n_3)/3$ (Jelinek 1981). The *mean susceptibility* K_m (Nagata & Kinoshita 1965) of each specimen is given by: $K_m=(K_1+K_2+K_3)/3$. The shape of the anisotropy ellipsoid is the *shape parameter* T (Jelinek 1981) where T = $2\ln(K_2/K_3)/(\ln(K_1/K_3)-1$. In this paper, the conventional plot T vs P_j has been used (Tarling & Hrouda 1993) to evaluate the relations of these parameters.

For this study, 150 sites were sampled for AMS analyses, mainly from the laccolith horizons of the San Martino body, but also from connecting and feeder dykes (Fig. S4). In addition to sampling at the laccolith scale (500-1000 m spacing), clusters of block samples were collected with closer spacing at selected locations to investigate the distribution of magnetic parameters at a very local scale. Both outer and inner parts of dykes were examined where possible.
Oriented block-samples were collected at 140 sites, from which 8 to 12 cores (diameter=25 mm, length=22 mm, volume ~11 cm^3) were extracted. At the remaining sites, 8 to 12 oriented cores samples were collected *in situ* using a portable drill-corer. Magnetic parameters were determined using an AGICO KLY-3S Kappabridge in the laboratory of Rock Magnetism at the School of Geography, Earth and Environmental Sciences, University of Birmingham, UK. Results were compiled with Anisoft (www.agico.com), normalized by specimen mean susceptibility, and averaged for block/sites to produce mean values of the AMS ellipsoid. The characterization of within-block variability comes from calculation of 95% confidence limits on magnitude parameters and on principal axis direction, thus the sizes of the 95% confidence ellipses on stereograms (Fig. S4) provide statistical values of each sample block/site set.

The relationship between the mineral preferred orientation of a rock sample and its magnetic fabric revealed by AMS analysis depends on the nature of the magnetic mineralogy, which has been examined by way of polarized microscopy and SEM-EDS, as well as by bulk susceptibility and heating experiments. The main iron-bearing phase in the porphyries is biotite, with rare tourmaline and only very minor opaques, mostly Ti-rich oxides. Biotite commonly underwent some chloritization, but with no significant formation of Fe-oxides. This petrographic assessment is supported by three additional lines of evidence. First, measured magnetic susceptibilities mostly fall in the narrow range of low values ($1.9 \times 10^{-4} \div 2.2 \times 10^{-5}$ SI units), typical of rocks characterized by paramagnetic mineralogy (Tarling & Hrouda 1993). Second, despite the significant weathering and alteration effects shown by most of the San Martino porphyry samples, the K_m for about 80% of the samples differs from the K_m of the freshest rocks (SLC3 and DSM14: $K_m \sim 9.5 \times 10^{-5}$) by only 2.5×10^{-5} (Table 2S2). And third, heating/cooling experiments on fresh, chloritized, and chloritized/weathered samples (performed on 2 g of sample powder using an AGICO CS-3 oven attachment to the Kappabridge) confirm an overall paramagnetic behaviour with a continuous and gradual decrease of susceptibility during heating (Fig. 4).

The paramagnetic AMS signal of biotite is due to the preferred crystallographic orientation of those crystals (magneto-crystalline anisotropy) in that the magnetic axes of biotite are parallel to its crystallographic axes and, therefore, to its shape axes: K_3 represents the statistical normal to the biotite foliation while K_1 represents the magnetic lineation that is marked by a “zone axis”, i.e. the statistically defined axis of rotation of the population of crystals (Bouchez 1997). The former may record flattening while the later stretching directions.

References

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Table S1. *K-feldspar megacrysts fabric data*

	n	Rotated Foliation Strike/Dip	Foliation Strike/Dip	Conf. angle (°) Max/Min	Eigenvalues E1/E2	n	Rotated Lineation Plunge/Bearing	Lineation Plunge/Bearing	Conf. angle (°) Max/Min	Eigenvalues E1/E2
Guardiola	51	291/26	232/31	7/5	0.80/0.11	51	10/96	20/276	19/5	0.67/0.30
Casa Margheri	51	289/21	223/30	8/6	0.78/0.14	47	17/5	12/13	46/7	0.55/0.38
Fonza	52	305/28	242/26	8/7	0.75/0.15	49	9/111	19/292	19/9	0.60/0.28
Bartoli	35	135/46	147/70	10/8	0.78/0.12					
Enfola sud E	45	62/42	100/37	28/12	0.54/0.31					
Enfola sud W	43	75/52	100/51	13/11	0.62/0.21					
BardellaSup1	30	341/64	331/36	12/10	0.72/0.16					
BardellaSup2	30	352/52	343/23	10/7	0.82/0.12					
Gualdarone1	55	23/15	159/17	10/6	0.74/0.18					
Gualdarone2	56	205/17	190/46	22/17	0.51/0.28					
Casa Balestrini	25	284/28	233/35	12/7	0.66/0.22					
Napoleone	32	113/15	158/38	12/9	0.71/0.18					
BardellaInf1	50	324/44	287/25	6/5	0.85/0.08	30	11/134	14/314	18/6	0.67/0.27
BardellaInf2	36	330/13	199/20	7/5	0.85/0.09	30	12/122	13/302	48/12	0.51/0.37
DykeWFonza	25	141/78	321/78	8/6	0.83/0.12	40	40/309	59/339	60/6	0.56/0.40
Lamaia1	43	317/25	238/20	10/9	0.70/0.17	52	7/330	21/337	45/32	0.48/0.43
Lamaia2	43	313/35	261/25	10/8	0.76/0.14	44	22/88	8/268	41/8	0.56/0.37
Lamaia3	43	334/37	286/16	9/7	0.77/0.14	42	26/86	4/266	55/11	0.51/0.37
Lamaia4	38	307/59	285/45	9/5	0.82/0.13	47	27/324	41/342	9/6	0.77/0.15
Lamaia5	46	297/29	241/30	9/7	0.74/0.16	36	11/98	19/278	38/7	0.57/0.35
Lamaia6	46	256/33	225/49	17/10	0.62/0.28	37	31/12	21/26	17/10	0.64/0.25
Lamaia7	46	288/28	235/33	17/8	0.62/0.28	40	30/16	18/29	15/9	0.66/0.21
Lamaia8	47	325/35	242/35	21/10	0.57/0.28	37	17/100	37/16	41/16	0.51/0.32
Lamaia9	39	289/32	270/19	9/7	0.81/0.11	70	39/352	13/280	11/5	0.68/0.23
PuntaMele1	49	295/13	206/27	8/6	0.80/0.12	44	12/359	354/11	24/6	0.62/0.33
PuntaMele2	53	95/9	163/32	14/8	0.64/0.26	54	2/167	4/348	26/12	0.55/0.27
PuntaMele3	51	330/20	218/16	11/6	0.75/0.18	50	6/334	18/340	16/6	0.64/0.26
PuntaMele4	54	342/42	312/16	7/6	0.82/0.11	50	43/41	20/54	45/43	0.51/0.45
PuntaMele5	50	261/10	199/33	8/7	0.74/0.14	51	14/353	16/1	27/7	0.58/0.32
CasaIschia0a	26	351/40	329/11	11/6	0.83/0.12					
CasaIschia0b	50	353/65	349/35	17/4	0.67/0.28					
CasaIschia1	48	308/64	291/49	15/5	0.69/0.27	47	64/60	36/74	6/5	0.85/0.10
CasaIschia2	45	15/75	20/46	14/8	0.69/0.21	46	30/21	16/32	21/9	0.60/0.28
CasaIschia3	45	25/65	37/42	6/5	0.84/0.12	48	10/247	20/60	32/4	0.59/0.38
CI3-4	31	10/30	94/5	17/7	0.69/0.24					
CasaIschia4	49	359/33	353/3	28/10	0.57/0.32	48	26/83	4/264	30/16	0.50/0.30
CasaIschia5	49	32/66	46/43	19/9	0.60/0.27	48	2/37	15/215	23/11	0.58/0.38
CasaIschia6a	47	45/69	60/50	9/5	0.79/0.15	48	36/216	48/190	27/7	0.58/0.33
CasaIschia6b	44	58/61	78/49	16/7	0.64/0.28	43	25/76	4/257	9/6	0.79/0.13
CasaIschia6c	43	63/75	74/64	11/8	0.70/0.19	46	28/239	52/223	29/8	0.58/0.32
CasaIschia 6av		55/68								
Viticcio street	46	226/65	231/89	7/6	0.77/0.12	46	10/48	12/227	19/6	0.63/0.31
Viticcio north	48	48/87	53/68	6/4	0.88/0.07					
Viticcio south	35	8/54	15/25	9/7	0.78/0.13					
Forno1	99	190/16	184/46	11/6	0.64/0.26	97	11/244	37/237	11/7	0.61/0.26
Forno2	87	226/34	208/58	7/6	0.72/0.17	91	1/202	12/201	26/5	0.57/0.36
Forno3	35	98/53	117/62	25/9	0.59/0.30	31	11/275	41/276	14/11	0.62/0.19
Forno4	35	204/31	194/60	11/6	0.77/0.15	30	33/276	61/284	8/5	0.82/0.13
Forno5	30	263/59	248/67	15/9	0.68/0.22	30	41/267	68/255	13/10	0.71/0.15
Forno6	33	323/30	253/18	53/38	0.49/0.37	34	72/192	59/125	19/13	0.60/0.24

e_1: semi-angle max/min (measured in degrees) of the confidence elllipes around the mean-site principal directions. The foliation and lineation data evidenced in red has been discarded during interpretation because e > 25°.

Table S2. *AMS fabric data*

		Rotated AMS data		Original AMS data		Mean eigenvectors									Mean AMS parameters		
		R. Foliation	R.Lineation	Foliation	Lineation	K1 - Kmax		K2 - Kint		K3 - Kmin		Susceptivity values			K_{mean}	Pj_{mean}	T_{mean}
Sample	n	Strike/Dip	Bearing/Plunge	Strike/Dip	Bearing/Plunge	Dec/Inc	e/z	Dec/Inc	e/z	Dec/Inc	e/z	K1	K2	K3			
Marciana Dyke																	
SM-DSM10	7	X	X	309/52	351/40	351/40	12/3	106/27	12/4	219/38	5/3	1.016	1.010	0.974	6.9E-05	1.047	0.709
SM-DSM11	11	X	X	314/58	120/21	120/21	4/2	2/50	12/3	224/32	12/2	1.042	1.025	0.933	8.9E-05	1.128	0.703
SM-DSM12	11	X	X	291/22	28/22	28/22	47/11	297/2	46/3	201/68	23/6	1.015	1.009	0.976	4.1E-05	1.044	0.689
SM-DSM13	9	X	X	295/76	308/41	308/41	15/1	101/46	14/2	206/14	6/2	1.046	1.021	0.933	8.0E-05	1.129	0.587
SM-DSM14	11	X	X	115/74	276/50	276/50	6/4	127/36	5/4	25/15	5/4	1.047	1.013	0.940	1.1E-04	1.116	0.375
SM-DSM15	8	X	X	286/69	104/7	104/7	6/3	356/68	7/6	197/21	6/3	1.038	0.999	0.963	1.1E-04	1.077	-0.029
SM-DSM16	6	X	X	328/54	349/27	349/27	16/3	107/42	27/5	238/35	23/3	1.031	1.005	0.964	1.0E-04	1.071	0.248
SM-DSM17	9	X	X	329/38	48/38	48/38	19/4	142/6	19/5	239/52	6/5	1.031	1.009	0.960	7.9E-05	1.076	0.394
SM-DSM18	8	X	X	68/59	91/33	91/33	13/7	216/41	14/9	338/31	10/7	1.029	1.000	0.971	7.1E-05	1.059	0.002
SM-DSM19	10	X	X	337/71	81/70	81/70	4/3	338/4	35/4	247/19	35/4	1.040	0.987	0.973	7.0E-05	1.073	-0.554
SM-DSM20	12	X	X	224/48	33/12	33/12	14/4	290/45	14/9	134/42	10/7	1.021	1.003	0.976	9.6E-05	1.047	0.203
SM-DSM3	8	X	X	295/75	302/27	302/27	3/2	89/59	3/2	205/15	4/2	1.047	1.012	0.941	7.0E-05	1.115	0.358
SM-DSM4	11	X	X	330/49	89/45	89/45	12/9	343/15	12/7	240/41	10/8	1.032	1.003	0.965	1.0E-04	1.069	0.163
SM-DSM5	9	X	X	298/38	8/37	8/37	5/2	105/10	8/5	208/51	8/2	1.027	0.998	0.975	7.8E-05	1.053	-0.104
SM-DSM21	12	X	X	4/85	6/23	6/23	4/1	171/67	4/2	274/5	2/1	1.063	1.018	0.919	1.38E-04	1.162	0.411
SM-DSM22	10	X	X	359/11	24/5	24/5	11/8	115/10	11/10	269/79	11/7	1.017	1.003	0.979	7.41E-05	1.039	0.274
SM-DSM23	10	X	X	285/14	73/7	73/7	39/10	342/12	39/8	195/76	12/8	1.013	1.008	0.979	6.84E-05	1.038	0.711
SM-DSM24	12	X	X	100/65	161/62	161/62	6/3	274/12	8/4	10/25	7/3	1.025	1.006	0.969	7.59E-05	1.058	0.349
SM-DSM25	9	X	X	137/60	302/25	302/25	6/3	179/50	12/3	47/29	11/3	1.027	1.002	0.972	6.69E-05	1.057	0.109
Enfola Dyke																	
SM-ENF1	11	44/48	130/47	76/32	118/22	118/22	38/12	217/22	39/27	346/58	29/10	1.015	1.006	0.979	1.2E-04	1.039	0.530
SM-ENF10	11	136/18	268/13	162/45	268/43	268/43	9/4	170/8	11/8	72/45	11/5	1.018	1.000	0.982	1.1E-04	1.036	0.016
SM-ENF11	8	294/40	62/33	255/37	67/6	67/6	7/5	333/37	12/5	165/53	13/6	1.034	0.992	0.973	1.0E-04	1.064	-0.373
SM-ENF12	11	63/47	159/47	94/41	138/31	138/31	5/3	243/24	6/5	4/49	6/3	1.019	1.004	0.977	9.7E-05	1.043	0.309
SM-ENF13	9	91/36	267/3	125/46	266/33	266/33	6/3	156/28	12/6	35/44	12/4	1.021	1.000	0.979	9.0E-05	1.044	0.020
SM-ENF14	11	73/48	224/28	102/46	205/46	205/46	17/7	108/7	18/5	12/44	8/6	1.015	1.007	0.978	7.9E-05	1.039	0.562
SM-ENF15	12	82/87	261/8	84/83	259/38	259/38	16/5	93/51	45/8	354/7	45/9	1.017	0.996	0.987	1.0E-04	1.031	-0.386
SM-ENF16	12	227/63	246/31	221/85	229/57	229/57	5/3	38/33	5/2	131/5	3/1	1.011	1.005	0.984	6.8E-04	1.028	0.519
SM-ENF17	11	84/51	229/35	107/54	204/54	204/54	11/4	110/3	12/8	17/36	9/4	1.012	1.003	0.985	9.4E-05	1.029	0.341
SM-ENF18	13	36/49	91/43	66/29	91/13	91/13	12/5	187/25	14/10	336/61	13/5	1.015	1.006	0.979	8.9E-05	1.038	0.482
SM-ENF19	9	91/28	166/28	134/41	154/16	154/16	14/8	256/36	14/7	44/49	10/3	1.017	1.009	0.974	8.6E-05	1.047	0.633
SM-ENF20	12	21/25	177/11	124/11	172/8	172/8	14/3	263/7	14/3	34/79	4/3	1.017	1.008	0.975	8.6E-05	1.046	0.584
SM-ENF21	12	191/81	263/81	11/69	93/69	93/69	10/3	190/3	10/4	281/20	5/3	1.019	1.007	0.974	9.8E-05	1.048	0.464
SM-ENF22	8	84/42	176/42	115/47	153/33	153/33	10/3	264/29	14/8	25/43	14/4	1.029	1.009	0.962	9.5E-05	1.071	0.413
SM-ENF23	12	100/77	265/49	105/84	254/79	254/79	12/3	106/9	14/12	15/6	14/3	1.023	1.013	0.964	1.0E-04	1.066	0.673
SM-ENF24	11	9/60	20/18	16/31	25/6	25/6	10/4	119/30	10/4	286/59	7/3	1.022	1.014	0.964	1.1E-04	1.066	0.714
SM-ENF25	10	150/63	152/5	153/90	333/9	333/9	29/11	155/81	29/9	63/1	12/10	1.013	1.007	0.981	9.9E-05	1.035	0.633
SM-ENF26	12	132/9	142/1	168/37	325/16	325/16	32/5	225/32	32/7	78/53	8/6	1.016	1.012	0.972	9.9E-05	1.050	0.794
Viticcio Dyke																	
SM-ENF31	8	239/85	243/36	60/79	222/60	222/60	4/1	66/28	10/3	330/10	9/1	1.015	1.004	0.981	1.0E-04	1.035	0.360
SM-ENF32	10	0/70	174/17	0/39	166/12	166/12	12/11	67/37	11/9	270/50	13/9	1.015	1.003	0.983	9.3E-05	1.033	0.246
SM-ENF33	11	118/84	131/64	298/81	111/38	111/38	16/3	309/51	18/6	207/9	12/3	1.020	1.004	0.975	1.9E-04	1.047	0.304
SM-ENF34	12	248/87	66/25	69/82	248/3	248/3	63/12	137/82	63/12	339/8	15/11	1.009	1.006	0.986	9.8E-05	1.025	0.737
SM-ENF4	10	50/79	64/50	59/62	71/22	71/22	14/7	193/53	13/9	329/28	10/9	1.015	1.002	0.983	7.9E-05	1.033	0.215
SM-ENF41	12	158/76	230/76	338/76	115/69	115/69	33/3	342/14	33/4	248/14	4/3	1.010	1.009	0.981	1.3E-04	1.033	0.918
SM-ENF42	12	61/90	62/77	65/76	81/48	81/48	46/23	234/38	46/16	335/14	26/12	1.004	1.001	0.995	8.5E-05	1.009	0.476
SM-ENF51	12	203/76	251/72	23/76	115/76	115/76	9/3	23/1	10/3	293/14	5/3	1.012	1.005	0.983	1.7E-04	1.031	0.495
SM-ENF52	12	150/64	232/54	155/81	179/69	179/69	6/5	332/19	8/4	65/9	8/6	1.014	1.001	0.985	1.3E-04	1.029	0.153
SM-ENF53	11	354/69	170/10	351/40	166/4	166/4	19/8	73/39	19/8	261/50	11/7	1.015	1.004	0.980	1.1E-04	1.037	0.361
Fonza Dyke																	
SM-DWF1E	6	322/74	100/67	311/51	94/37	94/37	8/3	339/30	8/6	221/38	7/2	1.019	1.008	0.973	1.0E-04	1.049	0.500
SM-DWF2	13	348/62	165/5	340/33	344/3	344/3	16/3	76/33	16/4	250/57	5/2	1.021	1.015	0.964	1.4E-04	1.065	0.804
SM-DWF3	7	147/59	157/16	152/85	152/3	152/3	24/9	270/84	26/13	62/5	23/15	1.019	1.003	0.979	8.9E-05	1.041	0.204
Layer 1 (L1)																	
SM-MON1	8	167/86	176/66	346/65	130/51	130/51	25/9	360/27	26/8	256/25	12/6	1.021	1.001	0.978	7.6E-05	1.044	0.096
SM-MSM1	6	235/37	278/26	215/58	283/56	283/56	43/6	29/11	42/14	125/31	18/14	1.014	1.009	0.977	9.1E-05	1.041	0.770
SM-MSM2	8	86/49	230/35	110/54	206/54	206/54	17/10	112/2	17/11	21/36	13/8	1.025	1.007	0.968	7.0E-05	1.060	0.389
SM-PER1	12	310/53	90/40	283/39	90/10	90/10	22/10	352/37	27/16	193/51	28/15	1.013	1.003	0.983	7.3E-05	1.031	0.312
SM-PER2	7	3/81	5/18	3/51	14/12	14/12	16/3	118/48	17/10	273/39	11/4	1.008	1.003	0.989	6.8E-05	1.020	0.444
SM-PER3	8	317/50	328/13	287/33	338/27	338/27	23/9	77/18	23/7	197/57	11/6	1.018	1.007	0.975	7.5E-05	1.046	0.526
SM-PER4	12	338/80	54/79	333/52	80/51	80/51	21/15	340/8	19.7	243/38	21/13	1.014	1.003	0.983	7.3E-05	1.032	0.298
SM-PER5	8	67/72	213/59	79/63	155/62	155/62	23/10	256/6	26/22	349/27	26/12	1.02	1.009	0.971	9.0E-05	1.053	0.534
SM-PER6	11	326/83	126/69	319/59	106/42	106/42	24/12	342/32	39/21	229/31	40/11	1.003	0.999	0.997	2.2E-05	1.006	-0.357
SM-PM1	13	98/13	149/10	156/34	328/5	328/5	17/8	235/34	17/6	66/56	8/6	1.016	1.006	0.978	9.6E-05	1.040	0.475
SM-PM2	11	158/76	158/2	338/76	340/9	340/9	17/9	101/73	17/4	248/14	9/5	1.012	1.004	0.983	8.7E-05	1.031	0.457
SM-PM3	10	86/21	118/12	141/35	298/15	298/15	37/14	198/30	44/34	51/55	44/18	1.006	0.999	0.995	9.0E-05	1.011	-0.206
SM-PM4	10	151/53	260/52	156/80	232/80	232/80	12/5	336/2	15/9	66/10	13/5	1.010	1.004	0.987	7.6E-05	1.024	0.466
SM-SEG1	13	242/3	245/1	185/31	242/27	242/27	21/7	340/14	22/9	95/58	11/7	1.006	1.002	0.992	7.7E-05	1.014	0.375
SM-SEG2	8	273/50	93/1	250/55	273/29	273/29	30/9	32/42	30/4	160/35	11/5	1.016	1.010	0.974	8.9E-05	1.047	0.691
SM-SEG3	7	98/65	169/63	109/72	129/47	129/47	17/5	275/38	21/15	19/18	20/5	1.023	0.998	0.979	8.4E-05	1.044	-0.093
SM-SEG5	10	23/42	176/22	58/18	165/17	165/17	51/8	73/5	51/9	328/72	10/8	1.006	1.004	0.991	6.1E-05	1.017	0.768
SM-SLIT1	6	134/20	205/19	159/46	192/29	192/29	15/6	302/32	14/5	69/44	9/3	1.015	1.007	0.979	8.5E-05	1.039	0.572
SM-SLIT2	14	102/85	107/43	283/88	103/14	103/14	55/5	290/76	55/7	193/2	16/5	1.011	1.006	0.983	5.6E-05	1.030	0.693
SM-SLIT3	7	278/66	94/9	264/66	274/21	274/21	15/5	41/57	15/10	174/24	11/4	1.020	1.002	0.979	8.2E-05	1.042	0.145
SM-SWF1	5	290/65	77/48	274/58	81/19	81/19	12/4	325/52	14/3	184/32	15/10	1.021	1.003	0.976	8.7E-05	1.047	0.193
SM-TAM1	9	285/49	315/29	258/48	335/47	335/47	12/7	72/7	12/4	168/42	7/4	1.010	1.005	0.985	8.8E-05	1.027	0.600
SM-TAM2	6	358/46	106/44	354/16	102/15	102/15	16/5	10/4	15/6	264/74	7/6	1.014	1.006	0.980	8.8E-05	1.037	0.534
SM-VLIT3	5	78/28	87/5	128/35	267/25	267/25	10/5	165/23	9/6	38/54	12/5	1.006	0.999	0.995	2.5E-05	1.012	-0.194
SM-SLC1	12	224/8	280/6	189/36	282/36	282/36	10/6	191/2	10/7	99/54	8/6	1.024	1.012	0.964	9.2E-05	1.066	0.635
SM-SLC2	10	212/16	223/3	192/45	217/23	217/23	17/6	325/36	18/12	102/45	15/10	1.026	0.998	0.977	1.2E-04	1.050	-0.127
SM-SLC3	12	37/84	216/14	44/61	205/30	205/30	18/6	78/46	20/9	314/29	14/6	1.021	1.004	0.975	9.5E-05	1.047	0.261
SM-BAR1	9	291/15	291/0	210/28	293/28	293/28	22/12	25/3	39/18	120/62	38/12	1.008	1.000	0.992	6.9E-05	1.017	-0.049
SM-BAR2	6	249/49	39/31	232/64	47/10	47/10	49/16	296/62	48/17	141/26	21/12	1.003	1.001	0.996	6.3E-05	1.007	0.516
L1: Casa Ischia sheet																	
SM-CI11	9	63/37	86/16	106/34	265/14	265/14	65/4	167/31	65/8	16/55	14/4	0.896	0.862	0.576	4.1E-06	1.630	0.824
SM-CI12	12	31/65	36/11	45/41	217/7	217/7	15/8	121/41	17/12	315/48	16/8	1.006	1.000	0.994	7.8E-05	1.013	0.020
SM-CI13	8	239/56	55/5	228/75	233/19	233/19	21/7	11/65	21/17	137/15	21/11	1.009	0.999	0.992	9.3E-05	1.018	-0.212
SM-CI16	9	329/35	146/2	273/17	329/14	329/14	47/9	61/9	47/9	183/73	12/7	1.017	1.014	0.969	1.2E-04	1.055	0.866
SM-CI17	11	357/70	7/26	356/40	20/19	20/19	17/5	123/34	17/9	266/50	10/5	1.023	1.004	0.972	8.4E-05	1.053	0.262
SM-CI18	10	357/65	13/30	355/35	27/20	27/20	10/6	128/27	37/9	265/55	37/5	1.024	0.991	0.985	9.7E-05	1.042	-0.656
SM-CI1A	8	21/69	193/20	30/42	181/24	181/24	37/4	74/32	37/7	300/48	15/5	1.021	1.01	0.969	7.8E-05	1.057	0.591
SM-CI1B	9	49/70	94/63	62/53	92/33	92/33	54/6	210/36	53/6	333/37	7/6	1.01	1.008	0.982	7.0E-05	1.032	0.891
SM-CI1C	7	48/89	49/33	52/69	56/9	56/9	39/10	168/67	41/12	322/21	20/9	1.009	1.003	0.988	7.8E-05	1.023	0.406
SM-CI1A-B-C (av		39/76															
SM-CI1D	9	226/87	20/83	49/73	77/57	77/57	30/10	220/27	30/7	319/17	12/6	1.009	1.003	0.988	8.7E-05	1.022	0.425
SM-CI1E	10	273/89	90/72	272/87	89/42	89/42	11/5	275/48	13/9	182/3	14/7	1.015	0.999	0.985	7.7E-05	1.030	-0.043
SM-CI2	11	41/88	41/30	45/66	49/8	49/8	34/12	157/64	40/25	315/24	35/17	1.005	1.001	0.994	7.2E-05	1.012	0.257
SM-CI22	7	144/36	314/7	157/63	321/28	321/28	11/5	194/49	12/8	67/27	10/5	1.012	1.000	0.987	8.0E-05	1.026	0.050
SM-CI23	11	22/82	186/63	27/55	138/53	138/53	19/10	34/10	23/14	297/35	23/10	1.013	0.999	0.988	9.5E-05	1.026	-0.084
SM-CI4	8	36/66	62/46	51/44	70/18	70/18	11/7	175/39	11/3	321/46	8/4	1.017	1.007	0.977	1.1E-04	1.043	0.508
SM-CI5	12	343/50	73/50	324/23	79/21	79/21	12/5	346/9	11/8	234/67	9/6	1.021	1.008	0.971	1.0E-04	1.054	0.476
SM-CI6	12	264/56	322/53	247/64	9/60	9/60	18/10	254/13	18/10	157/26	12/9	1.021	0.998	0.981	7.4E-05	1.041	-0.166
SM-CI7	12	311/51	41/51	282/37	57/28	57/28	27/23	315/22	38/20	192/53	37/18	1.008	0.999	0.993	7.9E-05	1.016	-0.236
SM-CI8	9	311/65	347/51	294/48	23/48	23/48	9/7	113/1	9/7	204/42	10/5	1.022	1.003	0.975	1.1E-04	1.049	0.191
SM-CI9A	13	314/41	353/29	273/28	10/28	10/28	30/15	279/3	29/16	183/62	20/15	1.019	1.004	0.977	1.2E-04	1.044	0.302
SM-CI9C	10	355/28	6/6	229/3	8/2	8/2	10/8	278/2	42/10	139/87	24/7	1.027	0.992	0.980	9.5E-05	1.050	-0.471
SM-CI3	11	278/67	38/64	265/66	63/40	63/40	15/11	287/40	15/12	175/24	16/12	1.021	0.999	0.980	8.5E-05	1.043	-0.039
SM-CI31	12	296/88	107/74	291/75	96/45	96/45	26/8	305/41	24/12	202/15	27/20	1.015	0.996	0.989	5.86E-05	1.027	-0.512
SM-CI32	9	314/56	8/50	290/39	36/38	36/38	29/12	300/8	29/17	200/50	17/12	1.02	0.998	0.982	6.45E-05	1.04	-0.135
SM-CI33	12	296/58	5/56	274/50	40/44	40/44	10/5	291/19	17/10	184/40	17/5	1.028	0.998	0.974	7.05E-05	1.057	-0.098
SM-CI34	8	249/71	306/67	242/83	40/73	40/73	16/6	244/16	15/14	152/6	14/9	1.013	1.001	0.986	5.65E-05	1.028	0.097
SM-CI35	9	290/61	317/40	271/55	347/54	347/54	21/6	87/7	20/18	181/35	20/8	1.006	1.002	0.992	5.75E-05	1.014	0.447
SM-CI36	5	279/60	353/59	262/60	37/51	37/51	26/7	276/23	25/7	172/30	11/7	1.006	1.003	0.991	5.83E-05	1.017	0.63
SM-CI37	12	257/68	22/64	248/77	56/44	56/44	13/9	260/43	25/12	158/13	24/8	1.009	1.000	0.991	5.55E-05	1.019	-0.035
SM-CI38	10	275/63	28/62	260/65	56/41	56/41	26/9	283/39	25/13	170/25	13/11	1.009	1.003	0.988	5.66E-05	1.023	0.42
SM-CI30-38 (aver		279/61															
L1: Lamaia sheet																	
SM-LAM1	12	342/40	61/40	308/14	68/12	68/12	11/5	337/7	16/11	218/76	16/5	1.005	1.000	0.996	4.0E-05	1.009	-0.081
SM-LAM2	9	278/52	43/46	254/54	57/23	57/23	11/6	302/45	12/4	165/36	10/5	1.021	1.007	0.972	8.8E-05	1.052	0.464
SM-LAM3B	10	311/32	118/7	253/25	300/19	300/19	45/6	35/16	45/6	163/65	10/7	1.014	1.008	0.978	8.7E-05	1.039	0.668
SM-LAM4	11	75/75	228/58	85/69	167/69	167/69	12/2	264/3	12/3	355/21	3/2	1.018	1.006	0.976	4.09E-05	1.044	0.409
SM-LAM5	6	265/80	294/70	261/84	55/76	55/76	45/16	262/12	44/25	171/6	31/13	1.005	1.001	0.994	2.26E-05	1.01	0.339
SM-LAM6	9	109/84	287/13	289/86	293/41	293/41	47/12	105/48	47/14	199/4	18/11	1.007	1.003	0.99	8.61E-06	1.017	0.495
SM-LAM7	10	186/30	288/29	183/60	300/57	300/57	47/22	190/12	59/21	93/30	55/22	1.007	0.999	0.994	1.13E-05	1.013	-0.198
SM-LAM8	11	268/47	278/10	244/54	281/40	281/40	30/8	39/29	31/13	154/36	15/6	1.009	1.002	0.989	4.84E-05	1.02	0.333
SM-LAM9	10	261/49	49/32	240/60	55/8	55/8	17/9	312/58	16/9	150/30	11/10	1.007	1.002	0.99	4.82E-05	1.018	0.439
SM-LAM10	11	284/58	9/58	264/56	44/44	44/44	14/6	284/27	13/5	174/34	7/5	1.02	1.012	0.968	6.42E-05	1.058	0.684
SM-LAM11	7	232/28	346/26	208/51	2/29	2/29	24/5	246/38	24/7	118/39	8/5	1.011	1.006	0.983	3.71E-05	1.03	0.669
SM-LAM12	12	294/39	353/35	254/37	14/33	14/33	13/7	274/14	13/5	164/53	8/4	1.018	1.007	0.975	6.91E-05	1.045	0.491
SM-LAM13	9	326/63	42/62	310/40	64/38	64/38	25/12	325/12	45/25	220/50	45/11	1.017	0.997	0.985	4.22E-05	1.033	-0.251
L1: Monumento area																	
SM-SLC4	8	95/88	96/16	275/89	276/14	276/14	12/8	90/76	23/9	185/2	23/11	1.021	0.998	0.981	7.3E-05	1.042	-0.123
SM-SLC5	10	229/51	311/51	218/73	357/65	357/65	13/8	224/18	72/9	128/17	28/12	1.023	0.990	0.987	5.3E-05	1.040	-0.792
SM-SLC6	7	16/83	26/55	19/55	50/36	50/36	19/15	170/34	35/16	289/35	35/16	1.015	0.997	0.988	8.6E-05	1.028	-0.332
SM-SLC10	12	98/43	117/17	124/54	296/10	296/10	28/5	193/52	28/6	34/36	7/6	1.008	1.006	0.986	1.03E-04	1.024	0.804
SM-SLC11	5	267/66	43/57	255/71	62/33	62/33	19/3	279/51	20/7	165/19	8/3	1.023	1.009	0.968	7.89E-05	1.059	0.493
SM-SLC13	10	223/64	312/64	218/87	31/70	31/70	19/8	219/20	31/11	128/2	28/9	1.021	1.003	0.976	7.94E-05	1.046	0.22
SM-SLC14	10	204/29	268/27	194/58	266/57	266/57	14/8	8/8	16/8	104/32	12/7	1.019	1.005	0.976	6.90E-05	1.045	0.367
SM-SLC15	8	230/67	292/64	225/88	33/79	33/79	12/6	225/11	10/9	135/2	11/8	1.024	0.999	0.976	7.54E-05	1.049	-0.025
SM-SLC16	12	212/66	6/45	29/88	30/35	30/35	18/9	205/55	19/7	299/2	11/7	1.016	1.007	0.977	6.46E-05	1.041	0.541
SM-SLC17	8	194/10	254/9	184/40	250/38	250/38	9/6	349/12	19/7	94/50	19/8	1.023	0.995	0.982	7.79E-05	1.043	-0.362
Layer 2																	
SM-SDC1	10	35/46	61/24	68/26	243/3	243/3	11/3	151/26	12/6	338/64	9/3	1.017	1.005	0.977	8.1E-05	1.042	0.420
SM-SDC2	8	335/49	21/39	309/24	38/24	38/24	31/10	128/1	31/10	219/66	11/10	1.006	1.002	0.992	5.9E-05	1.015	0.433
SM-CBAL1	10	42/50	133/50	72/32	119/25	119/25	19/7	219/19	17/10	341/58	12/10	1.007	1.004	0.989	5.5E-05	1.019	0.655
SM-CBAL2	11	52/18	133/17	143/23	311/5	311/5	12/3	218/23	12/5	52/67	6/5	1.010	1.006	0.984	8.0E-05	1.028	0.718
Layer 3																	
SM-FOR10	12	82/57	231/38	102/58	205/57	205/57	5/4	106/6	7/3	12/32	7/5	1.019	0.997	0.984	7.5E-05	1.036	-0.271
SM-FOR2	11	277/29	45/23	231/38	49/1	49/1	13/7	319/38	13/4	141/52	8/4	1.023	1.015	0.961	8.8E-05	1.071	0.746
SM-FOR3	11	203/82	17/36	25/70	33/22	33/22	22/11	167/59	33/18	295/20	31/10	1.012	0.999	0.989	6.1E-05	1.024	-0.146
SM-FOR4	14	168/17	199/10	175/47	192/17	192/17	9/4	299/42	9/6	85/43	6/5	1.014	1.006	0.980	8.5E-05	1.036	0.577
SM-FOR6	9	258/52	60/21	239/63	242/5	242/5	10/7	342/63	57/9	149/27	57/6	1.019	0.992	0.989	8.6E-05	1.034	-0.836
SM-SDC3	8	306/22	338/12	228/24	347/21	347/21	13/10	252/10	15/5	137/66	12/8	1.011	1.002	0.987	8.0E-05	1.025	0.286
SM-SDC4	11	280/67	284/9	267/65	288/38	288/38	13/7	62/42	12/6	177/25	8/6	1.013	1.006	0.981	7.0E-05	1.035	0.585
SM-CAM1	11	149/51	170/23	156/78	159/15	159/15	15/5	298/71	15/6	65/12	7/4	1.005	1.002	0.993	7.4E-05	1.013	0.457
SM-CAM2	12	173/57	251/56	174/86	194/79	194/79	29/6	354/10	29/5	84/4	6/5	1.006	1.002	0.992	8.4E-05	1.015	0.458
Bardella sill																	
SM-BAR10	6	108/14	166/12	157/36	162/3	162/3	17/3	254/36	17/13	67/53	13/3	1.01	1.001	0.989	5.15E-05	1.02	0.155
SM-BAR11	7	338/56	157/16	321/29	339/10	339/10	10/3	74/27	10/7	232/61	8/5	1.018	1.001	0.981	6.34E-05	1.038	0.099
SM-BARSS3	8	323/39	348/18	276/22	359/22	359/22	18/11	90/2	15/9	186/68	15/10	1.009	1.000	0.991	8.2E-05	1.018	0.015
SM-BARSS4	5	214/12	267/9	190/40	265/39	265/39	25/20	1/7	25/17	100/50	24/10	1.008	1.003	0.989	6.3E-05	1.020	0.474

Kmean: site mean susceptibility (SI units); Pj, anisotropy degree; T, shape parameter; K1, K2 and K3, site-mean declination (azimuth) and inclination (degrees) of the principal susceptibility directions; e/z semi-angle max/min (measured in degrees) of the confidence elllipes around the mean-site principal directions. The foliation and lineation data evidenced in red has been discarded during interpretation because e > 25°. Sample locations are reported in Figure S4.

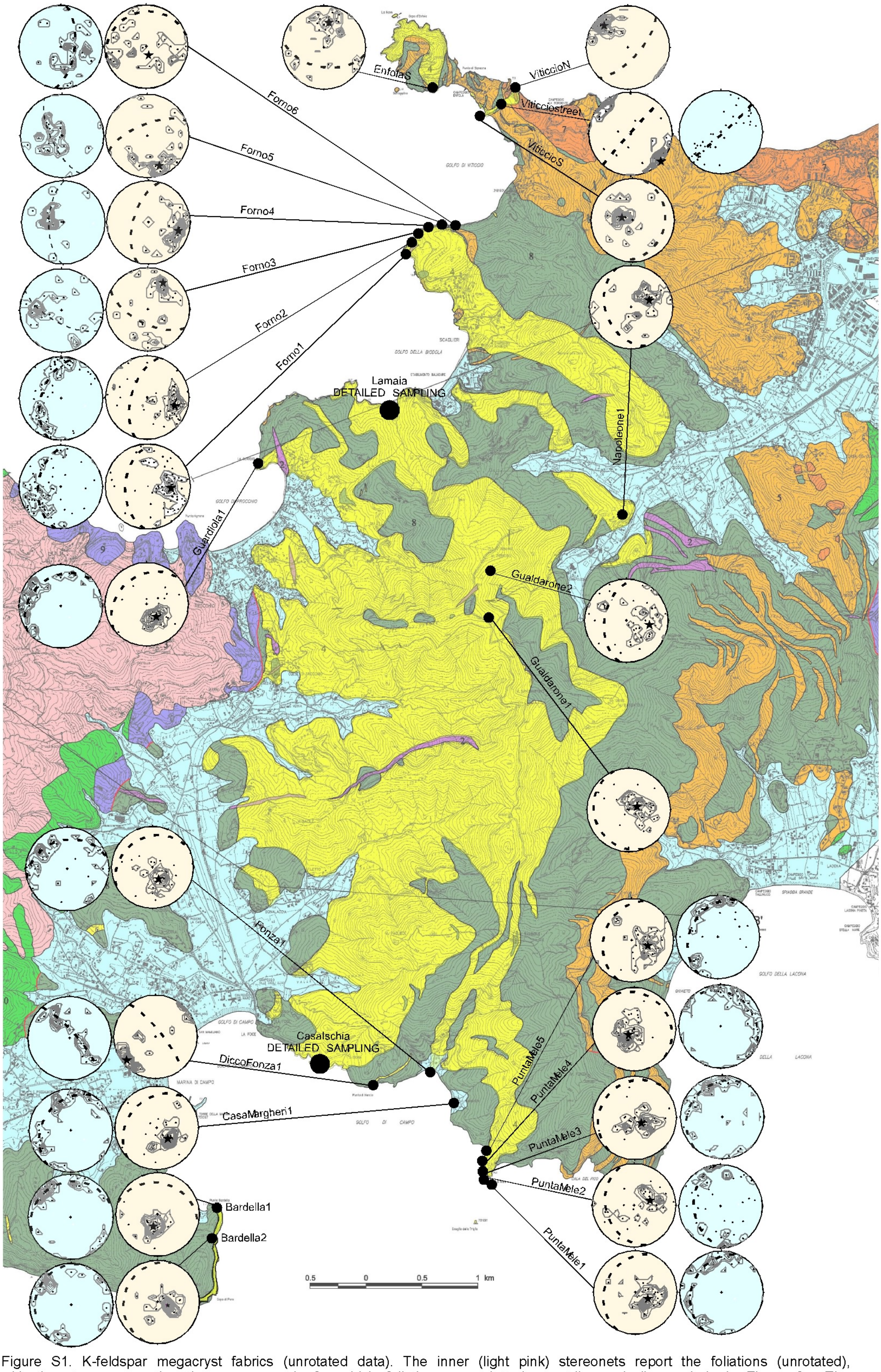

Figure S1. K-feldspar megacryst fabrics (unrotated data). The inner (light pink) stereonets report the foliations (unrotated), with the star representing the average pole for which foliations are plotted as strike and dip symbols in Figure 3a. The outer (light blue) stereonets report the lineations.

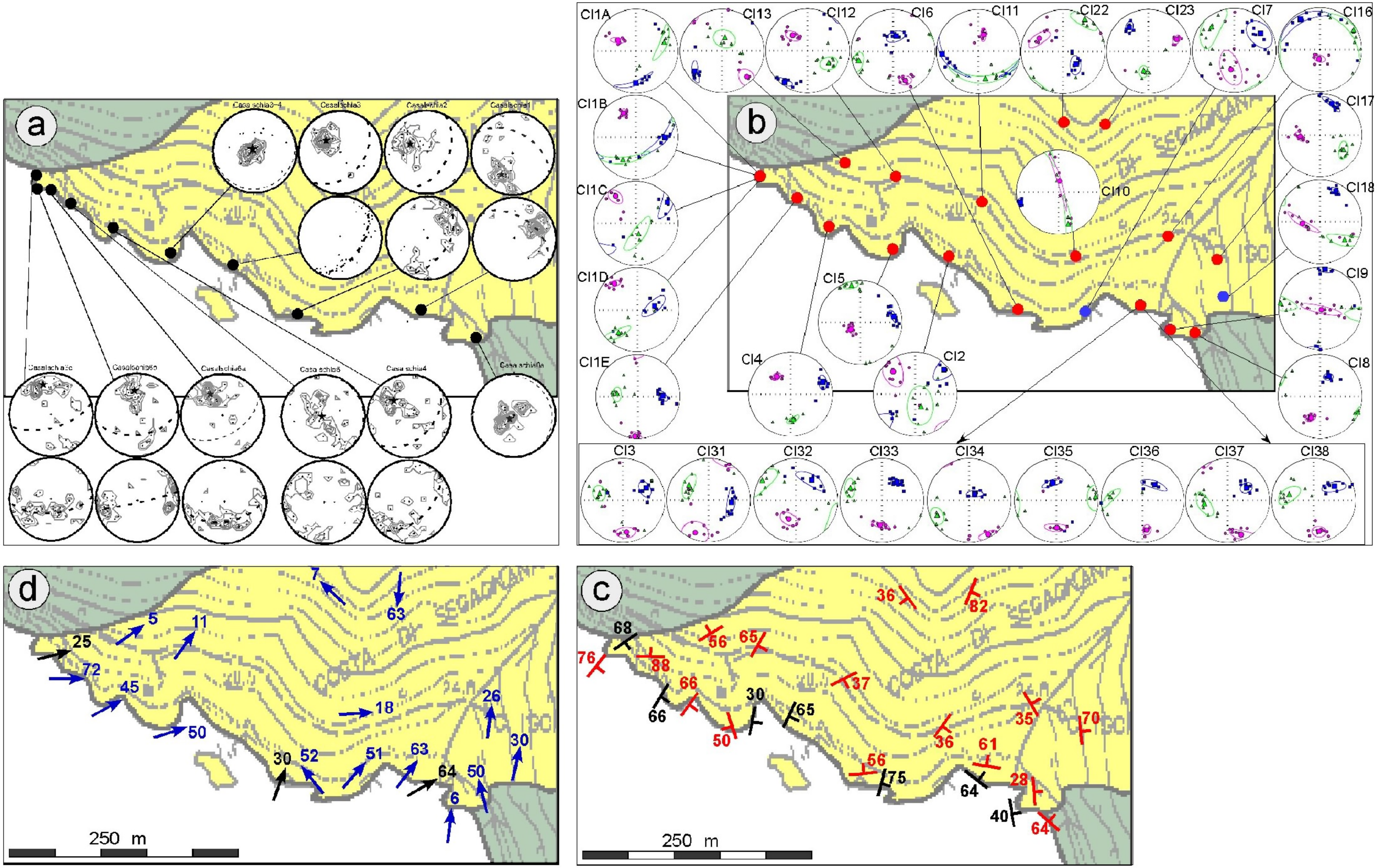

Figure S2. Geological map of the “Casa Ischia sheet”: a) K-feldspar megacryst stereoplots, unrotated data; b) AMS stereoplots, unrotated data; c) mineral (black) and AMS (red) foliations, restored data; numbers indicate the dip of the foliation plane; d) mineral (black) and AMS (blue) lineations, restored data; numbers indicate the plunge of the lineation in the direction of the arrow.

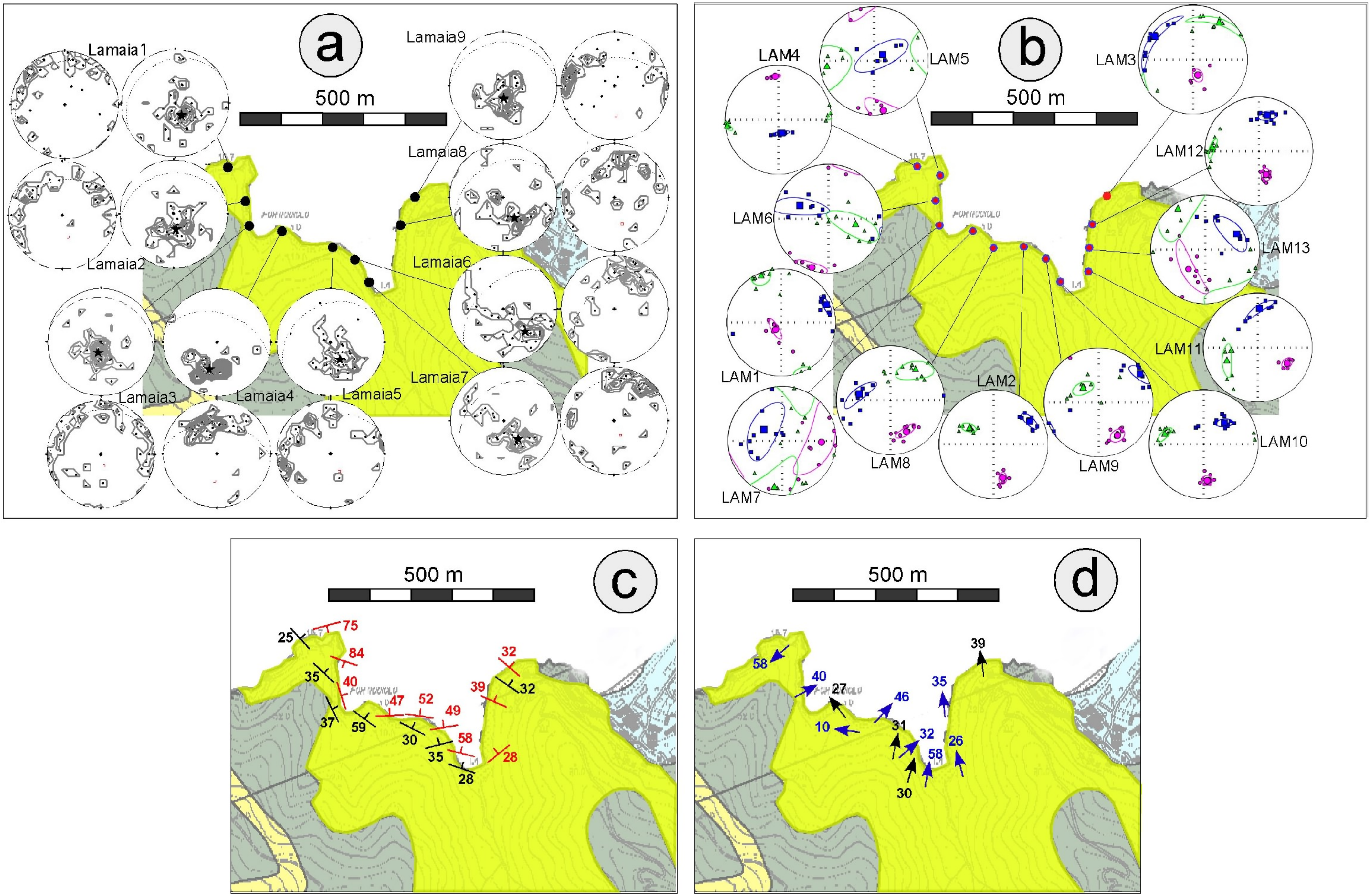

Figure S3. Geological maps of the "Lamaia sheet": a) K-feldspar megacryst stereoplots, unrotated data; b) AMS stereoplots, unrotated data; c) mineral (black) and AMS (red) foliations, restored data; numbers indicate the dip of the foliation plane; d) mineral (black) and AMS (blue) lineations, restored data; numbers indicate the plunge of the lineation in the direction of the arrow.

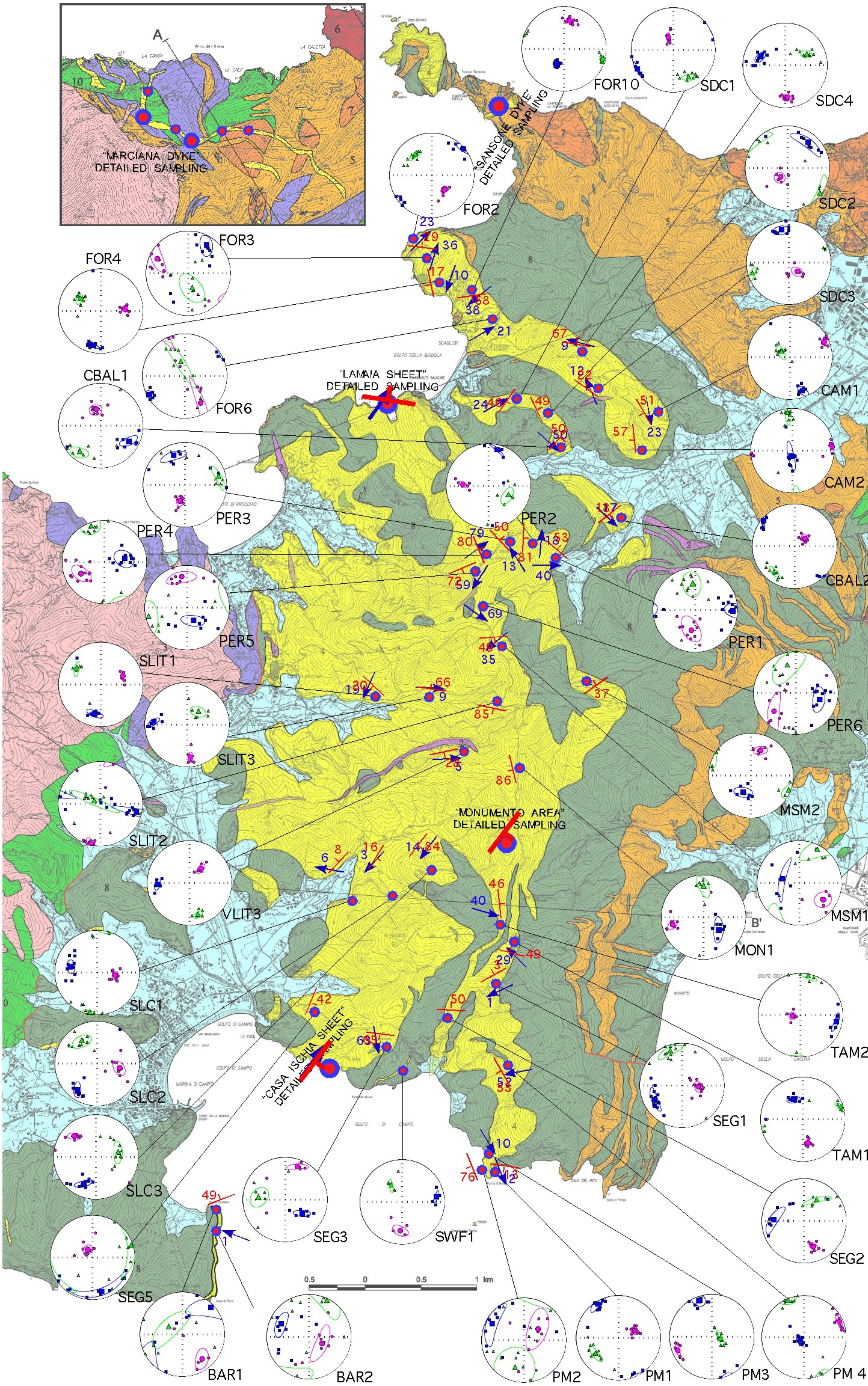

Figure S4. AMS fabrics as stereoplots (unrotated data). Purple circles = K3 (minimum susceptibility), green triangles = K2 (intermediate susceptibility), blue squares = K1 (maximum susceptibility). San Martino geological maps modified after Dini et al. (2006).