

SUPPLEMENTARY DATA

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Table S1. Legend of the geological units present in the study area

Legend	Name of the geological unit	Legend	Name of the geological unit
Kivqg	Quebrada Grande formation volcanosedimentary member	Ksts	Sabanalarga Batholith
Qal	Alluvial deposits	Pza	Amphibolites and amphibole schists
Qcl	Deposits of debris flows and/or sludge	Pzes	Quartz-sericite schists
Ngcf	Cerro de Frontino stock	Kivb	Barroso volcanic
Kld	Diorite	Pz (es + ev)	Intercalated schists
Qt	Alluvial terraces	TRga	Amagá stock
Ngpf	Páramo de Frontino stock	Qll	Anthropic plains
TRga	Amagá stock	Qal	Alluvial deposits
Kidc	Cambumbia stock	PrÁam	Puente Peláez Migmatites
Kcdgm	Mistrato pluton	TRab	El Buey stock
Qcl	Deposits of debris flows and/or sludge	Pzes	Quartz-sericite schists
Qal	Alluvial deposits	Qt	Alluvial terraces
Kidp	Pueblito diorite	Pgsd	Undifferentiated sediments
PrÁam	Migmatites	Kslb	Barroso lidites
Pzin	Abejorral intrusive gneiss	Ngc	Combia formation
Ksts	Sabanalarga batholith	Qcl	Deposits of debris flows and/or sludge
Ksts	Actinolite and chlorite-schists	Pzes	Quartz-sericite schists
Pnim	Alto de Minas intrusive gneiss	Kigr	Romerall gabbro
Ksts	Sabanalarga batholith	Pzev	Actinolite and chlorite-schists
Ksga	Altamira gabbro	Pz (es + ev)	Cataclastic gneiss
Ksts	Sabanalarga Batholith	PrÁmpt	Puqui metatonalite
Kida	Altavista stock	Pzev	Actinolite and chlorite- schists
Ksu	Urrao member	Qal	Alluvial deposits
Pzev	Green schists	Kigr	Copacabana gabbros
Jts	Sonsón batholith	Kitt	Támesis stock
Kiu	Peridotites	Ngc	Basalt dikes and silos
Pnip	Pantanillo intrusive gneiss	Qcl	Slope deposits
Qcl	Deposits of debris flows and/or sludge	Ngg	Guineales Formation
Kiu	Ultamafic rocks	Kigr	Gabbro
Kslb	Barroso lidites	TRah	Honda stock
Kisa	Abejorral Formation	Pzes	Quartz-sericite schists
TReC	Cajamarca schists	Ksto	Ovejas tonalite
Kium	Medellin dunite	PrÁnp	Puqui micaceous gneiss
Kstu	Unión Cupula	PzaAM	Alto de Minas amphibolites
Ksta	Hornblendic-biotitic tonalite	TRadl	Liborina Creek stock
Qt	Alluvial terraces	Pzq	Quartzites
Pzev	Pyroclastic rocks	Pgam	Amaga middle member formation
Ksts	Sabanalarga batholith	Kivqg	Quebrada Grande Formation volcanic member
Kivqg	Quebrada Grande formation volcanosedimentary member	Ksu	Urrao member
Pgab	Burítica andesite	Pzin	Intrusive syntectonic gneissics
Ksta	Antioquia batholith	Ngpa	Andesitic dikes and silos
Ngc	Combia formation	Ngvpf	Páramo de Frontino volcanics
Kuh	Harzburgite ultramafic rocks	TRaM	Amphibolites of Medellín
Kigr	Palmitas granite gneiss	Pznf	Feldspathic quartz gneisses
Kigr	Gabbro	Kisqg	Quebrada Grande formation sedimentary member

Legend	Name of the geological unit	Legend	Name of the geological unit
Ngc	Combia Formation volcanic member	Ksvu	Uramita volcanic
Ngpd	Dacitic porphyry	Qt	Alluvial terraces
Ksdh	Heliconia diorite	Pzin	Intrusive syntectonic gneissics
Ksta	Antioquia batholith	Pza	Amphibolites
Ksts	Sabanalarga batholith	Ksta	Antioquia batholith
Kcdu	Ursula stock	Pzin	Lenticular gneiss
Ksdh	Heliconia diorite	Pzin	Augen gneiss
Ksdh	Heliconia diorite	Kivb	Volcanic Barroso
Kiu	Serpentinites	Jts	Sonsón batholith
Pza	Amphibolite	Pgai	Amaga lower member formation
Ngpa	Andesitic porphyry	Kigr	Romerall gabbro
Kiu	Serpentinites	Kivb	Cataclastic facies of Ksvb
Kivb	Cataclastic facies of Ksvb	Jts	Sonsón batholith
Pzev	Actinolite and chlorite-schists	Ngcf	Cerro de Frontino stock
Qal	Alluvial deposits	Pzin	Intrusive gneissics
Kivqg	Quebrada Grande Formation volcanic member	Ngas	Amaga upper member formation
Kidp	Pueblito diorite	Kigr	Gabbro
Ngpa	Auguitic andesitic porphyry	Ngtf	Farallones batholith
Ngtf	Farallones batholith	Kslb	Barroso lidites

Source: Taken from González (2021).

Table S2. Hydrometeorological stations in the study area and surroundings operated by Ideam

Code	First name	Category	East [m]	North [m]	Installation date	End date
26140110	San Clemente	Pluviometric	810412	1080065	15/08/1970	Active
26180250	Valle Alto - Aut	Pluviographic	862521	1083496	14/04/1994	Active
26185040	San Felix	Ordinary weather	856145	1086047	15/08/1970	Active
26160080	Salamina Conc Barc	Pluviometric	843515	1088564	15/08/1970	Active
26170290	Riosucio	Pluviometric	816811	1091876	15/04/1985	Active
26180260	Miranda La	Pluviometric	860786	1092035	15/09/1999	Active
11010010	Vuelta La	Pluviometric	726505	1095965	14/01/1943	Active
26170350	Flecha La	Pluviometric	829415	1096477	15/09/1990	15/02/2002
26180240	Pavas Las	Pluviographic	854235	1102560	15/04/1994	Active
26160090	Pacora Plaza Feria	Pluviometric	847342	1102603	15/08/1970	Active
26187180	Albania	Limnigraph	860838	1103778	15/05/1994	10/12/2008
26170180	Caramanta	Pluviometric	826708	1105463	15/10/1970	Active
26190100	Santa Barbara	Pluviometric	798028	1107331	15/10/1970	Active
26187170	La Herencia	Limnigraph	860032	1108471	15/05/1994	28/08/2014
26185010	Pelada La	Ordinary weather	859581	1108804	15/04/1994	Active
26160160	Maria La	Pluviometric	833791	1109833	15/01/1962	Active
26195030	Jardin EL	Ordinary weather	809068	1109925	15/06/1990	Active
26177060	Maria La	Limnimetric	831301	1111222	15/10/1975	15/09/2005
26180190	Aguadas	Pluviometric	847792	1111184	15/08/1970	Active
26190120	Campamento	Pluviometric	800784	1120307	15/05/1979	15/12/1996
26197010	Campamento	Limnigraph	800784	1120307	14/09/1971	11/10/2018
26195020	Ita Andes	Ordinary weather	800273	1121378	15/07/1970	Active
26187030	Sonson	Limnigraph	863043	1121677	14/06/1955	Active
26180180	Sonson	Pluviographic	865184	1123891	15/06/1970	Active
2618500069	Sonsón - Aut	Main weather	865184	1123891	30/04/2017	Active
26177090	Balsos Los	Limnimetric	831335	1124128	15/07/1978	15/05/2002
26175030	Nacional Granja La	Main weather	821260	1124229	15/07/1977	Active
26187040	Quitասueno - Aut	Limnigraph	836590	1124609	9/03/2014	Active
26187110	La Pintada	Limnigraph	830231	1125606	15/10/1961	Active
26180220	La Pintada Alertas	Pluviometric	831339	1125603	2/06/1980	18/04/2020
11040010	Tutunendo	Pluviometric	727404	1127470	15/01/1966	Active

Code	First name	Category	East [m]	North [m]	Installation date	End date
26190090	Betania-Las Guacas	Pluviometric	789733	1128493	15/10/1970	Active
11020050	Pinon El	Pluviometric	759219	1128897	15/10/1958	Active
11020020	Guaduas	Pluviometric	766707	1129865	15/03/1977	15/04/2002
26205030	Farallones	Ordinary weather	829508	1131508	15/03/1970	15/04/1983
26180160	Abejorral	Pluviometric	850143	1131747	15/05/1970	Active
26170150	Pueblorrico	Pluviometric	804897	1132434	15/09/1970	Active
26185030	Jerico - Aut	Main weather	810360	1133314	28/11/2004	6/01/2016
26175040	Tunez Hacienda	Ordinary weather	825712	1133390	15/04/1975	Active
26170190	Dique El	Pluviometric	817665	1133812	15/09/1970	Active
26197020	Brasilía	Limnigraph	794213	1136273	14/09/1970	Active
26207030	Puente Iglesias	Limnigraph	819680	1136692	15/07/1978	Active
26197030	Remolino El	Limnigraph	796533	1139692	14/09/1971	22/08/2019
26185050	Santa Barbara - Aut	Main weather	836221	1139925	29/11/2004	Active
11025010	Mansa La	Ordinary weather	777723	1142179	15/07/1973	Active
26185020	Mesopotamia	Ordinary weather	862551	1142823	15/06/1970	Active
11020010	Carmen De Atrato	Pluviometric	771337	1145546	15/10/1958	Active
26210110	Penalisa	Pluviometric	802470	1148358	15/04/1971	Active
26200150	Fredonia	Pluviometric	821973	1148501	15/03/1975	Active
26177100	Santa Clara	Limnigraph	803712	1150023	15/05/1978	15/04/2002
23080790	Linda La	Pluviometric	866477	1149854	15/02/1982	15/11/2004
26180200	Montebello	Pluviometric	838401	1150014	15/10/1970	Active
26207080	Bolombolo	Limnigraph	804827	1152232	15/10/1971	Active
26200130	Bolombolo	Pluviometric	804827	1152232	15/05/1980	18/04/2020
26205070	Plata La	Main weather	807416	1153699	15/11/1982	15/04/1995
26180170	Union La	Pluviometric	855630	1155225	15/05/1970	Active
26207040	Rodadero El	Limnigraph	809268	1155537	15/05/1978	10/12/2008
27010790	Meseta La-Sena	Pluviometric	829584	1159164	15/08/1970	15/10/1984
26215010	Concordia	Ordinary weather	796043	1159957	15/06/1970	Active
27015260	Salada La	Agrometeorological	828703	1160829	15/07/1984	Active
23080750	Cocorna	Pluviometric	877654	1161260	15/05/1975	Active
2308500071	Retiro - Aut	Main weather	841459	1162112	28/04/2017	Active
26200120	Otramina	Pluviometric	809894	1163606	15/10/1970	Active
23080650	Campoalegre	Pluviometric	860719	1163558	15/06/1973	Active
26210080	Herradura La	Pluviometric	801111	1166542	15/10/1970	Active
23080920	Santuario	Pluviographic	867997	1169760	15/05/1992	18/04/2020
23085260	La Selva - Aut	Agrometeorological	851993	1170010	10/10/2004	Active
11070130	Brechon El	Pluviometric	783475	1170377	15/10/1970	15/01/2000
26200140	Armenia	Pluviometric	812477	1173005	15/04/1975	Active
23085270	Aeropuerto J.M. Cordova - Aut	Main synoptic	850294	1174227	27/11/2006	Active
23080640	Marinilla	Pluviometric	861586	1174319	15/06/1973	Active
27010770	Chuscal El	Pluviometric	819841	1175234	15/08/1970	Active
27010810	Santa Helena	Ordinary weather	840698	1177227	15/08/1970	Active
26217040	Cangrejo El	Limnigraph	802622	1178762	15/05/1978	20/10/2010
23085110	Penol El	Ordinary weather	871194	1179069	15/06/1973	Active
26210140	Altamira	Pluviometric	793235	1179769	15/04/1975	Active
27015330	Olaya Herrera - Aut	Main synoptic	832596	1179806	12/05/2014	Active
27011270	Laureles-Medellin	Pluviographic	832487	1182729	31/05/2011	Active
27015300	Villanueva Villahermosa	Main weather	837034	1183475	8/09/2005	6/01/2016
27011110	Astilleros	Pluviometric	823103	1183961	15/10/1990	Active
27015210	Vivero El	Main weather	842578	1186784	15/07/1982	15/06/1996
27015290	Pajarito - Aut	Main weather	830094	1187152	17/11/2005	6/01/2016
11075020	Urrao	Ordinary weather	771367	1188679	15/06/1973	Active
26210090	Anza	Pluviometric	802817	1189097	15/10/1970	Active
23085160	Corrientes	Ordinary weather	869862	1189881	15/05/1975	Active

Supplementary Data. Region-scale estimation of potential groundwater recharge in soft and hard rock formations through a distributed water balance in the area of influence of the tropical dry forest in the Cauca River canyon, Antioquia, Colombia

Code	First name	Category	East [m]	North [m]	Installation date	End date
27011120	Iguana La	Pluviographic	825152	1190479	15/10/1990	Active
27015090	Tulio Ospina	Ordinary weather	836695	1190823	15/09/1950	Active
11070020	Roble El	Pluviometric	761937	1192470	15/03/1977	Active
26205080	Aldea La	Special Meteorological	820355	1193235	15/09/1990	Active
26217060	Agara	Limnimetric	805704	1194272	15/11/1979	15/04/2002
11075010	Honda La	Ordinary weather	769759	1195112	15/07/1990	10/05/2011
27010820	Cuchilla La	Pluviometric	847738	1196173	15/08/1970	Active
23080740	Concepcion	Pluviometric	869263	1199285	15/05/1975	Active
27010800	Meseta La Sn Pedro	Pluviometric	830747	1199694	15/08/1970	Active
26210070	Caicedo	Pluviometric	789350	1200523	15/10/1970	Active
26215020	Canafisanto	Ordinary weather	807574	1201642	15/06/1987	15/04/2002
26217050	Cañafisto	Limnigraph	807288	1201787	14/11/1978	Active
26230180	Llanos De San Juan	Pluviometric	818525	1202749	15/11/1990	Active
27015150	Progreso El Hacienda	Ordinary weather	854007	1204911	14/04/1973	9/10/2018
26237020	Penalta	Limnimetric	814271	1206703	15/04/1971	Active
23080390	Santo Domingo	Pluviographic	879832	1207155	15/04/1986	Active
26210130	Guasabra	Pluviometric	792206	1211286	15/03/1975	Active
26237060	Sopetran	Limnimetric	814988	1212681	15/03/1980	15/04/1996
26225060	Hacienda Cotove - Aut	Agrometeorological	806438	1214618	24/11/2004	Active
26225030	Cotove Hacienda	Agrometeorological	806438	1214618	15/04/1975	6/01/2016
11070030	Clarita La	Pluviometric	769780	1215370	15/03/1977	Active
26217010	La Galera - Aut	Limnigraph	802367	1216962	14/11/1970	Active
27010830	San Isidro	Pluviometric	840922	1217751	15/08/1970	Active
27010840	San Pablo	Pluviometric	870714	1221963	15/10/1970	Active
27010870	Belmira	Pluviometric	824057	1222885	15/11/1970	Active
26230010	Olaya	Pluviometric	808294	1225101	15/10/1970	Active
27015280	Paramo Belmira - Aut	Main weather	826708	1225406	22/11/2004	Active
11110020	Abriaqui	Pluviographic	779079	1226736	14/12/1974	Active
26237100	Olaya	Limnigraph	806610	1226902	14/10/1981	11/10/2018
27010900	Gomez Plata	Pluviometric	873689	1230341	15/10/1970	Active
26220090	Giraldo	Pluviometric	792129	1231725	15/11/1970	Active
11110110	Boqueron De Toyo	Pluviographic	789891	1232994	15/05/1983	10/05/2011
27010880	Montanitas	Pluviometric	854628	1233160	15/10/1970	Active
26230140	Placita La	Pluviometric	814173	1235278	15/10/1970	Active
26225040	Piunti Hacienda	Ordinary weather	797041	1236292	15/06/1970	15/06/1970
11115020	Cañasgordas - Aut	Ordinary weather	784146	1239499	14/07/1973	Active
11110010	Normal Santa Teresa	Pluviometric	772650	1240134	15/01/1969	Active
11115040	Musinga	Ordinary weather	764944	1241787	15/08/1984	Active
26230220	Oculta La	Pluviometric	827408	1241706	15/09/1983	Active
26255020	Santa Isabel	Ordinary weather	836098	1241747	15/05/1970	18/04/2020
27020220	Llanos D Cuiba Los	Pluviometric	844529	1245440	15/11/1970	Active
26230200	Sabanalarga	Pluviographic	807946	1249142	15/03/1975	Active
11110030	Fuemia	Pluviometric	759576	1250673	15/03/1977	Active
26227010	Purgatorio	Limnigraph	802219	1251450	15/05/1980	15/11/1995
26237110	Cedral El	Limnigraph	823697	1252901	15/05/1980	Active
27020210	Angostura	Pluviometric	861287	1253075	15/10/1970	Active
26230130	Cruces Arriba	Pluviometric	830650	1253622	15/11/1970	Active
26230240	Abertura La	Pluviometric	820127	1255095	15/01/1992	Active
26230110	San Andres	Pluviometric	823997	1256149	15/10/1970	Active
26230190	Oro El	Pluviometric	813303	1258786	15/04/1975	15/10/1992
27020190	Yarumal	Pluviometric	852125	1261166	15/10/1970	Active
26237080	Yarumal	Limnigraph	826232	1267961	15/03/1980	15/04/2002
26220050	Cumbre La	Pluviographic	794920	1269919	15/11/1970	15/11/2004
26235030	Matanzas	Ordinary weather	824477	1270087	14/04/1993	27/09/2018
26237090	Valle El	Limnimetric	822567	1273505	15/03/1980	10/12/2008

Code	First name	Category	East [m]	North [m]	Installation date	End date
27020200	Cedeno	Pluviographic	858789	1273841	15/11/1970	Active
26237050	Puente Pescadero	Limnigraph	821184	1275907	14/11/1979	11/10/2018
26230160	Briceno	Pluviographic	841552	1277714	15/10/1970	Active
2621500070	Ituango - Aut	Main weather	813434	1285563	29/12/2017	Active
26225010	Ituango	Ordinary weather	817093	1288276	15/06/1970	15/07/1977
27020260	Tesoro El	Pluviometric	864740	1293300	15/09/1975	Active
26220100	Granja La	Pluviometric	817030	1293768	15/04/1975	Active
26237040	Puerto Valdivia - Aut	Limnigraph	853950	1298111	15/10/1959	Active
26240150	Puerto Valdivia	Pluviometric	853950	1298111	15/10/1979	18/04/2020
26220110	Santa Rita	Pluviographic	830009	1301921	15/09/1982	Active
12015010	Villarteaga	Ordinary weather	733988	1303551	15/03/1972	Active
26250060	Puerto Raudal	Pluviometric	861971	1306929	15/10/1970	Active
26240080	Hoyo Rico	Pluviometric	848459	1308453	15/03/1975	15/05/1989
26250110	Barro Blanco	Pluviometric	868983	1318435	15/03/1984	Active

Table S3. Hydrometeorological stations in the study area and surroundings operated by Corantioquia

Code	First name	Category	This [m]	North [m]	Installation date	End date
2620000014	Amaga - Aut	Pluviographic	819757	1158578	2/05/2013	Active
2620000059	Heliconia - Aut	Pluviographic	816689	1178400	8/03/2013	Active
2620000092	Santa Barbara - Aut	Pluviographic	834886	1141600	15/03/2013	Active
2701000025	Belmira - Aut	Pluviographic	824169	1222511	15/03/2013	Active
2619700019	Ciudad Bolivar - Aut	Limnigraph	784518	1139010	12/06/2013	Active
2702000001	Yarumal - Aut	Pluviographic	852150	1262497	13/03/2013	Active
2620000004	Valdivia - Aut	Pluviographic	847205	1281578	18/03/2013	Active
2620000005	Toledo - Aut	Pluviographic	821655	1267405	16/03/2013	Active
2620000008	Venecia - Aut	Pluviographic	816517	1151421	30/04/2013	Active
2701000009	Yali - Aut	Pluviographic	827606	1165648	18/03/2013	Active
2619000016	Andes - Aut	Pluviographic	800002	1117442	4/05/2013	Active
2620000018	Angelopolis - Aut	Pluviographic	819080	1169001	7/03/2013	Active
2702000019	Angostura - Aut	Pluviographic	860449	1253013	18/03/2013	Active
2701000023	Barbosa - Aut	Pluviographic	861907	1203075	14/03/2013	Active
2701000024	Bello - Aut	Pluviographic	827606	1165648	15/03/2013	Active
2619000026	Betania - Aut	Pluviographic	790717	1122469	2/05/2013	Active
2621000027	Betulia - Aut	Pluviographic	788201	1168088	2/05/2013	Active
2621000029	Buritica - Aut	Pluviographic	797395	1235007	30/04/2013	Active
2621000032	Caicedo - Aut	Pluviographic	787513	1201746	8/03/2013	Active
2701000033	Caldas - Aut	Pluviographic	827606	1165648	19/04/2013	Active
2702000034	Campamento - Aut	Pluviographic	865319	1263702	15/04/2013	Active
2617000036	Caramanta - Aut	Pluviographic	826409	1105826	30/04/2013	Active
2619000041	Ciudad Bolivar - Aut	Pluviographic	783189	1139442	2/05/2013	Active
2621000042	Concordia - Aut	Pluviographic	797494	1161030	6/05/2013	Active
2620000043	Copacabana - Aut	Pluviographic	816689	1178400	7/03/2013	Active
2701000044	Donmatias - Aut	Pluviographic	854253	1209189	10/03/2013	Active
2620000046	Ebejico - Aut	Pluviographic	812829	1191698	19/03/2013	Active
2701000050	Envigado - Aut	Pluviographic	833694	1173980	3/07/2013	Active
2620000054	Fredonia - Aut	Pluviographic	823397	1147474	27/04/2013	Active
2701000057	Guadalupe - Aut	Pluviographic	871512	1245705	19/03/2013	Active
2619000060	Hispania - Aut	Pluviographic	795438	1133493	1/05/2013	Active
2701000061	Itagui - Aut	Pluviographic	829376	1177099	25/07/2012	Active
2621000062	Ituango - Aut	Pluviographic	813458	1284567	18/03/2013	Active
2619000064	Jardin - Aut	Pluviographic	807596	1110910	6/05/2013	Active
2617000066	Jerico - Aut	Pluviographic	810353	1132607	8/05/2013	Active
2701000068	La Estrella - Aut	Pluviographic	827061	1170748	2/05/2013	Active
2617000069	La Pintada - Aut	Pluviographic	830452	1126792	13/03/2013	Active

Code	First name	Category	This [m]	North [m]	Installation date	End date
262000070	Liborina - Aut	Pluviographic	815204	1230397	27/04/2013	Active
270100073	Medellin - San Cristobal - Aut	Pluviographic	824778	1185053	12/03/2013	Active
262100078	Olaya - Aut	Pluviographic	807714	1225306	20/04/2013	Active
262000084	Sabanalarga - Aut	Pluviographic	807322	1249888	26/04/2013	Active
261900086	Salgar - Aut	Pluviographic	788976	1152024	15/03/2013	Active
262000087	San Andres De Cuerquia - Aut	Pluviographic	823726	1255901	20/03/2013	Active
262000088	San Jeronimo - Aut	Pluviographic	818302	1203042	26/04/2013	Active
262000090	San Jose De La Montana - Aut	Pluviographic	821941	1249385	14/03/2013	Active
262000091	San Pedro De Los Milagros - Aut	Pluviographic	827319	1208476	19/03/2013	Active
262100093	Santa Fe De Antioquia - Aut	Pluviographic	797274	1210355	11/03/2013	Active
270100094	Santa Rosa De Osos - Aut	Pluviographic	860966	1217756	13/03/2013	Active
262000096	Sopetran - Aut	Pluviographic	819484	1212273	29/04/2013	Active
261700098	Tamesis - Aut	Pluviographic	818221	1118302	4/05/2013	Active
262000002	Titiribi - Aut	Pluviographic	810138	1162148	1/05/2013	Active
261700003	Tarso - Aut	Pluviographic	806319	1139553	2/05/2013	Active
261700006	Valparaiso - Aut	Pluviographic	828040	1112457	2/05/2013	Active
262100021	Anza - Aut	Pluviographic	802960	1189146	29/04/2013	Active
262000022	Armenia Mantequilla - Aut	Pluviographic	812004	1173415	9/03/2013	Active
262000028	Briceno - Aut	Pluviographic	836921	1278208	12/03/2013	Active
262000053	Girardota - Aut	Pluviographic	834886	1141600	12/03/2013	Active
262000063	Ituango - Valle De Toledo - Aut	Pluviographic	822274	1273205	22/02/2018	Active
261800075	Montebello - Aut	Pluviographic	839615	1149384	12/03/2013	Active
261700079	Pueblorrico - Aut	Pluviographic	804463	1132408	4/05/2013	Active
262070025	Fredonia -Puente Iglesias - Aut	Limnigraph	819412	1136680	13/06/2013	Active
262070030	La Pintada - Rio Cauca - Aut	Limnigraph	830632	1127323	13/06/2013	Active
261970033	Salgar - Peñalisa - Aut	Limnigraph	802687	1148118	12/06/2013	Active
262070039	Venecia - Sinifaná - Aut	Limnigraph	807938	1155283	15/06/2013	Active

Table S4. General mapping units of soils present in the study area

Symbol	Unit	Symbol	Unit	Symbol	Unit
GD	Guadua Association	AE	Angelópolis Association	AG	Andes Association
TG	Tuntuná Association	NL	Nana Association	CL	Calderas Consociation
ES	Escobillal Association	SC	Sillón Association	TE	Tequendamite Association
GA	Gemelos Association	CN	Concordia Association	OL	Olaya Association
VC	Ventanas Consociation	AN	Amagá Association	MR	Rocky miscellaneous
JR	Jericó Association	FR	Fredonia Association	SP	Sopetrán Association
CA	Caucasia Association	HM	Herradura Association	AL	Aldana Association
ZU	Zungo Association	CH	Chuscal Association	RV	Raudal Association
GB	Guasabra Association	RN	Rionegro Association	ZL	Zulaibar Association
IT	Ituango Association	LL	Llano Largo Association	EC	El Cinco Association
PO	Poblanco Association	TR	Tarazá Complex	YA	Yarumal Association
HB	Horizontes Association	PS	Peñitas Association	GS	Girardota Complex
NQ	Niquia Association	SF	Santafé Association	LP	La Pulgarina Complex
SB	Santa Barbara Association	BH	Bartolo Association		

Source: IGAC and Gobernación de Antioquia (2007).

Table S5. Legend of the land cover map at Level 3 incorporated in the SWB model

Level 3	Level 3	Area (km ²)	Legend
1.1.1	111	18.03	Continuous urban fabric
1.1.2	112	1.56	Discontinuous urban fabric
1.2.1	121	0.009	Industrial or commercial areas
1.2.5	125	1.25	Water courses
1.3.1	131	0.30	Mining extraction areas
1.4.2	142	4.98	Sports and leisure facilities
2.1.1	211	0.004	Other temporary crops
2.2.1	221	3.71	Permanent leafy crops
2.2.2	222	284.78	Permanent row crops
2.2.3	223	4.21	Orchards
2.3.1	231	2034.54	Grazed pastures
2.3.2	232	26.54	Wooded pastures
2.3.3	233	787.50	Weedy pastures
2.4.1	241	6.36	Crop matrix
2.4.2	242	1047.45	Pastures and crops matrix
2.4.3	243	1167.40	Crops, pastures and natural spaces matrix
2.4.4	244	1485.18	Pastures and natural spaces matrix
2.4.5	245	656.17	Crops and natural spaces matrix
3.1.1	311	1190.79	Dense forest
3.1.2	312	20.21	Open forest
3.1.3	313	143.89	Fragmented forest
3.1.4	314	309.22	Gallery and riparian forest
3.1.5	315	66.75	Forest plantation
3.2.1	321	433.80	Grassland
3.2.2	322	478.12	Shrubland
3.2.3	323	396.46	Secondary vegetation or transitional
3.3.1	331	9.59	Natural sandy areas
3.3.3	333	2.15	Bare and degraded lands
3.3.4	334	0.38	Burned areas
4.1.1	411	0.08	Wetlands
5.1.1	511	48.56	Rivers (50 m)
5.1.2	512	0.27	Lagoons, lakes and natural wetlands
5.1.4	514	31.43	Artificial water bodies

Table S6. Soil-cover properties defined as parameters for the SWB model: assumed imperviousness, intercept threshold and curve number under normal conditions (CNII)

Code Level 3	Cover	Imperviousness	Interception threshold ai [mm]		CNII normal condition			
			Wet season	Normal-dry season	Group A	Group B	Group C	Group D
111	Continuous urban fabric	65	2.1	0.0	77	85	90	92
112	Discontinuous urban fabric	38	2.1	0.0	61	75	83	87
121	Industrial or commercial areas	85	1.6	0.0	89	92	94	95
131	Mining extraction areas	72	1.3	0.0	81	88	91	93
124	Airports	100	0.0	0.0	98	98	98	98
125	Water courses	100	0.0	0.0	98	98	98	98
141	Urban green spaces	0	1.6	0.0	39	61	74	80
142	Sport and leisure facilities	0	1.6	0.0	49	69	79	84
222	Permanent row crops	0	2.3	0.0	67	78	85	89
211	Other temporary crops	0	2.3	0.0	67	78	85	89
221	Permanent leafy crops	0	2.3	0.0	67	78	85	89
241	Crop matrix	0	2.3	0.0	67	78	85	89
245	Crops and natural spaces matrix	0	2.3	0.0	67	78	85	89
223	Orchards	0	2.3	0.0	39	61	74	80

Code Level 3	Cover	Imperviousness	Interception threshold ai [mm]		CNII normal condition			
			Wet season	Normal-dry season	Group A	Group B	Group C	Group D
225	Greenhouses	0	2.3	0.0	81	81	81	81
232	Wooded pastures	0	1.3	0.0	39	61	74	80
233	Weedy pastures	0	1.3	0.0	49	69	79	84
321	Grassland	0	1.3	0.0	49	69	79	84
322	Shrubland	0	0.0	0.0	35	56	70	77
231	Grazed pastures	0	1.3	0.0	68	79	86	89
244	Pastures and natural spaces matrix	0	1.3	0.0	68	79	86	89
242	Pastures and crops matrix	0	1.8	0.0	67.5	78.5	85.5	89
243	Crops, pastures and natural spaces matrix	0	1.8	0.0	67.5	78.5	85.5	89
311	Dense forest	0	2.5	1.5	25	55	70	77
312	Open forest	0	2.3	1.3	36	60	73	79
315	Forest plantation	0	2.3	1.3	36	60	73	79
313	Fragmented forest	0	2.0	1.0	45	66	77	83
323	Secondary vegetation or transitional	0	2.0	1.0	45	66	77	83
314	Gallery and riparian forest	0	2.5	1.0	25	35	45	55
511	Rivers	N/A	0.0	0.0	100	100	100	100
512	Lagoons, lakes and natural wetlands	N/A	0.0	0.0	100	100	100	100
514	Artificial water bodies	N/A	0.0	0.0	100	100	100	100
411	Wetlands	0	0.0	0.0	100	100	100	100
331	Natural sandy areas	N/A	0.0	0.0	40	40	40	40
333	Bare and degraded lands	N/A	0.0	0.0	40	40	40	40
334	Burned areas	N/A	0.0	0.0	40	40	40	40

Table S7. Soil-cover properties defined as parameters for the SWB model: maximum recharge rate (Rmax) and root-zone depth (RD)

Level 3 Code	Cover	Maximum recharge rate [mm/day]				Root-zone depth [m]			
		Group A	Group B	Group C	Group D	Group A	Group B	Group C	Group D
111	Continuous urban fabric	2	0.6	0.6	0.24	1.67	1.67	1.67	2.08
112	Discontinuous urban fabric	2	0.6	0.6	0.24	1.67	1.67	1.67	2.08
121	Industrial or commercial units	2	0.6	0.6	0.24	1.11	1.11	1.11	1.39
131	Mining extraction areas	2	0.6	0.6	0.24	0.74	0.74	0.74	0.92
124	Airports	2	0.6	0.6	0.24	0.74	0.74	0.74	0.92
125	Water courses	2	0.6	0.6	0.24	0.74	0.74	0.74	0.92
141	Urban green spaces	2	0.6	0.6	0.24	3.33	3.33	3.33	4.17
142	Sport and leisure facilities	2	0.6	0.6	0.24	3.33	3.33	3.33	4.17
222	Permanent row crops	2	0.6	0.6	0.24	1.67	1.67	1.67	2.08
211	Other temporary crops	2	0.6	0.6	0.24	0.84	2.5	3.33	3.33
221	Permanent leafy crops	2	0.6	0.6	0.24	0.84	2.5	3.33	3.33
241	Crop matrix	2	0.6	0.6	0.24	0.84	2.5	3.33	3.33
245	Crops and natural spaces matrix	2	0.6	0.6	0.24	0.84	2.5	3.33	3.33
223	Orchards	2	0.6	0.6	0.24	3.33	3.33	3.33	4.17
225	Greenhouses	2	0.6	0.6	0.24	1.67	1.67	1.67	2.08
232	Wooded pastures	2	0.6	0.6	0.24	3.33	3.33	3.33	4.17
233	Weedy pastures	2	0.6	0.6	0.24	3.33	3.33	3.33	4.17
321	Grassland	2	0.6	0.6	0.24	3.33	3.33	3.33	4.17
322	Shrubland	2	0.6	0.24	0.12	3.33	3.33	3.33	3.79
231	Grazed pastures	2	0.6	0.6	0.24	3.33	3.33	3.33	4.17
244	Pastures and natural spaces matrix	2	0.6	0.6	0.24	3.33	3.33	3.33	4.17
242	Pastures and crops matrix	2	0.6	0.6	0.24	2.5	2.5	2.5	3.125
243	Crops, pastures and natural spaces matrix	2	0.6	0.6	0.24	2.5	2.5	2.5	3.125
311	Dense forest	2	0.6	0.6	0.24	11.67	8.33	6.66	6.66

Level 3 Code	Cover	Maximum recharge rate [mm/day]				Root-zone depth [m]			
		Group A	Group B	Group C	Group D	Group A	Group B	Group C	Group D
312	Open forest	2	0.6	0.6	0.24	11.67	8.33	6.66	6.66
315	Forest plantation	2	0.6	0.6	0.24	11.67	8.33	6.66	6.66
313	Fragmented forest	2	0.6	0.6	0.24	11.67	8.33	6.66	6.66
323	Secondary vegetation or transitional	2	0.6	0.6	0.24	11.67	8.33	6.66	6.66
314	Gallery and riparian forest	2	3.9	1.9	0.9	11.67	8.33	6.66	6.66
511	Rivers	2	0.6	0.6	0.24	0	0	0	0
512	Lagoons, lakes and natural wetlands	2	0.6	0.6	0.24	0	0	0	0
514	Artificial water bodies	2	0.6	0.6	0.24	0	0	0	0
411	Wetlands	2	0.6	0.6	0.24	1.67	1.67	1.67	2.08
331	Natural sandy areas	2	0.6	0.6	0.24	0.5	0.5	0.5	0.5
333	Bare and degraded lands	2	0.6	0.6	0.24	0.5	0.5	0.5	0.5
334	Burned areas	2	0.6	0.6	0.24	0.5	0.5	0.5	0.5

Available data in kmz files

Figure 1. Delimitation of the study area and geological units present

Figure 3. Graphic summary of the spatial information used for the implementation of the SWB model in the study area

Figure 4. Spatial distribution of soil textures and field capacity in the study area

Figure 9. Spatial distribution of the average annual direct potential recharge (2013-2020) by hydrogeological unit in the study area