

# The SCAR GPS Campaigns in the ITRF2000

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The realization of the International Terrestrial Reference Frame (ITRF) is an important goal of the international geodetic community. Observations of satellites of the Global Positioning System (GPS) are thereby a major contribution. Data acquired during the SCAR GPS Campaigns represent valuable input for this purpose, which has been described in detail (Dietrich, 2001). It has been demonstrated, that also for Antarctica accuracies in the 1cm-level have been achieved, and the results include the tectonic motions of Antarctic GPS sites (Dietrich et al., 2001).

Regional densifications were accepted for the realization of the ITRF2000 for the first time. As a regional densification solution for Antarctica all GPS data from 1995 to 1999 have been reprocessed with the Bernese GPS Software, Version 4.2 and forwarded as a SINEX file to the ITRS Centre of the IERS, Paris.

As a result, all Antarctic GPS stations, which provided data, are now included in the official ITRF2000 solution, which is available in the internet (Altamimi, 2001). Table 1 shows the ITRF2000 coordinates and rates. The station distribution and horizontal motion rates are displayed in figure 1. Thanks are directed to all participants of the SCAR GPS Campaigns.

We strongly recommend, that all users of GPS in Antarctica refer to the official ITRF2000 coordinates.

## References

Altamimi (2001). <http://lareg.ensg.ign.fr/ITRF/ITRF2000>.

Dietrich, R. (2001). Present Status of the SCAR GPS Epoch Campaigns. In *SCAR Report No. 20*, pages 15–18, Cambridge, UK.

Dietrich, R., Dach, R., Engelhardt, G., Ihde, J., Korth, W., Kutterer, H.-J., Lindner, K., Mayer, M., Menge, F., Miller, H., Müller, C., Niemeier, W., Perl, J., Pohl, M., Salbach, H., Schenke, H.-W., Schöne, T., Seeber, G., Veit, A., and Völksen, C. (2001). ITRF coordinates and plate velocities from repeated GPS campaigns in Antarctica – an analysis based on different individual solutions. *Journal of Geodesy*, 74:756–766.

Table 1: Coordinate solution of ITRF2000, epoch 1997.0 and velocity solution for Antarctic GPS sites (from (Altamimi, 2001)).

Station name	$X$ [m]	$Y$ [m]	$Z$ [m]	$v_x$ [mm/a]	$v_y$ [mm/a]	$v_z$ [mm/a]
ART1 66017M001	1541244.8804	-2555205.1061	-5618168.9943	13.3	-8.7	7.4
BEL1 66018M001	1105999.5362	-763743.1799	-6214256.1147	21.3	-0.2	-31.7
BELG 66018M002	1106002.2977	-763742.2090	-6214255.8014	21.3	-0.2	-31.7
CAS1 66011M001	-901776.1617	2409383.4187	-5816748.4196	0.1	-7.7	-7.3
DAL1 66019M001	1548376.2484	-2544409.3161	-5621096.3554	13.6	-7.5	4.9
DALL 66019M002	1549109.8420	-2544290.0568	-5620947.1822	13.6	-7.5	4.9
DAV1 66010M001	486854.5477	2285099.3019	-5914955.6832	0.8	-3.2	-5.7
DUM1 91501M001	-1940883.7791	1628483.3531	-5833718.0175	-1.5	-13.9	-2.4
ELE1 66021M001	1723594.8003	-2520204.0306	-5581225.2206	12.8	-7.7	4.6
ESP1 66022M001	1560034.3767	-2401882.7248	-5679859.9970	19.1	-3.3	-4.8
FOR1 66023M001	2061522.3573	431615.7175	-6000314.4990	8.1	0.8	-5.6
FOR2 66023M002	2061809.1388	432116.1152	-6000155.3574	8.1	0.8	-5.6
FOS1 66024M001	757185.4670	-1904739.7270	-6019724.3107	15.8	-4.8	2.7
GRW1 66012M001	1536965.6501	-2554125.2502	-5619825.2676	16.6	-10.8	0.9
KERG 91201M002	1406337.3357	3918161.0996	-4816167.3549	-5.3	2.8	-5.8
MAIT 66028M001	2063437.6463	428659.4380	-5999849.1166	8.1	0.8	-5.6
MAR1 66029M001	1527541.6468	-2321657.4747	-5721839.9756	17.6	-3.7	-6.1
MAW1 66004M001	1111287.1660	2168911.2787	-5874493.5948	1.4	-2.3	-3.6
MCMU 66001M003 B	-1311703.2498	310815.1042	-6213255.1246	8.8	-12.0	-3.3
NOT1 66031M001	1451912.1204	-2436397.9268	-5693758.6311	17.1	-4.5	-3.5
OHG1 66008M003	1525852.2494	-2432401.8360	-5676185.0061	19.3	-3.7	-3.9
OHIG 66008M001	1525872.4801	-2432481.3040	-5676146.0816	19.3	-3.7	-3.9
PAL1 66005M001	1192924.6603	-2450915.5819	-5747042.5510	16.5	-5.2	2.9
PALM 66005M002	1192671.7725	-2450887.5812	-5747096.0449	16.5	-5.2	2.9
PRA1 66033M001	1493161.9747	-2550156.7342	-5633379.0772	14.0	-10.6	2.1
ROT1 66007M001	909255.1005	-2264721.3343	-5873063.0174	15.4	-2.5	2.0
SIG1 30607M001	2189251.3766	-2235016.4127	-5539523.6429	14.1	-2.6	0.8
SMR1 66034M001	927077.5077	-2195046.5033	-5896519.2639	16.0	-4.9	3.9
SPR1 66035M001	1342651.5903	-2427390.4579	-5724115.4923	16.3	-4.6	-1.4
SYOG 66006S002	1766207.8409	1460290.3502	-5932297.6797	3.8	-1.5	-1.5
TNB1 66036M001	-1623858.4728	462478.1939	-6130048.9421	5.8	-12.4	-12.2
VESL 66009M001	2009329.7131	-99741.4738	-6033158.4722	10.2	1.8	4.8
ZHON 66030M001	531102.2103	2190269.9476	-5946719.1420	-0.9	-2.0	5.6

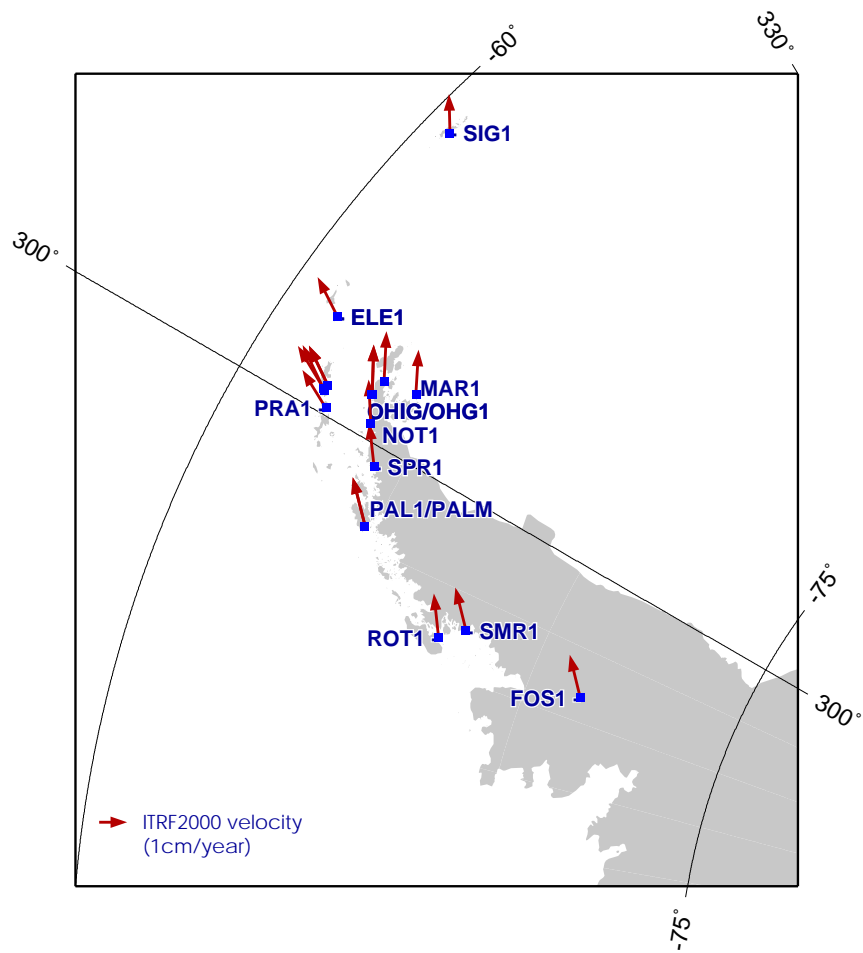
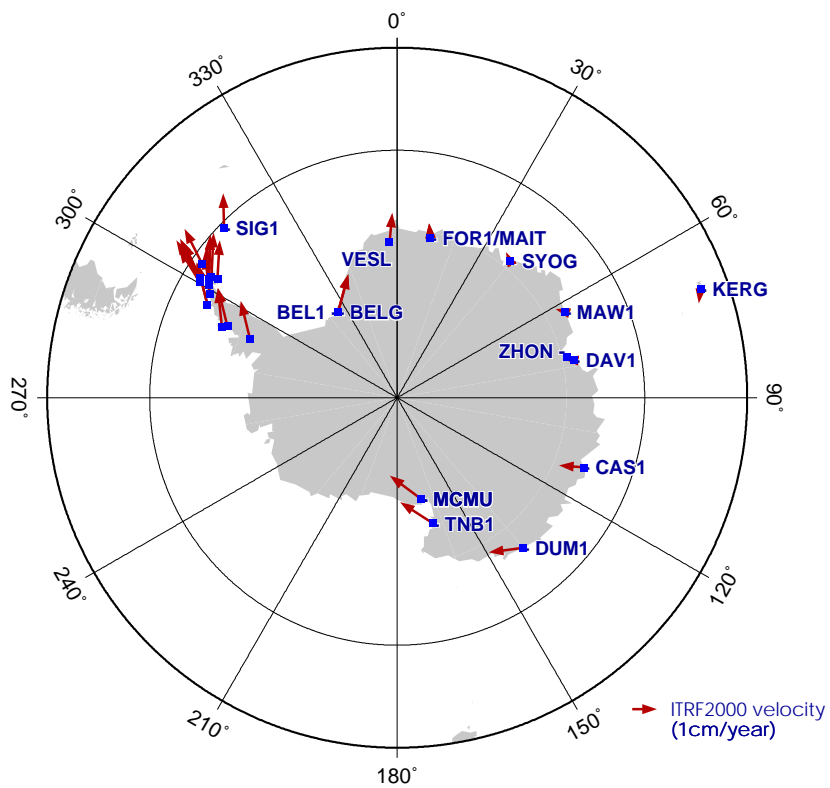


Figure 1: Station distribution and horizontal motion rates of Antarctic GPS stations within ITRF2000