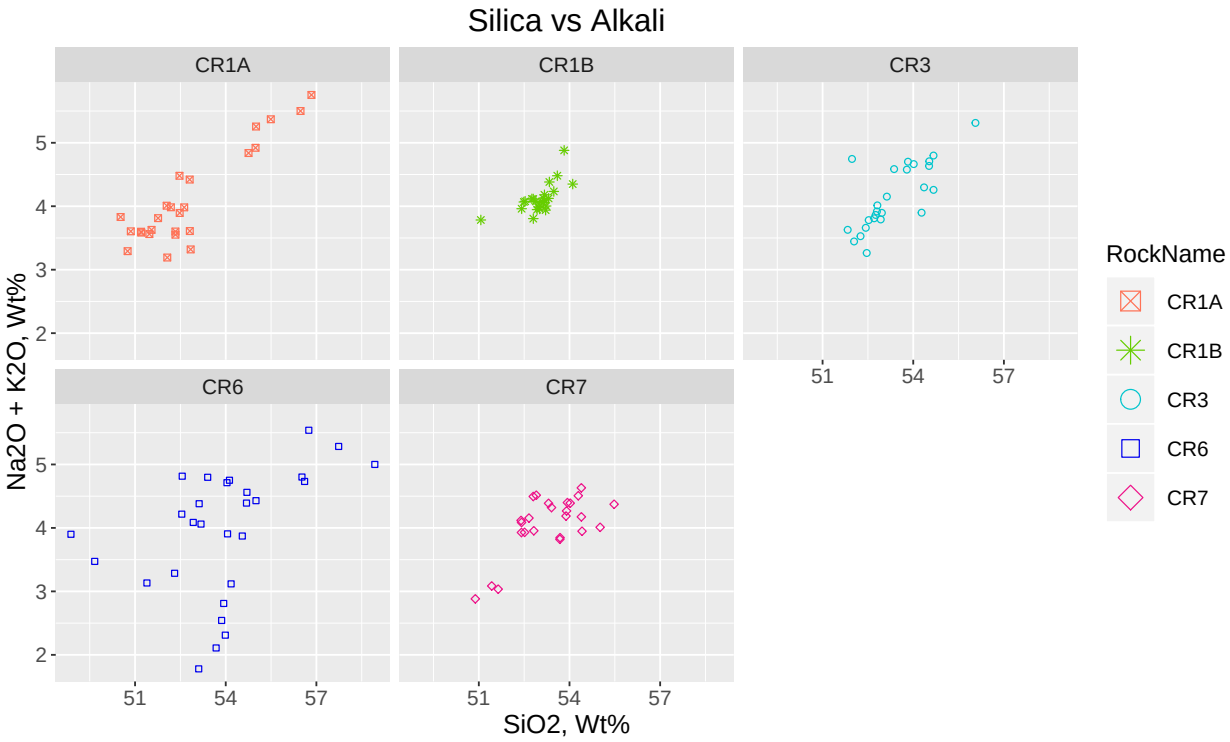
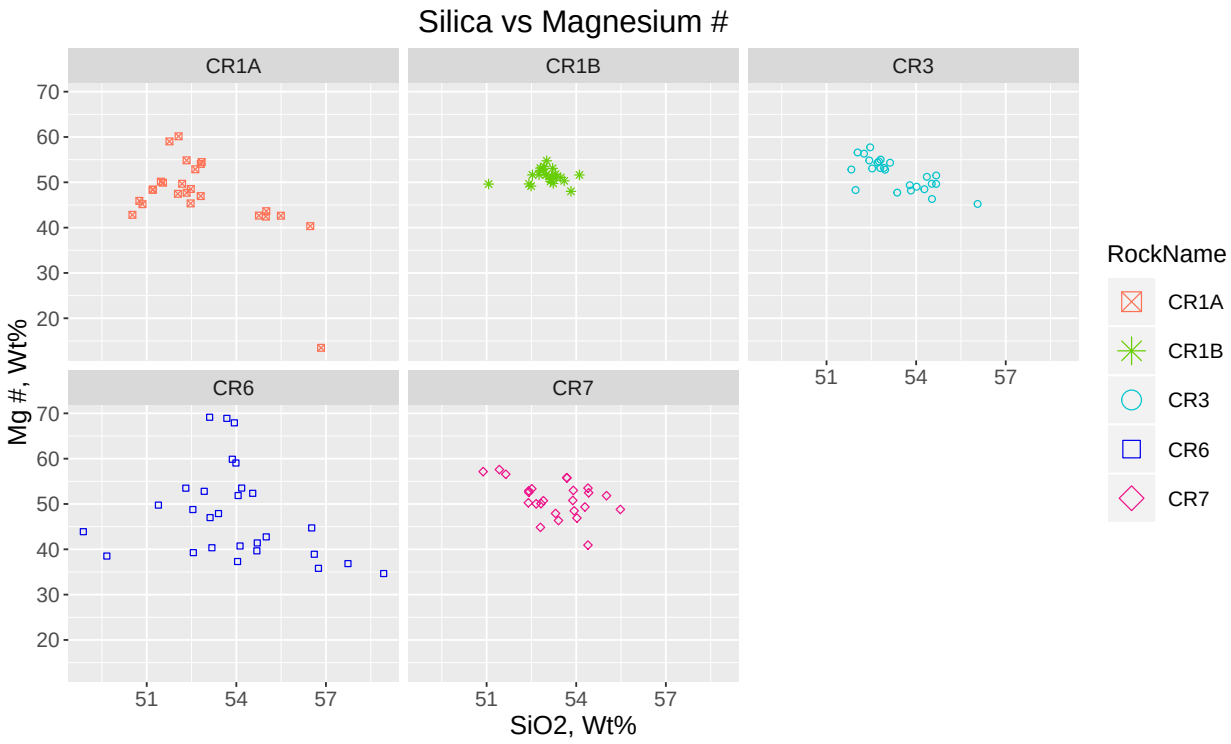
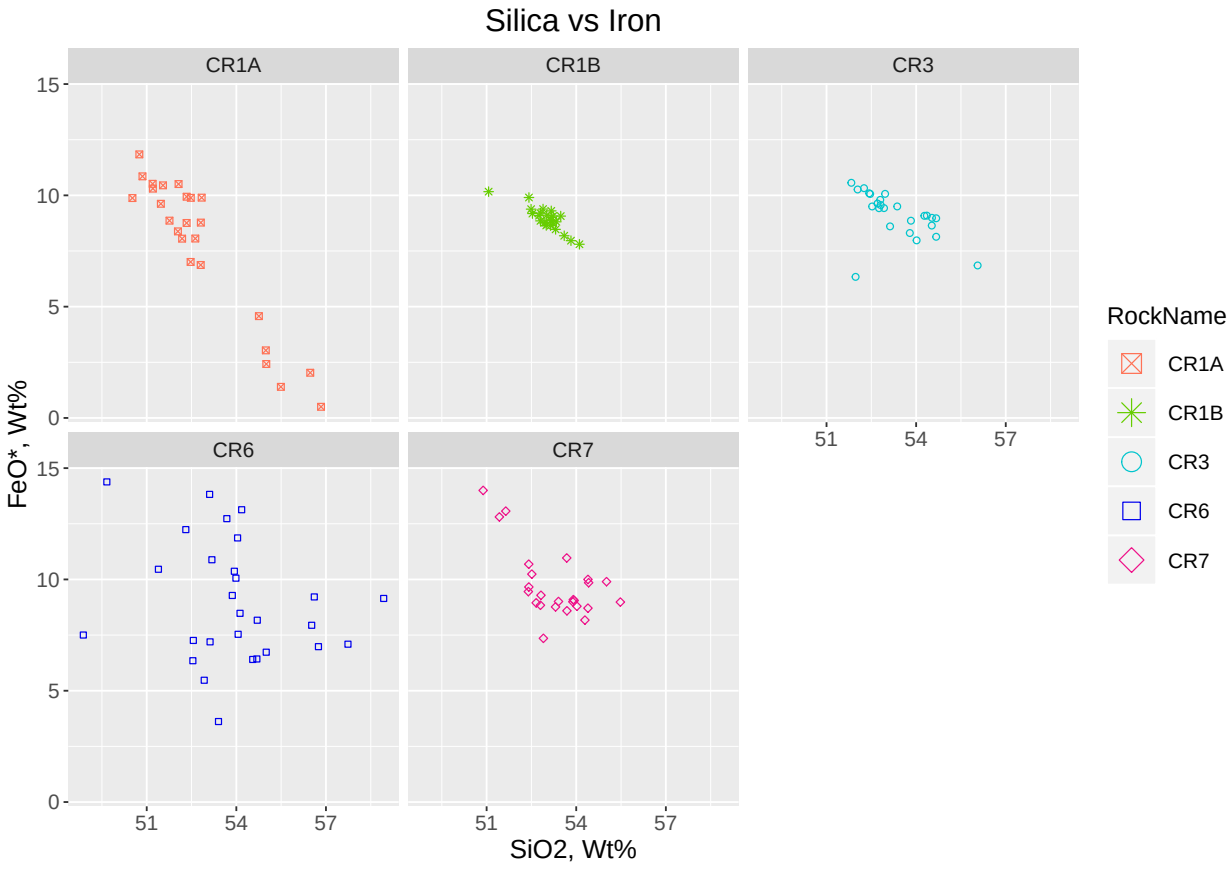
Costa Rican Bulk Rock Compositions

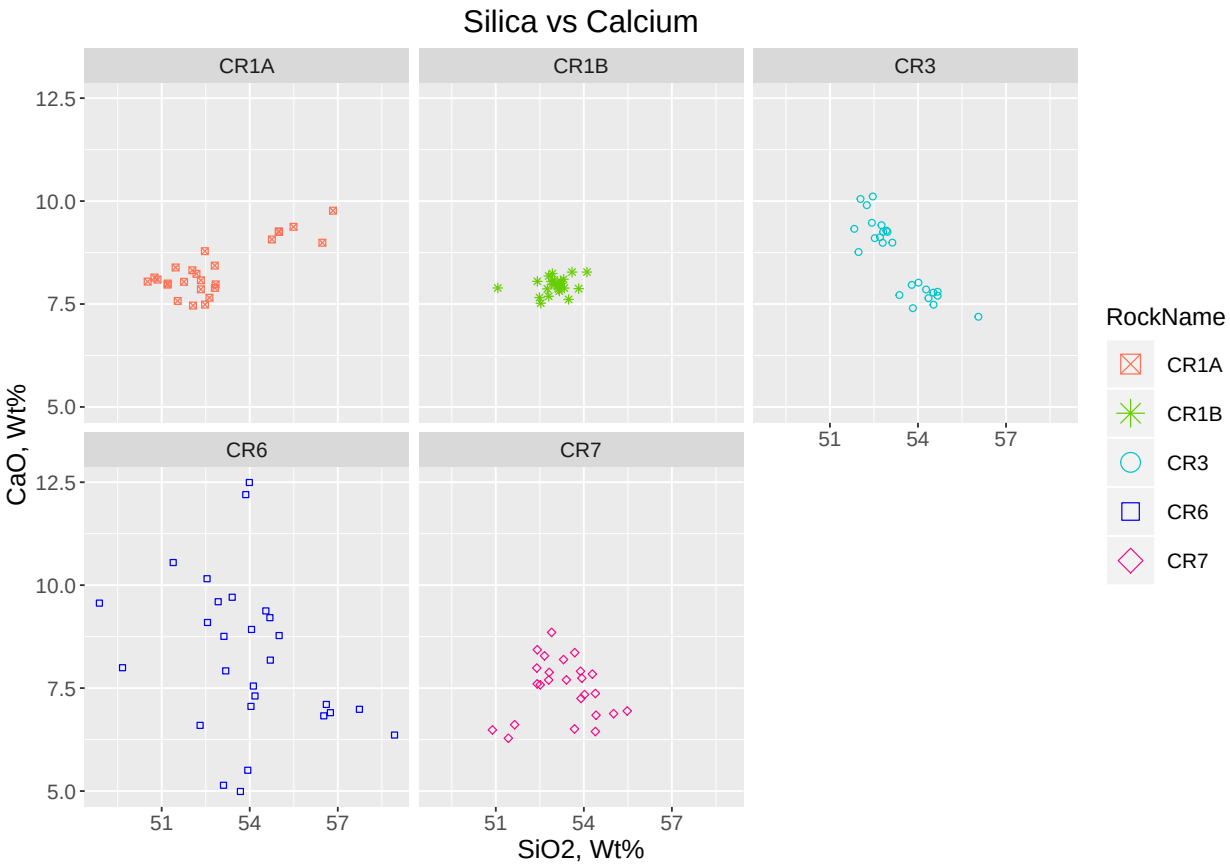
Julie M. Coulombe

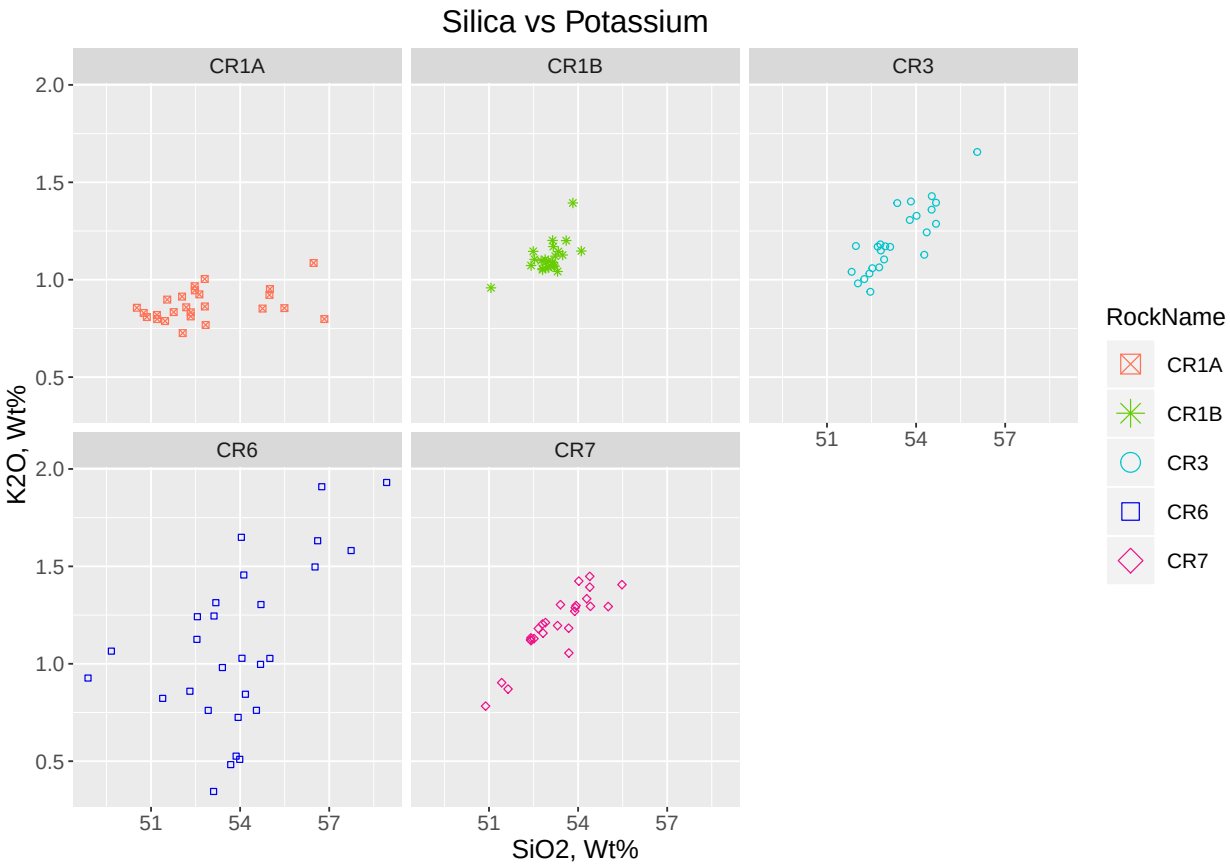
4/1/2020

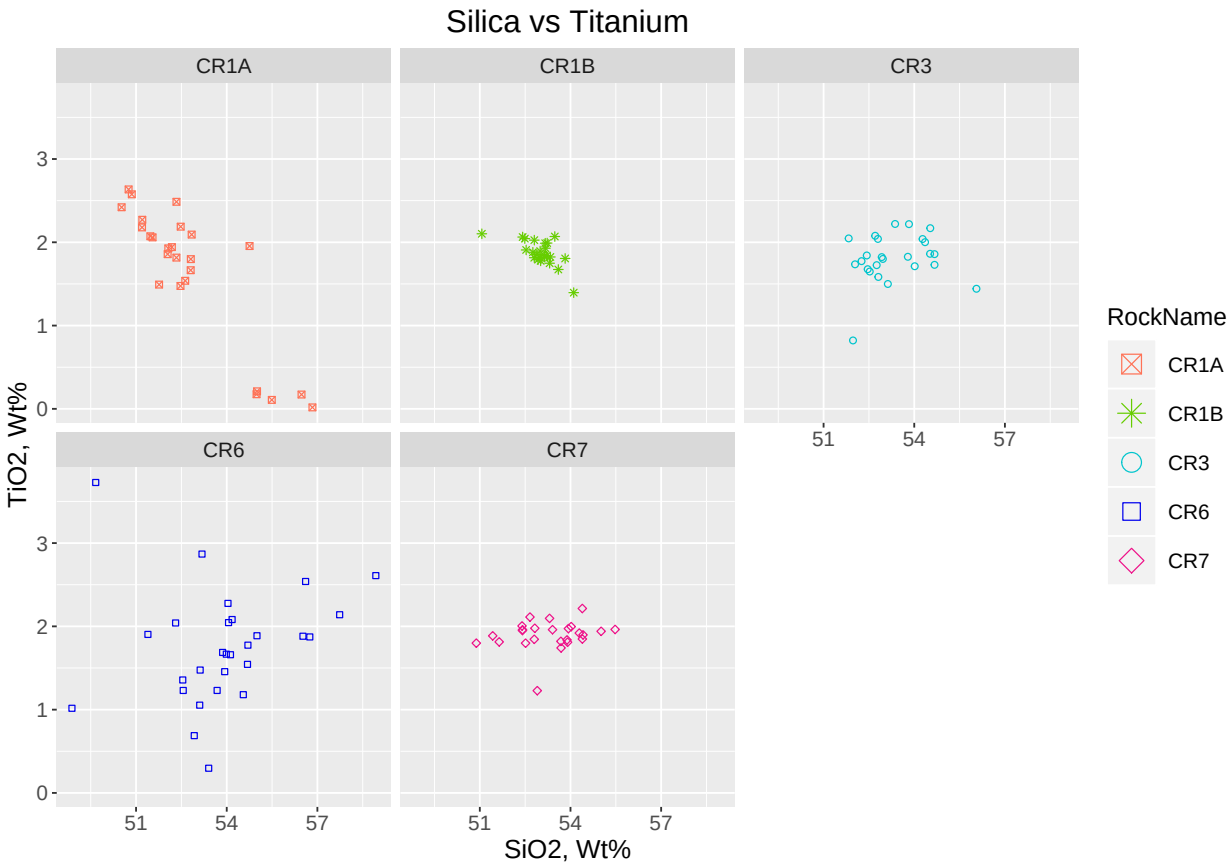


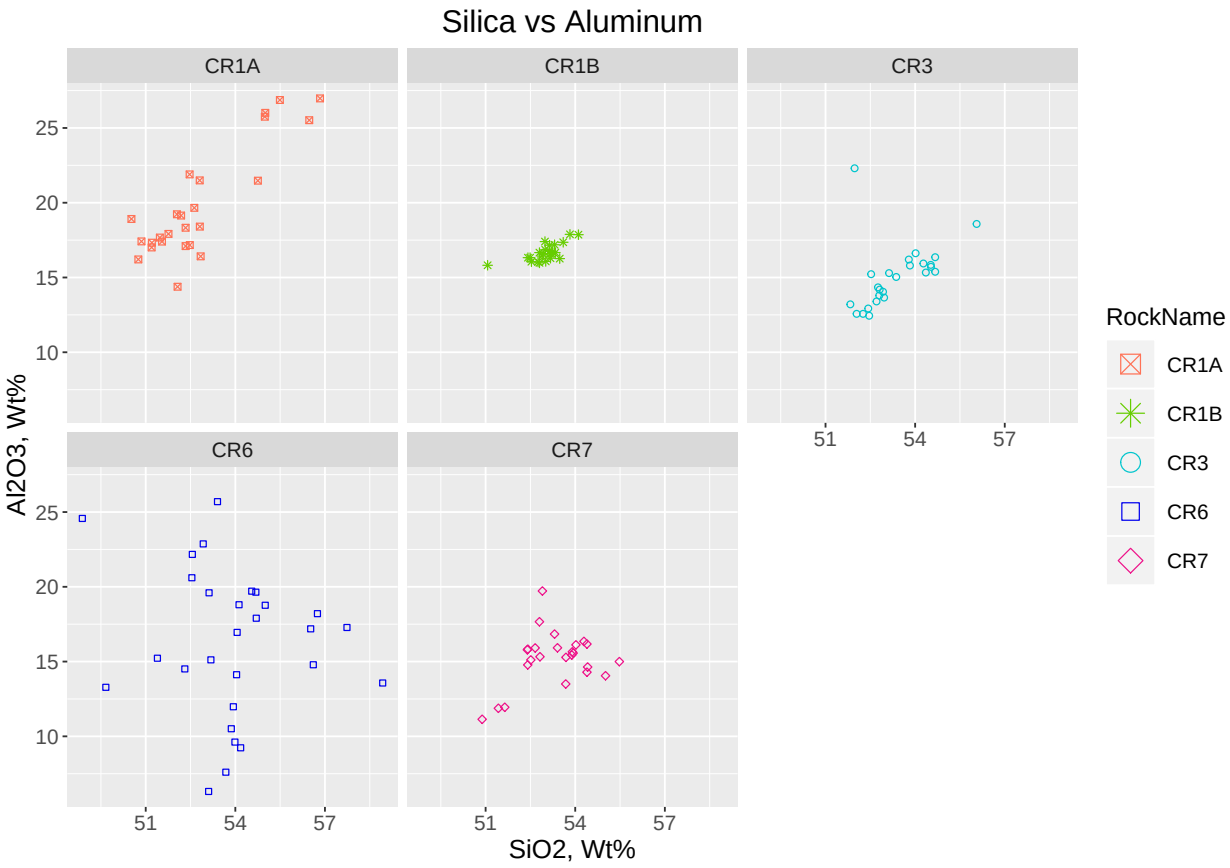

Silica vs Magnesium #
CR1A
CR1B
CR3
CR6
CR7
Mg #, Wt%
70
60
50
40
30
20
51
54
57
SiO2, Wt%
RockName
CR1A
CR1B
CR3
CR6
CR7

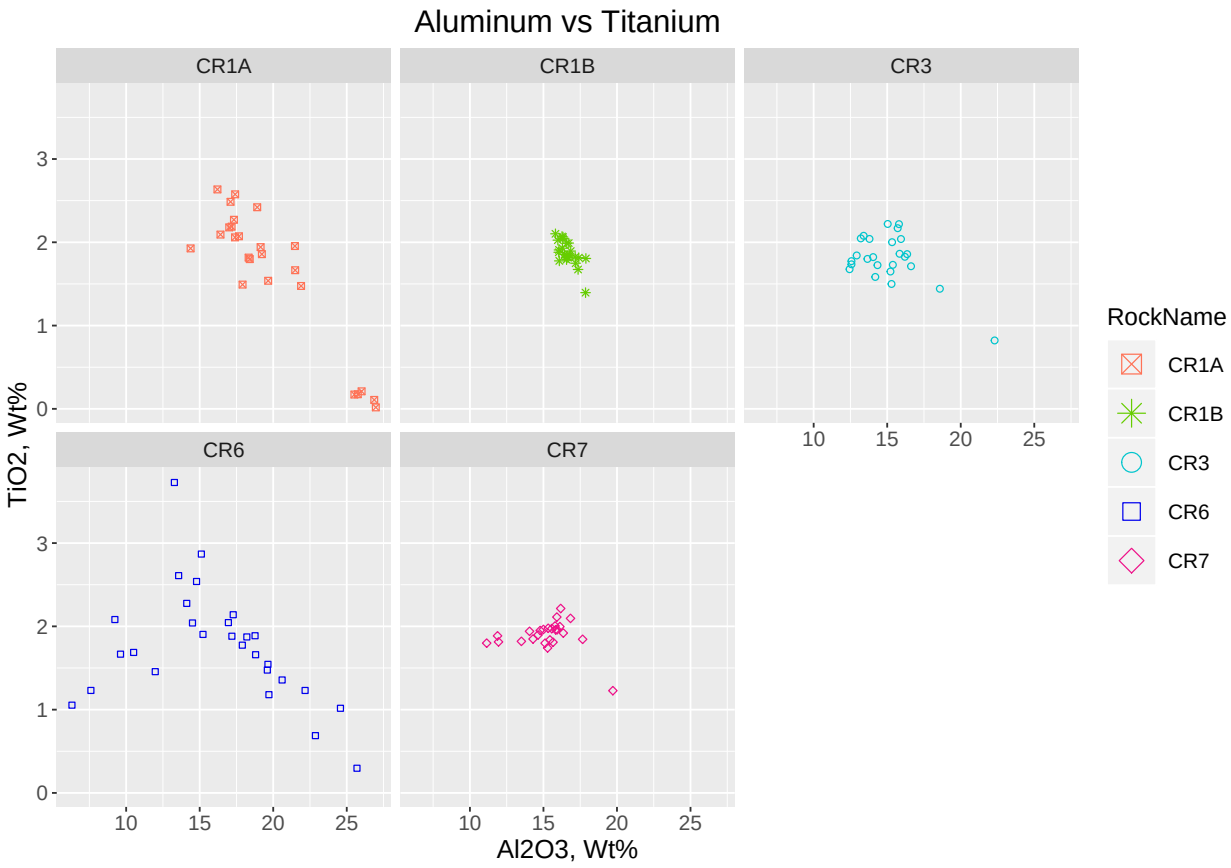

Silica vs Iron
CR1A
CR1B
CR3
CR6
CR7
FeO*, Wt%
15
10
5
0
51
54
57
SiO2, Wt%
RockName
CR1A
CR1B
CR3
CR6
CR7

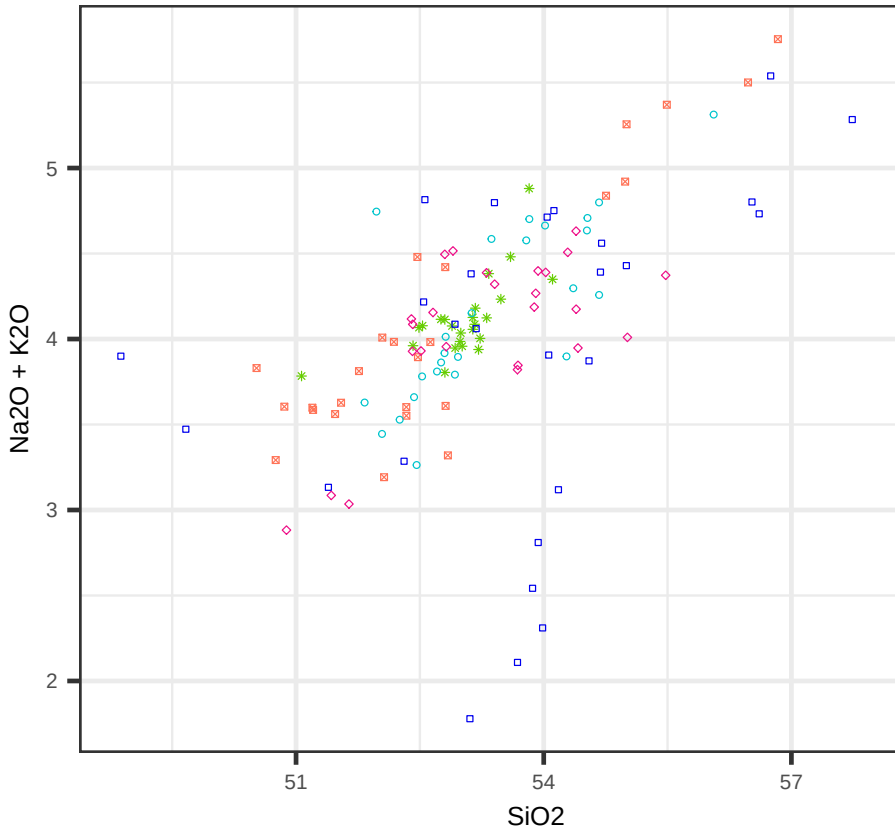

Silica vs Calcium
CR1A
CR1B
CR3
CR6
CR7
CaO, Wt%
SiO2, Wt%
12.5
10.0
7.5
5.0
51
54
57
RockName
CR1A
CR1B
CR3
CR6
CR7


Silica vs Potassium
CR1A
CR1B
CR3
CR6
CR7
K2O, Wt%
SiO2, Wt%
2.0
1.5
1.0
0.5
51
54
57
RockName
CR1A
CR1B
CR3
CR6
CR7

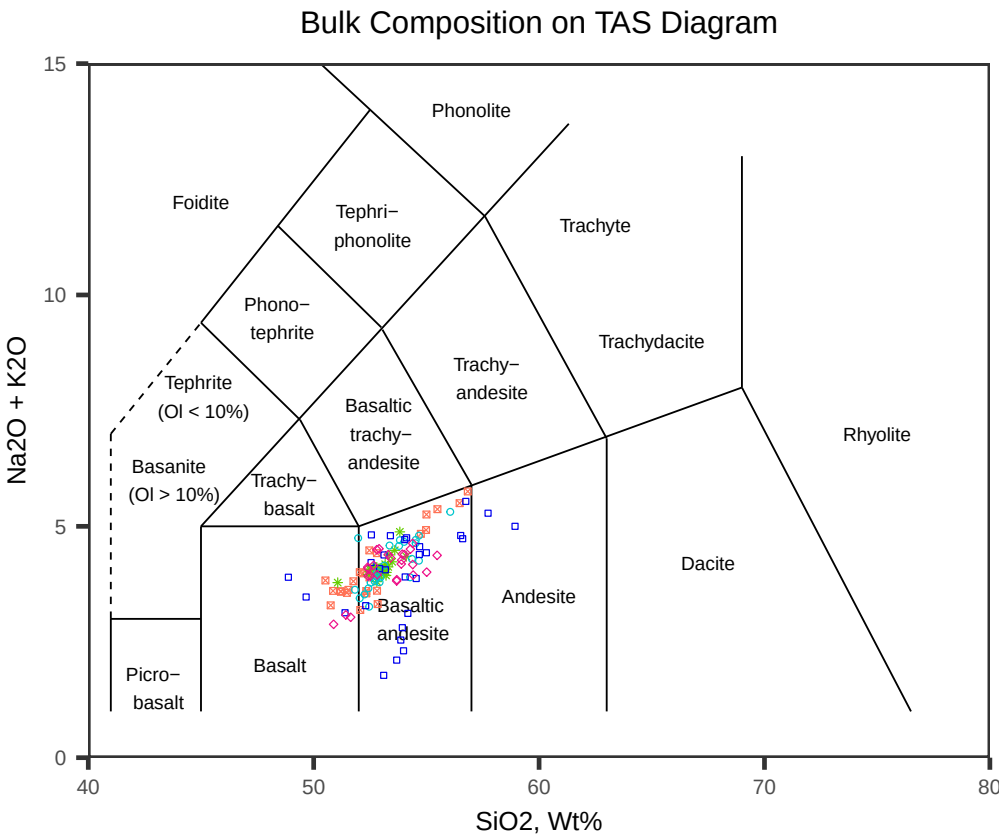

Silica vs Titanium
CR1A
CR1B
CR3
CR6
CR7
TiO2, Wt%
SiO2, Wt%
0
1
2
3
51
54
57
RockName
CR1A
CR1B
CR3
CR6
CR7


Silica vs Aluminum
CR1A
CR1B
CR3
CR6
CR7
Al2O3, Wt%
SiO2, Wt%
25
20
15
10
51
54
57
RockName
CR1A
CR1B
CR3
CR6
CR7


Aluminum vs Titanium
CR1A
CR1B
CR3
CR6
CR7
TiO2, Wt%
Al2O3, Wt%
0
1
2
3
10
15
20
25
RockName
CR1A
CR1B
CR3
CR6
CR7

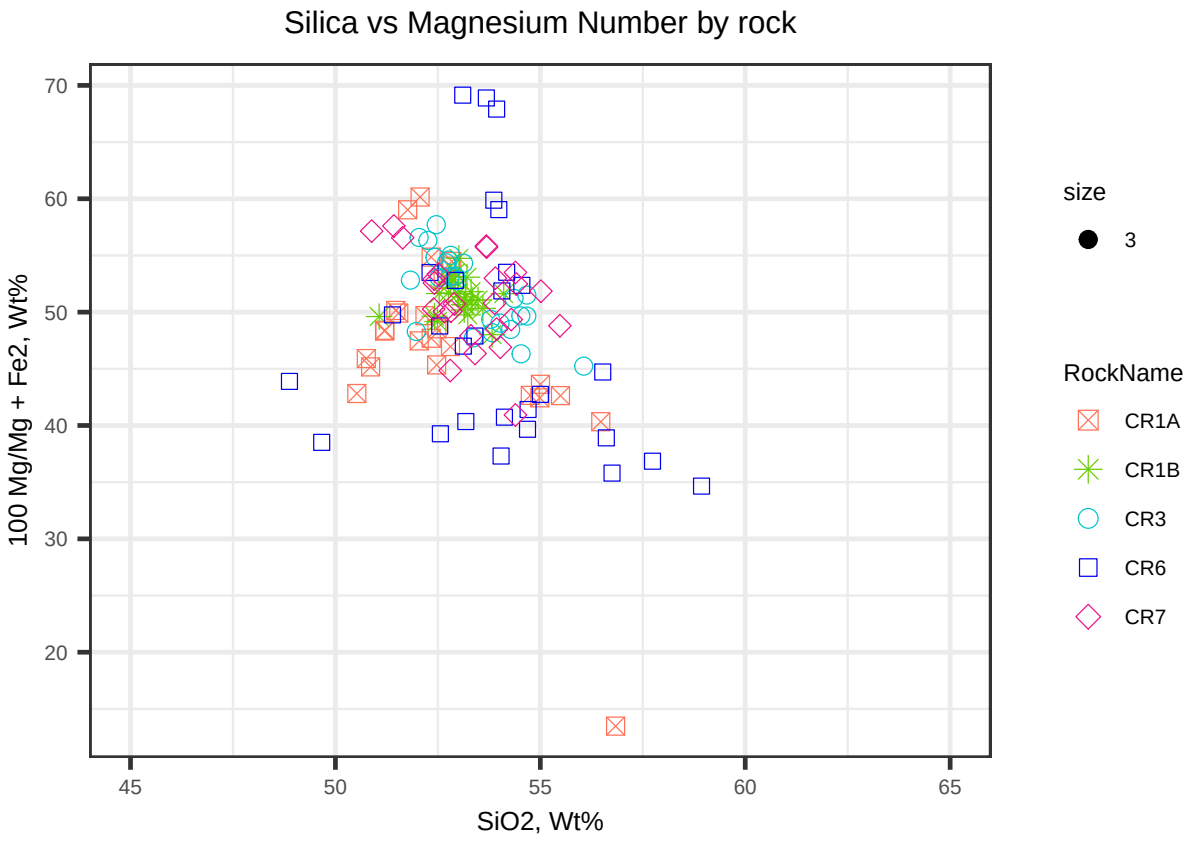


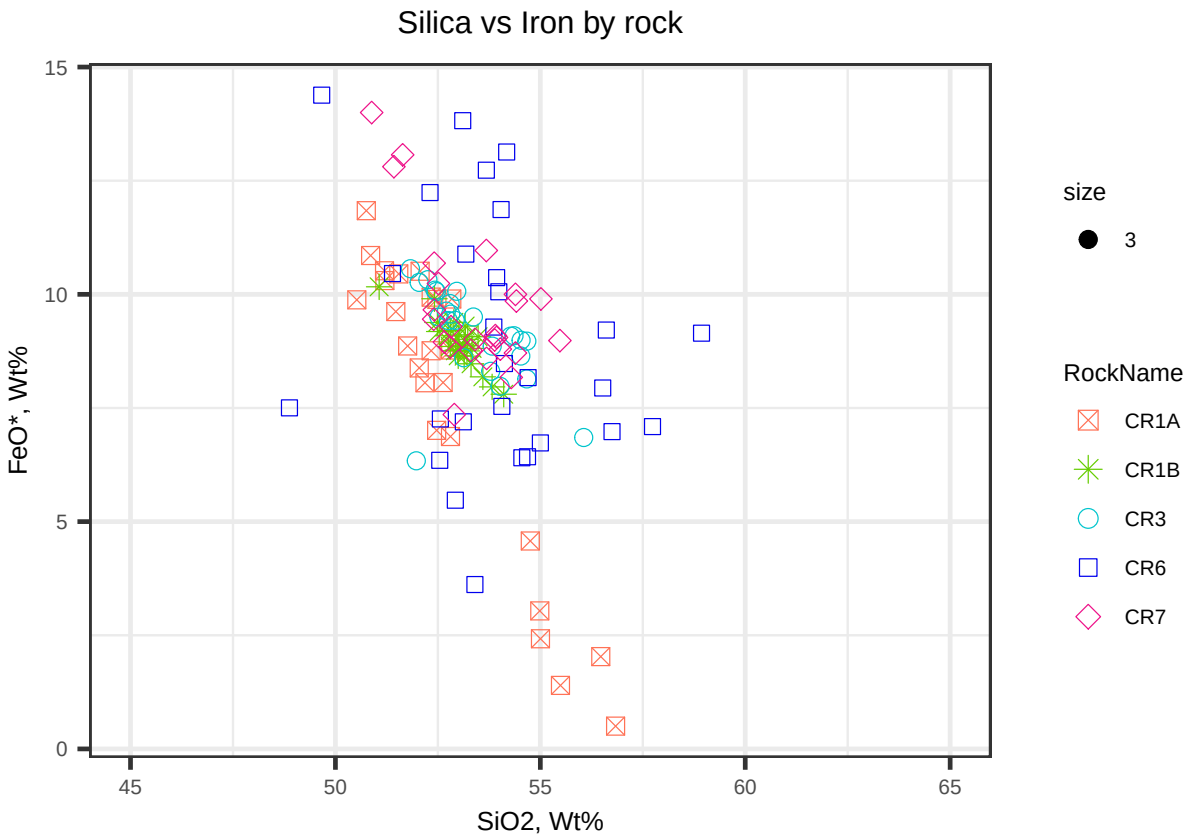
Plot Alkali by Rock Name - Bulk Composition

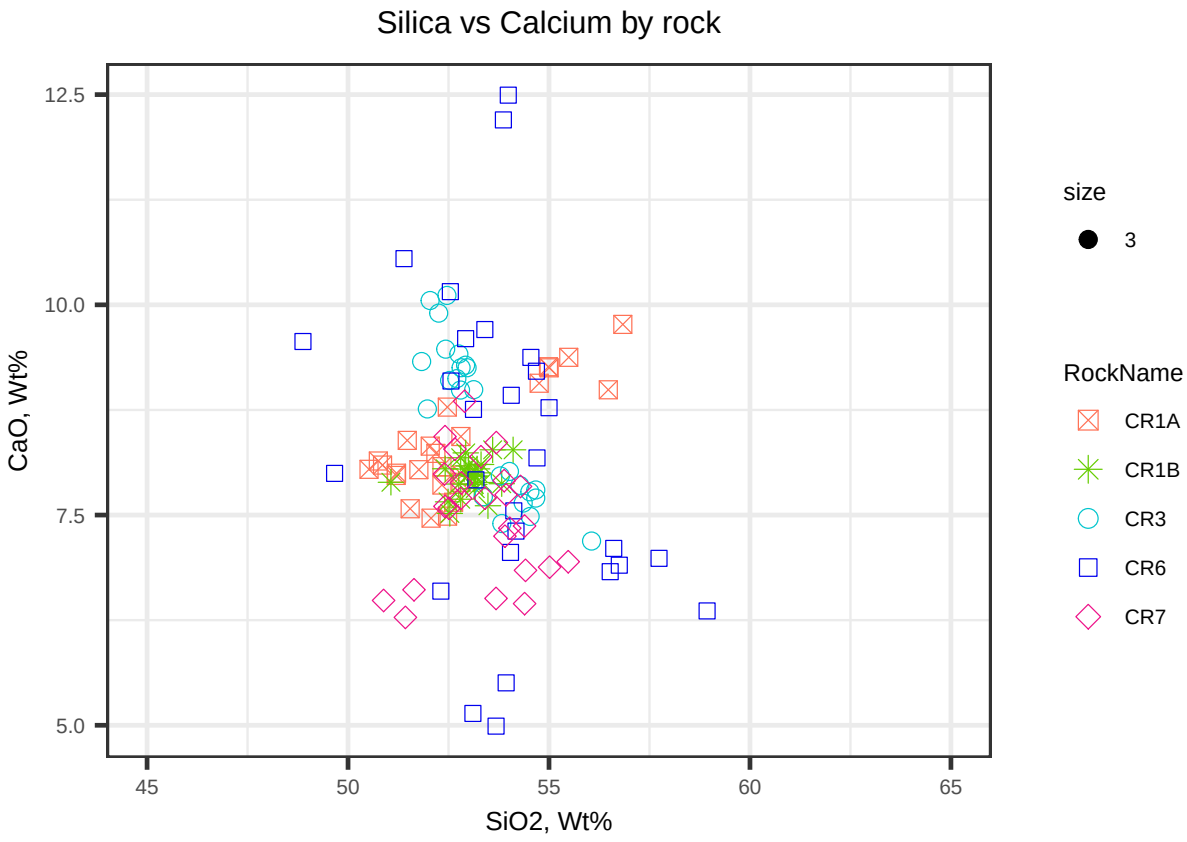


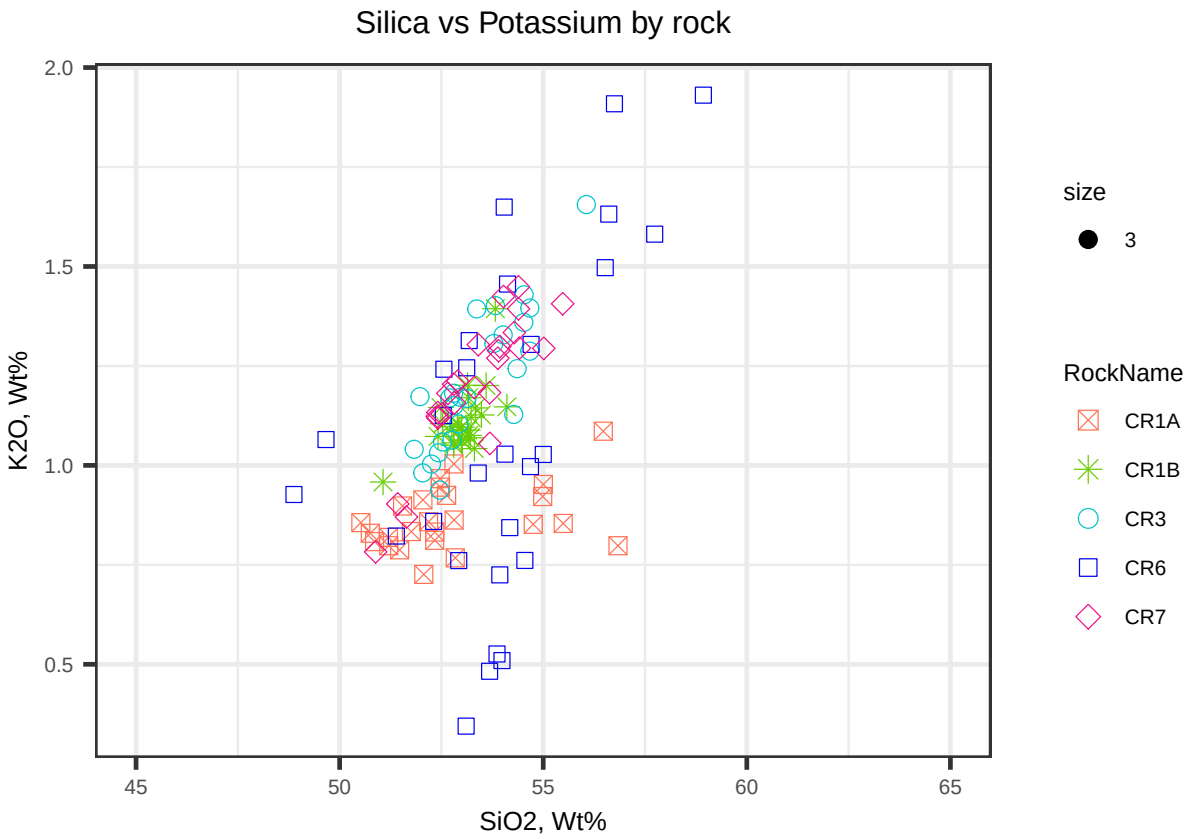
Overlay Alkali Plot on TAS Diagram

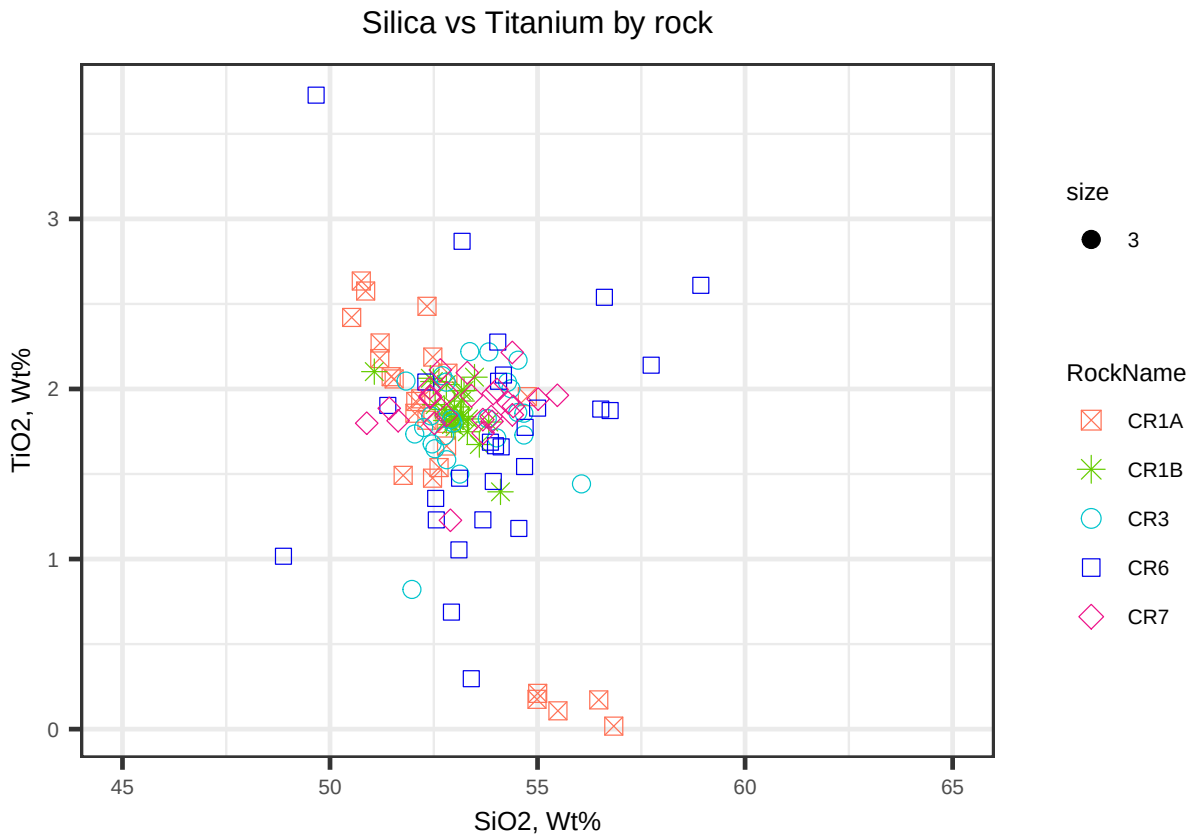
Now to look at plots of all rocks together

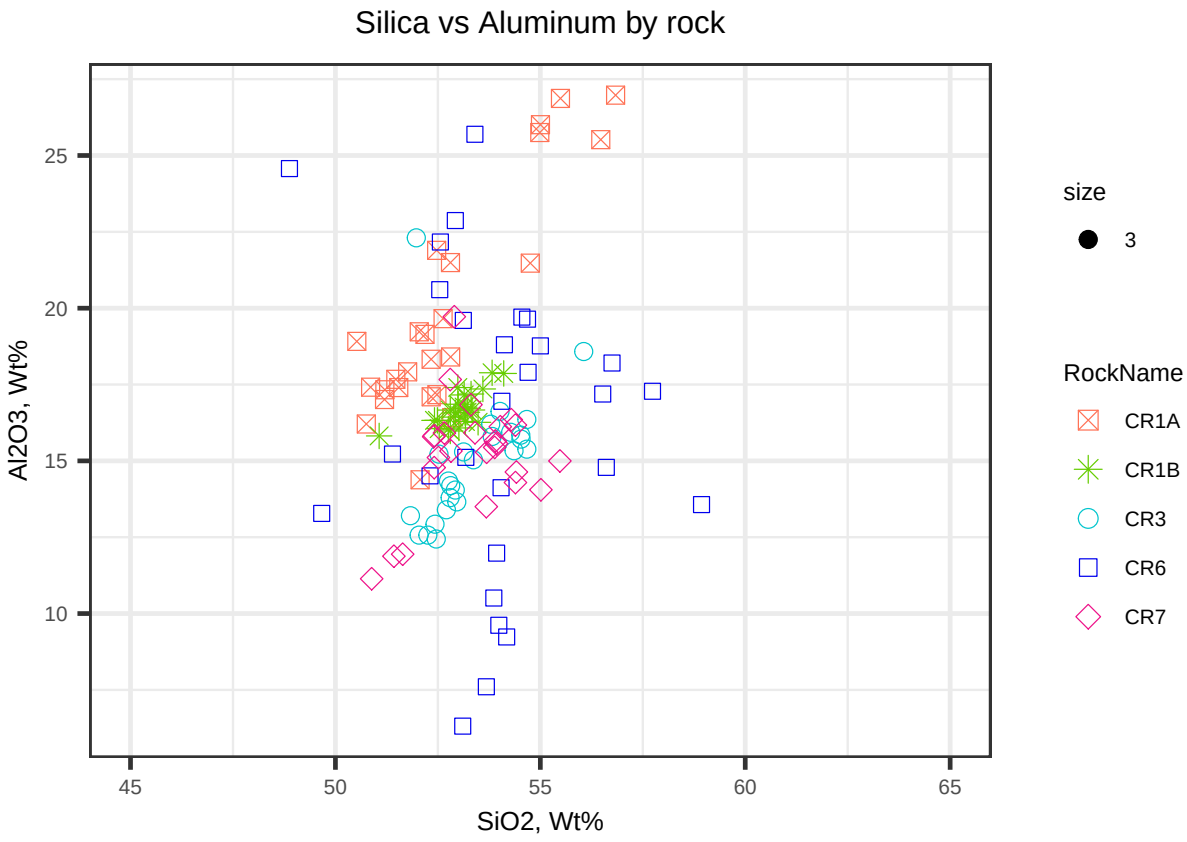

Silica vs Magnesium Number by rock
100 Mg/Mg + Fe2, Wt%
70
60
50
40
30
20
45
50
55
60
65
SiO2, Wt%
size
3
RockName
CR1A
CR1B
CR3
CR6
CR7

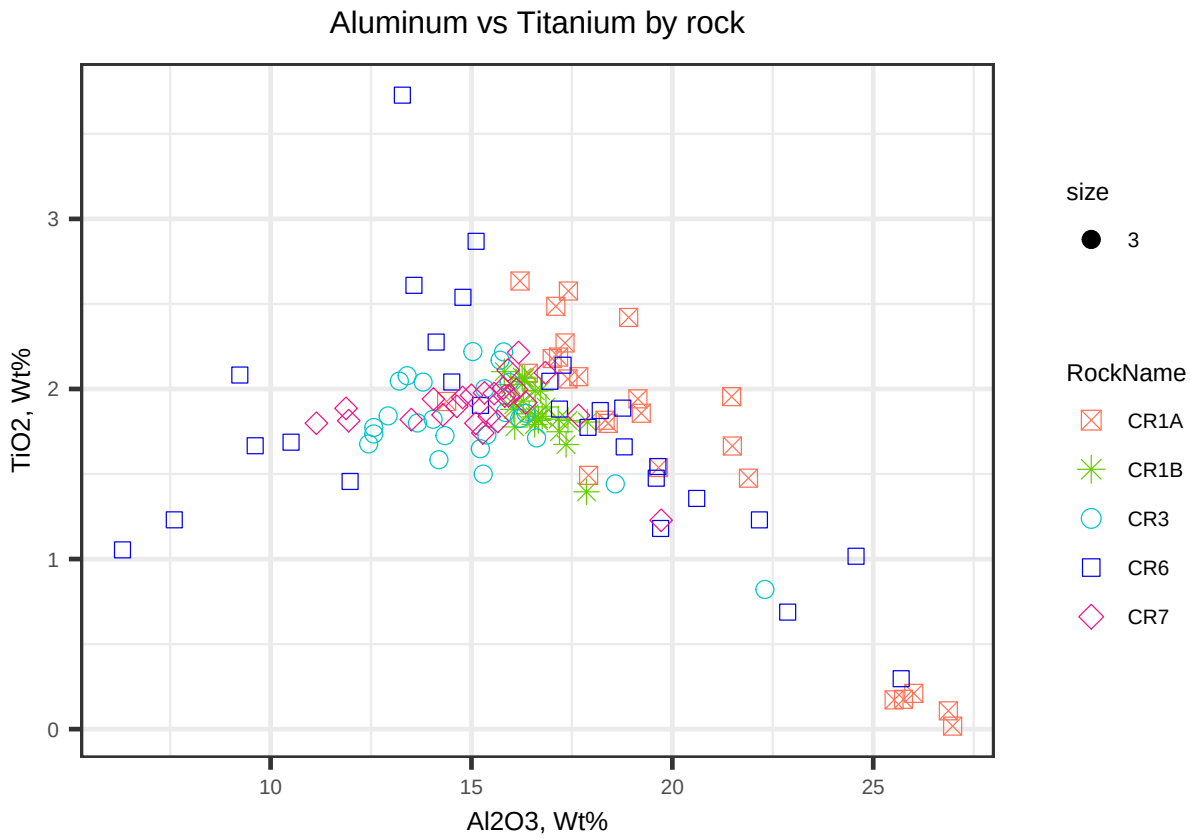

Silica vs Iron by rock
FeO*, Wt%
SiO2, Wt%
15
10
5
0
45
50
55
60
65
size
3
RockName
CR1A
CR1B
CR3
CR6
CR7


Silica vs Calcium by rock
12.5
10.0
7.5
5.0
CaO, Wt%
45
50
55
60
65
SiO2, Wt%
size
3
RockName
CR1A
CR1B
CR3
CR6
CR7


Silica vs Potassium by rock
2.0
1.5
1.0
0.5
K2O, Wt%
45
50
55
60
65
SiO2, Wt%
size
3
RockName
CR1A
CR1B
CR3
CR6
CR7


Silica vs Titanium by rock
TiO2, Wt%
SiO2, Wt%
0
1
2
3
45
50
55
60
65
size
3
RockName
CR1A
CR1B
CR3
CR6
CR7


Silica vs Aluminum by rock
Al2O3, Wt%
SiO2, Wt%
25
20
15
10
45
50
55
60
65
size
3
RockName
CR1A
CR1B
CR3
CR6
CR7



Now to compare CR1A to CR1B Harker Diagrams

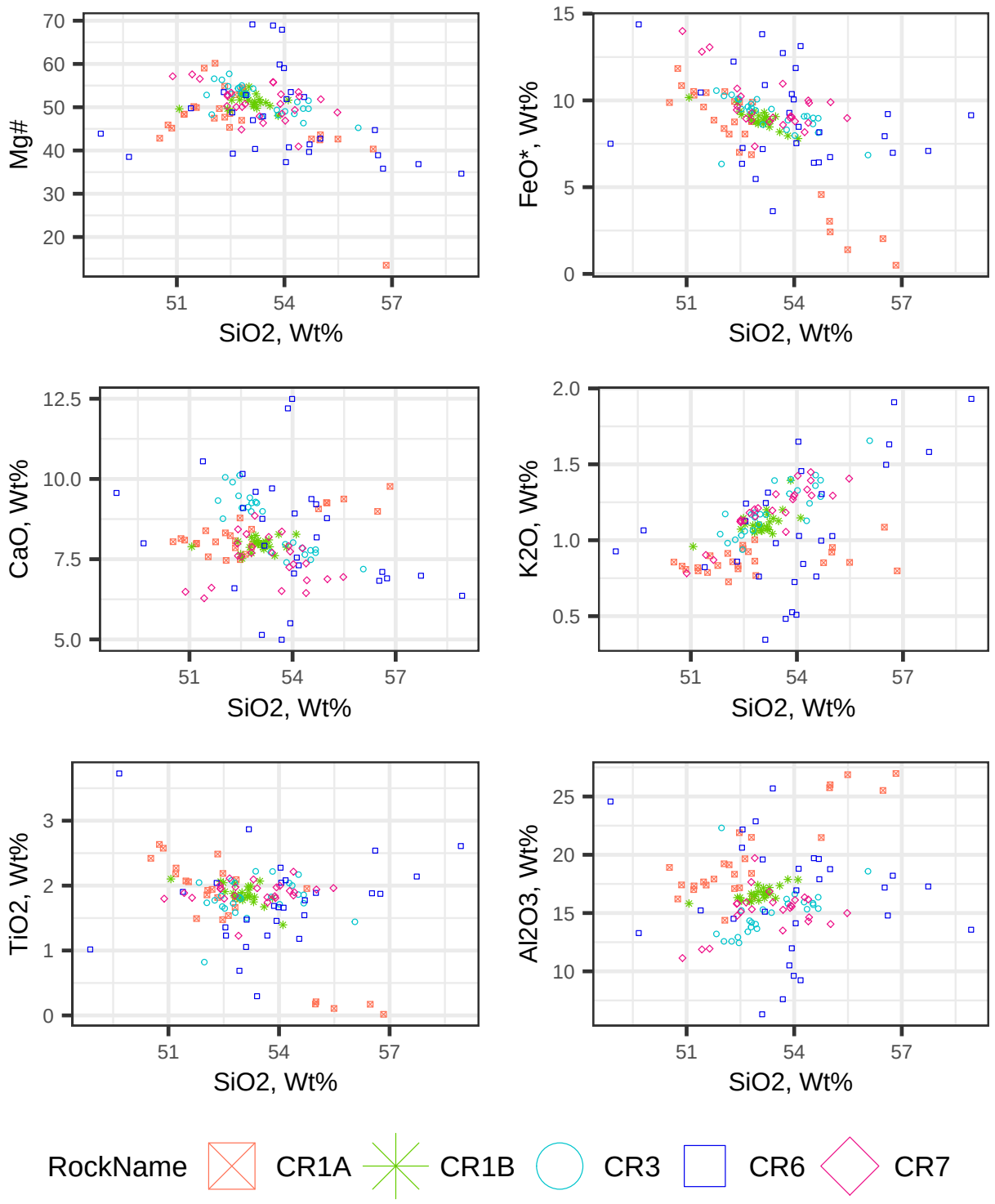
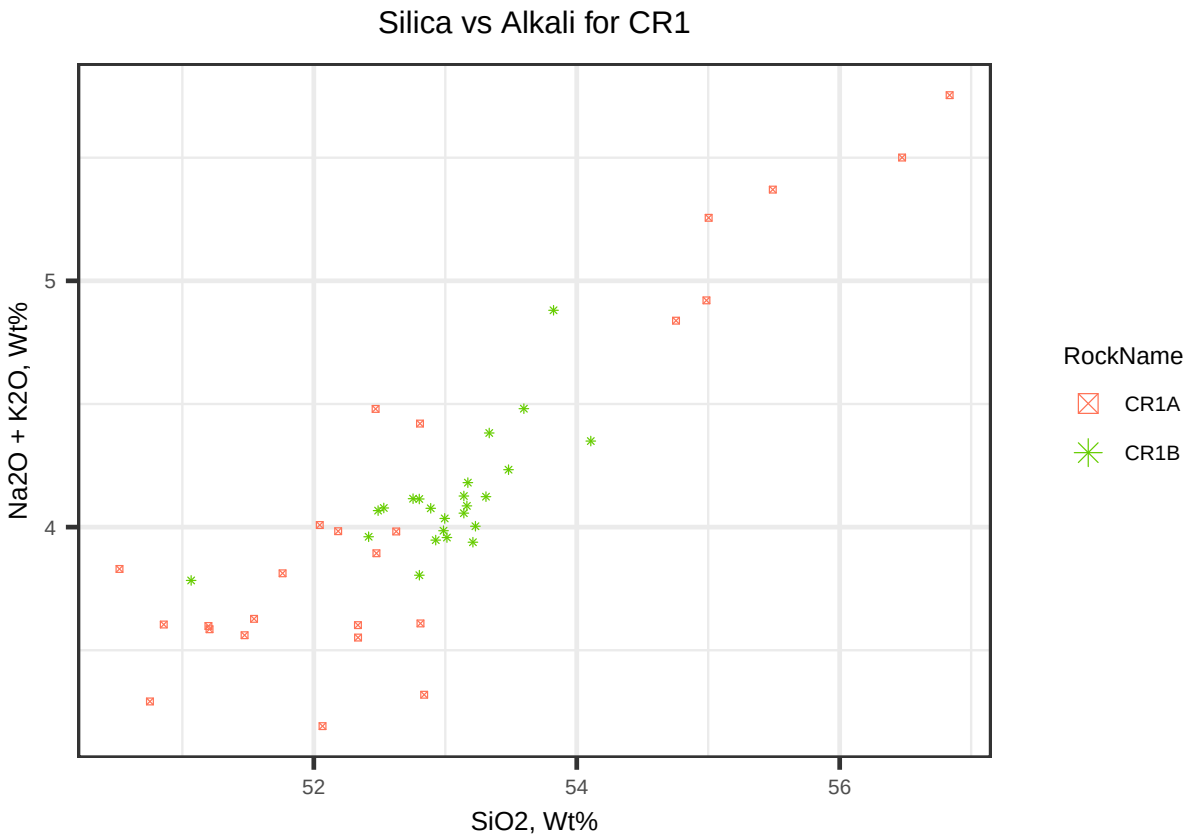
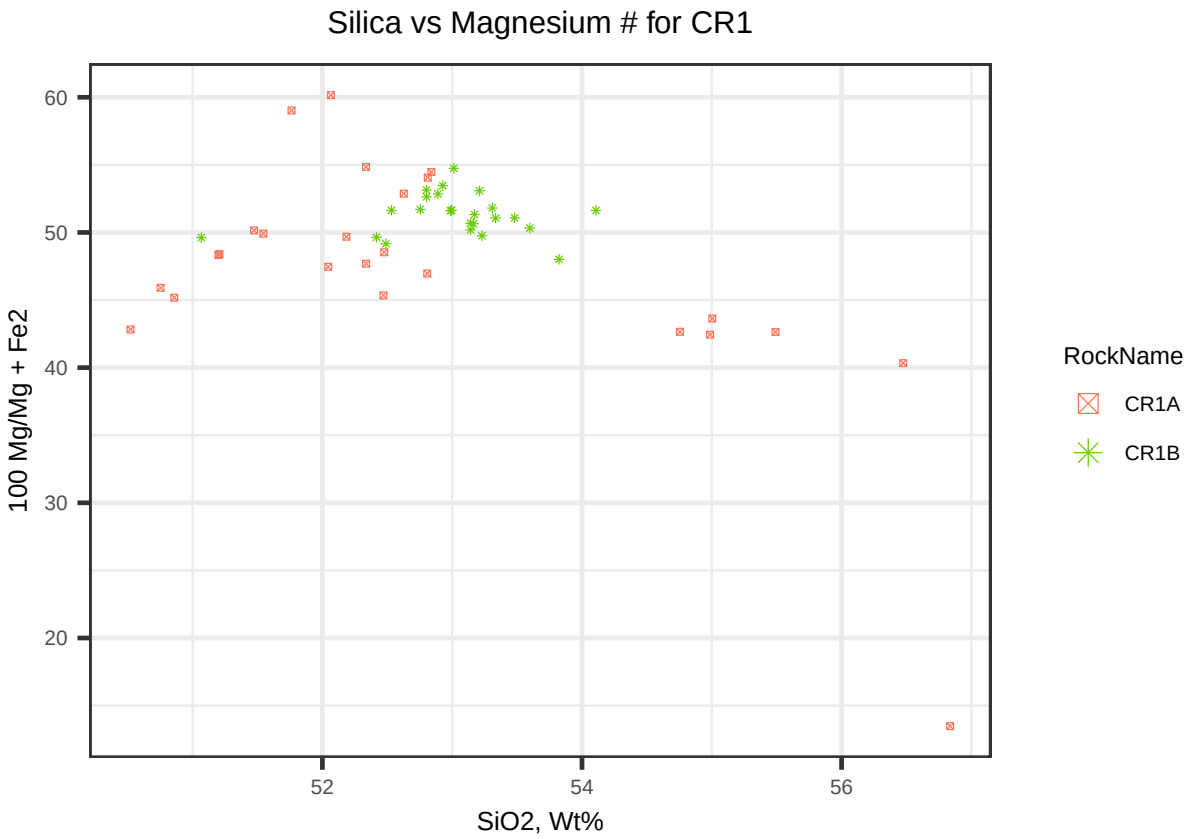
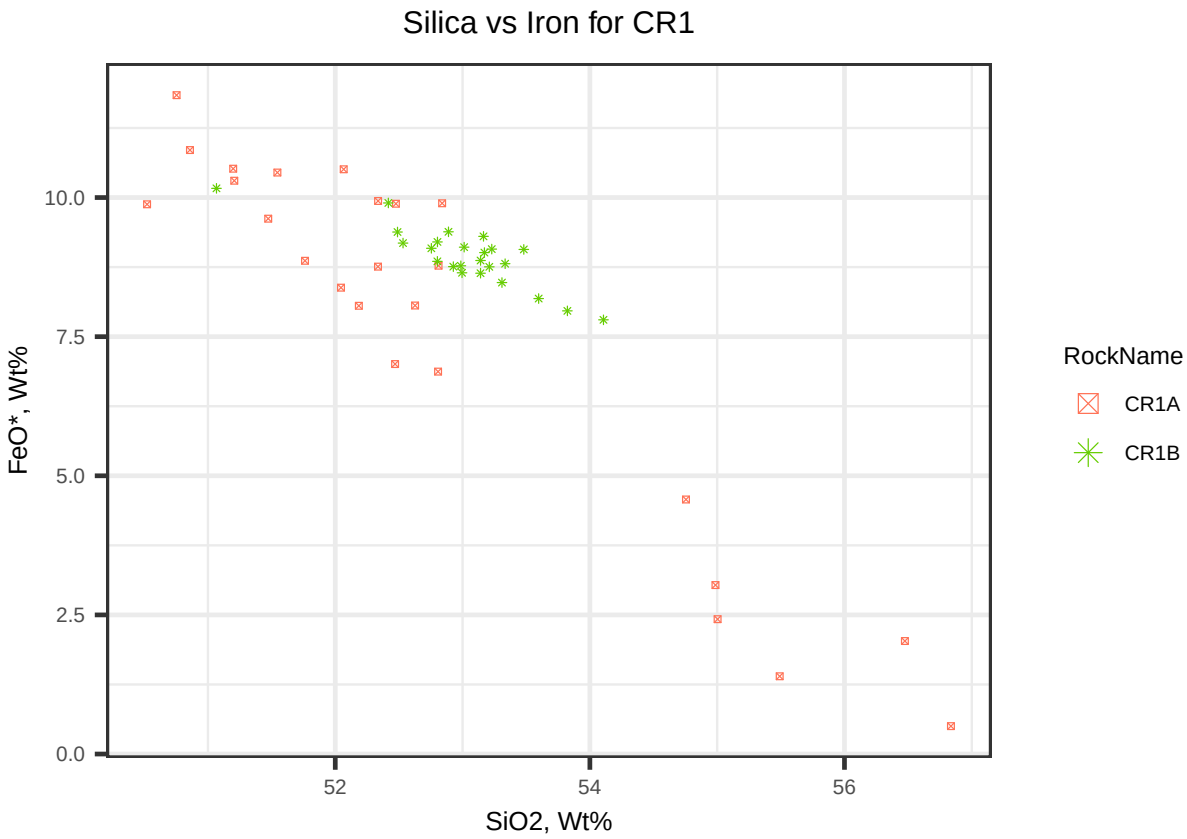
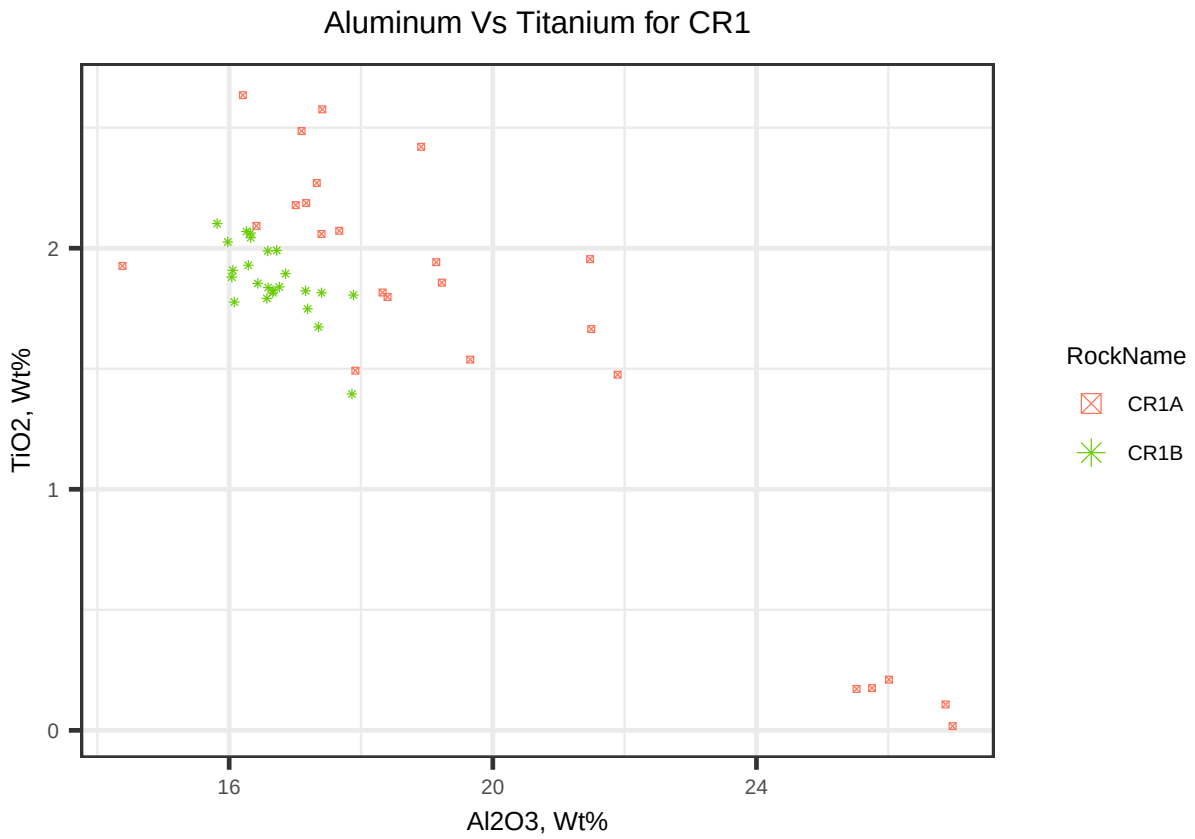


Figure 1: Figure 2: Major elements plotted against SiO2. All Wt% except Mg#


Silica vs Alkali for CR1
Na2O + K2O, Wt%
5
4
52
54
56
SiO2, Wt%
RockName
CR1A
CR1B


Silica vs Magnesium # for CR1
60
50
40
30
20
100 Mg/Mg + Fe2
52
54
56
SiO2, Wt%
RockName
CR1A
CR1B


Silica vs Iron for CR1
FeO*, Wt%
10.0
7.5
5.0
2.5
0.0
52
54
56
SiO2, Wt%
RockName
CR1A
CR1B



Taking a look at comparing CR2A to CR2B in Bulk Composition (bulk data for CR2 not yet available)

Table indicating mean averages for elements by rock

Element	CR1A	CR1B	CR3	CR6	CR7
SiO2	52.8	53	53.3	53.9	53.3
TiO2	1.64	1.87	1.81	1.76	1.9
Al2O3	19.8	16.7	15.1	16.3	15.2
Cr	0.0311	0.0264	0.0285	0.0322	0.0261
MgO	4.32	5.29	5.59	5.33	5.88
CaO	8.33	7.95	8.62	8.24	7.48
MnO	0.11	0.147	0.162	0.158	0.168
Fe2O3	7.7	8.93	9.12	8.95	9.73
Na2O	3.24	3	2.95	2.87	2.86
K2O	0.868	1.11	1.21	1.09	1.2
S	0.00635	0.00881	0.00736	0.00902	0.00784
P2O5	0.302	0.349	0.346	0.301	0.349
Total	99.3	98.8	98.9	99.1	98.8