

Table S1. Values of mean difference and standard deviation between ICESat-2 RIS DEM as well as the five Antarctic DEMs and OIB elevations as a function of surface slope.

slope/°	ICESat-2		TanDEM-X PolarDEM		REMA		Slater DEM		Helm DEM		Bamber DEM	
	Mean/m	Std/m	Mean/m	Std/m	Mean/m	Std/m	Mean/m	Std/m	Mean/m	Std/m	Mean/m	Std/m
0-0.05	-0.109	1.215	5.061	1.813	0.641	1.514	0.245	1.573	0.749	1.403	-0.053	1.898
0.05-0.1	-0.044	1.324	5.133	2.508	0.769	2.206	0.494	2.253	0.868	2.064	0.252	2.444
0.1-0.15	0.046	1.478	5.390	3.270	0.960	2.960	0.891	2.965	0.974	2.768	0.525	3.029
0.15-0.2	0.164	1.659	6.005	3.535	1.439	3.266	1.483	3.237	1.201	3.066	0.833	3.216
0.2-0.25	0.237	1.691	6.180	3.886	1.562	3.585	1.535	3.644	1.032	3.471	0.756	3.535
0.25-0.3	0.299	1.785	6.189	4.313	1.684	3.937	1.463	4.087	0.899	4.086	0.745	3.980
0.3-0.35	0.378	1.875	6.253	4.522	1.896	4.140	1.594	4.450	0.878	4.445	0.755	4.213
0.35-0.4	0.324	1.754	6.306	4.623	1.955	4.309	1.722	4.857	0.625	5.036	0.602	4.670
0.4-0.45	0.328	1.954	6.119	4.846	1.762	4.709	1.766	5.095	0.341	5.493	0.320	5.019
0.45-0.5	0.035	2.237	5.837	5.328	1.207	4.887	1.298	5.093	-0.277	5.727	-0.257	5.252
0.5-0.55	0.398	2.317	5.491	5.430	0.975	4.961	0.714	5.117	-0.804	5.902	-0.532	5.287
0.55-0.6	0.156	2.090	5.526	5.511	0.939	4.883	0.252	5.451	-1.390	6.069	-1.096	5.355
0.6-0.65	-0.019	2.144	4.799	6.084	0.135	5.434	-0.681	5.967	-2.675	6.701	-2.276	5.466
0.65-0.7	0.002	2.363	4.237	6.694	0.147	5.792	-1.474	6.805	-3.486	7.584	-2.675	6.304
0.7-0.75	0.090	2.726	3.760	6.656	-0.213	5.960	-1.402	6.220	-3.380	6.807	-3.046	5.869
0.75-0.8	0.273	1.895	5.280	6.441	1.144	5.693	0.236	6.212	-1.998	6.436	-1.448	5.581
0.8-0.85	0.271	2.055	4.763	6.780	1.185	6.315	-0.041	6.774	-2.300	7.173	-1.585	6.185
0.85-0.9	0.594	1.765	4.817	6.136	1.275	5.715	0.004	5.893	-2.660	6.160	-1.380	5.308
0.9-0.95	0.195	2.138	1.973	8.817	-1.779	7.926	-2.935	8.234	-5.079	8.477	-3.579	6.829
0.95-1.0	0.518	2.140	3.048	6.329	-0.244	5.856	-1.973	6.706	-3.875	7.005	-2.817	6.007

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slope/°	ICESat-2		TanDEM-X PolarDEM		REMA		Slater DEM		Helm DEM		Bamber DEM	
	Mean/m	Std/m	Mean/m	Std/m	Mean/m	Std/m	Mean/m	Std/m	Mean/m	Std/m	Mean/m	Std/m
0-0.05	-0.506	0.635	1.979	1.259	-0.899	1.652	0.040	0.674	0.209	1.923	-0.289	1.014
0.05-0.1	-0.657	1.123	1.923	1.786	-1.662	1.932	-0.155	1.142	-0.658	3.326	-0.695	1.834
0.1-0.15	-1.138	1.627	1.114	2.569	-2.741	2.251	-0.476	1.741	-2.157	4.124	-1.665	2.782
0.15-0.2	-1.098	1.564	0.893	2.803	-2.803	2.387	-0.214	2.195	-1.988	3.269	-1.498	2.741
0.2-0.25	-1.349	2.135	1.075	3.128	-2.613	2.992	0.047	2.745	-2.941	4.607	-1.284	3.125
0.25-0.3	-1.496	2.332	0.364	3.354	-3.486	3.403	0.720	3.217	-3.551	4.265	-0.659	4.810
0.3-0.35	-1.559	2.600	0.425	3.498	-3.196	3.600	0.864	3.674	-4.479	4.883	0.007	5.166
0.35-0.4	-1.904	2.775	0.564	3.597	-2.639	3.774	0.347	4.025	-5.423	5.502	-0.404	4.643
0.4-0.45	-2.125	3.590	1.030	3.886	-2.292	4.361	0.390	4.833	-4.728	6.020	-0.237	4.713
0.45-0.5	-2.021	4.184	0.953	3.984	-2.533	4.749	0.244	4.747	-4.519	5.736	-0.603	4.307
0.5-0.55	-2.197	4.909	0.879	3.892	-2.230	4.658	0.242	5.571	-4.615	6.328	-0.952	4.335
0.55-0.6	-1.060	4.579	1.953	3.863	-1.120	4.110	0.922	5.504	-3.632	6.625	-0.506	3.778
0.6-0.65	-1.791	3.721	0.621	3.913	-2.328	4.761	0.190	3.646	-5.078	4.794	-1.282	4.470
0.65-0.7	-2.710	4.622	0.357	3.897	-3.052	5.785	-0.627	4.907	-5.880	5.963	-1.002	4.650
0.7-0.75	-2.860	3.811	0.597	3.270	-2.855	4.846	0.132	4.201	-6.135	5.220	-2.613	5.149
0.75-0.8	-1.738	3.637	1.155	3.280	-1.222	4.066	0.515	4.037	-4.916	4.865	-0.949	3.784
0.8-0.85	-1.320	4.928	1.943	3.668	-0.360	4.638	-0.208	5.878	-4.465	6.242	0.487	3.249
0.85-0.9	-0.941	3.984	1.925	3.879	-0.276	5.231	0.456	4.855	-4.099	5.487	1.118	2.643
0.9-0.95	-1.676	5.850	2.591	3.358	-0.088	5.198	-0.738	6.889	-5.082	7.512	1.125	3.026
0.95-1.0	-2.002	3.762	1.366	3.414	-1.284	4.824	-0.393	4.540	-4.727	5.318	0.718	2.067