

MWD STD MSA user guide

General

MWD STD MSA is a free and open source standalone application for MSA correction based on the core of [MWD STD Basic](#), a multi-user automated cloud platform. The front-end is built on Excel. All data is processed on the local machine. The application is distributed under [AGPL3](#) license and is absolutely free for commercial use and redistribution.

MWD STD MSA utilizes [the industry MSA approach](#) and provides standard MSA correction accuracy. [Novel MSA](#) with improved accuracy is implemented in [MWD STD Advanced](#) only.

Run MSA

In Home tab insert 6-axis surveys into Input Area and click Run MSA. Data format is MD/Gx/Gy/Gz/Bx/By/Bz/G reference/B reference/Dip reference/Declination/Grid Convergence.

RUN BUTTON		STATUS FLAGS																																	
Run MSA		Done	ACCUR	SRV_N	TF_DIST	EXPECT	REF_QC																												
Input													Output																						
6-axis Survey							Reference									Raw Surveys										Corrected Surveys									
MD	Gx	Gy	Gz	Bx	By	Bz	G ref	B ref	Dip ref	Decl	Grid			MD	Inc	Az	G	B	Dip	ΔG	ΔB	ΔDip		MD	Inc	Az	G	B	Dip	ΔG	ΔB	ΔDip	ΔInc	ΔAz	
m	m	m	m	m	m	m	m	m	deg	deg	deg			m	deg	deg	m	m	deg	m	m	deg		m	deg	deg	m	m	deg	m	m	deg	deg	deg	
1154.7	4.75846	-2.7018	8.26431	-35763	-15199	34163	9.820638	51065	72.93	0	0	32.71	173.75	9.822	51741	73.97	0.0017	434	0.0017	434	0.0017	434	1154.7	32.69	174.67	9.821	51090	73.00	0.0007	25	0.07	0.05	-0.52		
1183.7	4.15986	3.92936	7.98514	28964	26962	32107	9.820638	51065	72.93	0	0	35.61	174.35	9.822	51822	73.84	0.0015	150	0.0015	150	0.0015	150	1183.7	35.60	175.07	9.823	51078	72.97	0.0021	13	0.04	0.01	-0.73		
1212.3	4.5983	4.20953	7.9901	30621	29647	29336	9.820638	51065	72.93	0	0	39.39	175.22	9.822	51742	73.89	0.0011	627	0.0011	627	0.0011	627	1212.3	39.38	175.94	9.822	51054	72.97	0.0014	-11	0.04	0.01	-0.72		
1240.8	-1.30101	-6.53138	7.21612	-7741	-43221	26766	9.820638	51065	72.93	0	0	42.70	176.55	9.820	51423	74.05	-0.0011	358	0.0011	358	0.0011	358	1240.8	42.69	176.55	9.820	51050	72.89	-0.0008	-15	-0.04	0.01	-0.01		
1269.3	-0.43718	7.64223	8.83162	-3713	45443	24280	9.820638	51065	72.93	0	0	45.93	176.43	9.821	51666	73.94	0.0008	108	0.0008	108	0.0008	108	1269.3	45.93	176.59	9.824	51044	72.96	0.0034	-21	0.03	0.00	-0.17		
1296.2	7.32674	-1.03238	6.45764	46274	-5344	21891	9.820638	51065	72.93	0	0	48.89	175.29	9.821	51465	74.00	0.0002	400	0.0002	400	0.0002	400	1296.2	48.86	176.25	9.818	51035	72.90	-0.0027	-30	-0.03	0.02	-0.99		
1326.6	-6.17648	4.11372	6.42604	-39662	25048	21681	9.820638	51065	72.93	0	0	49.12	175.68	9.818	51601	73.92	-0.0028	636	0.0028	636	0.0028	636	1326.6	49.12	175.37	9.820	51093	72.87	-0.0004	28	-0.06	0.00	0.31		
1355	-6.92643	-2.68103	6.42604	-43075	-18084	21652	9.820638	51065	72.93	0	0	49.13	174.70	9.821	51491	73.94	0.0006	436	0.0006	436	0.0006	436	1355.0	49.13	174.31	9.822	51123	72.81	0.0014	58	-0.12	0.01	0.39		
1383.2	1.79813	7.20569	6.42604	9598	45815	21366	9.820638	51065	72.93	0	0	49.13	173.02	9.820	51455	73.56	-0.0002	940	0.0002	940	0.0002	940	1383.2	49.13	173.54	9.823	50900	72.65	0.0019	-165	-0.38	0.00	-0.52		
1412.2	-5.91511	4.48769	6.4313	36191	29704	21766	9.820638	51065	72.93	0	0	49.18	172.81	9.823	51632	73.93	0.0023	867	0.0023	867	0.0023	867	1412.2	49.09	173.71	9.822	51103	72.90	0.0016	38	-0.03	0.01	-0.98		
1440.3	6.17321	4.14005	6.42077	37791	27552	21709	9.820638	51065	72.93	0	0	49.18	172.57	9.822	51567	73.97	0.0015	802	0.0015	802	0.0015	802	1440.3	49.16	173.52	9.821	51043	72.93	0.0006	-22	0.00	0.01	-0.94		
1467.6	-5.31465	-5.19877	6.4155	-32164	-33623	21709	9.820638	51065	72.93	0	0	49.21	173.68	9.820	51345	74.14	-0.0007	280	0.0007	280	0.0007	280	1467.6	49.20	173.49	9.820	51038	72.97	-0.0002	-27	0.04	0.01	0.18		
1495.9	-7.41101	-0.52146	6.42077	-46332	-4699	21624	9.820638	51065	72.93	0	0	49.16	174.34	9.819	51342	74.01	-0.0012	277	0.0012	277	0.0012	277	1495.9	49.16	173.94	9.821	50924	72.90	-0.0001	-141	-0.03	0.00	0.40		
1524.3	-1.15353	-7.34254	6.42077	-4056	-46077	21595	9.820638	51065	72.93	0	0	49.16	175.24	9.822	51246	74.06	0.0013	181	0.0013	181	0.0013	181	1524.3	49.17	175.38	9.822	50995	72.86	0.0012	-70	-0.07	0.01	-0.14		
1553.3	4.67731	6.57571	6.42604	28507	37074	21766	9.820638	51065	72.93	0	0	49.05	174.96	9.821	51594	73.96	0.0003	118	0.0003	118	0.0003	118	1553.3	49.04	175.65	9.821	51038	72.93	0.0007	-27	0.00	0.01	-0.68		
1582.4	7.33727	-1.135	6.42077	415	-69	21711	9.820638	51065	72.93	0	0	49.15	174.22	9.825	51468	74.03	0.0045	403	0.0045	403	0.0045	403	1582.4	49.15	175.21	9.821	51043	72.95	0.0004	54	0.04	0.01	0.02		
1611.9	-2.93912	6.1818	6.42077	-1.681	42.8	21711	9.820638	51065	72.93	0	0	49.12	174.95	9.818	51612	73.97	-0.0029	540	0.0029	540	0.0029	540	1611.9	49.12	174.95	9.818	51043	72.95	0.0004	-52	0.02	0.00	0.39		
1639.9	4.83533	5.130	6.42077	693	2.217	21711	9.820638	51065	72.93	0	0	49.11	175.38	9.817	51575	74.00	-0.0034	510	0.0034	510	0.0034	510	1639.9	49.11	175.38	9.817	51043	72.95	0.0004	-52	0.02	0.00	0.39		
1668.7	-6.85795	2.84431	6.42604	-43532	16907	21709	9.820638	51065	72.93	0	0	49.12	175.71	9.819	51489	74.02	-0.0015	434	0.0015	434	0.0015	434	1668.7	49.12	175.32	9.821	51013	72.95	0.0004	-52	0.02	0.00	0.39		
1697.1	-1.40574	0.07274	6.44711	-46589	-403	21852	9.820638	51065	72.93	0	0	48.96	175.67	9.819	51463	74.05	-0.0015	398	0.0015	398	0.0015	398	1697.1	48.96	175.30	9.820	51028	72.95	-0.0003	37	0.02	0.00	0.47		
1725.7	-6.74207	-3.07607	6.44711	-41933	-20284	21823	9.820638	51065	72.93	0	0	48.98	175.75	9.823	51440	74.04	0.0019	375	0.0019	375	0.0019	375	1725.7	48.97	175.31	9.823	51077	72.91	0.0006	12	-0.02	0.01	0.44		
1754.3	1.1746	6.96956	6.81581	6370	45243	24137	9.820638	51065	72.93	0	0	46.04	175.06	9.818	51673	73.83	-0.0025	308	0.0025	308	0.0025	308	1754.3	46.04	175.43	9.821	51063	72.86	-0.0001	-2	-0.07	0.00	-0.37		
1783.2	6.23642	-2.4598	7.18452	41990	-14913	26422	9.820638	51065	72.93	0	0	43.02	174.44	9.827	51481	73.84	0.0059	418	0.0059	418	0.0059	418	1783.2	42.99	175.39	9.824	50990	72.76	0.0037	-75	-0.17	0.03	-0.95		
1812	5.1935	3.63967	7.50055	34506	25919	26550	9.820638	51065	72.93	0	0	40.22	174.68	9.822	51750	73.78	0.0017	688	0.0017	688	0.0017	688	1812.0	40.20	175.47	9.822	51087	72.84	0.0015	22	-0.09	0.02	-0.79		
1840.5	-5.90459	0.81116	7.80036	-41304	-4587	30764	9.820638	51065	72.93	0	0	37.35	175.63	9.821	51704	73.84	0.0006	636	0.0006	636	0.0006	636	1840.5	37.35	175.13	9.823	51065	72.87	0.0006	0	-0.06	0.00	0.50		
1869.1	2.86538	-4.62991	8.17476	21699	-33421	33421	9.820638	51065	72.93	0	0	33.67	174.49	9.822	51617	73.96	0.0014	552	0.0014	552	0.0014	552	1869.1	33.64	175.13	9.822	51053	72.92	0.0010	-12	-0.01	0.02	-0.63		
1897.1	-1.41689	4.69838	8.50133	-12111	35474	35849	9.820638	51065	72.93	0	0	30.00	174.68	9.816	51867	73.67	-0.0046	802	0.0046	802	0.0046	802	1897.1	30.00	174.69	9.819	51033	72.91	-0.0016	-32	-0.02	-0.01	-0.01		
1925.9	3.68707	-2.32812	8.80156	30393	-17256	38162	9.820638	51065	72.93	0	0	26.36	173.49	9.823	51748	73.80	0.0019	883	0.0019	883	0.0019	883	1925.9	26.33	174.34	9.822	51019	72.90	0.0017	-46	-0.03	0.03	-0.85		
1953.8	2.7653	2.61782	9.04612	22890	23763	40248	9.820638	51065	72.93	0	0	22.82	173.51	9.819	51952	73.54	-0.0030	807	0.0030	807	0.0030	807	1953.8	22.81	174.19	9.819	51048	72.87	-0.0016	-17	-0.06	0.01	-0.69		
1982.4	2.42293	2.14504	9.27036	21652	21249	42219	9.820638	51065	72.93	0	0	19.25	174.05	9.820	51988	73.51	-0.0008	833	0.0008	833	0.0008	833	1982.4	19.25	174.72	9.821	51050	72.90	0.0007	-15	-0.03	0.01	-0.67		
2010.5	0.47405	2.67049	9.4389	3542	27790	43847	9.820638	51065	72.93	0	0	16.03	174.71	9.821	52033	73.42	0.0002	900	0.0002	900	0.0002	900	2010.5	16.04	174.96	9.823	51045	72.92	0.0005	-20	-0.01	0.01	-0.26		
2038.9	0.20542	-2.22804	9.56005	3599	-25282	45151	9.820638	51065	72.93	0	0	13.17	175.04	9.818	51891	73.66	-0.0022	816	0.0022	816	0.0022	816	2038.9	13.16	175.16	9.820	51038	72.86	-0.0009	-27	-0.07	0.02	-0.11		
2064.2	1.75926	0.31603	9.65486	23023	5396	46303	9.820638	51065	72.93	0	0	10.49	175.21	9.819	51992	73.41	-0.0017	710	0.0017	710	0.0017	710	2064.2	10.47	176.02	9.820	51011	72.89	-0.0002	-54	-0.04	0.02	-0.88		
							Run MSA	Run MSA	Run MSA	Run MSA	Run MSA	Run MSA	Run MSA	Run MSA	Run MSA	Run MSA	Run MSA	Run MSA	Run MSA	Run MSA	Run MSA	Run MSA	Run MSA	Run MSA	Run MSA	Run MSA	Run MSA	Run MSA	Run MSA	Run MSA	Run MSA	Run MSA	Run MSA	Run MSA	Run MSA
							Run MSA	Run MSA	Run MSA	Run MSA	Run MSA	Run MSA	Run MSA	Run MSA	Run MSA	Run MSA	Run MSA	Run MSA	Run MSA	Run MSA	Run MSA	Run MSA	Run MSA												

The QC tab contains quality check plots and MSA correction output (vector). You can change it manually, but be careful, as this directly affects the survey correction.

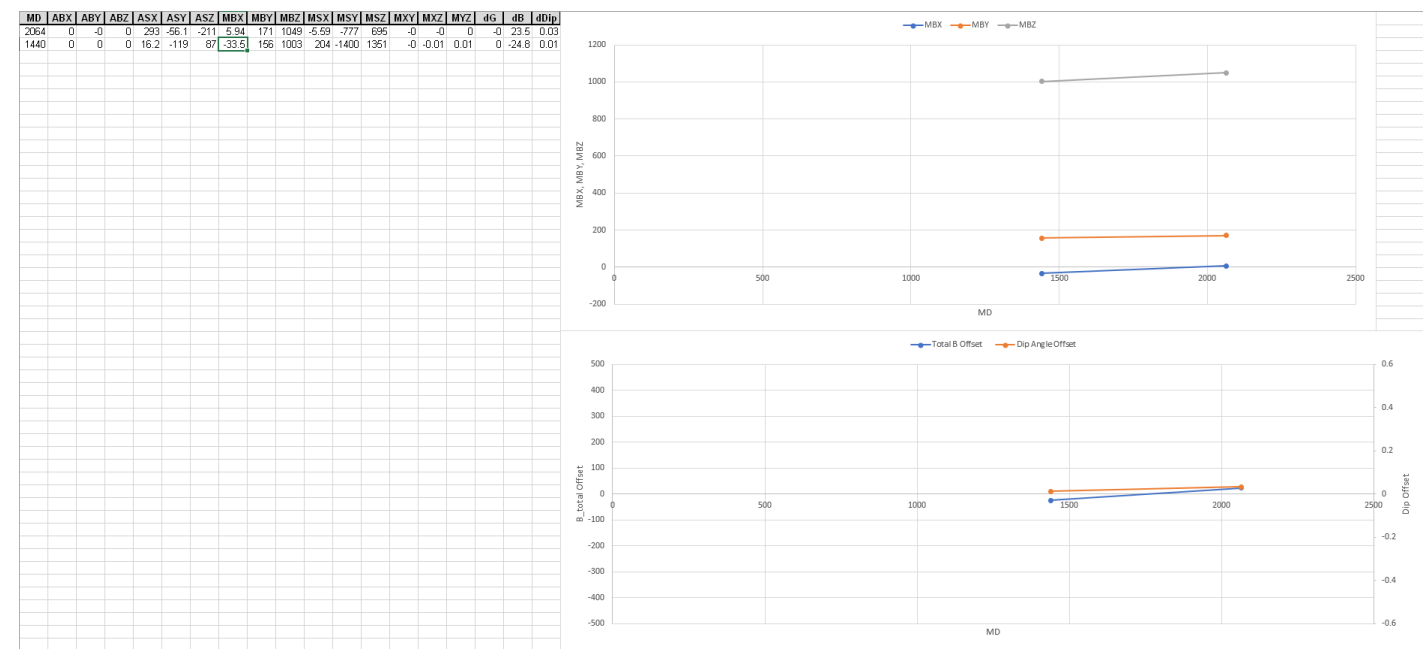
Settings tab allows you to change the input format of the 6-axis surveys (units and sensor axis order) in the section MWD Tool. Stiff D&I option is needed to manage the misalignment correction. Uncheck it if you want to allow the misalignment correction, these errors can be correlated with other error terms.

Here you must select the error model that matches your geomagnetic reference model. This affects MSA correction and quality control.

Also, you can enable to record the MSA correction history (to track solution stability) or clear this log.

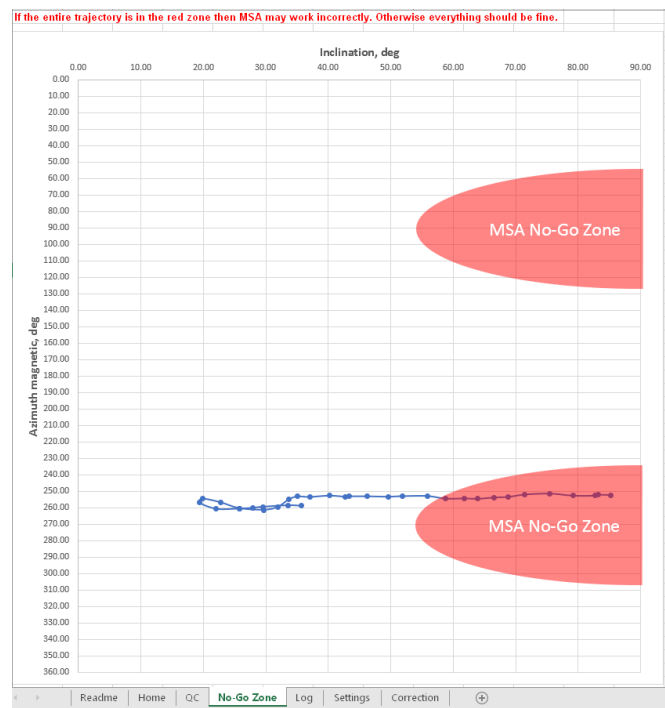
MSA History

Log tab contains a record of all MSA corrections results indexed by MD. You can track MSA stability with this feature. Constant drift or sharp change is the MSA correction vector is a sign of an issue.



MSA No-Go Zone

No-Go Zone tab contains a tool to understand if MSA correction is applicable for the trajectory. If the **entire trajectory is inside the red zone**, that means the MSA correction, most probably, will be inaccurate and instable.



PS

If you have questions or comments, please join our LinkedIn group:

<https://www.linkedin.com/groups/12451040/>