Task B.3.6 Analysis of groundwater quality data (National Testing Labs data set).

B.3.6 Groundwater Quality (using data sets 1.1, 1.4, 1.6)

Data Set 1.1
Loudoun County Groundwater, Well, and Pollution Sources

Well construction and groundwater information in database (MS Access) with locations in GIS maintained by B&D and Health Department. Source of most data from paper files generated during Health Department well permitting process (e.g., GW2 well construction form). Subset of WellPoll database, which includes well data and pollution sources data. Data on ~18,500 wells dating from 1930 to present, with information of varying quality and completeness including: location (VA state plane coordinates), surface elevation (62% complete), well depth (70%), casing depth (65%), static water level (53%) {but of suspect accuracy}, total yield (60%), depth of primary yield zone (60%), and transmissivity (~250 values).

Also includes groundwater quality data. Water quality data for a limited number of parameters are entered in the database for some wells (~2,100) constructed and tested prior to 2002. Water quality data provided digitally to B&D by National Testing Labs started in 2002 and is available for approximately 2,250 wells. These data are considered level A quality and typically consist of 100 physical/chemical water quality parameters per well for a total of more than 200,000 individual analyses. NTL data linked to the groundwater database by Health Department Permit No.

Also includes data on potential pollution sources – primarily on-site sewage disposal systems (e.g., drainfields) but also other sites such as cemeteries, landfills, chemical storage sites, etc. Currently approximately 15,000 records with site ID numbers and corresponding points in GIS. Data in some of the old records may be obsolete. Currently, data are obtained primarily from the Health Department sewage disposal system permitting process.

Data Set 1.4
USGS NAWQA Wells

As part of the USGS National Water-Quality Assessment Program (NAWQA) program, fourteen wells in Loudoun County were sampled between 1994 and 2004 for a broad range of chemicals. Data are compiled in a personal geodatabase format with related time series table. As many as 140 analyses per sample were analyzed including pesticides, radionuclides and volatile organic compounds. Two well sites in Purcellville were sampled in 2003 and 2004 with over 500 analyses each and showed little change over time. The total number of water quality analyses reported exceeds 3,000.

Data Set 1.6
Water Quality Data from LCSA and VADH Public Water Supplies

These data are collected by state and local agencies to monitor public water supply wells. WRMP has yet to receive data other than well locations. **{Restricted distribution}**

Section A) Basic statistics for all 98 anlalytes reported by National Testing Labs to VDH as part of the well permitting program. Most of these analytes have no record of detection within the county samples.

Summary of Results from National Testing Labs for All Analytes

PARAM_NAME	ANALYT_MET	MDL	# Analyses	# above MDL	% above MDL	PARAM_NAME	ANALYT_MET	MDL	# Analyses	# above MDL	% above MDL
Hexachlorobenzene	505	0.0005	1632	0	0.0	1,4-Dichlorobenzene	524.2	0.001	1632	0	0
Alachlor	505	0.001	1632	0	0.0	2,2-Dichloropropane	524.2	0.002	1632	0	0
Aldrin	505	0.002	1632	0	0.0	2-Chlorotoluene	524.2	0.001	1632	0	0
Atrazine	505	0.002	1632	0	0.0	4-Chlorotoluene	524.2	0.001	1632	0	0
Chlordane	505	0.001	1632	0	0.0	Bromobenzene	524.2	0.002	1632	0	0
Dichloran	505	0.002	1632	0	0.0	Bromomethane	524.2	0.002	1632	0	0
Dieldrin	505	0.001	1632	0	0.0	Carbon Tetrachloride	524.2	0.001	1632	0	0
Endrin	505	0.0001	1632	0	0.0	1,3-Dichloropropane	524.2	0.002	1632	0	0
1,1,1,2-Tetrachloroethane	524.2	0.002	1631	0	0.0	Dichlorodifluoromethane	524.2	0.002	1632	1	0.1
Heptachlor Epoxide	505	0.0001	1632	0	0.0	Trichlorofluoromethane	524.2	0.002	1632	1	0.1
Hexachlorocyclopentadiene	505	0.001	1632	0	0.0	1,1,2-Trichloroethane	524.2	0.002	1632	1	0.1
Lindane	505	0.0002	1632	0	0.0	Bromoform	524.2	0.004	1632	1	0.1
Methoxychlor	505	0.002	1632	0	0.0	Trichloroethene (TCE)	524.2	0.001	1632	2	0.1
PCBs	505	0.0005	1632	0	0.0	Dibromochloromethane	524.2	0.004	1632	3	0.2
Pentachloronitrobenzene	505	0.002	1632	0	0.0	Dichloromethane	524.2	0.002	1632	3	0.2
Simazine	505	0.002	1632	0	0.0	1,2-Dichloroethane	524.2	0.001	1632	3	0.2
Toxaphene	505	0.001	1632	0	0.0	Benzene	524.2	0.001	1632	4	0.2
Trifluralin	505	0.002	1632	0	0.0	Ethylbenzene	524.2	0.001	1632	4	0.2
2,4-D	515.2	0.010	1632	0	0.0	Nitrite as N	300.0	0.5	1632	5	0.3
Silvex(2,4,5-TP)	515.2	0.005	1632	0	0.0	Methyl-Tert-Butyl-Ether	524.2	0.004	1632	5	0.3
Heptachlor	505	0.0004	1632	0	0.0	Bromodichloromethane	524.2	0.002	1632	7	0.4
Mercury	200.8	0.001	1632	0	0.0	Nickel	200.8	0.02	1632	8	0.5
Selenium	200.8	0.020	1632	0	0.0	Foaming Agents	5540C	0.1	1632	9	0.6
Silver	200.8	0.002	1632	0	0.0	Arsenic	200.8	0.005	1632	13	0.8
Cadmium	200.8	0.002	1632	0	0.0	Tetrachloroethene (PCE)	524.2	0.002	1632	13	0.8
Chloroethane	524.2	0.002	1632	0	0.0	Xylene	524.2	0.001	1632	15	0.9
Chloromethane	524.2	0.002	1632	0	0.0	Chromium	200.8	0.010	1632	22	1.3
Dibromochloropropane (DBCP)	524.2	0.001	1632	0	0.0	Chloroform	524.2	0.002	1632	30	1.8
Dibromomethane	524.2	0.002	1632	0	0.0	Total THMs	524.2	0.002	1632	31	1.9
Ethylenedibromide (EDB)	524.2	0.001	1632	0	0.0	Barium	200.8	0.30	1632	35	2.1
Chlorobenzene	524.2	0.001	1632	0	0.0	Styrene	524.2	0.001	1632	57	3.5
cis-1,2-Dichloroethene	524.2	0.002	1632	0	0.0	Fluoride	300.0	0.5	1888	197	10.4
Trans-1,2-Dichloroethene	524.2	0.002	1632	0	0.0	Toluene	524.2	0.001	1885	227	12.0
Vinyl Chloride	524.2	0.001	1632	0	0.0	Lead	200.8	0.002	1888	252	13.3
1,1,1-Trichloroethane	524.2	0.001	1296	0	0.0	Nitrate as N	300.0	0.5	1888	473	25.1
cis-1,3-Dichloropropene	524.2	0.002	1632	0	0.0	Copper	200.8	0.004	1883	501	26.6
trans-1,3-Dichloropropene	524.2	0.002	1632	0	0.0	Aluminum	200.7	0.1	1888	553	29.3
1,1,2,2-Tetrachloroethane	524.2	0.002	1632	0	0.0	Zinc	200.8	0.004	1890	839	44.4
1,1-Dichloroethane	524.2	0.002	1632	0	0.0	Chloride	300.0	5.0	1888	859	45.4
1,1-Dichloroethene	524.2	0.001	1632	0	0.0	Sulfate	300.0	5.0	1888	1486	78.7
1,1-Dichloropropene	524.2	0.002	1632	0	0.0	Iron	200.7	0.020	1886	1836	97.3
1,2,3-Trichlorobenzene	524.2	0.002	1632	0	0.0	Turbidity (Turbidity Units)	2130B	0.1	1888	1849	97.9
1,2,3-Trichloropropane	524.2	0.002	1632	0	0.0	Hardness (as CaCO3)	2340B	10	1888	1864	98.7
Iron	200.7	0.020	1886	1836	97.3	Manganese	200.8	0.004	1888	1783	94.4
Turbidity (Turbidity Units)	2130B	0.1	1888	1849	97.9	Alkalinity	2320B	20	1888	1878	99.5
Hardness (as CaCO3)	2340B	10	1888	1864	98.7	Magnesium	200.7	0.10	1551	1546	99.7
Calcium	200.7	2.0	1551	1544	99.5	Total Dissolved Solids	1030F	20	1888	1881	99.6
1,2,4-Trichlorobenzene	524.2	0.002	1632	0	0	Sodium	200.7	1	1888	1883	99.7
1,2-Dichlorobenzene	524.2	0.001	1632	0	0	Corrosivity	2330B	---	1889	1887	99.9
1,2-Dichloropropane	524.2	0.002	1632	0	0	pH (Standard Units)	150.1	---	1889	1888	99.9
1,3-Dichlorobenzene	524.2	0.001	1632	0	0						

Summary of Results from National Testing Labs for All Analytes with <1% Detections

PARAM_NAME	ANALYT_MET	MDL	# Analyses	# above MDL	% above MDL
Hexachlorobenzene	505	0.0005	1632	0	0.0
Alachlor	505	0.001	1632	0	0.0
Aldrin	505	0.002	1632	0	0.0
Atrazine	505	0.002	1632	0	0.0
Chlordane	505	0.001	1632	0	0.0
Dichloran	505	0.002	1632	0	0.0
Dieldrin	505	0.001	1632	0	0.0
Endrin	505	0.0001	1632	0	0.0
1,1,1,2-Tetrachloroethane	524.2	0.002	1631	0	0.0
Heptachlor Epoxide	505	0.0001	1632	0	0.0
Hexachlorocyclopentadiene	505	0.001	1632	0	0.0
Lindane	505	0.0002	1632	0	0.0
Methoxychlor	505	0.002	1632	0	0.0
PCBs	505	0.0005	1632	0	0.0
Pentachloronitrobenzene	505	0.002	1632	0	0.0
Simazine	505	0.002	1632	0	0.0
Toxaphene	505	0.001	1632	0	0.0
Trifluralin	505	0.002	1632	0	0.0
2,4-D	515.2	0.01	1632	0	0.0
Silvex(2,4,5-TP)	515.2	0.005	1632	0	0.0
Heptachlor	505	0.0004	1632	0	0.0
Mercury	200.8	0.001	1632	0	0.0
Selenium	200.8	0.02	1632	0	0.0
Silver	200.8	0.002	1632	0	0.0
Cadmium	200.8	0.002	1632	0	0.0
Chloroethane	524.2	0.002	1632	0	0.0
Chloromethane	524.2	0.002	1632	0	0.0
Dibromochloropropane (DBCP)	524.2	0.001	1632	0	0.0
Dibromomethane	524.2	0.002	1632	0	0.0
Ethylenedibromide (EDB)	524.2	0.001	1632	0	0.0
Chlorobenzene	524.2	0.001	1632	0	0.0
cis-1,2-Dichloroethene	524.2	0.002	1632	0	0.0
Trans-1,2-Dichloroethene	524.2	0.002	1632	0	0.0
Vinyl Chloride	524.2	0.001	1632	0	0.0
1,1,1-Trichloroethane	524.2	0.001	1296	0	0.0
cis-1,3-Dichloropropene	524.2	0.002	1632	0	0.0
trans-1,3-Dichloropropene	524.2	0.002	1632	0	0.0

PARAM_NAME	ANALYT_MET	MDL	# Analyses	# above MDL	% above MDL
1,1,2,2-Tetrachloroethane	524.2	0.002	1632	0	0.0
1,1-Dichloroethane	524.2	0.002	1632	0	0.0
1,1-Dichloroethene	524.2	0.001	1632	0	0.0
1,1-Dichloropropene	524.2	0.002	1632	0	0.0
1,2,3-Trichlorobenzene	524.2	0.002	1632	0	0.0
1,2,3-Trichloropropane	524.2	0.002	1632	0	0.0
1,2,4-Trichlorobenzene	524.2	0.002	1632	0	0.0
1,2-Dichlorobenzene	524.2	0.001	1632	0	0.0
1,2-Dichloropropane	524.2	0.002	1632	0	0.0
1,3-Dichlorobenzene	524.2	0.001	1632	0	0.0
1,4-Dichlorobenzene	524.2	0.001	1632	0	0.0
2,2-Dichloropropane	524.2	0.002	1632	0	0.0
2-Chlorotoluene	524.2	0.001	1632	0	0.0
4-Chlorotoluene	524.2	0.001	1632	0	0.0
Bromobenzene	524.2	0.002	1632	0	0.0
Bromomethane	524.2	0.002	1632	0	0.0
Carbon Tetrachloride	524.2	0.001	1632	0	0.0
1,3-Dichloropropane	524.2	0.002	1632	0	0.0
Dichlorodifluoromethane	524.2	0.002	1632	1	0.1
Trichlorofluoromethane	524.2	0.002	1632	1	0.1
1,1,2-Trichloroethane	524.2	0.002	1632	1	0.1
Bromoform	524.2	0.004	1632	1	0.1
Trichloroethene (TCE)	524.2	0.001	1632	2	0.1
Dibromochloromethane	524.2	0.004	1632	3	0.2
Dichloromethane	524.2	0.002	1632	3	0.2
1,2-Dichloroethane	524.2	0.001	1632	3	0.2
Benzene	524.2	0.001	1632	4	0.2
Ethylbenzene	524.2	0.001	1632	4	0.2
Nitrite as N	300.0	0.5	1632	5	0.3
Methyl-Tert-Butyl-Ether	524.2	0.004	1632	5	0.3
Bromodichloromethane	524.2	0.002	1632	7	0.4
Nickel	200.8	0.02	1632	8	0.5
Foaming Agents	5540C	0.1	1632	9	0.6
Arsenic	200.8	0.005	1632	13	0.8
Tetrachloroethene (PCE)	524.2	0.002	1632	13	0.8
Xylene	524.2	0.001	1632	15	0.9

Summary of Results from National Testing Labs for All Analytes with >1% Detections

PARAM_NAME	ANALYT_MET	MDL	# Analyses	# above MDL	% above MDL
Chromium	200.8	0.010	1632	22	1.3
Chloroform	524.2	0.002	1632	30	1.8
Total THMs	524.2	0.002	1632	31	1.9
Barium	200.8	0.30	1632	35	2.1
Styrene	524.2	0.001	1632	57	3.5
Fluoride	300.0	0.5	1632	161	9.9
Toluene	524.2	0.001	1632	210	12.9
Lead	200.8	0.002	1632	234	14.3
Nitrate as N	300.0	0.5	1632	395	24.2
Copper	200.8	0.004	1632	449	27.5
Aluminum	200.7	0.1	1632	479	29.4
Zinc	200.8	0.004	1641	719	43.8
Chloride	300.0	5.0	1632	746	45.5
Sulfate	300.0	5.0	1632	1293	79.2
Manganese	200.8	0.004	1632	1539	94.3
Iron	200.7	0.020	1632	1587	97.2
Turbidity (Turbidity Units)	2130B	0.1	1632	1596	97.8
Hardness (as CaCO3)	2340B	10	1632	1609	98.6
Calcium	200.7	2.0	1296	1288	99.4
Alkalinity (Total as CaCO3)	2320B	20	1632	1622	99.4
Magnesium	200.7	0.10	1296	1290	99.5
Total Dissolved Solids	1030F	20	1632	1625	99.6
Sodium	200.7	1	1632	1629	99.8
Corrosivity	2330B	---	1632	1630	99.9
pH (Standard Units)	150.1	---	1633	1633	100.0

Correlation Matrix for Water Quality Data from National Testing Labs (Pearson Product Moment Correlation)

		pH	Ca	Cl	Al	F	Fe	Mg	Mn	NO3	SO4	TDS	Turb	Zn	Na	Cu
pH	Correlation		0.0938	-0.1504	0.0616	0.2509	-0.1116	-0.2042	-0.2605	-0.1679	0.0363	0.1112	-0.0236	-0.0045	0.3239	-0.0164
	(Sample Size)		-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432
	P-Value		0.0004	0	0.0197	0	0	0	0	0	0.1691	0	0.373	0.8652	0	0.5346
Ca		0.0938		0.3376	-0.0114	-0.0179	-0.0634	0.4062	0.1279	0.1216	0.4563	0.8871	-0.0108	0.0133	0.1062	-0.0038
		-1432		-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432
		0.0004		0	0.6663	0.4986	0.0164	0	0	0	0	0	0.6828	0.6158	0.0001	0.8864
Cl		-0.1504	0.3376		-0.0101	-0.0023	0.0796	0.4391	0.436	0.0585	0.094	0.4539	0.0563	0.035	0.1589	0.0368
		-1432	-1432		-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432
		0	0		0.7037	0.9309	0.0025	0	0	0.0268	0.0004	0	0.0329	0.1856	0	0.1632
Al		0.0616	-0.0114	-0.0101		0.0474	0.1672	0.0271	-0.0098	0.1227	0.1035	0.1135	0.262	0.0017	0.3288	0.0687
		-1432	-1432	-1432		-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432
		0.0197	0.6663	0.7037		0.0724	0	0.3045	0.7112	0	0.0001	0	0	0.9497	0	0.0093
F		0.2509	-0.0179	-0.0023	0.0474		-0.0136	-0.1507	-0.0861	-0.0447	-0.0128	0.0411	0.0064	-0.0155	0.3737	-0.0051
		-1432	-1432	-1432	-1432		-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432
		0	0.4986	0.9309	0.0724		0.6067	0	0.0011	0.0908	0.6284	0.12	0.8092	0.5588	0	0.8461
Fe		-0.1116	-0.0634	0.0796	0.1672	-0.0136		0.0462	0.4656	-0.0292	0.03	0.0199	0.4756	0.0272	0.0281	0.0241
		-1432	-1432	-1432	-1432	-1432		-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432
		0	0.0164	0.0025	0	0.6067		0.08	0	0.2701	0.2566	0.4522	0	0.304	0.2874	0.3616
Mg		-0.2042	0.4062	0.4391	0.0271	-0.1507	0.0462		0.2023	0.1606	0.3452	0.5865	0.0131	0.0067	-0.0379	0.0711
		-1432	-1432	-1432	-1432	-1432	-1432		-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432
		0	0	0	0.3045	0	0.08		0	0	0	0	0.6215	0.7986	0.1517	0.007
Mn		-0.2605	0.1279	0.436	-0.0098	-0.0861	0.4656	0.2023		-0.1467	0.0629	0.1697	0.2666	0.064	-0.0629	-0.0136
		-1432	-1432	-1432	-1432	-1432	-1432	-1432		-1432	-1432	-1432	-1432	-1432	-1432	-1432
		0	0	0	0.7112	0.0011	0	0		0	0.0171	0	0	0.0153	0.0171	0.6068
NO3		-0.1679	0.1216	0.0585	0.1227	-0.0447	-0.0292	0.1606	-0.1467		0.0197	0.0902	-0.0206	-0.0072	-0.0482	-0.0121
		-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432		-1432	-1432	-1432	-1432	-1432	-1432
		0	0	0.0268	0	0.0908	0.2701	0	0		0.4563	0.0006	0.4361	0.785	0.068	0.647
SO4		0.0363	0.4563	0.094	0.1035	-0.0128	0.03	0.3452	0.0629	0.0197		0.648	0.0265	0.004	0.3829	-0.0089
		-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432		-1432	-1432	-1432	-1432	-1432
		0.1691	0	0.0004	0.0001	0.6284	0.2566	0	0.0171	0.4563		0	0.3154	0.8788	0	0.7351
TDS		0.1112	0.8871	0.4539	0.1135	0.0411	0.0199	0.5865	0.1697	0.0902	0.648		0.0453	0.0248	0.3799	0.013
		-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432		-1432	-1432	-1432	-1432
		0	0	0	0	0.12	0.4522	0	0	0.0006	0		0.0862	0.3476	0	0.6223
Turb		-0.0236	-0.0108	0.0563	0.262	0.0064	0.4756	0.0131	0.2666	-0.0206	0.0265	0.0453		0.0144	0.0992	0.0019
		-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432		-1432	-1432	-1432
		0.373	0.6828	0.0329	0	0.8092	0	0.6215	0	0.4361	0.3154	0.0862		0.5865	0.0002	0.9432
Zn		-0.0045	0.0133	0.035	0.0017	-0.0155	0.0272	0.0067	0.064	-0.0072	0.004	0.0248	0.0144		0.0189	0.0233
		-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432		-1432	-1432
		0.8652	0.6158	0.1856	0.9497	0.5588	0.304	0.7986	0.0153	0.785	0.8788	0.3476	0.5865		0.4742	0.3784
Na		0.3239	0.1062	0.1589	0.3288	0.3737	0.0281	-0.0379	-0.0629	-0.0482	0.3829	0.3799	0.0992	0.0189		-0.0084
		-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432		-1432
		0	0.0001	0	0	0	0.2874	0.1517	0.0171	0.068	0	0	0.0002	0.4742		0.7518
Cu		-0.0164	-0.0038	0.0368	0.0687	-0.0051	0.0241	0.0711	-0.0136	-0.0121	-0.0089	0.013	0.0019	0.0233	-0.0084	
		-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432	-1432	
		0.5346	0.8864	0.1632	0.0093	0.8461	0.3616	0.007	0.6068	0.647	0.7351	0.6223	0.9432	0.3784	0.7518	

Statistically significant non-zero correlations at the 95.0% confidence level

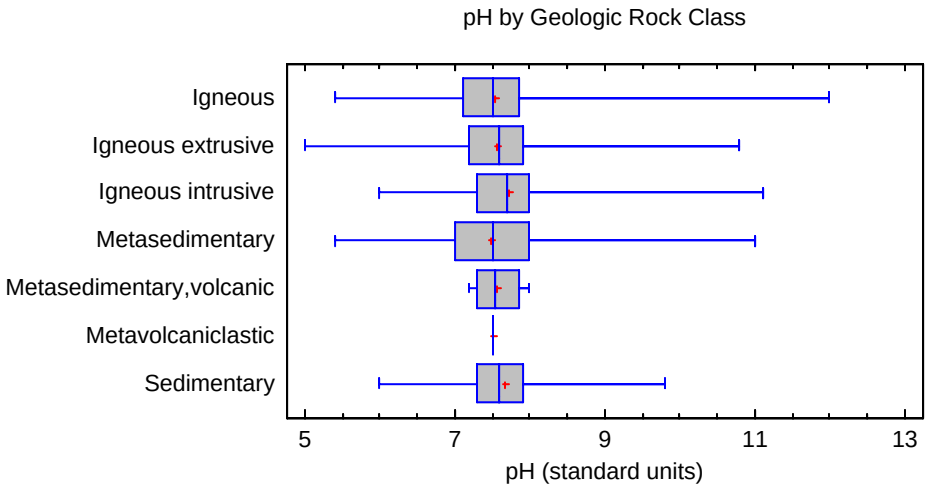
No statistically significant non-zero correlations at the 95.0% confidence level

Multiple Box-and-Whisker Plot - RESULTS_pH by BE_ROCK_CLASS

Dependent variable: RESULTS_pH
Factor: BE_ROCK_CLASS

Number of observations: 1799
Number of levels: 7

The StatAdvisor
This procedure constructs box-and-whisker plots to compare the 7 samples of RESULTS_pH. For a detailed statistical analysis of this data, select Compare - Analysis of Variance - One-Way ANOVA from the main menu.

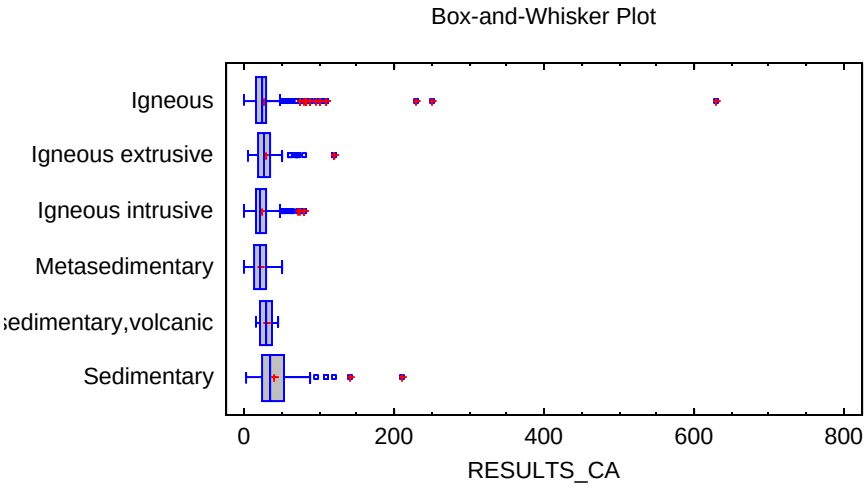


Multiple Box-and-Whisker Plot - RESULTS_CA by BE_ROCK_CLASS

Dependent variable: RESULTS_CA
Factor: BE_ROCK_CLASS

Number of observations: 1475
Number of levels: 6

The StatAdvisor
This procedure constructs box-and-whisker plots to compare the 6 samples of RESULTS_CA. For a detailed statistical analysis of this data, select Compare - Analysis of Variance - One-Way ANOVA from the main menu.

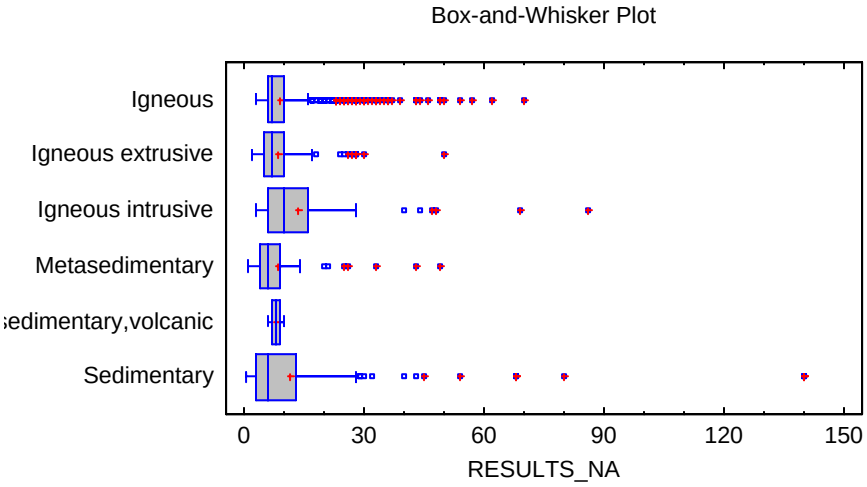


Multiple Box-and-Whisker Plot - RESULTS_NA by BE_ROCK_CLASS

Dependent variable: RESULTS_NA
Factor: BE_ROCK_CLASS

Number of observations: 1474
Number of levels: 6

The StatAdvisor
This procedure constructs box-and-whisker plots to compare the 6 samples of RESULTS_NA. For a detailed statistical analysis of this data, select Compare - Analysis of Variance - One-Way ANOVA from the main menu.

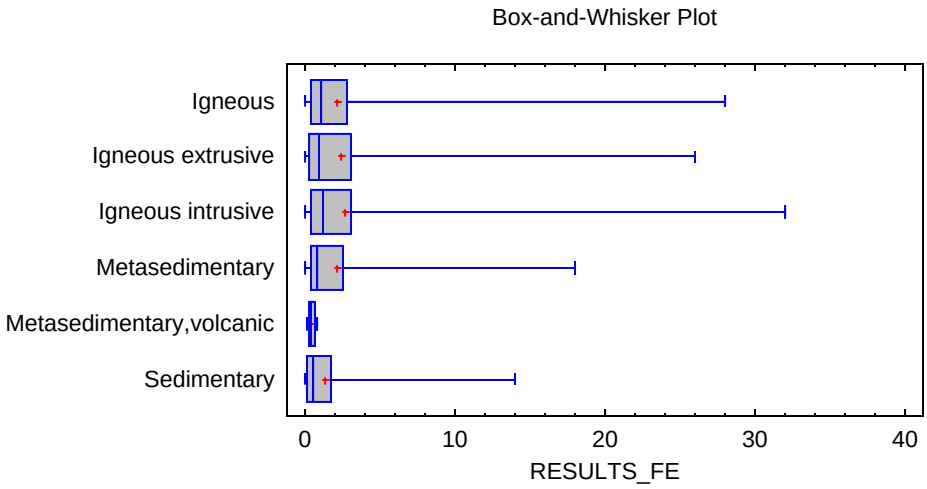


Multiple Box-and-Whisker Plot - RESULTS_FE by BE_ROCK_CLASS

Dependent variable: RESULTS_FE
Factor: BE_ROCK_CLASS

Number of observations: 1460
Number of levels: 6

The StatAdvisor
This procedure constructs box-and-whisker plots to compare the 6 samples of RESULTS_FE. For a detailed statistical analysis of this data, select Compare - Analysis of Variance - One-Way ANOVA from the main menu.



Summary Statistics

	Count	*Average*	*Standard deviation*	*Coeff. of variation*	*Minimum*	*Maximum*	*Range*
RESULTS_pH	1799	7.57571	0.695308	9.17812%	5.0	12.0	7.0
RESULTS_ALK	1800	106.362	53.3769	50.1841%	6.2	1100.0	1093.8
RESULTS_CA	1475	28.1109	24.3293	86.5475%	1.0	630.0	629.0
RESULTS_CL	1800	8.12667	16.2553	200.025%	2.5	440.0	437.5
RESULTS_AL	1795	0.188903	0.487477	258.058%	0.05	9.7	9.65
RESULTS_FL	1795	0.329833	0.370505	112.331%	0.25	8.3	8.05
RESULTS_FE	1460	2.13308	3.12572	146.535%	0.01	32.0	31.99
RESULTS_MG	1475	8.47816	5.63749	66.4943%	0.002	56.0	55.998
RESULTS_MN	1458	0.138788	0.147395	106.202%	0.002	2.0	1.998
RESULTS_NO3	1474	0.895929	1.93516	215.995%	0.25	29.0	28.75
RESULTS_SO3	1475	13.3471	27.1333	203.29%	2.5	660.0	657.5
RESULTS_PB	1793	0.00225711	0.0110246	488.44%	0.001	0.26	0.259
RESULTS_TDS	1793	132.574	77.8413	58.7154%	2.0	1600.0	1598.0
RESULTS_TURB	1789	16.2949	43.3089	265.782%	0.05	1000.0	999.95
RESULTS_HARD	1796	104.247	70.2967	67.4327%	5.0	1600.0	1595.0
RESULTS_ZN	1793	0.0139381	0.103182	740.291%	0.002	3.6	3.598
RESULTS_NA	1474	9.56479	9.64506	100.839%	0.5	140.0	139.5
RESULTS_CU	1794	0.0105819	0.0949785	897.553%	0.002	3.3	3.298
Total	30038	25.5398	53.2031	208.315%	0.001	1600.0	1600.0

	Stnd. skewness	*Stnd. kurtosis*
RESULTS_pH	15.392	36.0362
RESULTS_ALK	95.8145	717.587
RESULTS_CA	189.115	2071.77
RESULTS_CL	228.024	2538.41
RESULTS_AL	159.916	1085.66
RESULTS_FL	199.121	1691.53
RESULTS_FE	55.3281	145.676
RESULTS_MG	36.6896	78.1361
RESULTS_MN	51.5105	182.337
RESULTS_NO3	101.944	523.736

RESULTS_SO3	245.289	2431.15
RESULTS_PB	319.916	3232.52
RESULTS_TDS	116.277	809.305
RESULTS_TURB	187.884	1589.77
RESULTS_HARD	125.904	1079.77
RESULTS_ZN	456.326	7315.99
RESULTS_NA	91.6741	437.663
RESULTS_CU	478.519	7589.63
Total	384.276	2937.07

The StatAdvisor
This table shows various statistics for each of the 18 columns of data. To test for significant differences amongst the column means, select Analysis of Variance from the list of Tabular Options. Select Means Plot from the list of Graphical Options to display the means graphically.

WARNING: There is more than a 3 to 1 difference between the smallest standard deviation and the largest. This may cause problems since the analysis of variance assumes that the standard deviations at all levels are equal. Select Variance Check from the list of Tabular Options to run a formal statistical test for differences among the sigmas. You may want to consider transforming the data to remove any dependence of the standard deviation on the mean.

WARNING: The standardized skewness and/or kurtosis is outside the range of -2 to +2 for 18 columns. This indicates some significant nonnormality in the data, which violates the assumption that the data come from normal distributions. You may wish to transform the data or use the Kruskal-Wallis test to compare the medians instead of the means.

Multiple-Variable Analysis

Data variables:
- RESULTS_pH
- RESULTS_CA
- RESULTS_CL
- RESULTS_AL
- RESULTS_FL
- RESULTS_FE
- RESULTS_MG
- RESULTS_MN
- RESULTS_NO3
- RESULTS_SO3
- RESULTS_TDS
- RESULTS_TURB
- RESULTS_ZN
- RESULTS_NA
- RESULTS_CU

There are 1432 complete cases for use in the calculations.

The StatAdvisor
This procedure is designed to summarize several columns of quantitative data. It will calculate various statistics, including correlations, covariances, and partial correlations. Also included in the procedure are a number of multivariate graphs, which give interesting views into the data. Use the Tabular Options and Graphical Options buttons on the analysis toolbar to access these different procedures.

After this procedure, you may wish to select another procedure to build a statistical model for your data. Depending on your goal, one of several procedures may be appropriate. Following is a list of goals with an indication of which procedure would be appropriate:

GOAL: build a model for predicting one variable given values of one of more other variables.
PROCEDURE: Relate - Multiple Factors - Multiple Regression

GOAL: group rows of data with similar characteristics.

PROCEDURE: Describe - Multivariate Methods - Cluster Analysis

GOAL: develop a method for predicting which of several groups new rows belong to.
PROCEDURE: Relate - Classification Methods - Discriminant Analysis

GOAL: reduce the number of columns to a small set of meaningful measures.
PROCEDURE: Describe - Multivariate Methods - Factor Analysis

GOAL: determine which combinations of the columns determine most of the variability in your data.
PROCEDURE: Describe - Multivariate Methods - Principal Components

GOAL: find combinations of the columns which are strongly related to each other.
PROCEDURE: Describe - Multivariate Methods - Canonical Correlations

Correlations

	RESULTS_pH	RESULTS_CA	RESULTS_CL	RESULTS_AL	RESULTS_FL	RESULTS_FE
RESULTS_pH		0.0938	-0.1504	0.0616	0.2509	-0.1116
		(1432)	(1432)	(1432)	(1432)	(1432)
		0.0004	0.0000	0.0197	0.0000	0.0000
RESULTS_CA	0.0938		0.3376	-0.0114	-0.0179	-0.0634
	(1432)		(1432)	(1432)	(1432)	(1432)
	0.0004		0.0000	0.6663	0.4986	0.0164
RESULTS_CL	-0.1504	0.3376		-0.0101	-0.0023	0.0796
	(1432)	(1432)		(1432)	(1432)	(1432)
	0.0000	0.0000		0.7037	0.9309	0.0025
RESULTS_AL	0.0616	-0.0114	-0.0101		0.0474	0.1672
	(1432)	(1432)	(1432)		(1432)	(1432)
	0.0197	0.6663	0.7037		0.0724	0.0000
RESULTS_FL	0.2509	-0.0179	-0.0023	0.0474		-0.0136
	(1432)	(1432)	(1432)	(1432)		(1432)
	0.0000	0.4986	0.9309	0.0724		0.6067
RESULTS_FE	-0.1116	-0.0634	0.0796	0.1672	-0.0136	
	(1432)	(1432)	(1432)	(1432)	(1432)	
	0.0000	0.0164	0.0025	0.0000	0.6067	
RESULTS_MG	-0.2042	0.4062	0.4391	0.0271	-0.1507	0.0462
	(1432)	(1432)	(1432)	(1432)	(1432)	(1432)
	0.0000	0.0000	0.0000	0.3045	0.0000	0.0800
RESULTS_MN	-0.2605	0.1279	0.4360	-0.0098	-0.0861	0.4656
	(1432)	(1432)	(1432)	(1432)	(1432)	(1432)
	0.0000	0.0000	0.0000	0.7112	0.0011	0.0000
RESULTS_NO3	-0.1679	0.1216	0.0585	0.1227	-0.0447	-0.0292
	(1432)	(1432)	(1432)	(1432)	(1432)	(1432)
	0.0000	0.0000	0.0268	0.0000	0.0908	0.2701
RESULTS_SO3	0.0363	0.4563	0.0940	0.1035	-0.0128	0.0300
	(1432)	(1432)	(1432)	(1432)	(1432)	(1432)
	0.1691	0.0000	0.0004	0.0001	0.6284	0.2566
RESULTS_TDS	0.1112	0.8871	0.4539	0.1135	0.0411	0.0199
	(1432)	(1432)	(1432)	(1432)	(1432)	(1432)
	0.0000	0.0000	0.0000	0.0000	0.1200	0.4522
RESULTS_TURB	-0.0236	-0.0108	0.0563	0.2620	0.0064	0.4756
	(1432)	(1432)	(1432)	(1432)	(1432)	(1432)
	0.3730	0.6828	0.0329	0.0000	0.8092	0.0000
RESULTS_ZN	-0.0045	0.0133	0.0350	0.0017	-0.0155	0.0272
	(1432)	(1432)	(1432)	(1432)	(1432)	(1432)
	0.8652	0.6158	0.1856	0.9497	0.5588	0.3040
RESULTS_NA	0.3239	0.1062	0.1589	0.3288	0.3737	0.0281
	(1432)	(1432)	(1432)	(1432)	(1432)	(1432)
	0.0000	0.0001	0.0000	0.0000	0.0000	0.2874
RESULTS_CU	-0.0164	-0.0038	0.0368	0.0687	-0.0051	0.0241

	(1432)	(1432)	(1432)	(1432)	(1432)	(1432)
	0.5346	0.8864	0.1632	0.0093	0.8461	0.3616

	RESULTS_MG	RESULTS_MN	RESULTS_NO3	RESULTS_SO3	RESULTS_TDS
RESULTS_pH	-0.2042	-0.2605	-0.1679	0.0363	0.1112
	(1432)	(1432)	(1432)	(1432)	(1432)
	0.0000	0.0000	0.0000	0.1691	0.0000
RESULTS_CA	0.4062	0.1279	0.1216	0.4563	0.8871
	(1432)	(1432)	(1432)	(1432)	(1432)
	0.0000	0.0000	0.0000	0.0000	0.0000
RESULTS_CL	0.4391	0.4360	0.0585	0.0940	0.4539
	(1432)	(1432)	(1432)	(1432)	(1432)
	0.0000	0.0000	0.0268	0.0004	0.0000
RESULTS_AL	0.0271	-0.0098	0.1227	0.1035	0.1135
	(1432)	(1432)	(1432)	(1432)	(1432)
	0.3045	0.7112	0.0000	0.0001	0.0000
RESULTS_FL	-0.1507	-0.0861	-0.0447	-0.0128	0.0411
	(1432)	(1432)	(1432)	(1432)	(1432)
	0.0000	0.0011	0.0908	0.6284	0.1200
RESULTS_FE	0.0462	0.4656	-0.0292	0.0300	0.0199
	(1432)	(1432)	(1432)	(1432)	(1432)
	0.0800	0.0000	0.2701	0.2566	0.4522
RESULTS_MG		0.2023	0.1606	0.3452	0.5865
		(1432)	(1432)	(1432)	(1432)
		0.0000	0.0000	0.0000	0.0000
RESULTS_MN	0.2023		-0.1467	0.0629	0.1697
	(1432)		(1432)	(1432)	(1432)
	0.0000		0.0000	0.0171	0.0000
RESULTS_NO3	0.1606	-0.1467		0.0197	0.0902
	(1432)	(1432)		(1432)	(1432)
	0.0000	0.0000		0.4563	0.0006
RESULTS_SO3	0.3452	0.0629	0.0197		0.6480
	(1432)	(1432)	(1432)		(1432)
	0.0000	0.0171	0.4563		0.0000
RESULTS_TDS	0.5865	0.1697	0.0902	0.6480	
	(1432)	(1432)	(1432)	(1432)	
	0.0000	0.0000	0.0006	0.0000	
RESULTS_TURB	0.0131	0.2666	-0.0206	0.0265	0.0453
	(1432)	(1432)	(1432)	(1432)	(1432)
	0.6215	0.0000	0.4361	0.3154	0.0862
RESULTS_ZN	0.0067	0.0640	-0.0072	0.0040	0.0248
	(1432)	(1432)	(1432)	(1432)	(1432)
	0.7986	0.0153	0.7850	0.8788	0.3476
RESULTS_NA	-0.0379	-0.0629	-0.0482	0.3829	0.3799
	(1432)	(1432)	(1432)	(1432)	(1432)
	0.1517	0.0171	0.0680	0.0000	0.0000
RESULTS_CU	0.0711	-0.0136	-0.0121	-0.0089	0.0130
	(1432)	(1432)	(1432)	(1432)	(1432)
	0.0070	0.6068	0.6470	0.7351	0.6223

	RESULTS_TURB	RESULTS_ZN	RESULTS_NA	RESULTS_CU
RESULTS_pH	-0.0236	-0.0045	0.3239	-0.0164
	(1432)	(1432)	(1432)	(1432)
	0.3730	0.8652	0.0000	0.5346
RESULTS_CA	-0.0108	0.0133	0.1062	-0.0038
	(1432)	(1432)	(1432)	(1432)
	0.6828	0.6158	0.0001	0.8864
RESULTS_CL	0.0563	0.0350	0.1589	0.0368

	(1432)	(1432)	(1432)	(1432)
	0.0329	0.1856	0.0000	0.1632
RESULTS_AL	0.2620	0.0017	0.3288	0.0687
	(1432)	(1432)	(1432)	(1432)
	0.0000	0.9497	0.0000	0.0093
RESULTS_FL	0.0064	-0.0155	0.3737	-0.0051
	(1432)	(1432)	(1432)	(1432)
	0.8092	0.5588	0.0000	0.8461
RESULTS_FE	0.4756	0.0272	0.0281	0.0241
	(1432)	(1432)	(1432)	(1432)
	0.0000	0.3040	0.2874	0.3616
RESULTS_MG	0.0131	0.0067	-0.0379	0.0711
	(1432)	(1432)	(1432)	(1432)
	0.6215	0.7986	0.1517	0.0070
RESULTS_MN	0.2666	0.0640	-0.0629	-0.0136
	(1432)	(1432)	(1432)	(1432)
	0.0000	0.0153	0.0171	0.6068
RESULTS_NO3	-0.0206	-0.0072	-0.0482	-0.0121
	(1432)	(1432)	(1432)	(1432)
	0.4361	0.7850	0.0680	0.6470
RESULTS_SO3	0.0265	0.0040	0.3829	-0.0089
	(1432)	(1432)	(1432)	(1432)
	0.3154	0.8788	0.0000	0.7351
RESULTS_TDS	0.0453	0.0248	0.3799	0.0130
	(1432)	(1432)	(1432)	(1432)
	0.0862	0.3476	0.0000	0.6223
RESULTS_TURB		0.0144	0.0992	0.0019
		(1432)	(1432)	(1432)
		0.5865	0.0002	0.9432
RESULTS_ZN	0.0144		0.0189	0.0233
	(1432)		(1432)	(1432)
	0.5865		0.4742	0.3784
RESULTS_NA	0.0992	0.0189		-0.0084
	(1432)	(1432)		(1432)
	0.0002	0.4742		0.7518
RESULTS_CU	0.0019	0.0233	-0.0084	
	(1432)	(1432)	(1432)	
	0.9432	0.3784	0.7518	

Correlation
(Sample Size)
P-Value

The StatAdvisor

This table shows Pearson product moment correlations between each pair of variables. These correlation coefficients range between -1 and +1 and measure the strength of the linear relationship between the variables. Also shown in parentheses is the number of pairs of data values used to compute each coefficient. The third number in each location of the table is a P-value which tests the statistical significance of the estimated correlations. P-values below 0.05 indicate statistically significant non-zero correlations at the 95.0% confidence level. The following pairs of variables have P-values below 0.05:

RESULTS_pH and RESULTS_CA
RESULTS_pH and RESULTS_CL
RESULTS_pH and RESULTS_AL
RESULTS_pH and RESULTS_FL
RESULTS_pH and RESULTS_FE
RESULTS_pH and RESULTS_MG
RESULTS_pH and RESULTS_MN
RESULTS_pH and RESULTS_NO3
RESULTS_pH and RESULTS_TDS
RESULTS_pH and RESULTS_NA

RESULTS_CA and RESULTS_CL
RESULTS_CA and RESULTS_FE
RESULTS_CA and RESULTS_MG
RESULTS_CA and RESULTS_MN
RESULTS_CA and RESULTS_NO3
RESULTS_CA and RESULTS_SO3
RESULTS_CA and RESULTS_TDS
RESULTS_CA and RESULTS_NA
RESULTS_CL and RESULTS_FE
RESULTS_CL and RESULTS_MG
RESULTS_CL and RESULTS_MN
RESULTS_CL and RESULTS_NO3
RESULTS_CL and RESULTS_SO3
RESULTS_CL and RESULTS_TDS
RESULTS_CL and RESULTS_TURB
RESULTS_CL and RESULTS_NA
RESULTS_AL and RESULTS_FE
RESULTS_AL and RESULTS_NO3
RESULTS_AL and RESULTS_SO3
RESULTS_AL and RESULTS_TDS
RESULTS_AL and RESULTS_TURB
RESULTS_AL and RESULTS_NA
RESULTS_AL and RESULTS_CU
RESULTS_FL and RESULTS_MG
RESULTS_FL and RESULTS_MN
RESULTS_FL and RESULTS_NA
RESULTS_FE and RESULTS_MN
RESULTS_FE and RESULTS_TURB
RESULTS_MG and RESULTS_MN
RESULTS_MG and RESULTS_NO3
RESULTS_MG and RESULTS_SO3
RESULTS_MG and RESULTS_TDS
RESULTS_MG and RESULTS_CU
RESULTS_MN and RESULTS_NO3
RESULTS_MN and RESULTS_SO3
RESULTS_MN and RESULTS_TDS
RESULTS_MN and RESULTS_TURB
RESULTS_MN and RESULTS_ZN
RESULTS_MN and RESULTS_NA
RESULTS_NO3 and RESULTS_TDS
RESULTS_SO3 and RESULTS_TDS
RESULTS_SO3 and RESULTS_NA
RESULTS_TDS and RESULTS_NA
RESULTS_TURB and RESULTS_NA

Summary Statistics

	Count	*Average*	*Median*	*Geometric mean*	*Standard deviation*	*Coeff. of variation*	*Minimum*
RESULTS_pH	1799	7.57571	7.6	7.54482	0.695308	9.17812%	5.0
RESULTS_ALK	1800	106.362	100.0	96.4602	53.3769	50.1841%	6.2
RESULTS_CA	1475	28.1109	25.0	23.3852	24.3293	86.5475%	1.0
RESULTS_CL	1800	8.12667	2.5	4.84347	16.2553	200.025%	2.5
RESULTS_AL	1795	0.188903	0.05	0.0859776	0.487477	258.058%	0.05
RESULTS_FL	1795	0.329833	0.25	0.284405	0.370505	112.331%	0.25
RESULTS_FE	1460	2.13308	0.98	0.844674	3.12572	146.535%	0.01
RESULTS_MG	1475	8.47816	7.1	6.83632	5.63749	66.4943%	0.002
RESULTS_MN	1458	0.138788	0.11	0.0739129	0.147395	106.202%	0.002
RESULTS_NO3	1474	0.895929	0.25	0.416293	1.93516	215.995%	0.25
RESULTS_SO3	1475	13.3471	10.0	8.7761	27.1333	203.29%	2.5
RESULTS_TDS	1793	132.574	120.0	119.168	77.8413	58.7154%	2.0
RESULTS_TURB	1789	16.2949	5.0	4.79057	43.3089	265.782%	0.05
RESULTS_ZN	1793	0.0139381	0.002	0.00420239	0.103182	740.291%	0.002

RESULTS_NA	1474	9.56479	7.0	7.57374	9.64506	100.839%	0.5
RESULTS_CU	1794	0.0105819	0.002	0.00320993	0.0949785	897.553%	0.002
Total	26449	21.9264	2.9	1.33478	49.0037	223.491%	0.002

	Maximum	*Range*	*Lower quartile*	*Upper quartile*	*Interquartile range*	*Stnd. skewness*	*Stnd. kurtosis*
RESULTS_pH	12.0	7.0	7.2	7.9	0.7	15.392	36.0362
RESULTS_ALK	1100.0	1093.8	76.0	120.0	44.0	95.8145	717.587
RESULTS_CA	630.0	629.0	18.0	33.0	15.0	189.115	2071.77
RESULTS_CL	440.0	437.5	2.5	8.0	5.5	228.024	2538.41
RESULTS_AL	9.7	9.65	0.05	0.1	0.05	159.916	1085.66
RESULTS_FL	8.3	8.05	0.25	0.25	0.0	199.121	1691.53
RESULTS_FE	32.0	31.99	0.34	2.7	2.36	55.3281	145.676
RESULTS_MG	56.0	55.998	5.3	10.0	4.7	36.6896	78.1361
RESULTS_MN	2.0	1.998	0.039	0.18	0.141	51.5105	182.337
RESULTS_NO3	29.0	28.75	0.25	0.25	0.0	101.944	523.736
RESULTS_SO3	660.0	657.5	5.0	16.0	11.0	245.289	2431.15
RESULTS_TDS	1600.0	1598.0	96.0	150.0	54.0	116.277	809.305
RESULTS_TURB	1000.0	999.95	1.8	15.0	13.2	187.884	1589.77
RESULTS_ZN	3.6	3.598	0.002	0.007	0.005	456.326	7315.99
RESULTS_NA	140.0	139.5	5.0	10.0	5.0	91.6741	437.663
RESULTS_CU	3.3	3.298	0.002	0.004	0.002	478.519	7589.63
Total	1600.0	1600.0	0.21	13.0	12.79	379.374	2848.07

The StatAdvisor

This table shows various statistics for each of the 16 columns of data. To test for significant differences amongst the column means, select Analysis of Variance from the list of Tabular Options. Select Means Plot from the list of Graphical Options to display the means graphically.

WARNING: There is more than a 3 to 1 difference between the smallest standard deviation and the largest. This may cause problems since the analysis of variance assumes that the standard deviations at all levels are equal. Select Variance Check from the list of Tabular Options to run a formal statistical test for differences among the sigmas. You may want to consider transforming the data to remove any dependence of the standard deviation on the mean.

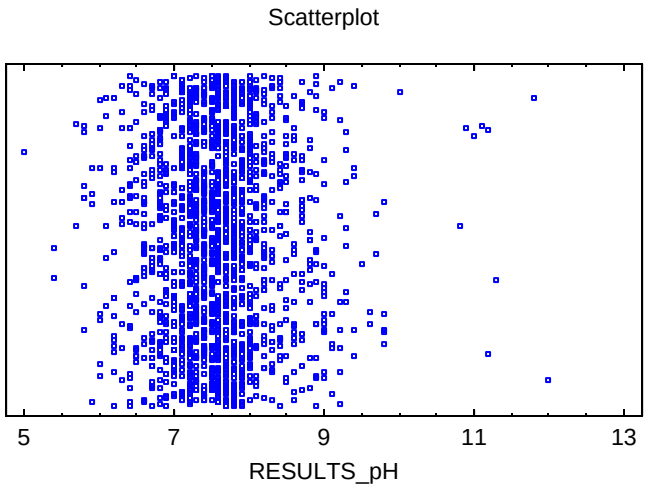
WARNING: The standardized skewness and/or kurtosis is outside the range of -2 to +2 for 16 columns. This indicates some significant nonnormality in the data, which violates the assumption that the data come from normal distributions. You may wish to transform the data or use the Kruskal-Wallis test to compare the medians instead of the means.

Section B) Analysis of individual analytes reported by National Testing Labs.

One-Variable Analysis - RESULTS_pH

Data variable: RESULTS_pH
1799 values ranging from 5.0 to 12.0

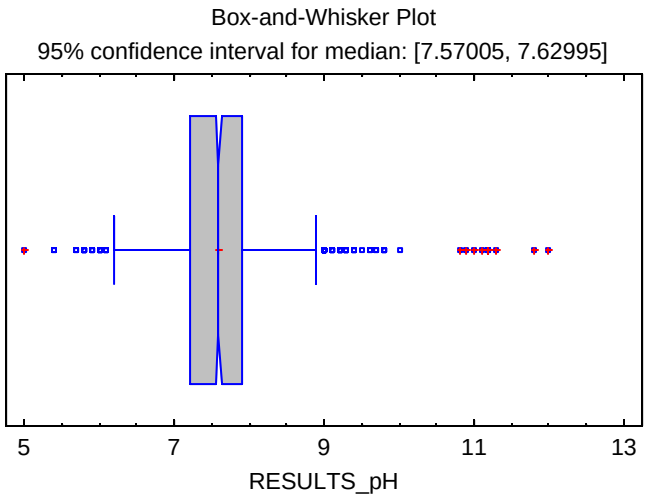
The StatAdvisor
This procedure is designed to summarize a single sample of data. It will calculate various statistics and graphs. Also included in the procedure are confidence intervals and hypothesis tests. Use the Tabular Options and Graphical Options buttons on the analysis toolbar to access these different procedures.



Summary Statistics for RESULTS_pH

Count	1799
Average	7.57571
Standard deviation	0.695308
Coeff. of variation	9.17812%
Minimum	5.0
Maximum	12.0
Range	7.0
Stnd. skewness	15.392
Stnd. kurtosis	36.0362

The StatAdvisor
This table shows summary statistics for RESULTS_pH. It includes measures of central tendency, measures of variability, and measures of shape. Of particular interest here are the standardized skewness and standardized kurtosis, which can be used to determine whether the sample comes from a normal distribution. Values of these statistics outside the range of -2 to +2 indicate significant departures from normality, which would tend to invalidate any statistical test regarding the standard deviation. In this case, the standardized skewness value is not within the range expected for data from a normal distribution. The standardized kurtosis value is not within the range expected for data from a normal distribution.



Percentiles for RESULTS_pH

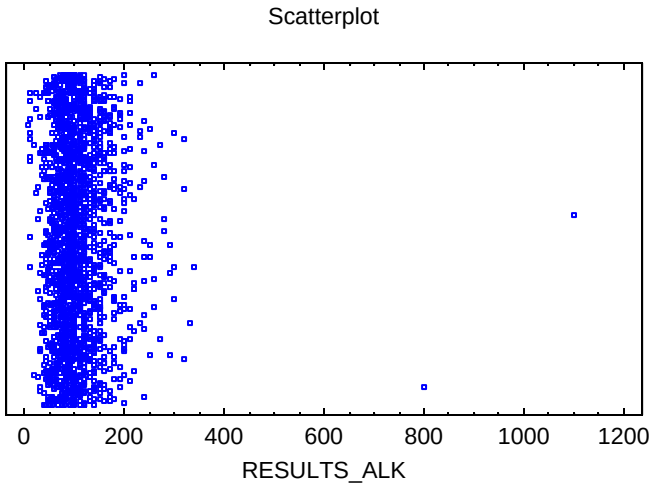
	Percentiles
1.0%	6.0
5.0%	6.5
10.0%	6.8
25.0%	7.2
50.0%	7.6
75.0%	7.9
90.0%	8.4
95.0%	8.8
99.0%	9.6

The StatAdvisor
This pane shows sample percentiles for RESULTS_pH. The percentiles are values below which specific percentages of the data are found. You can see the percentiles graphically by selecting Quantile Plot from the list of Graphical Options.

One-Variable Analysis - RESULTS_ALK

Data variable: RESULTS_ALK
1800 values ranging from 6.2 to 1100.0

The StatAdvisor
This procedure is designed to summarize a single sample of data. It will calculate various statistics and graphs. Also included in the procedure are confidence intervals and hypothesis tests. Use the Tabular Options and Graphical Options buttons on the analysis toolbar to access these different procedures.

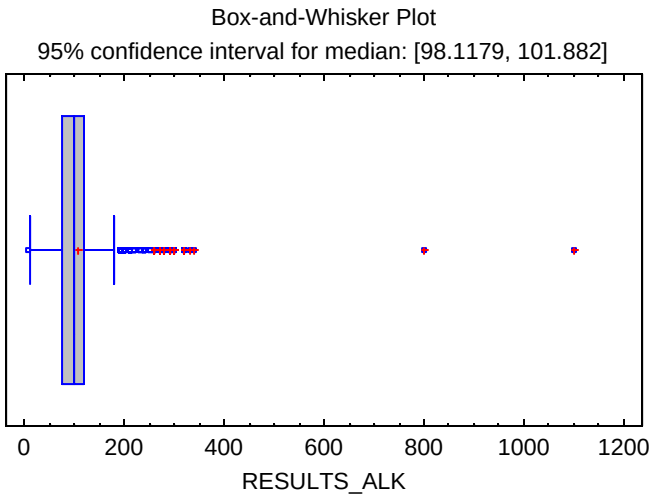


Summary Statistics for RESULTS_ALK

Count	1800
Average	106.362
Standard deviation	53.3769
Coeff. of variation	50.1841%
Minimum	6.2
Maximum	1100.0
Range	1093.8
Stnd. skewness	95.8145
Stnd. kurtosis	717.587

The StatAdvisor

This table shows summary statistics for RESULTS_ALK. It includes measures of central tendency, measures of variability, and measures of shape. Of particular interest here are the standardized skewness and standardized kurtosis, which can be used to determine whether the sample comes from a normal distribution. Values of these statistics outside the range of -2 to +2 indicate significant departures from normality, which would tend to invalidate any statistical test regarding the standard deviation. In this case, the standardized skewness value is not within the range expected for data from a normal distribution. The standardized kurtosis value is not within the range expected for data from a normal distribution.



Percentiles for RESULTS_ALK

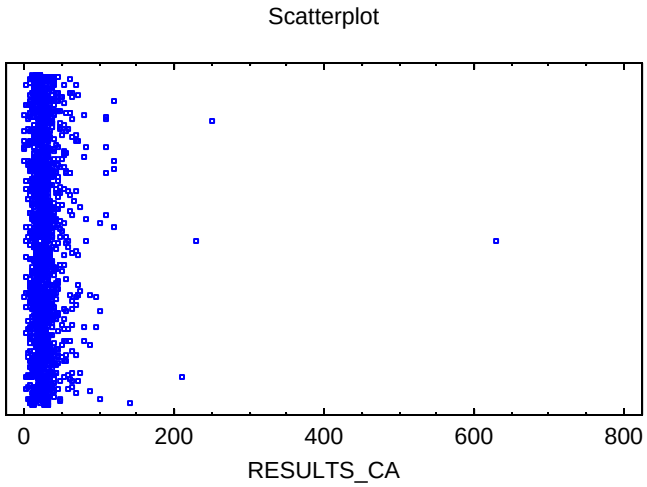
	Percentiles
1.0%	28.0
5.0%	46.0
10.0%	58.0
25.0%	76.0
50.0%	100.0
75.0%	120.0
90.0%	160.0
95.0%	190.0
99.0%	260.0

The StatAdvisor
This pane shows sample percentiles for RESULTS_ALK. The percentiles are values below which specific percentages of the data are found. You can see the percentiles graphically by selecting Quantile Plot from the list of Graphical Options.

One-Variable Analysis - RESULTS_CA

Data variable: RESULTS_CA
1475 values ranging from 1.0 to 630.0

The StatAdvisor
This procedure is designed to summarize a single sample of data. It will calculate various statistics and graphs. Also included in the procedure are confidence intervals and hypothesis tests. Use the Tabular Options and Graphical Options buttons on the analysis toolbar to access these different procedures.

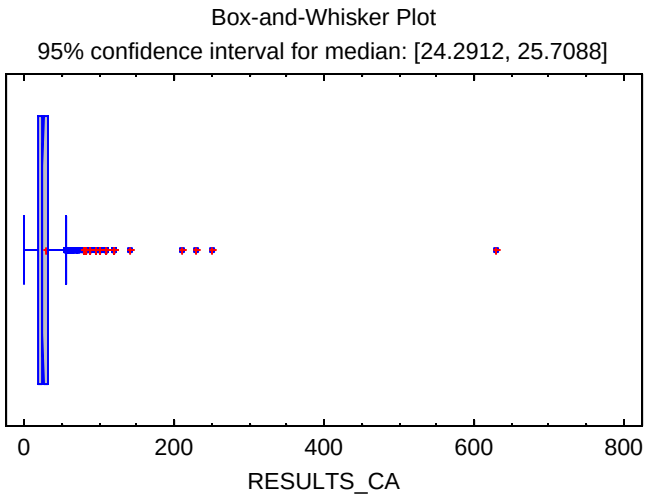


Summary Statistics for RESULTS_CA

Count	1475
Average	28.1109
Standard deviation	24.3293
Coeff. of variation	86.5475%
Minimum	1.0
Maximum	630.0
Range	629.0
Stnd. skewness	189.115
Stnd. kurtosis	2071.77

The StatAdvisor

This table shows summary statistics for RESULTS_CA. It includes measures of central tendency, measures of variability, and measures of shape. Of particular interest here are the standardized skewness and standardized kurtosis, which can be used to determine whether the sample comes from a normal distribution. Values of these statistics outside the range of -2 to +2 indicate significant departures from normality, which would tend to invalidate any statistical test regarding the standard deviation. In this case, the standardized skewness value is not within the range expected for data from a normal distribution. The standardized kurtosis value is not within the range expected for data from a normal distribution.



Percentiles for RESULTS_CA

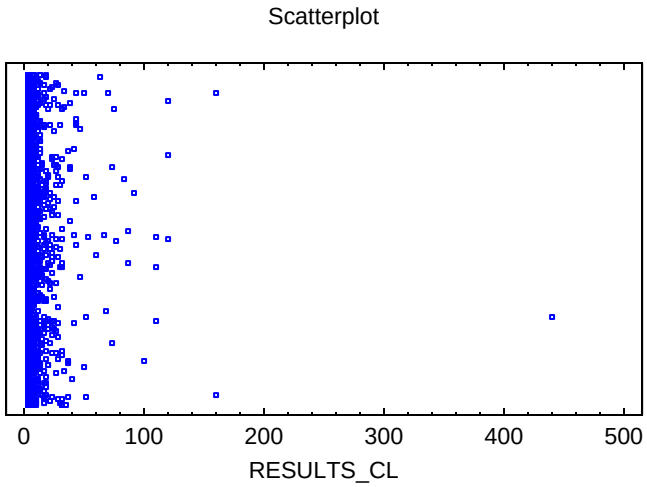
	Percentiles
1.0%	3.3
5.0%	8.4
10.0%	11.0
25.0%	18.0
50.0%	25.0
75.0%	33.0
90.0%	45.0
95.0%	59.0
99.0%	100.0

The StatAdvisor
This pane shows sample percentiles for RESULTS_CA. The percentiles are values below which specific percentages of the data are found. You can see the percentiles graphically by selecting Quantile Plot from the list of Graphical Options.

One-Variable Analysis - RESULTS_CL

Data variable: RESULTS_CL
1800 values ranging from 2.5 to 440.0

The StatAdvisor
This procedure is designed to summarize a single sample of data. It will calculate various statistics and graphs. Also included in the procedure are confidence intervals and hypothesis tests. Use the Tabular Options and Graphical Options buttons on the analysis toolbar to access these different procedures.

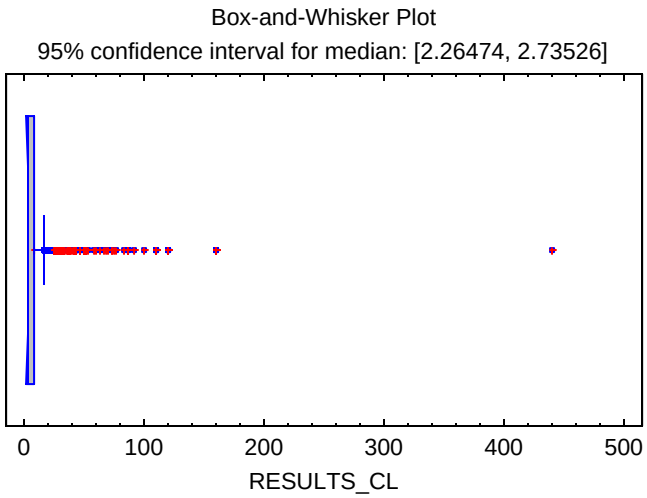


Summary Statistics for RESULTS_CL

Count	1800
Average	8.12667
Standard deviation	16.2553
Coeff. of variation	200.025%
Minimum	2.5
Maximum	440.0
Range	437.5
Stnd. skewness	228.024
Stnd. kurtosis	2538.41

The StatAdvisor

This table shows summary statistics for RESULTS_CL. It includes measures of central tendency, measures of variability, and measures of shape. Of particular interest here are the standardized skewness and standardized kurtosis, which can be used to determine whether the sample comes from a normal distribution. Values of these statistics outside the range of -2 to +2 indicate significant departures from normality, which would tend to invalidate any statistical test regarding the standard deviation. In this case, the standardized skewness value is not within the range expected for data from a normal distribution. The standardized kurtosis value is not within the range expected for data from a normal distribution.



Percentiles for RESULTS_CL

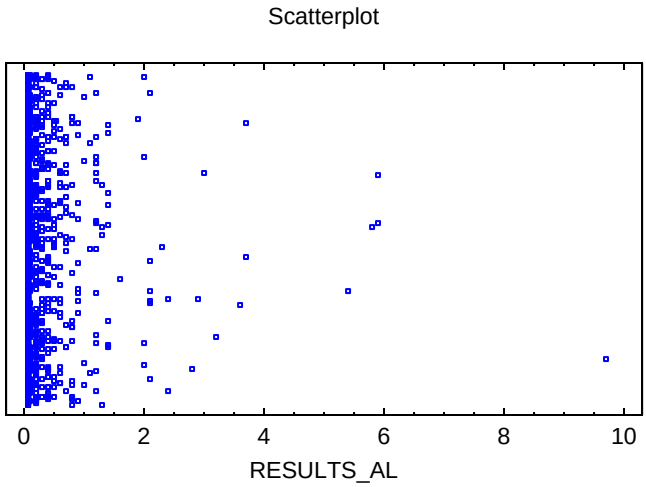
	Percentiles
1.0%	2.5
5.0%	2.5
10.0%	2.5
25.0%	2.5
50.0%	2.5
75.0%	8.0
90.0%	17.0
95.0%	26.0
99.0%	70.0

The StatAdvisor
This pane shows sample percentiles for RESULTS_CL. The percentiles are values below which specific percentages of the data are found. You can see the percentiles graphically by selecting Quantile Plot from the list of Graphical Options.

One-Variable Analysis - RESULTS_AL

Data variable: RESULTS_AL
1795 values ranging from 0.05 to 9.7

The StatAdvisor
This procedure is designed to summarize a single sample of data. It will calculate various statistics and graphs. Also included in the procedure are confidence intervals and hypothesis tests. Use the Tabular Options and Graphical Options buttons on the analysis toolbar to access these different procedures.

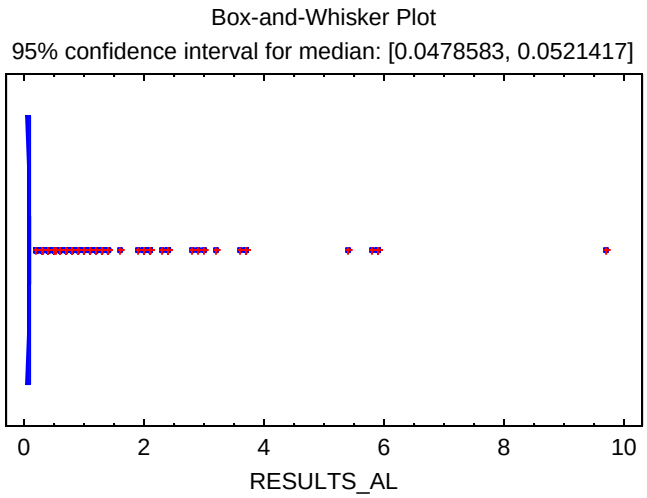


Summary Statistics for RESULTS_AL

Count	1795
Average	0.188903
Standard deviation	0.487477
Coeff. of variation	258.058%
Minimum	0.05
Maximum	9.7
Range	9.65
Stnd. skewness	159.916
Stnd. kurtosis	1085.66

The StatAdvisor

This table shows summary statistics for RESULTS_AL. It includes measures of central tendency, measures of variability, and measures of shape. Of particular interest here are the standardized skewness and standardized kurtosis, which can be used to determine whether the sample comes from a normal distribution. Values of these statistics outside the range of -2 to +2 indicate significant departures from normality, which would tend to invalidate any statistical test regarding the standard deviation. In this case, the standardized skewness value is not within the range expected for data from a normal distribution. The standardized kurtosis value is not within the range expected for data from a normal distribution.



Percentiles for RESULTS_AL

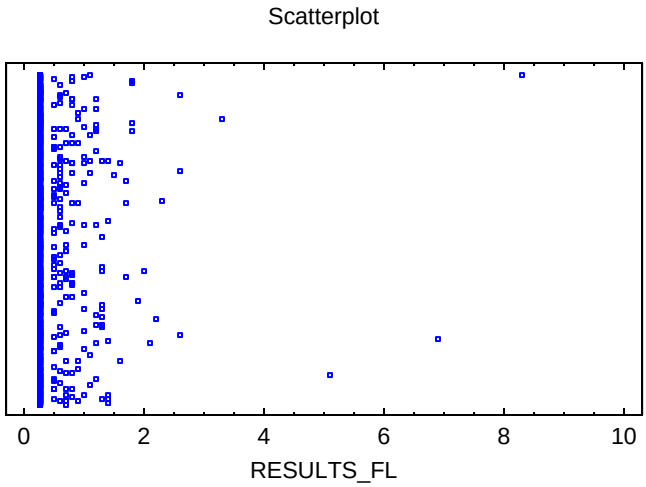
	Percentiles
1.0%	0.05
5.0%	0.05
10.0%	0.05
25.0%	0.05
50.0%	0.05
75.0%	0.1
90.0%	0.4
95.0%	0.7
99.0%	2.1

The StatAdvisor
This pane shows sample percentiles for RESULTS_AL. The percentiles are values below which specific percentages of the data are found. You can see the percentiles graphically by selecting Quantile Plot from the list of Graphical Options.

One-Variable Analysis - RESULTS_FL

Data variable: RESULTS_FL
1795 values ranging from 0.25 to 8.3

The StatAdvisor
This procedure is designed to summarize a single sample of data. It will calculate various statistics and graphs. Also included in the procedure are confidence intervals and hypothesis tests. Use the Tabular Options and Graphical Options buttons on the analysis toolbar to access these different procedures.

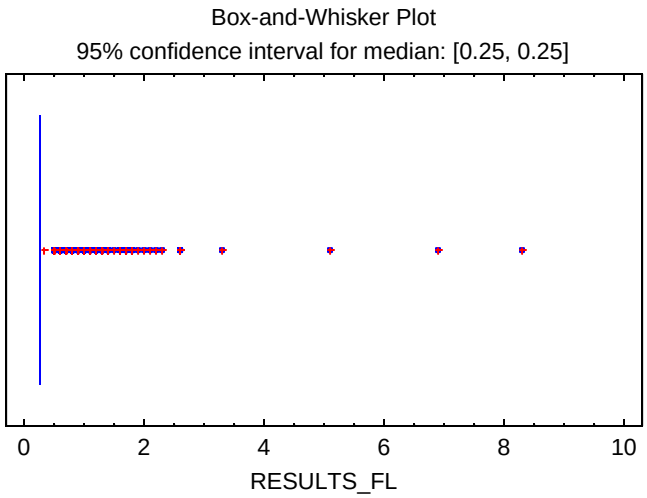


Summary Statistics for RESULTS_FL

Count	1795
Average	0.329833
Standard deviation	0.370505
Coeff. of variation	112.331%
Minimum	0.25
Maximum	8.3
Range	8.05
Stnd. skewness	199.121
Stnd. kurtosis	1691.53

The StatAdvisor

This table shows summary statistics for RESULTS_FL. It includes measures of central tendency, measures of variability, and measures of shape. Of particular interest here are the standardized skewness and standardized kurtosis, which can be used to determine whether the sample comes from a normal distribution. Values of these statistics outside the range of -2 to +2 indicate significant departures from normality, which would tend to invalidate any statistical test regarding the standard deviation. In this case, the standardized skewness value is not within the range expected for data from a normal distribution. The standardized kurtosis value is not within the range expected for data from a normal distribution.



Percentiles for RESULTS_FL

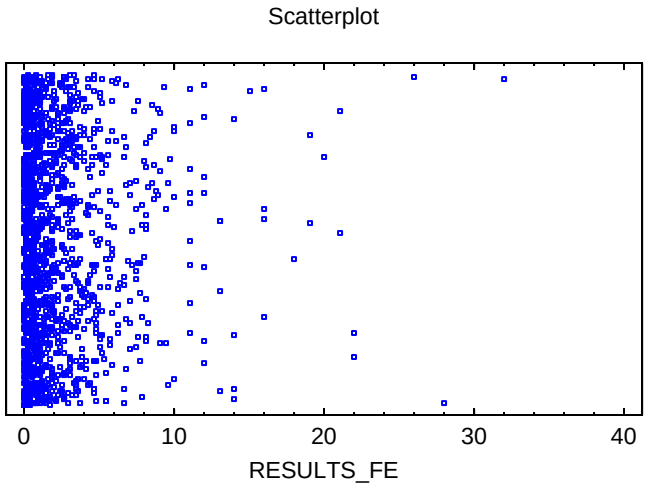
	Percentiles
1.0%	0.25
5.0%	0.25
10.0%	0.25
25.0%	0.25
50.0%	0.25
75.0%	0.25
90.0%	0.5
95.0%	0.8
99.0%	1.7

The StatAdvisor
This pane shows sample percentiles for RESULTS_FL. The percentiles are values below which specific percentages of the data are found. You can see the percentiles graphically by selecting Quantile Plot from the list of Graphical Options.

One-Variable Analysis - RESULTS_FE

Data variable: RESULTS_FE
1460 values ranging from 0.01 to 32.0

The StatAdvisor
This procedure is designed to summarize a single sample of data. It will calculate various statistics and graphs. Also included in the procedure are confidence intervals and hypothesis tests. Use the Tabular Options and Graphical Options buttons on the analysis toolbar to access these different procedures.

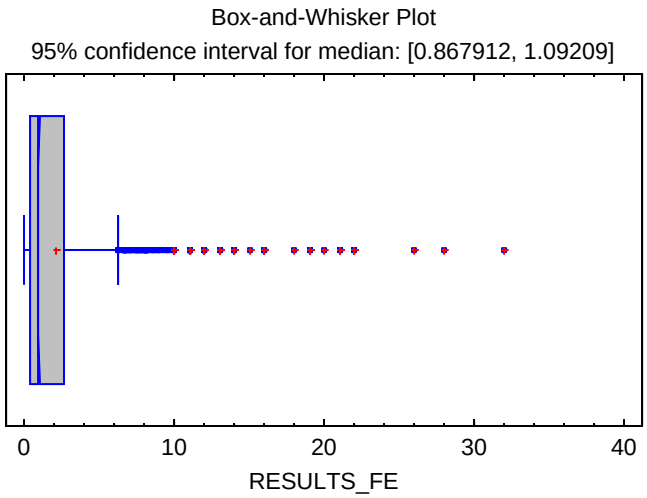


Summary Statistics for RESULTS_FE

Count	1460
Average	2.13308
Standard deviation	3.12572
Coeff. of variation	146.535%
Minimum	0.01
Maximum	32.0
Range	31.99
Stnd. skewness	55.3281
Stnd. kurtosis	145.676

The StatAdvisor

This table shows summary statistics for RESULTS_FE. It includes measures of central tendency, measures of variability, and measures of shape. Of particular interest here are the standardized skewness and standardized kurtosis, which can be used to determine whether the sample comes from a normal distribution. Values of these statistics outside the range of -2 to +2 indicate significant departures from normality, which would tend to invalidate any statistical test regarding the standard deviation. In this case, the standardized skewness value is not within the range expected for data from a normal distribution. The standardized kurtosis value is not within the range expected for data from a normal distribution.



Percentiles for RESULTS_FE

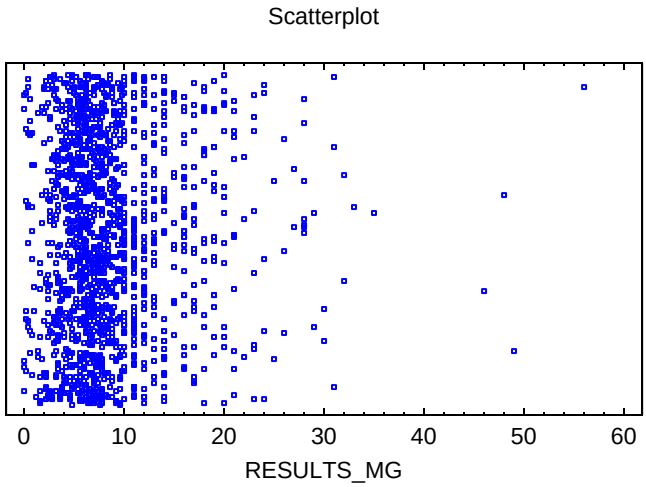
	Percentiles
1.0%	0.01
5.0%	0.045
10.0%	0.1
25.0%	0.34
50.0%	0.98
75.0%	2.7
90.0%	5.25
95.0%	8.0
99.0%	16.0

The StatAdvisor
This pane shows sample percentiles for RESULTS_FE. The percentiles are values below which specific percentages of the data are found. You can see the percentiles graphically by selecting Quantile Plot from the list of Graphical Options.

One-Variable Analysis - RESULTS_MG

Data variable: RESULTS_MG
1475 values ranging from 0.002 to 56.0

The StatAdvisor
This procedure is designed to summarize a single sample of data. It will calculate various statistics and graphs. Also included in the procedure are confidence intervals and hypothesis tests. Use the Tabular Options and Graphical Options buttons on the analysis toolbar to access these different procedures.

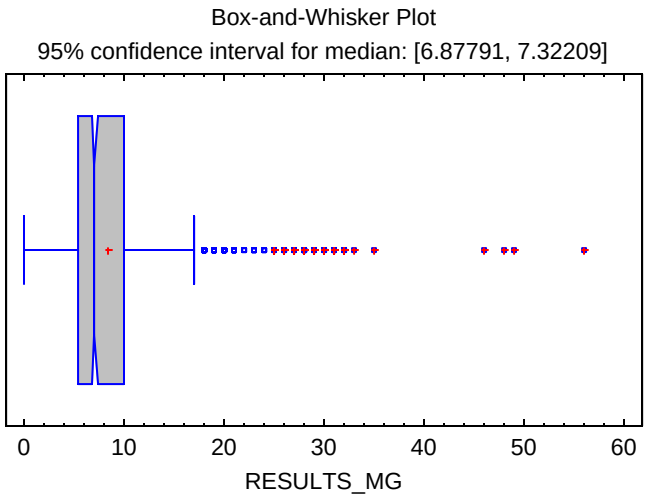


Summary Statistics for RESULTS_MG

Count	1475
Average	8.47816
Standard deviation	5.63749
Coeff. of variation	66.4943%
Minimum	0.002
Maximum	56.0
Range	55.998
Stnd. skewness	36.6896
Stnd. kurtosis	78.1361

The StatAdvisor

This table shows summary statistics for RESULTS_MG. It includes measures of central tendency, measures of variability, and measures of shape. Of particular interest here are the standardized skewness and standardized kurtosis, which can be used to determine whether the sample comes from a normal distribution. Values of these statistics outside the range of -2 to +2 indicate significant departures from normality, which would tend to invalidate any statistical test regarding the standard deviation. In this case, the standardized skewness value is not within the range expected for data from a normal distribution. The standardized kurtosis value is not within the range expected for data from a normal distribution.



Percentiles for RESULTS_MG

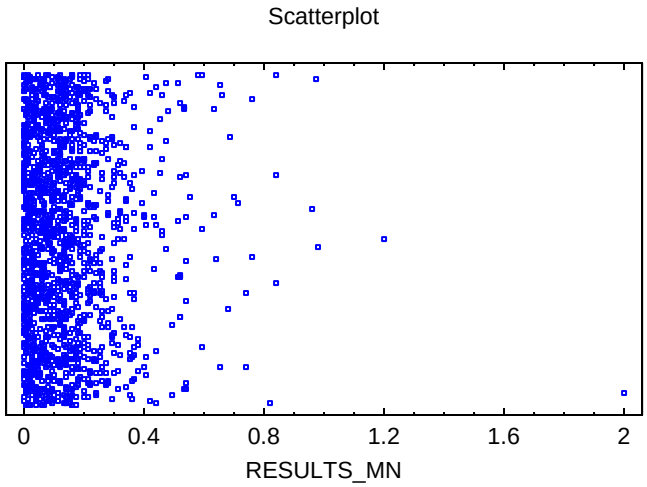
	Percentiles
1.0%	0.39
5.0%	2.3
10.0%	3.3
25.0%	5.3
50.0%	7.1
75.0%	10.0
90.0%	16.0
95.0%	19.0
99.0%	29.0

The StatAdvisor
This pane shows sample percentiles for RESULTS_MG. The percentiles are values below which specific percentages of the data are found. You can see the percentiles graphically by selecting Quantile Plot from the list of Graphical Options.

One-Variable Analysis - RESULTS_MN

Data variable: RESULTS_MN
1458 values ranging from 0.002 to 2.0

The StatAdvisor
This procedure is designed to summarize a single sample of data. It will calculate various statistics and graphs. Also included in the procedure are confidence intervals and hypothesis tests. Use the Tabular Options and Graphical Options buttons on the analysis toolbar to access these different procedures.

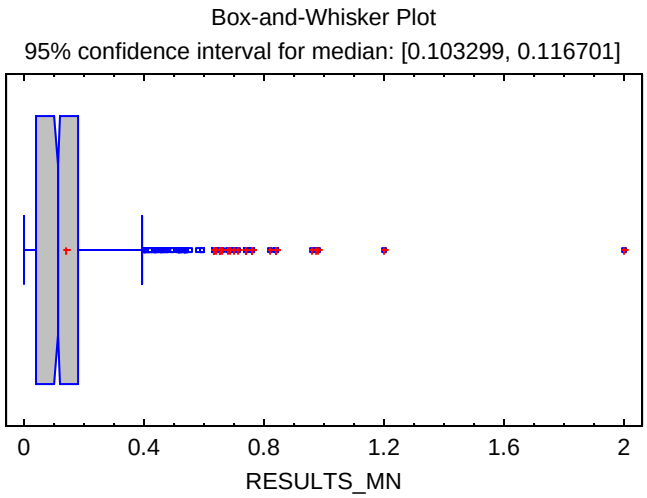


Summary Statistics for RESULTS_MN

Count	1458
Average	0.138788
Standard deviation	0.147395
Coeff. of variation	106.202%
Minimum	0.002
Maximum	2.0
Range	1.998
Stnd. skewness	51.5105
Stnd. kurtosis	182.337

The StatAdvisor

This table shows summary statistics for RESULTS_MN. It includes measures of central tendency, measures of variability, and measures of shape. Of particular interest here are the standardized skewness and standardized kurtosis, which can be used to determine whether the sample comes from a normal distribution. Values of these statistics outside the range of -2 to +2 indicate significant departures from normality, which would tend to invalidate any statistical test regarding the standard deviation. In this case, the standardized skewness value is not within the range expected for data from a normal distribution. The standardized kurtosis value is not within the range expected for data from a normal distribution.



Percentiles for RESULTS_MN

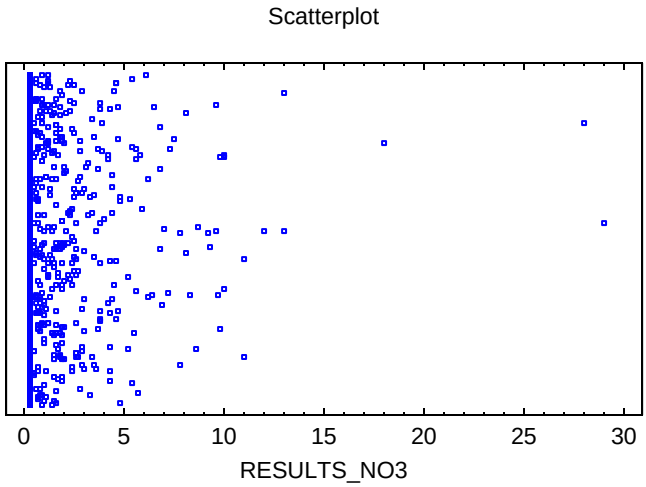
	Percentiles
1.0%	0.002
5.0%	0.002
10.0%	0.01
25.0%	0.039
50.0%	0.11
75.0%	0.18
90.0%	0.3
95.0%	0.41
99.0%	0.7

The StatAdvisor
This pane shows sample percentiles for RESULTS_MN. The percentiles are values below which specific percentages of the data are found. You can see the percentiles graphically by selecting Quantile Plot from the list of Graphical Options.

One-Variable Analysis - RESULTS_NO3

Data variable: RESULTS_NO3
1474 values ranging from 0.25 to 29.0

The StatAdvisor
This procedure is designed to summarize a single sample of data. It will calculate various statistics and graphs. Also included in the procedure are confidence intervals and hypothesis tests. Use the Tabular Options and Graphical Options buttons on the analysis toolbar to access these different procedures.

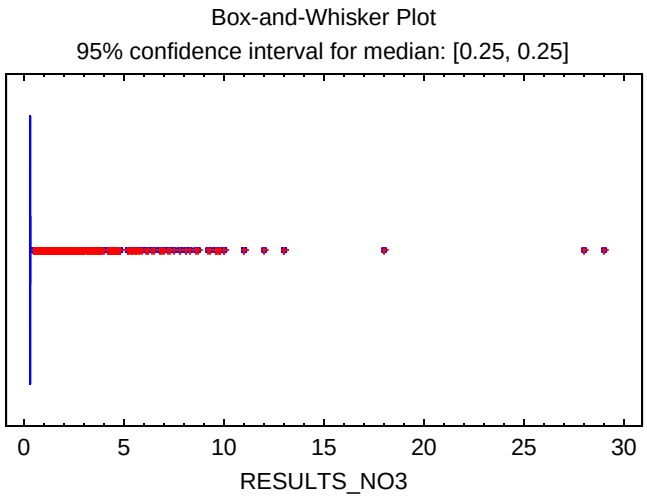


Summary Statistics for RESULTS_NO3

Count	1474
Average	0.895929
Standard deviation	1.93516
Coeff. of variation	215.995%
Minimum	0.25
Maximum	29.0
Range	28.75
Stnd. skewness	101.944
Stnd. kurtosis	523.736

The StatAdvisor

This table shows summary statistics for RESULTS_NO3. It includes measures of central tendency, measures of variability, and measures of shape. Of particular interest here are the standardized skewness and standardized kurtosis, which can be used to determine whether the sample comes from a normal distribution. Values of these statistics outside the range of -2 to +2 indicate significant departures from normality, which would tend to invalidate any statistical test regarding the standard deviation. In this case, the standardized skewness value is not within the range expected for data from a normal distribution. The standardized kurtosis value is not within the range expected for data from a normal distribution.



Percentiles for RESULTS_NO3

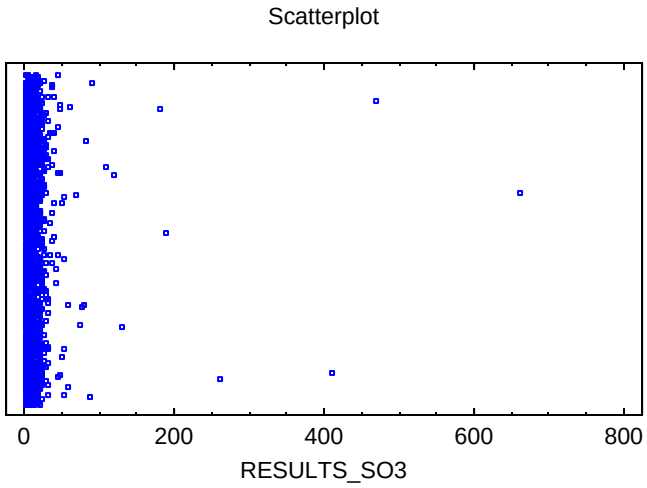
	Percentiles
1.0%	0.25
5.0%	0.25
10.0%	0.25
25.0%	0.25
50.0%	0.25
75.0%	0.25
90.0%	2.3
95.0%	4.2
99.0%	9.6

The StatAdvisor
This pane shows sample percentiles for RESULTS_NO3. The percentiles are values below which specific percentages of the data are found. You can see the percentiles graphically by selecting Quantile Plot from the list of Graphical Options.

One-Variable Analysis - RESULTS_SO3

Data variable: RESULTS_SO3
1475 values ranging from 2.5 to 660.0

The StatAdvisor
This procedure is designed to summarize a single sample of data. It will calculate various statistics and graphs. Also included in the procedure are confidence intervals and hypothesis tests. Use the Tabular Options and Graphical Options buttons on the analysis toolbar to access these different procedures.

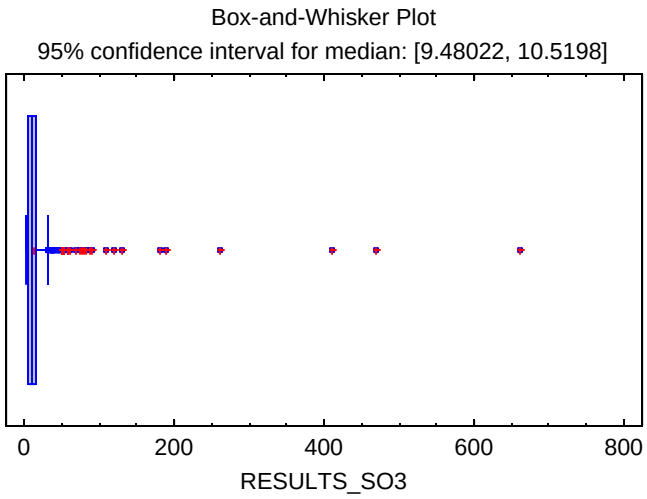


Summary Statistics for RESULTS_SO3

Count	1475
Average	13.3471
Standard deviation	27.1333
Coeff. of variation	203.29%
Minimum	2.5
Maximum	660.0
Range	657.5
Stnd. skewness	245.289
Stnd. kurtosis	2431.15

The StatAdvisor

This table shows summary statistics for RESULTS_SO3. It includes measures of central tendency, measures of variability, and measures of shape. Of particular interest here are the standardized skewness and standardized kurtosis, which can be used to determine whether the sample comes from a normal distribution. Values of these statistics outside the range of -2 to +2 indicate significant departures from normality, which would tend to invalidate any statistical test regarding the standard deviation. In this case, the standardized skewness value is not within the range expected for data from a normal distribution. The standardized kurtosis value is not within the range expected for data from a normal distribution.



Percentiles for RESULTS_SO3

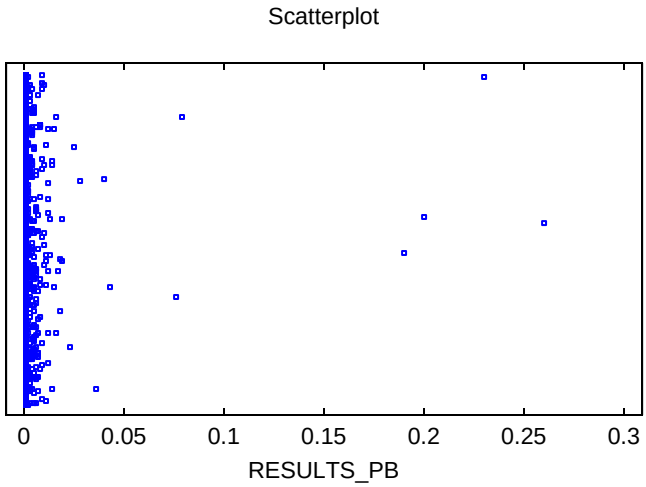
	Percentiles
1.0%	2.5
5.0%	2.5
10.0%	2.5
25.0%	5.0
50.0%	10.0
75.0%	16.0
90.0%	22.0
95.0%	29.0
99.0%	74.0

The StatAdvisor
This pane shows sample percentiles for RESULTS_SO3. The percentiles are values below which specific percentages of the data are found. You can see the percentiles graphically by selecting Quantile Plot from the list of Graphical Options.

One-Variable Analysis - RESULTS_PB

Data variable: RESULTS_PB
1793 values ranging from 0.001 to 0.26

The StatAdvisor
This procedure is designed to summarize a single sample of data. It will calculate various statistics and graphs. Also included in the procedure are confidence intervals and hypothesis tests. Use the Tabular Options and Graphical Options buttons on the analysis toolbar to access these different procedures.

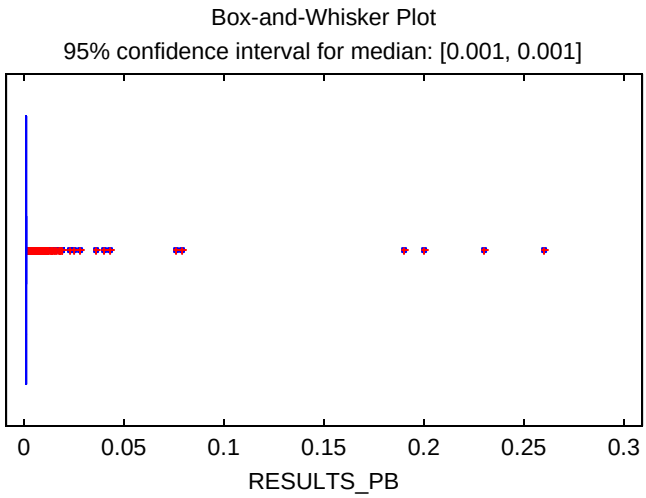


Summary Statistics for RESULTS_PB

Count	1793
Average	0.00225711
Standard deviation	0.0110246
Coeff. of variation	488.44%
Minimum	0.001
Maximum	0.26
Range	0.259
Stnd. skewness	319.916
Stnd. kurtosis	3232.52

The StatAdvisor

This table shows summary statistics for RESULTS_PB. It includes measures of central tendency, measures of variability, and measures of shape. Of particular interest here are the standardized skewness and standardized kurtosis, which can be used to determine whether the sample comes from a normal distribution. Values of these statistics outside the range of -2 to +2 indicate significant departures from normality, which would tend to invalidate any statistical test regarding the standard deviation. In this case, the standardized skewness value is not within the range expected for data from a normal distribution. The standardized kurtosis value is not within the range expected for data from a normal distribution.



Percentiles for RESULTS_PB

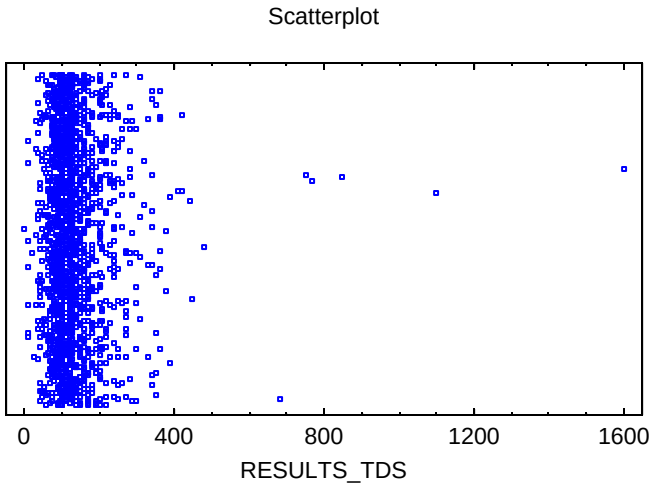
	Percentiles
1.0%	0.001
5.0%	0.001
10.0%	0.001
25.0%	0.001
50.0%	0.001
75.0%	0.001
90.0%	0.003
95.0%	0.006
99.0%	0.016

The StatAdvisor
This pane shows sample percentiles for RESULTS_PB. The percentiles are values below which specific percentages of the data are found. You can see the percentiles graphically by selecting Quantile Plot from the list of Graphical Options.

One-Variable Analysis - RESULTS_TDS

Data variable: RESULTS_TDS
1793 values ranging from 2.0 to 1600.0

The StatAdvisor
This procedure is designed to summarize a single sample of data. It will calculate various statistics and graphs. Also included in the procedure are confidence intervals and hypothesis tests. Use the Tabular Options and Graphical Options buttons on the analysis toolbar to access these different procedures.

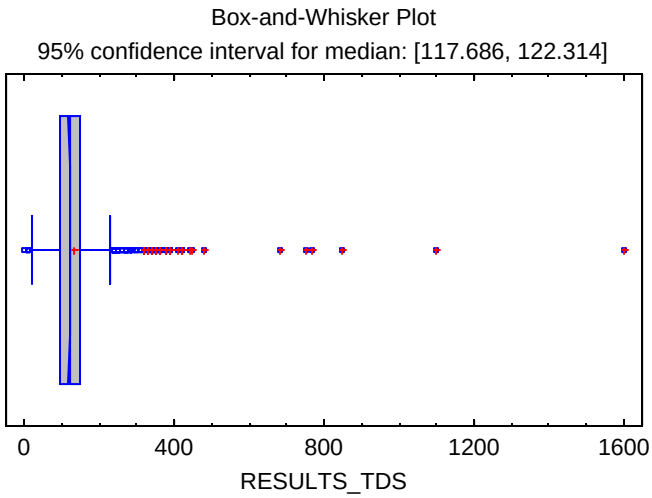


Summary Statistics for RESULTS_TDS

Count	1793
Average	132.574
Standard deviation	77.8413
Coeff. of variation	58.7154%
Minimum	2.0
Maximum	1600.0
Range	1598.0
Stnd. skewness	116.277
Stnd. kurtosis	809.305

The StatAdvisor

This table shows summary statistics for RESULTS_TDS. It includes measures of central tendency, measures of variability, and measures of shape. Of particular interest here are the standardized skewness and standardized kurtosis, which can be used to determine whether the sample comes from a normal distribution. Values of these statistics outside the range of -2 to +2 indicate significant departures from normality, which would tend to invalidate any statistical test regarding the standard deviation. In this case, the standardized skewness value is not within the range expected for data from a normal distribution. The standardized kurtosis value is not within the range expected for data from a normal distribution.



Percentiles for RESULTS_TDS

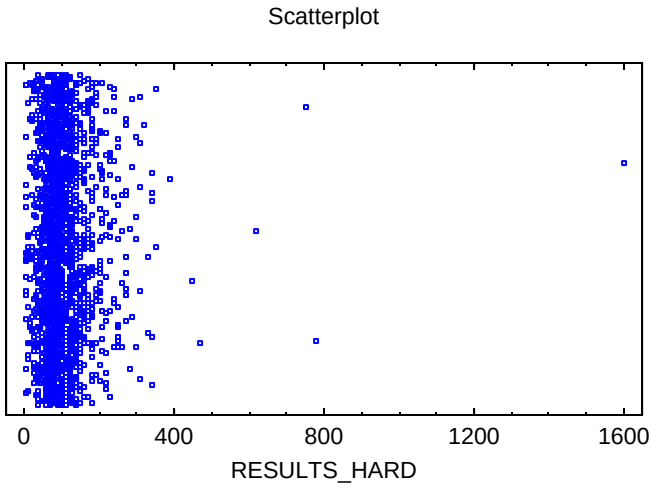
	Percentiles
1.0%	38.0
5.0%	63.0
10.0%	75.0
25.0%	96.0
50.0%	120.0
75.0%	150.0
90.0%	200.0
95.0%	250.0
99.0%	360.0

The StatAdvisor
This pane shows sample percentiles for RESULTS_TDS. The percentiles are values below which specific percentages of the data are found. You can see the percentiles graphically by selecting Quantile Plot from the list of Graphical Options.

One-Variable Analysis - RESULTS_HARD

Data variable: RESULTS_HARD
1796 values ranging from 5.0 to 1600.0

The StatAdvisor
This procedure is designed to summarize a single sample of data. It will calculate various statistics and graphs. Also included in the procedure are confidence intervals and hypothesis tests. Use the Tabular Options and Graphical Options buttons on the analysis toolbar to access these different procedures.

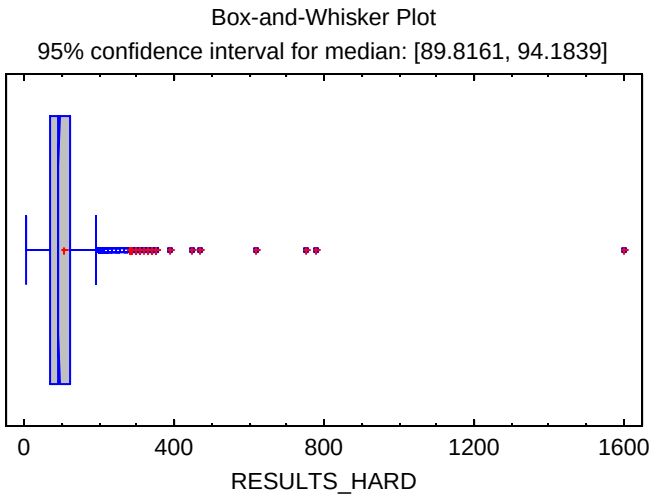


Summary Statistics for RESULTS_HARD

Count	1796
Average	104.247
Standard deviation	70.2967
Coeff. of variation	67.4327%
Minimum	5.0
Maximum	1600.0
Range	1595.0
Stnd. skewness	125.904
Stnd. kurtosis	1079.77

The StatAdvisor

This table shows summary statistics for RESULTS_HARD. It includes measures of central tendency, measures of variability, and measures of shape. Of particular interest here are the standardized skewness and standardized kurtosis, which can be used to determine whether the sample comes from a normal distribution. Values of these statistics outside the range of -2 to +2 indicate significant departures from normality, which would tend to invalidate any statistical test regarding the standard deviation. In this case, the standardized skewness value is not within the range expected for data from a normal distribution. The standardized kurtosis value is not within the range expected for data from a normal distribution.



Percentiles for RESULTS_HARD

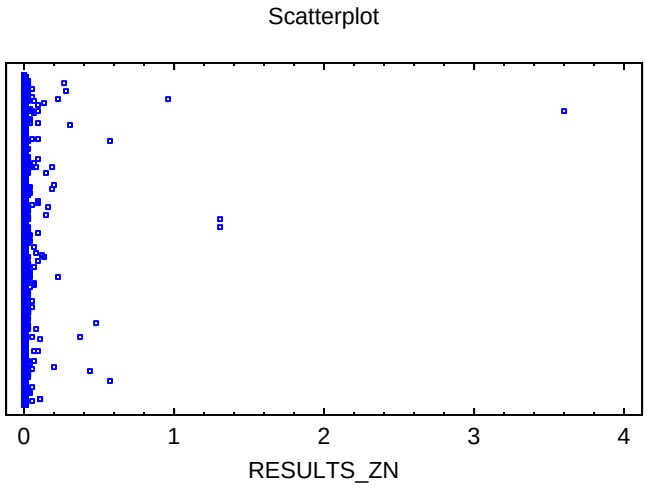
	Percentiles
1.0%	10.0
5.0%	34.0
10.0%	47.0
25.0%	69.0
50.0%	92.0
75.0%	120.0
90.0%	170.0
95.0%	210.0
99.0%	310.0

The StatAdvisor
This pane shows sample percentiles for RESULTS_HARD. The percentiles are values below which specific percentages of the data are found. You can see the percentiles graphically by selecting Quantile Plot from the list of Graphical Options.

One-Variable Analysis - RESULTS_ZN

Data variable: RESULTS_ZN
1793 values ranging from 0.002 to 3.6

The StatAdvisor
This procedure is designed to summarize a single sample of data. It will calculate various statistics and graphs. Also included in the procedure are confidence intervals and hypothesis tests. Use the Tabular Options and Graphical Options buttons on the analysis toolbar to access these different procedures.

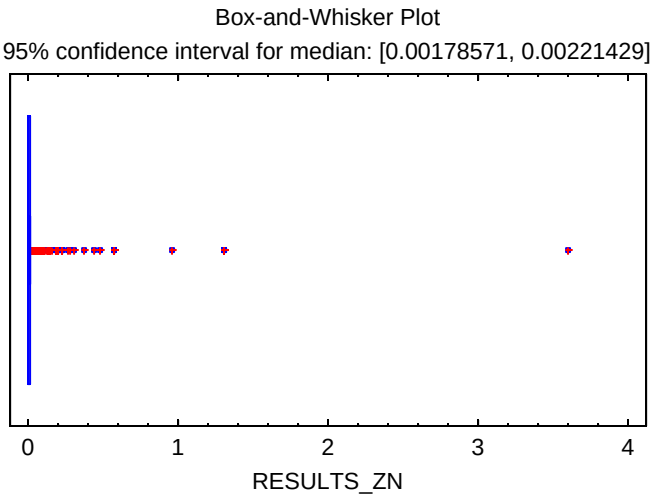


Summary Statistics for RESULTS_ZN

Count	1793
Average	0.0139381
Standard deviation	0.103182
Coeff. of variation	740.291%
Minimum	0.002
Maximum	3.6
Range	3.598
Stnd. skewness	456.326
Stnd. kurtosis	7315.99

The StatAdvisor

This table shows summary statistics for RESULTS_ZN. It includes measures of central tendency, measures of variability, and measures of shape. Of particular interest here are the standardized skewness and standardized kurtosis, which can be used to determine whether the sample comes from a normal distribution. Values of these statistics outside the range of -2 to +2 indicate significant departures from normality, which would tend to invalidate any statistical test regarding the standard deviation. In this case, the standardized skewness value is not within the range expected for data from a normal distribution. The standardized kurtosis value is not within the range expected for data from a normal distribution.



Percentiles for RESULTS_ZN

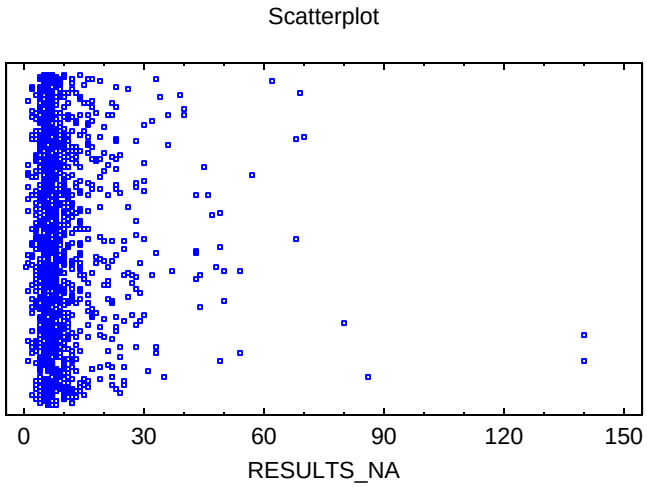
	Percentiles
1.0%	0.002
5.0%	0.002
10.0%	0.002
25.0%	0.002
50.0%	0.002
75.0%	0.007
90.0%	0.017
95.0%	0.029
99.0%	0.18

The StatAdvisor
This pane shows sample percentiles for RESULTS_ZN. The percentiles are values below which specific percentages of the data are found. You can see the percentiles graphically by selecting Quantile Plot from the list of Graphical Options.

One-Variable Analysis - RESULTS_NA

Data variable: RESULTS_NA
1474 values ranging from 0.5 to 140.0

The StatAdvisor
This procedure is designed to summarize a single sample of data. It will calculate various statistics and graphs. Also included in the procedure are confidence intervals and hypothesis tests. Use the Tabular Options and Graphical Options buttons on the analysis toolbar to access these different procedures.

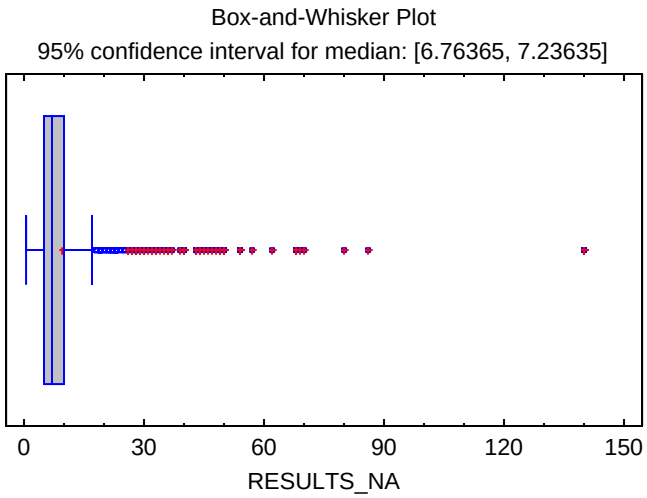


Summary Statistics for RESULTS_NA

Count	1474
Average	9.56479
Standard deviation	9.64506
Coeff. of variation	100.839%
Minimum	0.5
Maximum	140.0
Range	139.5
Stnd. skewness	91.6741
Stnd. kurtosis	437.663

The StatAdvisor

This table shows summary statistics for RESULTS_NA. It includes measures of central tendency, measures of variability, and measures of shape. Of particular interest here are the standardized skewness and standardized kurtosis, which can be used to determine whether the sample comes from a normal distribution. Values of these statistics outside the range of -2 to +2 indicate significant departures from normality, which would tend to invalidate any statistical test regarding the standard deviation. In this case, the standardized skewness value is not within the range expected for data from a normal distribution. The standardized kurtosis value is not within the range expected for data from a normal distribution.



Percentiles for RESULTS_NA

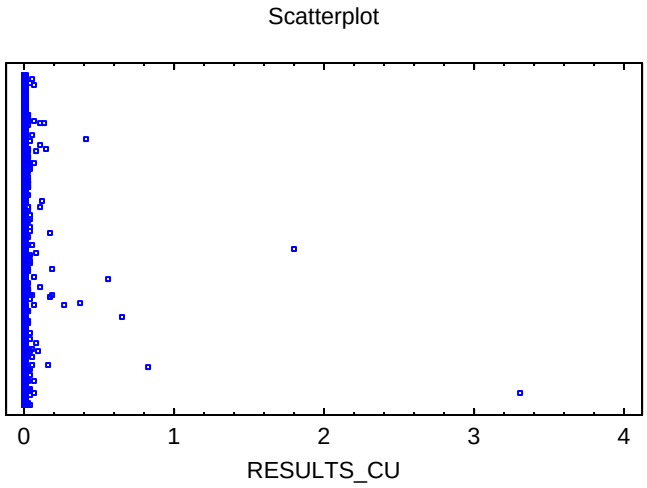
	Percentiles
1.0%	2.0
5.0%	3.0
10.0%	4.0
25.0%	5.0
50.0%	7.0
75.0%	10.0
90.0%	17.0
95.0%	25.0
99.0%	49.0

The StatAdvisor
This pane shows sample percentiles for RESULTS_NA. The percentiles are values below which specific percentages of the data are found. You can see the percentiles graphically by selecting Quantile Plot from the list of Graphical Options.

One-Variable Analysis - RESULTS_CU

Data variable: RESULTS_CU
1794 values ranging from 0.002 to 3.3

The StatAdvisor
This procedure is designed to summarize a single sample of data. It will calculate various statistics and graphs. Also included in the procedure are confidence intervals and hypothesis tests. Use the Tabular Options and Graphical Options buttons on the analysis toolbar to access these different procedures.

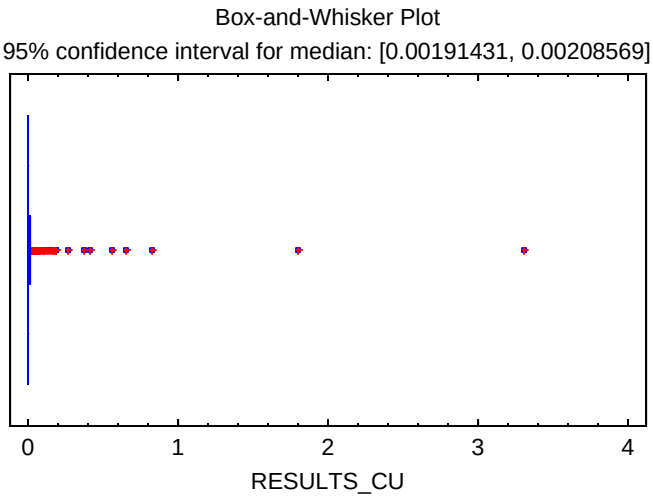


Summary Statistics for RESULTS_CU

Count	1794
Average	0.0105819
Standard deviation	0.0949785
Coeff. of variation	897.553%
Minimum	0.002
Maximum	3.3
Range	3.298
Stnd. skewness	478.519
Stnd. kurtosis	7589.63

The StatAdvisor

This table shows summary statistics for RESULTS_CU. It includes measures of central tendency, measures of variability, and measures of shape. Of particular interest here are the standardized skewness and standardized kurtosis, which can be used to determine whether the sample comes from a normal distribution. Values of these statistics outside the range of -2 to +2 indicate significant departures from normality, which would tend to invalidate any statistical test regarding the standard deviation. In this case, the standardized skewness value is not within the range expected for data from a normal distribution. The standardized kurtosis value is not within the range expected for data from a normal distribution.



Percentiles for RESULTS_CU

	Percentiles
1.0%	0.002
5.0%	0.002
10.0%	0.002
25.0%	0.002
50.0%	0.002
75.0%	0.004
90.0%	0.012
95.0%	0.024
99.0%	0.1

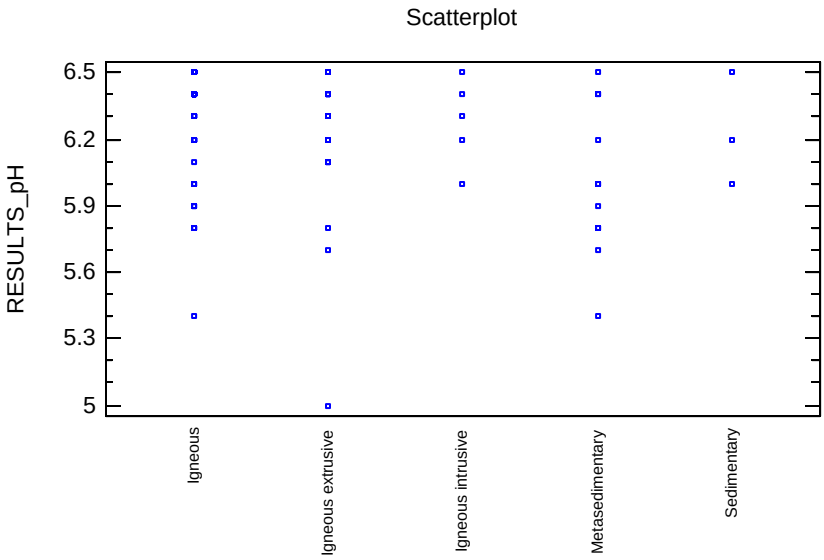
The StatAdvisor
This pane shows sample percentiles for RESULTS_CU. The percentiles are values below which specific percentages of the data are found. You can see the percentiles graphically by selecting Quantile Plot from the list of Graphical Options.

Subset Analysis (RESULTS_pH<=6.5)

Data variable: RESULTS_pH
Code variable: BE_ROCK_CLASS
Selection variable: RESULTS_pH<=6.5

Number of observations: 96
Number of levels: 5

The StatAdvisor
This procedure calculates summary statistics for the values of RESULTS_pH corresponding to each of the 5 levels of BE_ROCK_CLASS. It also creates a variety of plots and allows you to save the calculated statistics. Further analyses can be performed on the data using the Oneway Analysis of Variance procedure under Compare on the main menu.

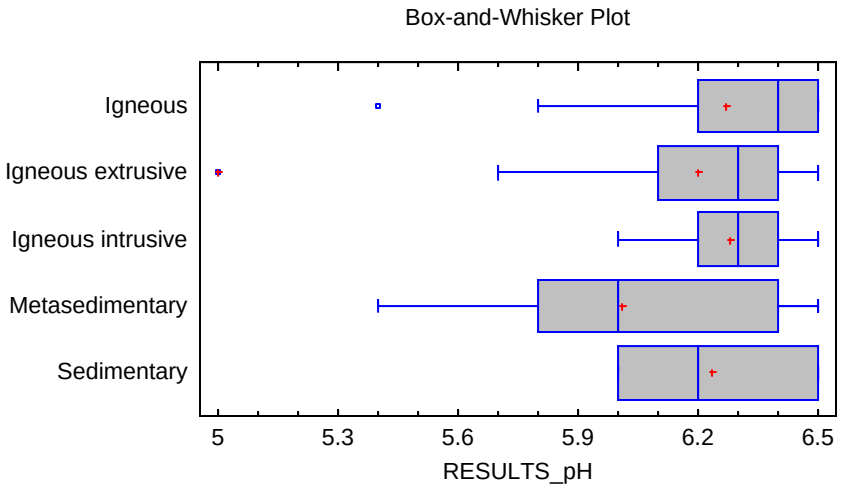


Summary Statistics
Data variable: RESULTS_pH

				Standard	*Coefficient*				*Lower*
BE_ROCK_CLASS	*Count*	*Average*	*Median*	*Deviation*	*of variation*	*Minimum*	*Maximum*	*Range*	*Quartile*
Igneous	55	6.26909	6.4	0.249349	3.97744%	5.4	6.5	1.1	6.2
Igneous extrusive	22	6.2	6.3	0.342261	5.52034%	5.0	6.5	1.5	6.1
Igneous intrusive	5	6.28	6.3	0.192354	3.06296%	6.0	6.5	0.5	6.2
Metasedimentary	11	6.00909	6.0	0.338982	5.64116%	5.4	6.5	1.1	5.8
Sedimentary	3	6.23333	6.2	0.251661	4.03734%	6.0	6.5	0.5	6.0
Total	96	6.22292	6.3	0.288181	4.63096%	5.0	6.5	1.5	6.1

	Upper	*Interquartile*	*Standardized*	*Standardized*
BE_ROCK_CLASS	*Quartile*	*Range*	*Skewness*	*Kurtosis*
Igneous	6.5	0.3	-4.02336	2.35154
Igneous extrusive	6.4	0.3	-4.45803	6.38986
Igneous intrusive	6.4	0.2	-0.538711	-0.0100022
Metasedimentary	6.4	0.6	-0.128931	-0.406635
Sedimentary	6.5	0.5	0.41407	
Total	6.4	0.3	-6.11171	5.95295

The StatAdvisor
This table shows sample statistics for the 5 levels of BE_ROCK_CLASS.

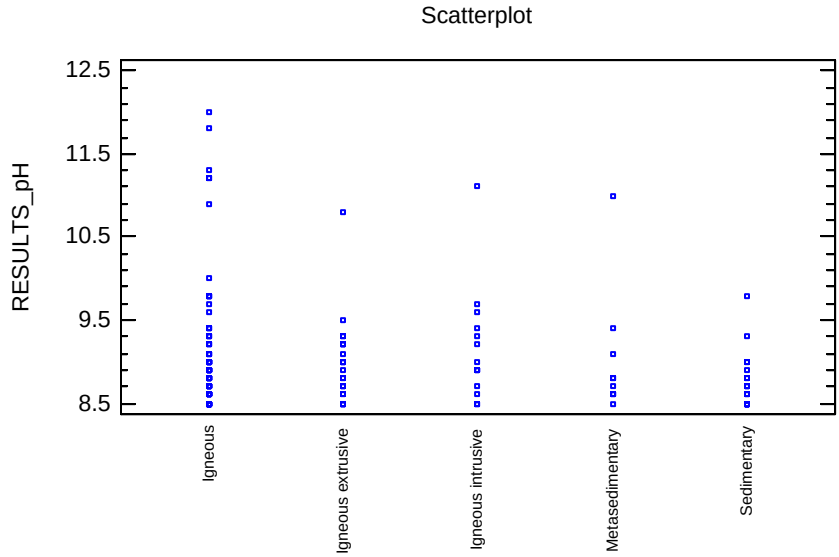


Subset Analysis (RESULTS_pH>=8.5)

Data variable: RESULTS_pH
Code variable: BE_ROCK_CLASS
Selection variable: RESULTS_pH>=8.5

Number of observations: 160
Number of levels: 5

The StatAdvisor
This procedure calculates summary statistics for the values of RESULTS_pH corresponding to each of the 5 levels of BE_ROCK_CLASS. It also creates a variety of plots and allows you to save the calculated statistics. Further analyses can be performed on the data using the Oneway Analysis of Variance procedure under Compare on the main menu.



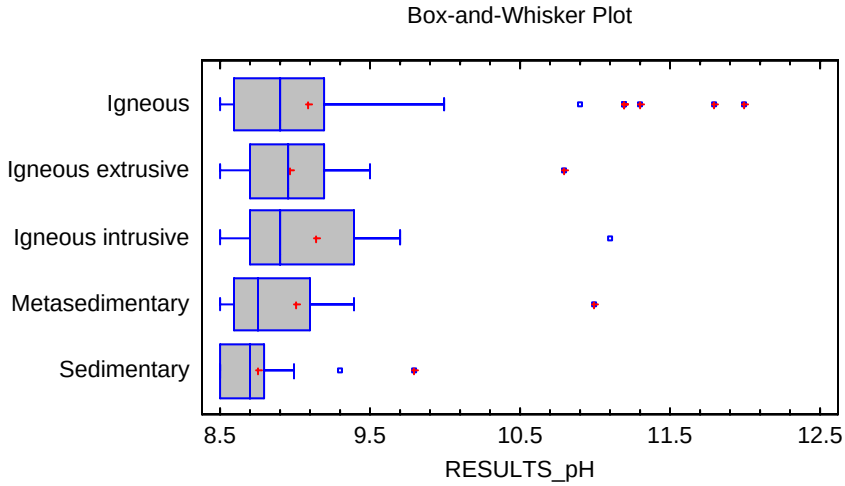
Summary Statistics
Data variable: RESULTS_pH

				Standard	*Coefficient*				*Lower*
BE_ROCK_CLASS	*Count*	*Average*	*Median*	*Deviation*	*of variation*	*Minimum*	*Maximum*	*Range*	*Quartile*

Igneous	86	9.08488	8.9	0.73557	8.09663%	8.5	12.0	3.5	8.6
Igneous extrusive	28	8.96429	8.95	0.458027	5.10946%	8.5	10.8	2.3	8.7
Igneous intrusive	15	9.14667	8.9	0.655599	7.16762%	8.5	11.1	2.6	8.7
Metasedimentary	10	9.01	8.75	0.750481	8.32943%	8.5	11.0	2.5	8.6
Sedimentary	21	8.75714	8.7	0.31713	3.62139%	8.5	9.8	1.3	8.5
Total	160	9.02188	8.8	0.648624	7.18946%	8.5	12.0	3.5	8.6

	Upper	*Interquartile*	*Standardized*	*Standardized*
BE_ROCK_CLASS	*Quartile*	*Range*	*Skewness*	*Kurtosis*
Igneous	9.2	0.6	9.05018	10.908
Igneous extrusive	9.2	0.5	5.26563	9.67766
Igneous intrusive	9.4	0.7	3.1813	4.16492
Metasedimentary	9.1	0.5	3.20396	4.24764
Sedimentary	8.8	0.3	3.92642	4.87027
Total	9.15	0.55	13.0584	18.1031

The StatAdvisor
This table shows sample statistics for the 5 levels of BE_ROCK_CLASS.



Subset Analysis (RESULTS_CL>=250)

Data variable: RESULTS_CL
Code variable: BE_ROCK_CLASS
Selection variable: RESULTS_CL>=250

Number of observations: 1
Number of levels: 1

The StatAdvisor
This procedure calculates summary statistics for the values of RESULTS_CL corresponding to each of the 1 levels of BE_ROCK_CLASS. It also creates a variety of plots and allows you to save the calculated statistics. Further analyses can be performed on the data using the Oneway Analysis of Variance procedure under Compare on the main menu.

Summary Statistics
Data variable: RESULTS_CL

				Standard	*Coefficient*				*Lower*
BE_ROCK_CLASS	*Count*	*Average*	*Median*	*Deviation*	*of variation*	*Minimum*	*Maximum*	*Range*	*Quartile*
Igneous	1	440.0	440.0		%	440.0	440.0	0.0	440.0

Total	1	440.0	440.0		%	440.0	440.0	0.0	440.0

	Upper	*Interquartile*	*Standardized*	*Standardized*
BE_ROCK_CLASS	*Quartile*	*Range*	*Skewness*	*Kurtosis*
Igneous	440.0	0.0		
Total	440.0	0.0		

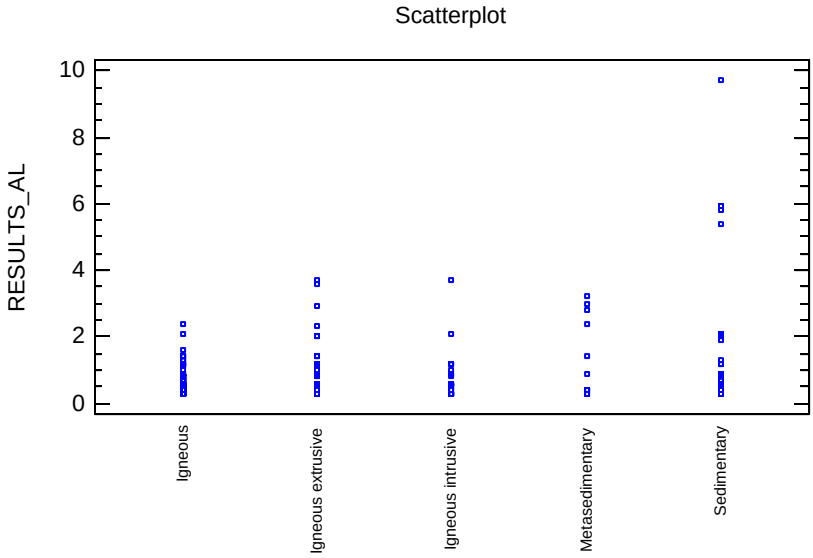
The StatAdvisor
This table shows sample statistics for the 1 levels of BE_ROCK_CLASS.

Subset Analysis (RESULTS_AL>0.2)

Data variable: RESULTS_AL
Code variable: BE_ROCK_CLASS
Selection variable: RESULTS_AL>0.2

Number of observations: 288
Number of levels: 5

The StatAdvisor
This procedure calculates summary statistics for the values of RESULTS_AL corresponding to each of the 5 levels of BE_ROCK_CLASS. It also creates a variety of plots and allows you to save the calculated statistics. Further analyses can be performed on the data using the Oneway Analysis of Variance procedure under Compare on the main menu.



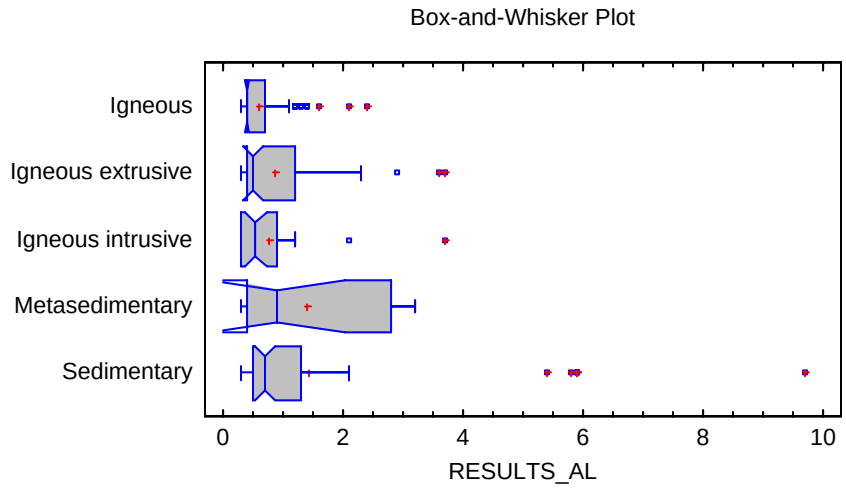
Summary Statistics
Data variable: RESULTS_AL

				Standard	*Coefficient*				*Lower*
BE_ROCK_CLASS	*Count*	*Average*	*Median*	*Deviation*	*of variation*	*Minimum*	*Maximum*	*Range*	*Quartile*
Igneous	147	0.588639	0.4	0.356024	60.4825%	0.3	2.4	2.1	0.4
Igneous extrusive	55	0.861818	0.5	0.786575	91.2693%	0.3	3.7	3.4	0.4
Igneous intrusive	26	0.776923	0.55	0.729004	93.8321%	0.3	3.7	3.4	0.3
Metasedimentary	11	1.40909	0.9	1.20121	85.2473%	0.3	3.2	2.9	0.4
Sedimentary	49	1.42245	0.7	1.89838	133.459%	0.3	9.7	9.4	0.5
Total	288	0.831007	0.5	0.991595	119.325%	0.3	9.7	9.4	0.4

	Upper	*Interquartile*	*Standardized*	*Standardized*
BE_ROCK_CLASS	*Quartile*	*Range*	*Skewness*	*Kurtosis*
Igneous	0.7	0.3	10.8506	15.2056

Igneous extrusive	1.2	0.8	6.54568	7.32682
Igneous intrusive	0.9	0.6	6.17662	10.827
Metasedimentary	2.8	2.4	0.715286	-1.17524
Sedimentary	1.3	0.8	7.8957	11.3831
Total	0.85	0.45	32.4843	102.762

The StatAdvisor
This table shows sample statistics for the 5 levels of BE_ROCK_CLASS.



Subset Analysis (RESULTS_FL>4)

Data variable: RESULTS_FL
Code variable: BE_ROCK_CLASS
Selection variable: RESULTS_FL>4

Number of observations: 3
Number of levels: 2

The StatAdvisor
This procedure calculates summary statistics for the values of RESULTS_FL corresponding to each of the 2 levels of BE_ROCK_CLASS. It also creates a variety of plots and allows you to save the calculated statistics. Further analyses can be performed on the data using the Oneway Analysis of Variance procedure under Compare on the main menu.

Summary Statistics
Data variable: RESULTS_FL

				Standard	*Coefficient*				*Lower*
BE_ROCK_CLASS	*Count*	*Average*	*Median*	*Deviation*	*of variation*	*Minimum*	*Maximum*	*Range*	*Quartile*
Igneous	2	6.7	6.7	2.26274	33.7723%	5.1	8.3	3.2	5.1
Igneous intrusive	1	6.9	6.9		%	6.9	6.9	0.0	6.9
Total	3	6.76667	6.9	1.60416	23.7068%	5.1	8.3	3.2	5.1

	Upper	*Interquartile*	*Standardized*	*Standardized*
BE_ROCK_CLASS	*Quartile*	*Range*	*Skewness*	*Kurtosis*
Igneous	8.3	3.2		
Igneous intrusive	6.9	0.0		
Total	8.3	3.2	-0.26265	

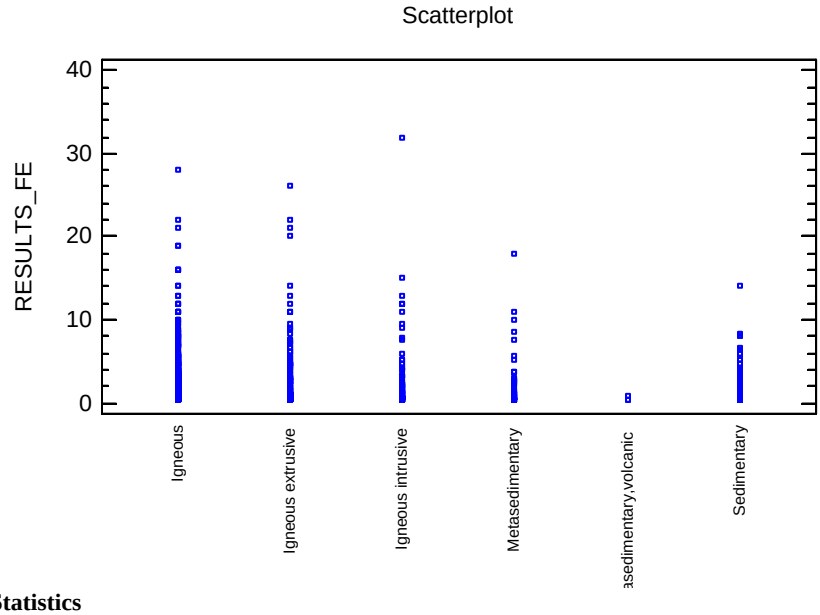
The StatAdvisor
This table shows sample statistics for the 2 levels of BE_ROCK_CLASS.

Subset Analysis (RESULTS_FE>0.3)

Data variable: RESULTS_FE
Code variable: BE_ROCK_CLASS
Selection variable: RESULTS_FE>0.3

Number of observations: 1127
Number of levels: 6

The StatAdvisor
This procedure calculates summary statistics for the values of RESULTS_FE corresponding to each of the 6 levels of BE_ROCK_CLASS. It also creates a variety of plots and allows you to save the calculated statistics. Further analyses can be performed on the data using the Oneway Analysis of Variance procedure under Compare on the main menu.



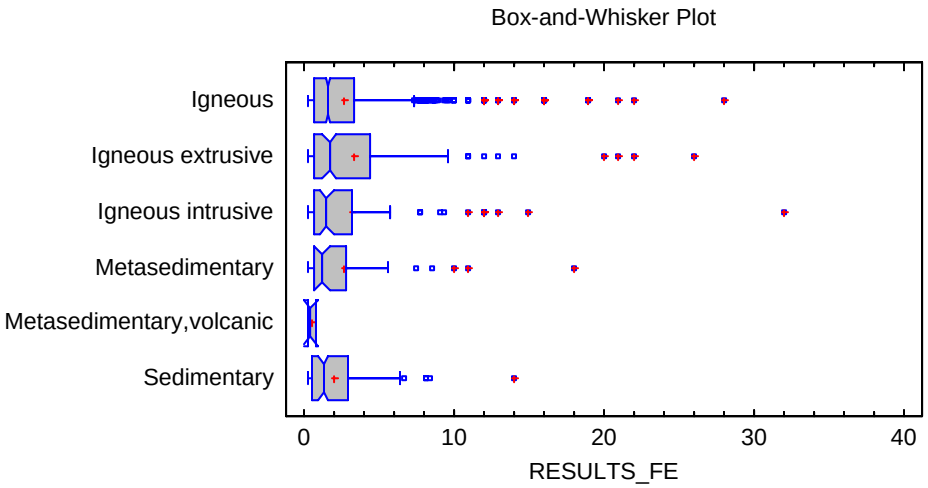
Summary Statistics
Data variable: RESULTS_FE

				Standard	*Coefficient*			
BE_ROCK_CLASS	*Count*	*Average*	*Median*	*Deviation*	*of variation*	*Minimum*	*Maximum*	*Range*
Igneous	726	2.65875	1.6	3.08077	115.873%	0.31	28.0	27.69
Igneous extrusive	160	3.33206	1.7	4.16255	124.924%	0.31	26.0	25.69
Igneous intrusive	78	3.18628	1.55	4.66069	146.273%	0.31	32.0	31.69
Metasedimentary	43	2.71977	1.2	3.52742	129.696%	0.33	18.0	17.67
Metasedimentary,volcanic	3	0.533333	0.45	0.265016	49.6904%	0.32	0.83	0.51
Sedimentary	117	2.05547	1.3	2.16656	105.405%	0.32	14.0	13.68
Total	1127	2.72489	1.5	3.33471	122.38%	0.31	32.0	31.69

	Lower	*Upper*	*Interquartile*	*Standardized*	*Standardized*
BE_ROCK_CLASS	*Quartile*	*Quartile*	*Range*	*Skewness*	*Kurtosis*
Igneous	0.74	3.4	2.66	33.9043	76.6018
Igneous extrusive	0.74	4.45	3.71	14.6721	26.1208
Igneous intrusive	0.7	3.2	2.5	13.4984	34.017
Metasedimentary	0.69	2.8	2.11	7.12275	10.9204
Metasedimentary,volcanic	0.32	0.83	0.51	0.901631	
Sedimentary	0.56	2.9	2.34	10.4894	17.6859
Total	0.72	3.4	2.68	45.3901	110.441

The StatAdvisor

This table shows sample statistics for the 6 levels of BE_ROCK_CLASS.

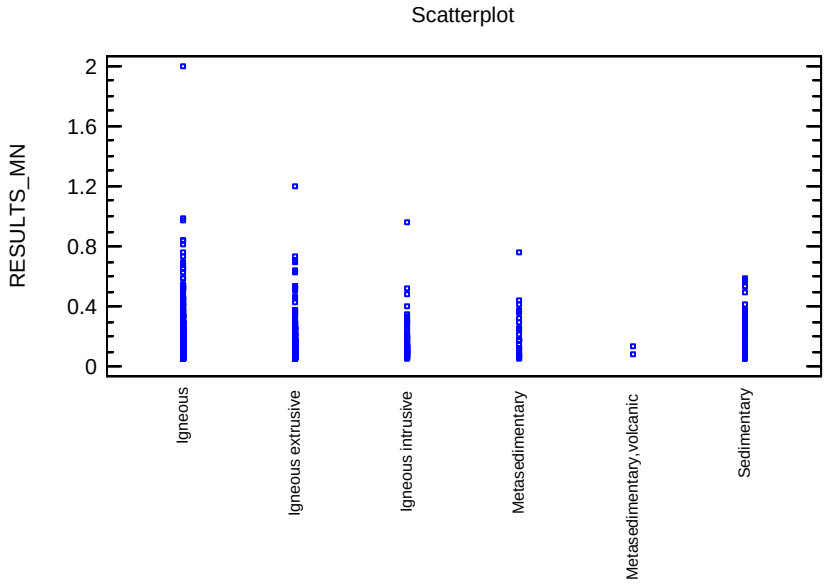


Subset Analysis (RESULTS_MN>0.05)

Data variable: RESULTS_MN
Code variable: BE_ROCK_CLASS
Selection variable: RESULTS_MN>0.05

Number of observations: 1027
Number of levels: 6

The StatAdvisor
This procedure calculates summary statistics for the values of RESULTS_MN corresponding to each of the 6 levels of BE_ROCK_CLASS. It also creates a variety of plots and allows you to save the calculated statistics. Further analyses can be performed on the data using the Oneway Analysis of Variance procedure under Compare on the main menu.

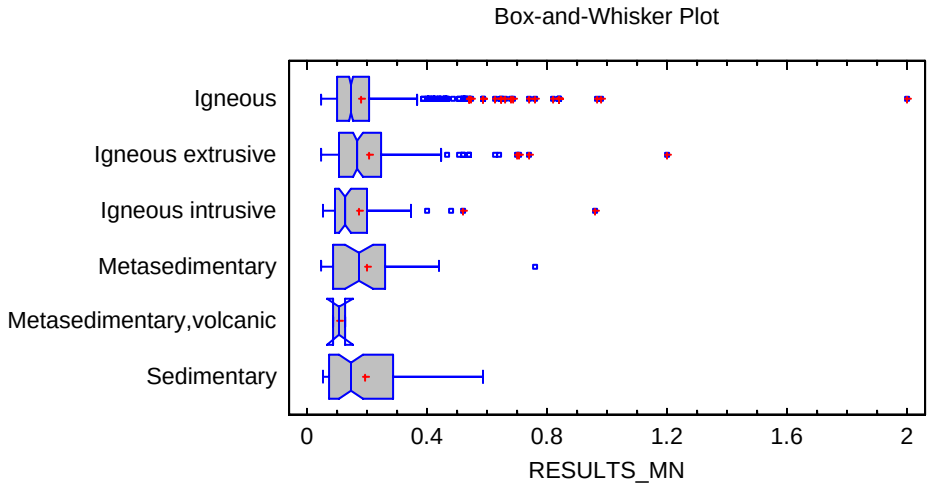


Summary Statistics
Data variable: RESULTS_MN

				Standard	*Coefficient*			
BE_ROCK_CLASS	*Count*	*Average*	*Median*	*Deviation*	*of variation*	*Minimum*	*Maximum*	*Range*
Igneous	724	0.18437	0.15	0.147198	79.8384%	0.051	2.0	1.949
Igneous extrusive	138	0.210935	0.17	0.168346	79.8096%	0.051	1.2	1.149
Igneous intrusive	69	0.173913	0.13	0.138687	79.7452%	0.055	0.96	0.905
Metasedimentary	30	0.203	0.175	0.154128	75.9252%	0.051	0.76	0.709
Metasedimentary,volcanic	2	0.1095	0.1095	0.0289914	26.4761%	0.089	0.13	0.041
Sedimentary	64	0.197563	0.145	0.144616	73.1999%	0.053	0.59	0.537
Total	1027	0.188458	0.15	0.149671	79.4189%	0.051	2.0	1.949

	Lower	*Upper*	*Interquartile*	*Standardized*	*Standardized*
BE_ROCK_CLASS	*Quartile*	*Quartile*	*Range*	*Skewness*	*Kurtosis*
Igneous	0.1	0.21	0.11	47.4232	199.521
Igneous extrusive	0.11	0.25	0.14	12.1055	22.1935
Igneous intrusive	0.095	0.2	0.105	10.9252	25.096
Metasedimentary	0.086	0.26	0.174	4.16696	5.22286
Metasedimentary,volcanic	0.089	0.13	0.041		
Sedimentary	0.077	0.285	0.208	3.71552	0.937836
Total	0.1	0.22	0.12	47.993	173.791

The StatAdvisor
This table shows sample statistics for the 6 levels of BE_ROCK_CLASS.

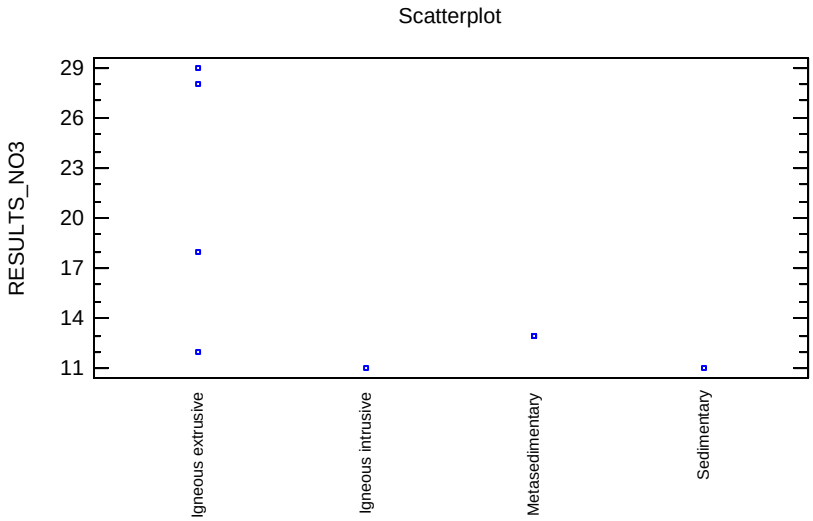


Subset Analysis (RESULTS_NO3>10)

Data variable: RESULTS_NO3
Code variable: BE_ROCK_CLASS
Selection variable: RESULTS_NO3>10

Number of observations: 8
Number of levels: 4

The StatAdvisor
This procedure calculates summary statistics for the values of RESULTS_NO3 corresponding to each of the 4 levels of BE_ROCK_CLASS. It also creates a variety of plots and allows you to save the calculated statistics. Further analyses can be performed on the data using the Oneway Analysis of Variance procedure under Compare on the main menu.



Summary Statistics
Data variable: RESULTS_NO3

				Standard	*Coefficient*				*Lower*
BE_ROCK_CLASS	*Count*	*Average*	*Median*	*Deviation*	*of variation*	*Minimum*	*Maximum*	*Range*	*Quartile*
Igneous extrusive	4	21.75	23.0	8.18026	37.6104%	12.0	29.0	17.0	15.0
Igneous intrusive	1	11.0	11.0		%	11.0	11.0	0.0	11.0
Metasedimentary	2	13.0	13.0	0.0	0.0%	13.0	13.0	0.0	13.0
Sedimentary	1	11.0	11.0		%	11.0	11.0	0.0	11.0
Total	8	16.875	13.0	7.51071	44.5079%	11.0	29.0	18.0	11.5

	Upper	*Interquartile*	*Standardized*	*Standardized*
BE_ROCK_CLASS	*Quartile*	*Range*	*Skewness*	*Kurtosis*
Igneous extrusive	28.5	13.5	-0.352391	-1.40158
Igneous intrusive	11.0	0.0		
Metasedimentary	13.0	0.0		
Sedimentary	11.0	0.0		
Total	23.0	11.5	1.30979	-0.32017

The StatAdvisor
This table shows sample statistics for the 4 levels of BE_ROCK_CLASS.

Subset Analysis (RESULTS_SO3>250)

Data variable: RESULTS_SO3
Code variable: BE_ROCK_CLASS
Selection variable: RESULTS_SO3>250

Number of observations: 4
Number of levels: 2

The StatAdvisor
This procedure calculates summary statistics for the values of RESULTS_SO3 corresponding to each of the 2 levels of BE_ROCK_CLASS. It also creates a variety of plots and allows you to save the calculated statistics. Further analyses can be performed on the data using the Oneway Analysis of Variance procedure under Compare on the main menu.

Summary Statistics
Data variable: RESULTS_SO3

				Standard	*Coefficient*				*Lower*

BE_ROCK_CLASS	*Count*	*Average*	*Median*	*Deviation*	*of variation*	*Minimum*	*Maximum*	*Range*	*Quartile*
Igneous	1	260.0	260.0		%	260.0	260.0	0.0	260.0
Sedimentary	3	513.333	470.0	130.512	25.4244%	410.0	660.0	250.0	410.0
Total	4	450.0	440.0	165.529	36.7843%	260.0	660.0	400.0	335.0

	Upper	*Interquartile*	*Standardized*	*Standardized*
BE_ROCK_CLASS	*Quartile*	*Range*	*Skewness*	*Kurtosis*
Igneous	260.0	0.0		
Sedimentary	660.0	250.0	0.940031	
Total	565.0	230.0	0.281556	0.38094

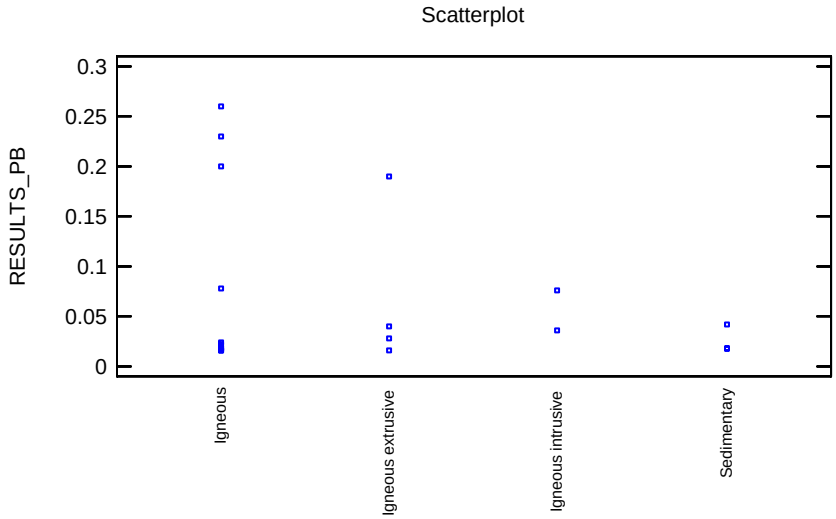
The StatAdvisor
This table shows sample statistics for the 2 levels of BE_ROCK_CLASS.

Subset Analysis (RESULTS_PB>0.015)

Data variable: RESULTS_PB
Code variable: BE_ROCK_CLASS
Selection variable: RESULTS_PB>0.015

Number of observations: 19
Number of levels: 4

The StatAdvisor
This procedure calculates summary statistics for the values of RESULTS_PB corresponding to each of the 4 levels of BE_ROCK_CLASS. It also creates a variety of plots and allows you to save the calculated statistics. Further analyses can be performed on the data using the Oneway Analysis of Variance procedure under Compare on the main menu.



Summary Statistics
Data variable: RESULTS_PB

				Standard	*Coefficient*				*Lower*
BE_ROCK_CLASS	*Count*	*Average*	*Median*	*Deviation*	*of variation*	*Minimum*	*Maximum*	*Range*	*Quartile*
Igneous	10	0.0887	0.024	0.100249	113.02%	0.016	0.26	0.244	0.018
Igneous extrusive	4	0.0685	0.034	0.0815904	119.11%	0.016	0.19	0.174	0.022
Igneous intrusive	2	0.056	0.056	0.0282843	50.5076%	0.036	0.076	0.04	0.036
Sedimentary	3	0.0266667	0.019	0.0141539	53.0772%	0.018	0.043	0.025	0.018
Total	19	0.0712105	0.028	0.0820309	115.195%	0.016	0.26	0.244	0.018

	Upper	*Interquartile*	*Standardized*	*Standardized*
BE_ROCK_CLASS	*Quartile*	*Range*	*Skewness*	*Kurtosis*
Igneous	0.2	0.182	1.28829	-0.637243
Igneous extrusive	0.115	0.093	1.56273	1.51673
Igneous intrusive	0.076	0.04		
Sedimentary	0.043	0.025	1.21787	
Total	0.079	0.061	2.61738	0.564582

The StatAdvisor
This table shows sample statistics for the 4 levels of BE_ROCK_CLASS.

Subset Analysis (RESULTS_TDS>500)

Data variable: RESULTS_TDS
Code variable: BE_ROCK_CLASS
Selection variable: RESULTS_TDS>500

Number of observations: 6
Number of levels: 2

The StatAdvisor
This procedure calculates summary statistics for the values of RESULTS_TDS corresponding to each of the 2 levels of BE_ROCK_CLASS. It also creates a variety of plots and allows you to save the calculated statistics. Further analyses can be performed on the data using the Oneway Analysis of Variance procedure under Compare on the main menu.

Summary Statistics
Data variable: RESULTS_TDS

				Standard	*Coefficient*				*Lower*
BE_ROCK_CLASS	*Count*	*Average*	*Median*	*Deviation*	*of variation*	*Minimum*	*Maximum*	*Range*	*Quartile*
Igneous	3	1073.33	850.0	457.857	42.6575%	770.0	1600.0	830.0	770.0
Sedimentary	3	843.333	750.0	225.019	26.682%	680.0	1100.0	420.0	680.0
Total	6	958.333	810.0	346.376	36.1436%	680.0	1600.0	920.0	750.0

	Upper	*Interquartile*	*Standardized*	*Standardized*
BE_ROCK_CLASS	*Quartile*	*Range*	*Skewness*	*Kurtosis*
Igneous	1600.0	830.0	1.18281	
Sedimentary	1100.0	420.0	1.09276	
Total	1100.0	350.0	1.64943	1.23251

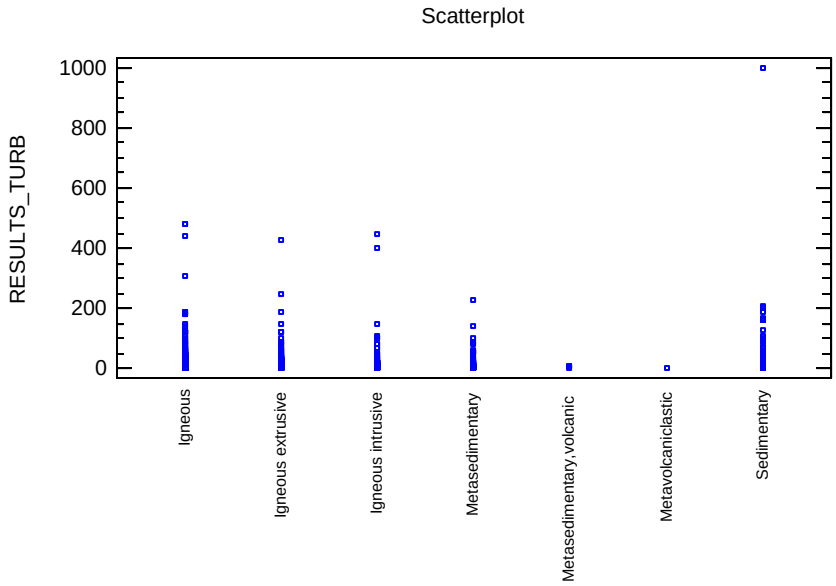
The StatAdvisor
This table shows sample statistics for the 2 levels of BE_ROCK_CLASS.

Subset Analysis (RESULTS_TURB>1)

Data variable: RESULTS_TURB
Code variable: BE_ROCK_CLASS
Selection variable: RESULTS_TURB>1

Number of observations: 1480
Number of levels: 7

The StatAdvisor
This procedure calculates summary statistics for the values of RESULTS_TURB corresponding to each of the 7 levels of BE_ROCK_CLASS. It also creates a variety of plots and allows you to save the calculated statistics. Further analyses can be performed on the data using the Oneway Analysis of Variance procedure under Compare on the main menu.

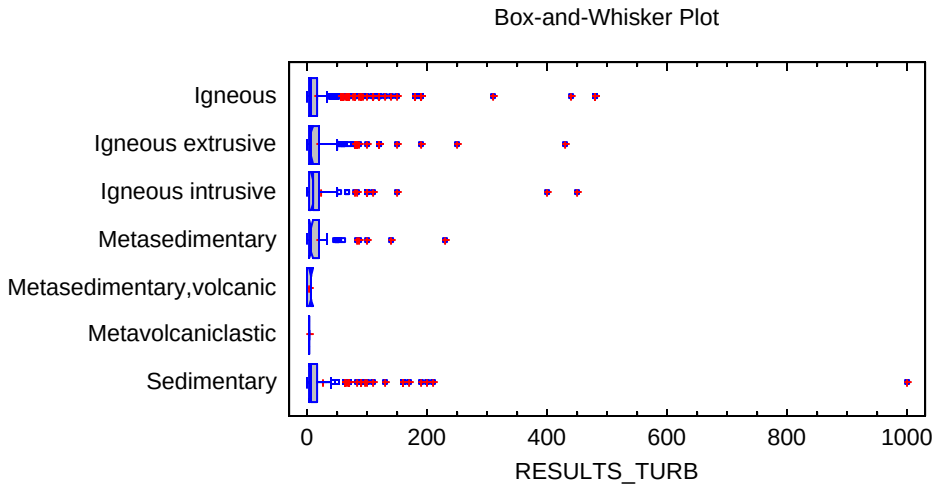


Summary Statistics
Data variable: RESULTS_TURB

				Standard	*Coefficient*				*Lower*
BE_ROCK_CLASS	*Count*	*Average*	*Median*	*Deviation*	*of variation*	*Minimum*	*Maximum*	*Range*	*Quartile*
Igneous	893	17.104	7.0	36.3334	212.426%	1.1	480.0	478.9	3.3
Igneous extrusive	250	20.0388	7.95	38.8412	193.83%	1.1	430.0	428.9	3.1
Igneous intrusive	110	25.4982	9.45	60.2465	236.277%	1.1	450.0	448.9	4.0
Metasedimentary	66	21.4788	7.3	37.0078	172.299%	1.2	230.0	228.8	3.4
Metasedimentary,volcanic	3	5.06667	6.5	2.48261	48.9988%	2.2	6.5	4.3	2.2
Metavolcaniclastic	1	5.0	5.0		%	5.0	5.0	0.0	5.0
Sedimentary	157	28.4949	6.2	87.6896	307.738%	1.1	1000.0	998.9	2.5
Total	1480	19.5945	7.1	46.9514	239.615%	1.1	1000.0	998.9	3.2

	Upper	*Interquartile*	*Standardized*	*Standardized*
BE_ROCK_CLASS	*Quartile*	*Range*	*Skewness*	*Kurtosis*
Igneous	16.0	12.7	96.7583	520.486
Igneous extrusive	22.0	18.9	41.1537	179.999
Igneous intrusive	22.0	18.0	24.2111	76.1517
Metasedimentary	20.0	16.6	12.1301	27.1202
Metasedimentary,volcanic	6.5	4.3	-1.22474	
Metavolcaniclastic	5.0	0.0		
Sedimentary	18.0	15.5	46.3656	250.0
Total	18.0	14.8	158.986	1240.82

The StatAdvisor
This table shows sample statistics for the 7 levels of BE_ROCK_CLASS.



Subset Analysis (RESULTS_CU>1.3)

Data variable: RESULTS_CU
Code variable: BE_ROCK_CLASS
Selection variable: RESULTS_CU>1.3

Number of observations: 2
Number of levels: 2

The StatAdvisor
This procedure calculates summary statistics for the values of RESULTS_CU corresponding to each of the 2 levels of BE_ROCK_CLASS. It also creates a variety of plots and allows you to save the calculated statistics. Further analyses can be performed on the data using the Oneway Analysis of Variance procedure under Compare on the main menu.

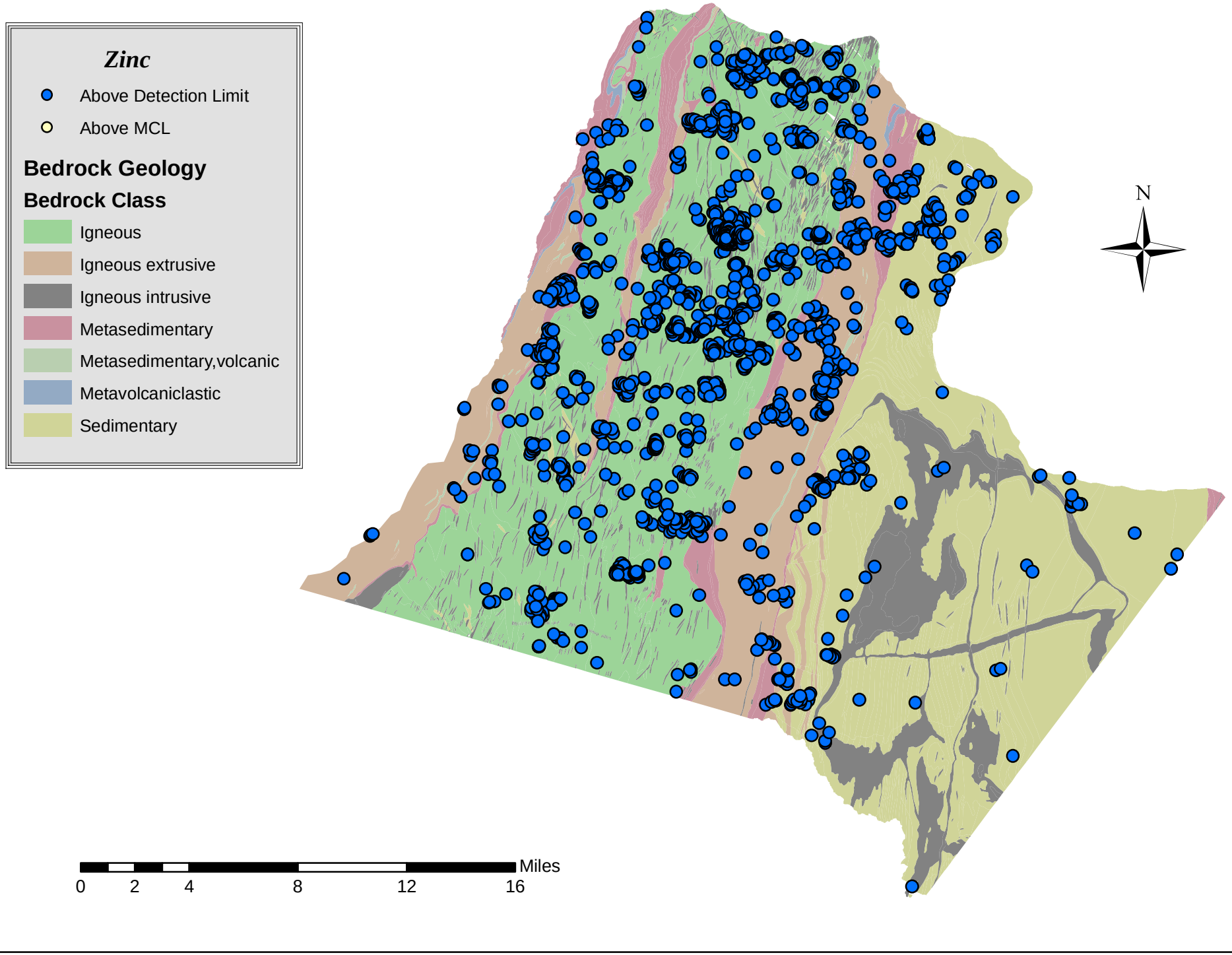
Summary Statistics
Data variable: RESULTS_CU

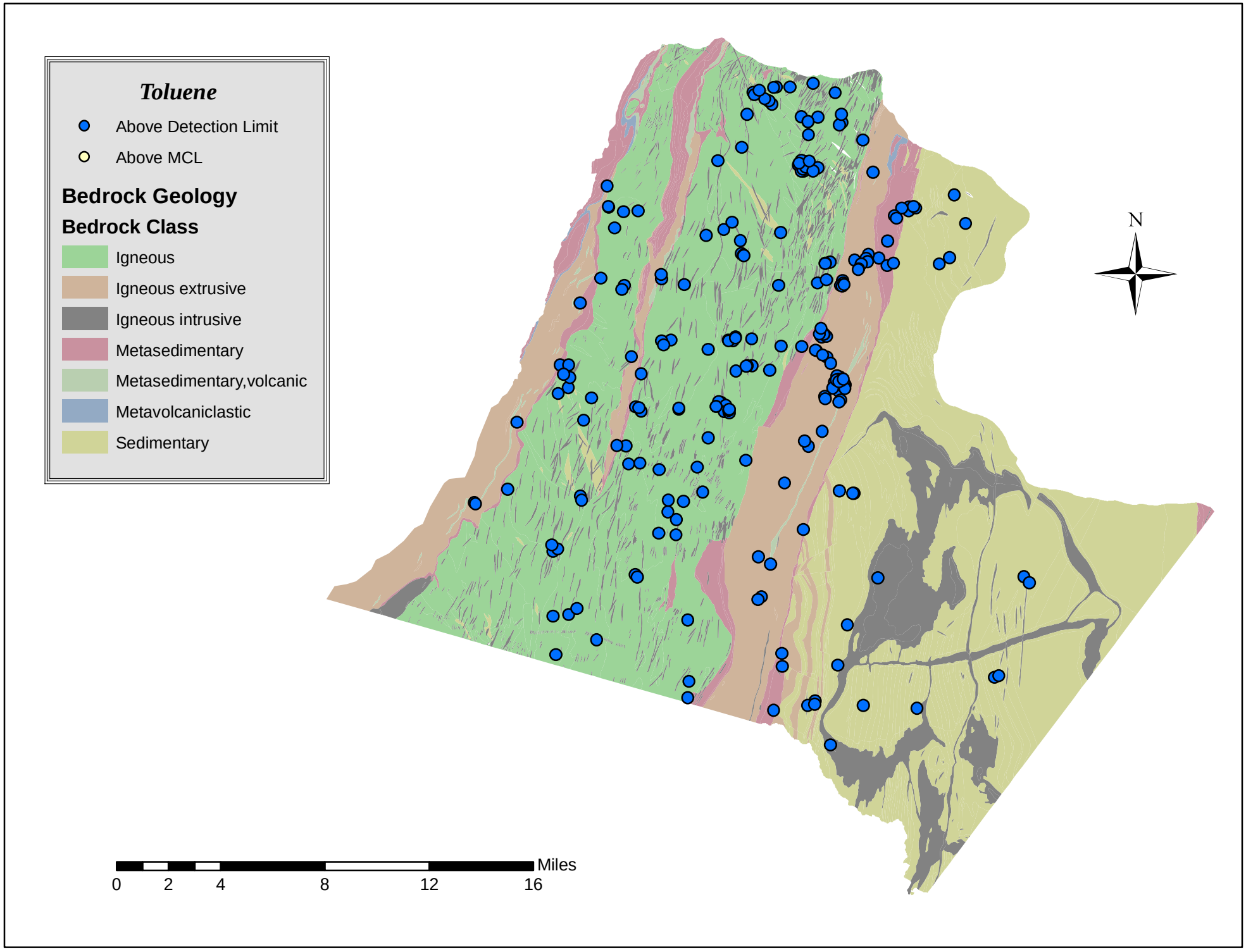
				Standard	*Coefficient*				*Lower*
BE_ROCK_CLASS	*Count*	*Average*	*Median*	*Deviation*	*of variation*	*Minimum*	*Maximum*	*Range*	*Quartile*
Igneous	1	3.3	3.3		%	3.3	3.3	0.0	3.3
Igneous extrusive	1	1.8	1.8		%	1.8	1.8	0.0	1.8
Total	2	2.55	2.55	1.06066	41.5945%	1.8	3.3	1.5	1.8

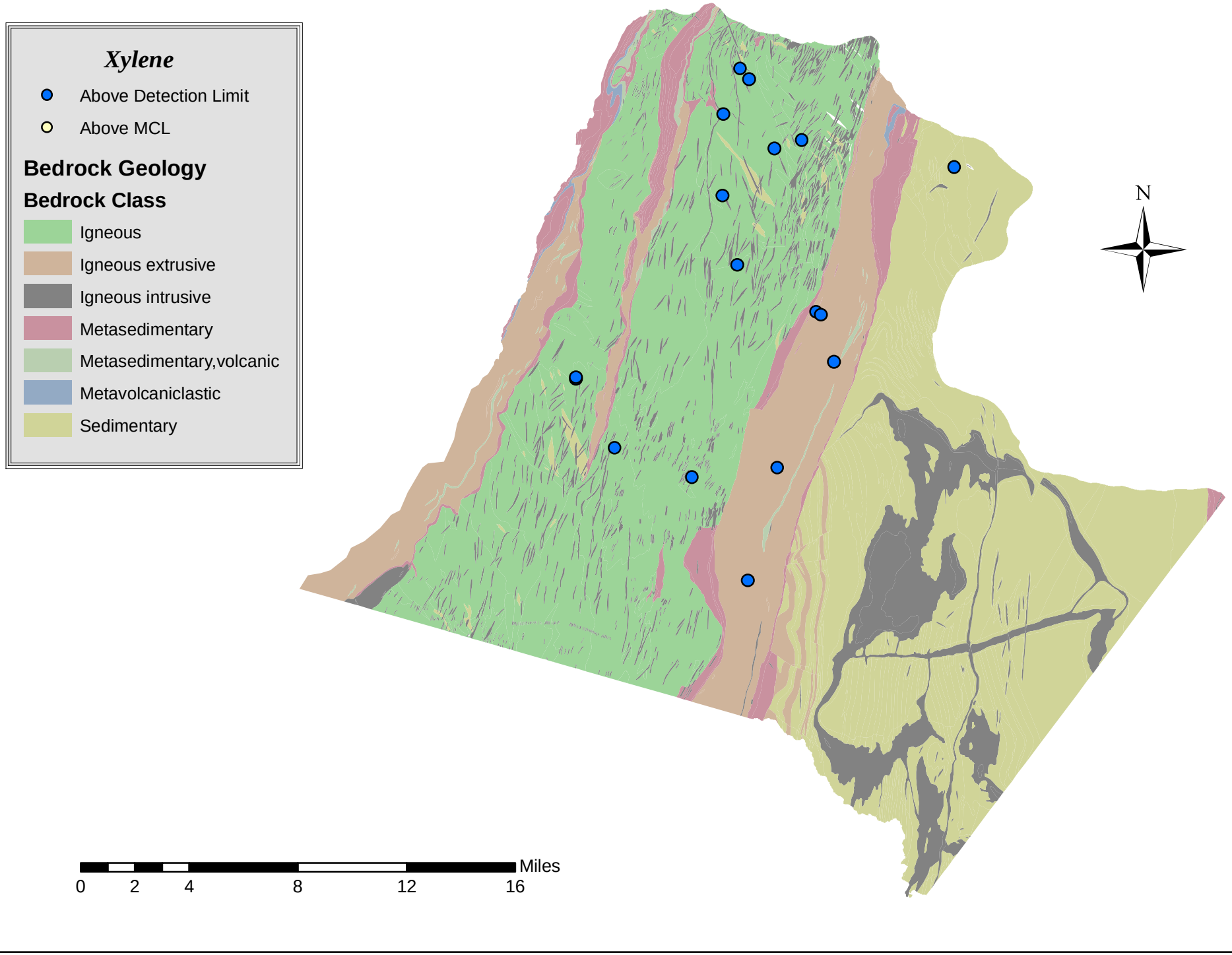
	Upper	*Interquartile*	*Standardized*	*Standardized*
BE_ROCK_CLASS	*Quartile*	*Range*	*Skewness*	*Kurtosis*
Igneous	3.3	0.0		
Igneous extrusive	1.8	0.0		
Total	3.3	1.5		

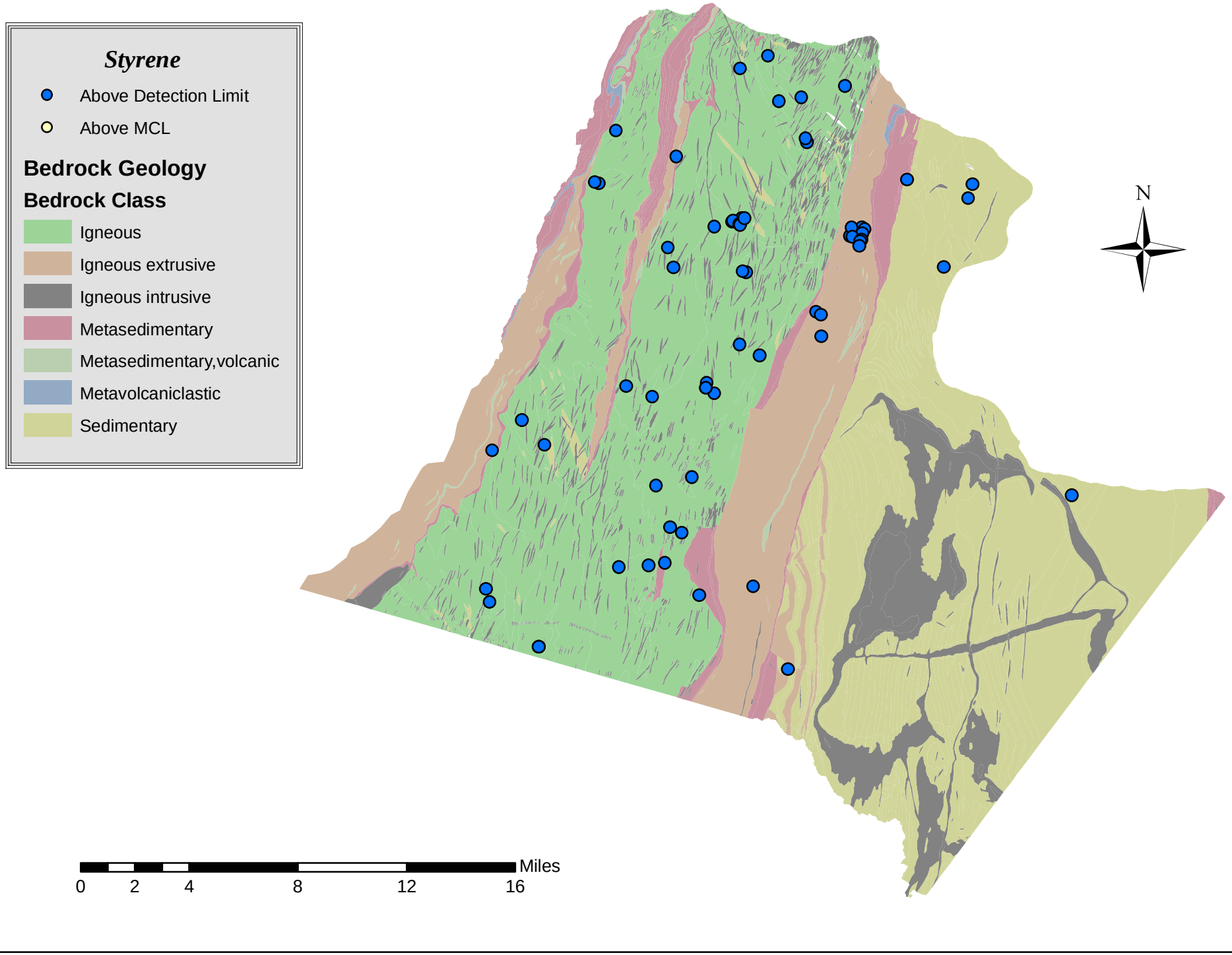
The StatAdvisor
This table shows sample statistics for the 2 levels of BE_ROCK_CLASS.

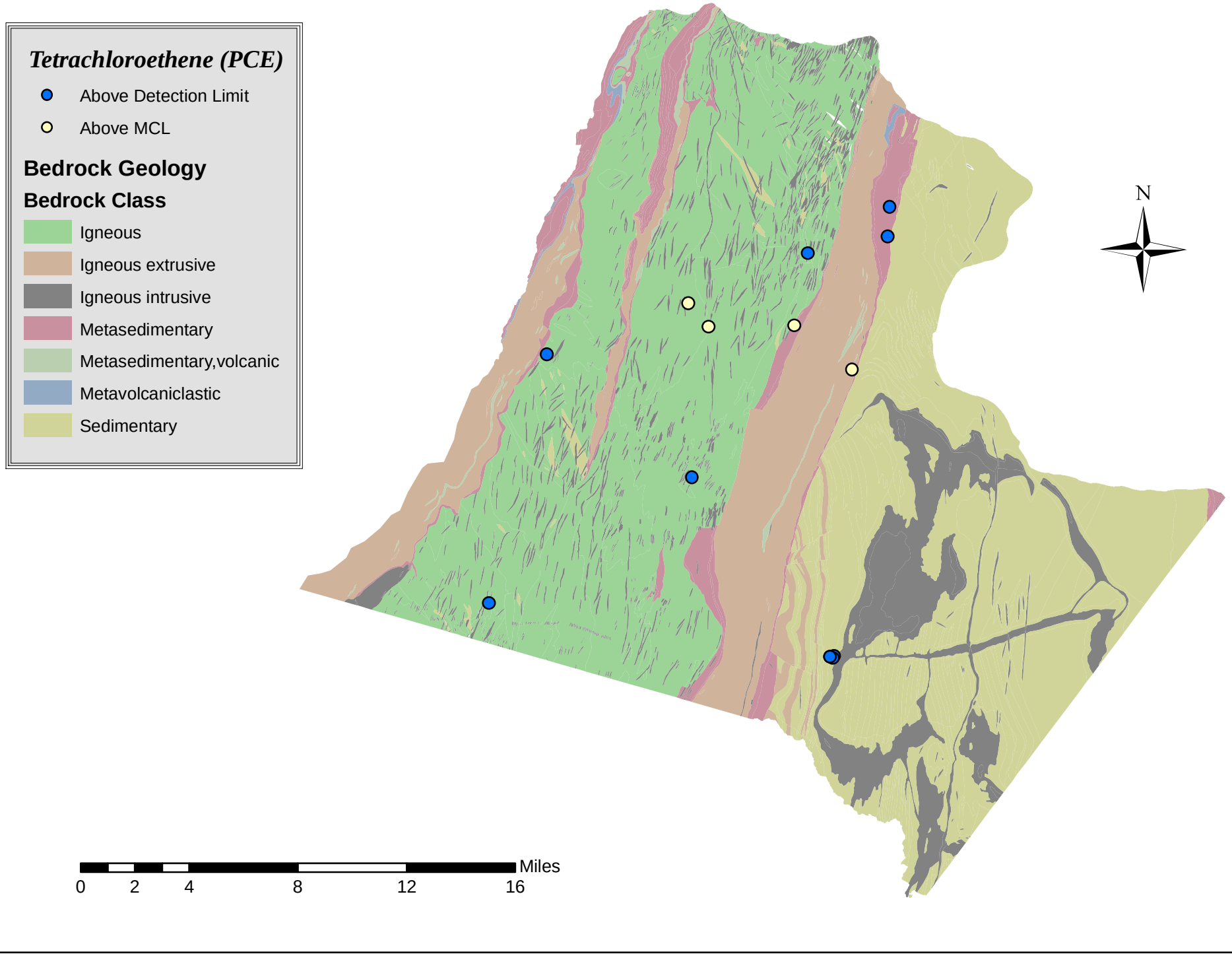
Section C) GIS maps showing spatial distribution of various analytes showing sites with results above detection limits and sites with results above EPA MCLs or SMCLs.

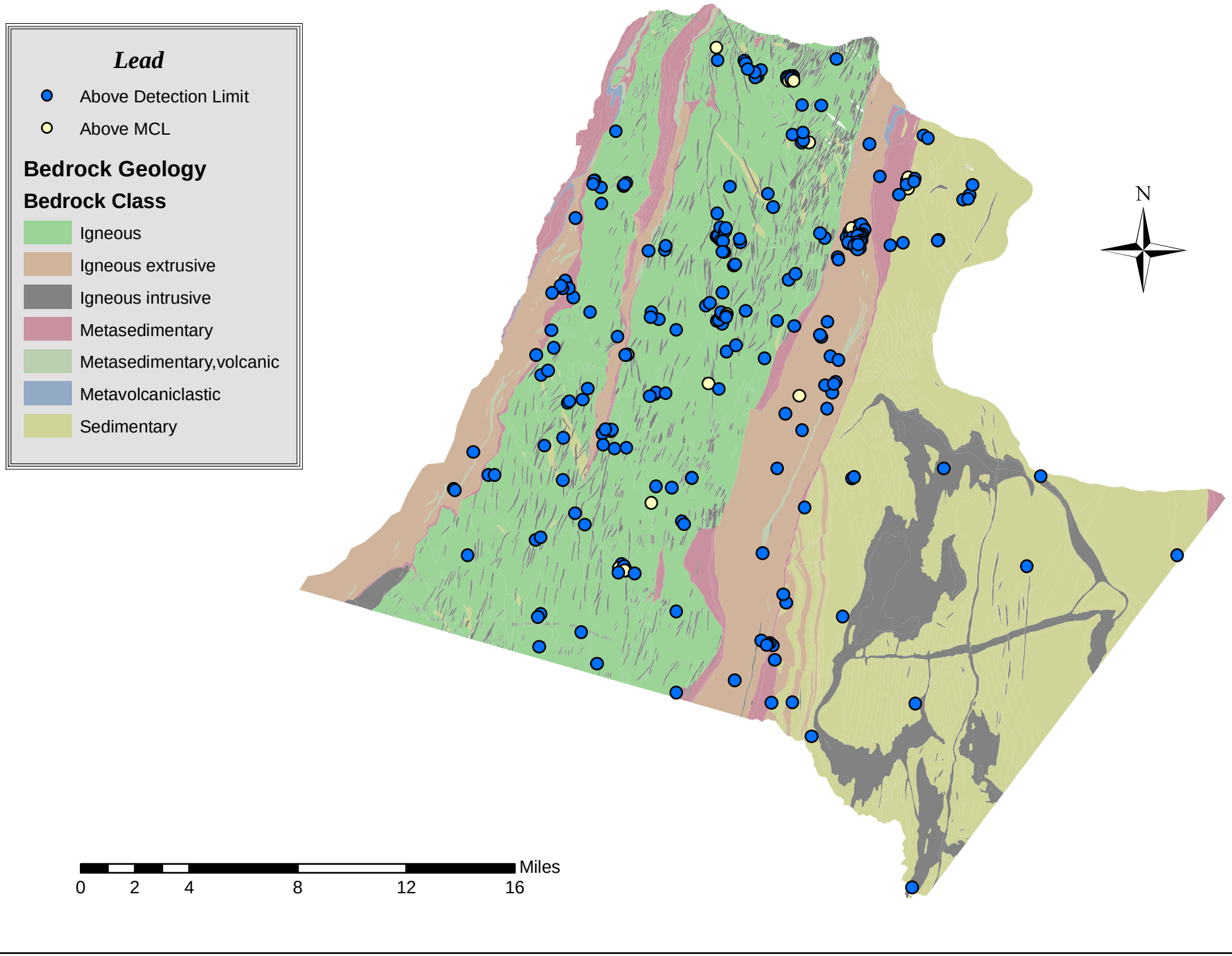

Zinc
Above Detection Limit
Above MCL
Bedrock Geology
Bedrock Class
Igneous
Igneous extrusive
Igneous intrusive
Metasedimentary
Metasedimentary,volcanic
Metavolcaniclastic
Sedimentary
N
0
2
4
8
12
16
Miles

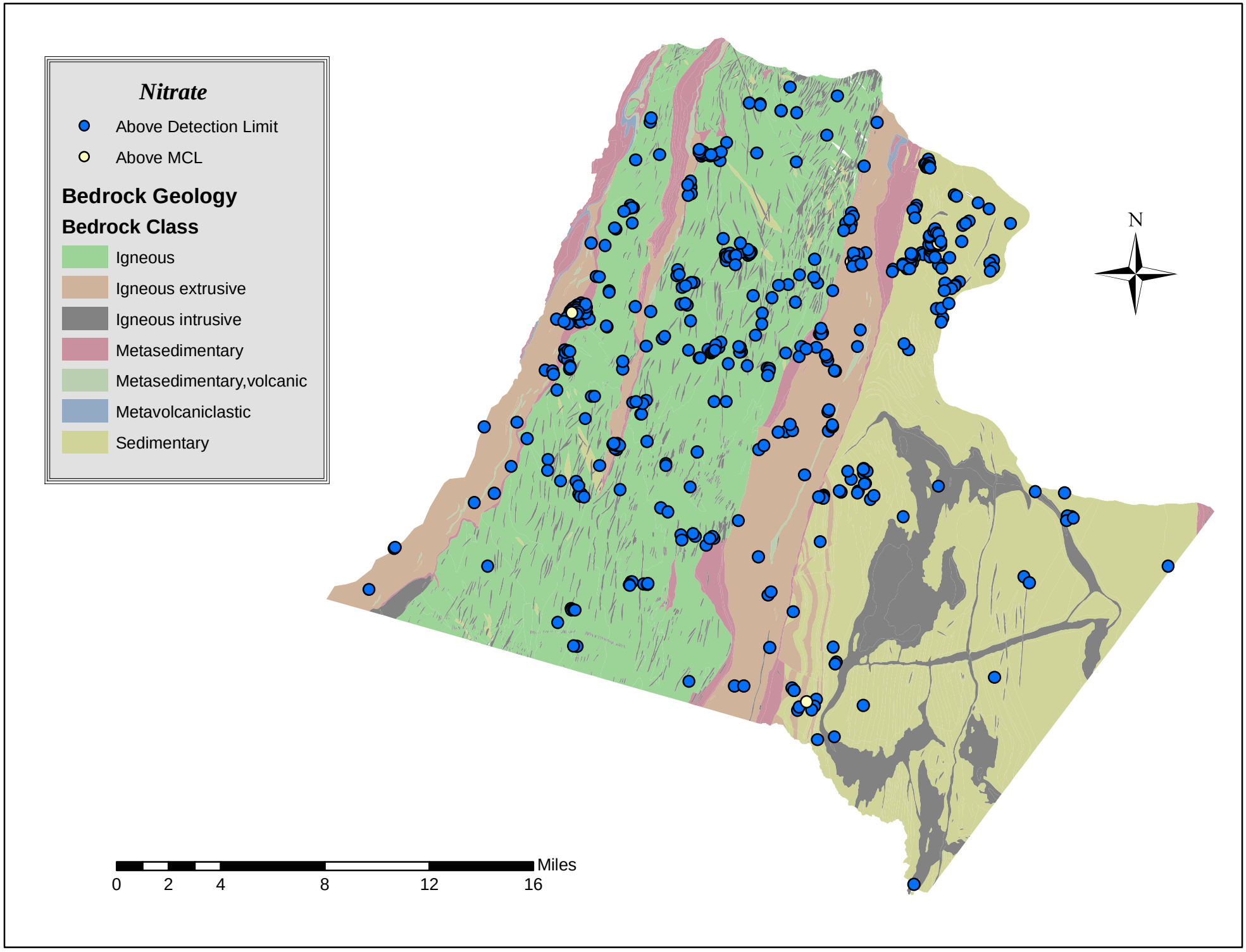

Toluene
Above Detection Limit
Above MCL
Bedrock Geology
Bedrock Class
Igneous
Igneous extrusive
Igneous intrusive
Metasedimentary
Metasedimentary,volcanic
Metavolcaniclastic
Sedimentary
N
0
2
4
8
12
16
Miles

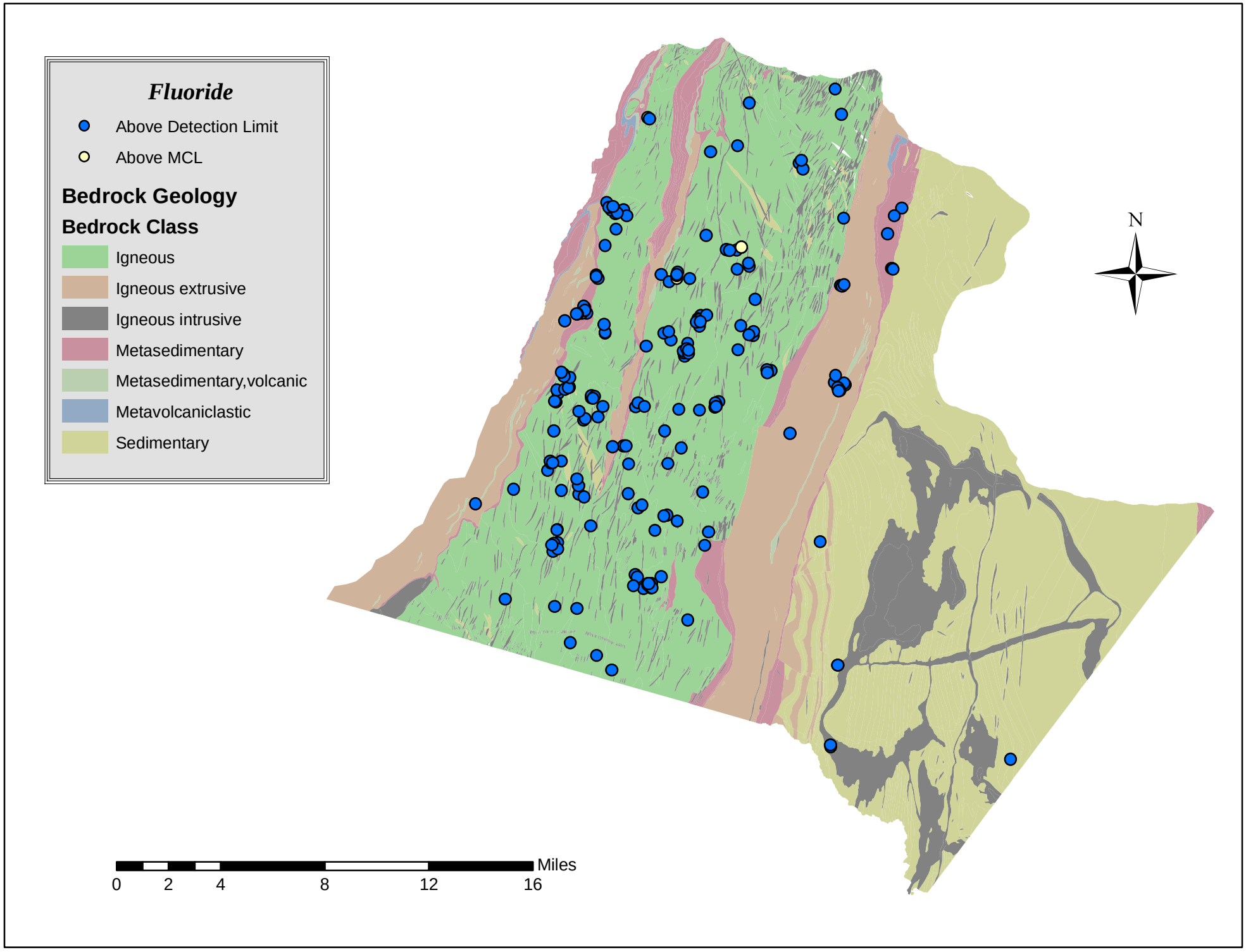

Xylene
Above Detection Limit
Above MCL
Bedrock Geology
Bedrock Class
Igneous
Igneous extrusive
Igneous intrusive
Metasedimentary
Metasedimentary,volcanic
Metavolcaniclastic
Sedimentary
N
0
2
4
8
12
16
Miles

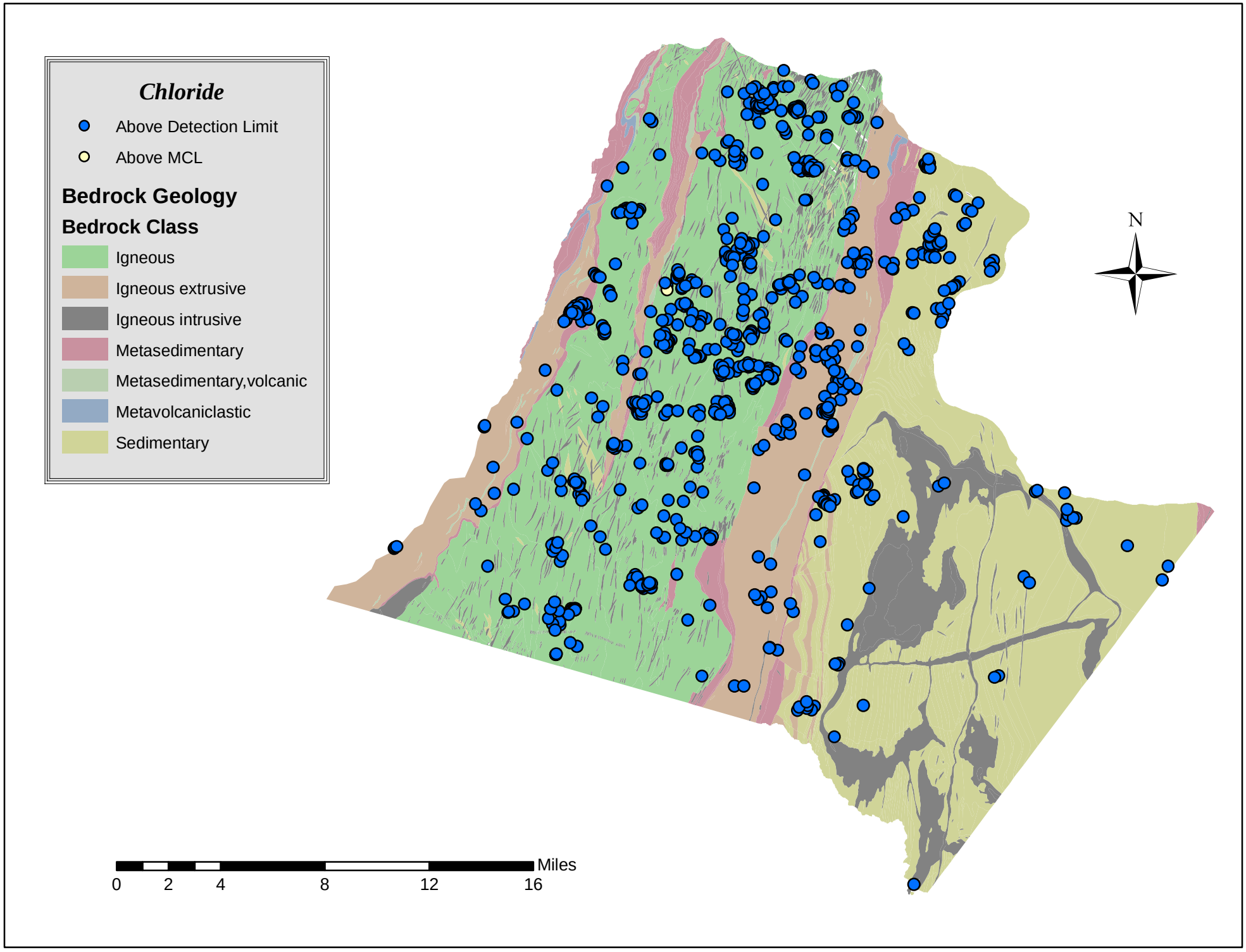

Styrene
Above Detection Limit
Above MCL
Bedrock Geology
Bedrock Class
Igneous
Igneous extrusive
Igneous intrusive
Metasedimentary
Metasedimentary,volcanic
Metavolcaniclastic
Sedimentary
N
0
2
4
8
12
16
Miles

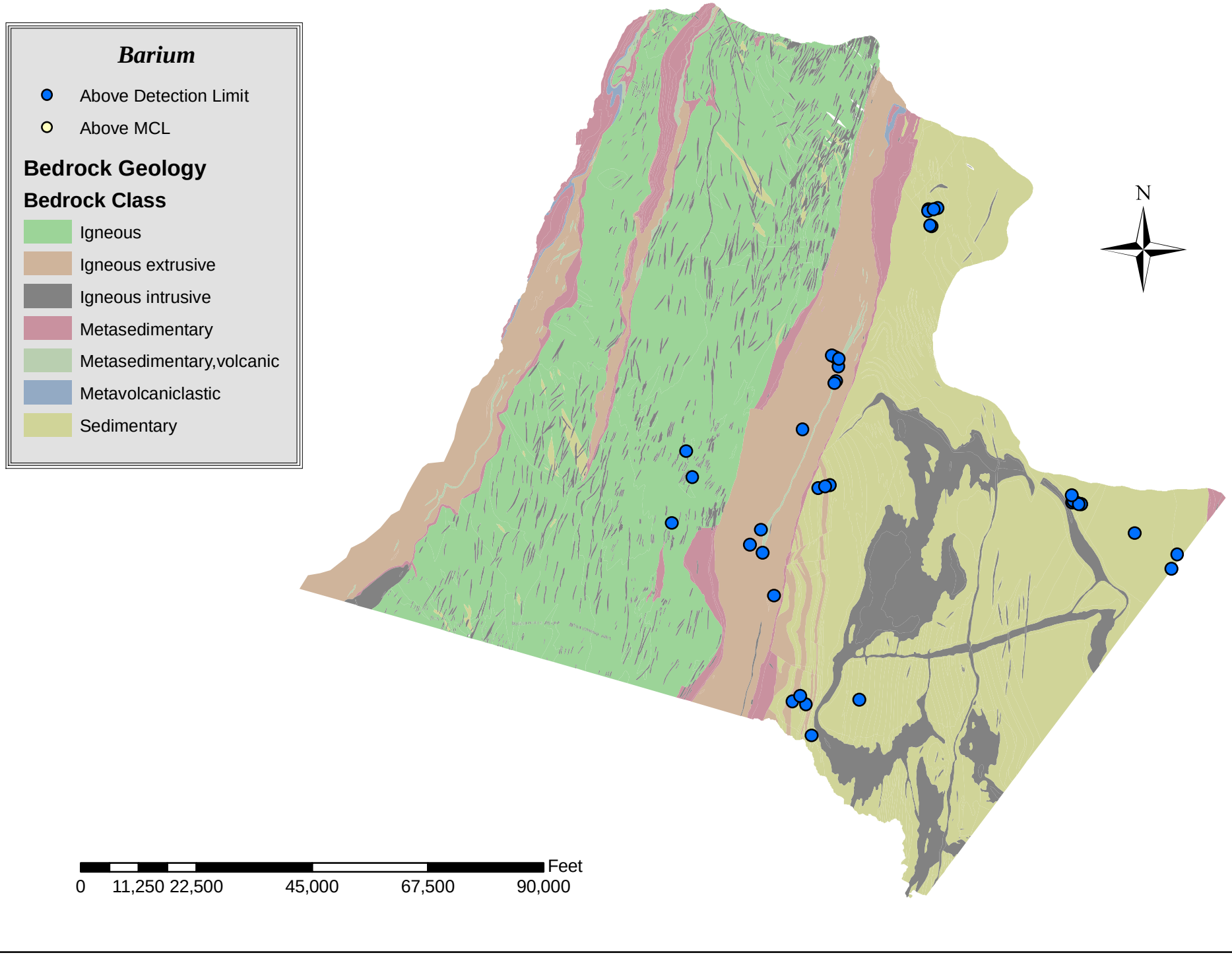

Tetrachloroethene (PCE)
Above Detection Limit
Above MCL
Bedrock Geology
Bedrock Class
Igneous
Igneous extrusive
Igneous intrusive
Metasedimentary
Metasedimentary,volcanic
Metavolcaniclastic
Sedimentary
N
Miles
0
2
4
8
12
16

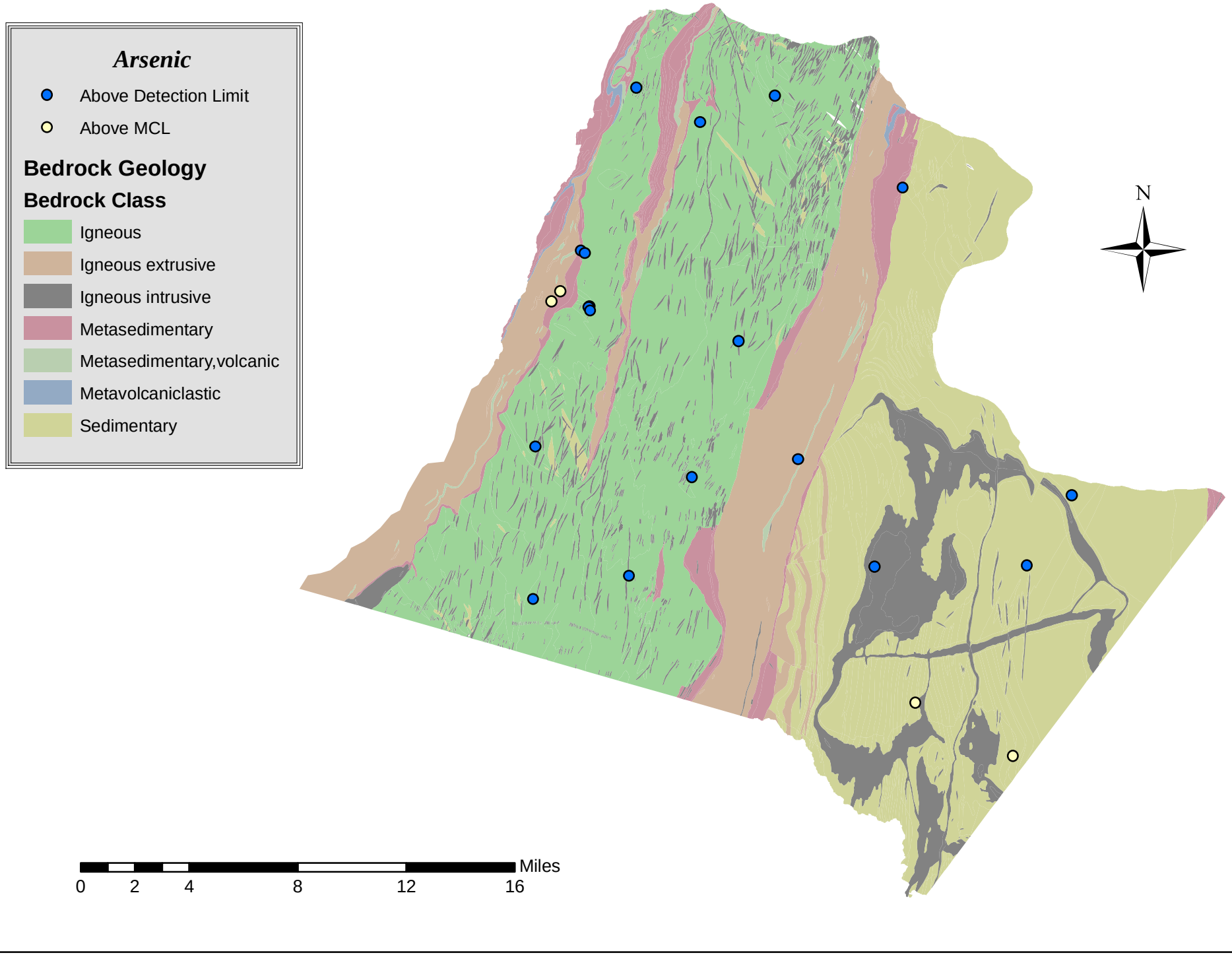

Lead
Above Detection Limit
Above MCL
Bedrock Geology
Bedrock Class
Igneous
Igneous extrusive
Igneous intrusive
Metasedimentary
Metasedimentary,volcanic
Metavolcaniclastic
Sedimentary
N
Miles
0
2
4
8
12
16

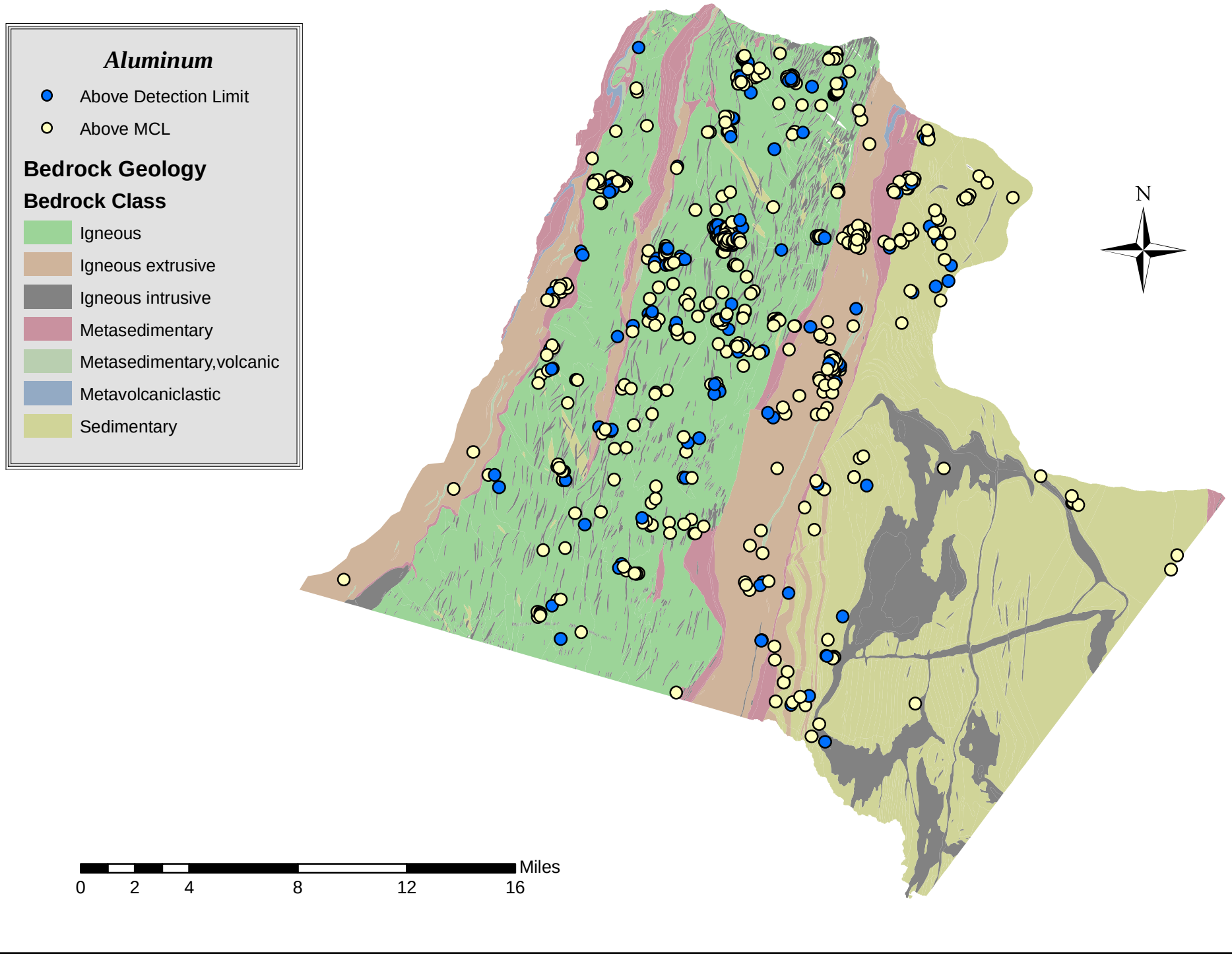

Nitrate
Above Detection Limit
Above MCL
Bedrock Geology
Bedrock Class
Igneous
Igneous extrusive
Igneous intrusive
Metasedimentary
Metasedimentary,volcanic
Metavolcaniclastic
Sedimentary
N
0
2
4
8
12
16
Miles

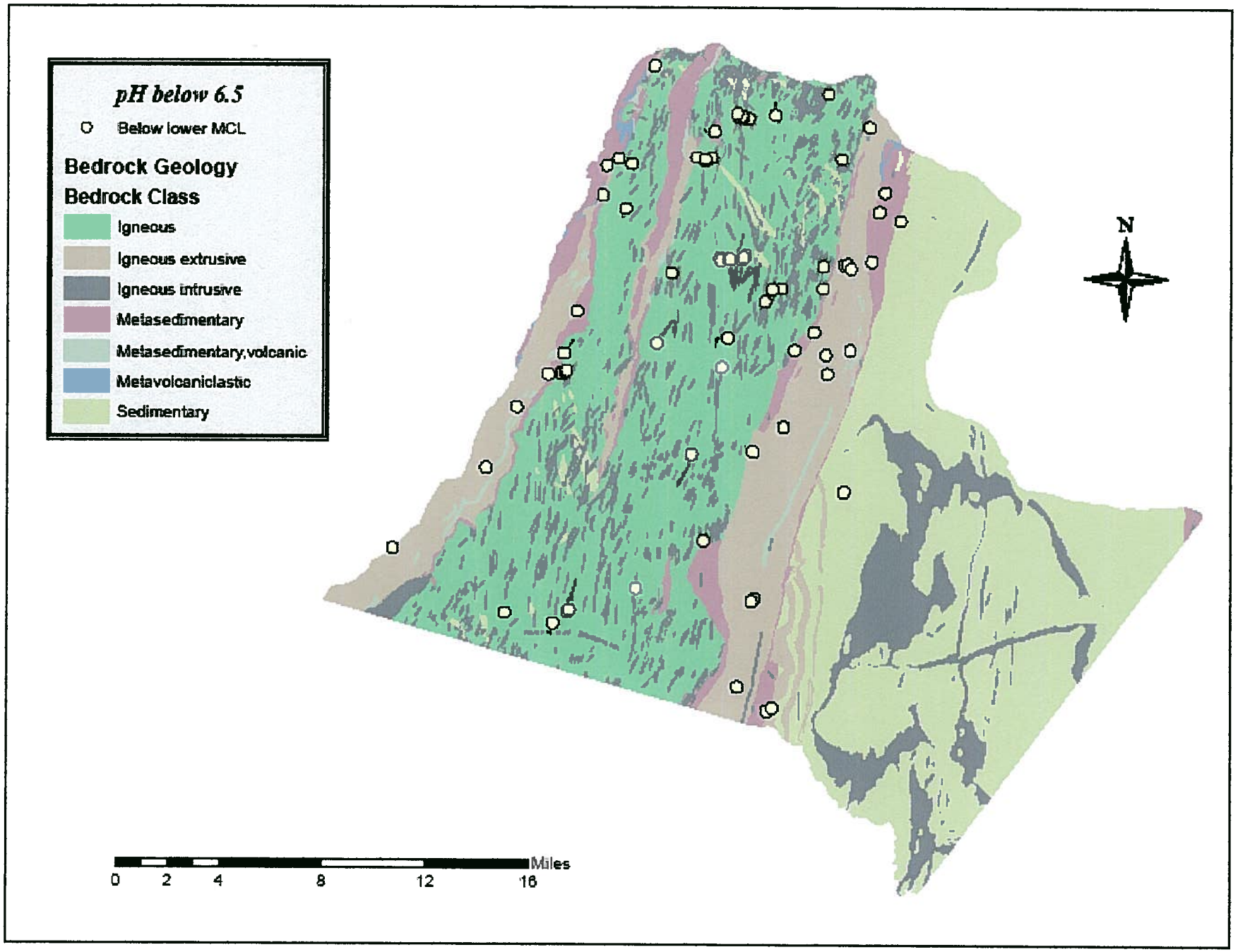

Fluoride
Above Detection Limit
Above MCL
Bedrock Geology
Bedrock Class
Igneous
Igneous extrusive
Igneous intrusive
Metasedimentary
Metasedimentary,volcanic
Metavolcaniclastic
Sedimentary
N
Miles
0
2
4
8
12
16

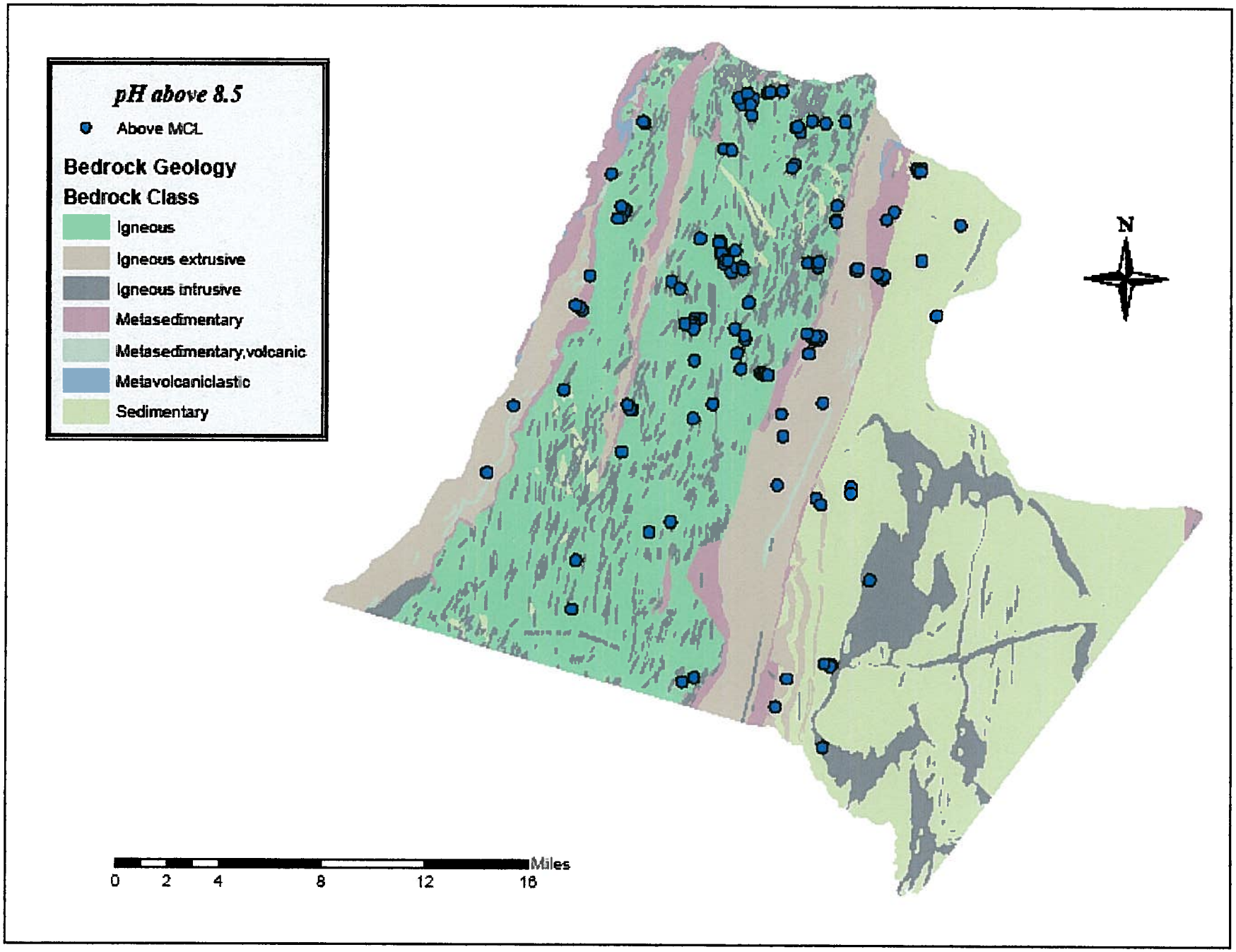

Chloride
Above Detection Limit
Above MCL
Bedrock Geology
Bedrock Class
Igneous
Igneous extrusive
Igneous intrusive
Metasedimentary
Metasedimentary,volcanic
Metavolcaniclastic
Sedimentary
N
0
2
4
8
12
16
Miles


Barium
Above Detection Limit
Above MCL
Bedrock Geology
Bedrock Class
Igneous
Igneous extrusive
Igneous intrusive
Metasedimentary
Metasedimentary,volcanic
Metavolcaniclastic
Sedimentary
N
0
11,250
22,500
45,000
67,500
90,000
Feet


Arsenic
Above Detection Limit
Above MCL
Bedrock Geology
Bedrock Class
Igneous
Igneous extrusive
Igneous intrusive
Metasedimentary
Metasedimentary,volcanic
Metavolcaniclastic
Sedimentary
N
Miles
0
2
4
8
12
16

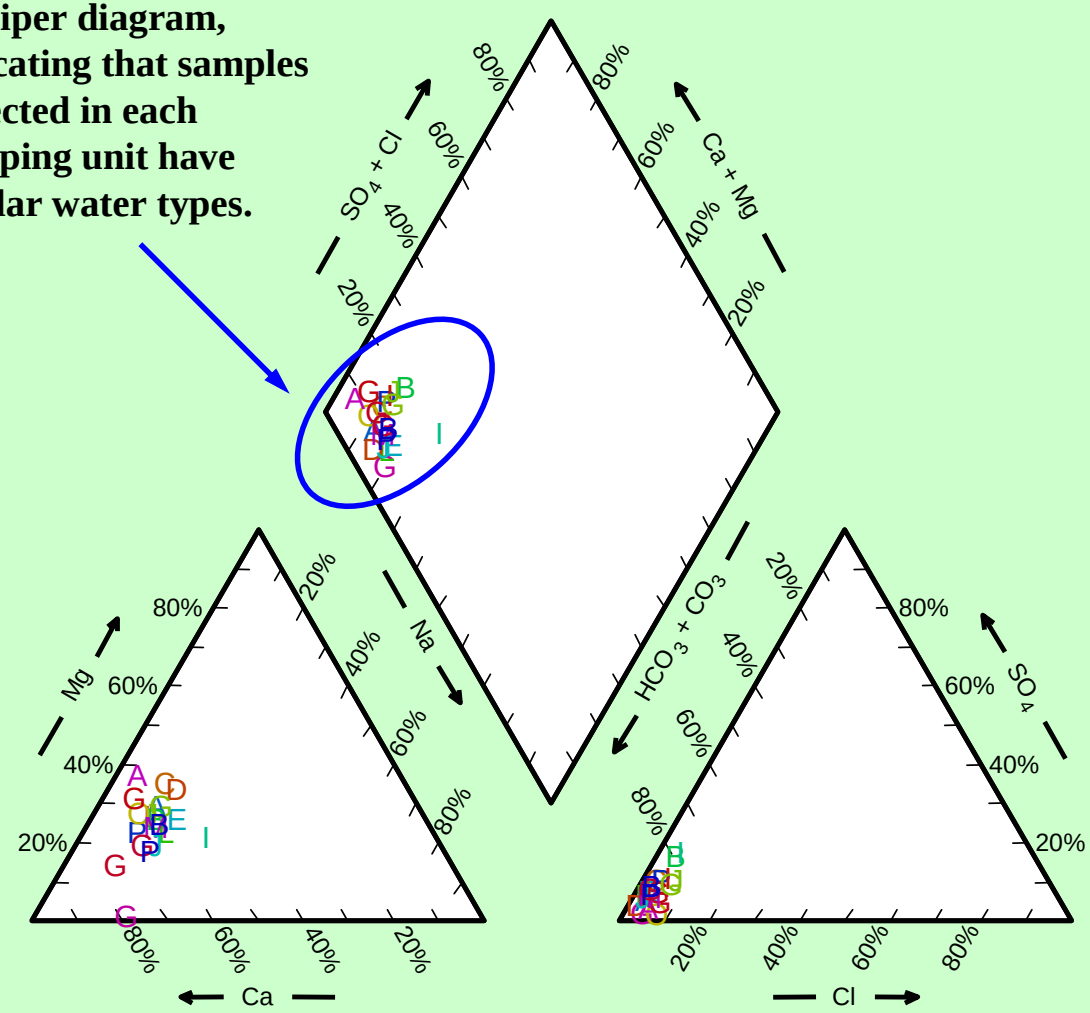

Aluminum
Above Detection Limit
Above MCL
Bedrock Geology
Bedrock Class
Igneous
Igneous extrusive
Igneous intrusive
Metasedimentary
Metasedimentary,volcanic
Metavolcaniclastic
Sedimentary
N
0
2
4
8
12
16
Miles


pH below 6.5
Below lower MCL
Bedrock Geology
Bedrock Class
Igneous
Igneous extrusive
Igneous intrusive
Metasedimentary
Metasedimentary,volcanic
Metavolcaniclastic
Sedimentary
N
Miles
0
2
4
8
12
16


pH above 8.5
Above MCL
Bedrock Geology
Bedrock Class
Igneous
Igneous extrusive
Igneous intrusive
Metasedimentary
Metasedimentary,volcanic
Metavolcaniclastic
Sedimentary
N
0
2
4
8
12
16
Miles

Section D) Identification and graphical representation of water quality types using Durov and Piper diagrams.

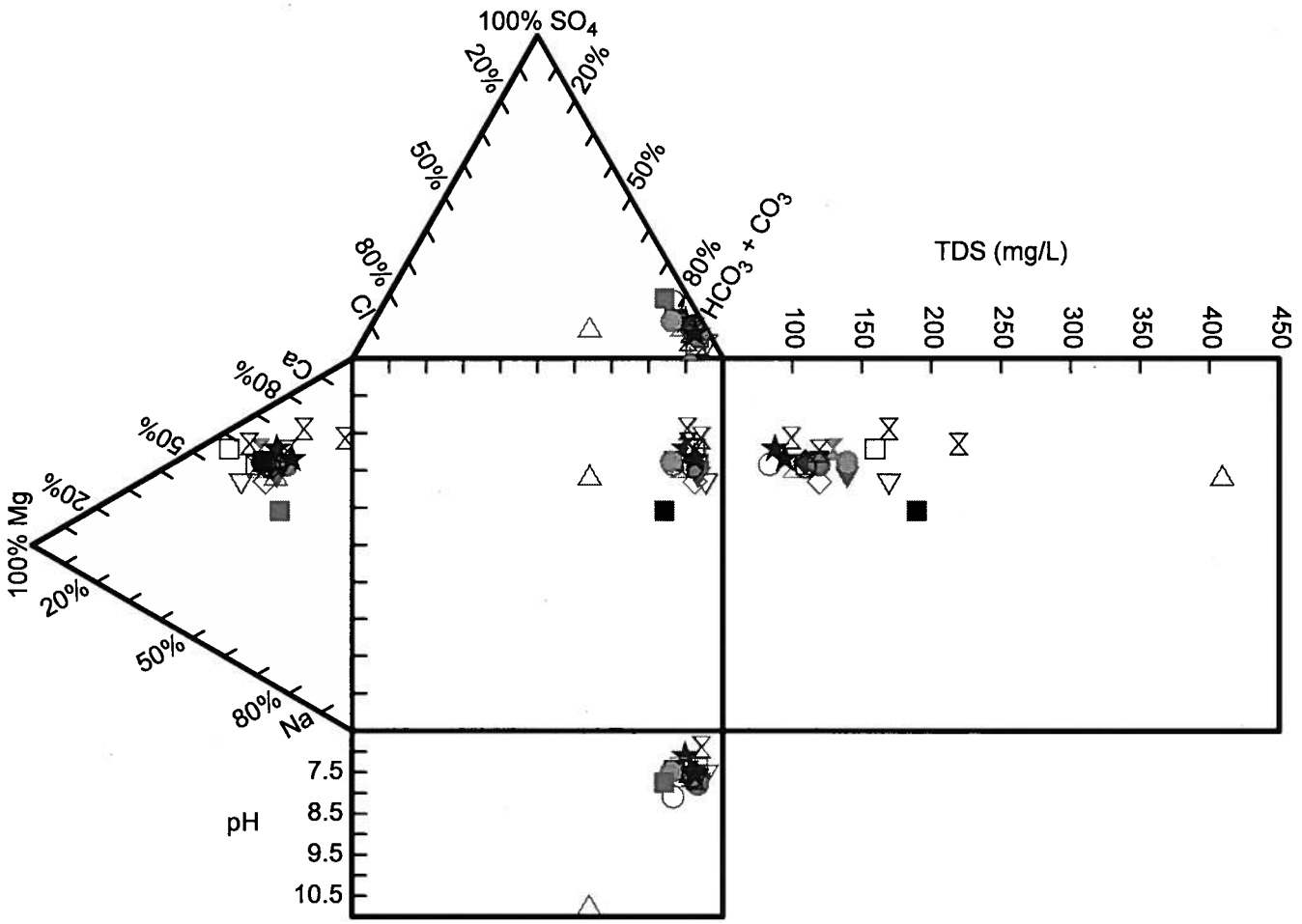
Symbols for each mapping unit plot closely on Piper diagram, indicating that samples collected in each mapping unit have similar water types.



Legend

A	Swift Run
E	Zmd-Igneou...
C	Zc-Zcr-Cato...
G	Ypg-Igneous
P	Yp-Sedimen...
I	Yml-Igneous
B	Yn-Igneous
L	Jtr-Jm-Sedi...
D	Js-Jmz-Jhg-...
O	JTRc-JTRcg...
A	TRbl-Sedim...
G	TRbs-TRbsh...
G	TRmp-Sedi...
J	Ybg-Igneous
M	Ygt-Igneous
J	Yhm-Igneous
G	Ylg-Igneous
G	Ymb-Igneous
B	Ymc-Igneous
I	Jd-Jdh-Igne...
P	Ca-Ch-Cw-...

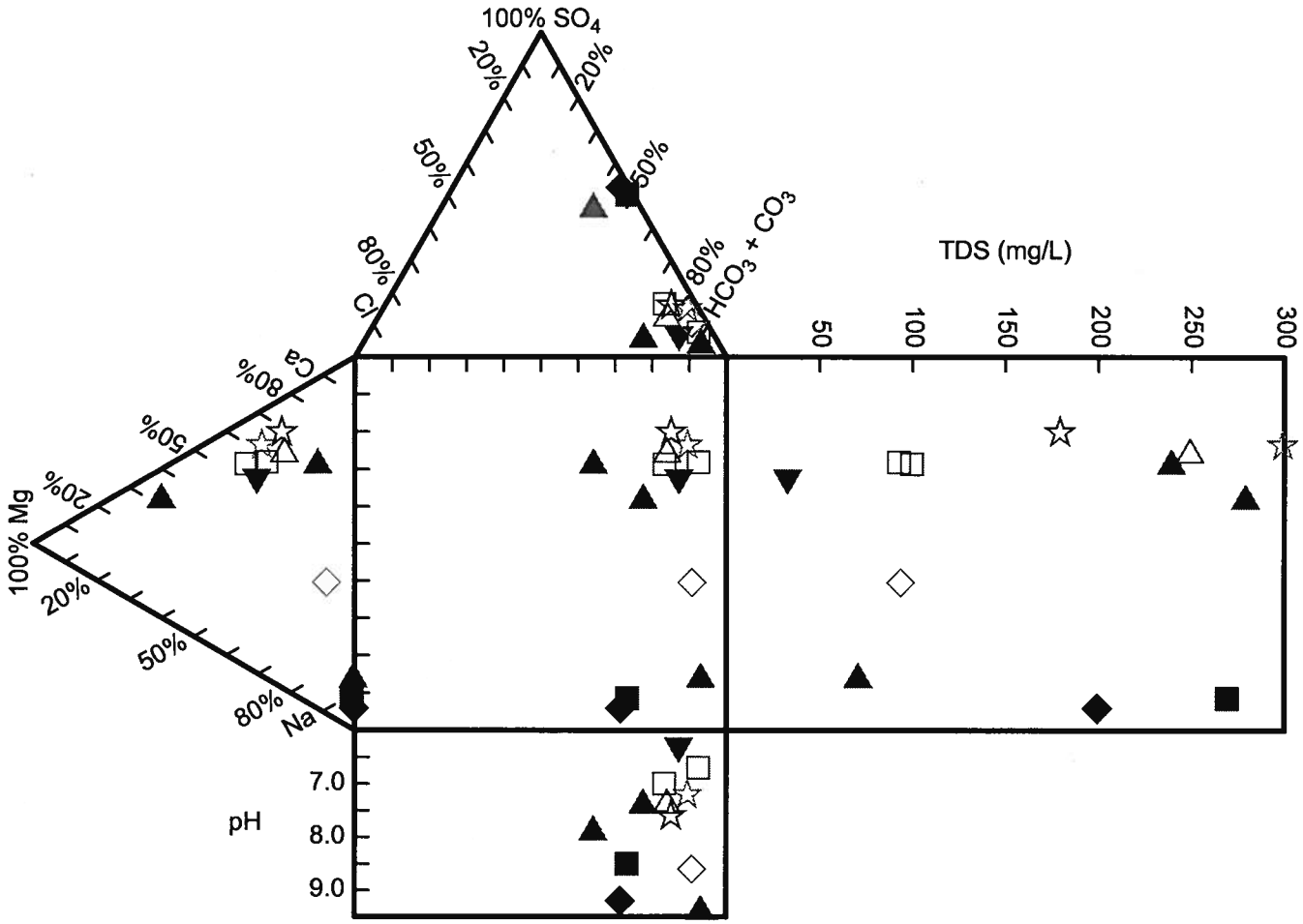
Median Values by Rock Unit



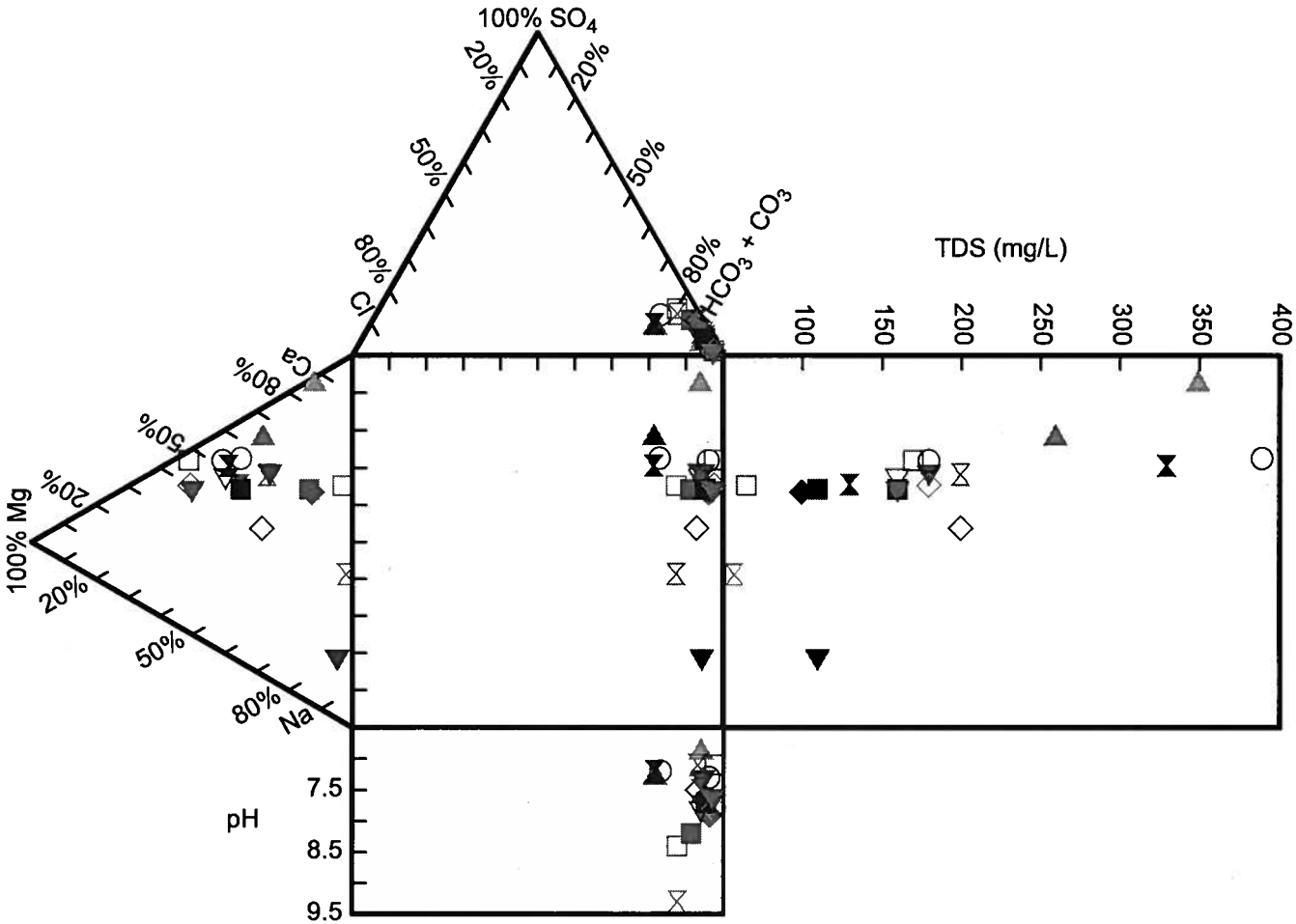
Legend

- Swift Run
- Zmd-Igneou...
- Zc-Zcr-Cato...
- Ypg-Igneous
- Yp-Sedimen...
- Yml-Igneous
- Yn-Igneous
- Jtr-Jm-Sedi...
- Js-Jmz-Jhg-...
- JTRc-JTRc...
- TRbl-Sedim...
- TRbs-TRbs...
- TRmp-Sedi...
- Ybg-Igneous
- Ygt-Igneous
- Yhm-Igneous
- Ylg-Igneous
- Ymb-Igneous
- Ymc-Igneous
- Jd-Jdh-Igne...
- Ca-Ch-Cw-...

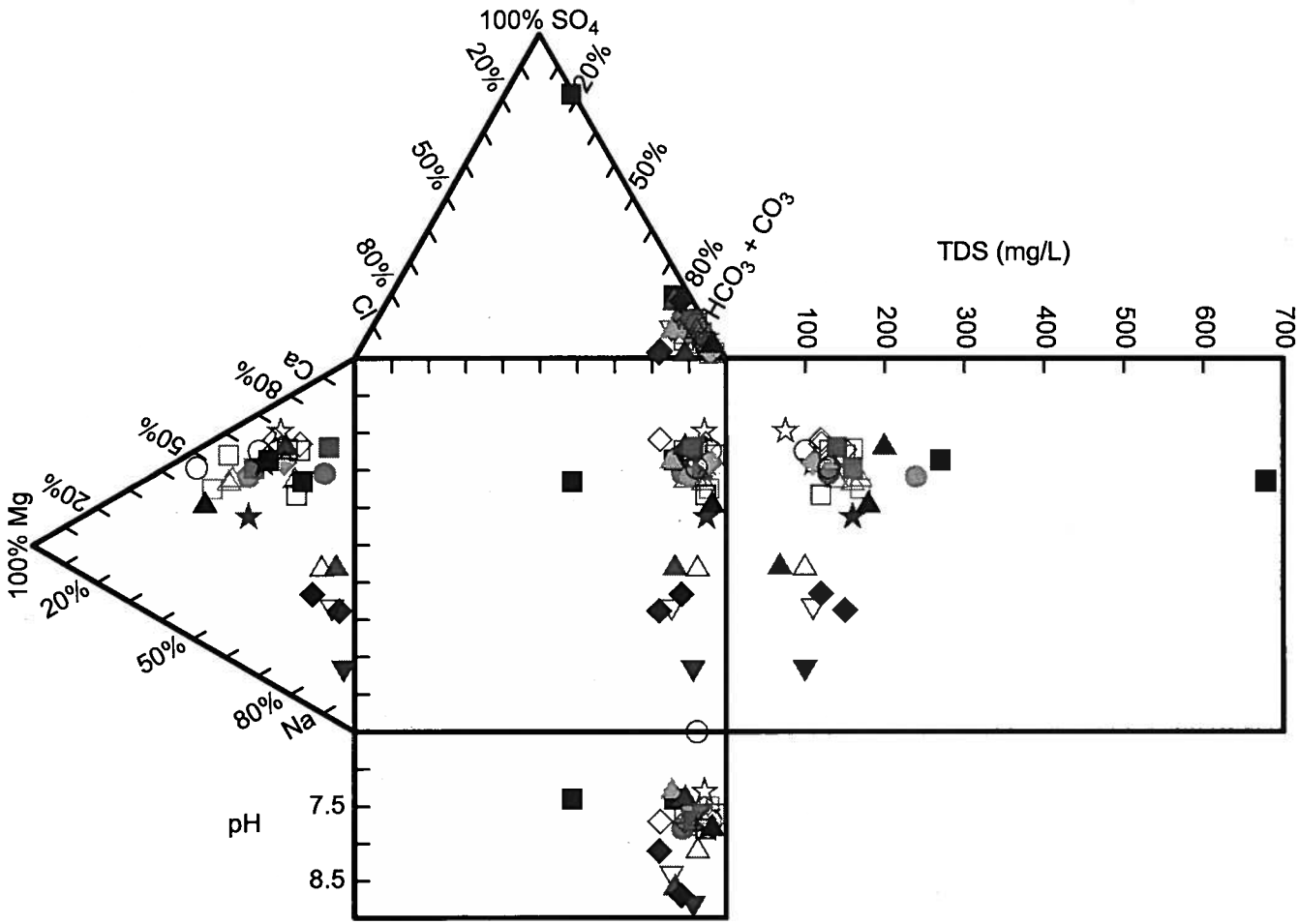
Jd-Jdh Jurassic Diabase



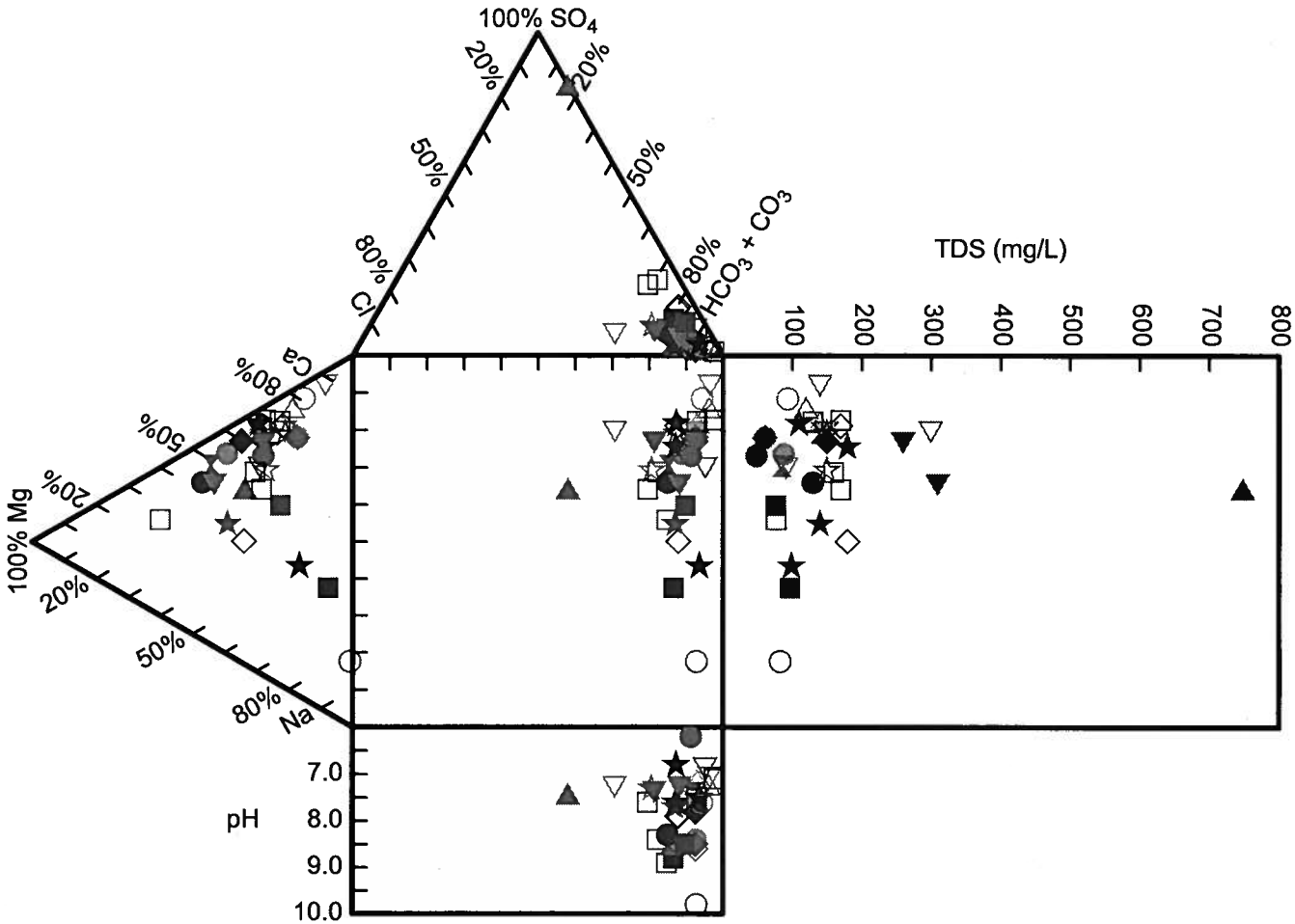
Jss-Jmz-Jhg Jurassic Basalts



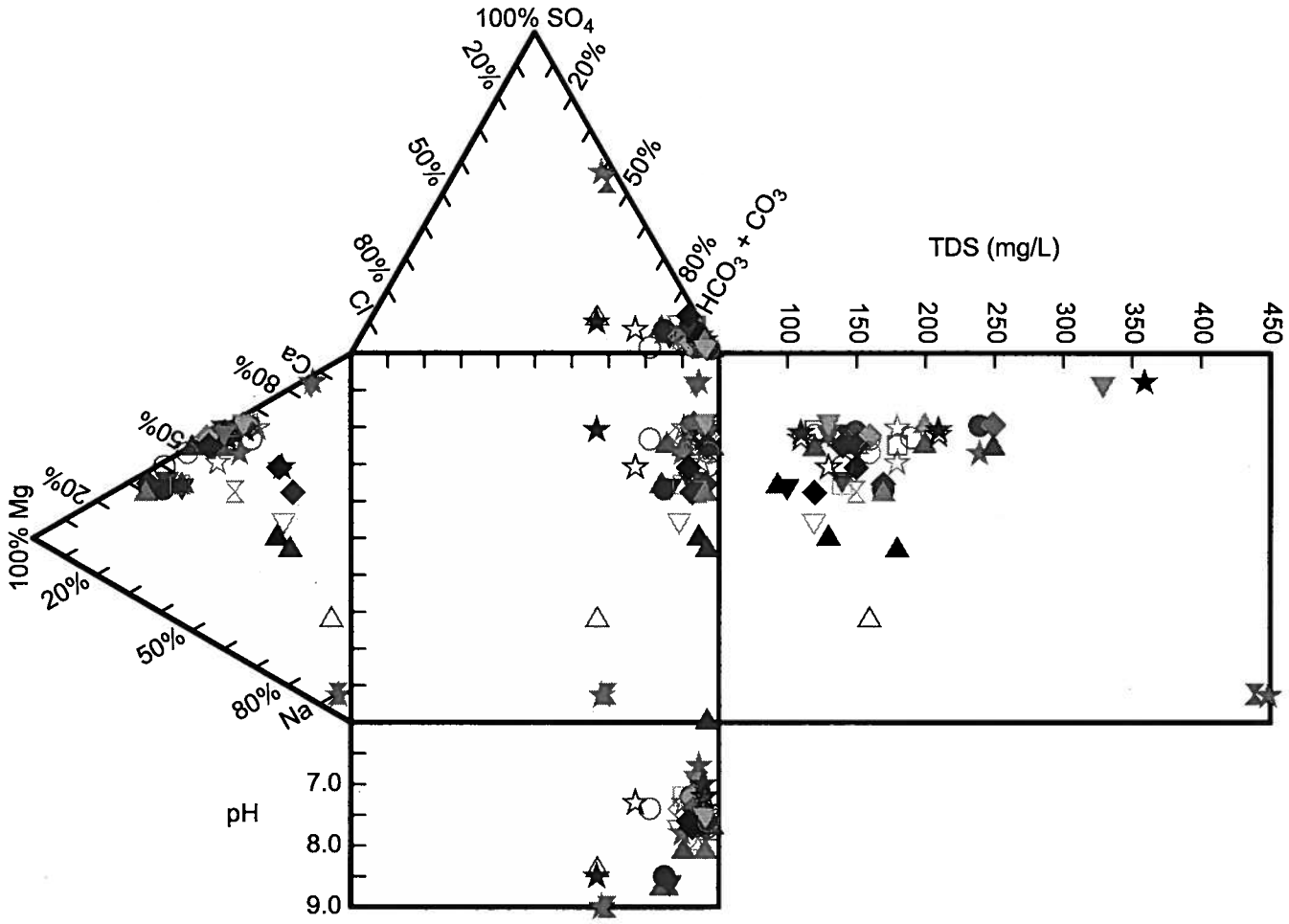
Jtr-Jm Sedimentary



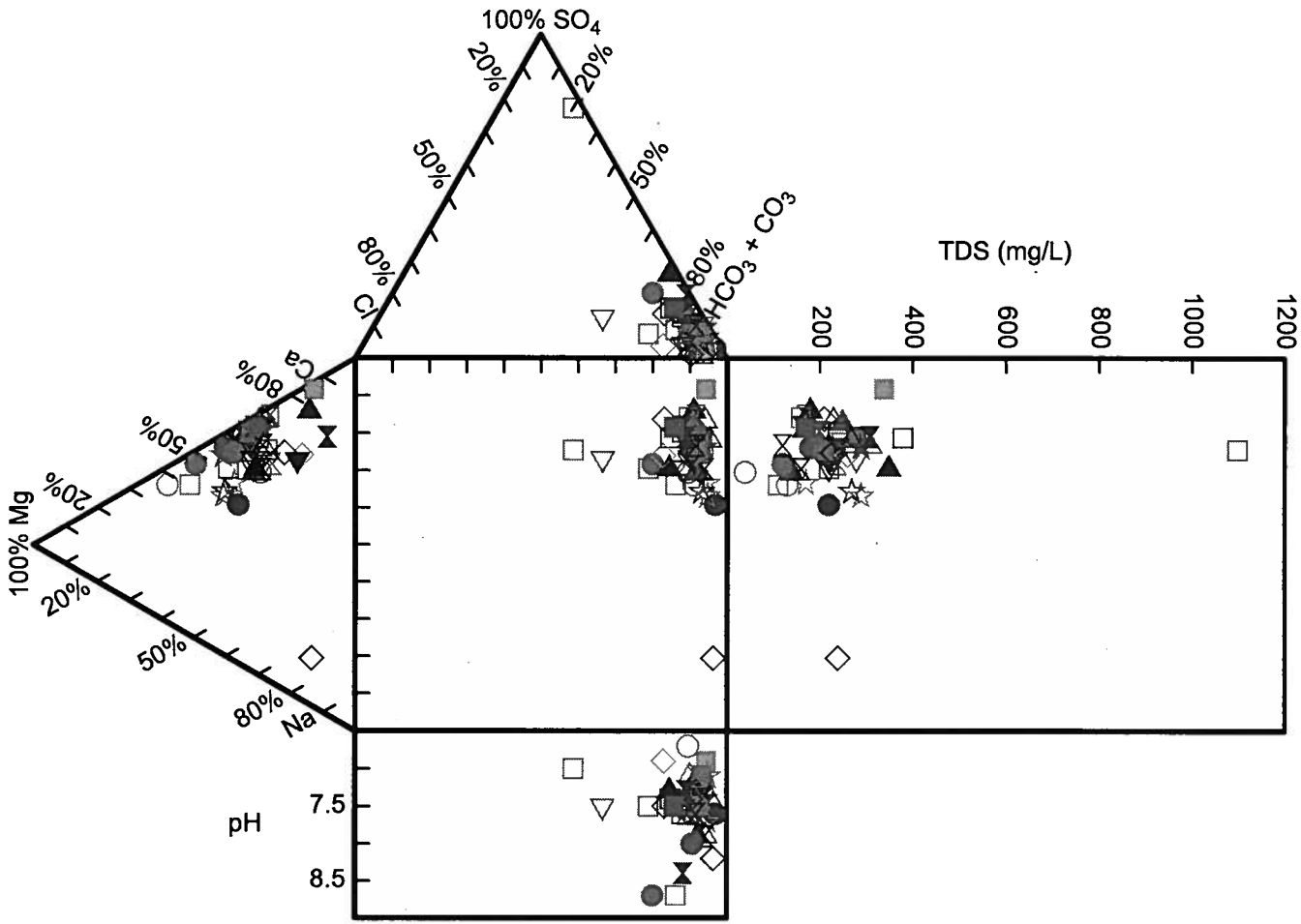
JTRtm-JTRc-JTRcg Sedimentary



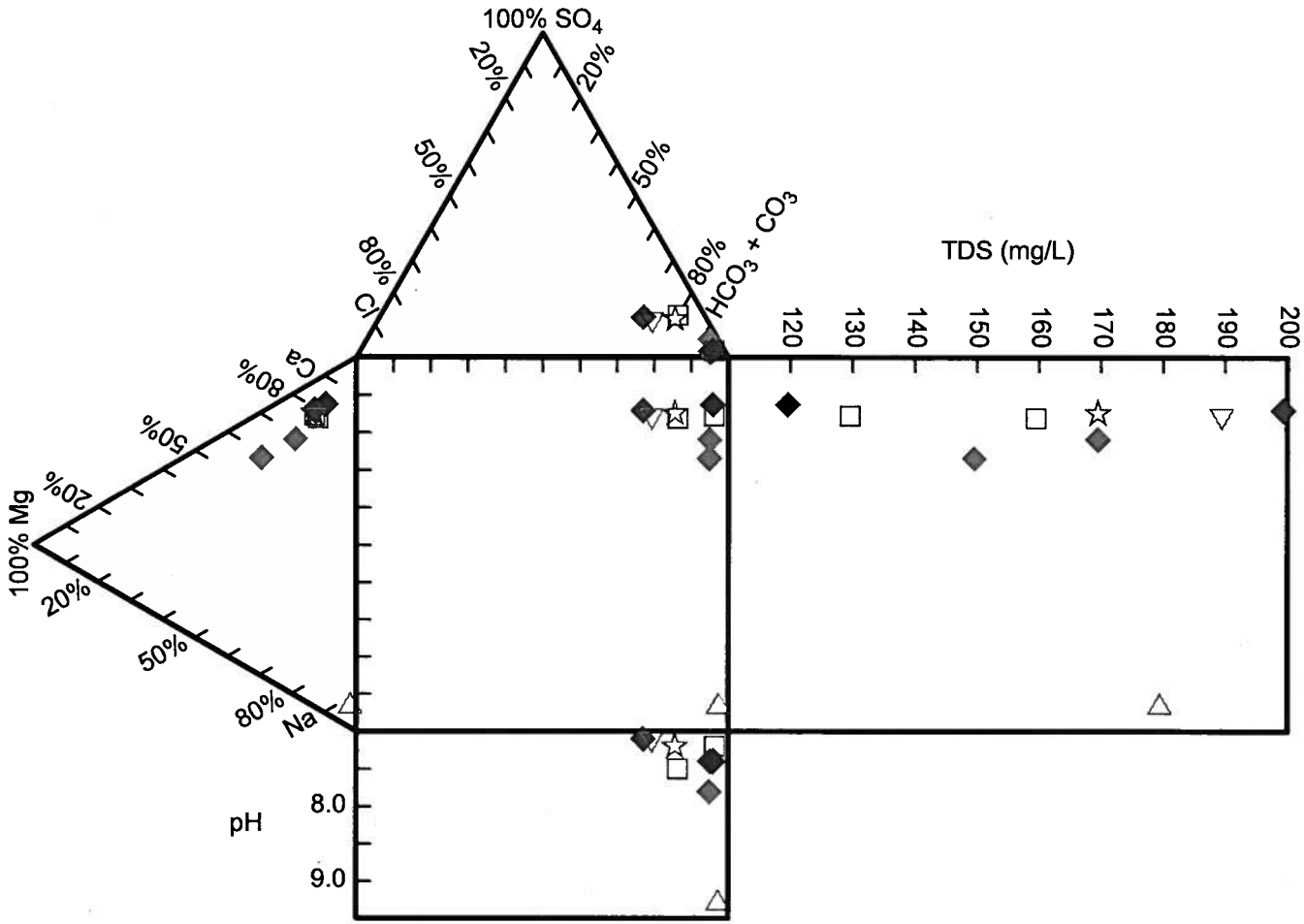
TRbl Conglomerate



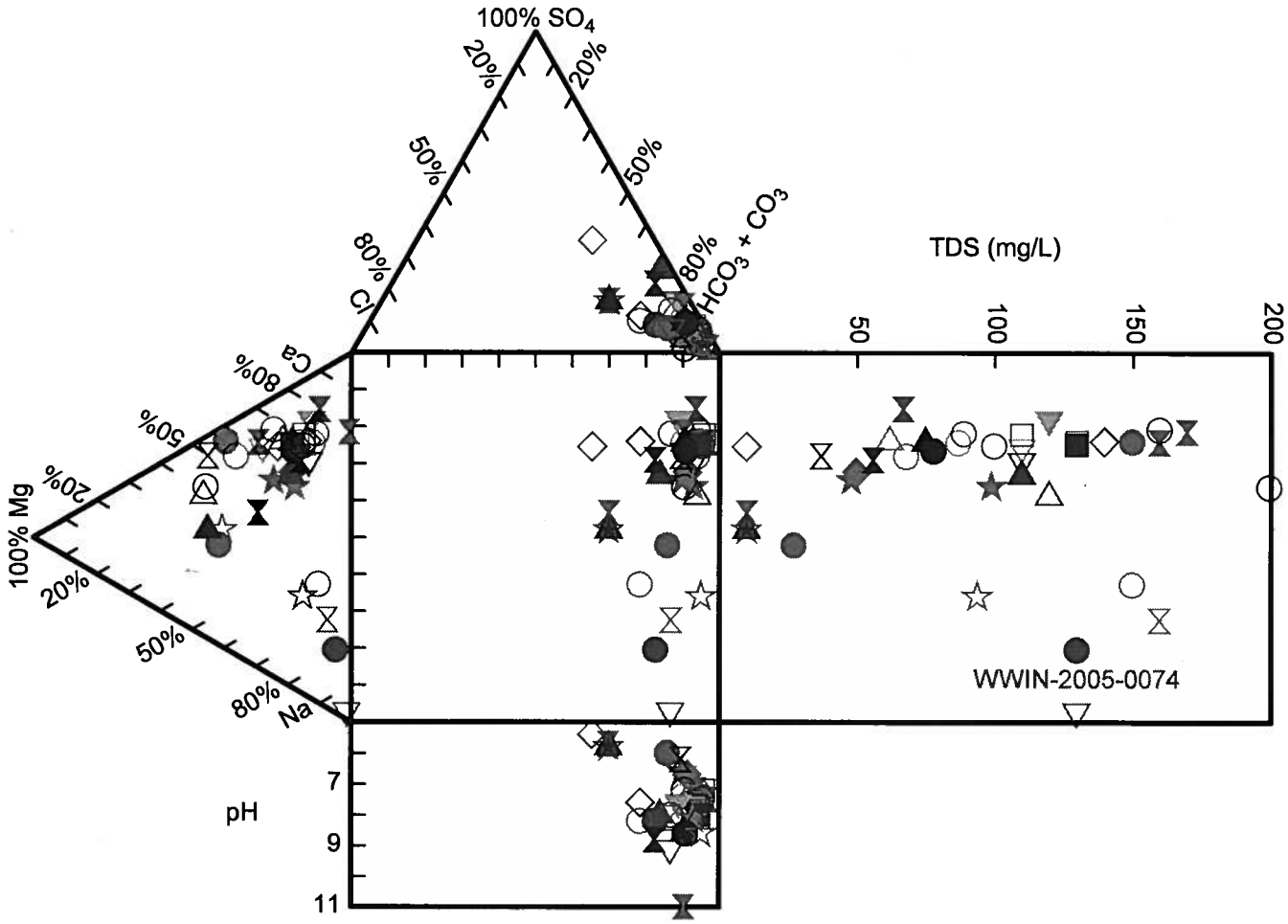
TRbs-TRbsh Sedimentary



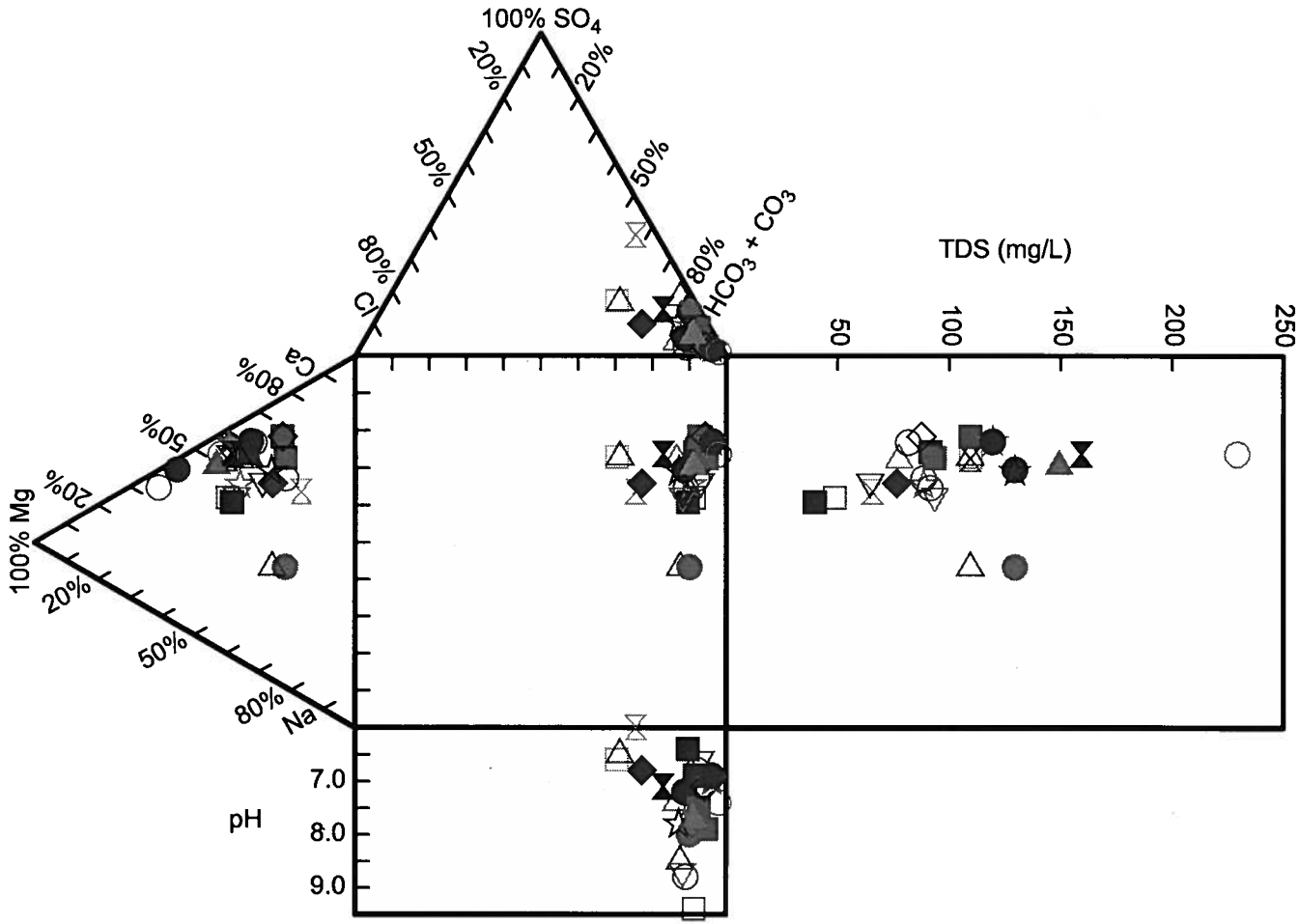
TRmp Sedimentary



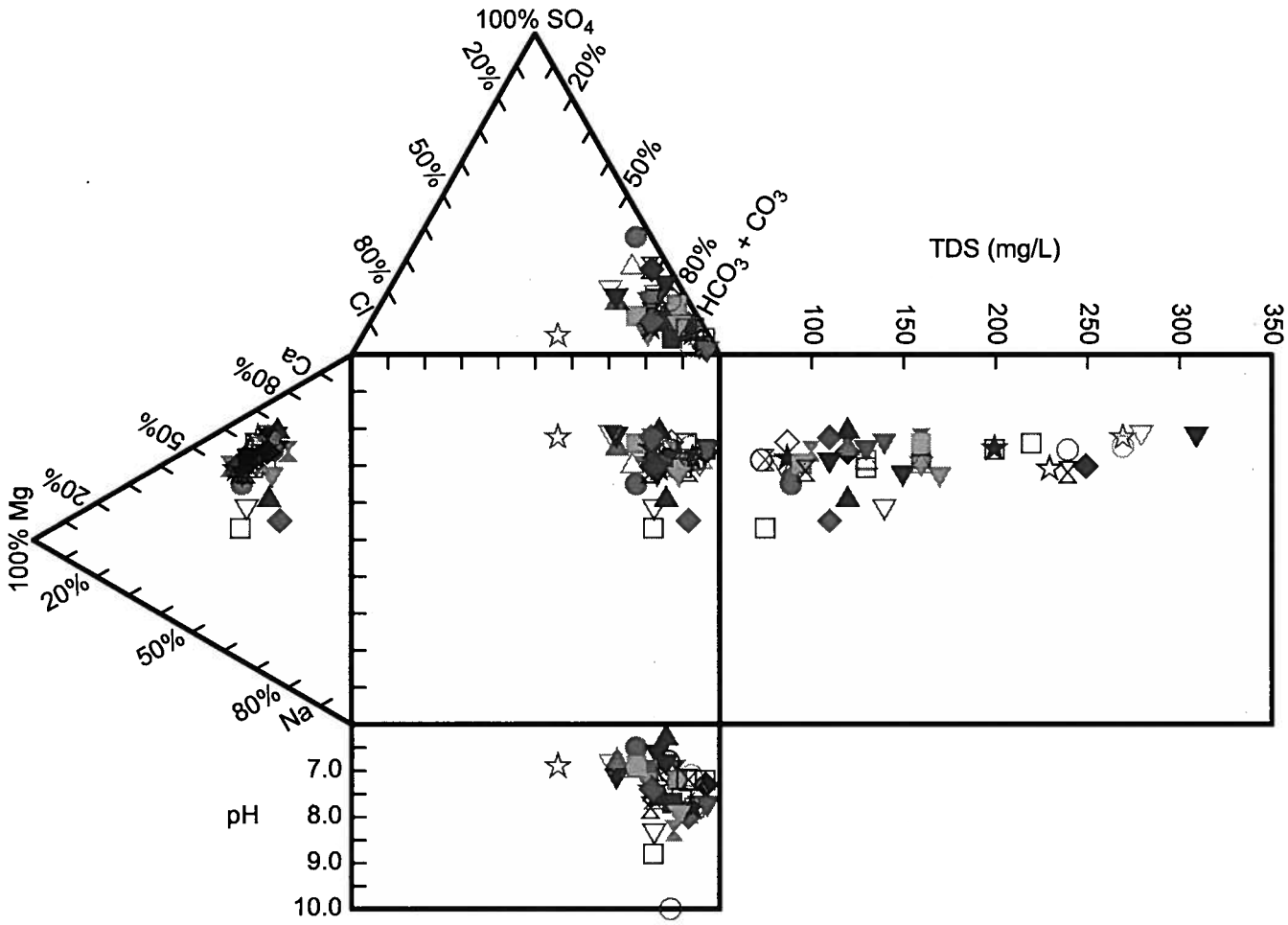
Cw-Ch Metasedimentary



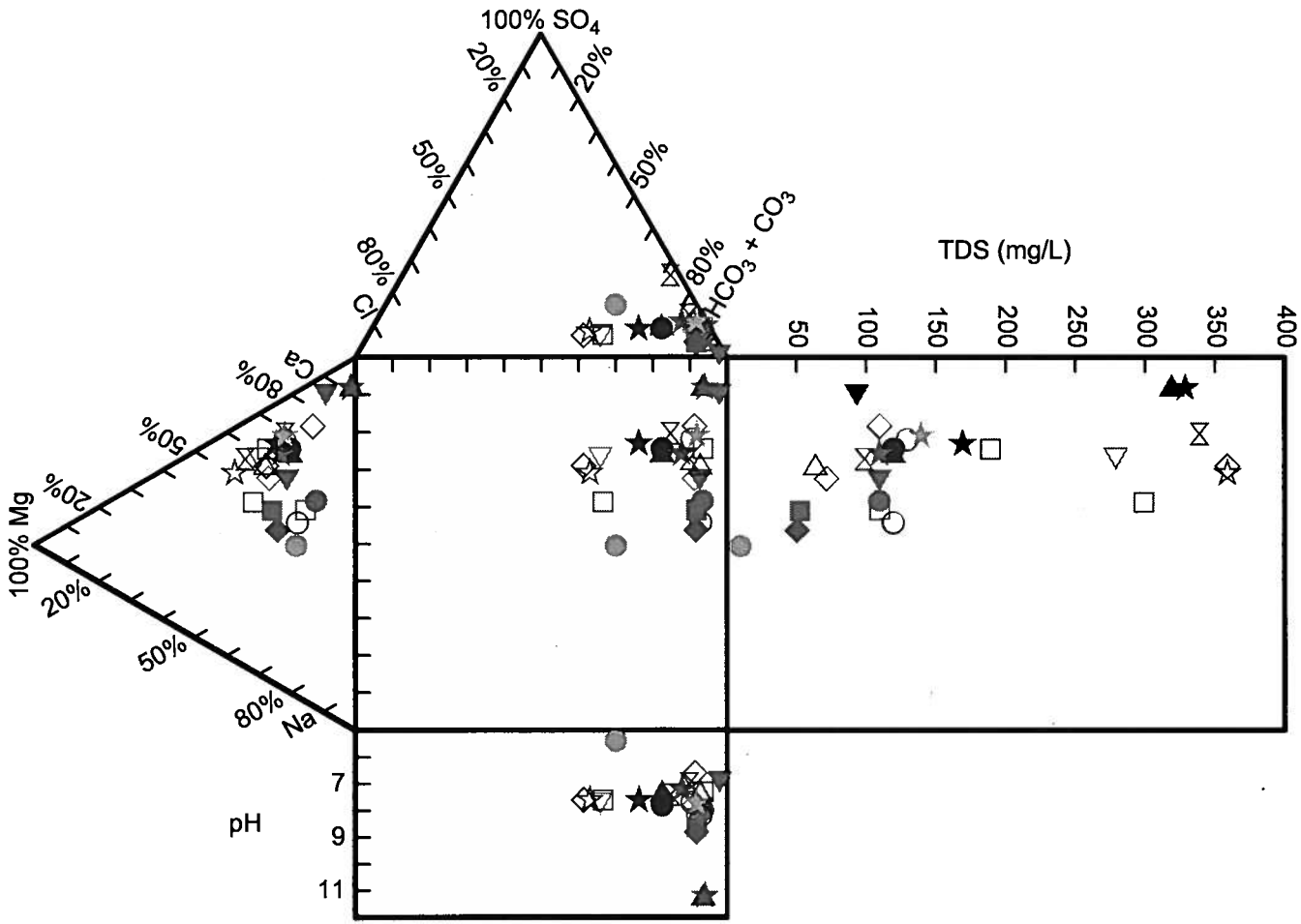
Zss-Zsp Swift Run Metasedimentary



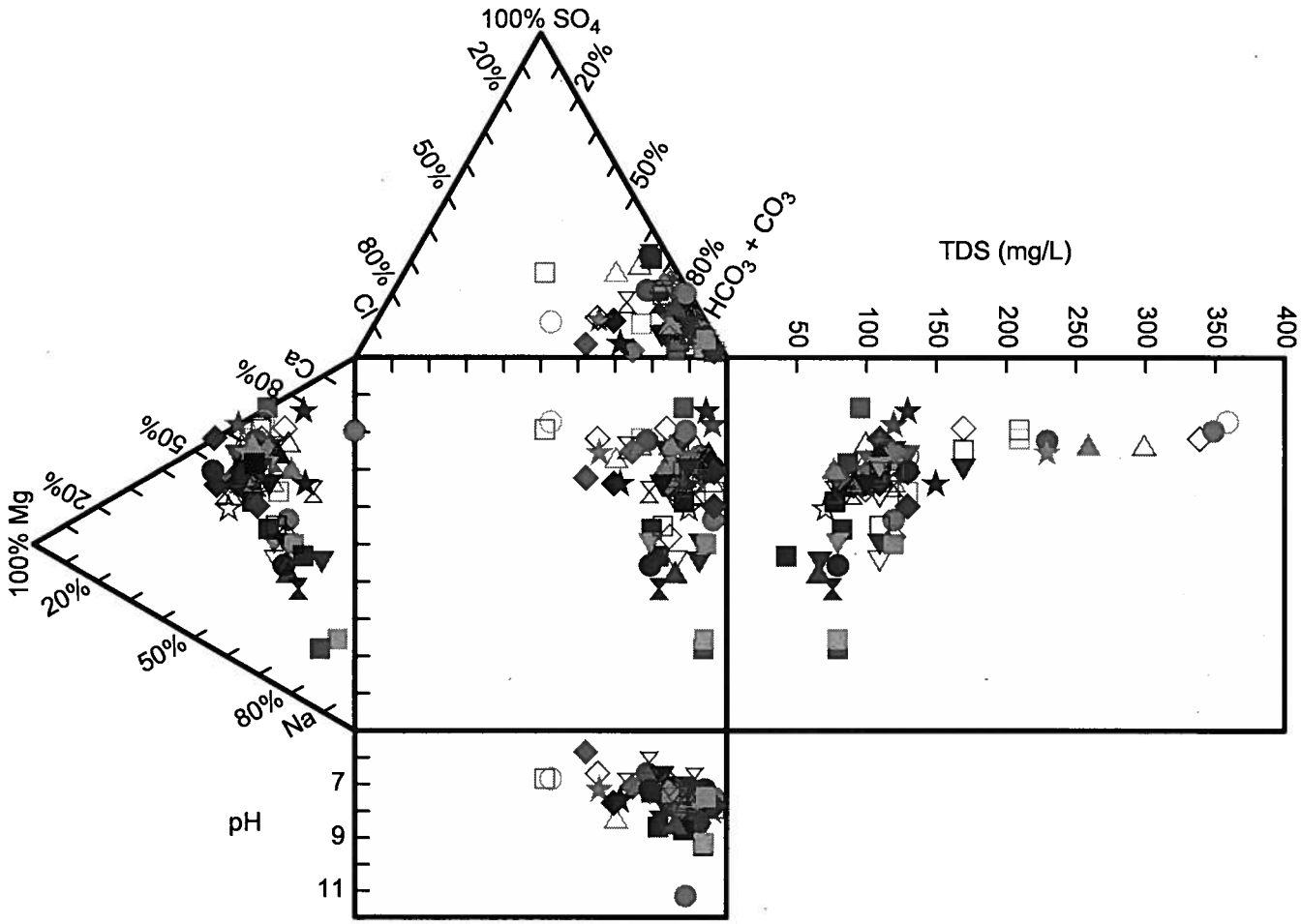
Ybg Igneous


100% SO4
20%
20%
50%
50%
80%
80%
Cl
HCO3 + CO3
TDS (mg/L)
100
150
200
250
300
350
Ca
80%
50%
20%
100% Mg
20%
50%
80%
Na
pH
7.0
8.0
9.0
10.0

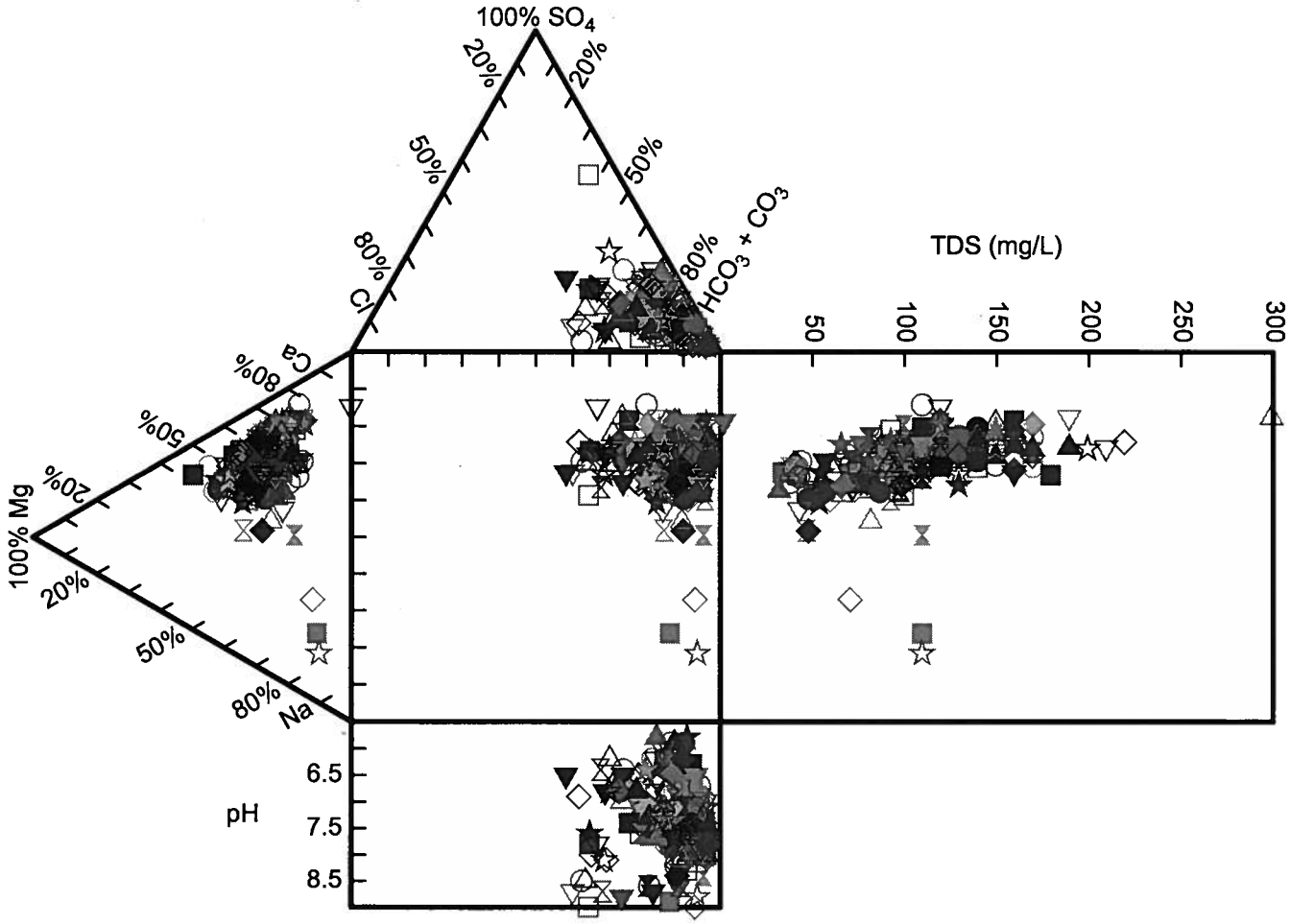
Yc Igneous


100% SO4
20%
50%
80%
HCO3 + CO3
Cl
Ca
Mg
Na
100% Mg
TDS (mg/L)
50
100
150
200
250
300
350
400
pH
7
9
11

Yg Igneous

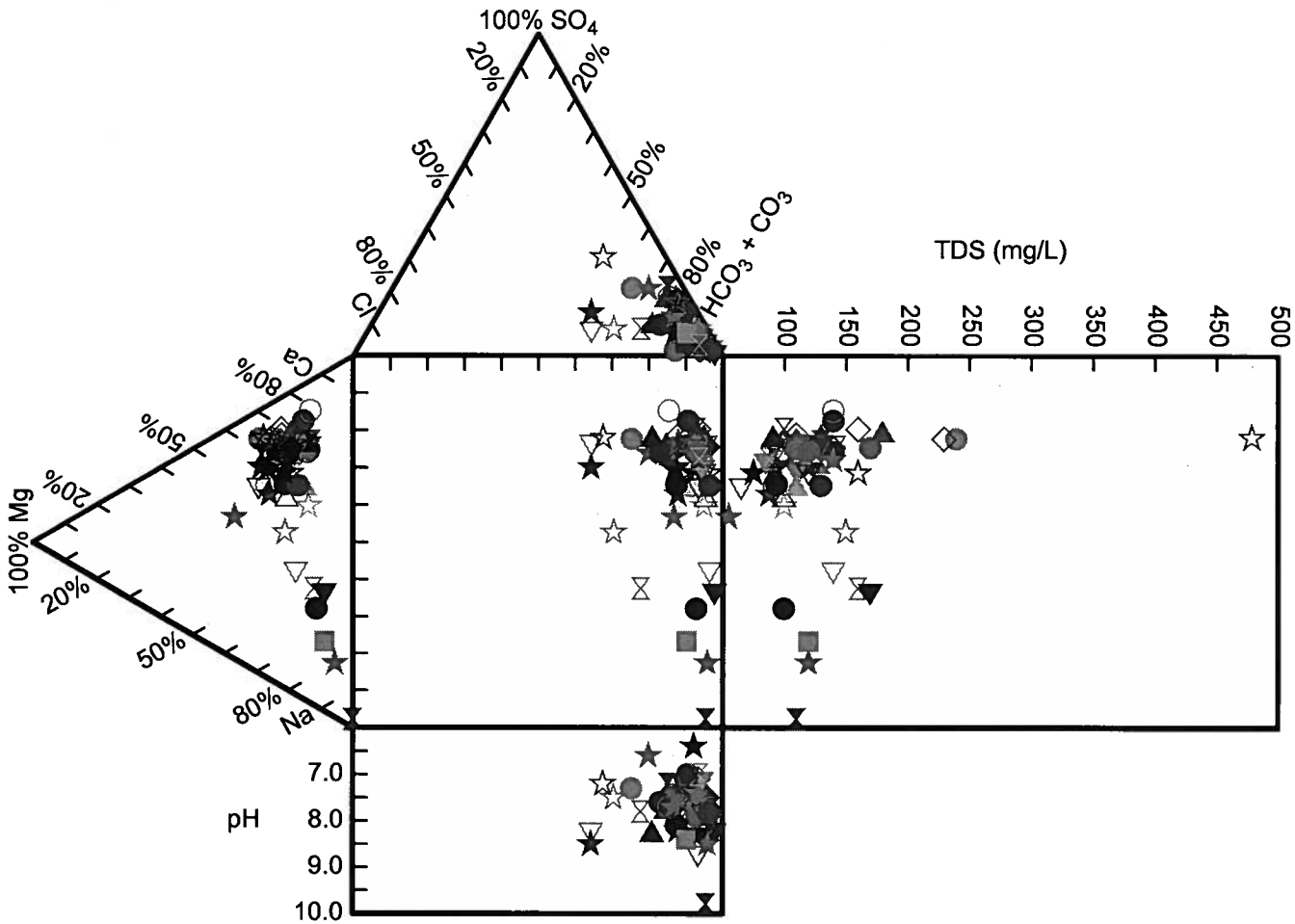

100% SO4
20%
50%
80%
HCO3 + CO3
Cl
Ca
100% Mg
Na
TDS (mg/L)
50
100
150
200
250
300
350
400
pH
7
9
11

Ygt Igneous

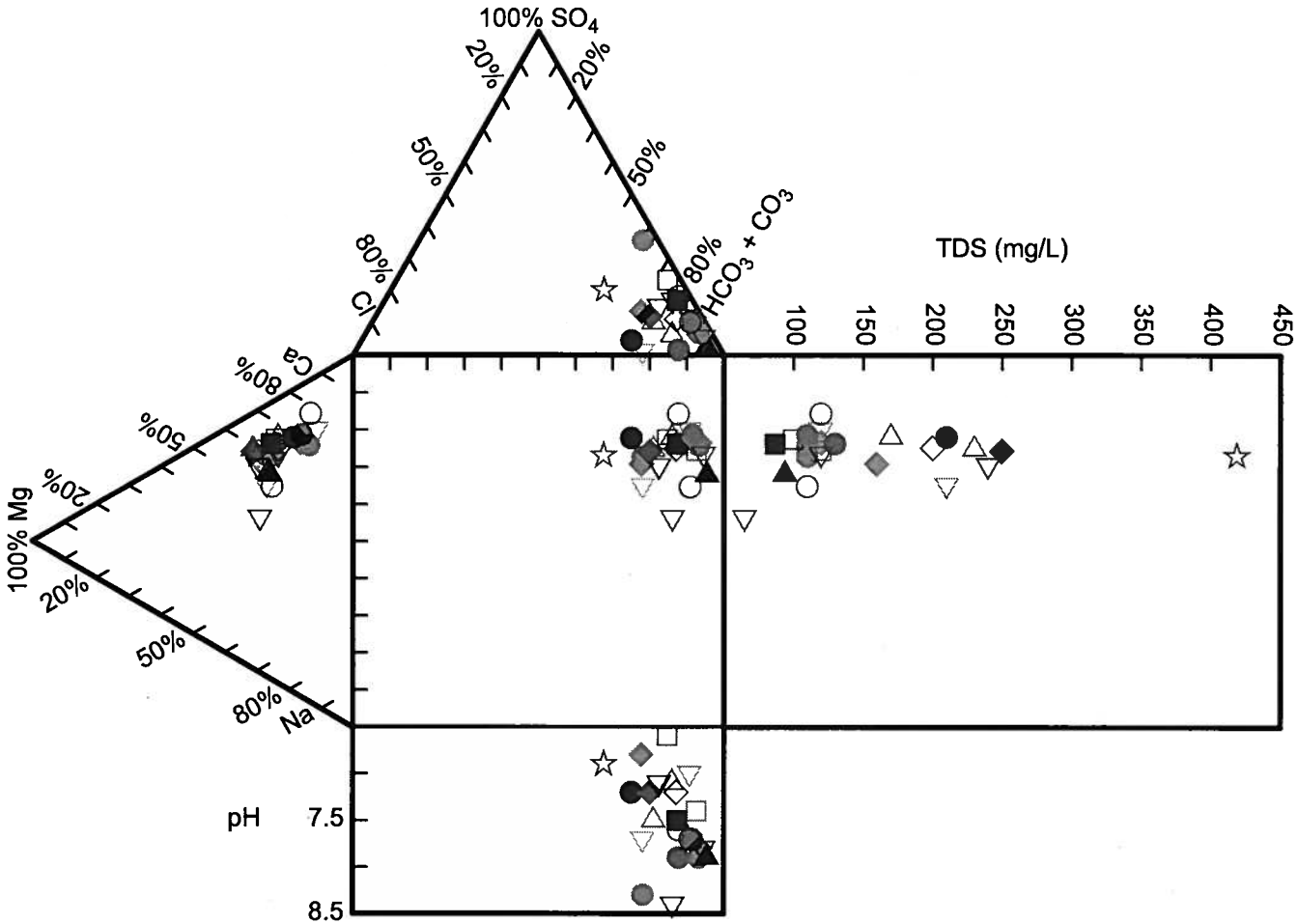


100% SO4
20%
50%
80%
Cl
20%
50%
80%
HCO3 + CO3
Ca
80%
50%
20%
100% Mg
20%
50%
80%
Na
TDS (mg/L)
50
100
150
200
250
300
pH
6.5
7.5
8.5

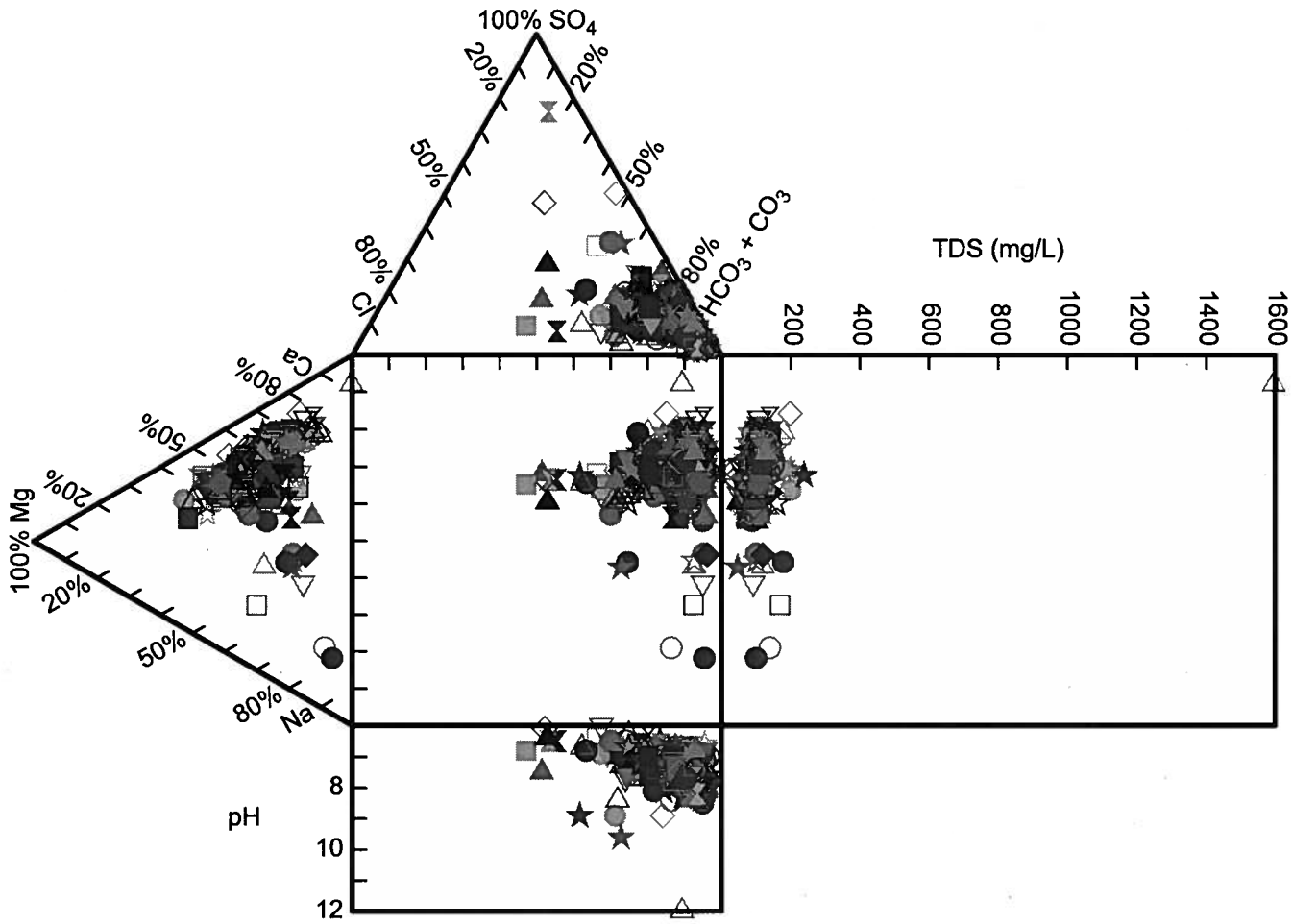
Yhm Igneous


100% SO4
20%
50%
80%
Cl
80%
50%
20%
Ca
100% Mg
20%
50%
80%
Na
80%
50%
20%
HCO3 + CO3
TDS (mg/L)
100
150
200
250
300
350
400
450
500
pH
7.0
8.0
9.0
10.0

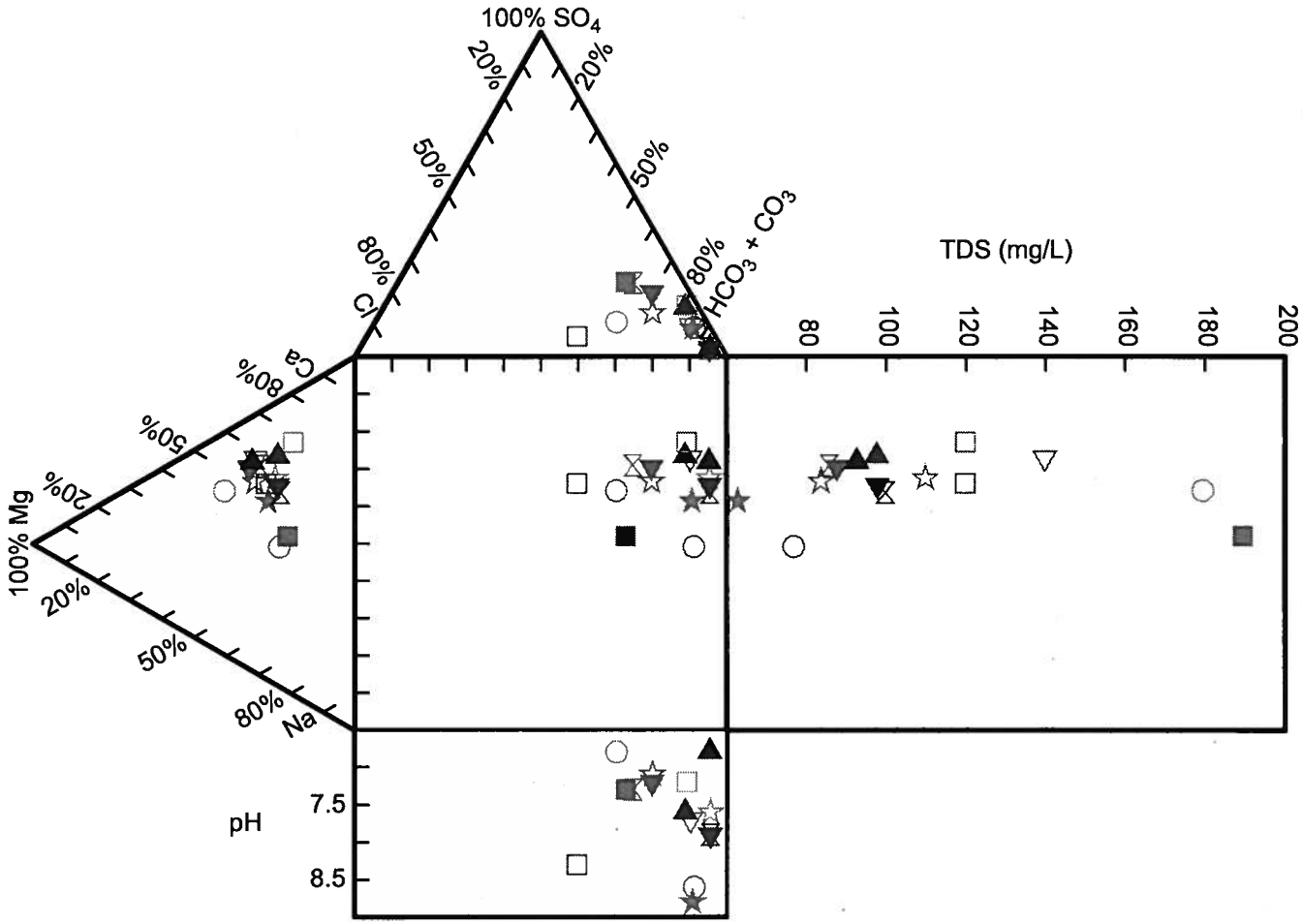
Ylg Igneous


100% SO4
20%
50%
80%
Cl
80%
50%
20%
100% Mg
20%
50%
80%
Na
80%
50%
20%
Ca
100% HCO3 + CO3
TDS (mg/L)
100
150
200
250
300
350
400
450
pH
7.5
8.5

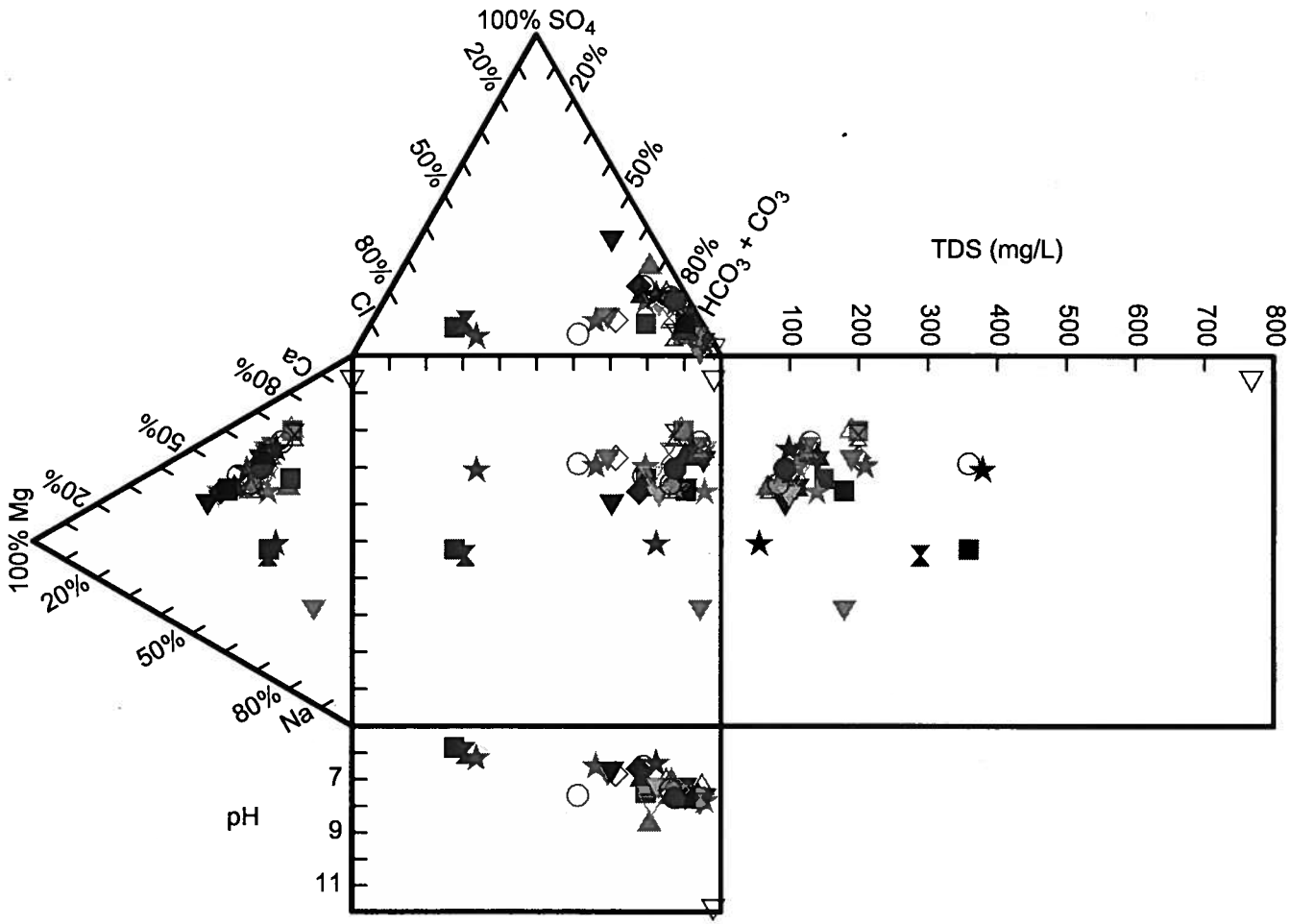
Ymb Igneous


100% SO4
20%
50%
80%
HCO3 + CO3
Cl
Ca
Mg
Na
100% Mg
100% Na
TDS (mg/L)
200
400
600
800
1000
1200
1400
1600
pH
8
10
12

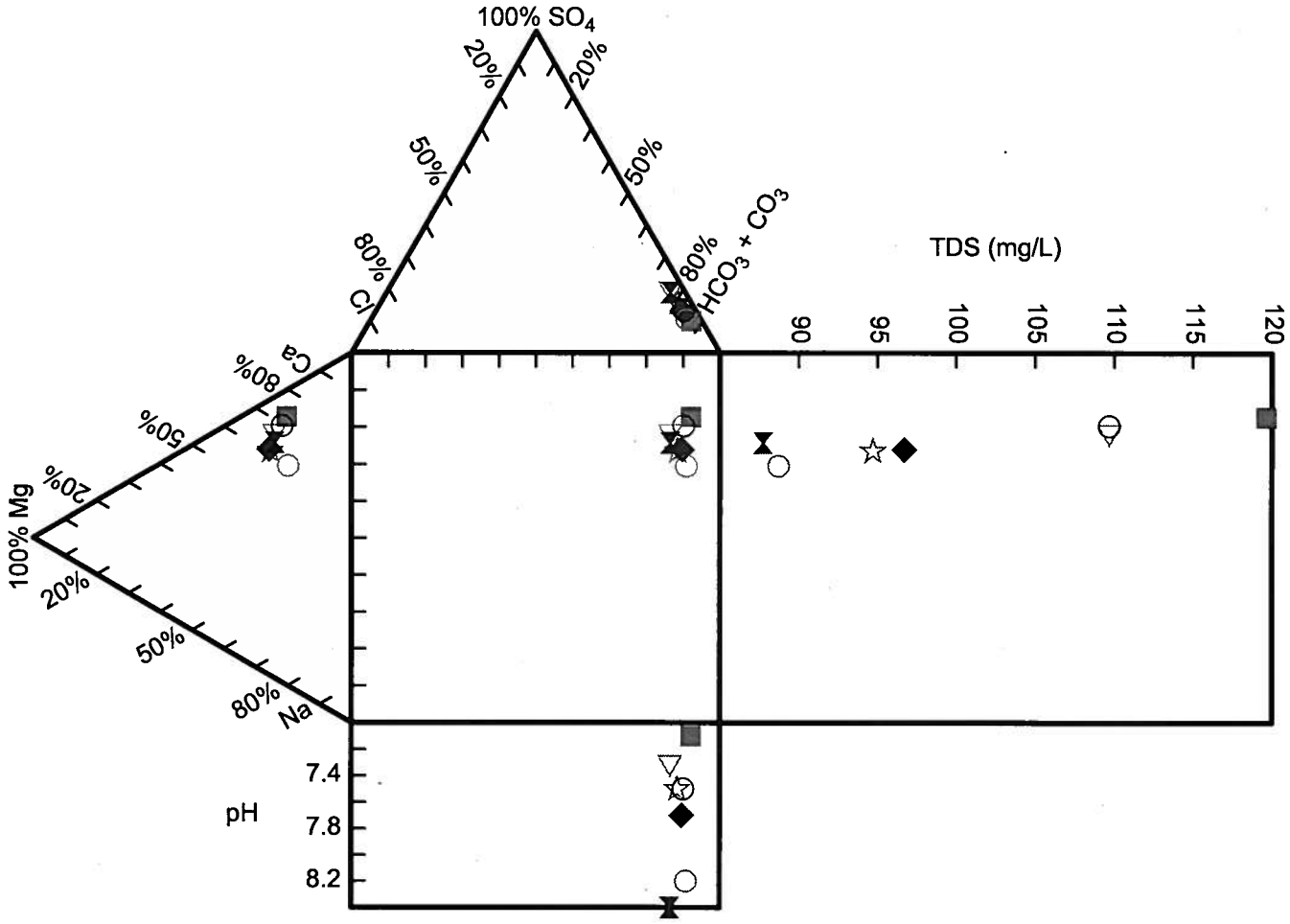
Ymc Igneous


100% SO4
20%
20%
50%
50%
80%
80%
Cl
HCO3 + CO3
TDS (mg/L)
80
100
120
140
160
180
200
Ca
80%
50%
20%
100% Mg
20%
50%
80%
Na
pH
7.5
8.5

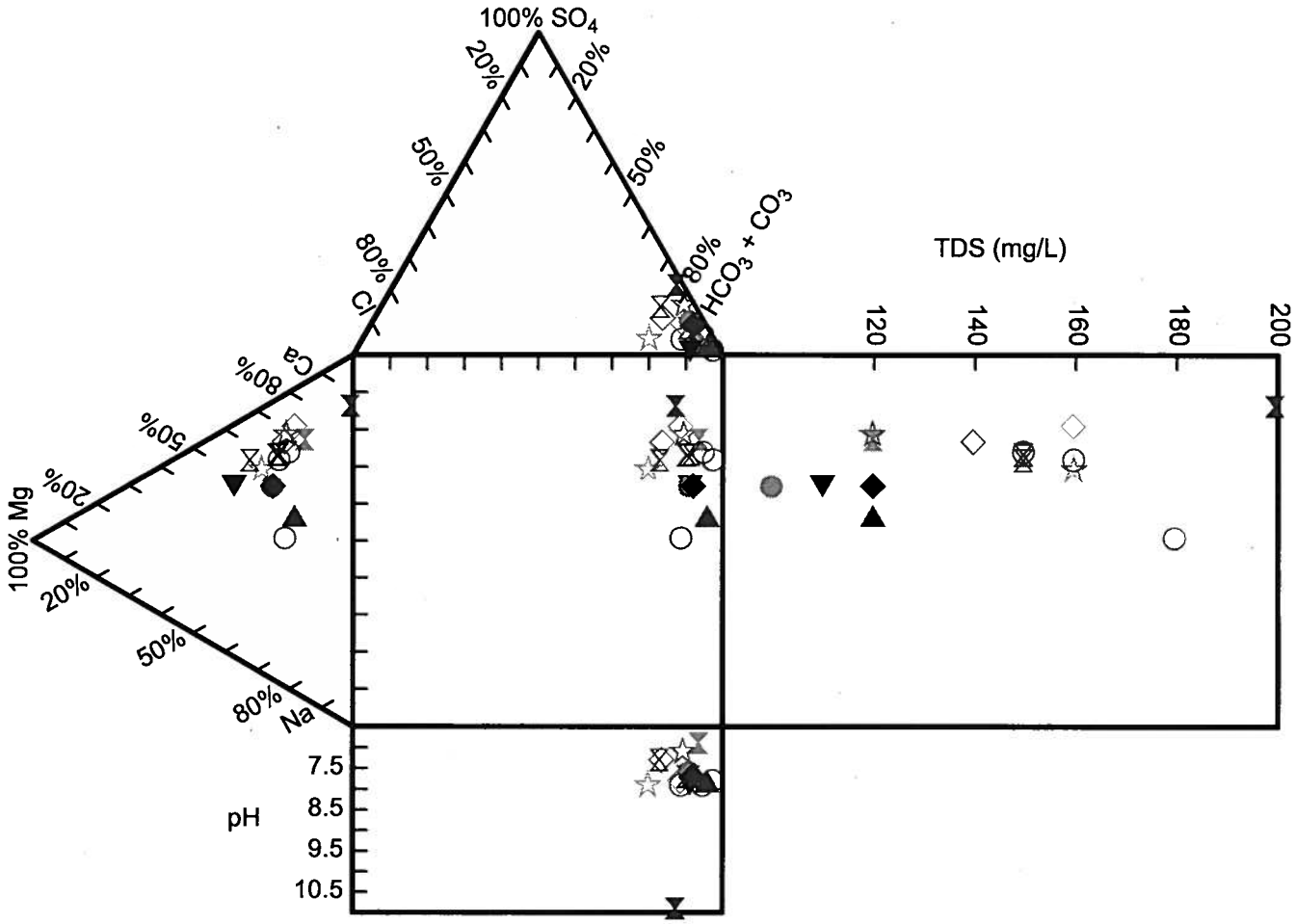
Yml Igenous


100% SO_4
20%
20%
50%
50%
80%
80%
Cl
$HCO_3 + CO_3$
TDS (mg/L)
100
200
300
400
500
600
700
800
Ca
80%
50%
20%
100% Mg
20%
50%
80%
Na
pH
7
9
11

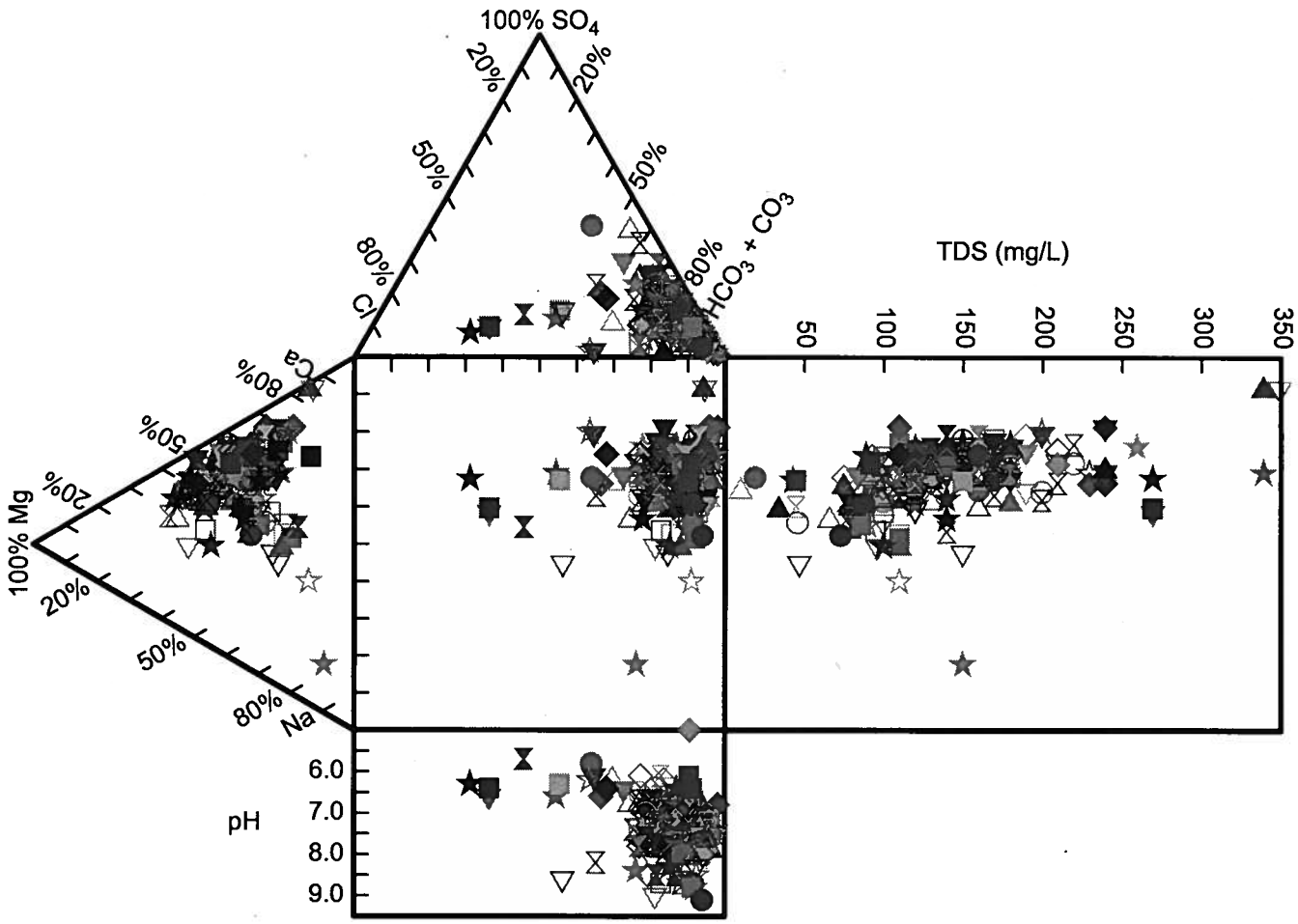
Yp Sedimentary



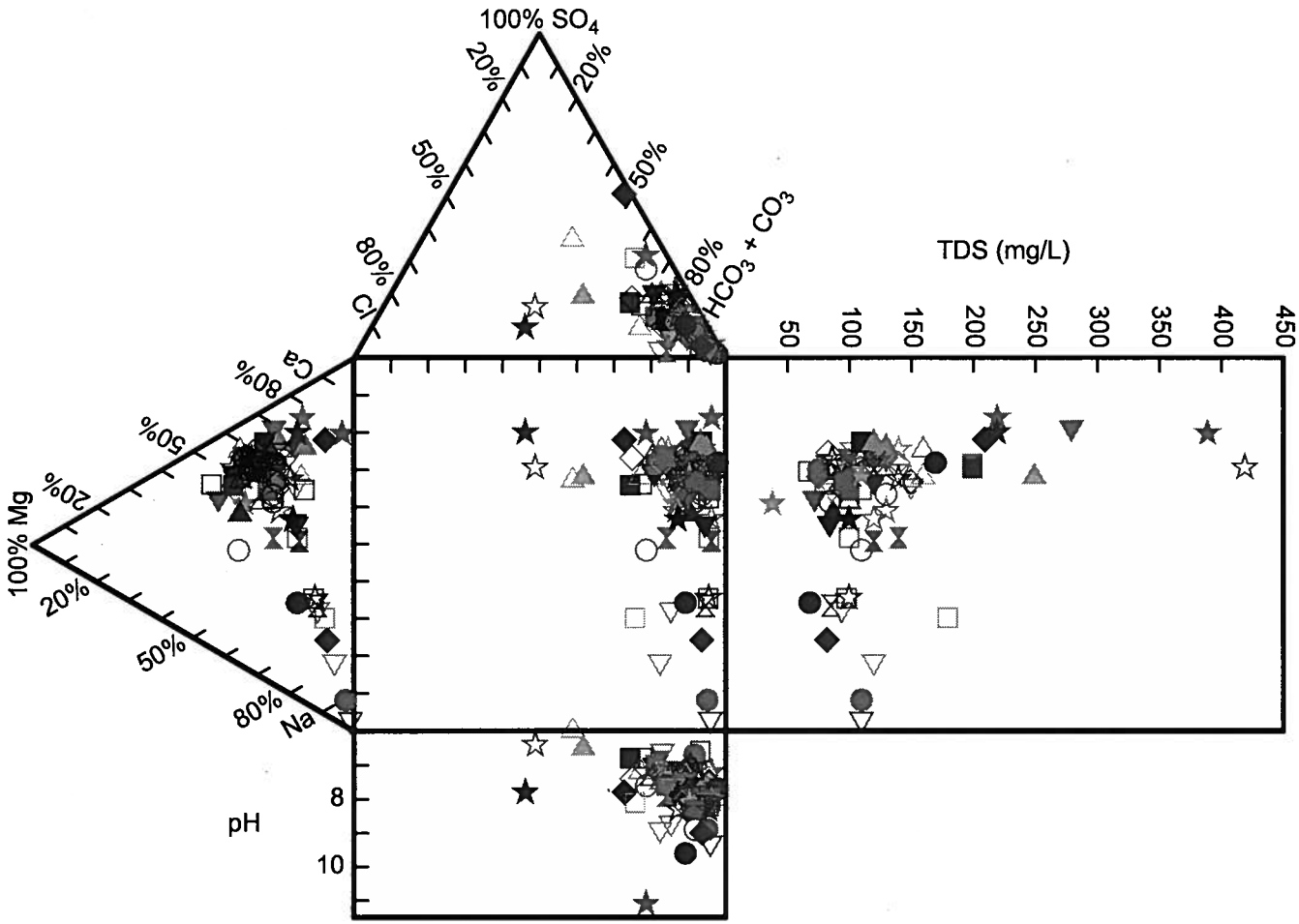
Ypg Igneous


100% SO4
20%
20%
50%
50%
80%
80%
Cl
HCO3 + CO3
TDS (mg/L)
120
140
160
180
200
Ca
80%
50%
20%
100% Mg
20%
50%
80%
Na
7.5
8.5
9.5
10.5
pH

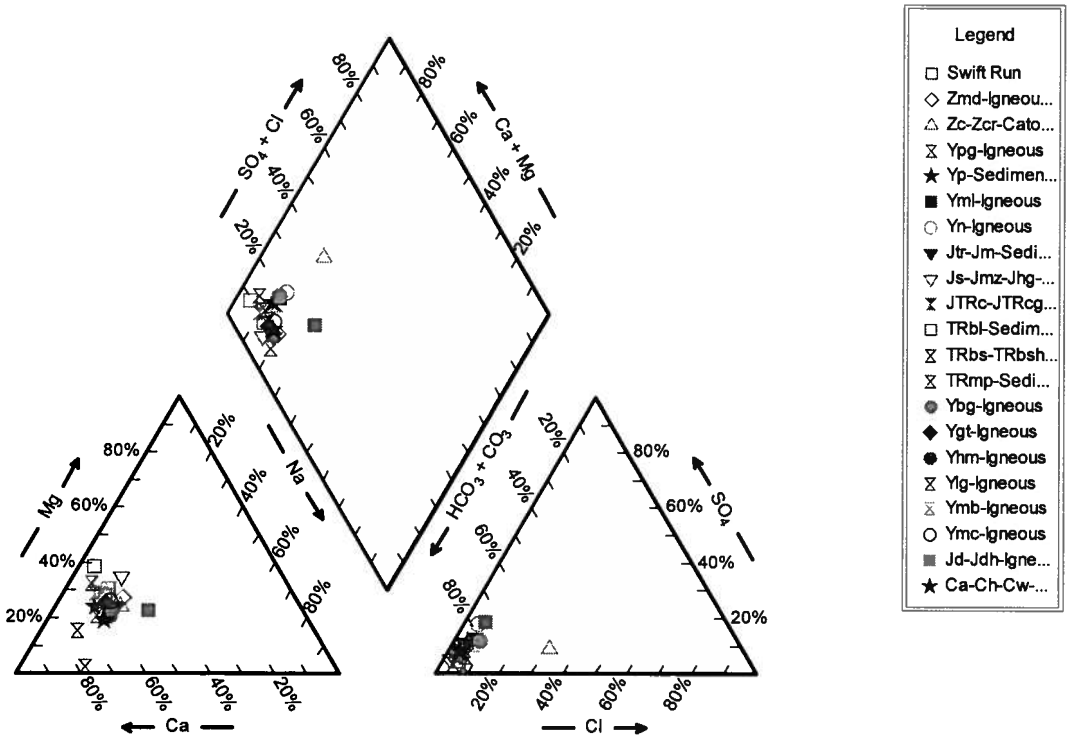
Zc-Zr Igneous Extrusives



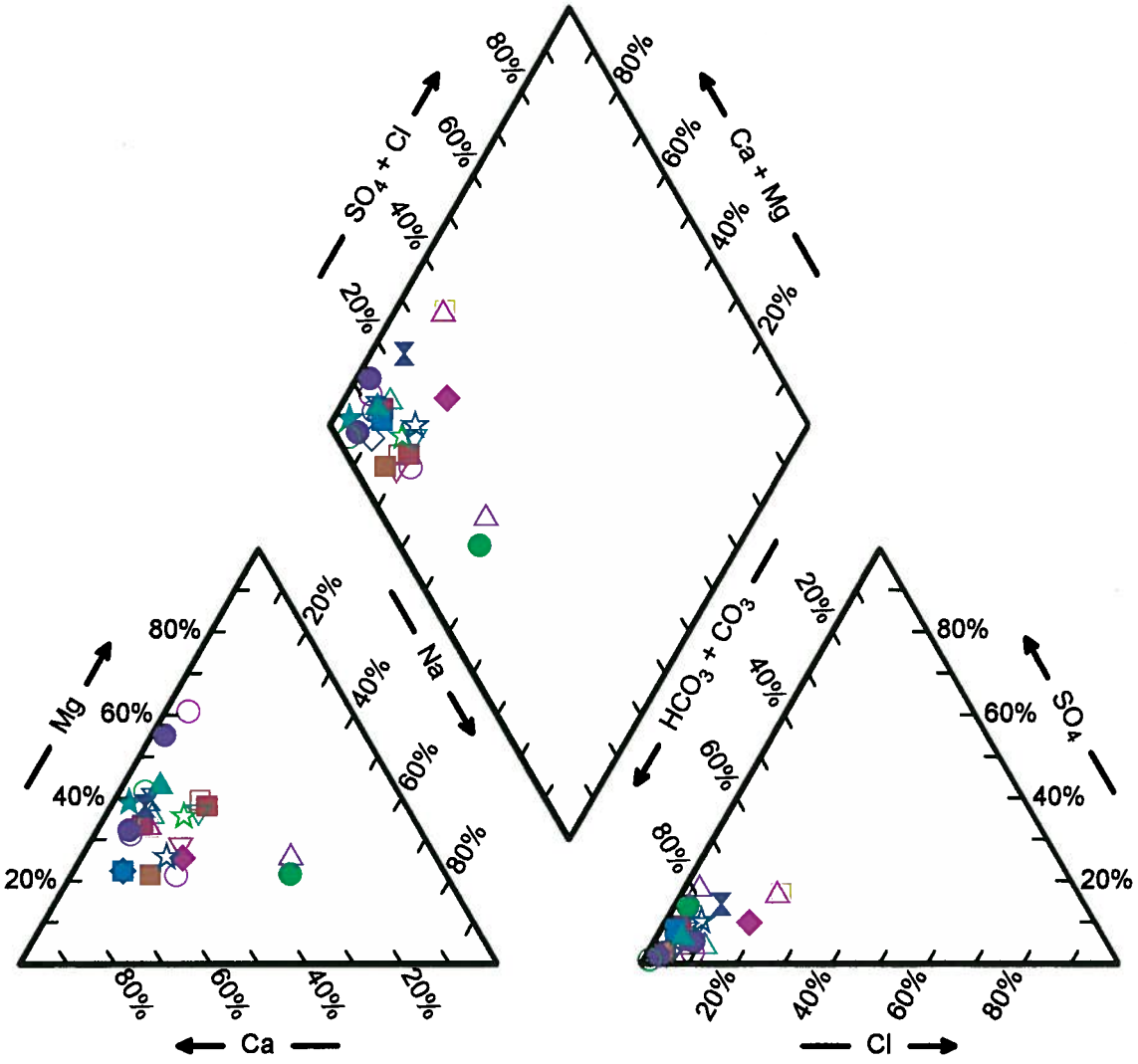
Zmd Igneous Intrusives



Piper Diagram



Zss Swift Run



Legend

- WWIN-200...
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- WWTS-200...
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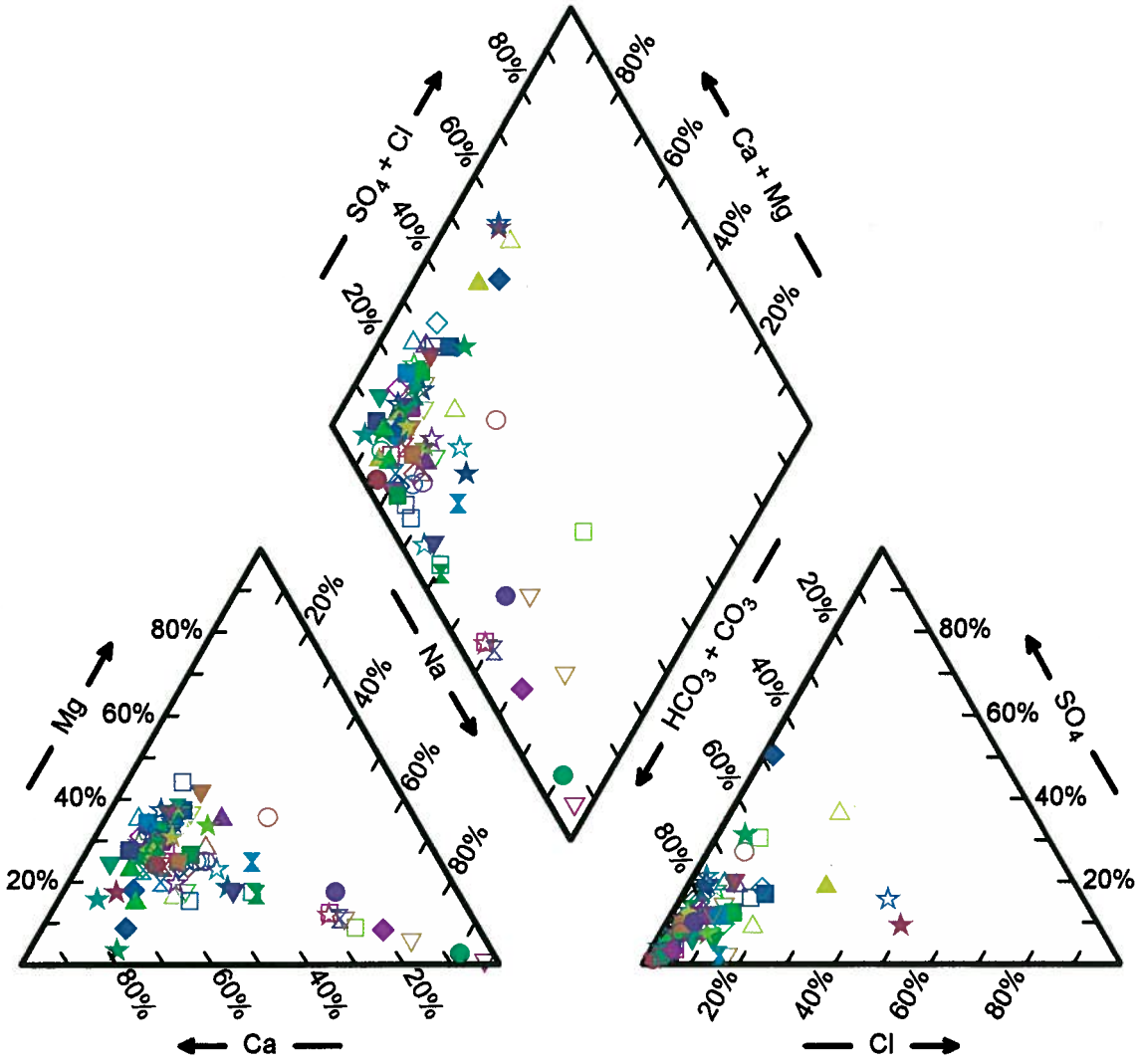
- WWTS-200...
- WWIN-200...
- WWIN-200...
- WWIN-200...

Zmd Igneous



Legend

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- WWIN-200...
- WWIN-200...
- WWTS-200...
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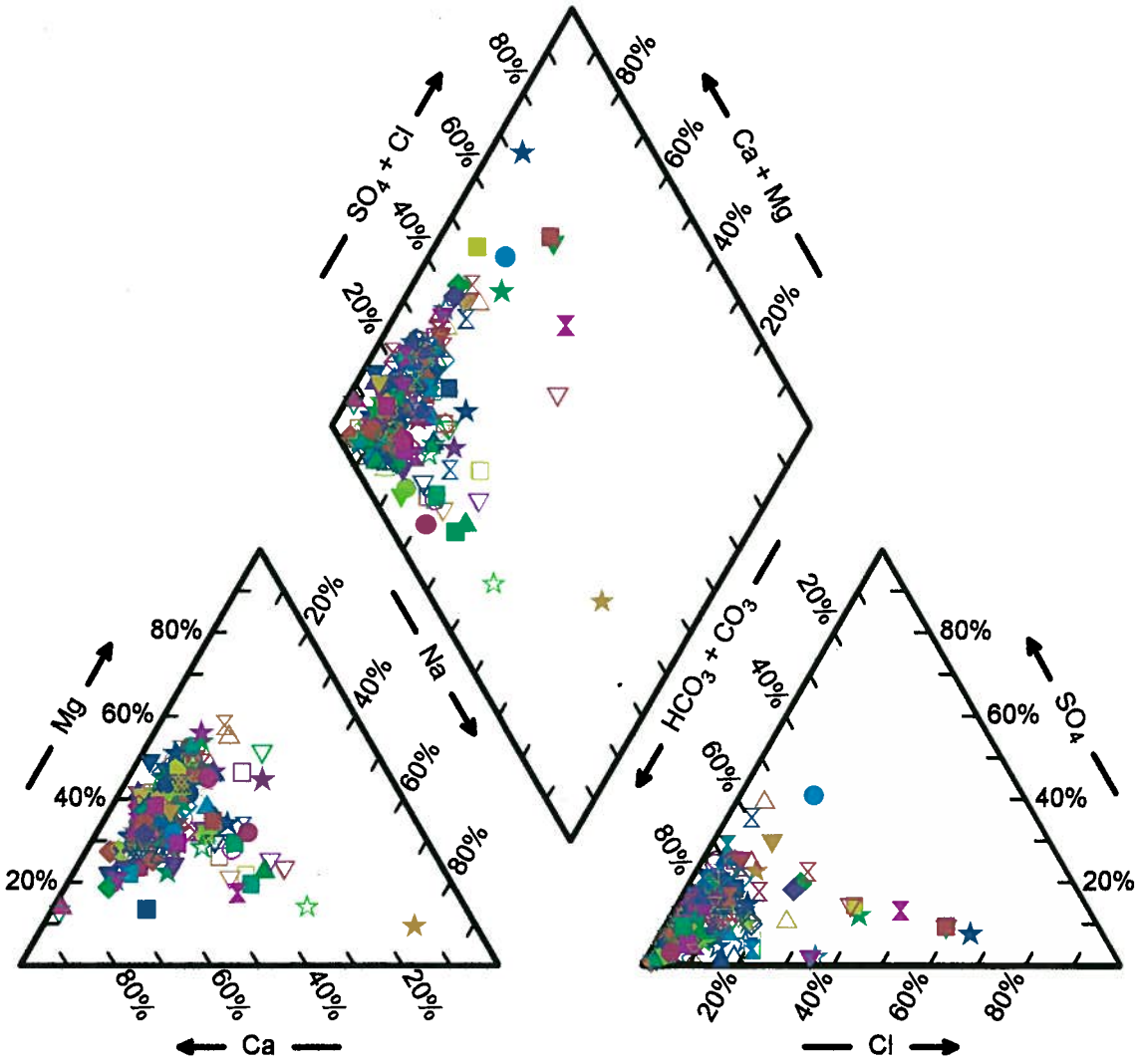
- WWIN-200...
- WWTS-200...
- WWTS-200...
- WWIN-200...

56 More...

Zr Zc Catoctin



Legend

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- WWIN-200...
- WWTS-200...
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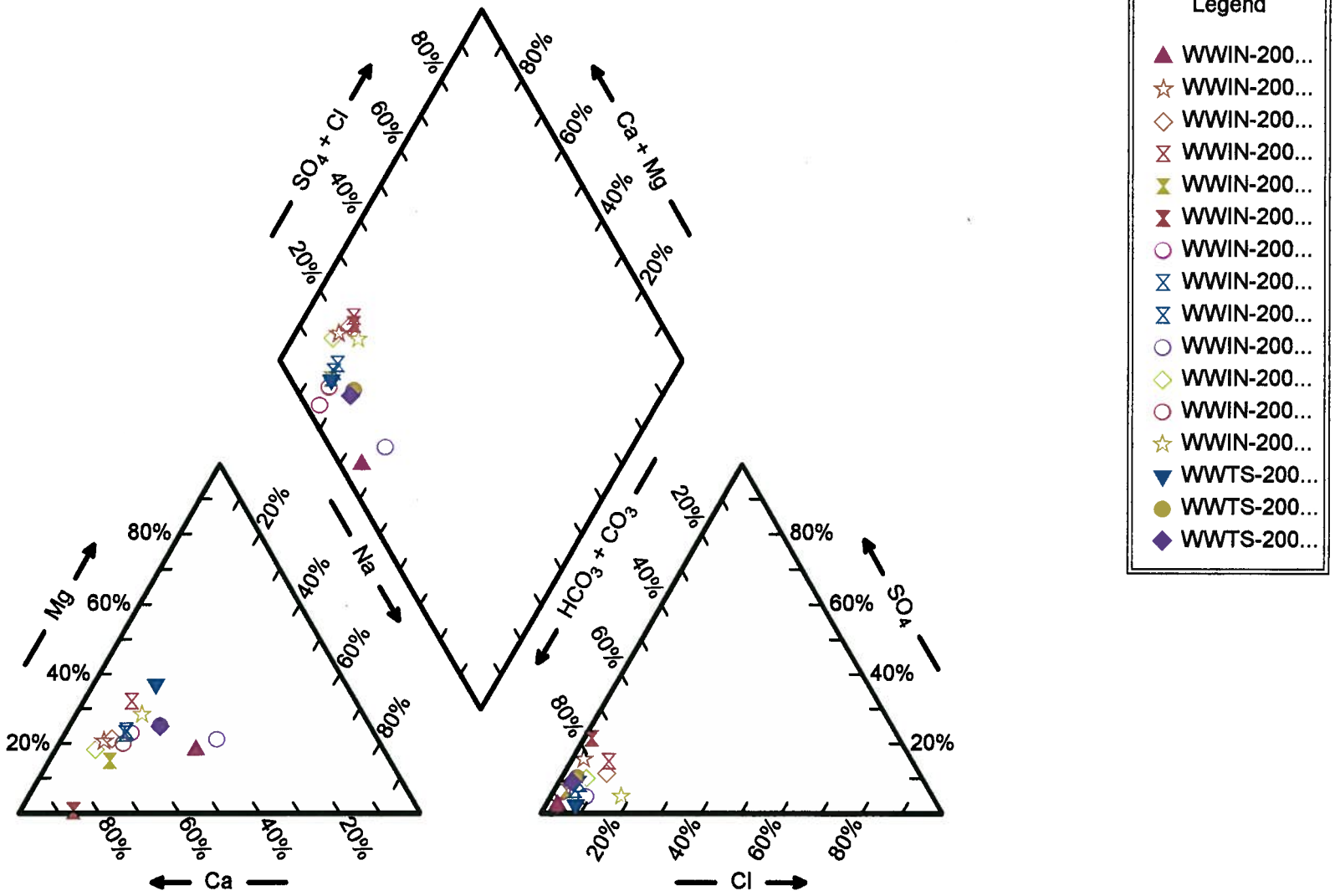
- WWIN-200...
- WWIN-200...

179 More...

Ypg Igneous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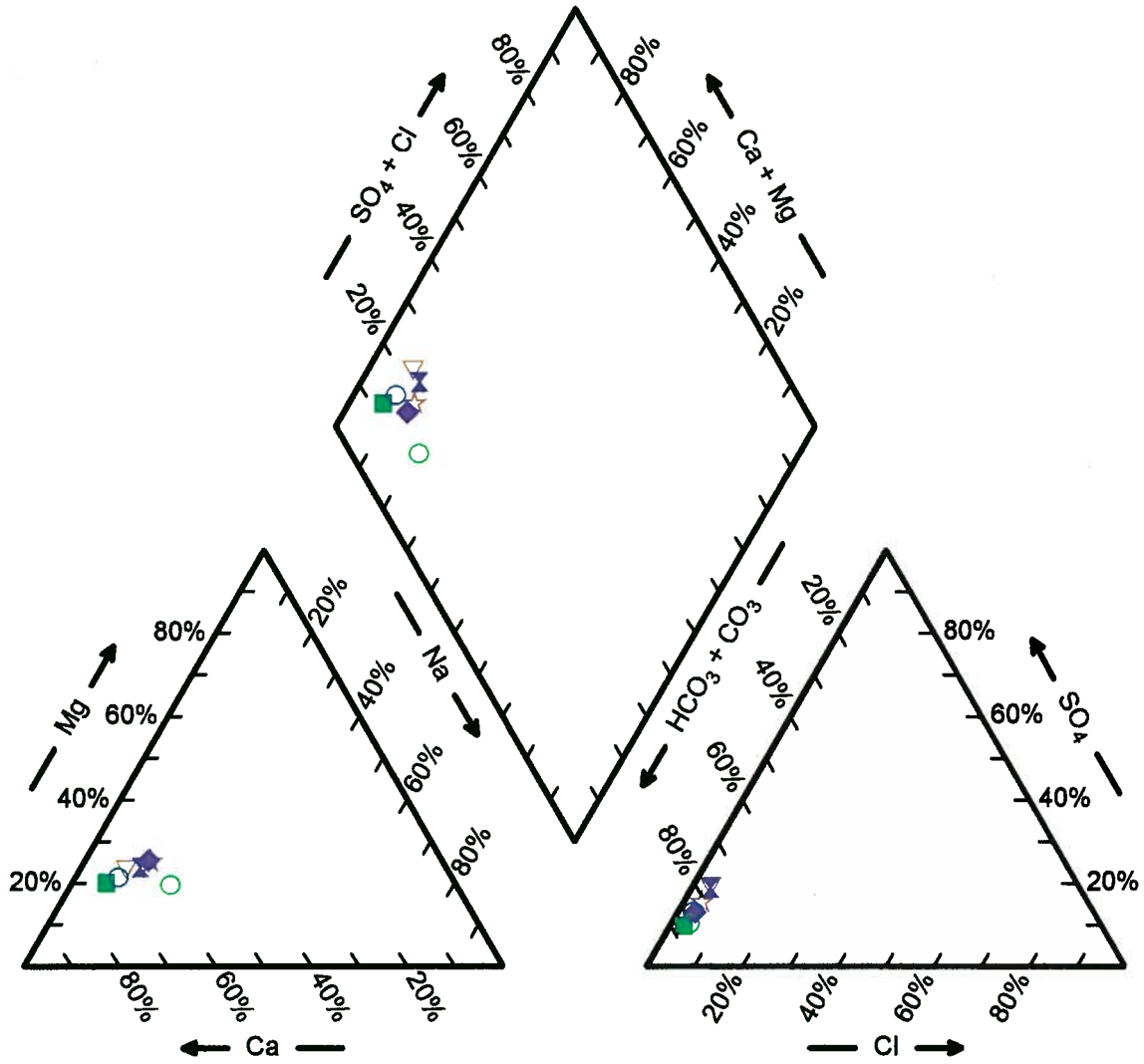
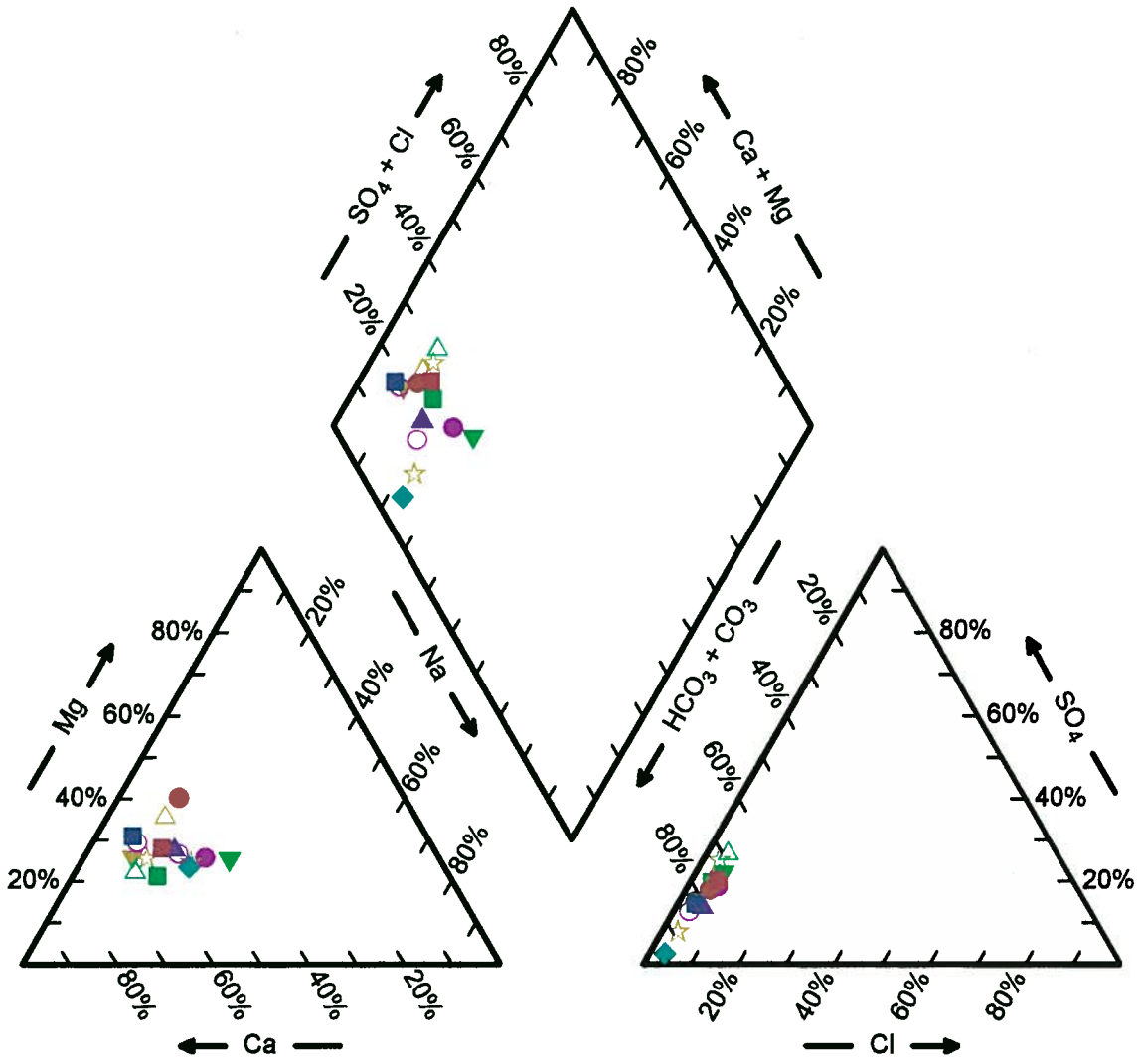
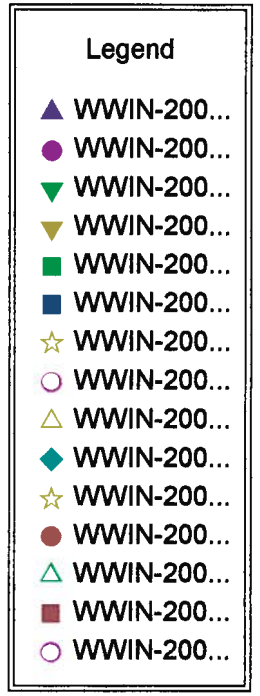
WWIN-200...
WWIN-200...
WWIN-200...
WWIN-200...
WWTS-200...
WWTS-200...
WWTS-200...
SO4 + Cl
Ca + Mg
Na
HCO3 + CO3
Mg
Ca
Cl
SO4
20%
40%
60%
80%

Yp Sedimentary



Yn Igneous


80%
60%
40%
20%
$SO_4 + Cl$
$Ca + Mg$
Na
$HCO_3 + CO_3$
Mg
Ca
SO_4
Cl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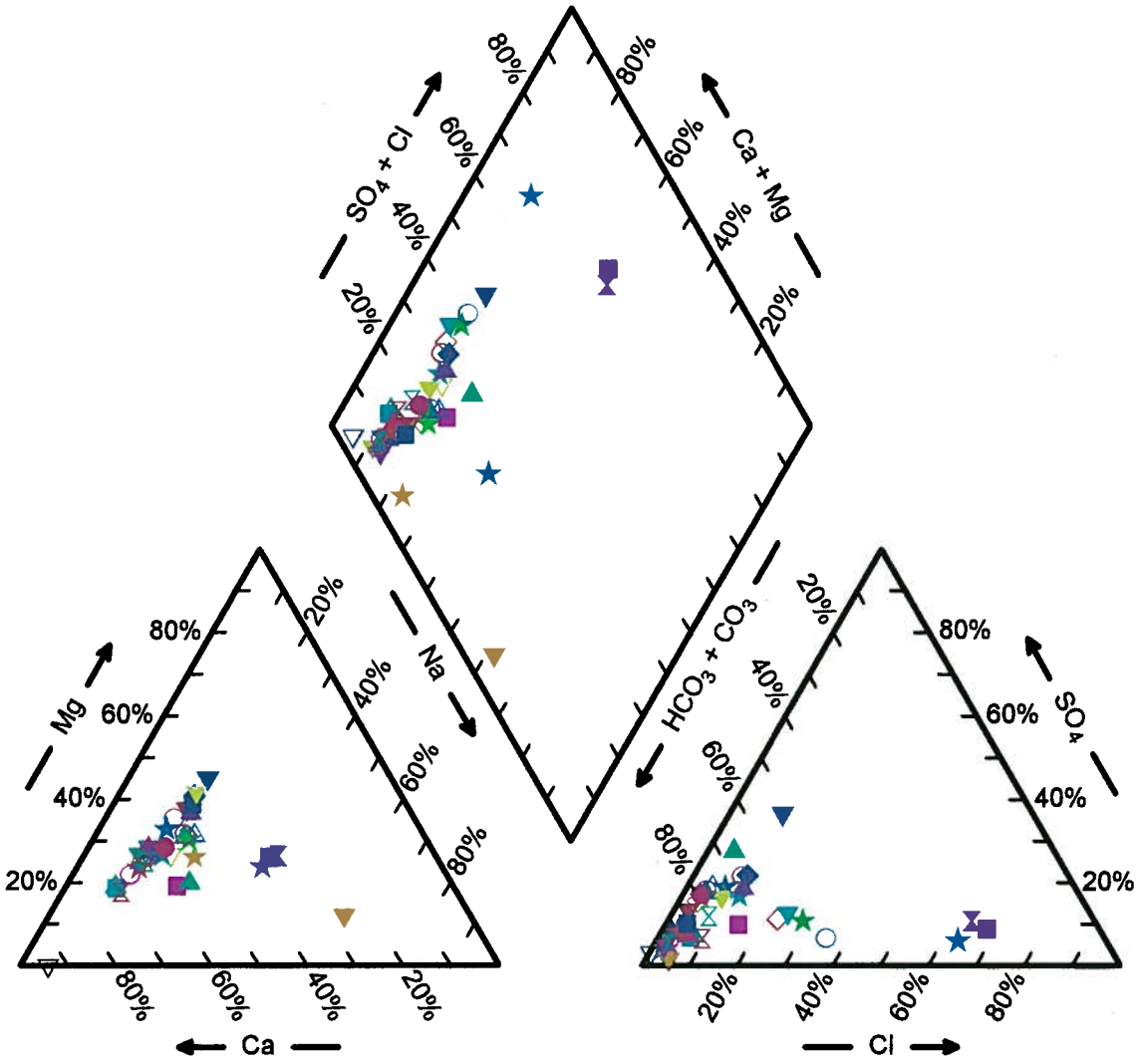
WWIN-200...

Yml Igneous



Legend

- WWTS-200...
- WWIN-200...
- WWIN-200...
- WWIN-200...
- WWIN-200...
- WWTS-200...
- WWTS-200...
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- WWCO-200...
- WWIN-200...
- WWIN-200...
- WWTS-200...
- WWTS-200...
- WWIN-200...
- WWTS-200...
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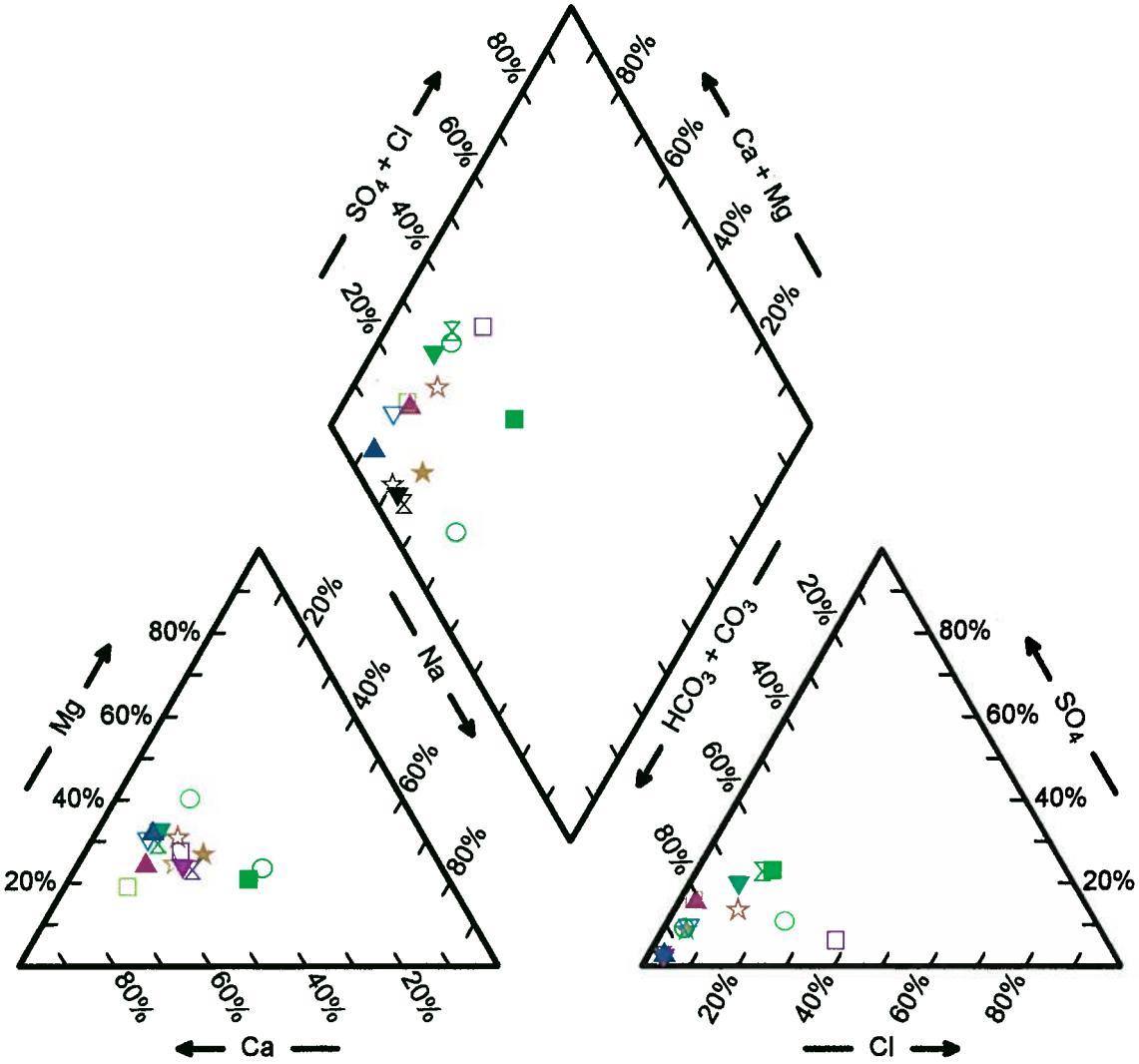
- WWTS-200...

14 More...

Ymc Igneous



Legend

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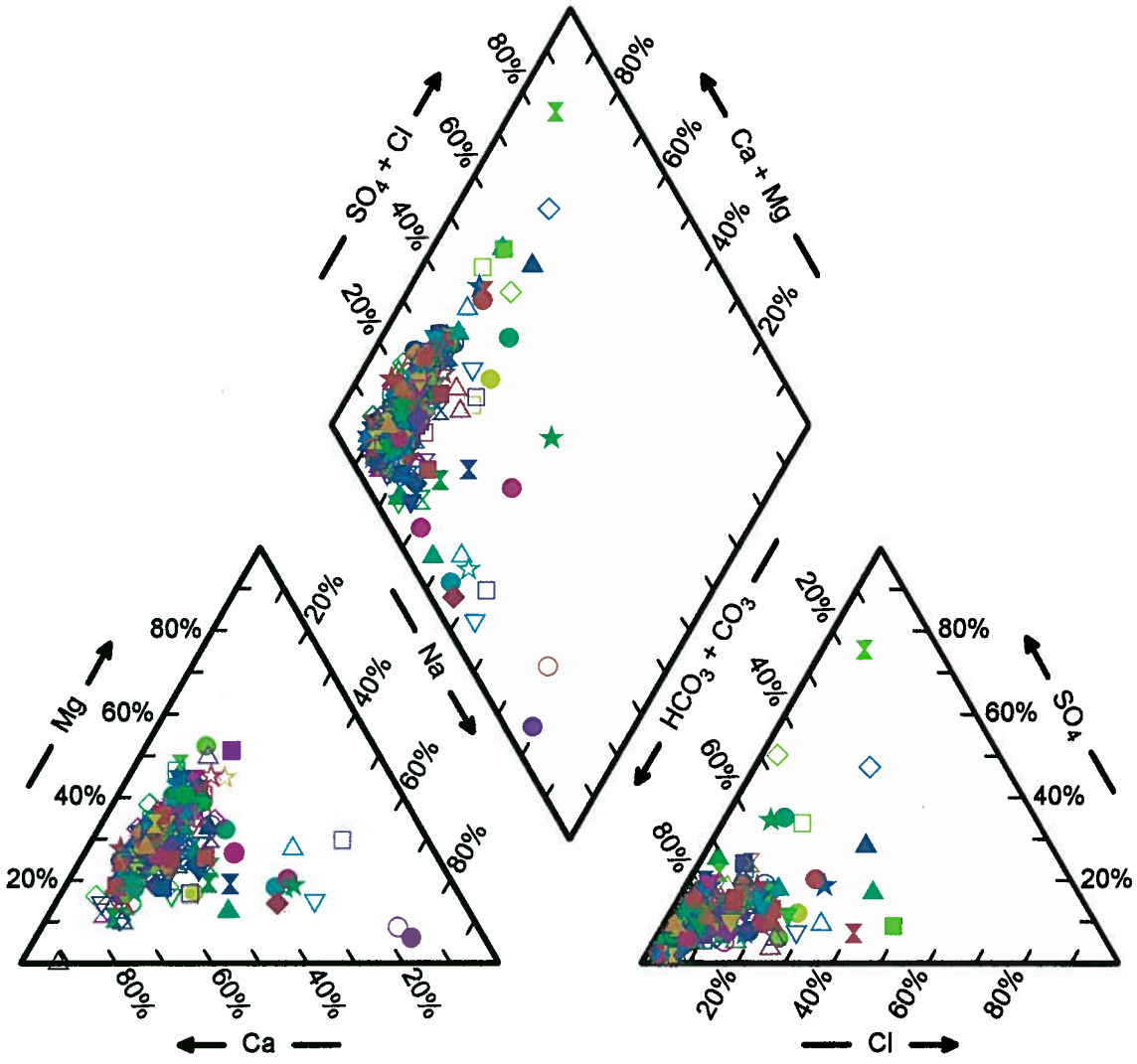
- WWIN-200...

Ymb Igneous



Legend

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- WWTS-200...
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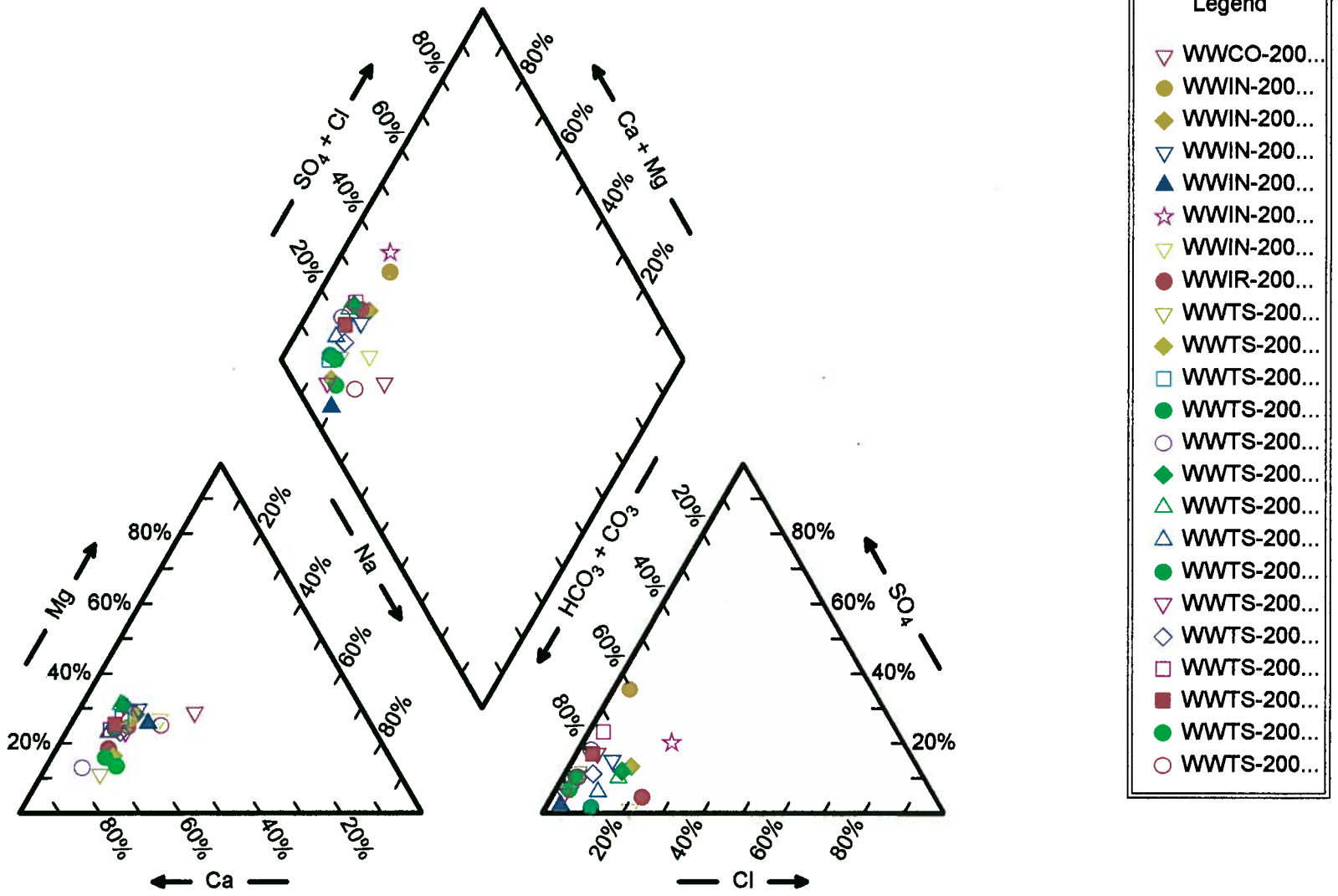
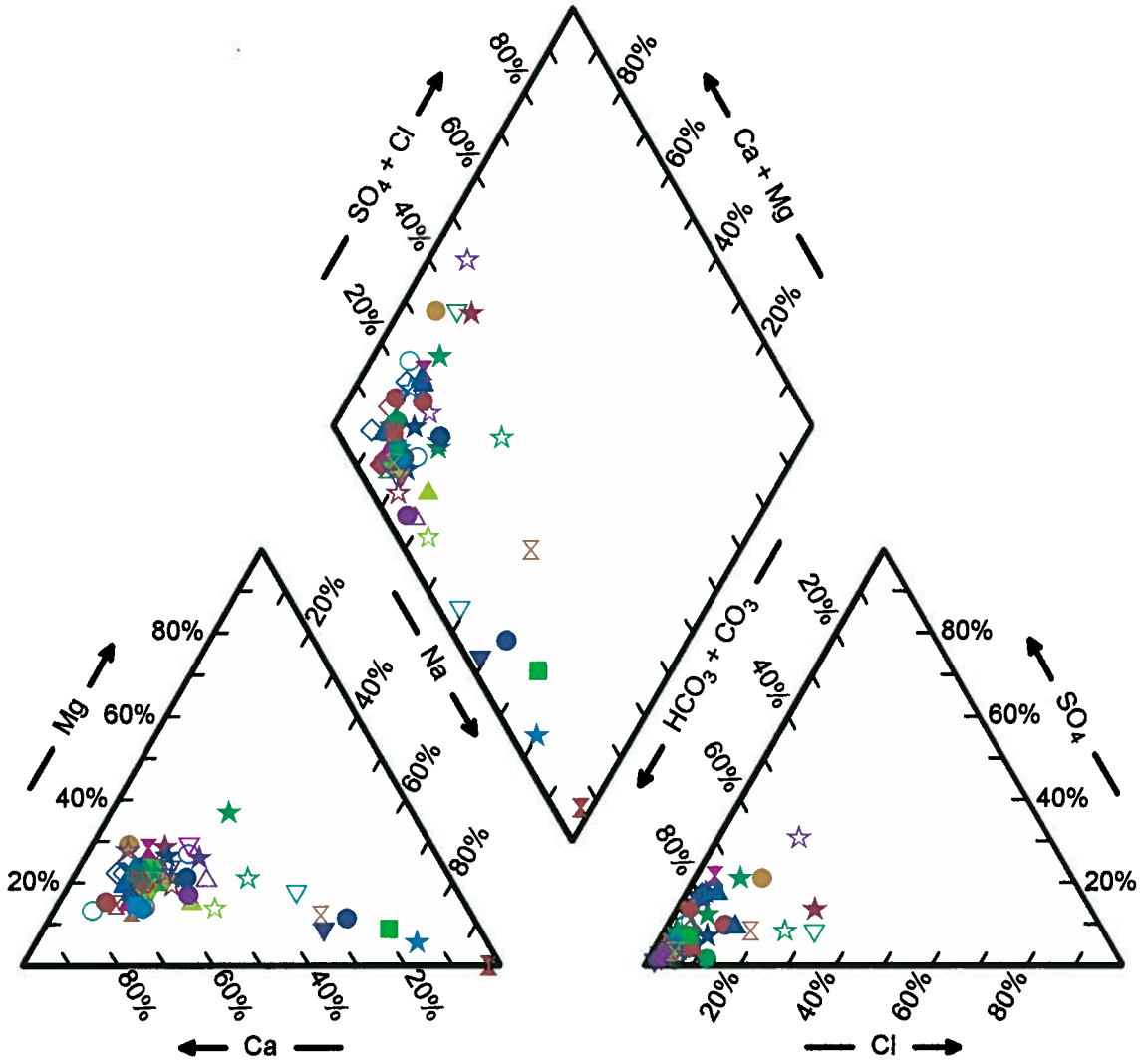
- WWTS-200...
- WWTS-200...
- WWIN-200...
- WWTS-200...
- WWTS-200...
- WWIN-200...

228 More...

Ylg Igneous


Legend
WWCO-200...
WWIN-200...
WWIN-200...
WWIN-200...
WWIN-200...
WWIN-200...
WWIN-200...
WWIR-200...
WWTS-200...
WWTS-200...
WWTS

Yhm Igneous



Legend

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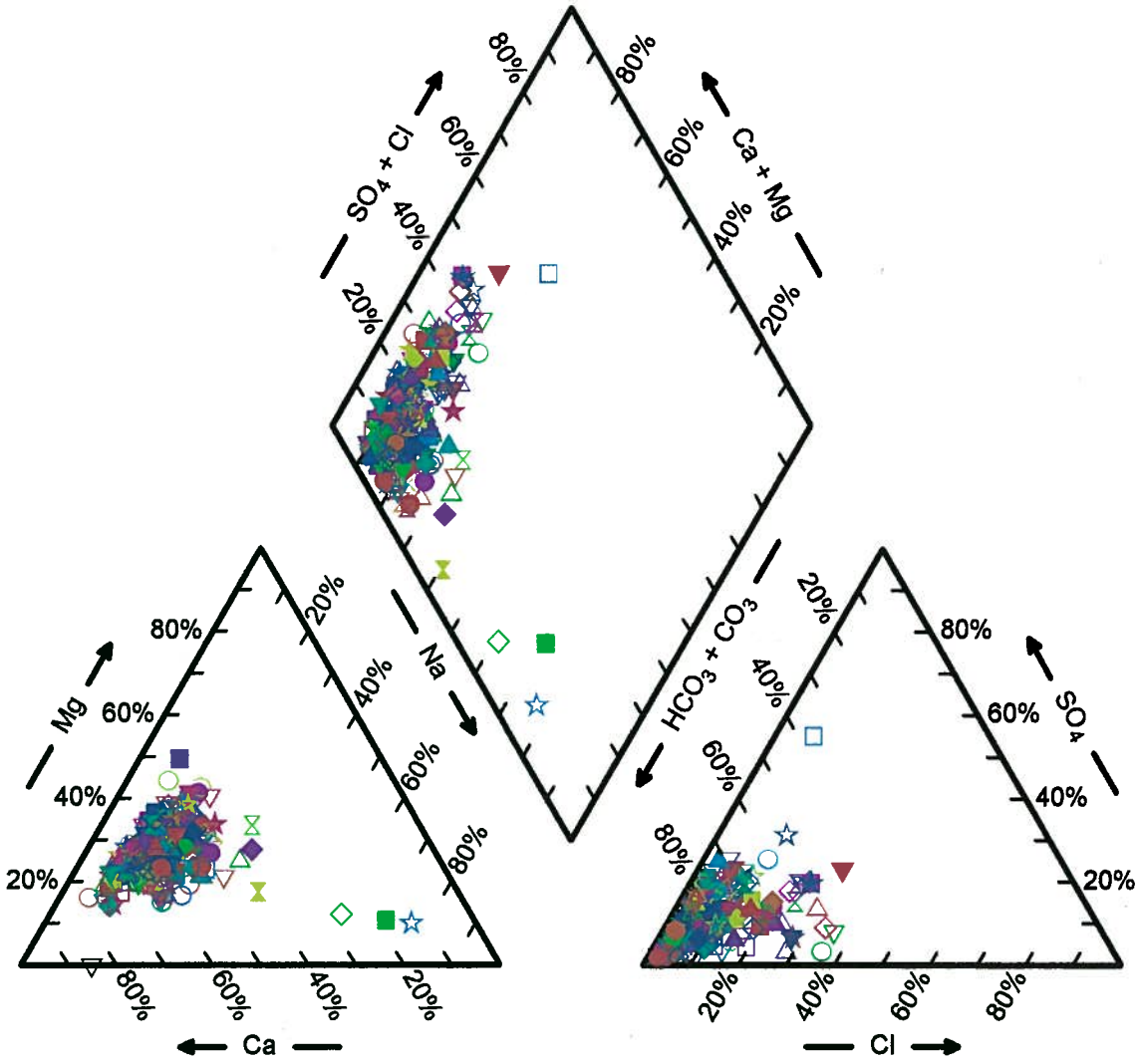
- WWTS-200...
- WWTS-200...

34 More...

Ygt Igneous



Legend

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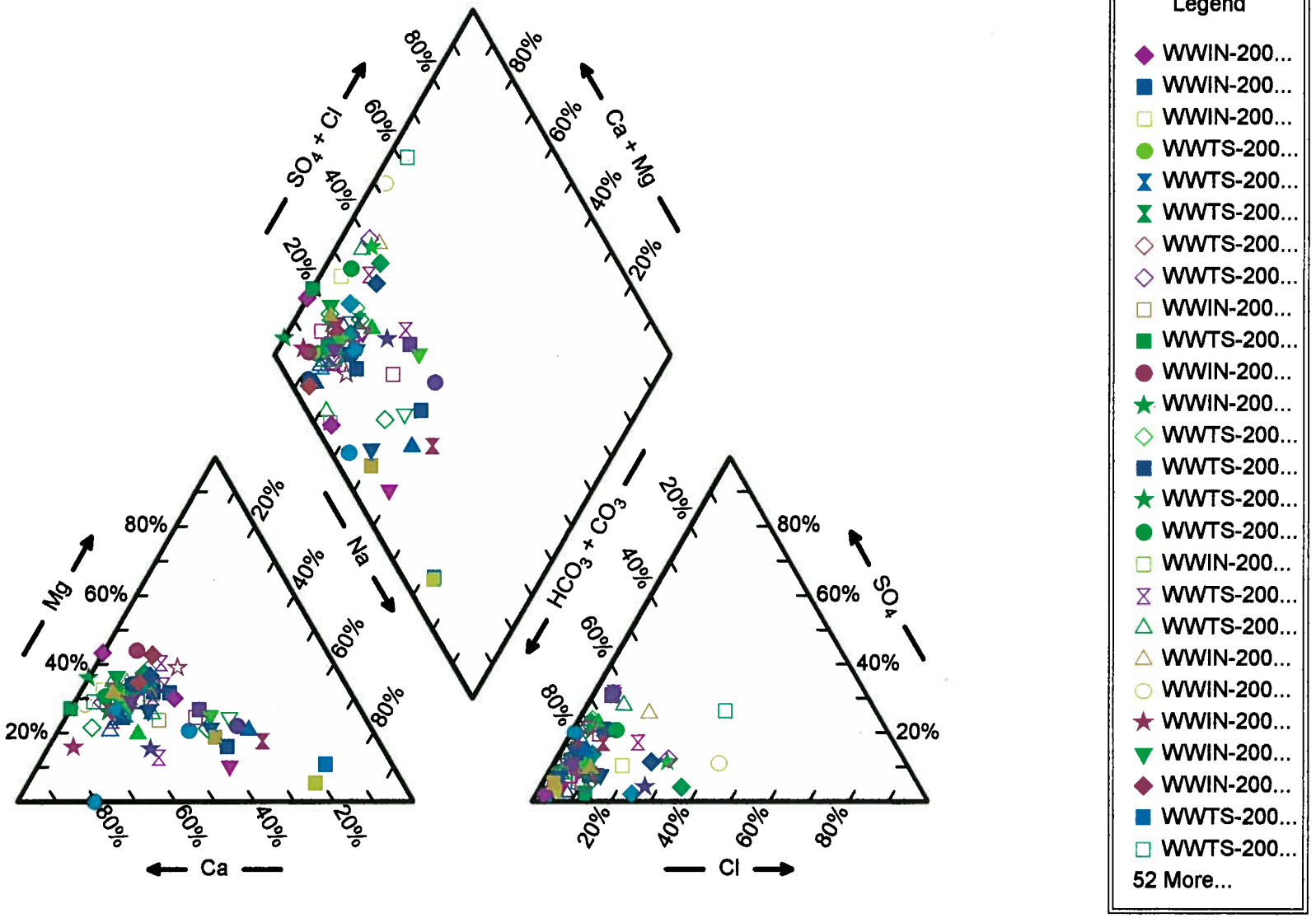
- WWTS-200...
- WWIN-200...

229 More...

Yc Igneous


Legend
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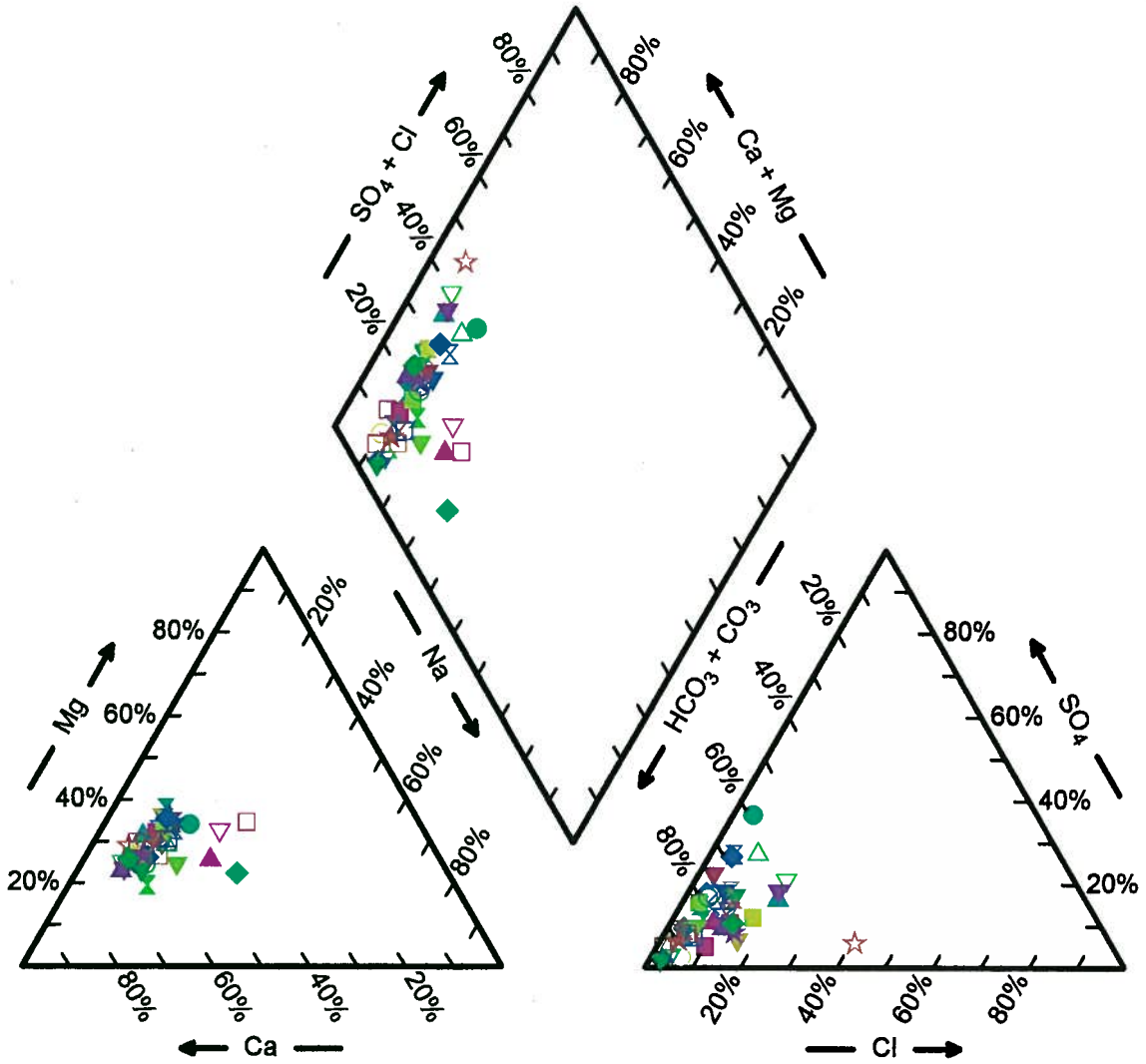
WWTS-200...
WWIN-200...
WWIN-200...
WWIN-200...
WWIN-200...
WWIN-200...
WWTS-200...
WWTS-200...
52 More...
SO4 + Cl
Ca + Mg
Na
HCO3 + CO3
Mg
Ca
SO4
Cl
80%
60%
40%
20%

Ybg Igneous



Legend

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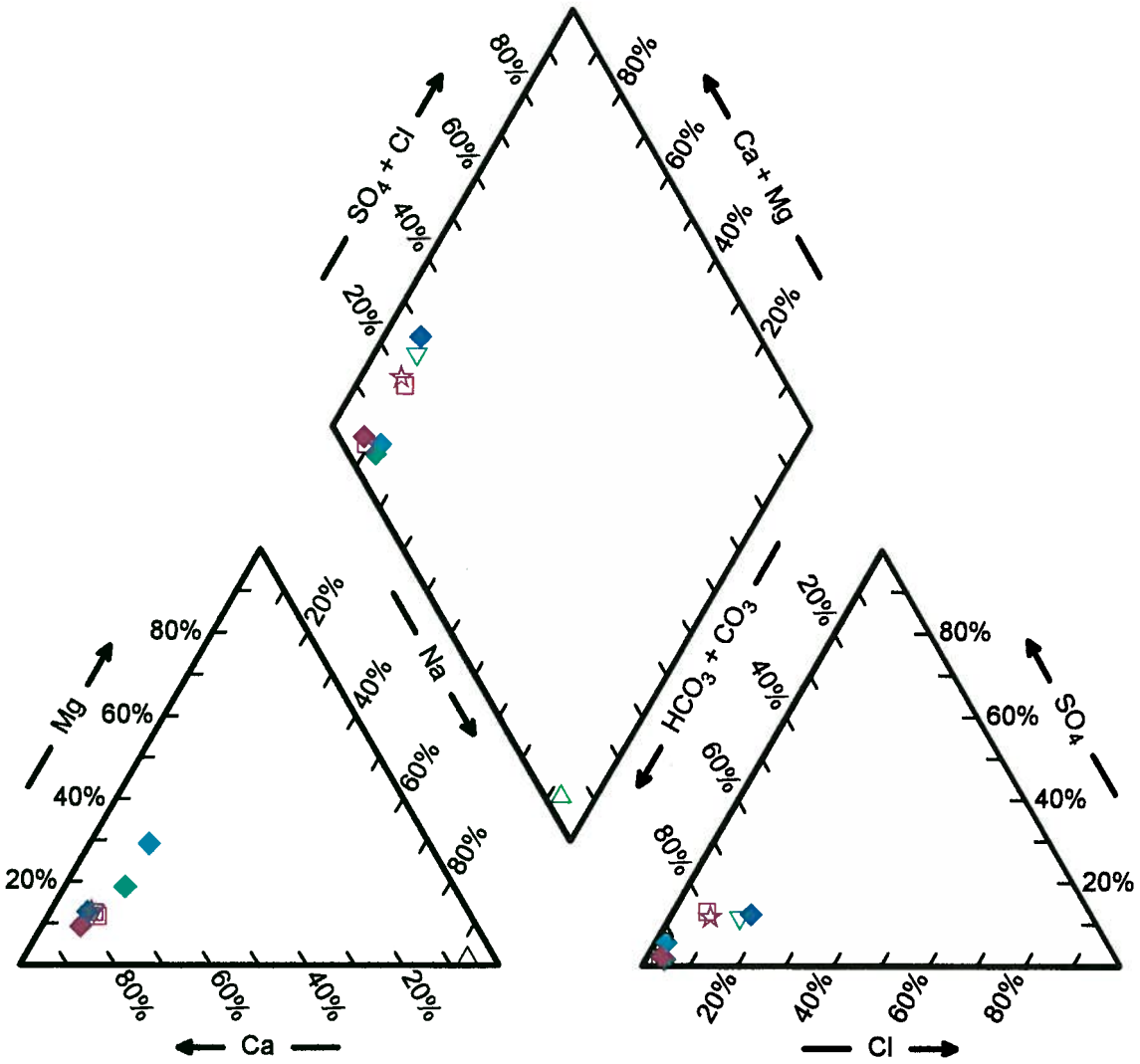
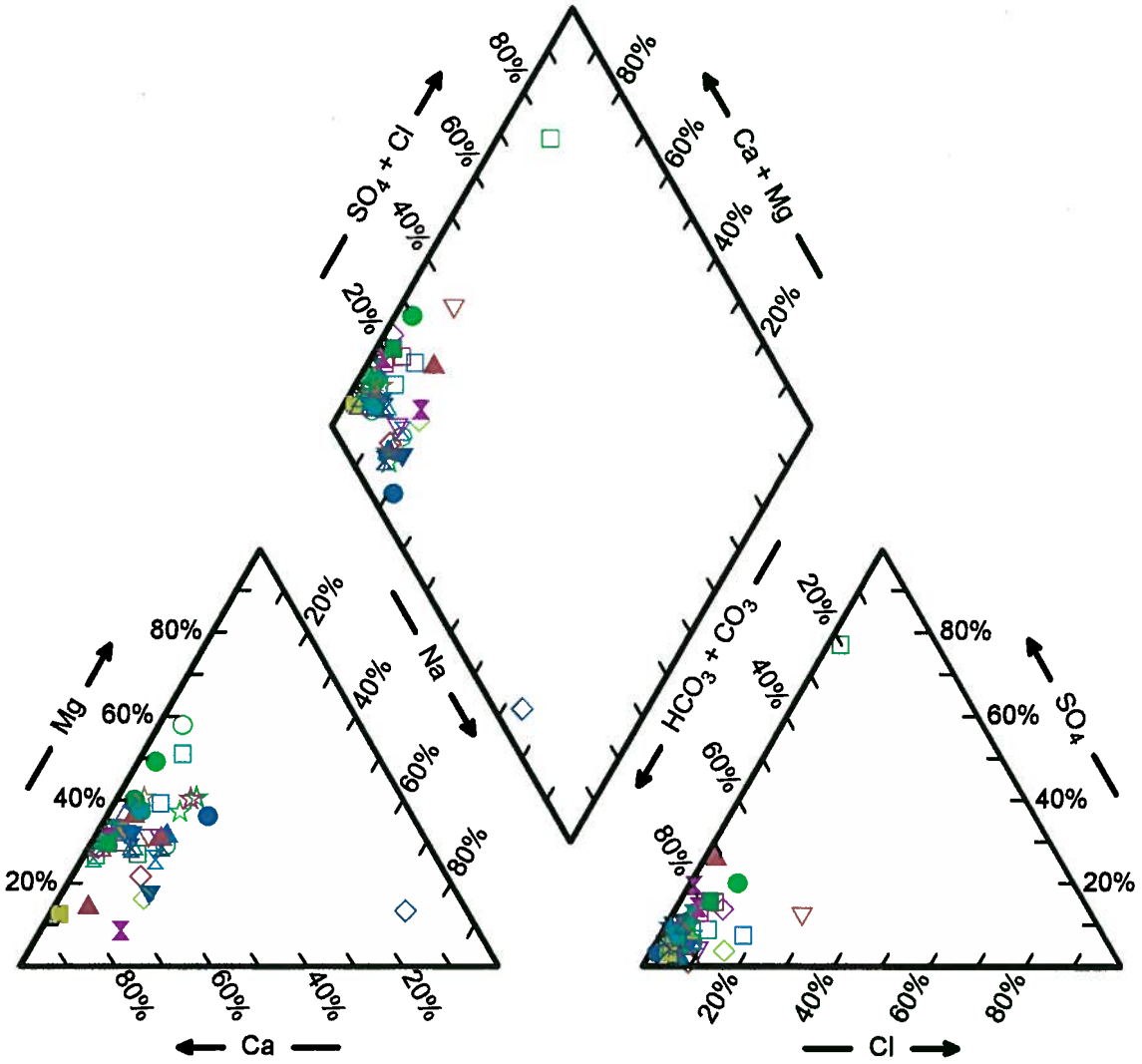
- WWTS-200...

17 More...

TRmp Manassas



TRbs TRbsh Balls Bluff Siltstone



Legend

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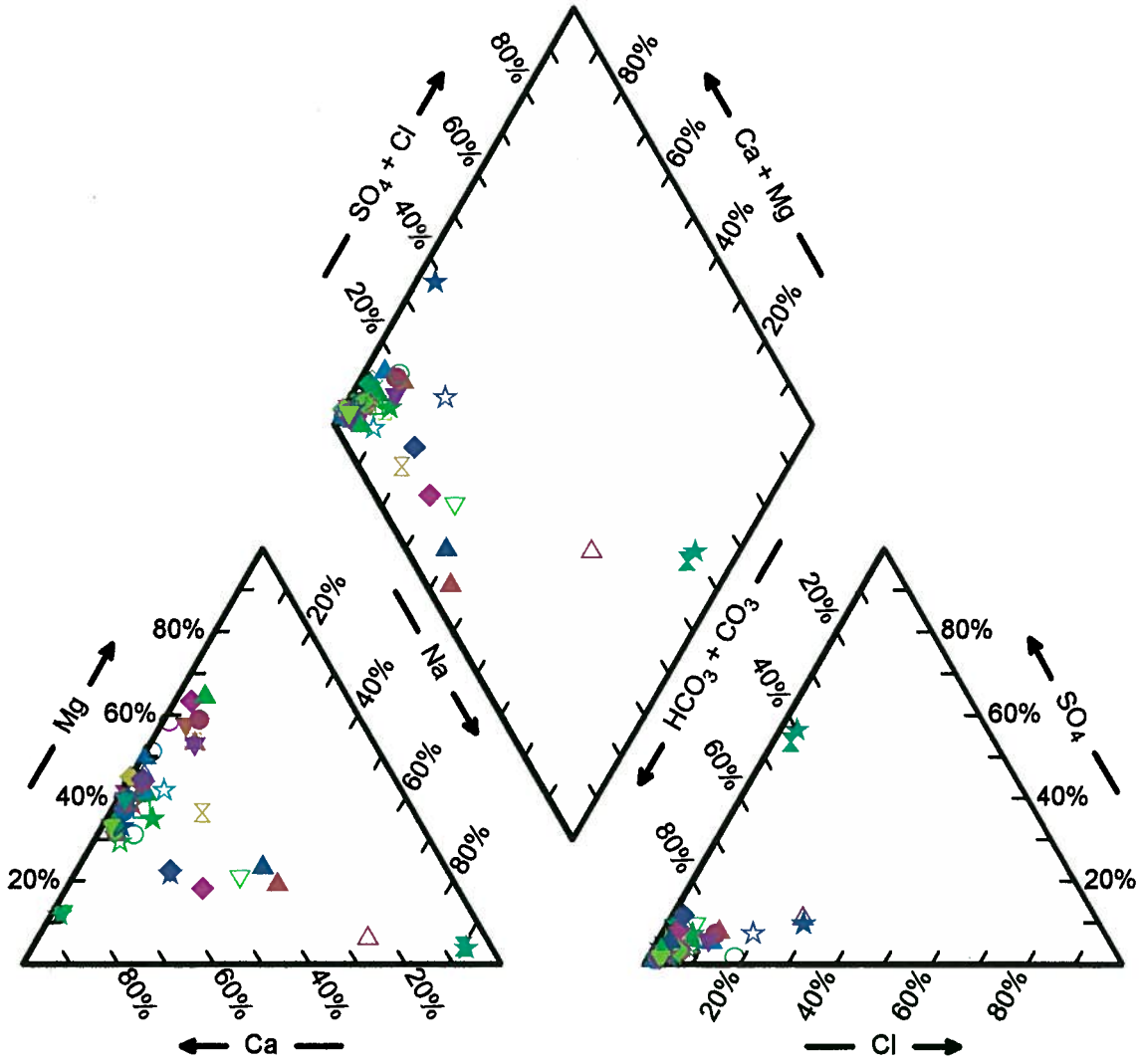
- WWTS-200...
- 20 More...

TRbl Leesburg



Legend

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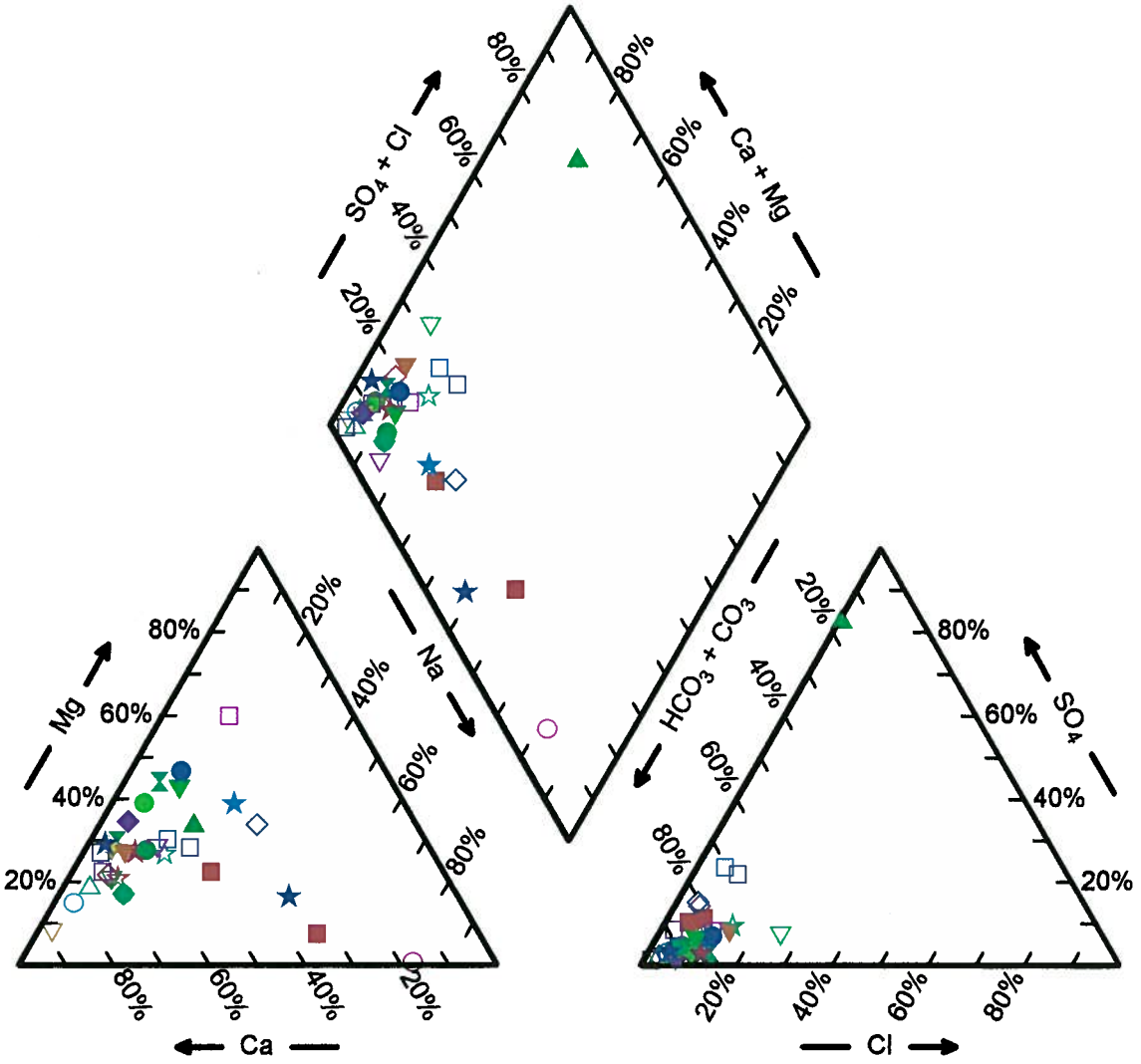
- WWIN-200...

25 More...

JTRtm JTRc JTRcg Catharpin



Legend

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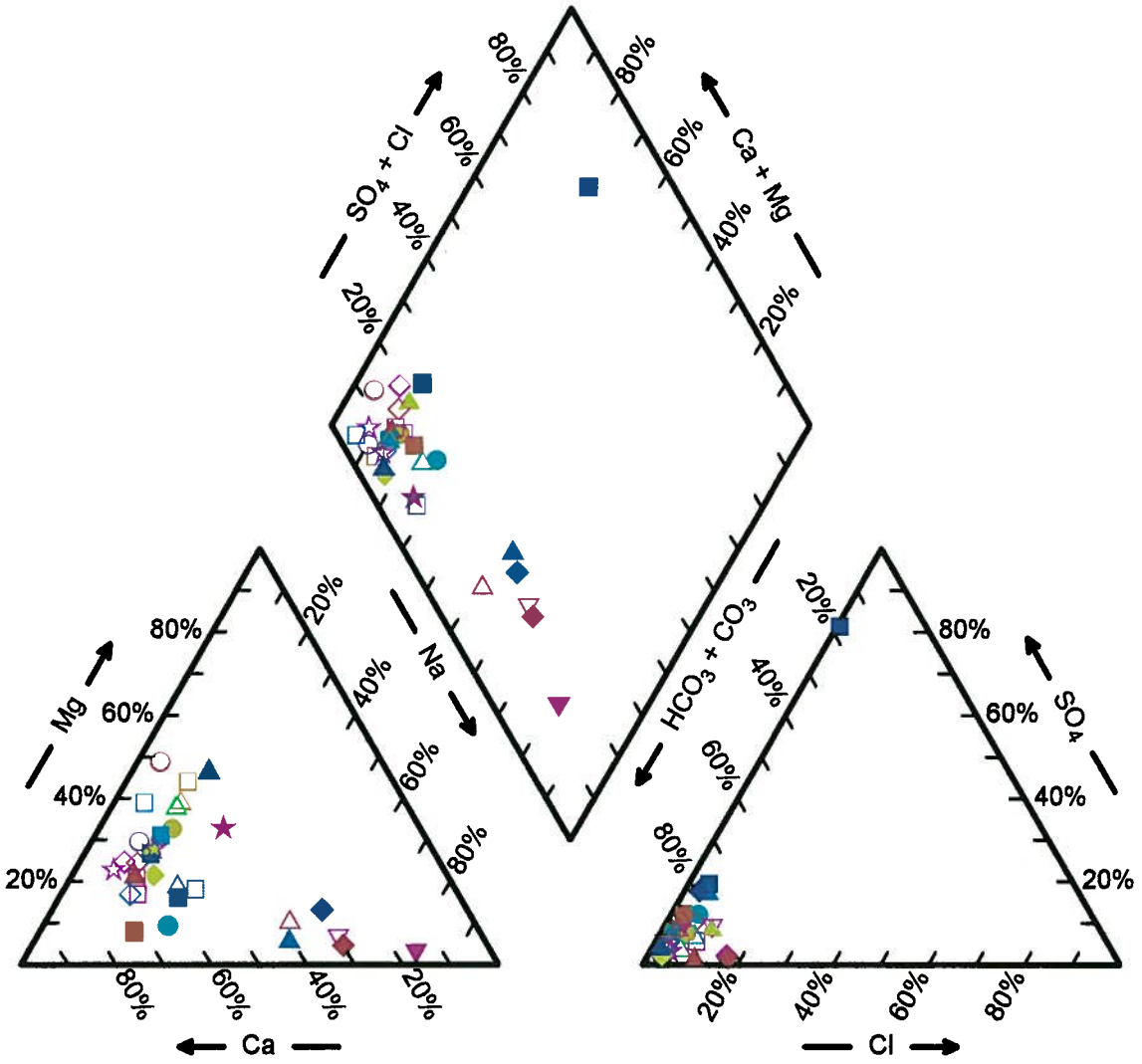
- WWIN-200...

9 More...

Jtr Jm Sediments



Legend

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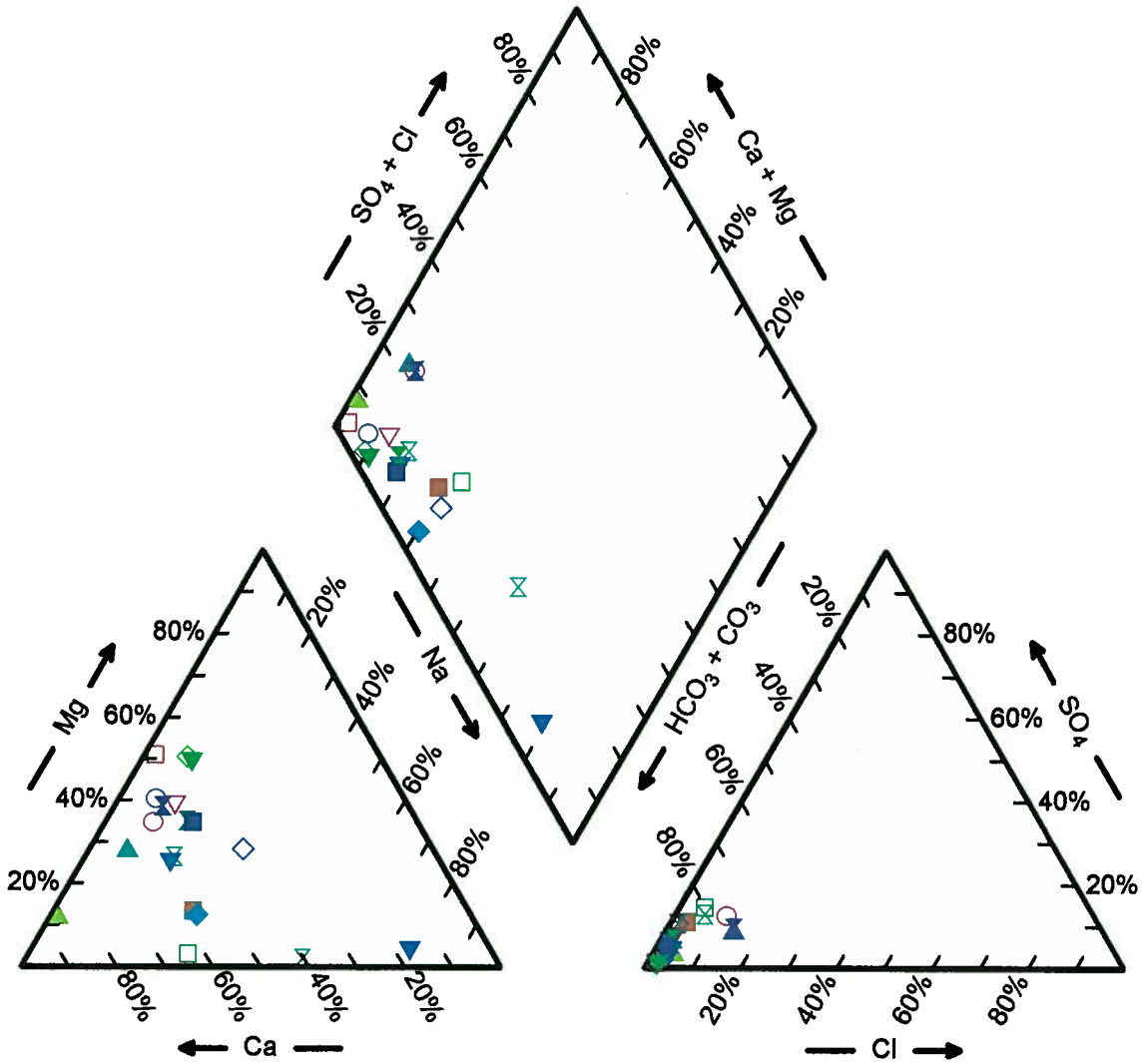
6 More...

Jss Jmz Jhg Basalts



Legend

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- WWIN-200...
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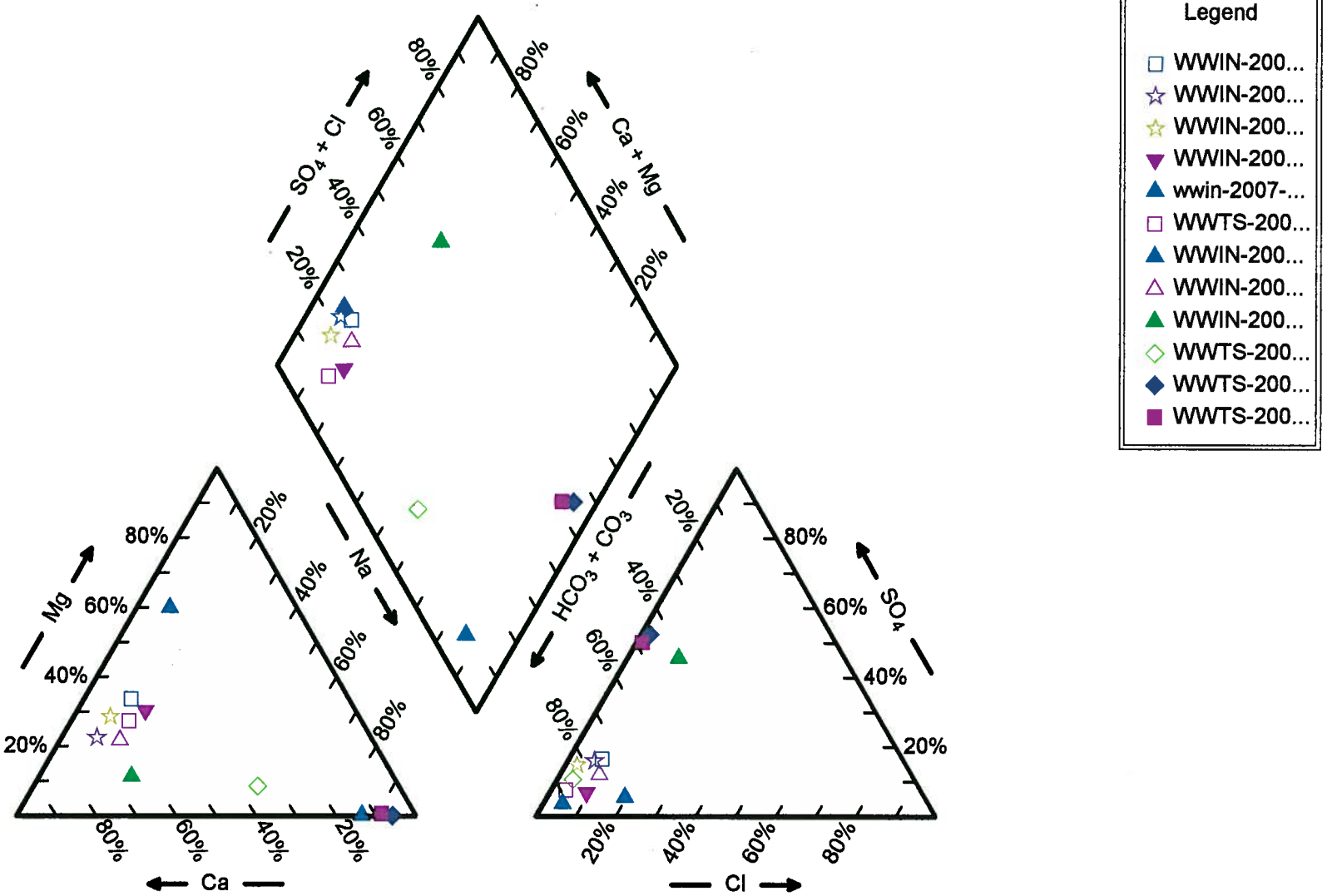
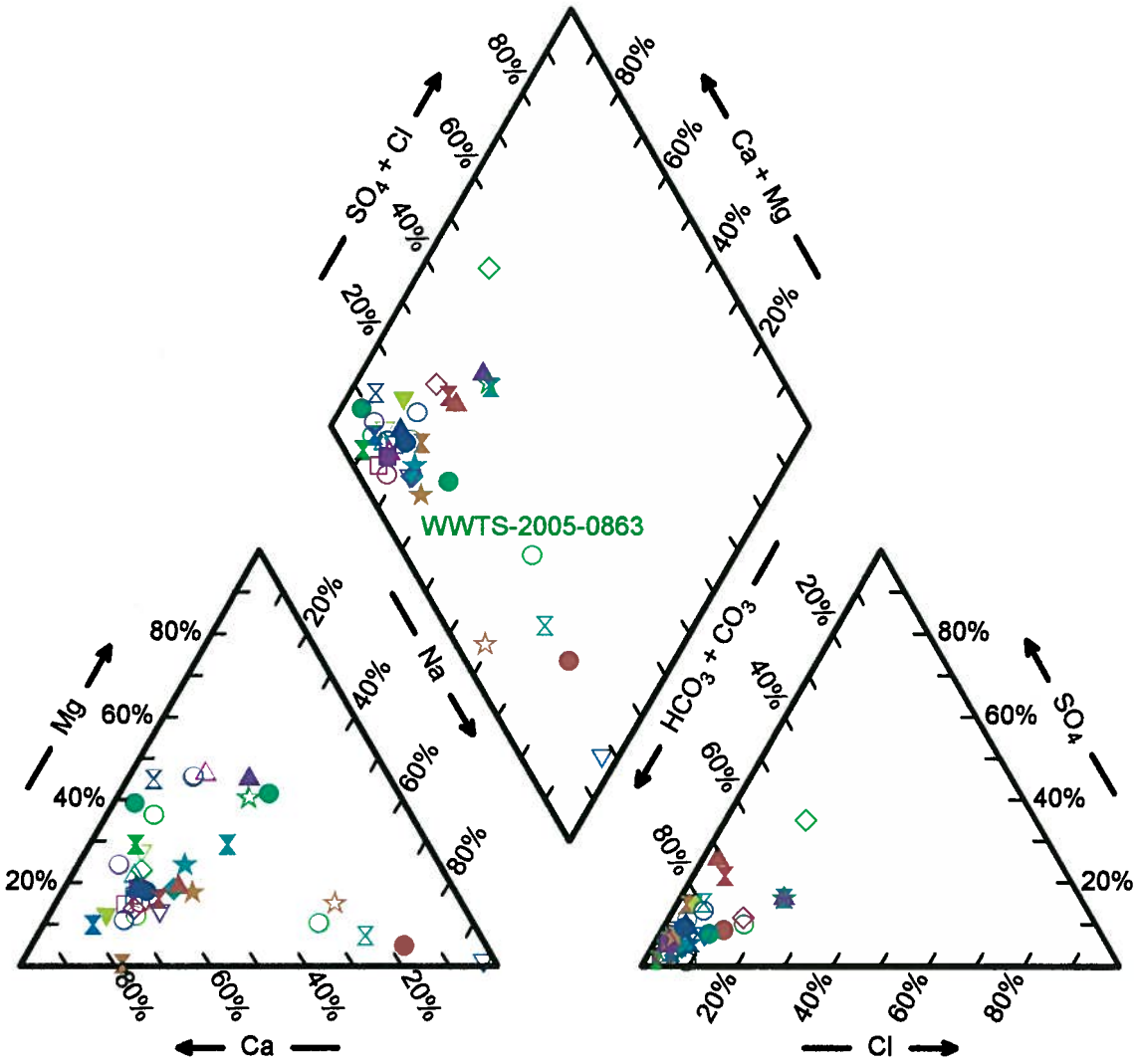
Jd Jdh Jurassic diabase



Cw Ch Metasediments



Legend

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- WWTS-200...
- WWIN-200...
- WWIN-200...

11 More...