

Supplementary Information

Table 1. Site velocities (mm/y) relative to ITRF2008.

ID	Longitude	Latitude	East Vel	North Vel	Sigma East	Sigma North	Corr	Network
Colombia								
ALPA	-72.92	11.53	8.4	13.6	1.2	0.9	0.0	GeoRED
BAAP	-73.55	4.07	-5.0	9.9	0.7	0.3	0.0	GeoRED
BACO	-75.69	9.40	13.2	7.8	1.5	1.4	0.0	GeoRED
BAME	-74.57	4.24	1.6	14.2	1.0	0.3	0.0	GeoRED
BAPA	-74.66	5.47	2.6	14.6	0.4	0.3	0.0	GeoRED
BARU	-75.59	10.26	11.6	9.9	1.0	0.6	0.0	GeoRED
BASO	-77.39	6.20	6.7	15.5	0.9	0.4	0.0	GeoRED
BOBG	-73.36	8.31	6.7	15.1	0.7	0.4	0.0	GeoRED
BOGT	-74.08	4.64	-0.4	15.2	0.5	0.3	0.1	IGS
BUGT	-77.00	3.83	5.0	15.0	0.4	0.2	0.0	GeoRED
CAPI	-72.43	5.35	-3.0	11.5	0.5	0.5	0.0	GeoRED
CIA1	-76.36	3.51	3.0	14.3	2.9	1.0	0.1	GeoRED
CN35	-81.36	13.38	11.0	6.6	0.8	0.6	0.0	COCONet/GeoRED
CN37	-75.26	10.79	8.5	13.8	2.0	2.3	0.0	COCONet/GeoRED
CN38	-71.99	12.22	11.3	13.8	0.6	0.4	0.0	COCONet/GeoRED
CORO	-75.29	9.33	11.7	11.4	0.7	0.5	0.1	GeoRED
CUC1	-72.51	7.93	7.5	13.0	1.6	0.5	-0.1	GeoRED
GUAP	-77.89	2.57	7.9	13.4	0.7	0.4	0.0	GeoRED
MALO	-81.61	4.00	48.3	13.6	0.8	0.3	0.0	GeoRED
MECE	-73.71	7.11	4.4	15.0	0.8	0.6	0.1	GeoRED
MITU	-70.23	1.26	-4.7	11.5	1.1	0.3	0.0	GeoRED
MZAL	-75.47	5.03	1.6	17.9	0.4	0.7	0.0	GeoRED
OCEL	-71.62	4.27	-5.0	11.6	0.6	0.3	0.0	GeoRED
PAL1	-73.19	7.14	3.5	14.7	0.6	0.5	0.0	GeoRED
PASI	-76.50	0.51	-3.1	10.3	0.5	0.4	0.0	GeoRED
POVA	-76.61	2.45	5.1	13.0	0.6	0.3	0.0	GeoRED
PUIN	-67.90	3.85	-4.6	10.7	1.4	0.5	0.1	GeoRED
QUIL	-77.29	1.39	5.0	14.3	0.9	0.4	0.0	GeoRED
SAN0	-81.72	12.58	12.3	7.0	0.4	0.3	0.0	COCONet/GeoRED
SEL1	-75.53	6.19	4.0	14.9	0.5	0.3	0.1	GeoRED
TICU	-69.94	-4.19	-4.2	10.8	1.1	0.2	-0.3	GeoRED
TONE	-76.14	6.32	4.2	15.5	0.6	0.3	0.0	GeoRED
TUCO	-78.75	1.81	13.8	12.8	0.6	0.2	0.0	GeoRED
URRA	-76.21	8.01	12.6	14.0	1.4	1.1	0.1	GeoRED
UWAS	-72.39	6.45	0.1	13.0	0.4	0.3	0.0	GeoRED
VBUV	-73.86	5.53	3.7	15.6	0.7	0.4	0.0	GeoRED
VDPR	-73.25	10.44	8.5	15.2	0.4	0.4	0.1	GeoRED
VMAG	-74.85	9.29	8.4	14.1	0.8	0.7	0.0	GeoRED
VNEI	-75.26	3.06	-0.7	13.8	0.7	0.4	0.1	GeoRED
VORA	-76.72	7.82	14.2	11.6	2.9	2.2	0.0	GeoRED
VOTU	-74.71	7.02	6.0	15.1	0.3	0.5	0.0	GeoRED
VPIJ	-75.11	4.40	1.6	14.4	0.6	0.3	0.0	GeoRED
VPOL	-74.86	10.79	7.6	16.6	0.9	0.6	0.1	GeoRED
VROS	-74.32	4.85	0.1	14.5	0.8	0.4	0.0	GeoRED
VSJG	-72.64	2.53	-4.9	10.8	1.2	0.4	0.0	GeoRED
VSJP	-75.84	4.78	1.0	15.2	0.7	0.4	0.0	GeoRED

Table 1. Site velocities (mm/y) relative to ITRF2008 (*continued*).

ID	Longitude	Latitude	East Vel	North Vel	Sigma East	Sigma North	Corr	Network
Ecuador								
AUCA	-76.88	-0.64	-2.3	9.9	0.5	0.2	0.0	Espona
BAEZ	-77.89	-0.46	2.0	10.4	0.5	0.1	0.0	Espona
COEC	-77.79	0.72	3.0	12.5	1.2	0.4	0.0	Espona
ESMR	-79.72	0.93	17.9	16.5	0.7	0.4	0.0	Espona
GLPS	-90.30	-0.74	50.7	10.2	0.2	0.2	0.0	IGS
RIOP	-78.65	-1.65	-0.5	5.7	0.7	0.4	0.0	IGS
SNLR	-78.85	1.29	11.0	10.6	0.6	0.3	0.0	Espona
Panamá								
ACP1	-79.95	9.37	16.7	11.4	0.4	0.4	0.0	ACP
ACP6	-79.41	9.24	16.7	12.1	0.6	0.6	0.3	ACP
CN28	-79.03	8.63	17.3	15.1	0.9	0.7	0.0	COCONet
CN33	-80.33	8.49	19.9	6.3	2.4	2.4	0.0	COCONet
Venezuela								
CN19	-70.05	12.61	12.8	14.1	1.2	1.0	0.0	COCONet/Funvisis
CN40	-68.96	12.18	12.2	12.9	1.1	1.0	0.0	COCONet/Funvisis
Costa Rica								
ISCO	-87.06	5.54	50.0	74.4	0.7	0.6	0.0	COCONet

Table 2. Site velocities (mm/y) relative to stable South America, Figure 6. Margin-parallel (035°, NE-SW) velocities, Figure 9 and Margin-normal (125°, SE-NW), Figure 10.

ID	Longitude	Latitude	East velocity (mm/y)	North velocity (mm/y)	Sigma East	Sigma North	Margin normal velocity	Margin parallel velocity	Margin normal sigma	Margin parallel sigma
ACP1	280.050	9.371	22.2	1.7	0.4	0.4	17.2	14.1	0.4	0.4
ACP6	280.592	9.238	22.1	2.3	0.6	0.6	16.8	14.6	0.7	0.5
ALPA	287.082	11.528	13.9	3.0	1.2	0.9	9.6	10.4	1.0	1.1
AUCA	283.117	-0.641	1.9	-0.2	0.5	0.2	1.6	0.9	0.3	0.4
BAAP	286.446	4.072	-0.2	-0.6	0.7	0.3	0.2	-0.7	0.4	0.6
BACO	284.308	9.402	18.6	-2.4	1.5	1.4	16.6	8.6	1.5	1.5
BAEZ	282.113	-0.459	6.2	0.5	0.5	0.1	4.8	3.9	0.3	0.4
BAME	285.435	4.236	6.4	3.9	1.0	0.3	3.0	6.8	0.6	0.8
BAPA	285.342	5.466	7.5	4.2	0.4	0.3	3.8	7.8	0.3	0.4
BARU	284.410	10.258	17.0	-0.3	1.0	0.6	14.1	9.5	0.7	0.9
BASO	282.607	6.203	11.7	5.5	0.9	0.4	6.5	11.2	0.6	0.8
BOBG	286.642	8.312	11.9	4.6	0.7	0.4	7.1	10.6	0.5	0.6
BOGT	285.919	4.640	4.4	4.7	0.5	0.3	0.9	6.4	0.4	0.5
BUGT	283.004	3.826	9.7	4.9	0.4	0.2	5.1	9.6	0.3	0.4
CAPI	287.572	5.351	1.8	0.9	0.5	0.5	1.0	1.7	0.5	0.5
CIA1	283.643	3.505	7.6	4.2	2.9	1.0	3.9	7.8	1.9	2.3
CN19	289.952	12.612	18.2	3.3	1.2	1.0	13.1	13.1	1.0	1.1
CN28	280.966	8.625	22.7	5.3	0.9	0.7	15.5	17.3	0.8	0.9
CN33	279.673	8.487	25.3	-3.3	2.4	2.4	22.6	11.8	2.4	2.4
CN35	278.637	13.375	17.0	-2.9	0.8	0.6	15.6	7.4	0.7	0.7
CN37	284.737	10.793	14.0	3.6	2.0	2.3	9.4	11.0	2.2	2.0
CN38	288.012	12.222	16.9	3.1	0.6	0.4	12.0	12.2	0.5	0.6
CN40	291.042	12.180	17.6	1.9	1.1	1.0	13.3	11.7	1.1	1.1
COEC	282.213	0.716	7.3	2.6	1.2	0.4	4.5	6.3	0.8	1.0
CORO	284.712	9.328	17.0	1.1	0.7	0.5	13.3	10.7	0.6	0.6
CUC1	287.487	7.932	12.6	2.4	1.6	0.5	9.0	9.2	1.0	1.4
ESMR	280.276	0.935	22.2	6.8	0.7	0.4	14.3	18.3	0.5	0.6
GLPS	269.696	-0.743	54.8	2.1	0.2	0.2	43.7	33.2	0.2	0.2
GUAP	282.105	2.574	12.5	3.5	0.7	0.4	8.2	10.0	0.5	0.6
ISCO	272.944	5.544	55.1	65.8	0.7	0.6	7.4	85.5	0.7	0.7
MALO	278.394	4.003	53.1	4.2	0.8	0.3	41.1	33.9	0.5	0.7
MECE	286.288	7.107	9.5	4.5	0.8	0.6	5.2	9.1	0.7	0.7
MITU	289.768	1.261	-0.4	0.7	1.1	0.3	-0.7	0.3	0.7	0.9
MZAL	284.529	5.030	6.5	7.7	0.4	0.7	0.9	10.0	0.6	0.5
OCEL	288.384	4.271	-0.3	0.9	0.6	0.3	-0.8	0.6	0.4	0.5
PAL1	286.811	7.136	8.5	4.2	0.6	0.5	4.6	8.3	0.6	0.6
PASI	283.501	0.513	1.2	0.2	0.5	0.4	0.8	0.8	0.4	0.4
POVA	283.385	2.449	9.7	2.8	0.6	0.3	6.3	7.9	0.4	0.5
PUIN	292.097	3.851	0.0	-0.4	1.4	0.5	0.2	-0.4	0.9	1.2
QUIL	282.709	1.394	9.5	4.2	0.9	0.4	5.3	8.9	0.6	0.8

Table 2. Site velocities (mm/y) relative to stable South America, Figure 6. Margin-parallel (035°, NE-SW) velocities, Figure 9 and Margin-normal (125°, SE-NW), Figure 10 (*continued*).

ID	Longitude	Latitude	East velocity (mm/y)	North velocity (mm/y)	Sigma East	Sigma North	Margin normal velocity	Margin parallel velocity	Margin normal sigma	Margin parallel sigma
RIOP	281.349	-1.651	3.5	-4.1	0.7	0.4	5.2	-1.4	0.5	0.6
SANO	278.284	12.580	18.2	-2.4	0.4	0.3	16.3	8.5	0.4	0.4
SEL1	284.471	6.191	9.0	4.6	0.5	0.3	4.7	8.9	0.4	0.4
SNLR	281.153	1.293	15.4	0.8	0.6	0.3	12.2	9.5	0.4	0.5
TICU	290.061	-4.187	-0.4	-0.1	1.1	0.2	-0.3	-0.3	0.6	0.9
TONE	283.861	6.324	9.3	5.4	0.6	0.3	4.5	9.7	0.4	0.5
TUCO	281.252	1.815	18.3	3.0	0.6	0.2	13.3	13.0	0.4	0.5
URRA	283.790	8.012	17.8	3.9	1.4	1.1	12.3	13.4	1.2	1.3
UWAS	287.609	6.451	5.1	2.4	0.4	0.3	2.8	4.8	0.4	0.4
VBUV	286.141	5.533	8.6	5.1	0.7	0.4	4.1	9.1	0.5	0.6
VDPR	286.752	10.436	13.8	4.7	0.4	0.4	8.7	11.8	0.4	0.4
VMAG	285.153	9.287	13.7	3.8	0.8	0.7	9.0	11.0	0.7	0.8
VNEI	284.745	3.062	3.9	3.6	0.7	0.4	1.1	5.1	0.5	0.6
VORA	283.278	7.818	19.4	1.5	2.9	2.2	15.0	12.3	2.5	2.6
VOTU	285.290	7.019	11.1	4.8	0.3	0.5	6.3	10.3	0.4	0.4
VPIJ	284.893	4.397	6.3	4.1	0.6	0.3	2.9	7.0	0.5	0.6
VPOL	285.139	10.794	13.1	6.3	0.9	0.6	7.1	12.6	0.7	0.8
VROS	285.677	4.847	4.9	4.1	0.8	0.4	1.7	6.2	0.5	0.7
VSJG	287.361	2.533	-0.4	0.2	1.2	0.4	-0.4	-0.1	0.8	1.0
VSJP	284.164	4.781	5.8	5.0	0.7	0.4	1.9	7.4	0.5	0.6

Table 3. Site velocities (mm/y) relative to North Andean Block (NAB) (Supplementary Figure 1).

ID	Longitude	Latitude	Vel (E)	Vel (N)	Sig (E)	Sig (N)
ACPI	-79.950	9.371	15.3	-2.4	0.4	0.4
ACP6	-79.408	9.238	15.2	-1.8	0.6	0.6
AHUA	-77.550	-1.060	-4.3	-3.8	0.7	0.4
ALPA	-72.918	11.528	7.0	-1.1	1.2	0.9
AMAL	-79.420	-4.580	-2.3	-5.5	0.5	0.3
ARCA	-70.750	7.080	-6.8	-3.3	0.5	0.5
AUCA	-76.880	-0.640	-5.6	-5.0	0.5	0.5
AYAN	-80.750	-1.980	5.5	0.7	1.0	0.8
BAAP	-73.554	4.072	-7.3	-4.7	0.7	0.3
BACO	-75.692	9.402	11.6	-6.6	1.5	1.4
BAEZ	-77.887	-0.459	-0.8	-3.6	0.5	0.2
BALZ	-79.900	-1.360	3.4	-0.4	1.2	0.9
BAME	-74.565	4.236	-0.6	-0.3	1.0	0.3
BAPA	-74.658	5.466	0.6	0.1	0.4	0.3
BARU	-75.590	10.258	10.1	-4.4	1.0	0.6
BASO	-77.393	6.203	4.8	1.4	0.9	0.4
BOBG	-73.358	8.312	5.0	0.5	0.7	0.4
BOGT	-74.081	4.640	-2.6	0.6	0.5	0.3
BUEN	-76.993	3.820	2.3	4.1	0.4	0.2
BUGT	-76.996	3.826	2.7	0.8	0.4	0.2
CABP	-80.420	-0.380	14.2	2.7	0.5	0.6
CALI	-76.530	3.370	0.6	0.9	0.4	0.3
CAPI	-72.428	5.351	-5.2	-3.3	0.5	0.5
CHIS	-80.720	-1.050	8.8	2.5	0.4	0.3
CIA1	-76.357	3.505	0.7	0.0	2.9	1.0
CN19	-70.049	12.612	11.3	-0.8	1.2	1.0
CN28	-79.034	8.625	15.8	1.2	0.9	0.7
CN33	-80.327	8.487	18.4	-7.4	2.4	2.4
CN35	-81.363	13.375	10.3	-7.0	0.8	0.7
CN37	-75.263	10.793	7.1	-0.6	2.0	2.3
CN38	-71.988	12.222	9.9	-1.0	0.6	0.4
CN40	-68.958	12.180	10.6	-2.2	1.1	1.0
CNJO	-76.840	0.230	-4.8	-3.3	0.6	0.5
COEC	-77.787	0.716	0.4	-1.6	1.2	0.4
CORO	-75.288	9.328	10.1	-3.0	0.7	0.5
CUC1	-72.513	7.932	5.6	-1.8	1.6	0.6
CUEC	-79.000	-2.880	-3.1	-5.8	0.4	0.3
CUER	-79.530	-2.350	-2.3	-1.1	0.8	0.5
CULA	-78.690	0.140	4.8	0.6	1.3	1.1
DAUL	-79.990	-1.870	2.2	-0.2	0.7	0.4
DESV	-79.920	-1.040	3.9	0.1	0.6	0.5
ELCH	-77.800	-0.330	-3.2	-2.6	0.4	0.3
ESMR	-79.720	0.930	14.2	2.3	0.3	0.3
FLFR	-79.840	-0.350	7.9	-2.0	0.4	0.5
FLOR	-75.600	1.620	-5.7	-5.0	0.6	0.4
GPH1	-79.910	-2.730	-1.0	-1.3	0.9	0.8
GUAP	-77.895	2.574	5.5	-0.7	0.7	0.4
GYEC	-79.890	-2.140	0.1	0.3	0.5	0.4
HONA	-79.150	-3.470	-3.2	-5.2	0.9	0.4

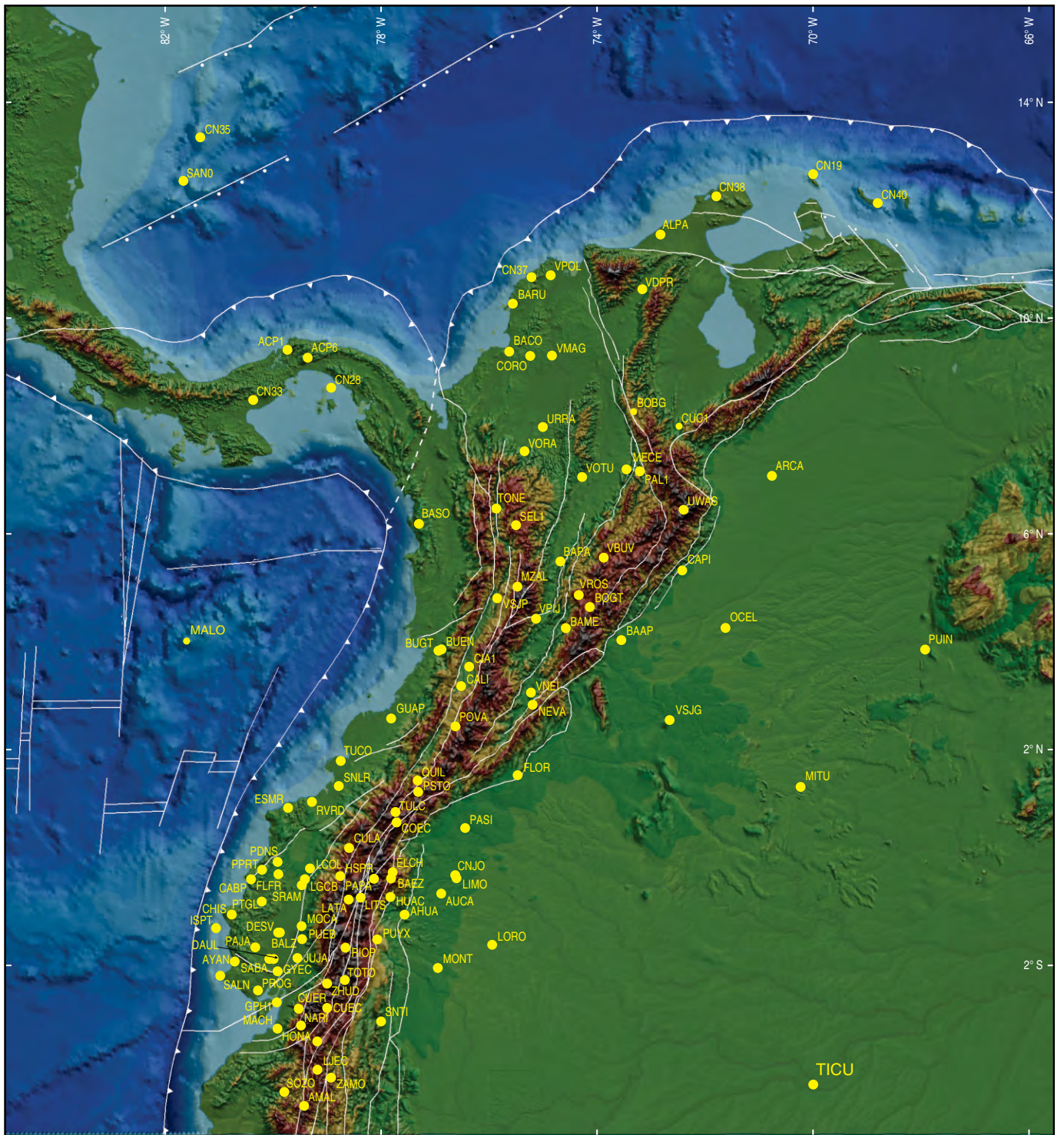
Table 3. Site velocities (mm/y) relative to North Andean Block (NAB) (Supplementary Figure 1) (*continued*).

ID	Longitude	Latitude	Vel (E)	Vel (N)	Sig (E)	Sig (N)
HSPR	-78.850	-0.350	5.3	-2.9	0.5	0.4
HUAC	-77.800	-0.700	-4.2	-3.4	0.6	0.6
ISPT	-81.070	-1.260	28.4	1.0	0.4	0.3
JUJA	-79.550	-1.890	3.4	0.1	1.1	0.6
LATA	-78.620	-0.810	1.8	-1.7	0.2	0.2
LCOL	-79.200	-0.240	5.2	-1.2	0.3	0.2
LGCB	-79.570	0.380	9.3	-0.7	0.5	0.3
LIMO	-76.620	-0.400	-6.9	-3.3	1.2	0.9
LITS	-78.440	0.870	6.1	-0.8	0.3	0.3
LJEC	-79.190	-3.980	-3.1	-5.7	1.5	0.5
LORO	-75.980	-1.610	-8.2	-1.6	0.6	0.5
MACH	-79.960	-3.250	-1.9	-4.1	0.7	0.4
MALO	-81.606	4.003	46.1	0.1	0.8	0.4
MECE	-73.712	7.107	2.5	0.4	0.8	0.6
MITU	-70.232	1.261	-7.4	-3.4	1.1	0.3
MOCA	-79.500	-1.180	2.9	-0.6	0.5	0.4
MONT	-76.980	-2.060	-5.8	-3.4	0.6	0.5
MZAL	-75.471	5.030	-0.5	3.5	0.4	0.7
NARI	-79.530	-3.140	-4.0	-5.2	0.5	0.3
NEVA	-75.290	2.930	0.5	0.9	0.7	0.8
OCEL	-71.616	4.271	-7.3	-3.2	0.6	0.3
PAJA	-80.420	-1.550	3.6	-1.6	1.0	0.7
PAL1	-73.189	7.136	1.5	0.1	0.6	0.5
PAPA	-78.140	-0.380	-0.4	-0.5	0.5	0.4
PASI	-76.499	0.513	-5.8	-3.9	0.5	0.4
PDNS	-79.990	0.110	11.4	1.5	0.6	0.4
POVA	-76.615	2.449	2.7	-1.3	0.6	0.3
PPRT	-80.210	-0.120	12.6	3.1	0.5	0.5
PROG	-80.360	-2.410	2.2	-0.3	0.5	0.3
PSTO	-77.270	1.210	0.7	-0.3	0.5	0.4
PTGL	-80.030	0.780	16.9	1.7	0.5	0.4
PUEB	-79.530	-1.550	2.9	-0.3	1.6	0.9
PUIN	-67.903	3.851	-7.1	-4.5	1.4	0.5
PUYX	-78.060	-1.500	-1.0	-4.5	1.7	0.7
QUIL	-77.291	1.394	2.5	0.1	0.9	0.4
RIOP	-78.650	-1.650	-2.7	-7.4	0.4	0.4
RVRD	-79.380	1.060	13.0	1.1	0.4	0.4
SABA	-80.220	-1.840	1.3	-0.6	1.2	0.8
SALN	-80.990	-2.180	7.0	-0.5	0.6	0.4
SANO	-81.716	12.580	11.5	-6.5	0.4	0.3
SEL1	-75.529	6.191	2.0	0.5	0.5	0.4
SNLR	-78.840	1.290	8.8	-3.9	0.4	0.5
SNTI	-78.010	-3.040	-4.4	-6.0	1.2	1.3
SOZO	-79.790	-4.330	-3.3	-5.4	0.8	0.4
SRAM	-79.560	-0.600	5.6	-1.2	2.0	1.5
TICU	-69.939	-4.187	-7.3	-4.2	1.1	0.2
TONE	-76.139	6.324	2.3	1.2	0.6	0.3

Table 3. Site velocities (mm/y) relative to North Andean Block (NAB) (Supplementary Figure 1) (*continued*).

ID	Longitude	Latitude	Vel (E)	Vel (N)	Sig (E)	Sig (N)
TOTO	-78.670	-2.250	-2.1	-5.7	0.3	0.2
TUCO	-78.748	1.815	11.3	-1.1	0.6	0.2
TULC	-77.700	0.810	-0.4	-0.4	0.4	0.3
URRA	-76.210	8.012	10.8	-0.3	1.4	1.1
UWAS	-72.391	6.451	-1.9	-1.8	0.4	0.4
VBUV	-73.859	5.533	1.6	1.0	0.7	0.4
VDPR	-73.248	10.436	6.9	0.6	0.4	0.4
VMAG	-74.847	9.287	6.8	-0.3	0.8	0.7
VNEI	-75.255	3.062	-3.1	-0.6	0.7	0.4
VORA	-76.722	7.818	12.4	-2.6	2.9	2.2
VOTU	-74.710	7.019	4.1	0.7	0.3	0.5
VPIJ	-75.107	4.397	-0.7	0.0	0.7	0.3
VPOL	-74.861	10.794	6.1	2.2	0.9	0.6
VROS	-74.323	4.847	-2.1	0.0	0.8	0.4
VSJG	-72.639	2.533	-7.4	-3.9	1.2	0.4
VSJP	-75.836	4.781	-1.2	0.8	0.7	0.4
ZAMO	-78.930	-4.050	-3.8	-4.8	0.3	0.3
ZHUD	-79.000	-2.460	-1.7	-5.0	0.5	0.3

See stations in Figure 1



Supplementary Figure 1. Stations mentioned in Supplementary Table 3.