Jour. Fac. Sci., Hokkaido Univ., Ser. VII (Geophysics), Vol. 11, No. 6, 895-900, 2002.

Geomagnetic Survey in the Eastern Part of Hokkaido, NE Japan (2) : Supplemental Data Report

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(Received December 15, 2001)

Abstract

Succeeding to the previous geomagnetic surveys in 2000, the supplemental one was made at 45 stations to establish the well distributed magnetic stations in the eastern part of Hokkaido, NE Japan. As the present survey does not reveal the remarkable geomagnetic anomalies, the geomagnetic anomaly pattern is almost the same as that established in 2000 : positive anomalies with conspicuously large amplitude are distributed along the coastal region of the Pacific Ocean, contrary to the negative ones in the north of the positive anomaly region. Exclusive of these anomalies, the geomagnetic anomalies are relatively calm in the eastern part of Hokkaido.

1. Geomagnetic Survey

Succeeding to the survey of the magnetic total force in 2000 (Sugisaki et al., 2001), we made a supplemental survey in the eastern part of Hokkaido, NE Japan by means of a proton precession magnetometer based on the Overhauser effect. The geomagnetic stations established by the present survey are 45 in number as shown in Fig. 1 by solid circles together with hollow circles established in 2000. An objective is to obtain the data in the northern part of the study area where the density of the observation points is thin.

The survey was performed for period from October 4 to October 7, 2001. Horizontal geomagnetic gradient at almost all stations is within 8 nT/meter as shown in Fig. 2, suggesting the data reproducibility is fairly good. Corrections for geomagnetic diurnal and other disturbances are made on the basis of continuous magnetic records at Memanbetsu Magnetic Observatory belongs to Japan Meteorological Agency (Fig. 3). As shown in Fig. 3, we encountered with a geomagnetic storm in the first half of the survey period. Distribution of the

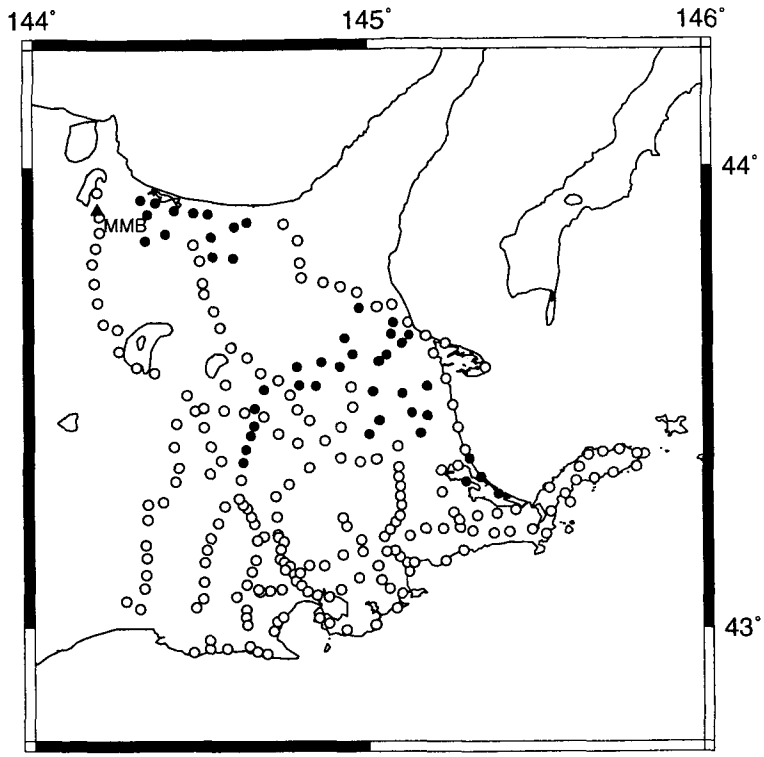

Fig. 1. Supplemental geomagnetic stations are shown by solid circles together with those estblished in 2000 (Sugisaki et al., 2001) by hollow circles. MMB denotes Memanbetsu Magnetic Observatory.

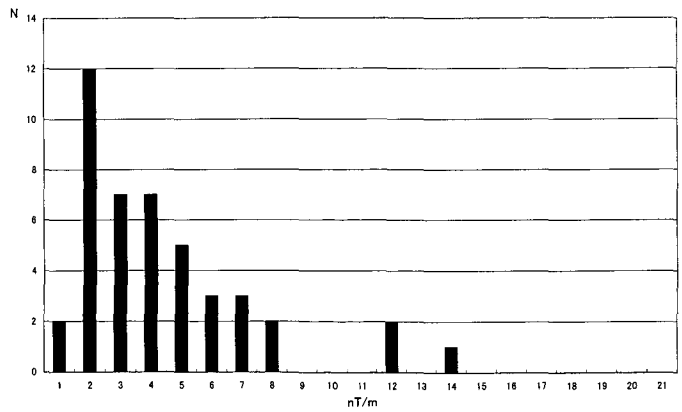

Fig. 2. Histogram of the geomagnetic field gradient.

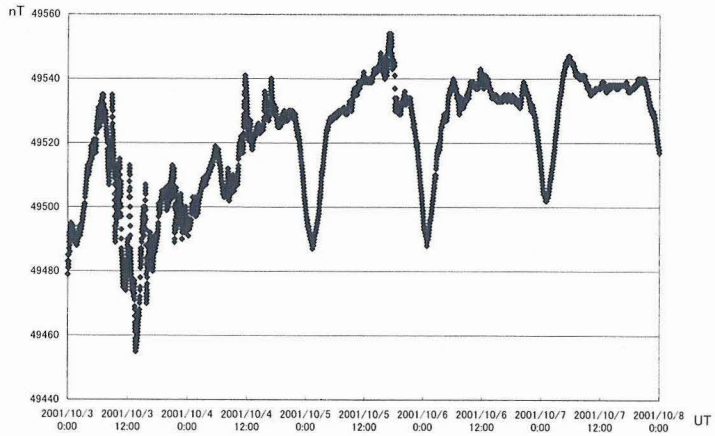

Fig. 3. Continuous records of the geomagnetic total force at Memanbetsu Magnetic Observatory (MMB).

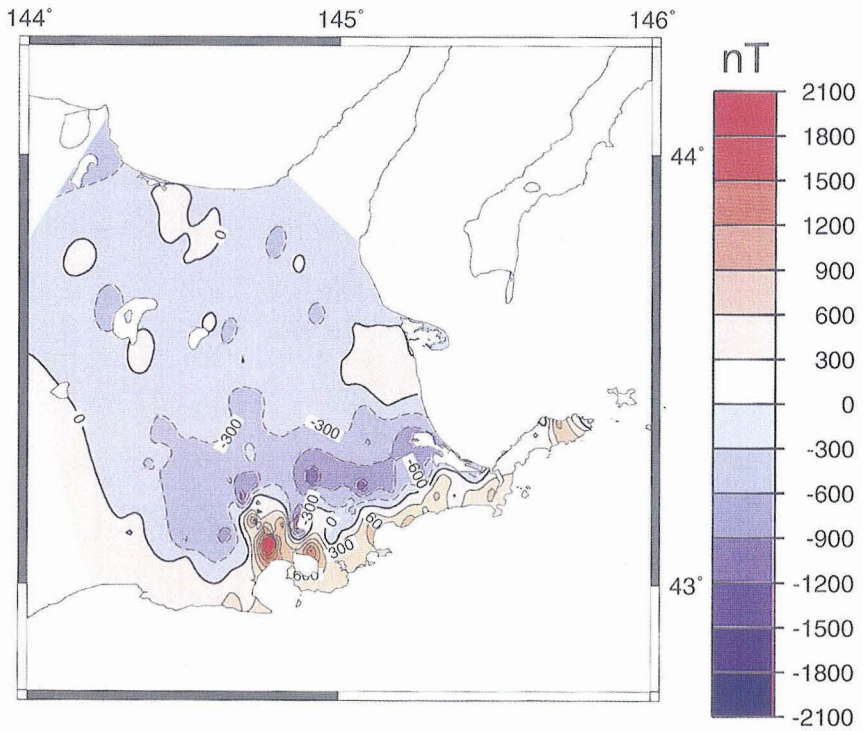

Fig. 4. Distribution of the geomagnetic anomalies relative to the IGRF 2000 values with contour interval of 300 nT. Thin solid contours represent the positive anomalies, while the dashed ones denote the negative anomalies. Thick solid contours show the reference value.

geomagnetic anomalies relative to the IGRF 2000 values is shown in Fig. 4 with conter interval of 300 nT. The contours are drawn by a method developed by Smith and Wessel (1990) as we had used before (Sugisaki et al., 2001). Observation time, geographical location, observed value, corrected value, magnetic field gradient and residual anomaly at each station are tabulated in Appendix A.

2. Geomagnetic anomalies

As remarkable geomagnetic anomalies are not developed on the present survey areas, the geomagnetic anomaly pattern is almost the same as that established in 2000 (Fig. 4). This may be because the present survey areas are covered with the thick Quaternary sediments (about 5 km in maximum ; Satoh et al., 2001) characterized by weak magnetization.

3. Conclusion

The supplemental survey was made at 45 magnetic stations to establish the well distributed magnetic stations in the eastern part of Hokkaido, NE Japan. As the present survey does not reveal the remarkable geomagnetic anomalies, the geomagnetic anomaly pattern is almost the same as that established in 2000 : positive anomalies with conspicuously large amplitude are distributed along the coastal region of the Pacific Ocean, contrary to the negative ones in the north of the positive anomaly region. Exclusive of these anomalies, the geomagnetic anomalies are relatively calm in the eastern part of Hokkaido.

Acknowledgement

Ms. M. Saba, Hokkaido University, is acknowledged for her help in preparing figures.

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Corrections : In the paper "Geomagnetic Survey in the Eastern Part of Hokkaido, NE Japan : A Data Report" (Sugisaki et al., J. Fac. Sci. Hokkaido Univ., Ser. 7, 11, 811-820, 2001), the published two data in Appendix A are incorrect. The corrected numerical values are given here by the gothic letters.

Aug. 30	13 : 15	43.103	144.781	**50279.88**	**50277.08**	15.31	**1271.18**
Sept. 1	15 : 19	43.728	144.511	**49162.94**	**49174.75**	7.06	**−253.16**

Appendix A

	Time	Lat(°)	Long(°)	Obs(nT)	Corrected(nT)	Fieldglad(nT/m)	Res Anomaly(nT)
Oct.4	13:07	43.6200	145.0980	49138.70	49163.70		-42.90
	15:42	43.4700	145.1300	49334.92	49358.92	1.52	244.02
	15:59	43.5120	145.1000	49255.81	49283.81	1.14	137.41
	16:28	43.4530	145.0310	49088.07	49119.07	3.41	-13.83
	16:45	43.4230	145.0010	49027.92	49056.92	1.16	-67.68
	17:11	43.5170	145.0130	49169.13	49194.13	2.98	20.83
Oct.5	10:01	43.8570	144.3970	49424.89	49469.89	2.84	-61.71
	10:21	43.8430	144.3380	49409.35	49456.35	7.76	-83.95
	10:40	43.9000	144.3420	49414.47	49459.47	2.38	-111.03
	10:56	43.9300	144.3230	49346.71	49389.71	0.64	-202.49
	11:15	43.9250	144.3670	49516.00	49556.00	4.49	-21.20
	11:37	43.9070	144.4230	49549.02	49586.69	6.81	34.89
	11:55	43.9020	144.4800	49559.69	49590.69	1.06	57.49
	13:15	43.9000	144.5230	49512.36	49523.36	1.86	3.16
	13:40	43.8500	144.5330	49399.27	49407.27	11.90	-82.63
	13:58	43.8080	144.5370	49602.08	49610.08	3.38	144.38
	14:27	43.8050	144.5980	49473.26	49480.26	11.73	33.06
	14:51	43.8730	144.6020	49485.10	49491.10	1.37	7.70
	15:06	43.8820	144.6400	49430.31	49436.31	4.06	-41.49
	16:02	43.6970	144.9720	49147.68	49152.68	2.53	-131.32
	16:25	43.6650	145.0720	49066.79	49071.79	1.40	-166.91
	16:40	43.6400	145.0650	49090.90	49095.90	1.95	-130.90
	17:07	43.6320	144.9280	48855.10	48861.10	3.23	-399.20
Oct.6	9:17	43.4800	144.6600	48992.98	49033.98	2.09	-216.82
	9:33	43.5200	144.6880	49227.56	49272.56	5.71	7.46
	9:55	43.5300	144.7930	49123.16	49166.16	4.28	-75.34
	10:14	43.5280	144.8430	49043.13	49085.13	2.18	-141.37
	10:31	43.5700	144.7870	49062.33	49101.33	1.85	-163.87
	10:51	43.5800	144.8600	49007.12	49042.12	4.44	-208.38
	11:10	43.5700	144.9150	49035.38	49065.38	3.28	-164.32
	11:31	43.5970	144.9530	48985.26	49010.26	5.08	-223.84
	12:25	43.5820	145.0300	49125.73	49141.73	6.42	-62.77
	12:43	43.5950	145.0530	49256.25	49266.25	6.89	60.95
	13:08	43.6380	145.1200	49145.47	49153.47	0.75	-57.03
	14:31	43.5270	145.1750	49337.15	49335.15	1.92	201.15
	14:54	43.4630	145.1750	49331.31	49328.31	2.22	229.71
	15:10	43.4250	145.1550	49146.77	49143.77	1.59	60.67
	15:37	43.3700	145.3020	48600.86	48598.86	13.85	-413.04
	15:52	43.3300	145.3370	48016.58	48017.58	5.72	-962.52
	16:09	43.2930	145.3900	48243.86	48245.86	7.20	-699.04
	16:58	43.3200	145.2920	48223.16	48225.16	1.79	-761.84
Oct.7	13:03	43.3620	144.6250	48925.46	48924.46	3.51	-270.94
	13:26	43.3900	144.6320	48952.74	48947.74	4.25	-261.26
	13:45	43.4200	144.6470	48927.31	48919.31	3.08	-301.99
	14:10	43.4420	144.6580	48914.54	48904.54	3.35	-325.86