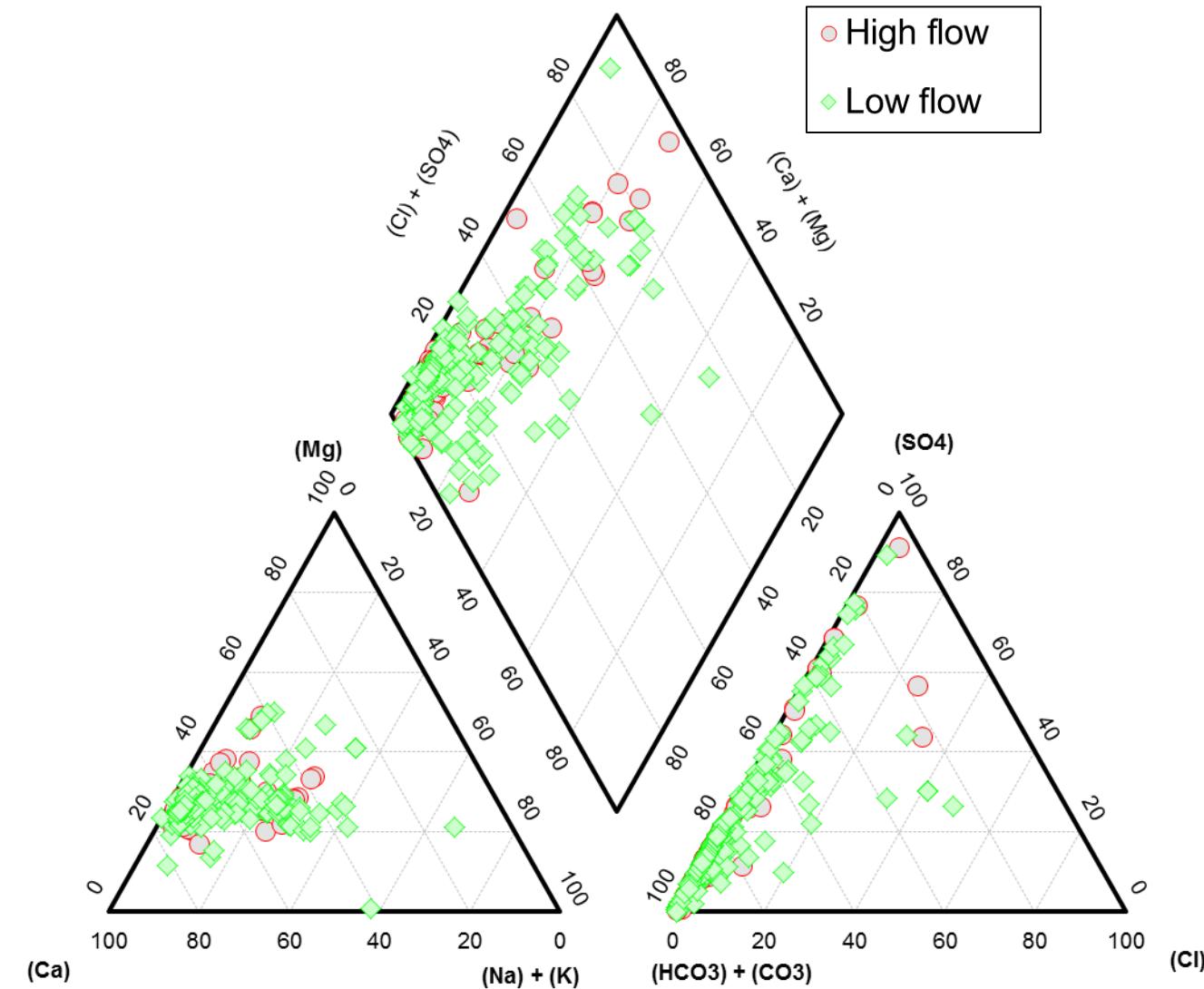
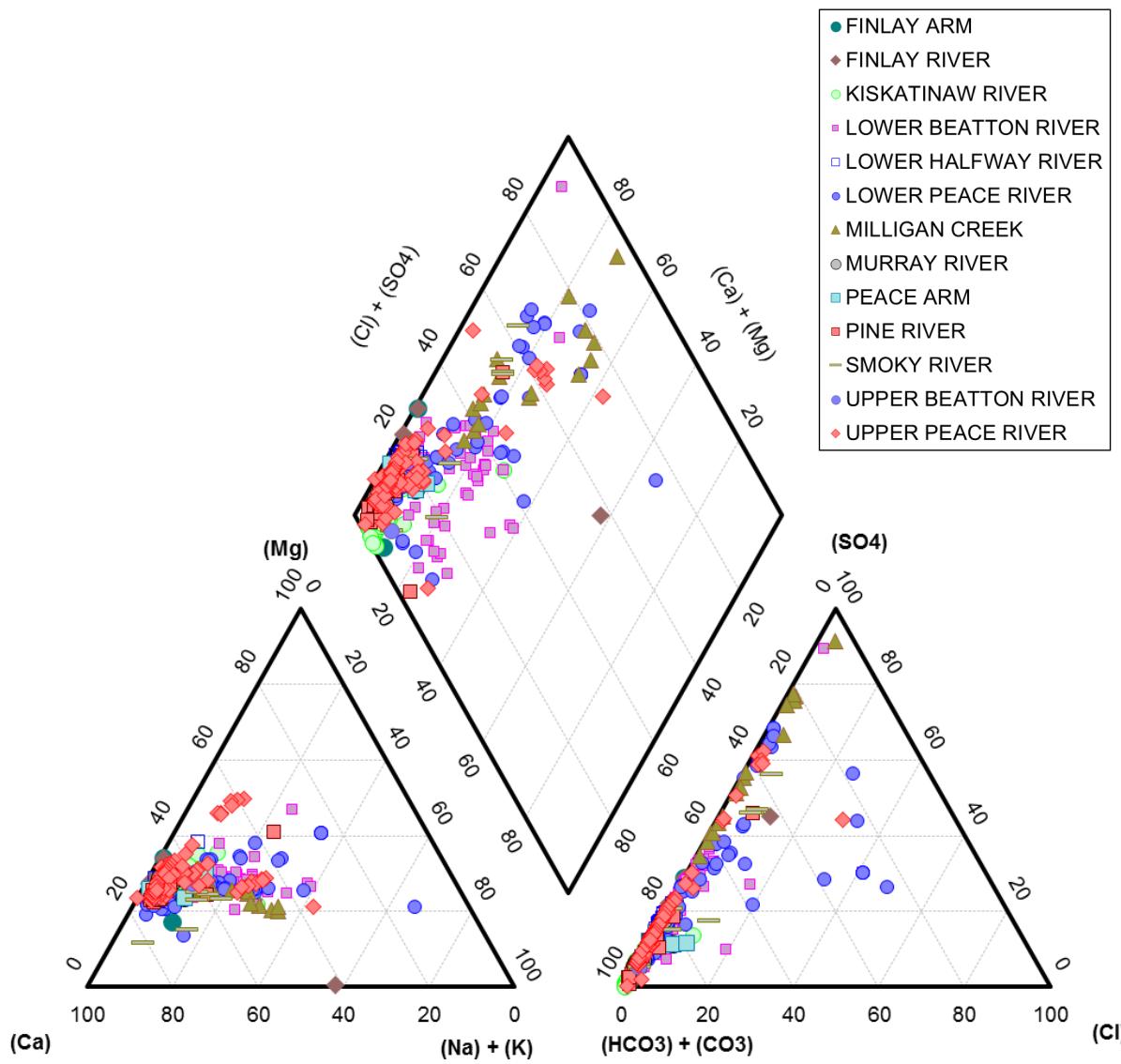


Water type

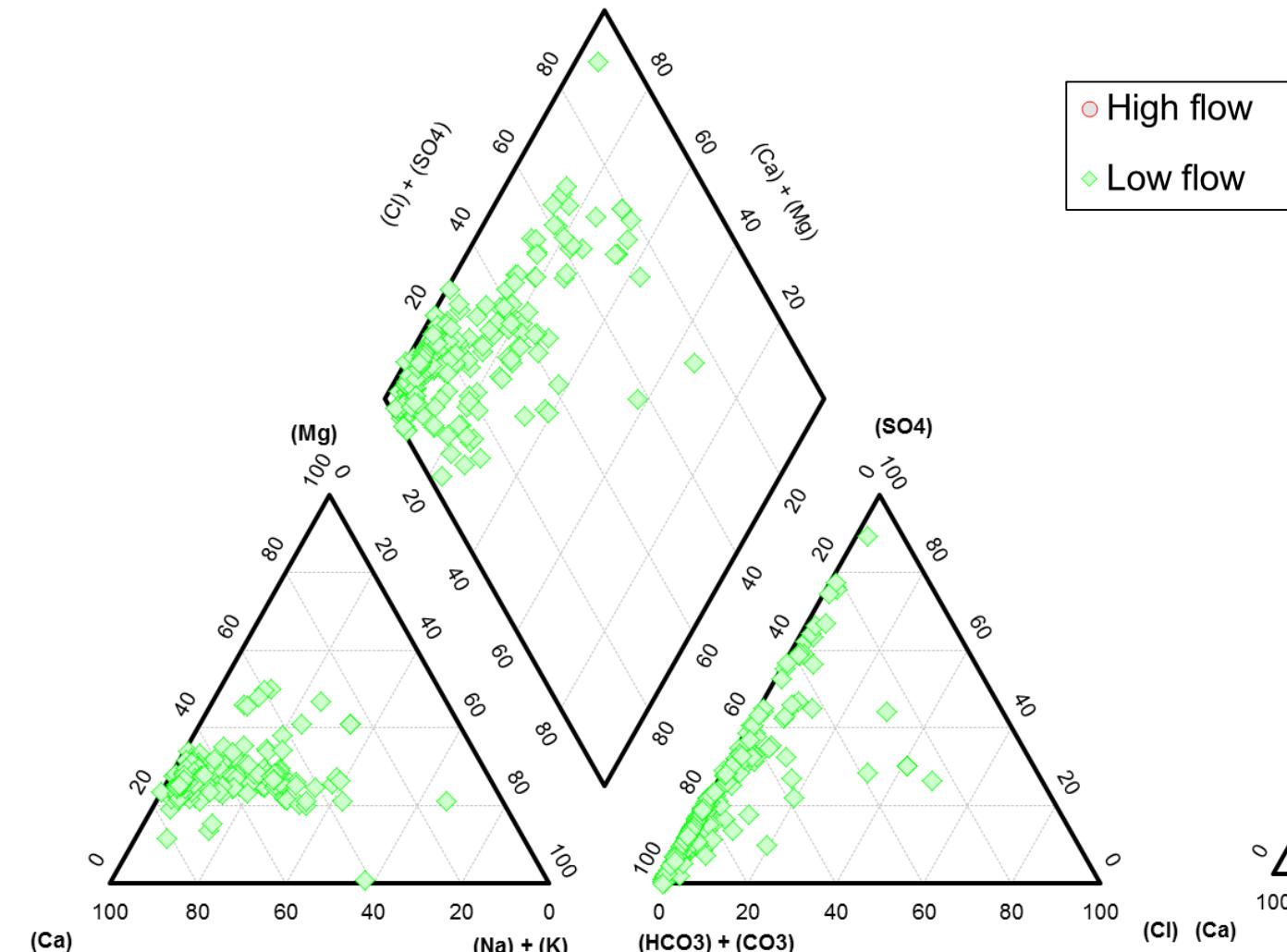
Surface Water Quality

PRRD

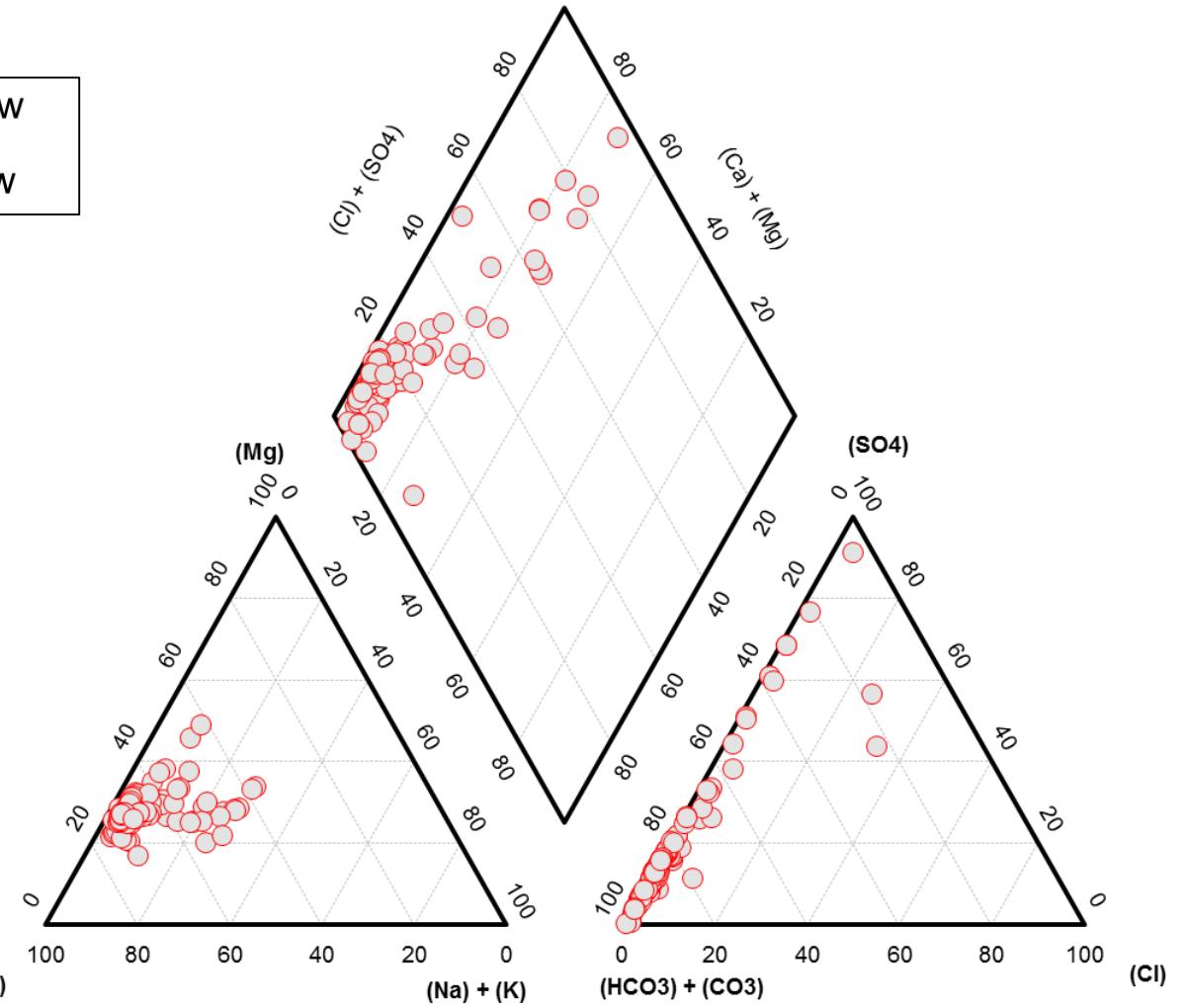
Piper plot - watershed



Piper plot – flow condition

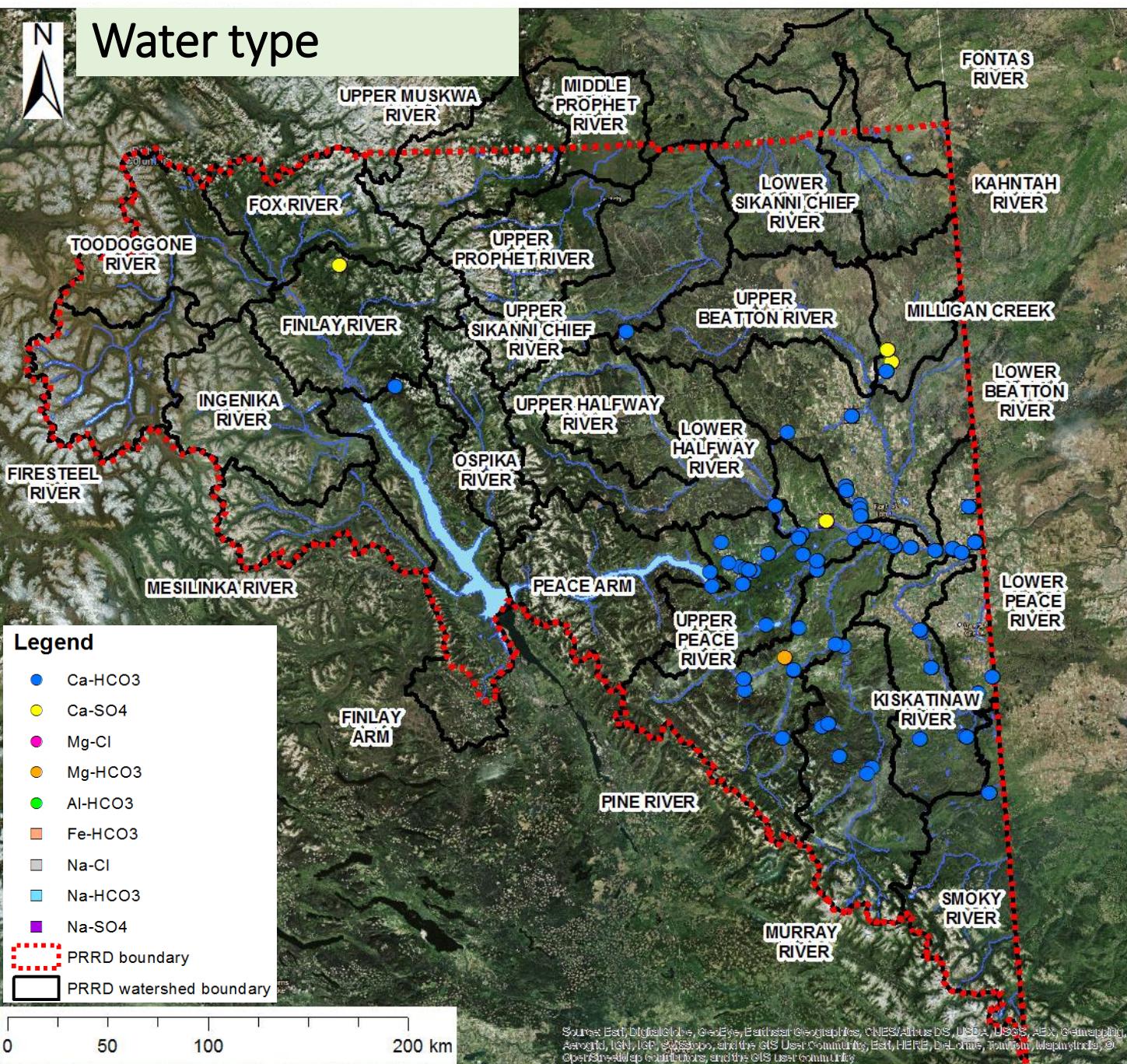


○ High flow
◆ Low flow

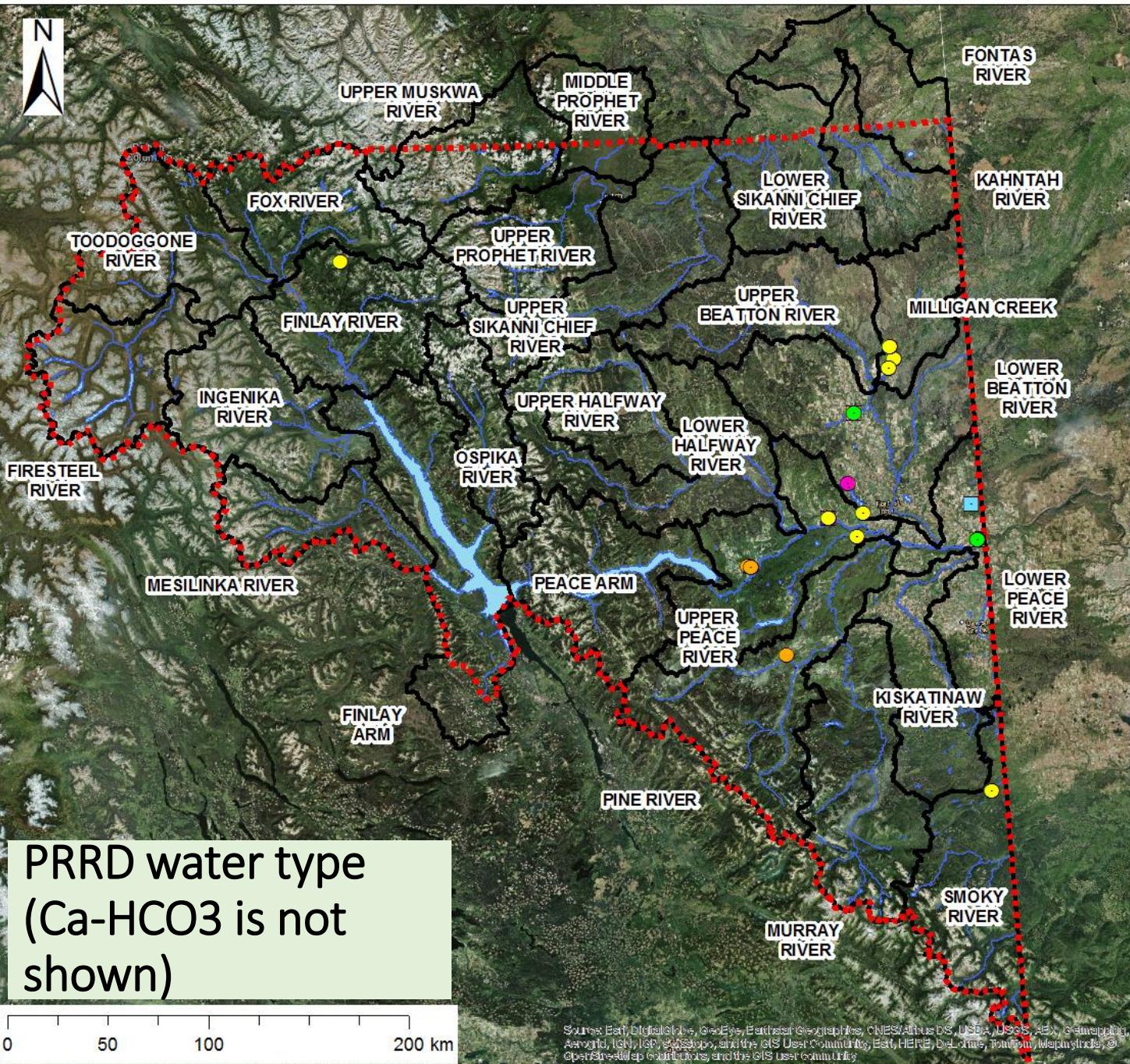




Water type



Sampling Year	Ca-HCO ₃ Water type No of Samples
1972	42
1973	35
1974	14
1976	17
1977	1
1980	1
1984	4
1985	12
1986	27
1987	20
1988	16
1989	7
1990	1
1991	5
1992	1
1994	1
1996	1
1997	10
1998	1
1999	6
2000	2
2001	8
2002	7
2003	33
2004	34
2005	4
2007	48
2008	66
2009	1
2010	2
2011	14
2012	11
2013	3
2014	5
Total	460



Legend

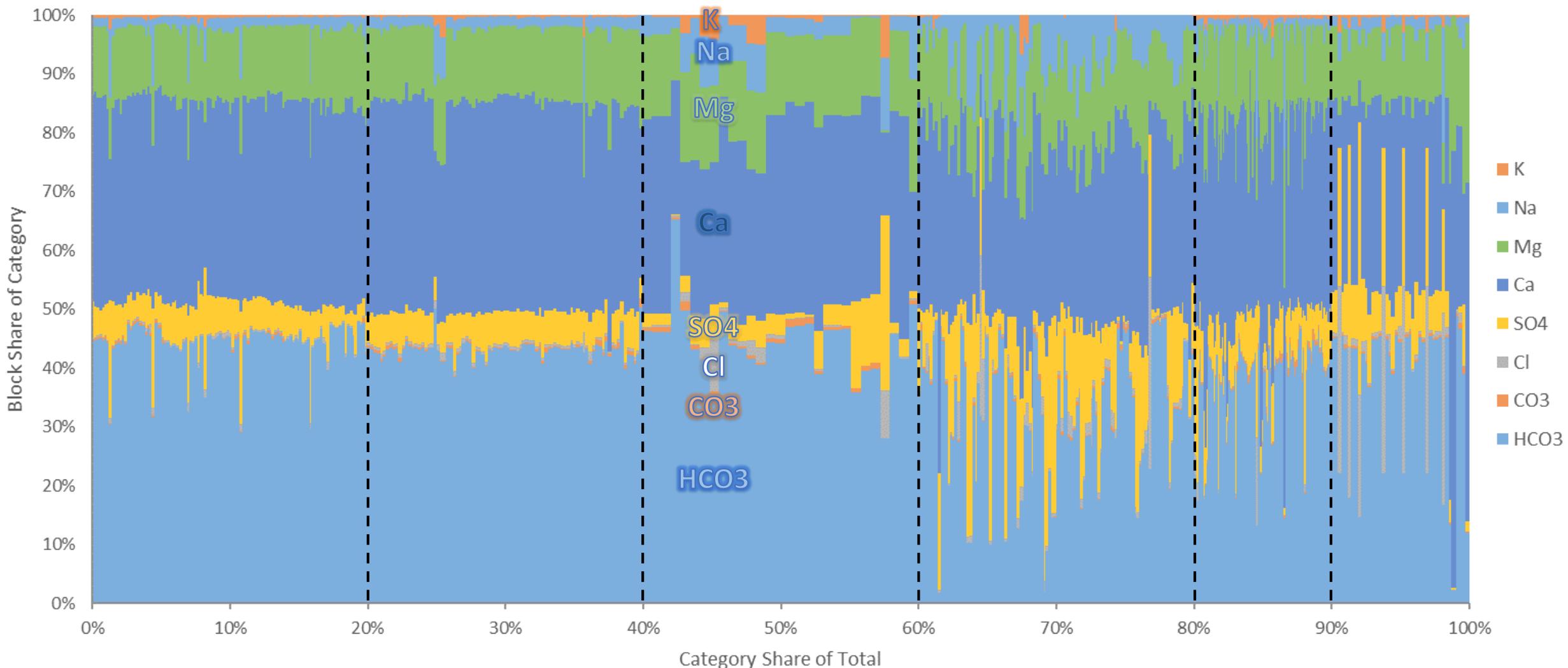
- Ca-HCO₃
 - Ca-SO₄
 - Mg-Cl
 - Mg-HCO₃
 - Al-HCO₃
 - Fe-HCO₃
 - Na-Cl
 - Na-HCO₃
 - Na-SO₄
- PRRD boundary
□ PRRD watershed boundary

Watershed	No of samples						
	Ca-HCO ₃	Ca-SO ₄	Mg-Cl	Mg-HCO ₃	Al-HCO ₃	Fe-HCO ₃	Na-Cl
FINLAY ARM	1						
FINLAY RIVER	3	1					
KISKATINAW RIVER	36						
LOWER BEATTION RIVER	42	1	1		1	1	1
LOWER HALFWAY RIVER	11						
LOWER PEACE RIVER	195	9	4		5	1	1
MILLIGAN CREEK	6	11					
MURRAY RIVER	12						
PEACE ARM	3						
PINE RIVER	26				1		
SMOKY RIVER	5	2					
UPPER BEATTION RIVER	1						
UPPER PEACE RIVER	119	7	5				1
Total samples	460	31	5	6	6	1	1

Sources: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, PCG, and the GIS User Community, Esri, HERE, DeLorme, TomTom, MapmyIndia, © OpenStreetMap Contributors, and the GIS User Community.

0 50 100 200 km

PRRD Marimekko chart



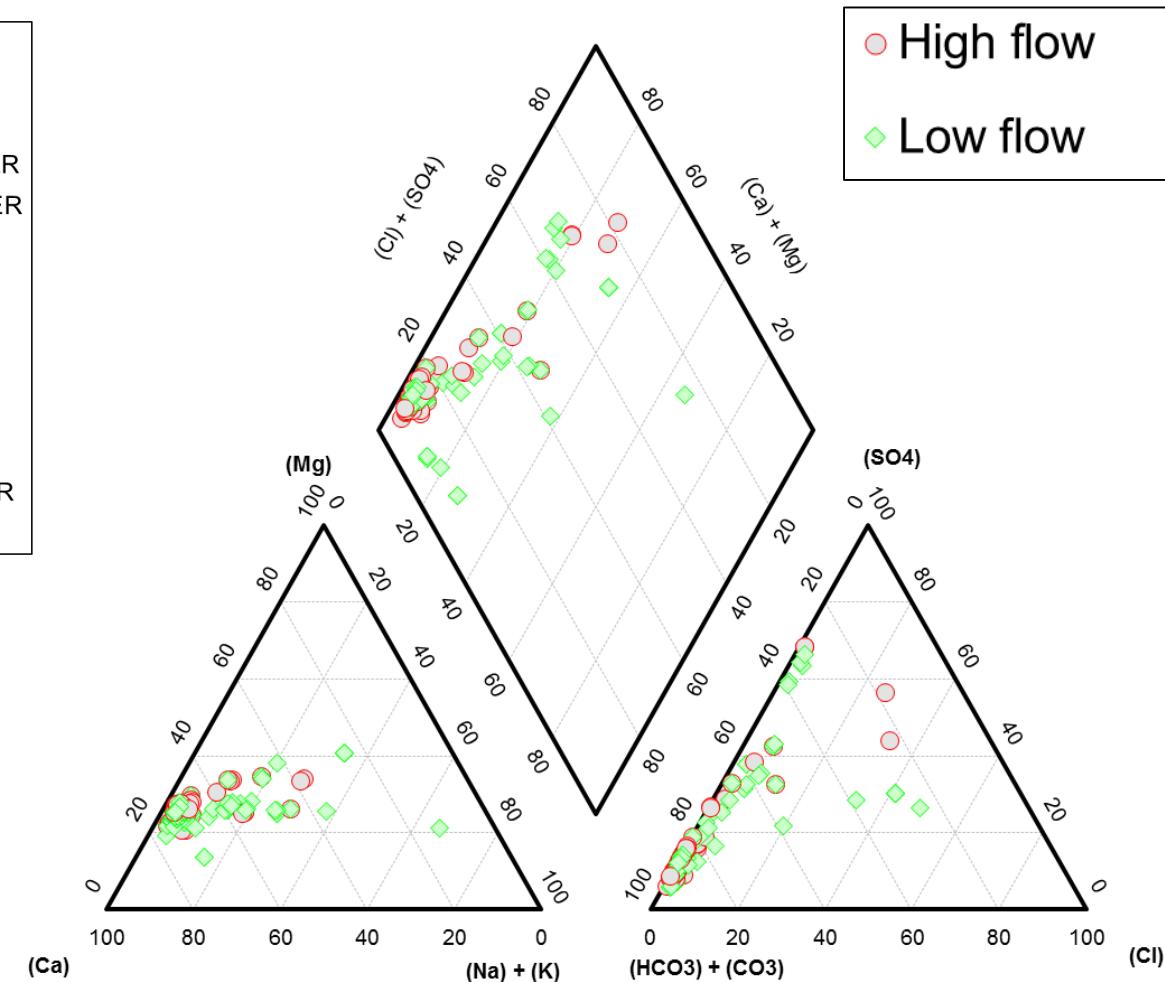
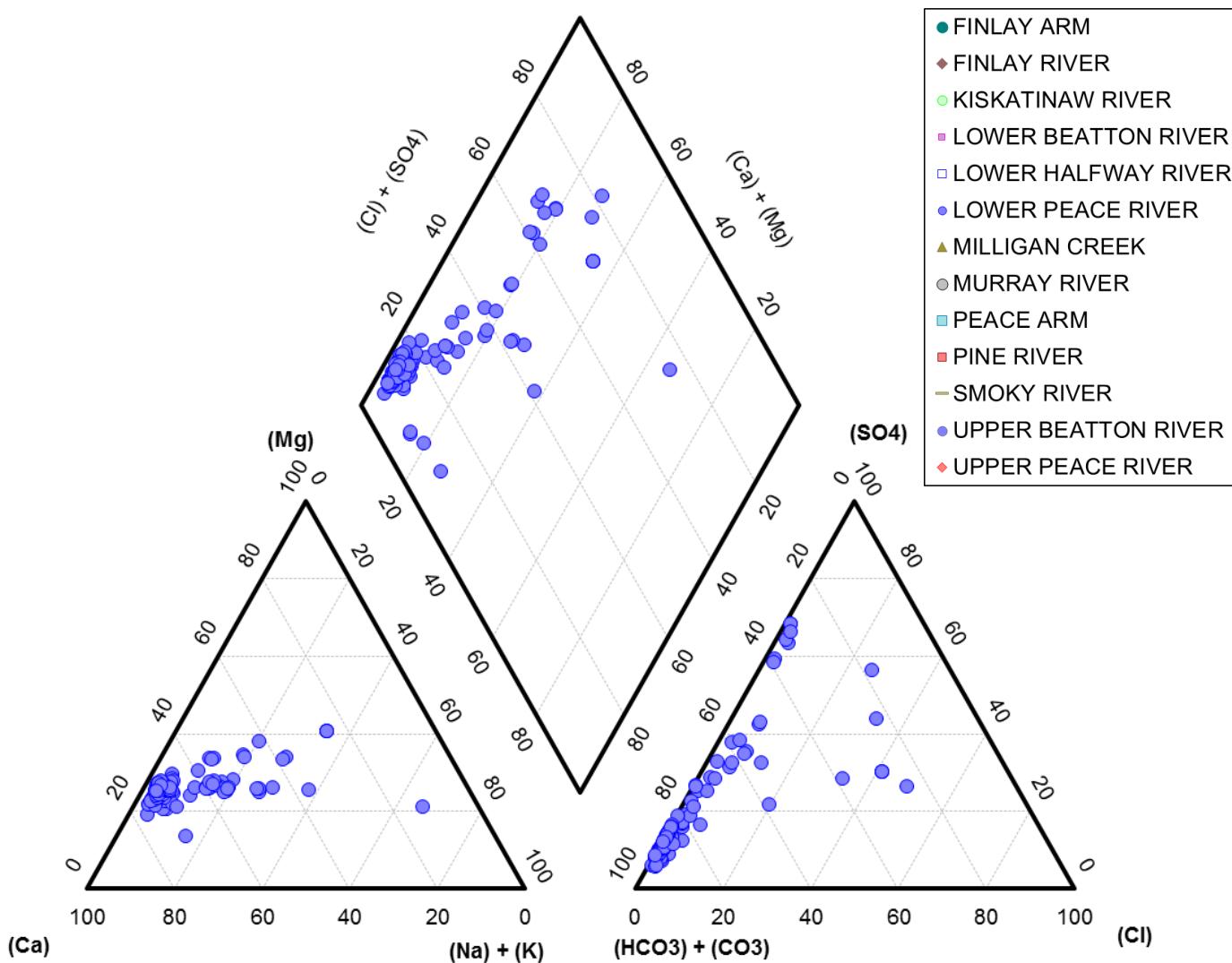
Sampling year	1972-1980	1981-1990	1991-2000	2001-2005	2006-2010	2011-2014
No of Samples	110	87	29	112	134	41

Water type

by watershed

PRRD

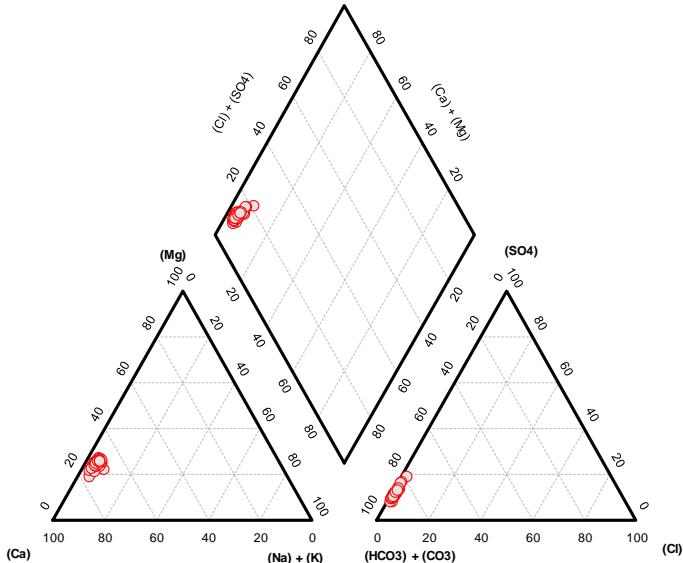
1.- Lower Peace River watershed (215 samples)



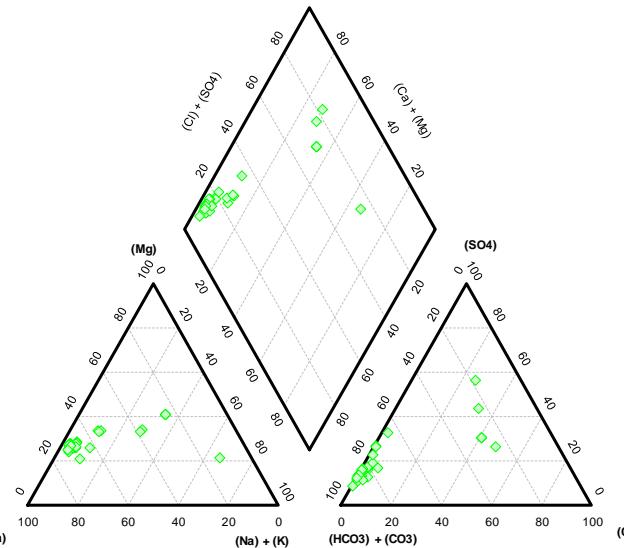
1.- Lower Peace River watershed

- Time analysis. Stations E206585 and Peace-05 (at the mouth of PR)

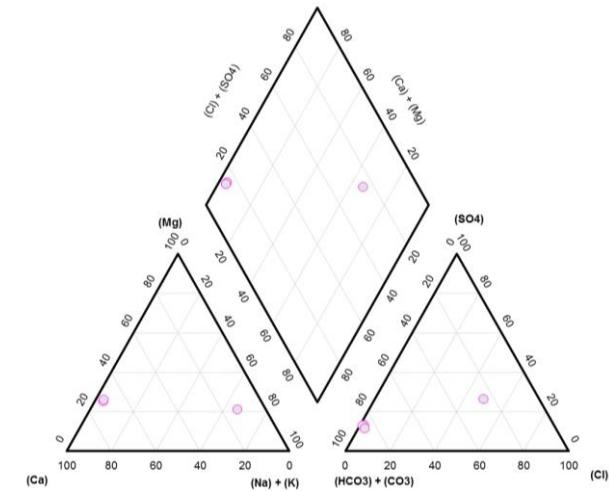
1970-1980 (78 samples)



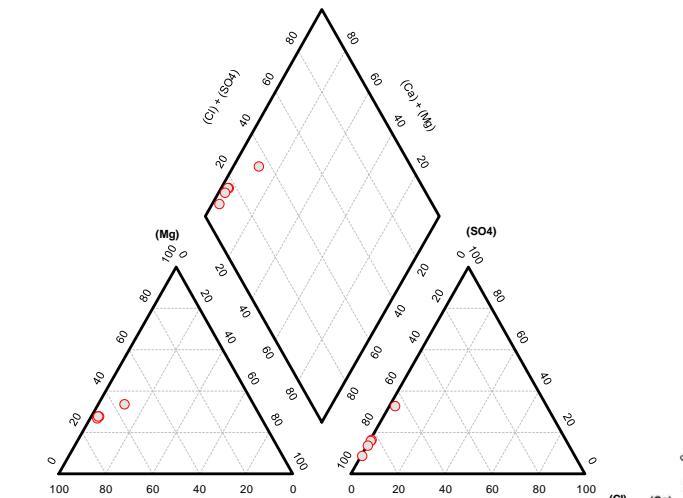
2007-2013 (43 samples)



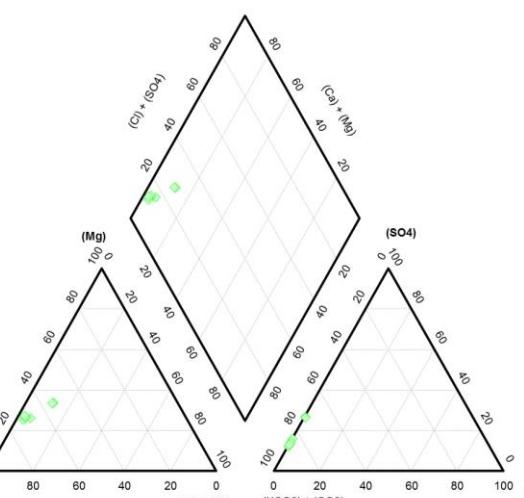
2013 (4 samples)



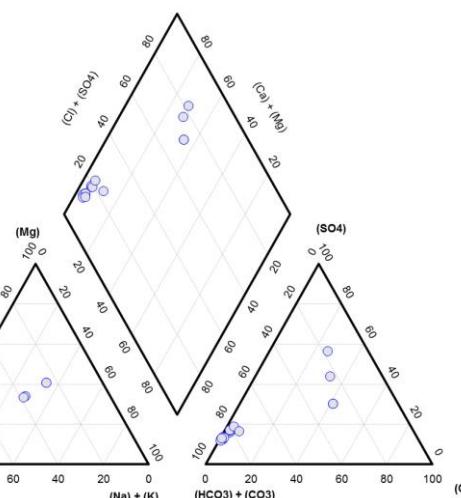
2007 (5 samples)



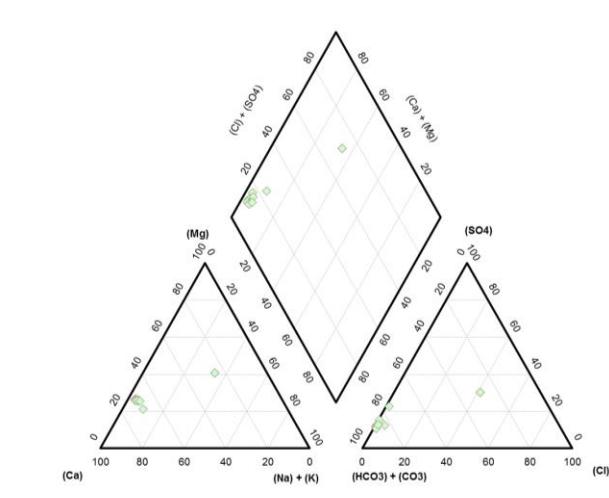
2008 (7 samples)



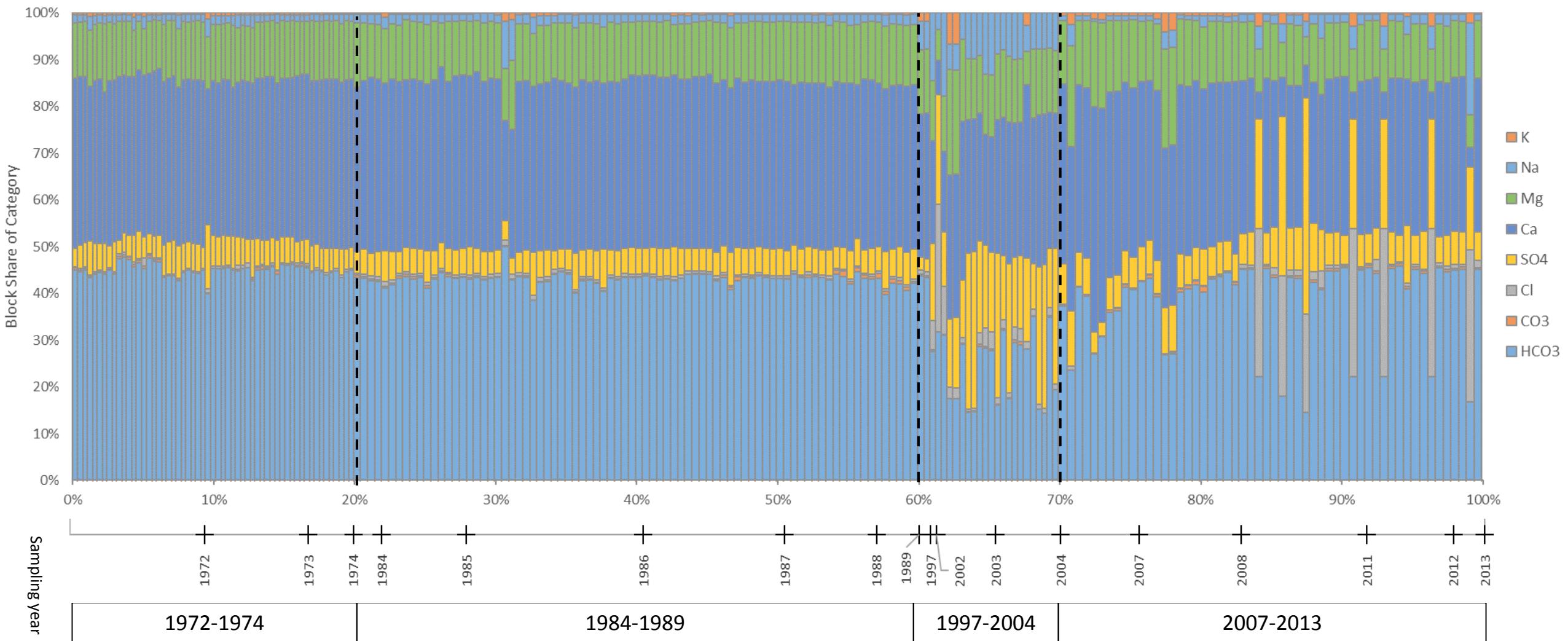
2011 (16 samples)



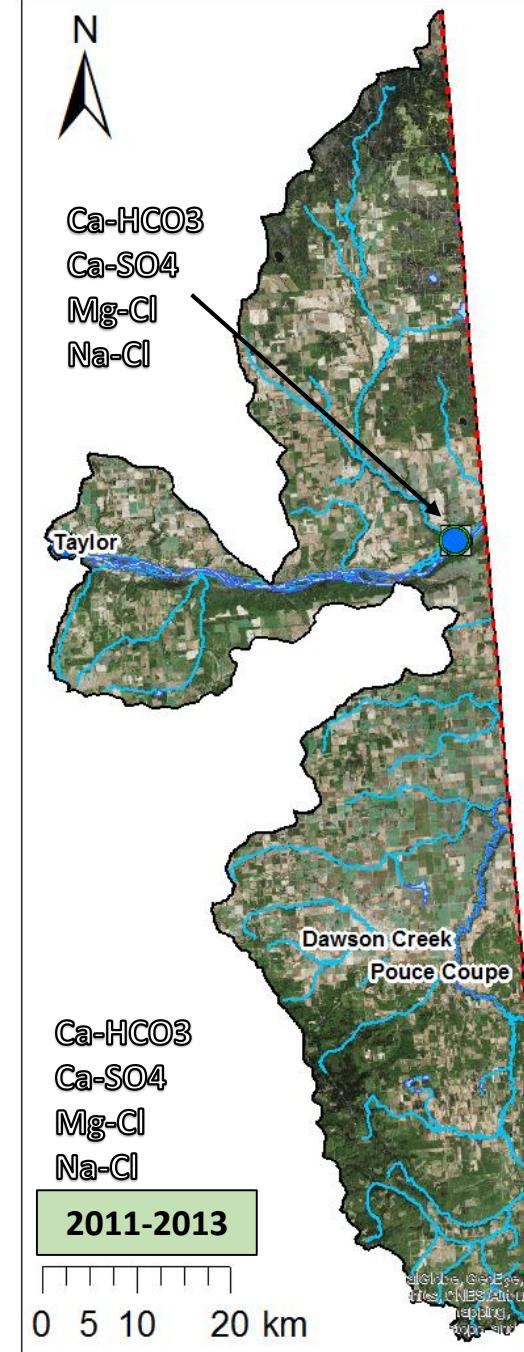
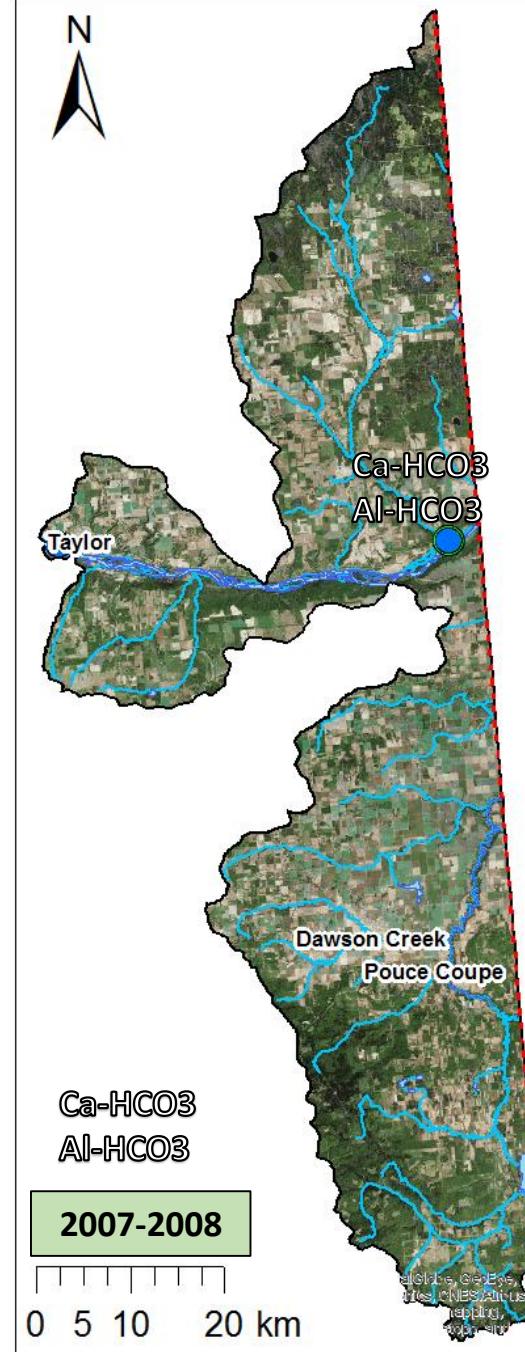
2012 (11 samples)



1.- Lower Peace River watershed (215 samples)

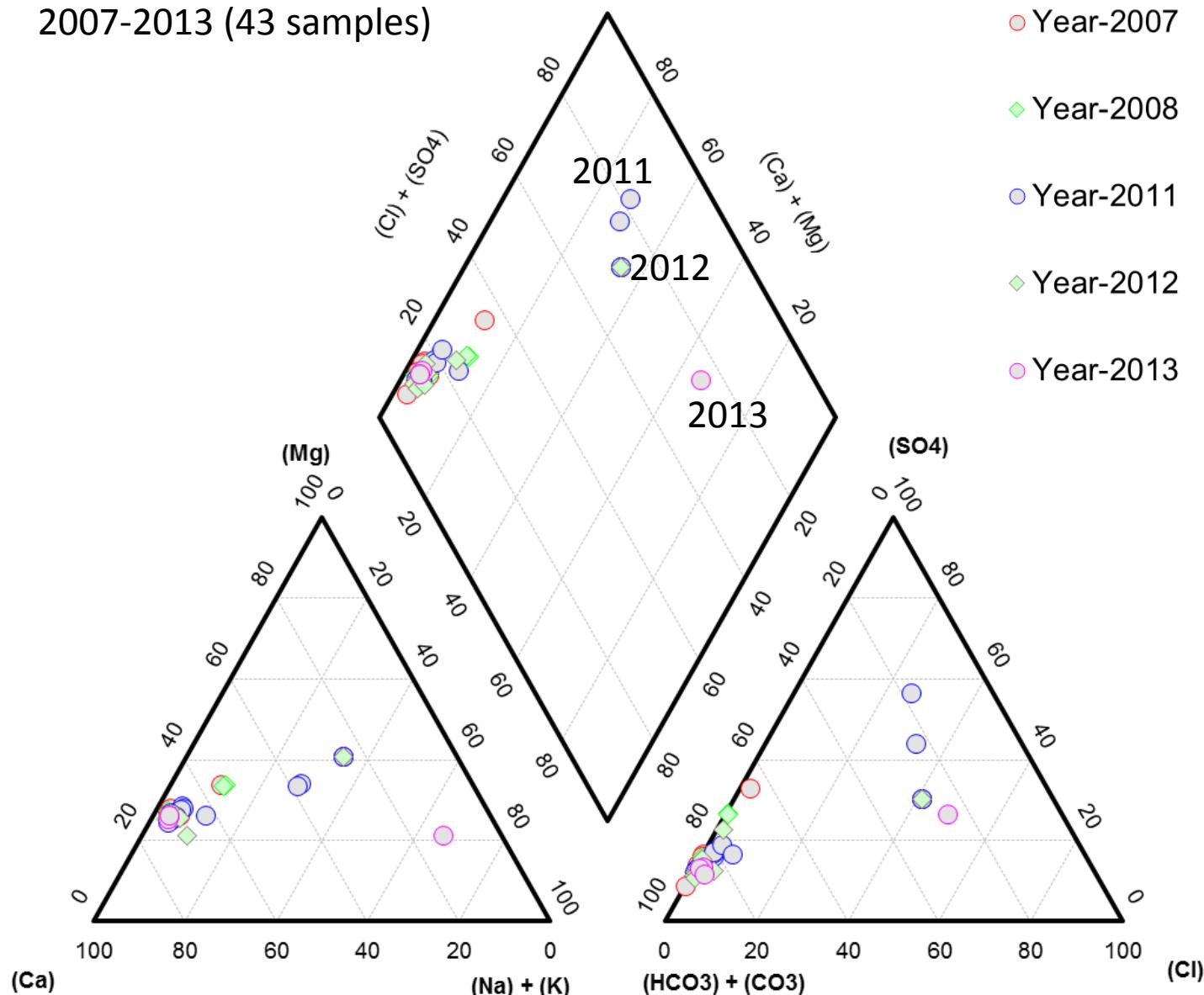


Spatial distribution of water type



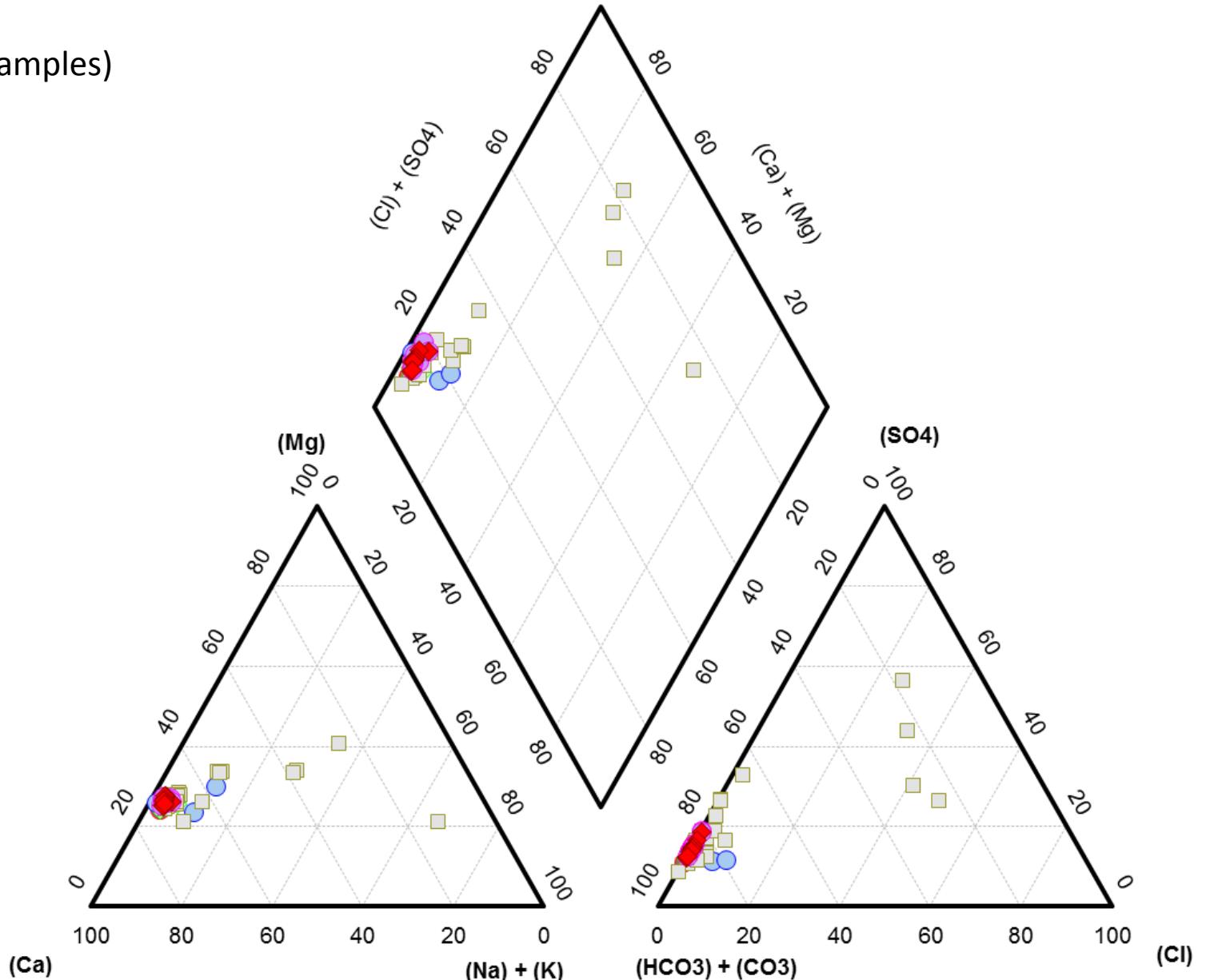
1.- Lower Peace River watershed

2007-2013 (43 samples)

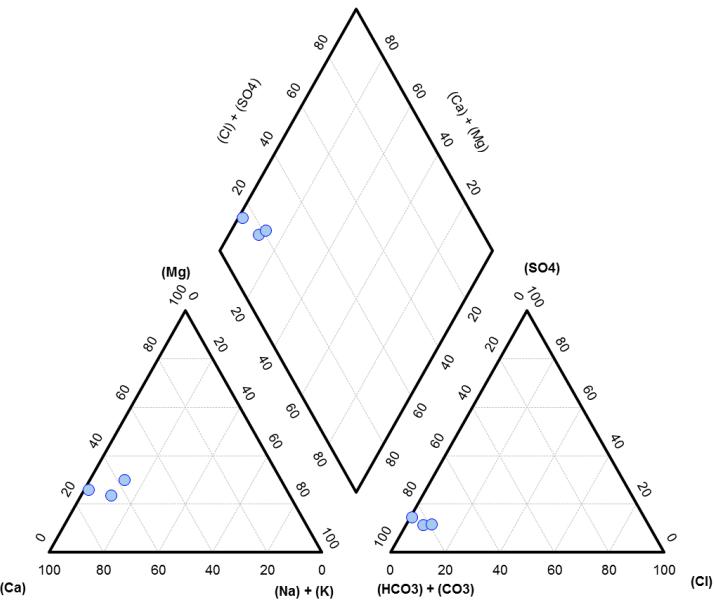


1.- Lower Peace River watershed

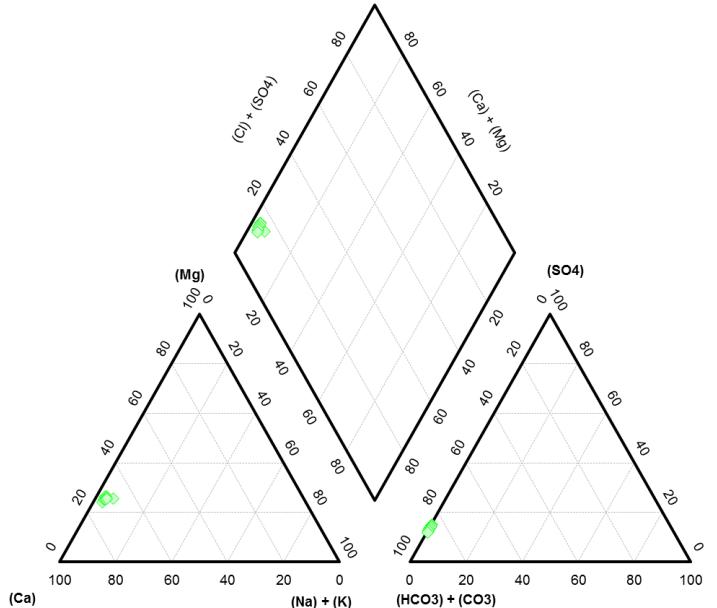
Water samples taken along Peace River (94 samples)



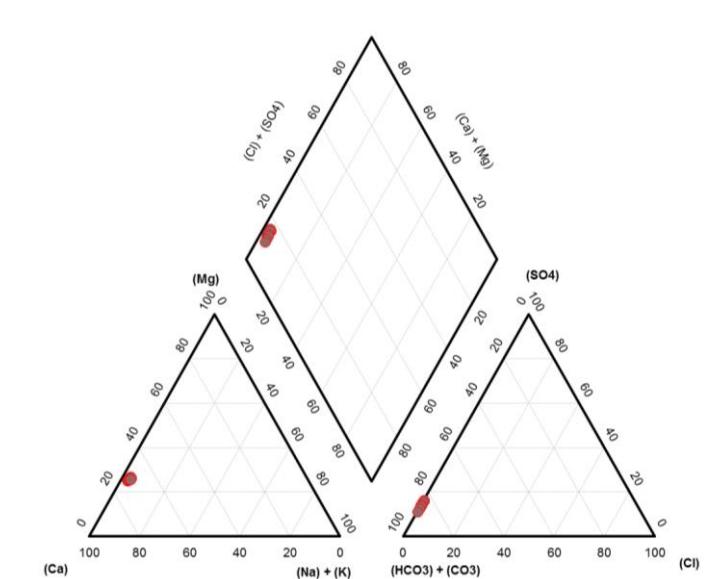
178 Km upstream-Williston Reservoir (3 samples)



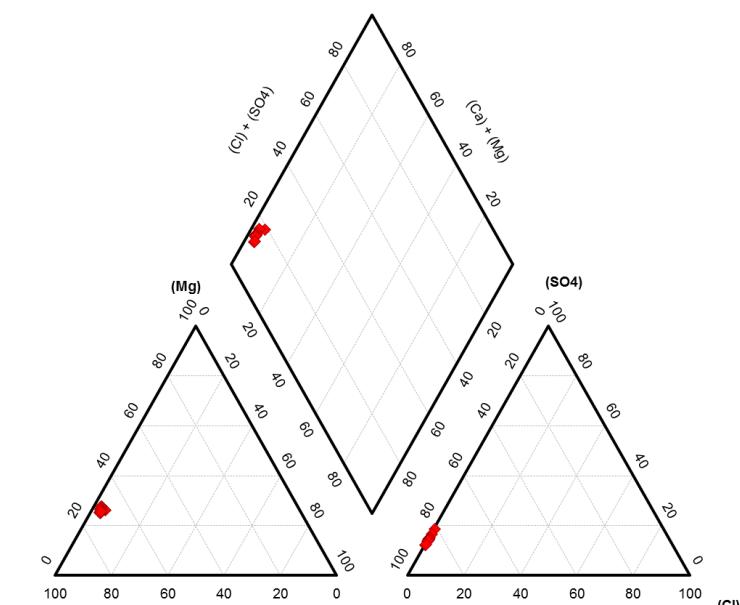
146 Km upstream-Hudson's Hope (14 samples)



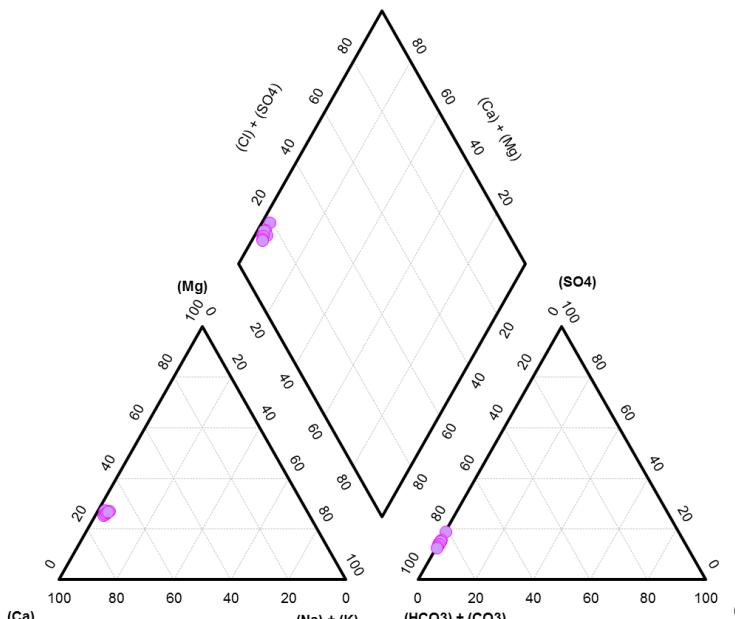
107 Km upstream-Attachie (12 samples)



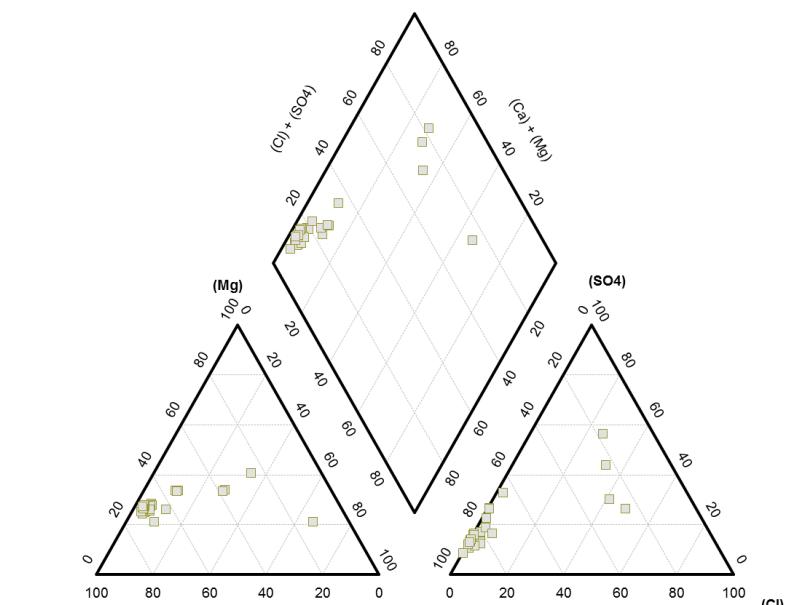
67 Km upstream-Gran Haven (11 samples)



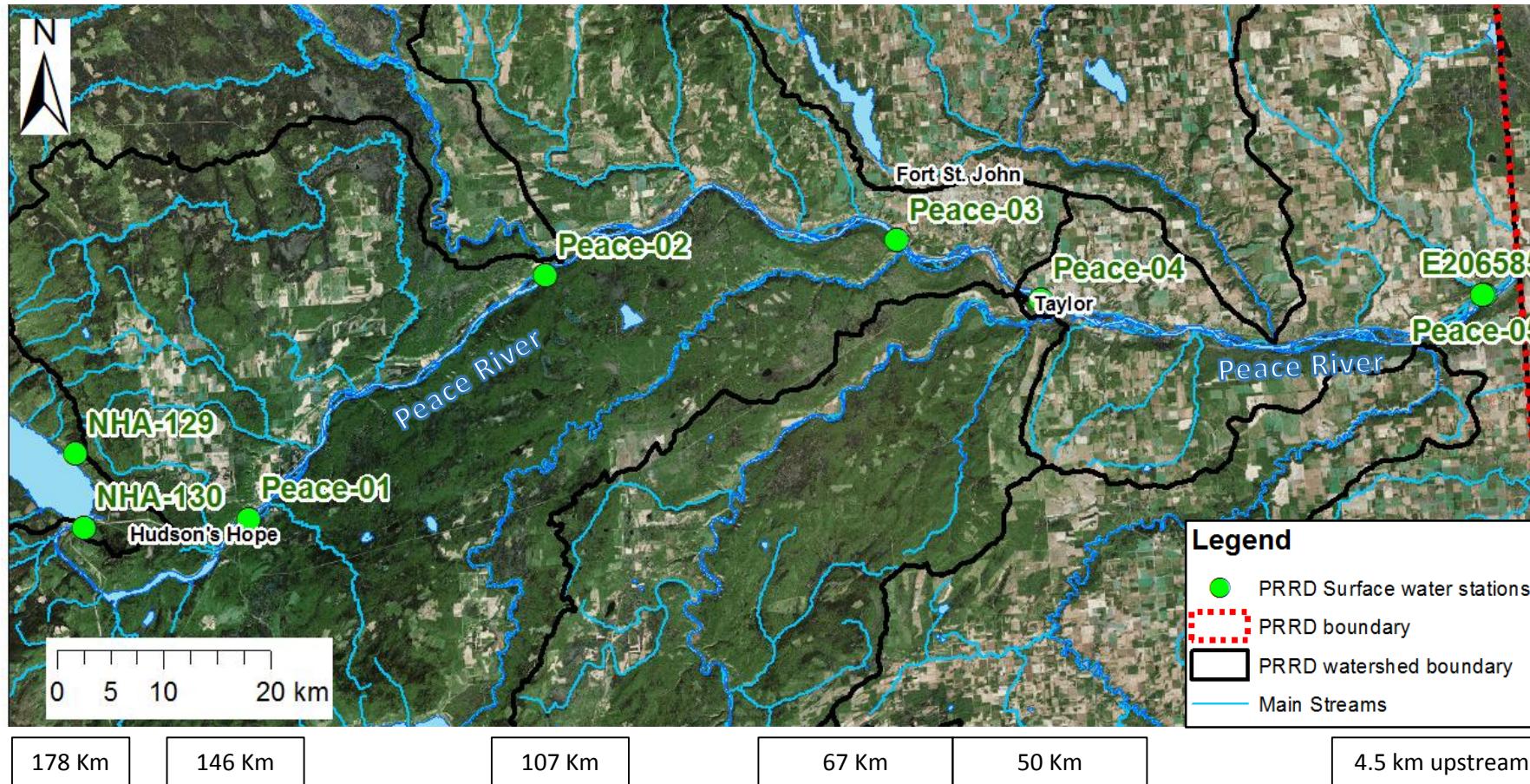
50 Km upstream-Taylor (11 samples)

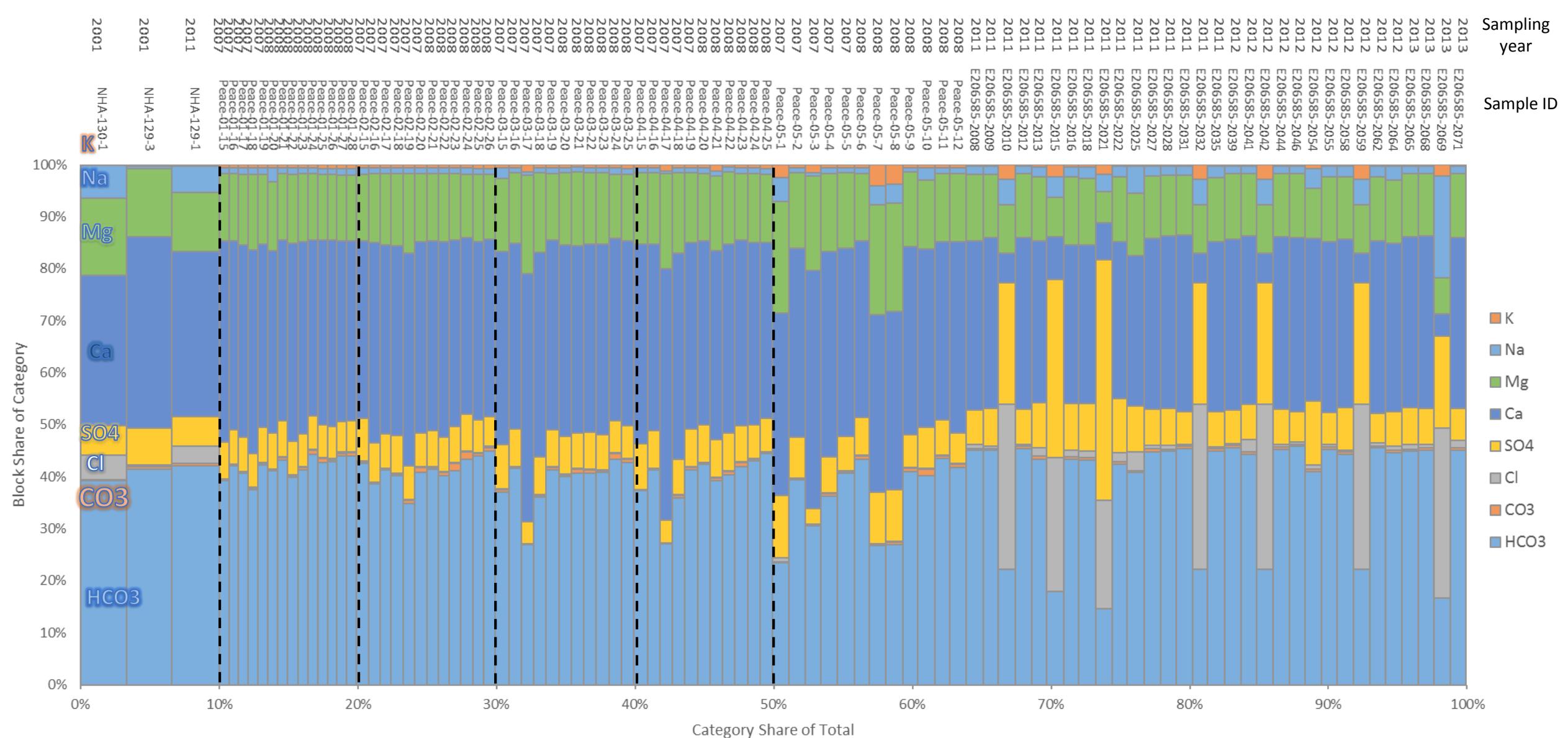


4.5 Km upstream-at the mouth (43 samples)



Water type evolution along the Peace River

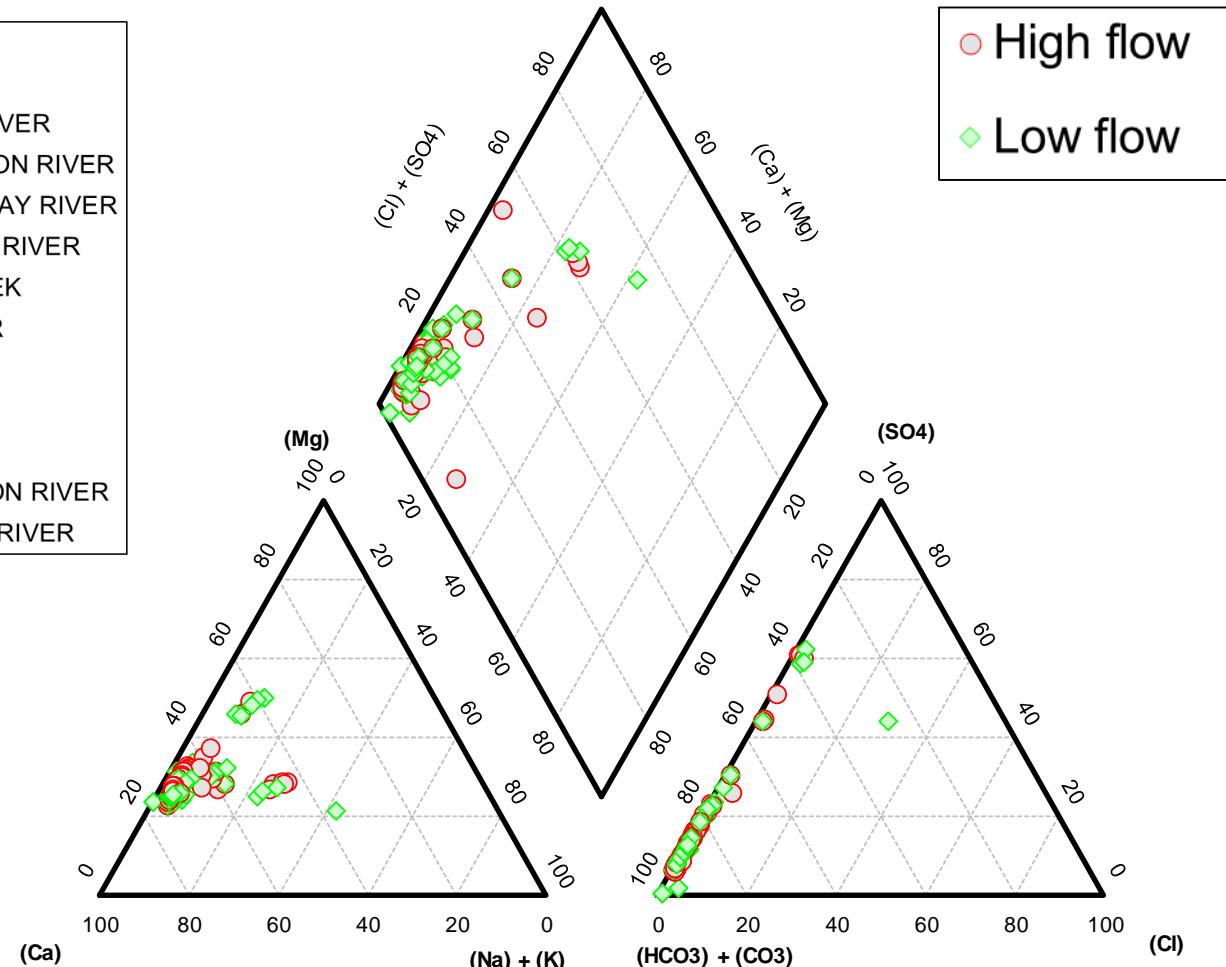
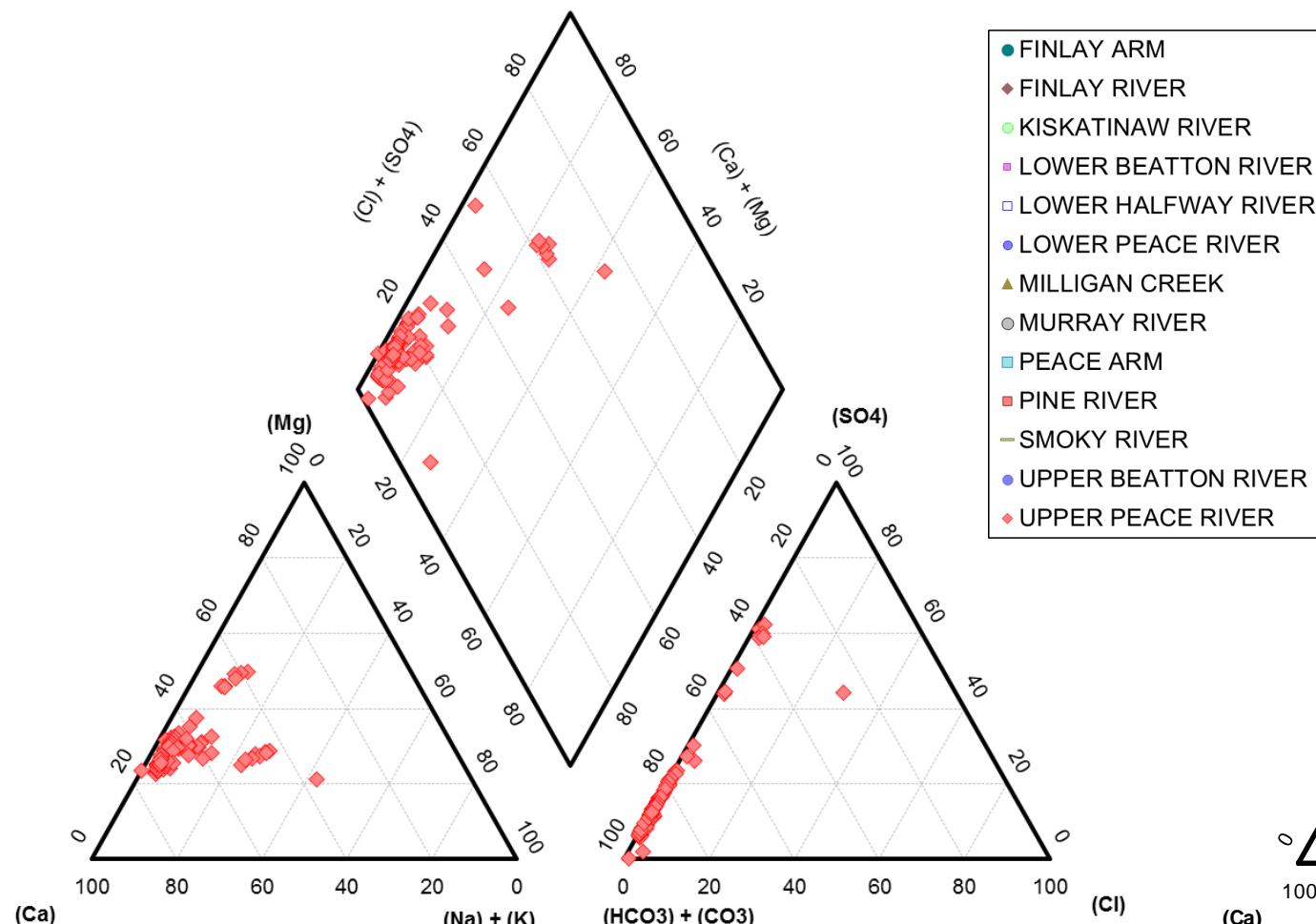




178 Km upstream (Williston Reservoir) Samples 2001-2011	146 Km upstream (Hudson's Hope) Samples 2007-2008	107 Km upstream (Attachie) Samples 2007-2008	67 Km upstream (Grand Haven) Samples 2007-2008	50 Km upstream (Taylor) Samples 2007-2008	4.5 km upstream (at the mouth) Samples 2007-2013
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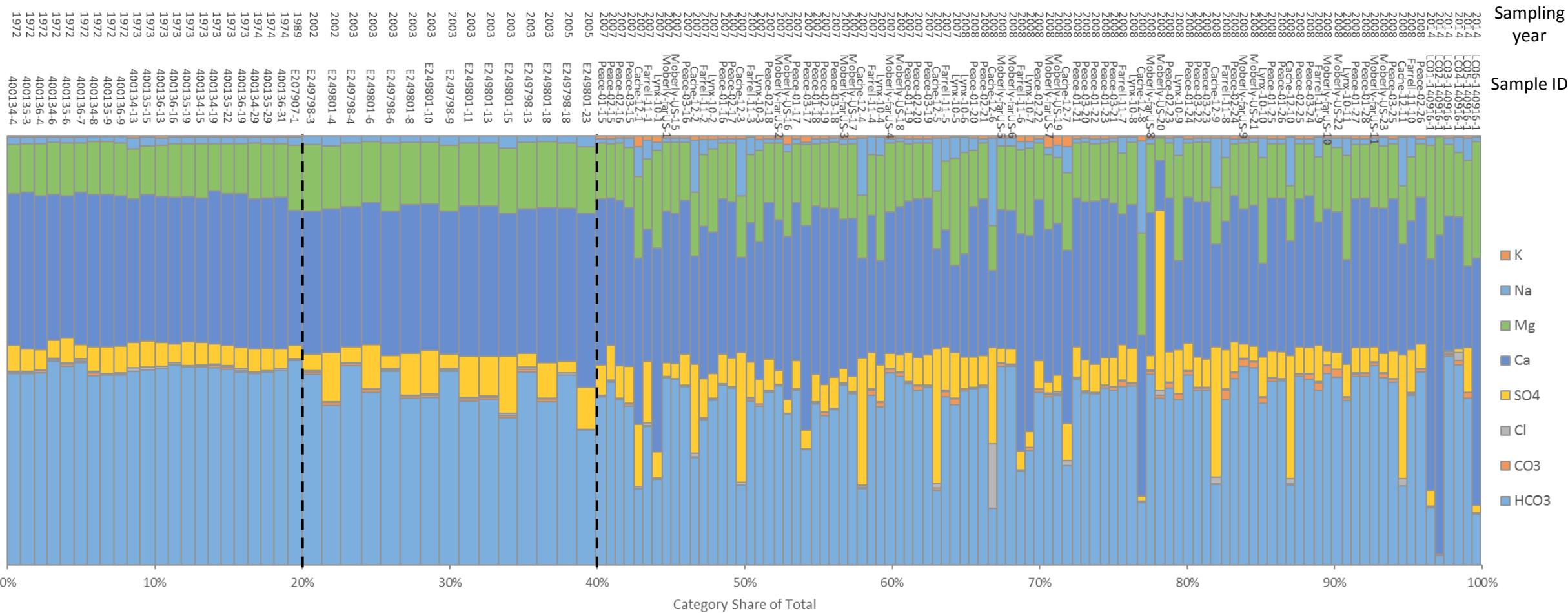
2.- Upper Peace River watershed (132 samples)

Piper plot



2.- Upper Peace River watershed (132 samples)

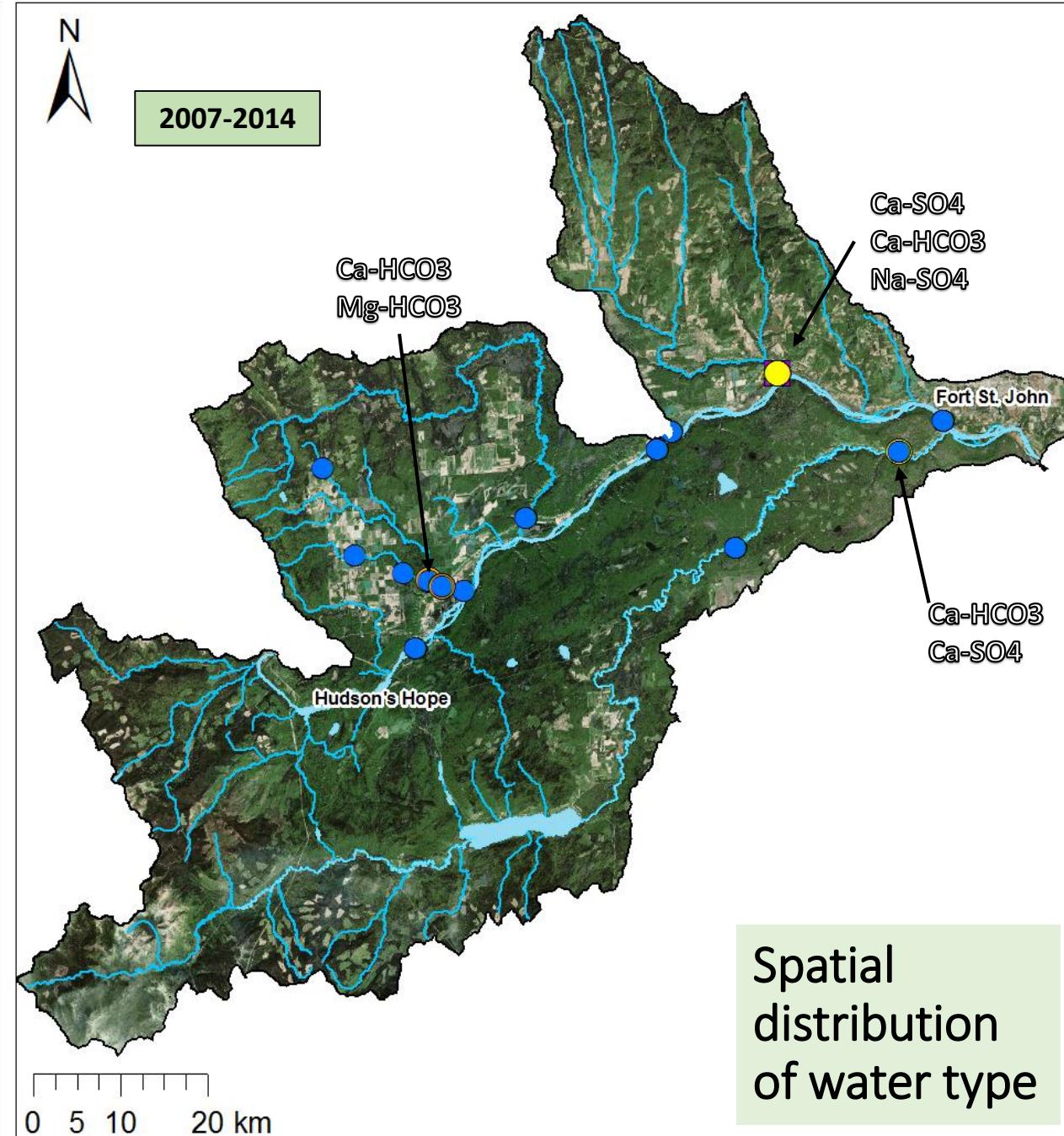
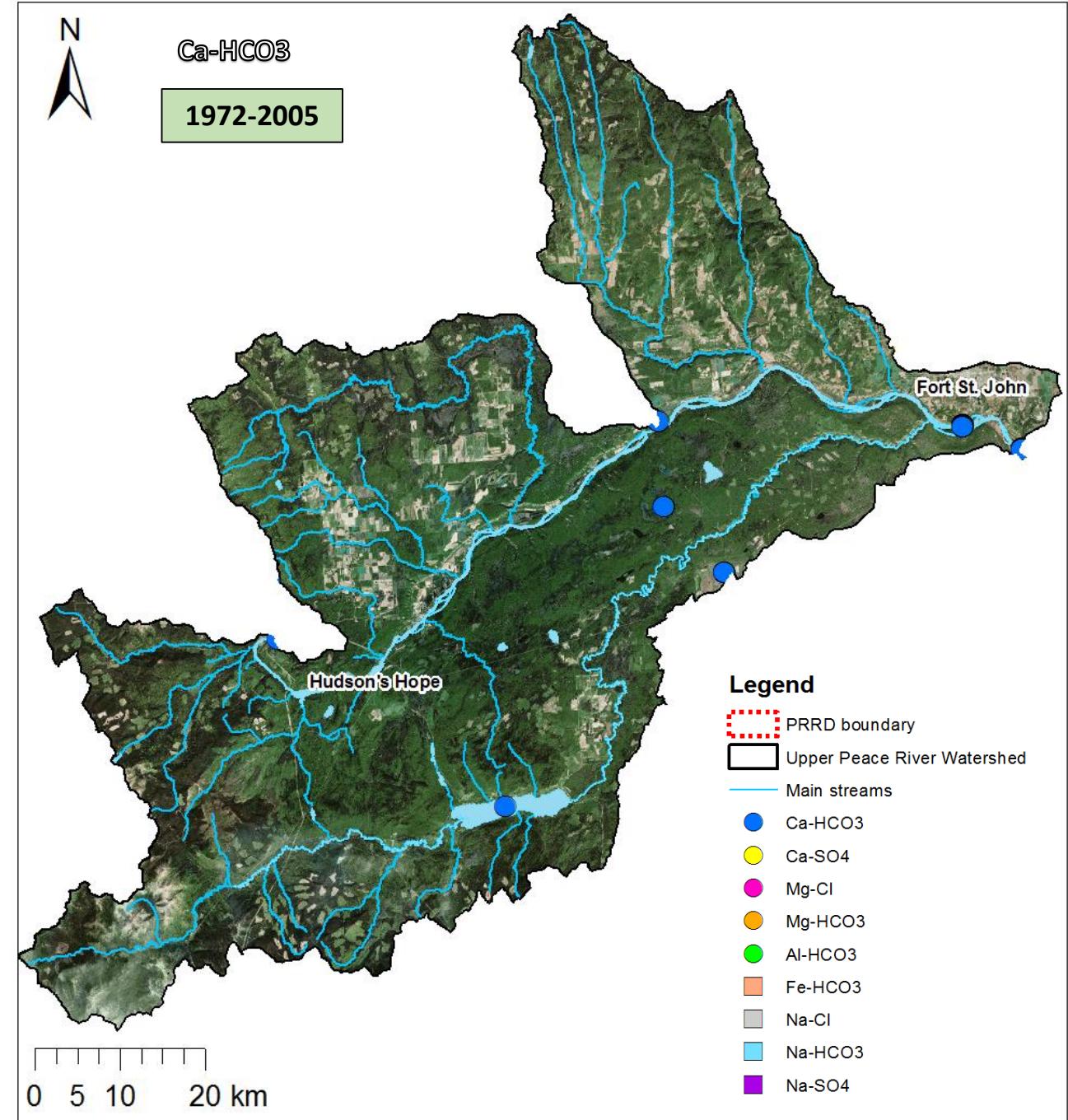
Marimekko chart



1972-1989

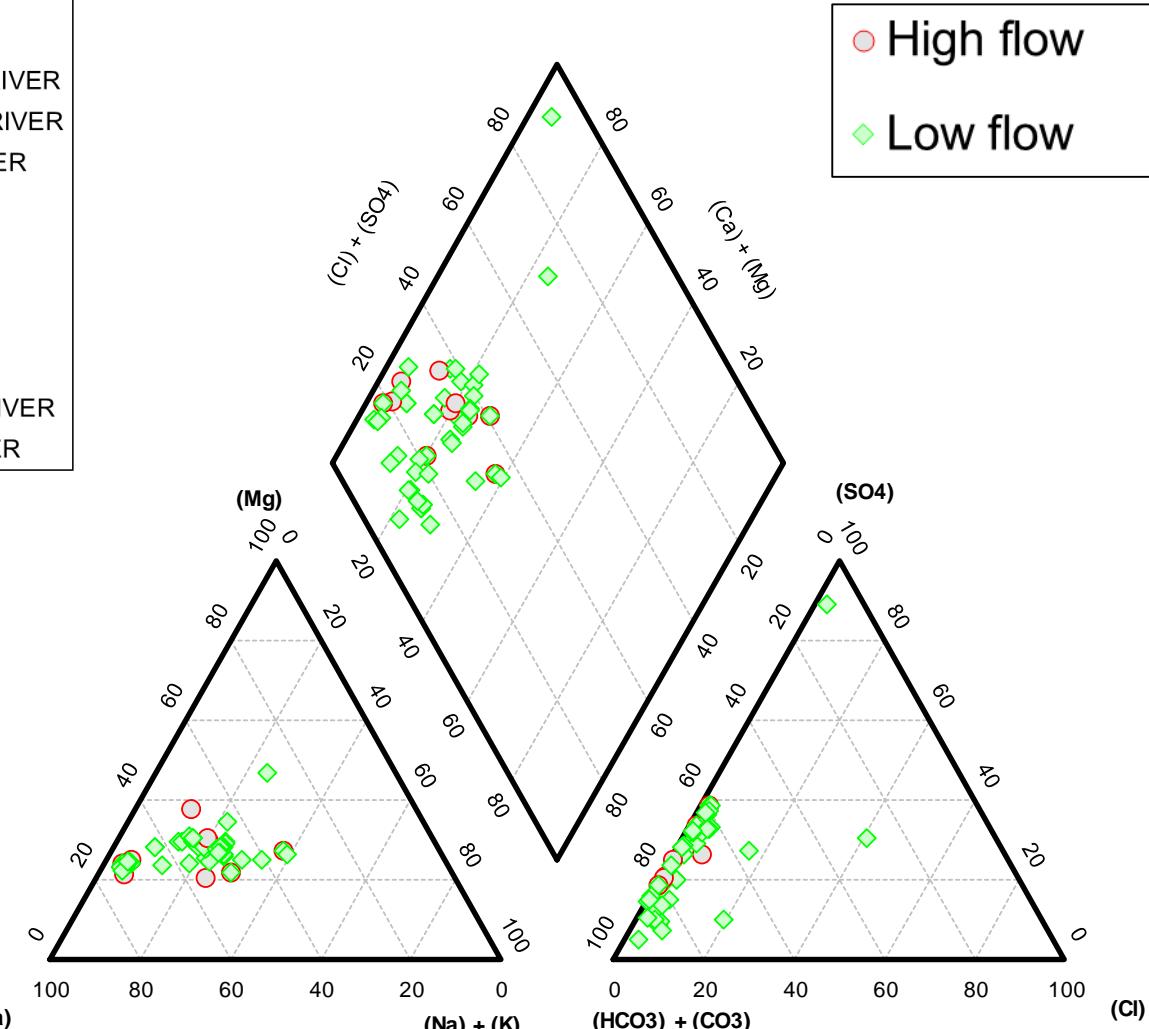
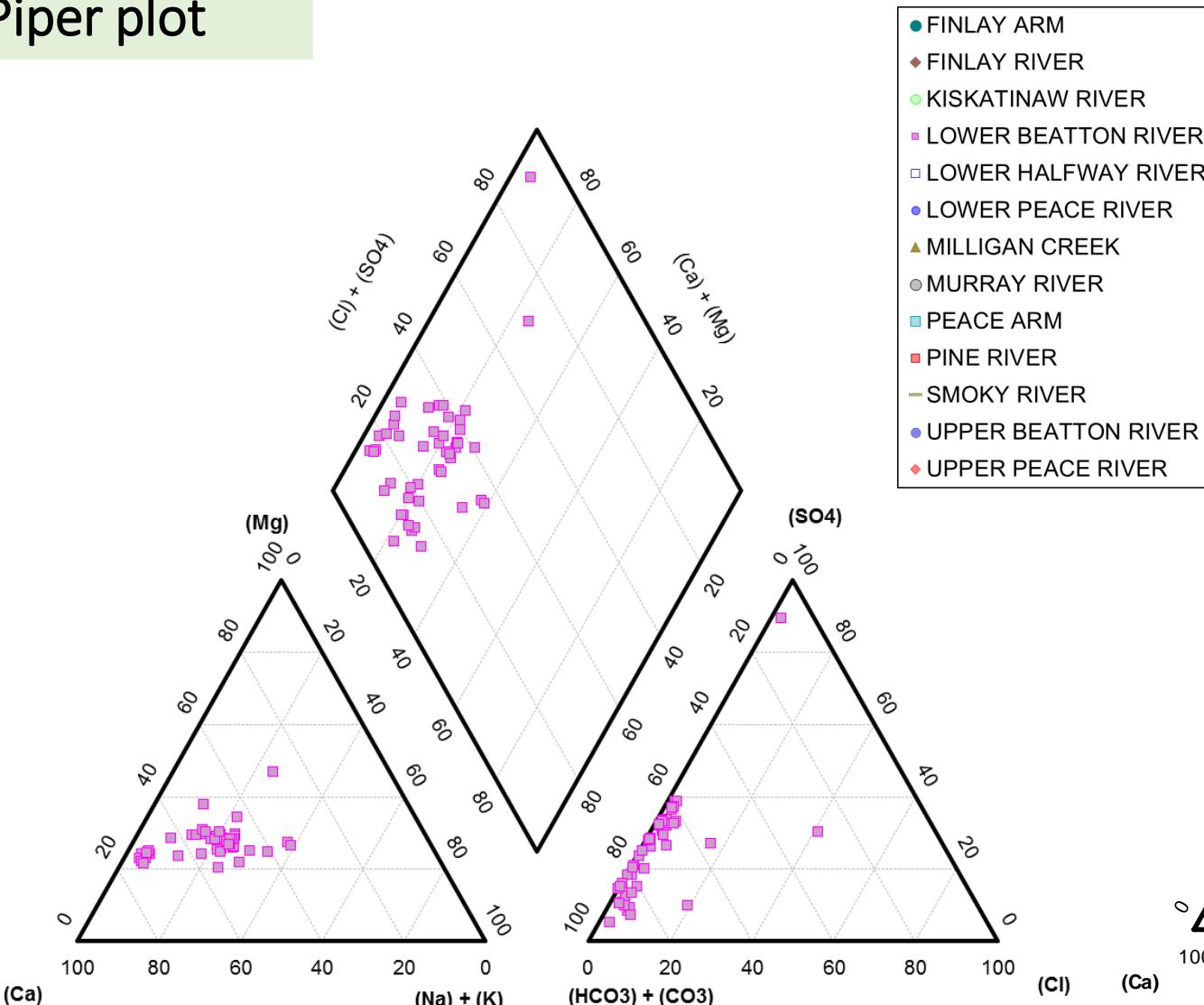
2002-2005

2007-2014



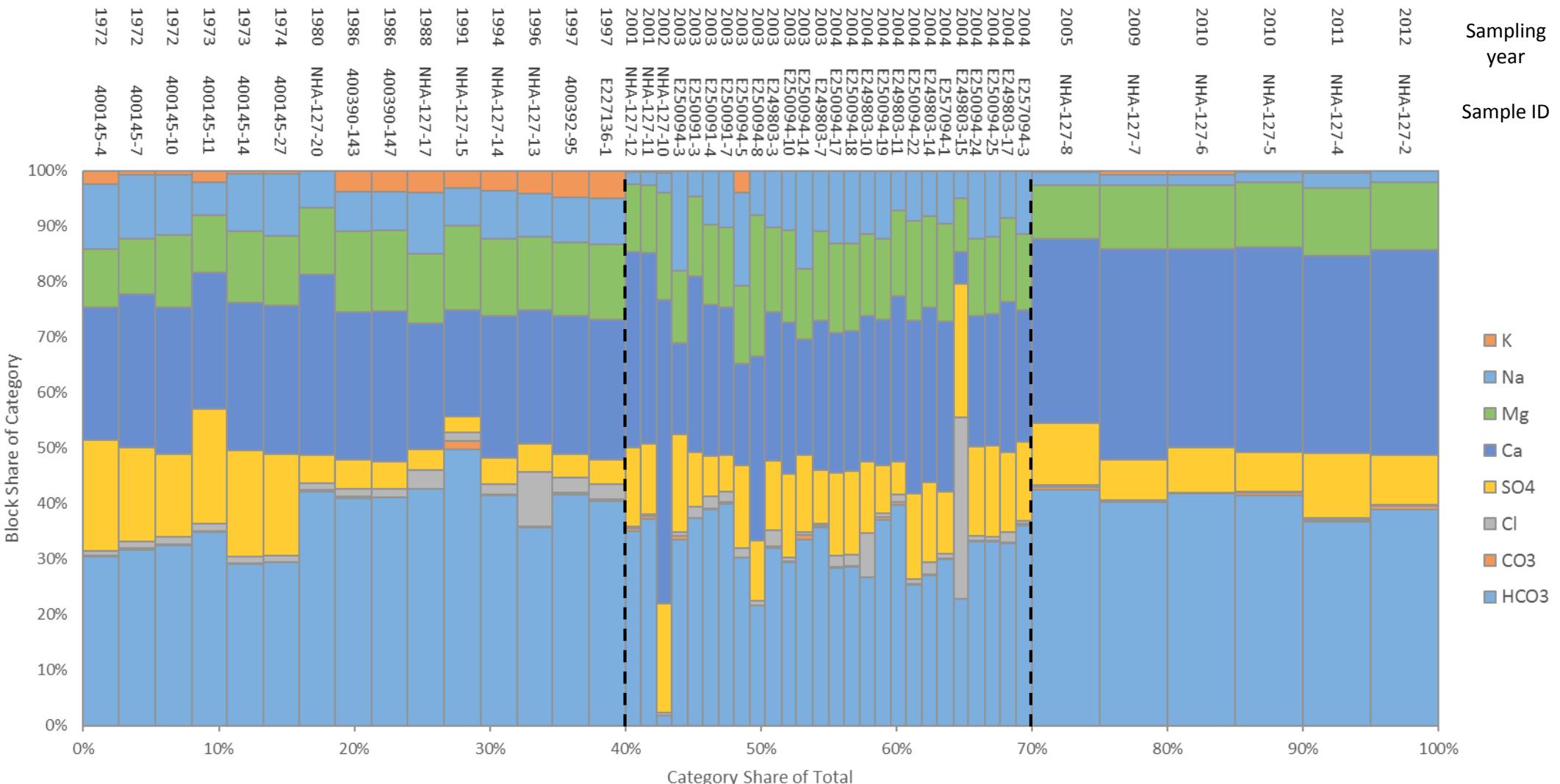
3.- Lower Beatton River watershed (47 samples)

Piper plot



3.- Lower Beatton River watershed (47 samples)

Marimekko chart



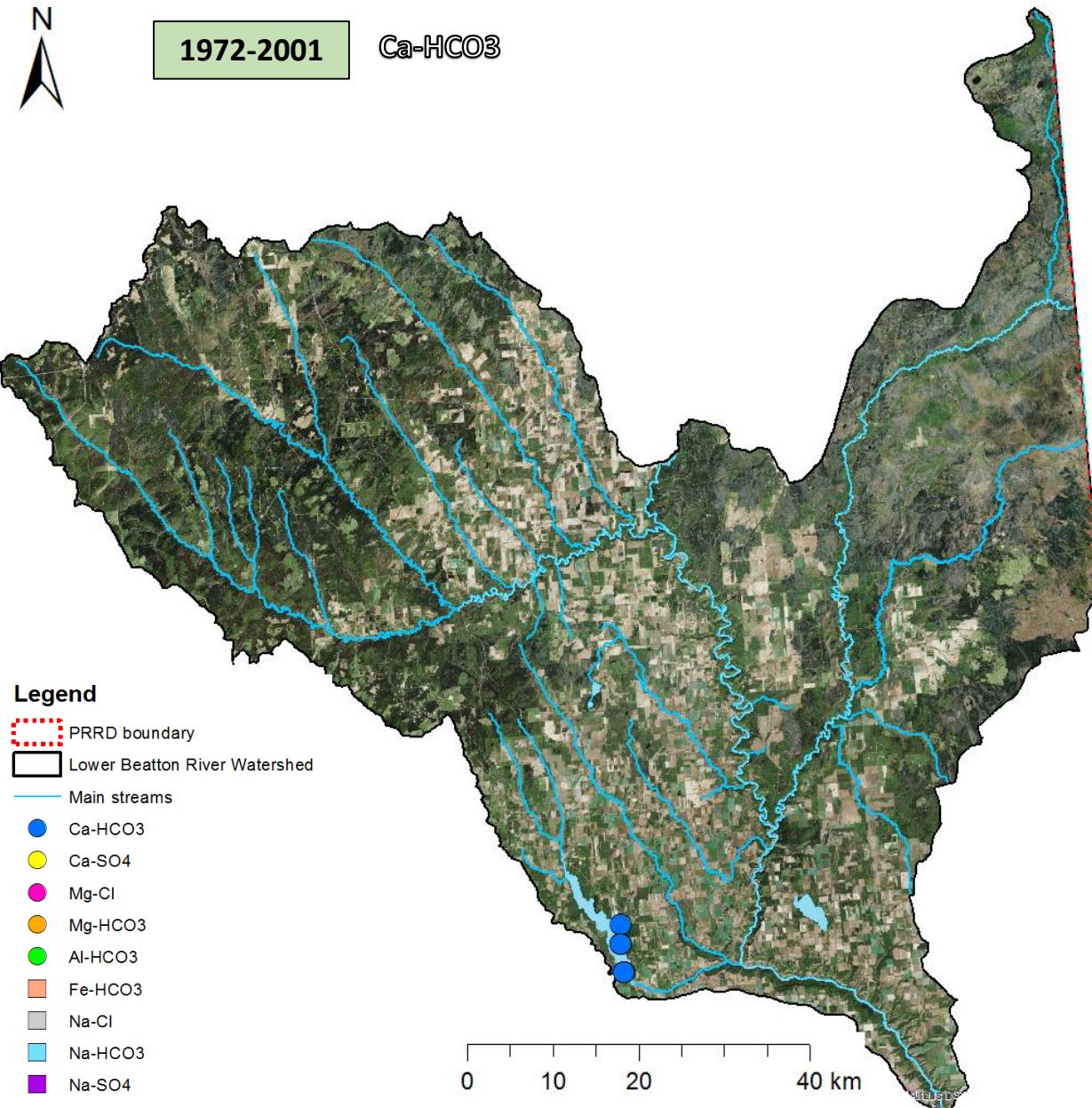
1972-1997

2001-2004

2005-2012

N

1972-2001

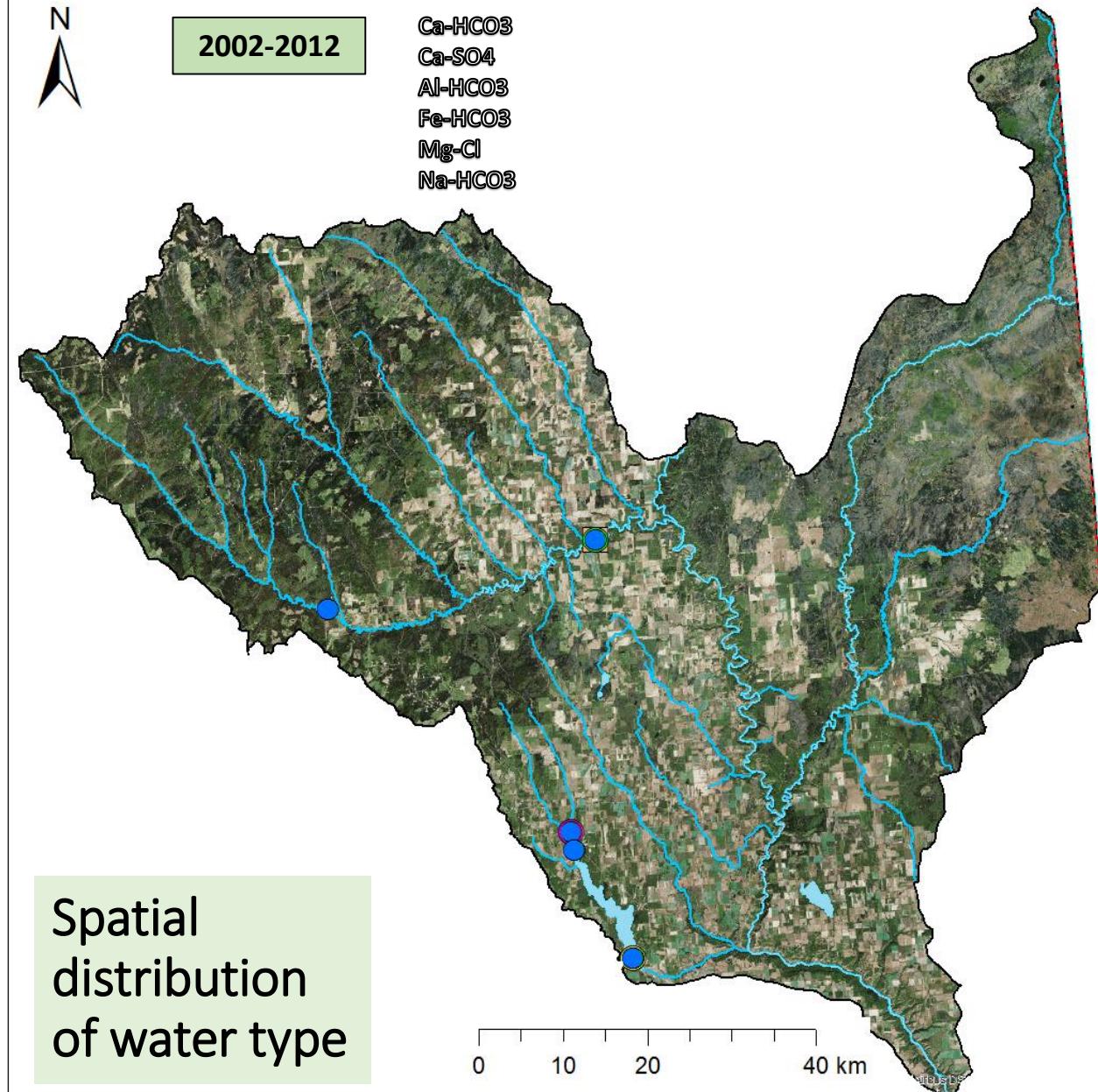
Ca-HCO₃

N

2002-2012

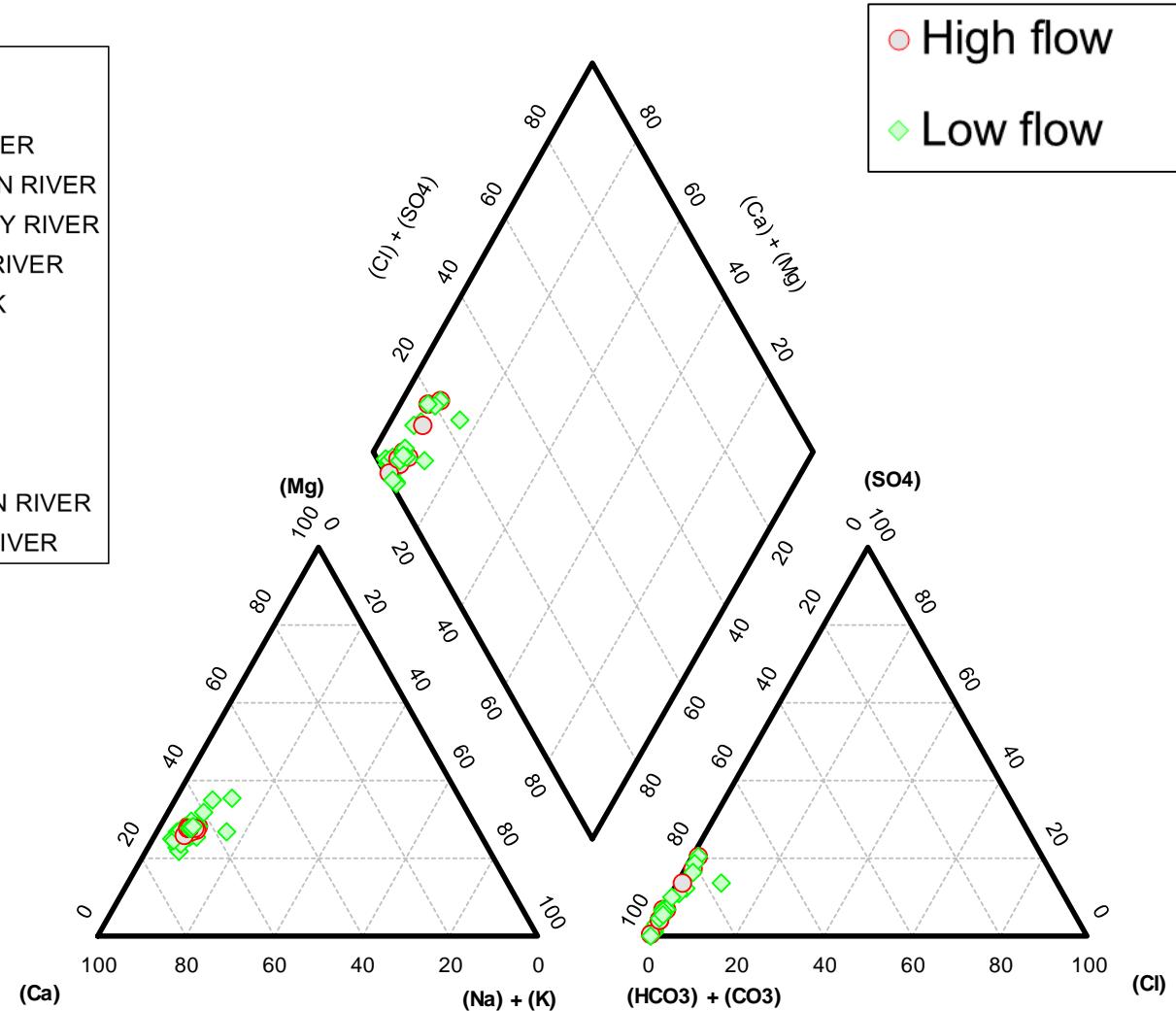
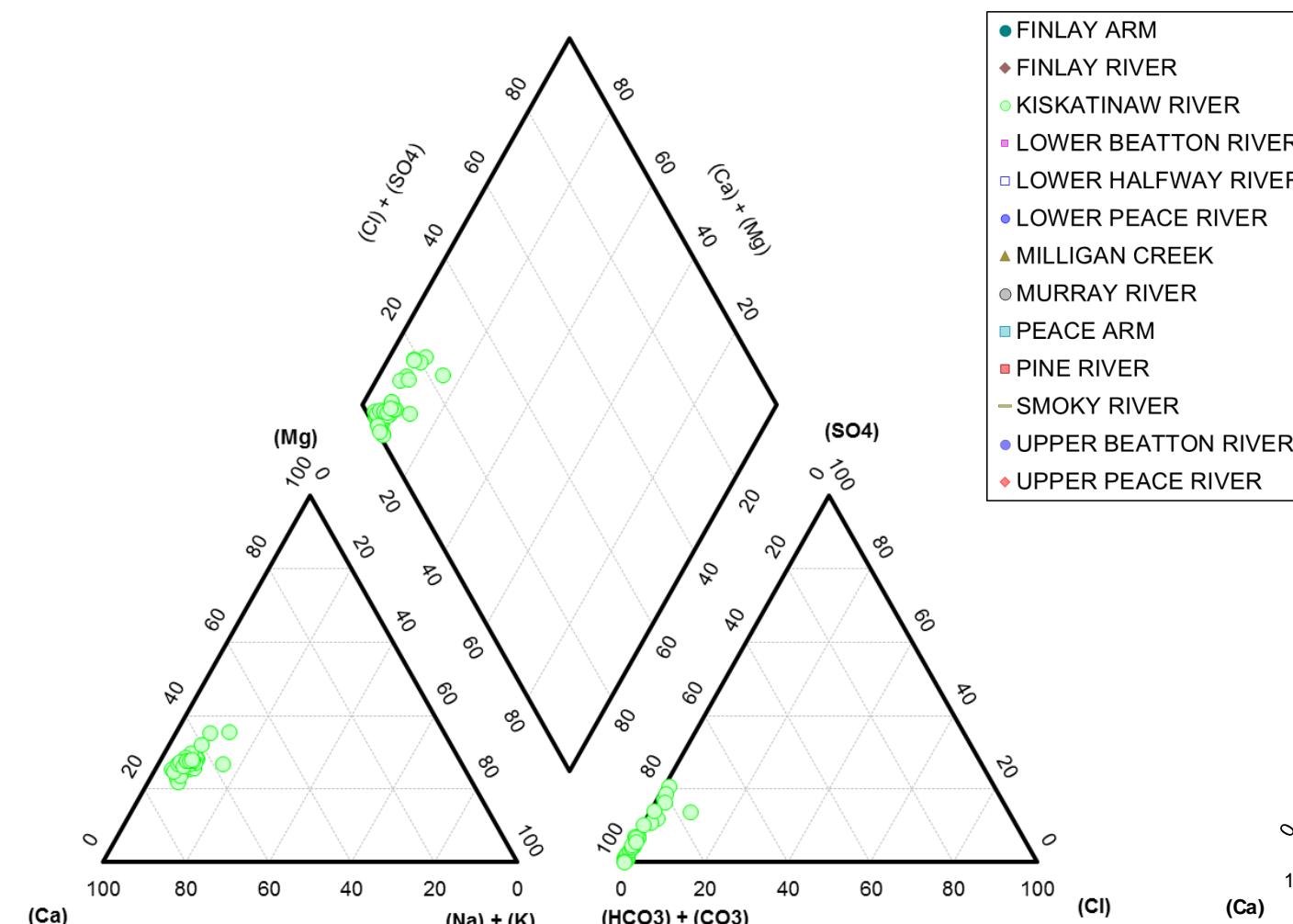
Ca-HCO₃
Ca-SO₄
Al-HCO₃
Fe-HCO₃
Mg-Cl
Na-HCO₃

Spatial distribution of water type



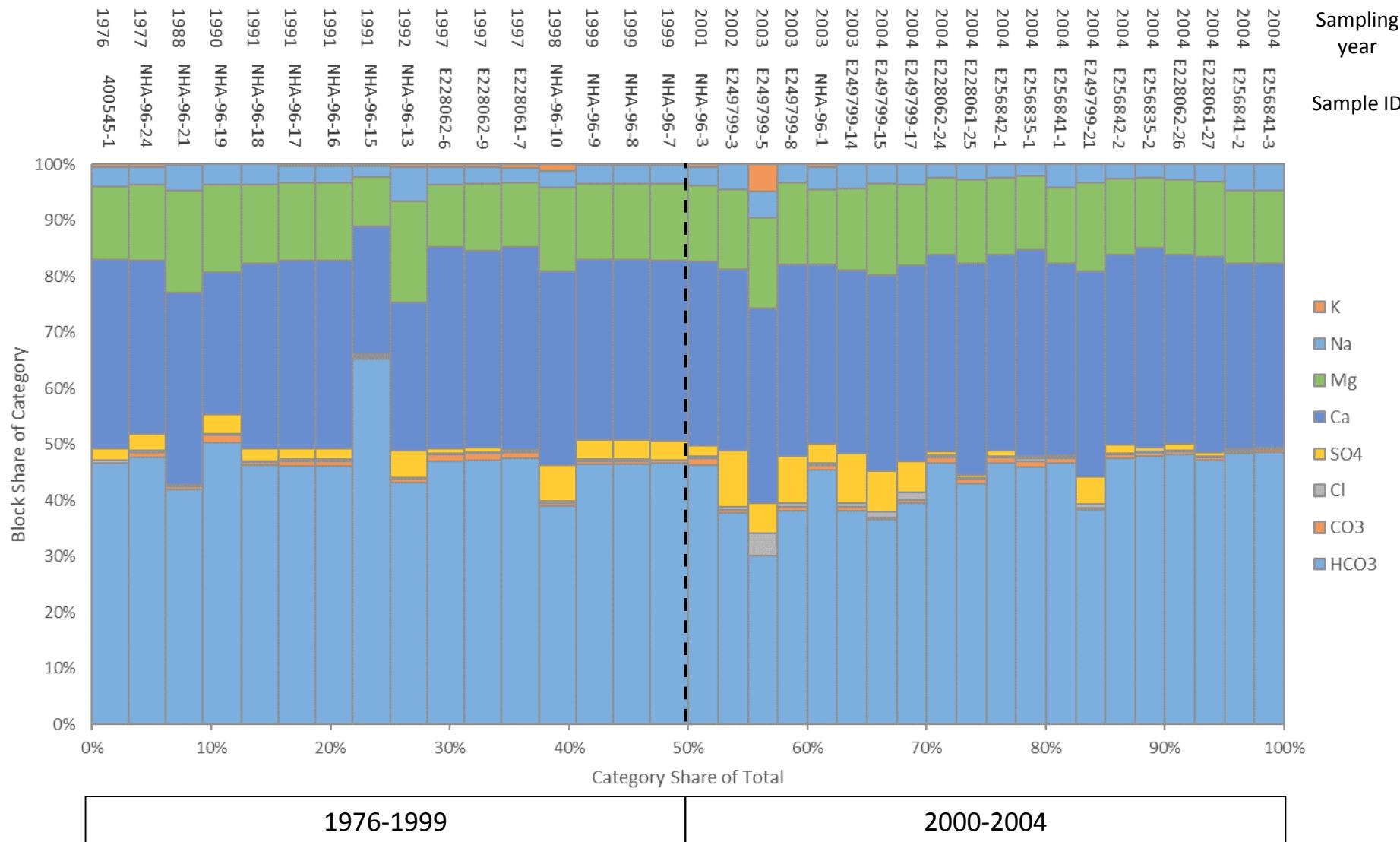
4.- Kiskatinaw watershed (36 samples)

Piper plot



4.- Kiskatinaw watershed (36 samples)

Marimekko chart

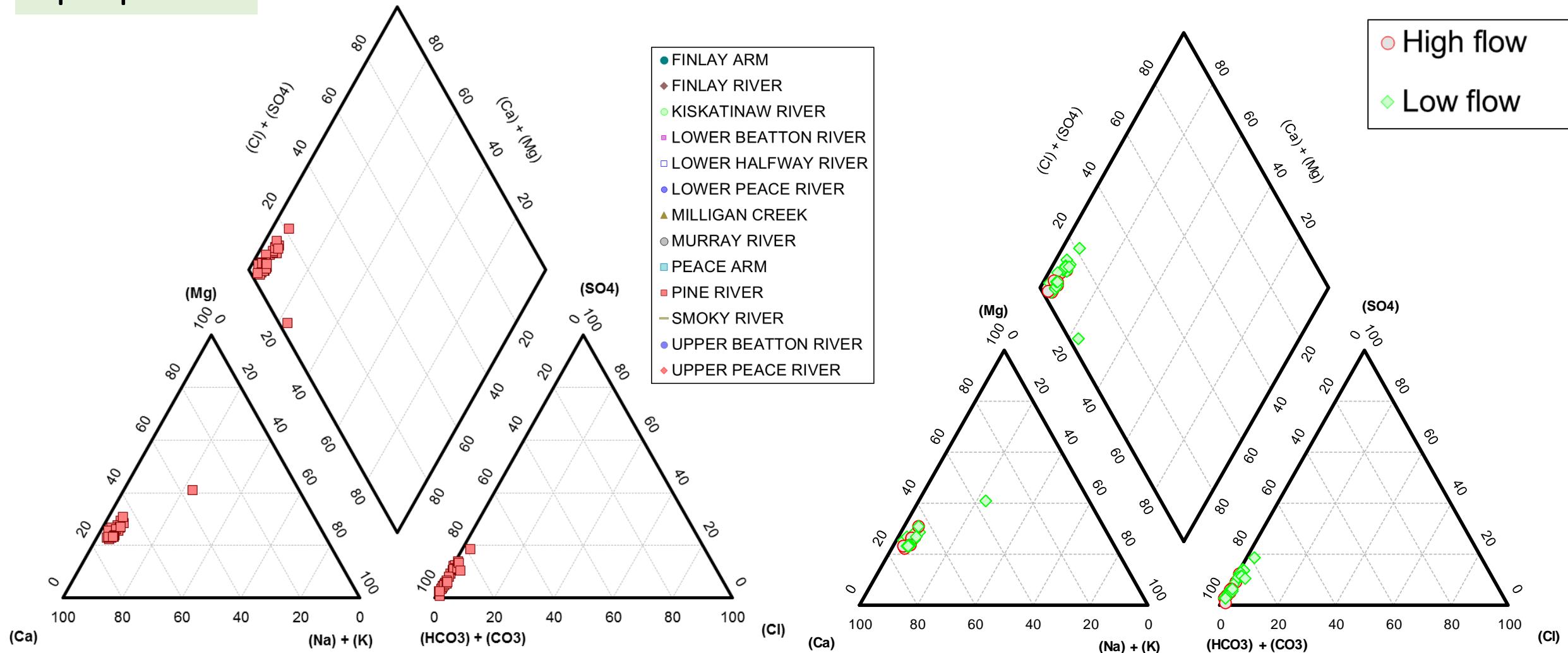




Spatial
distribution
of water type

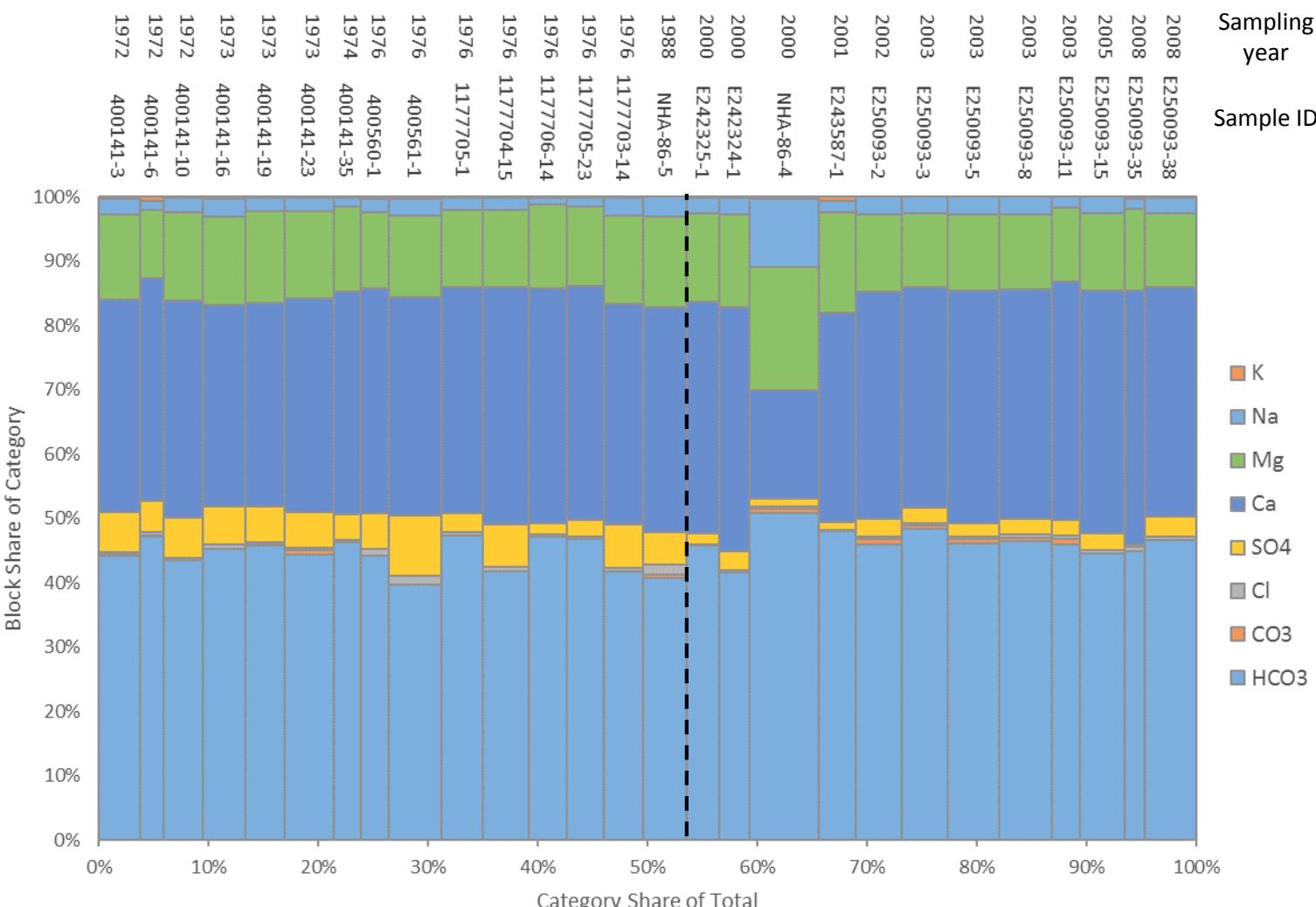
5.- Pine River (27 samples)

Piper plot



5.- Pine River (27 samples)

Marimekko chart



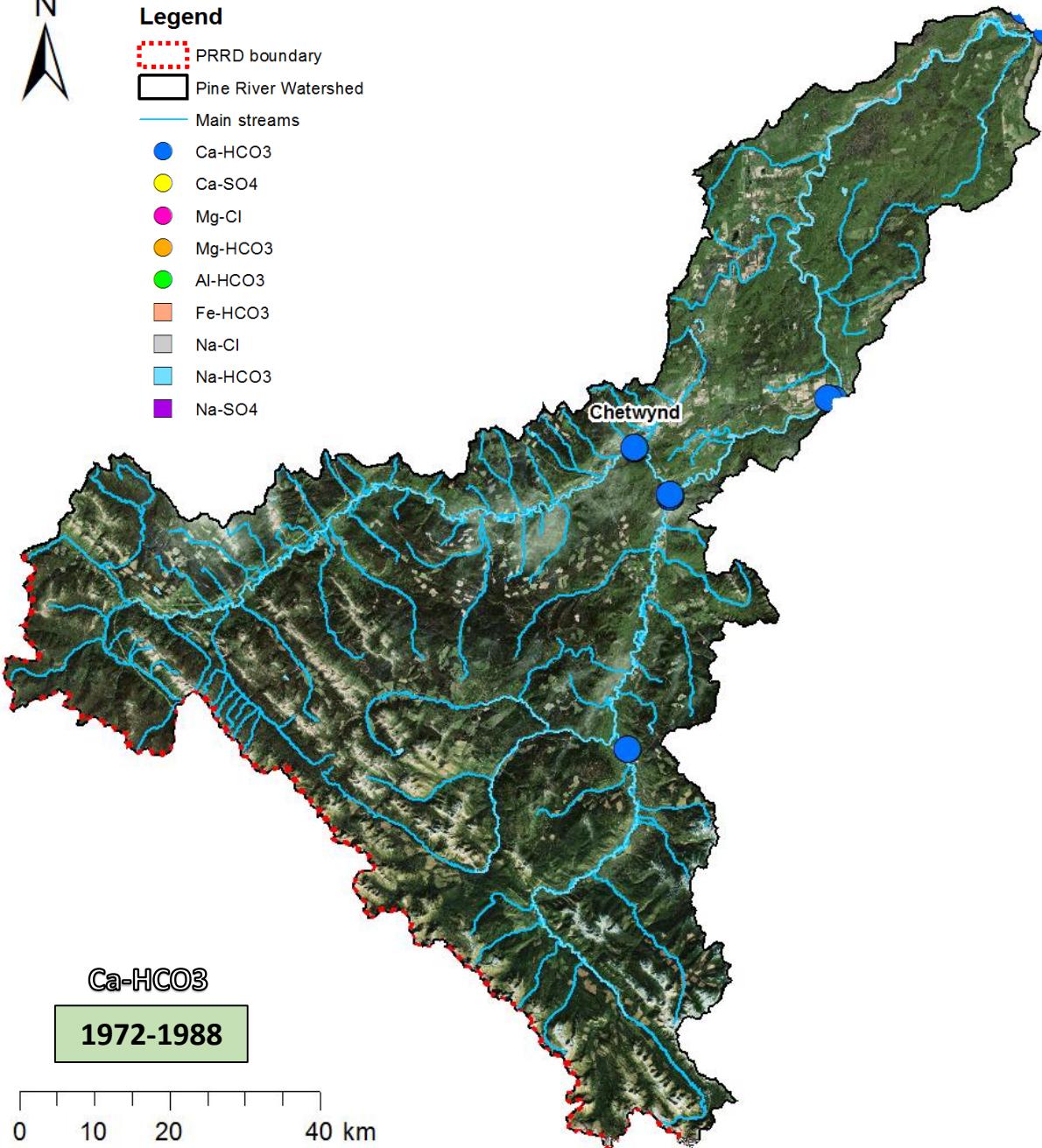
1972-1988

2000-2008

N

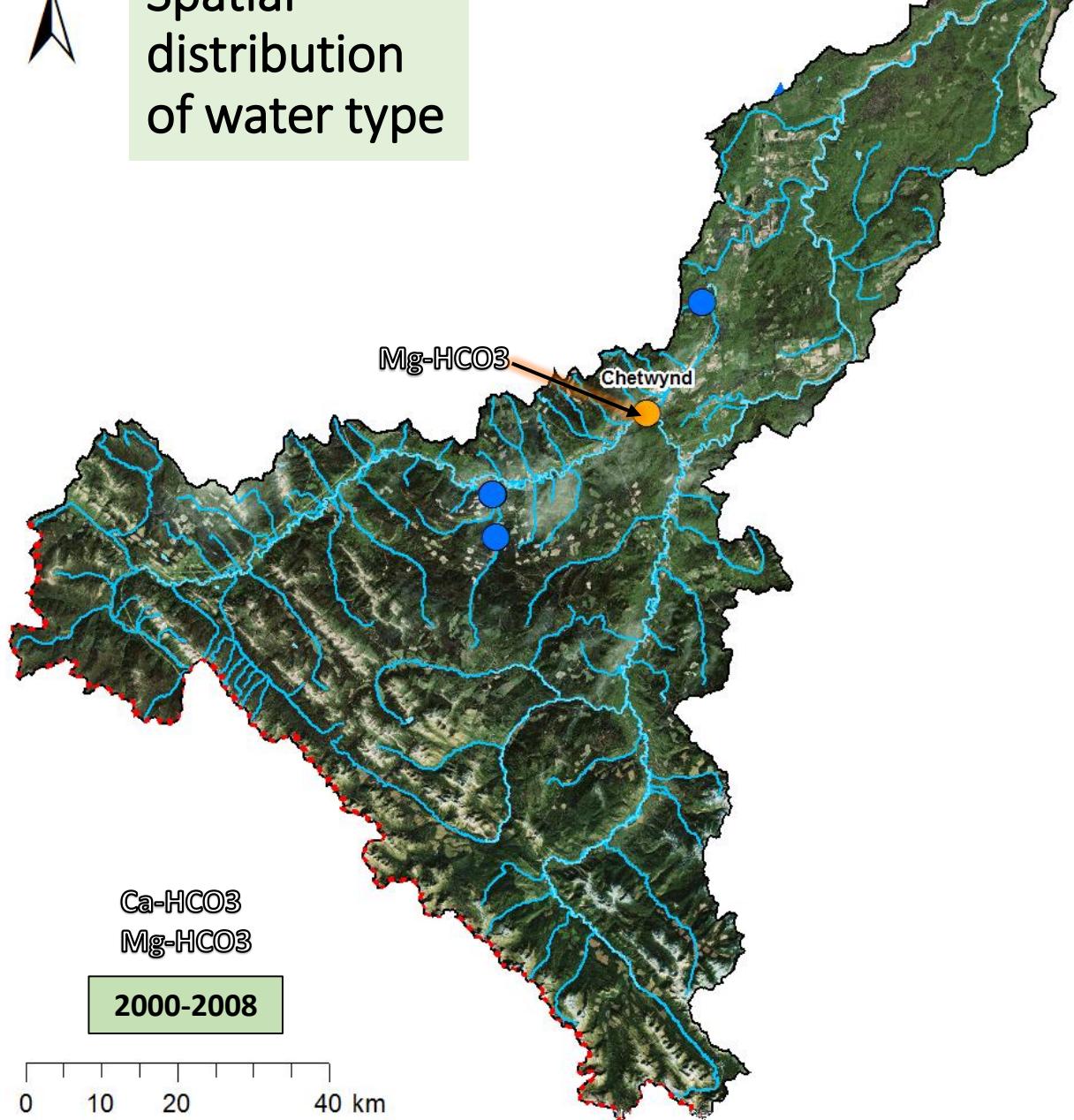
Legend

- PRRD boundary
- Pine River Watershed
- Main streams
- Ca-HCO₃
- Ca-SO₄
- Mg-Cl
- Mg-HCO₃
- Al-HCO₃
- Fe-HCO₃
- Na-Cl
- Na-HCO₃
- Na-SO₄



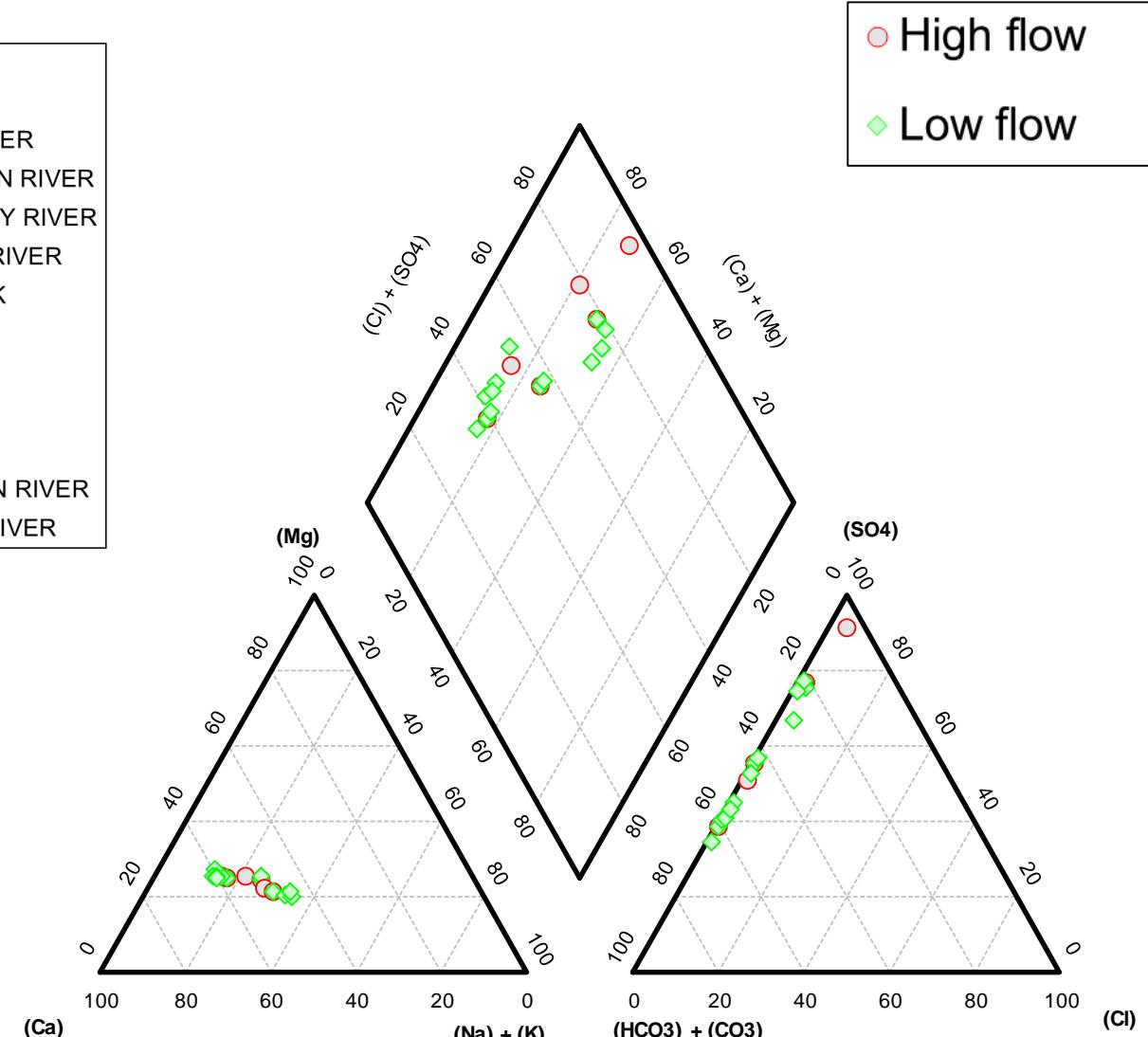
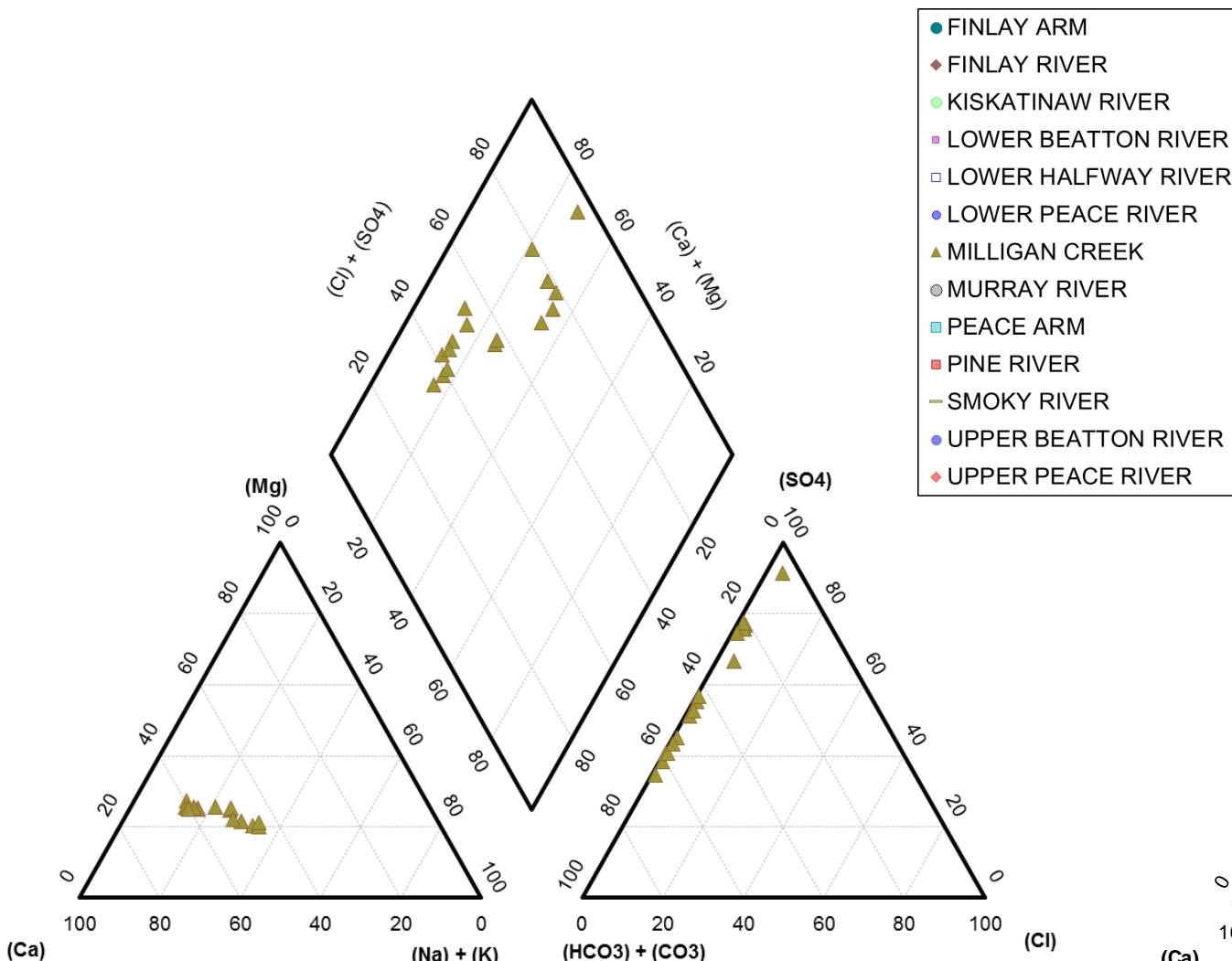
N

Spatial distribution of water type



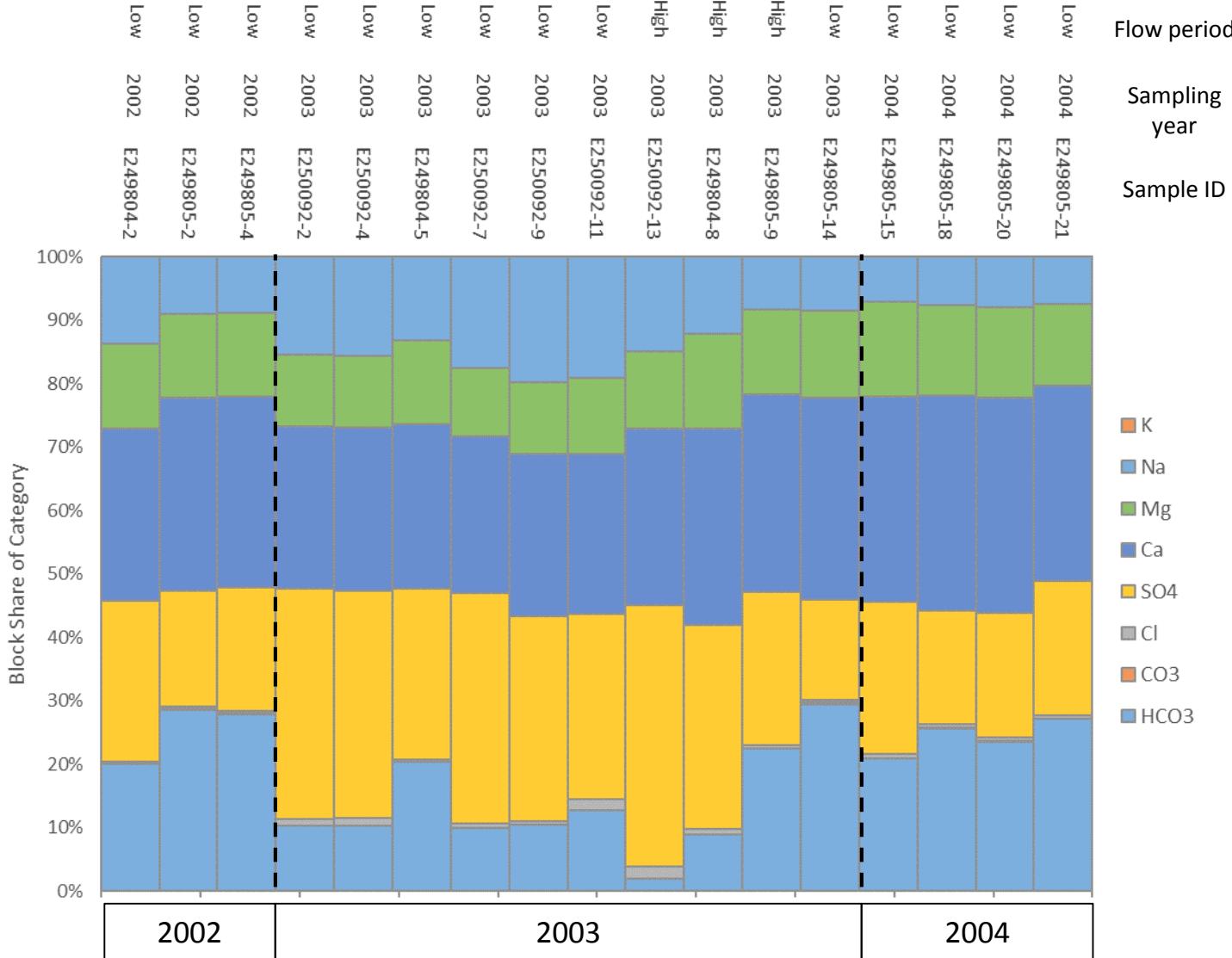
6.- Milligan Creek (17 samples)

Piper plot

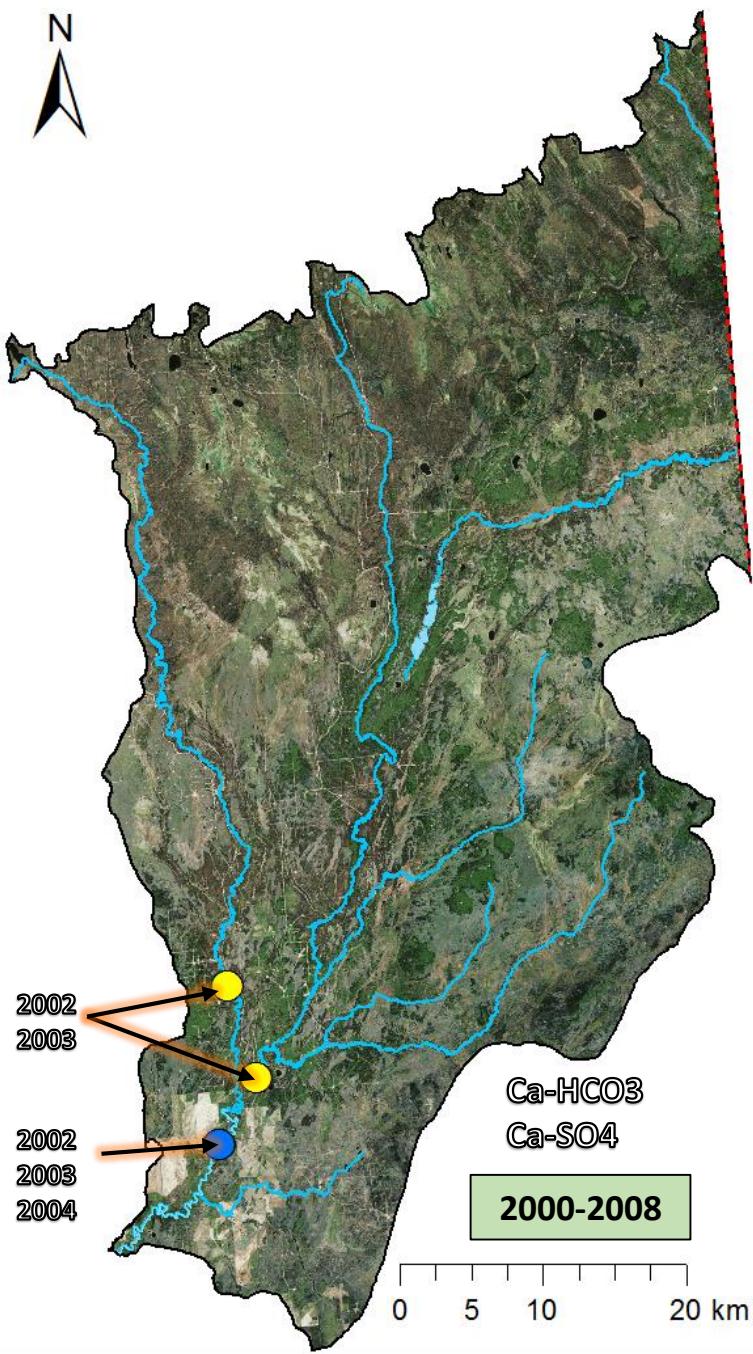


6.- Milligan Creek (17 samples)

Marimekko chart



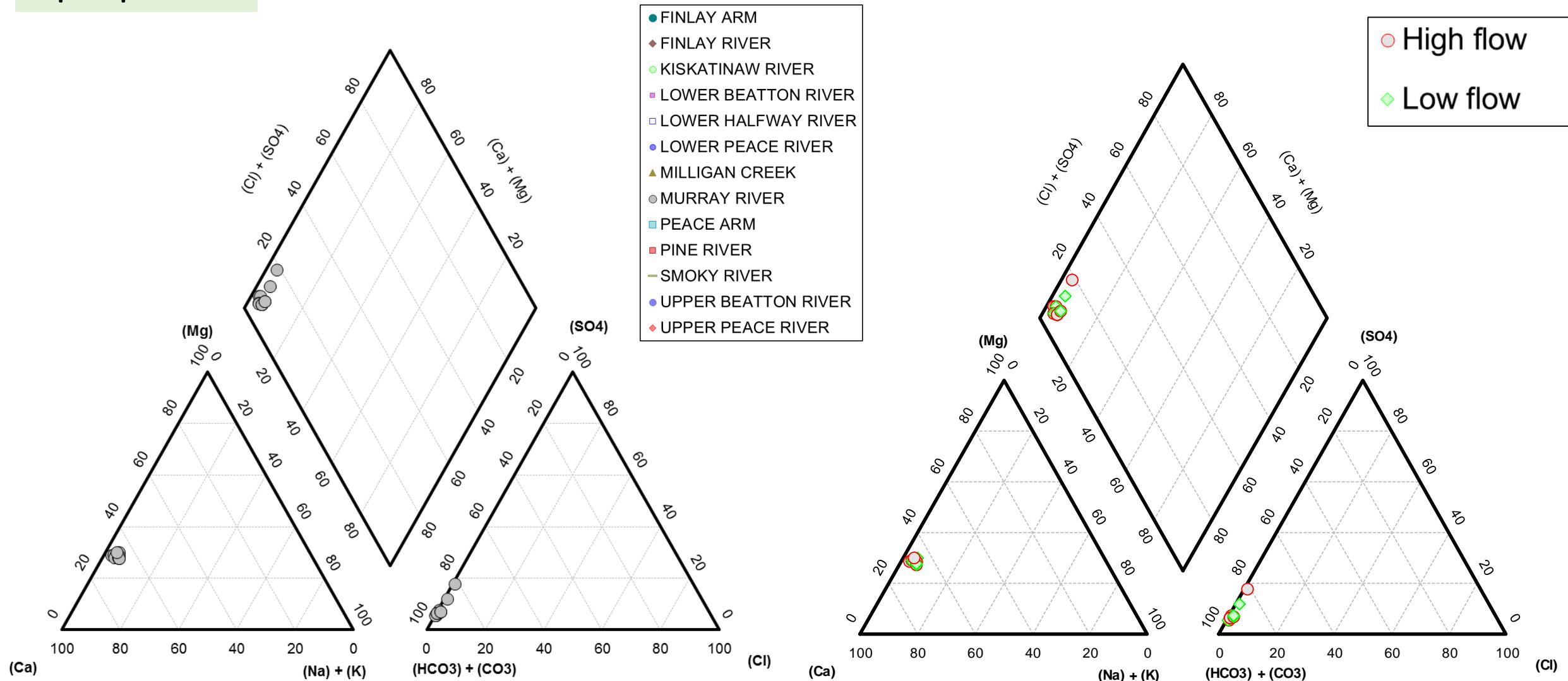
N
W E S



Spatial
distribution
of water type

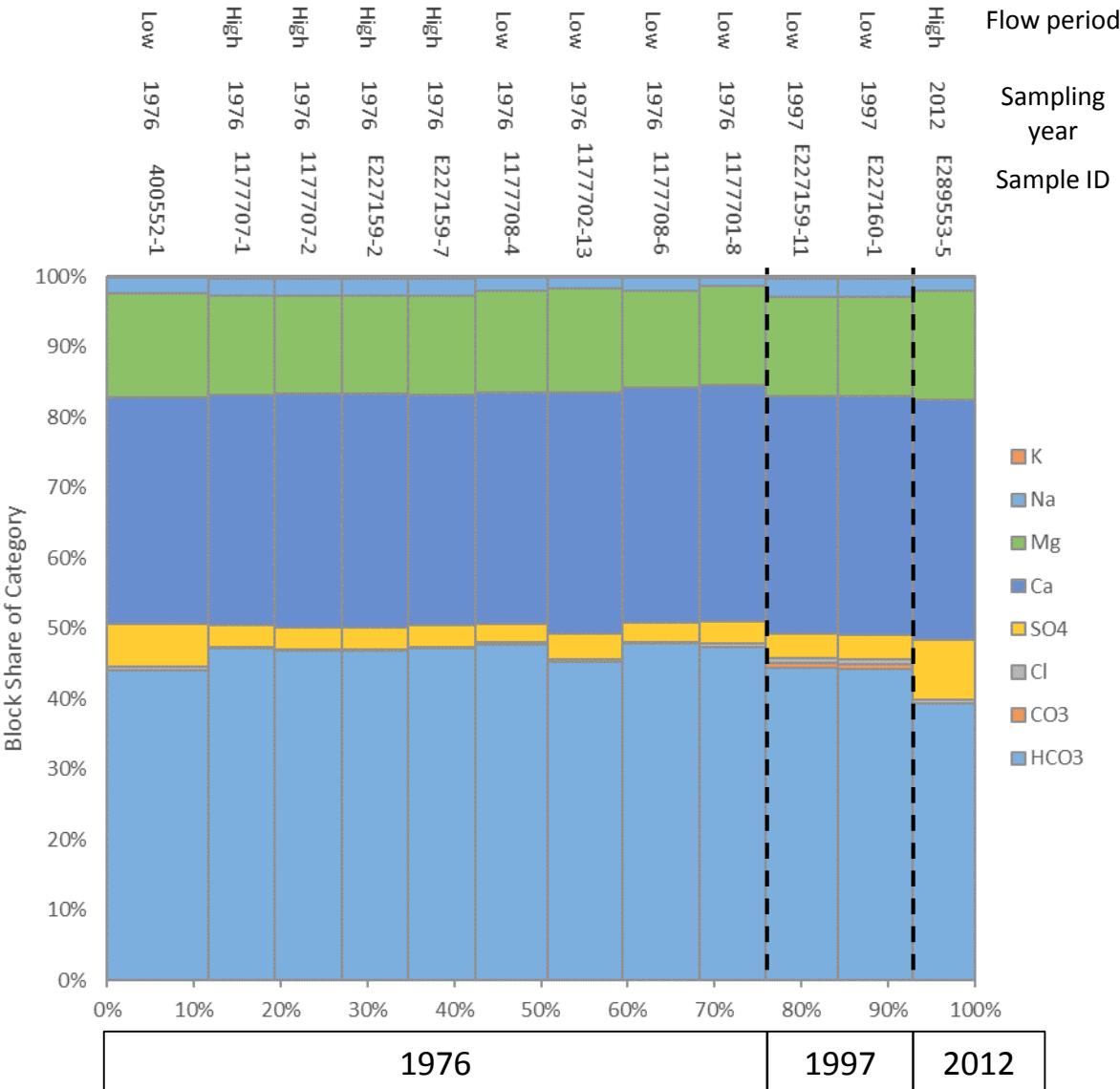
7.- Murray River (12 samples)

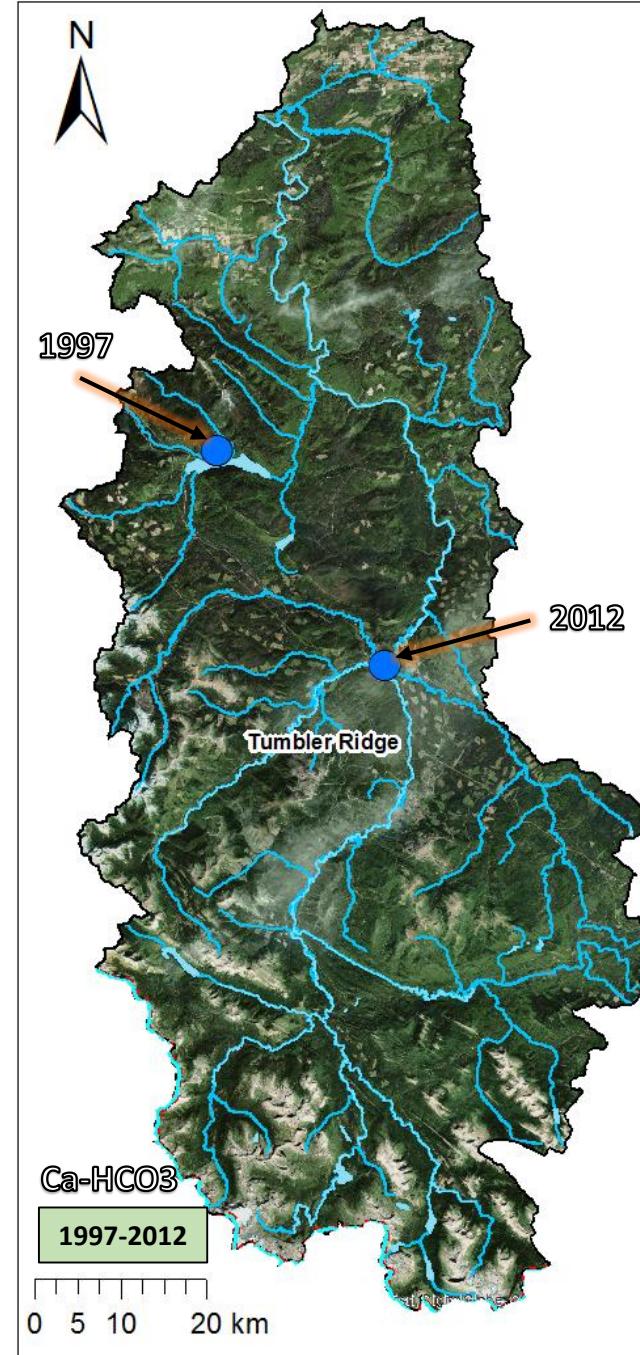
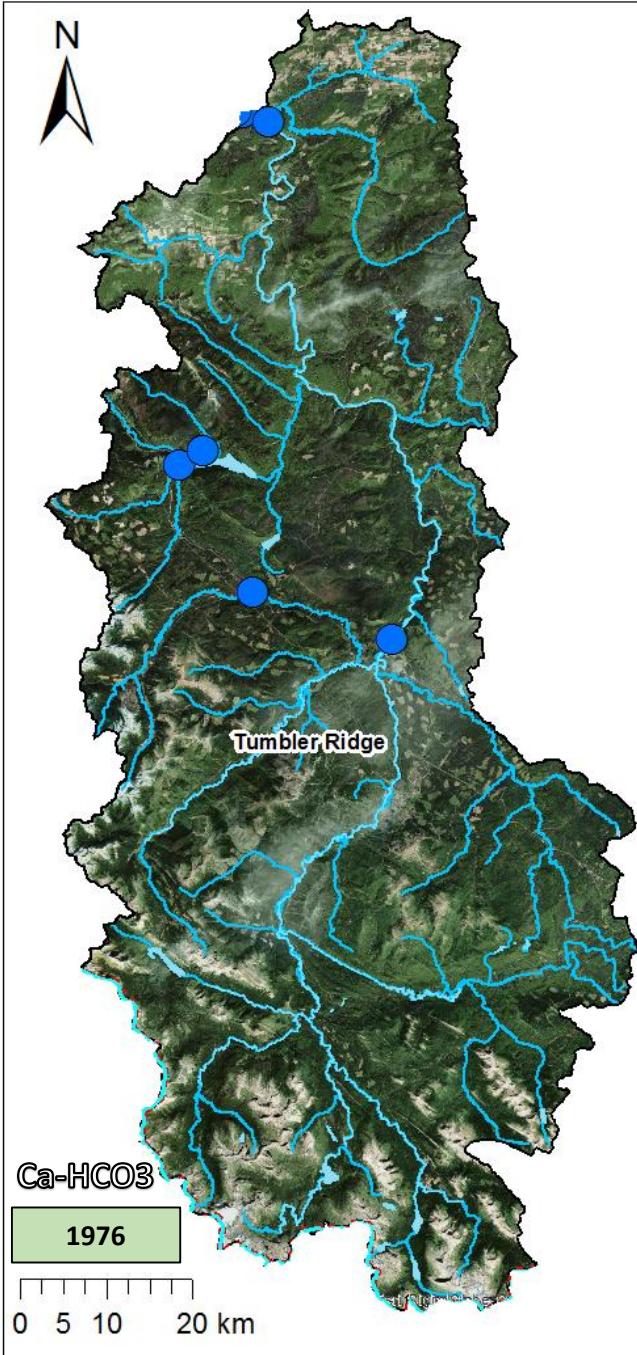
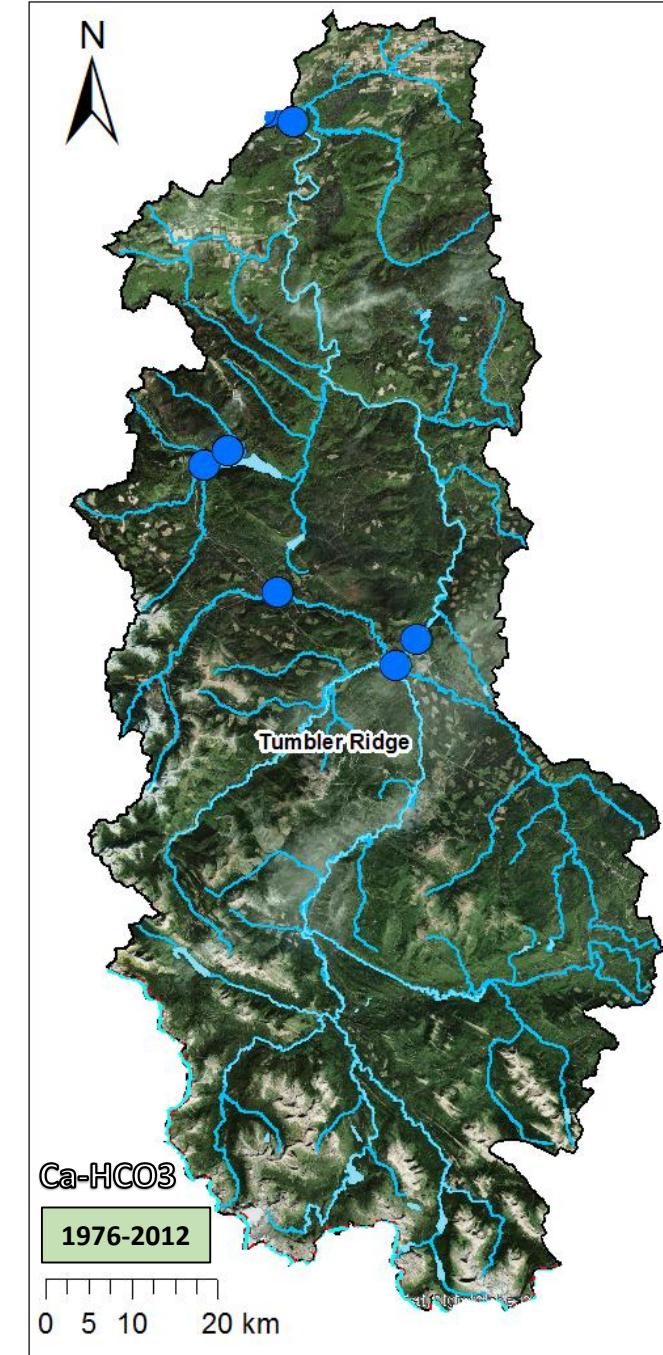
Piper plot



7.- Murray River (12 samples)

Marimekko chart





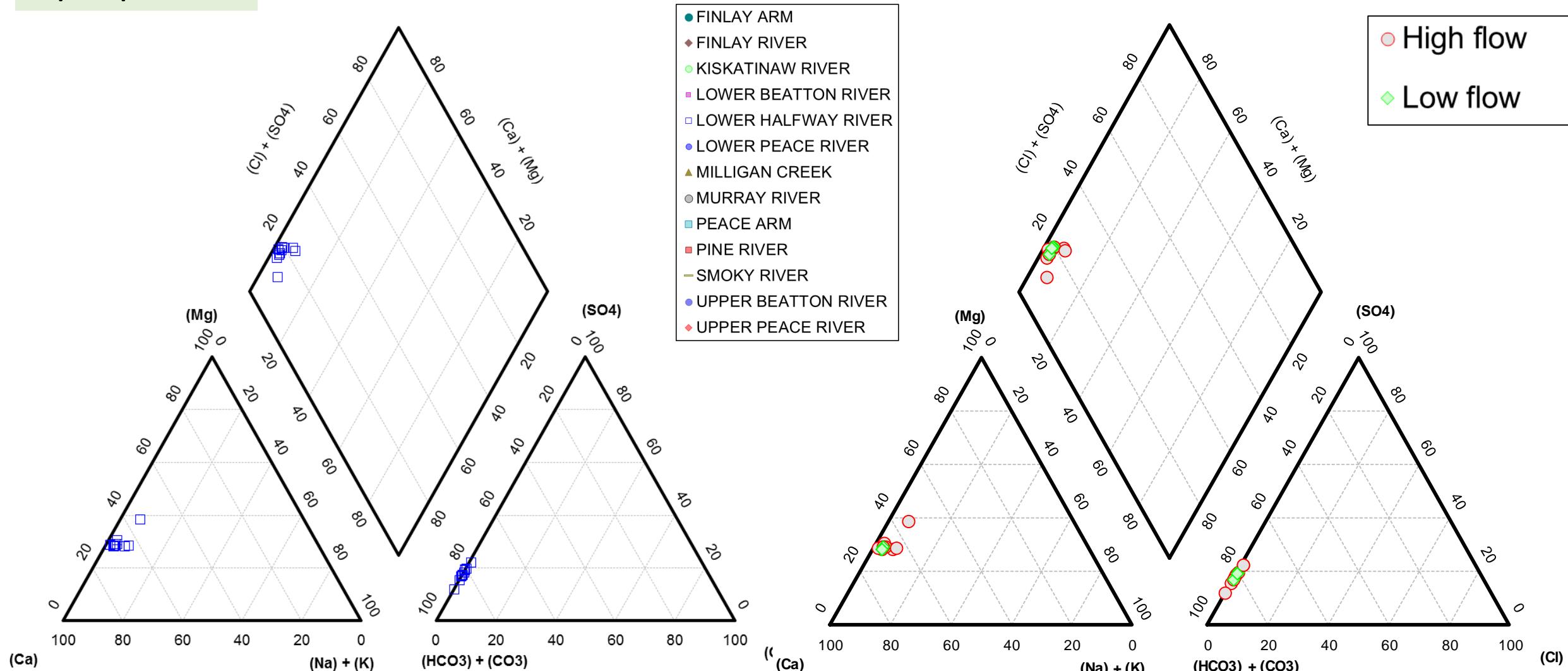
Legend

- PRRD boundary
- Murray River Watershed
- Main streams
- Ca-HCO₃
- Ca-SO₄
- Mg-Cl
- Mg-HCO₃
- Al-HCO₃
- Fe-HCO₃
- Na-Cl
- Na-HCO₃
- Na-SO₄

**Spatial
distribution
of water type**

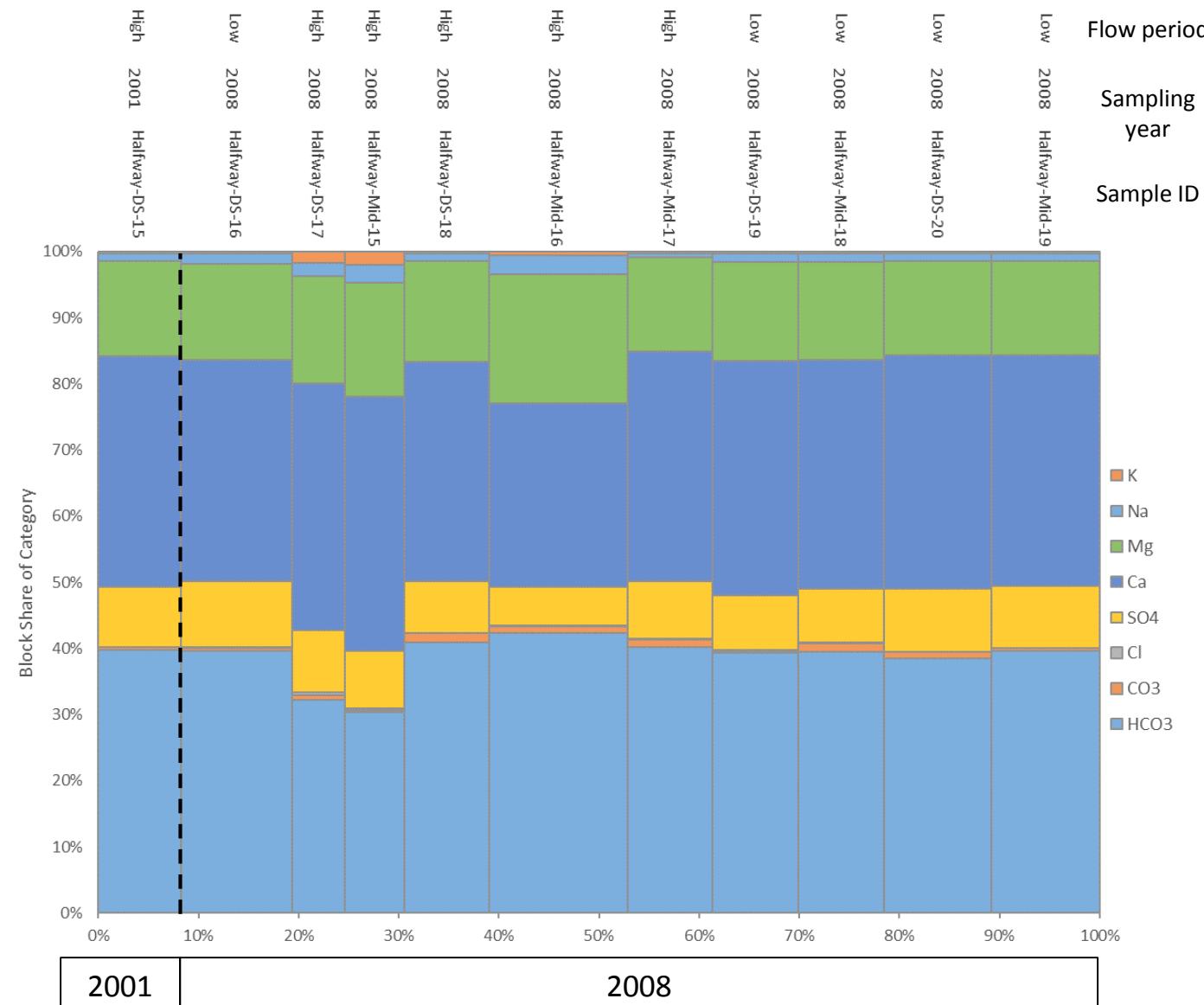
8.- Lower Halfway River (11 samples)

Piper plot



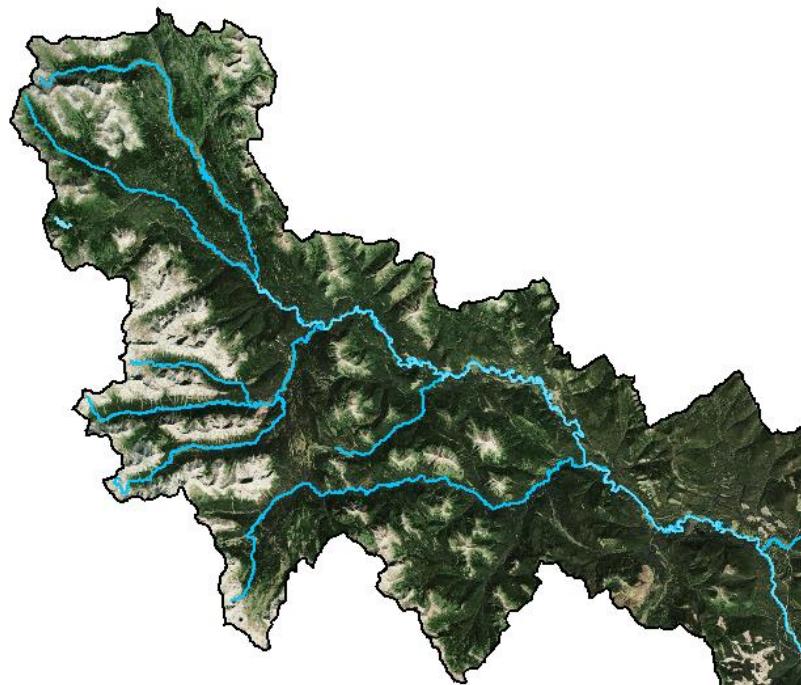
8.- Lower Halfway River (11 samples)

Marimekko chart



N
W

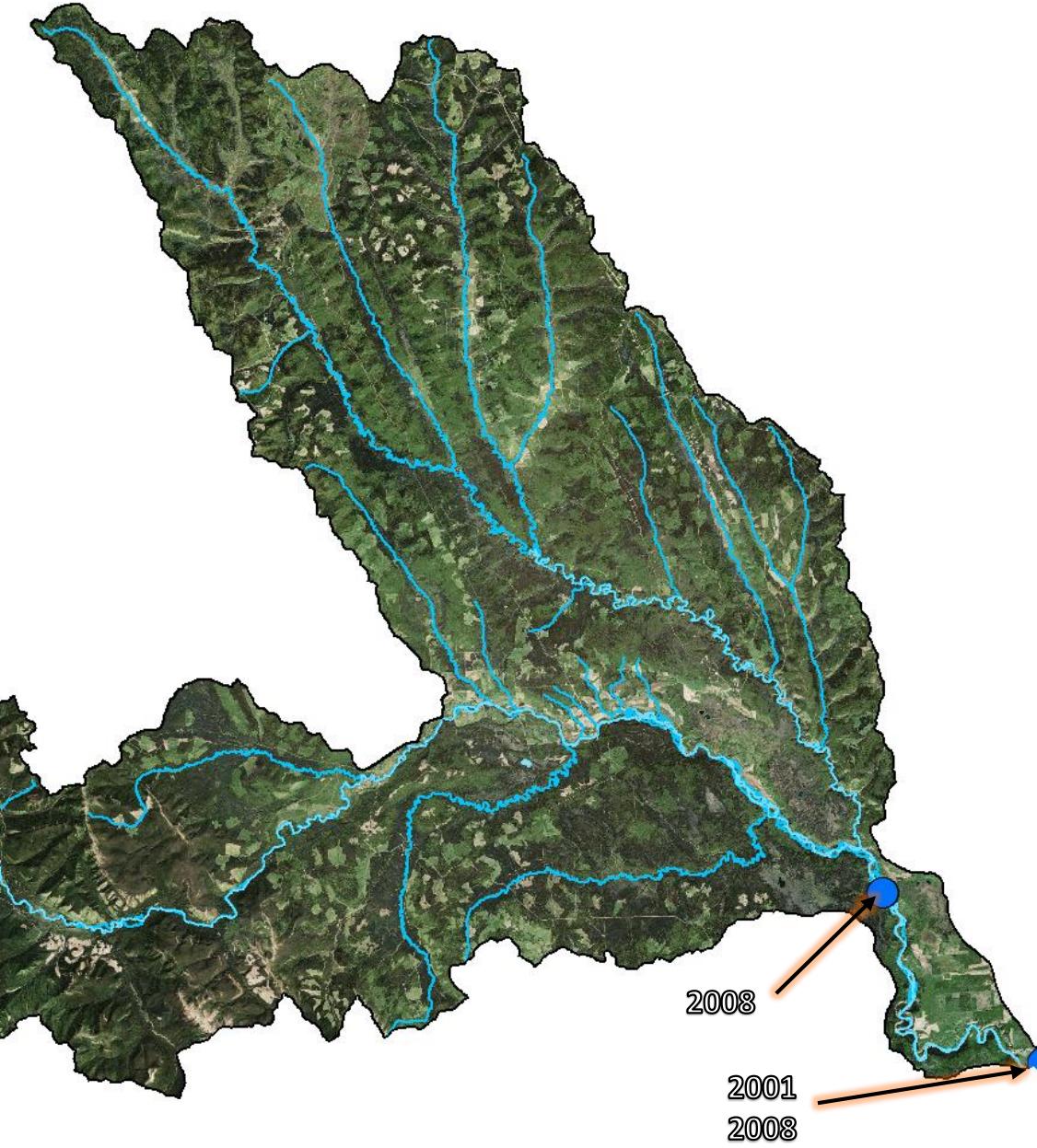
Spatial distribution of water type



Ca-HCO₃

2001-2008

0 5 10 20 km

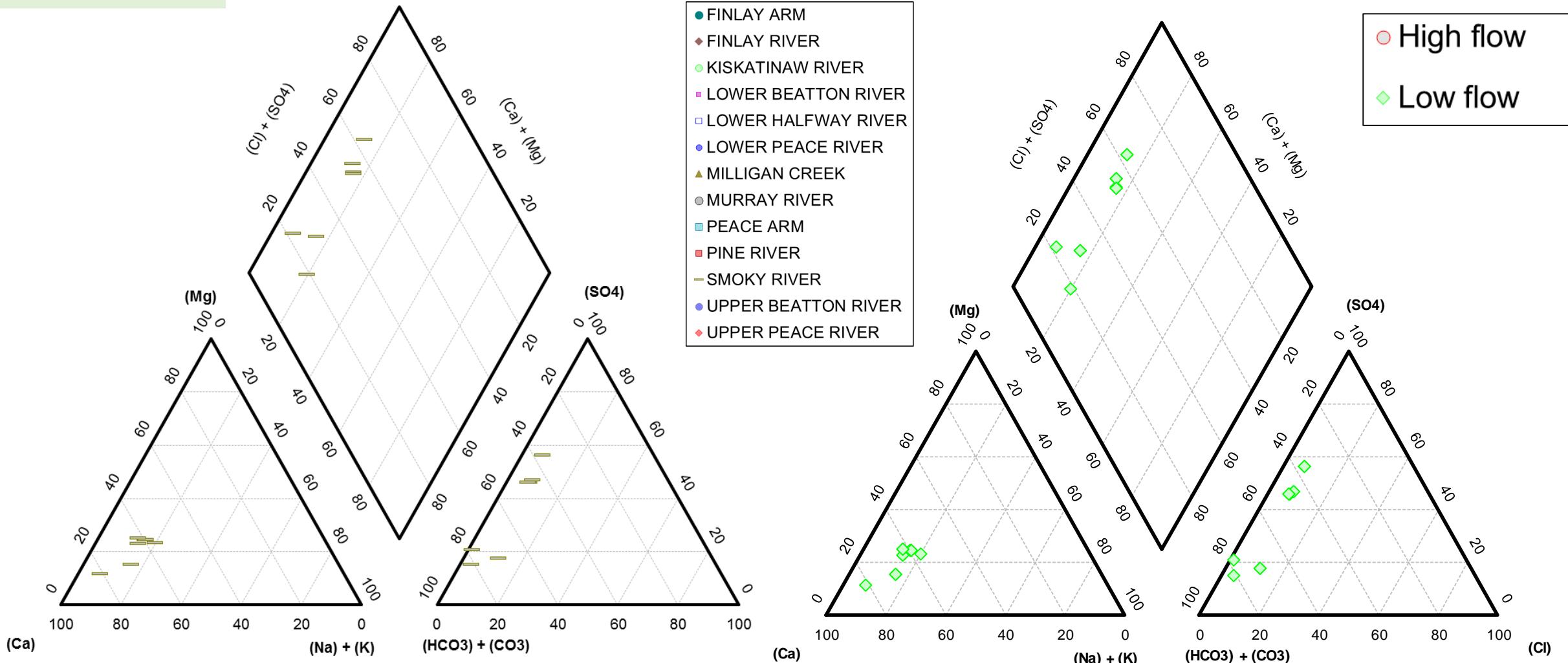


Legend

- PRRD boundary
- Lower Halfway
- River Watershed
- Main streams
- Ca-HCO₃
- Ca-SO₄
- Mg-Cl
- Mg-HCO₃
- Al-HCO₃
- Fe-HCO₃
- Na-Cl
- Na-HCO₃
- Na-SO₄

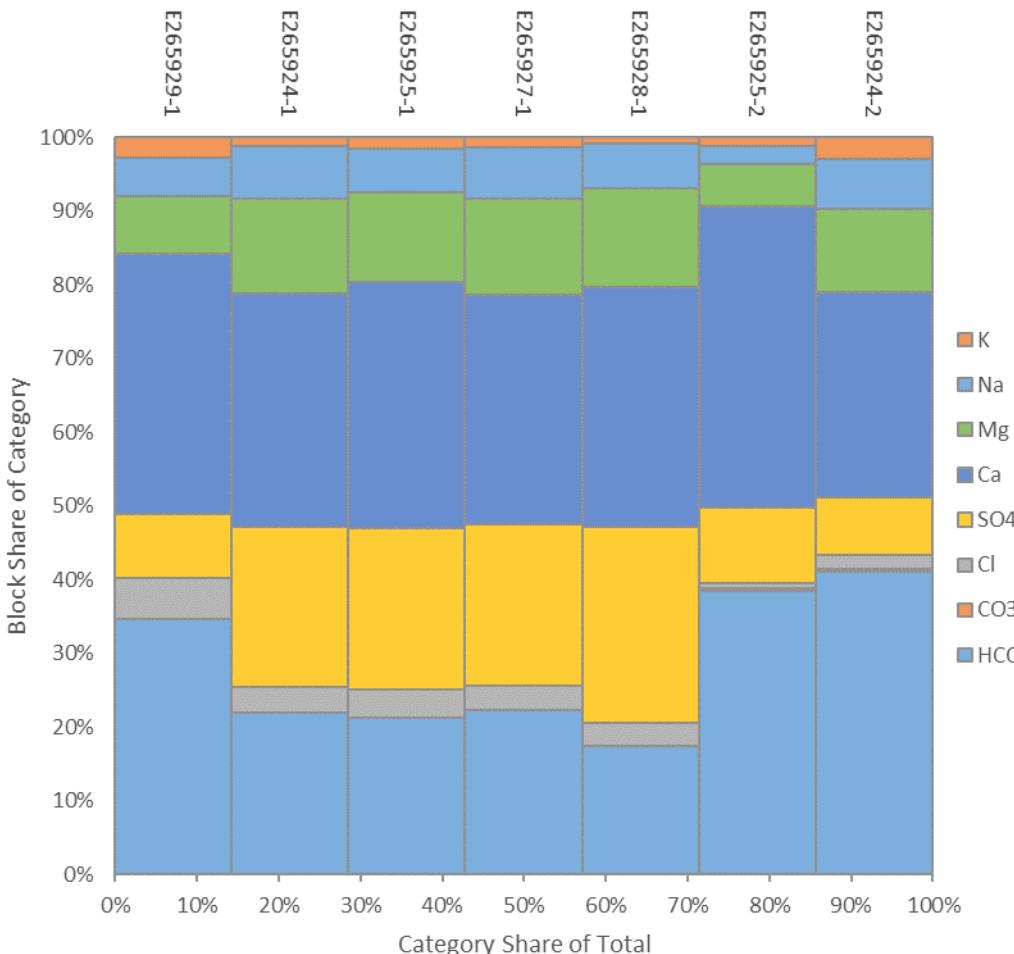
9.- Smoky River (7 samples)

Piper plot



9.- Smoky River (7 samples)

Marimekko chart

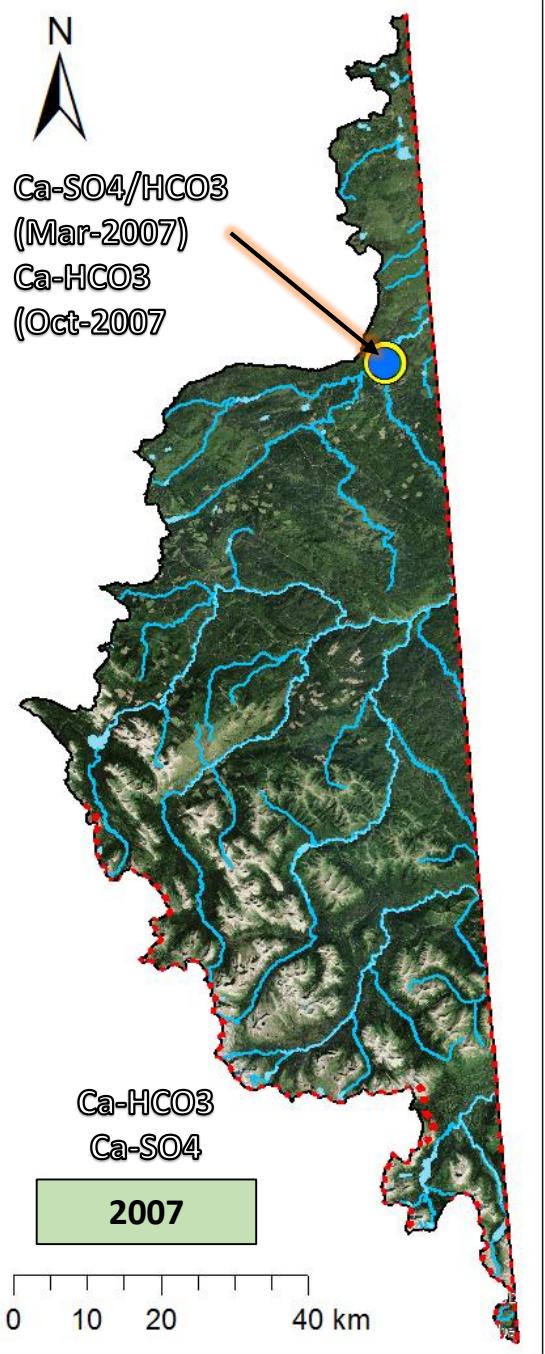


March

October

2007 - Low flow

N



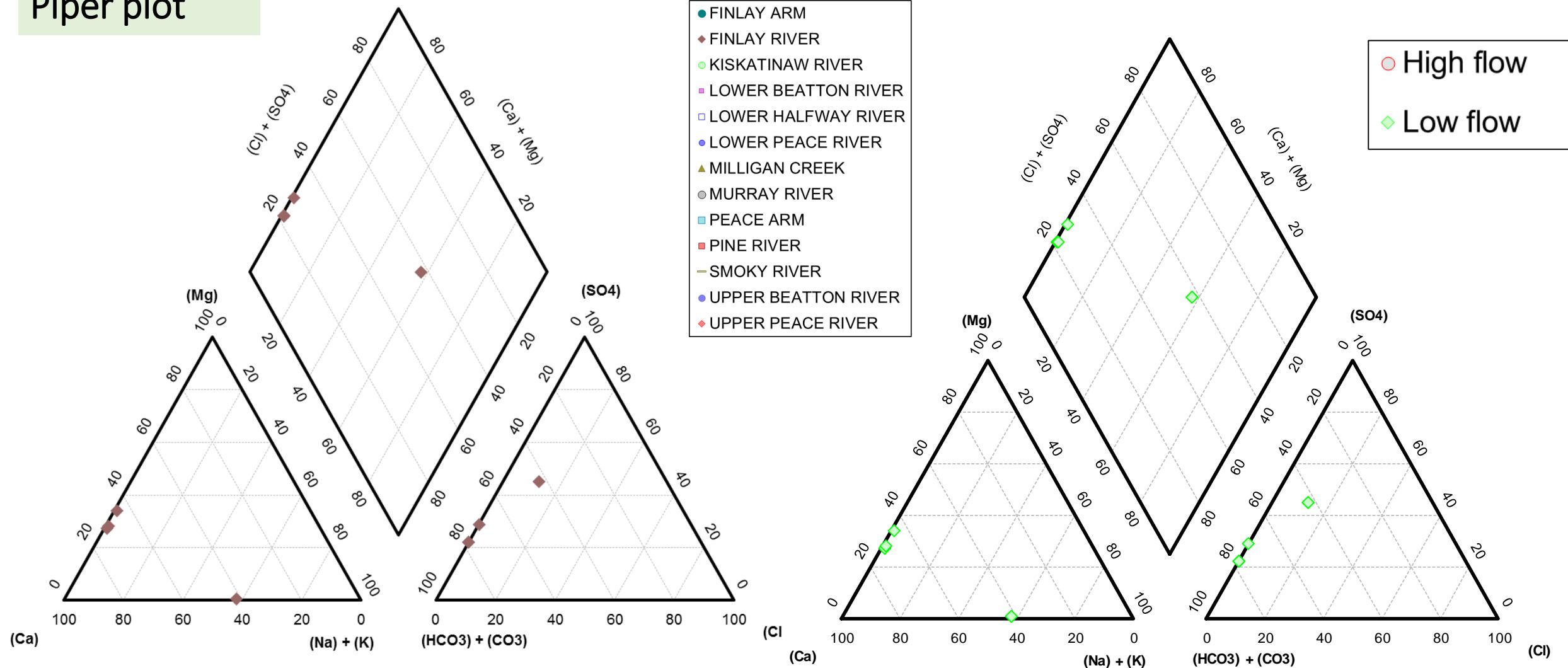
Spatial
distribution
of water type

Legend

- PRRD boundary
- Smoky River Watershed
- Main streams
- Ca-HCO₃
- Ca-SO₄
- Mg-Cl
- Mg-HCO₃
- Al-HCO₃
- Fe-HCO₃
- Na-Cl
- Na-HCO₃
- Na-SO₄

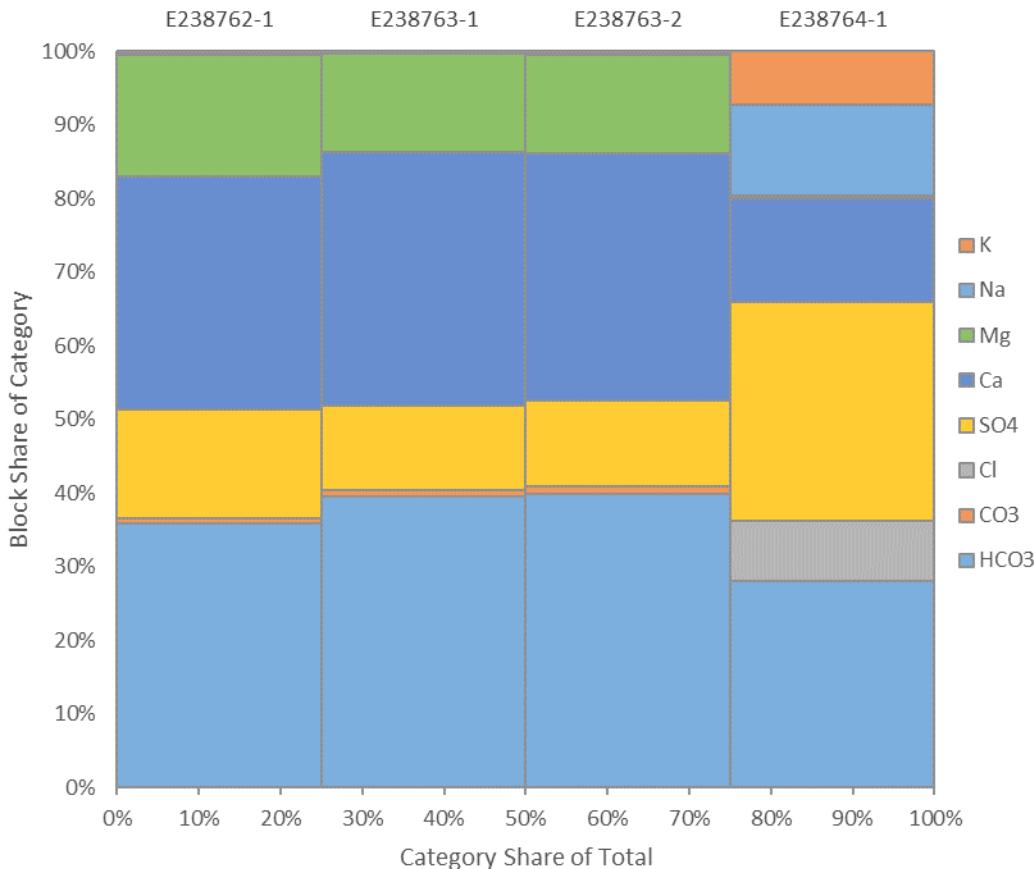
10.- Finlay River (4 samples)

Piper plot

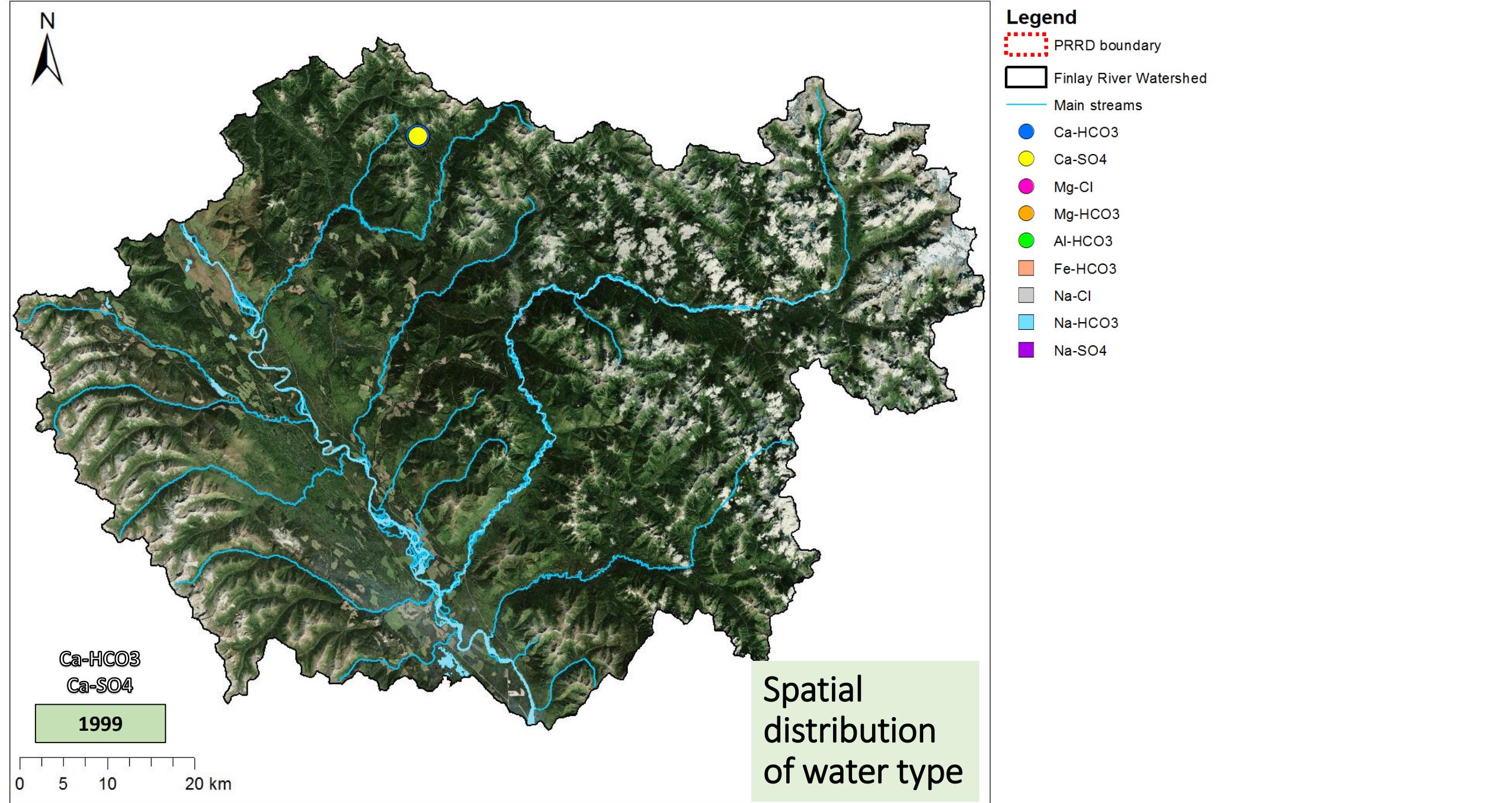


10.- Finlay River (4 samples)

Marimekko chart

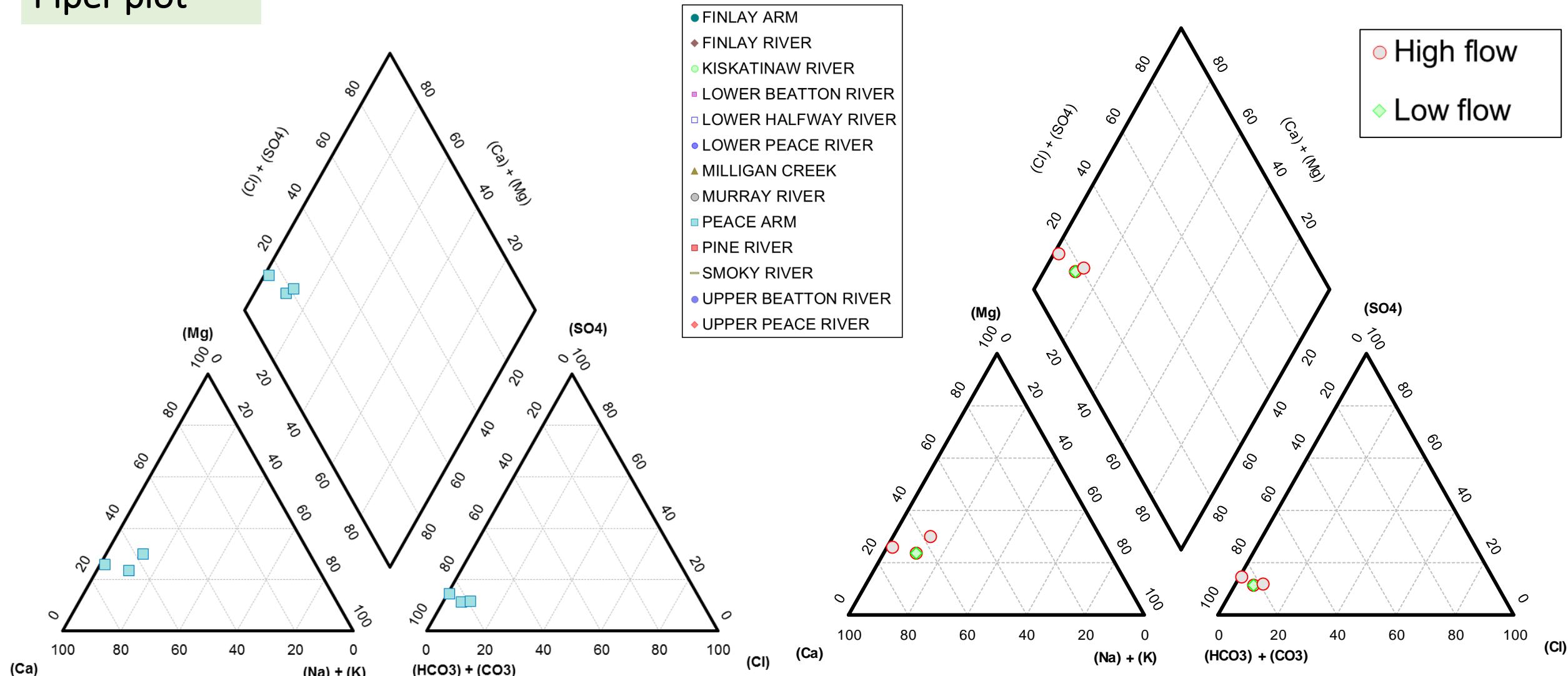


1999 - Low flow



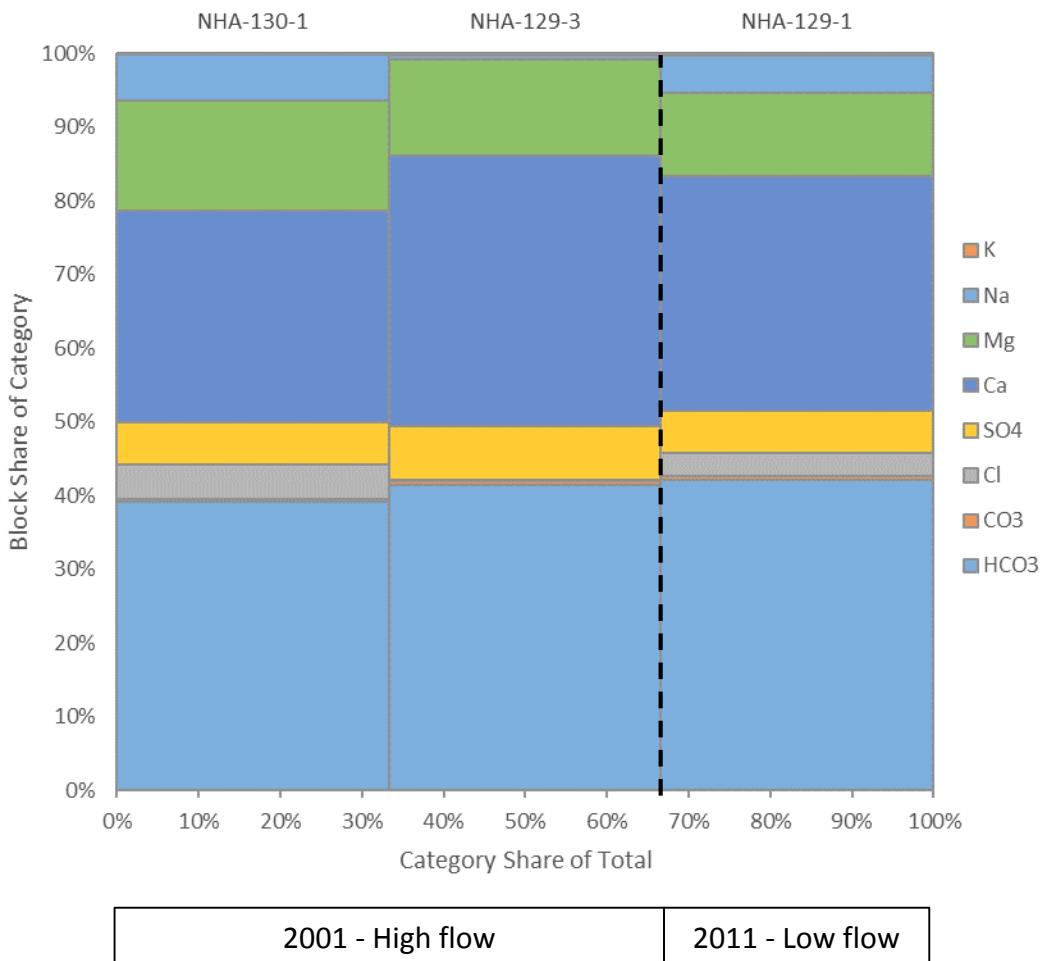
11.- Peace Arm (3 samples)

Piper plot

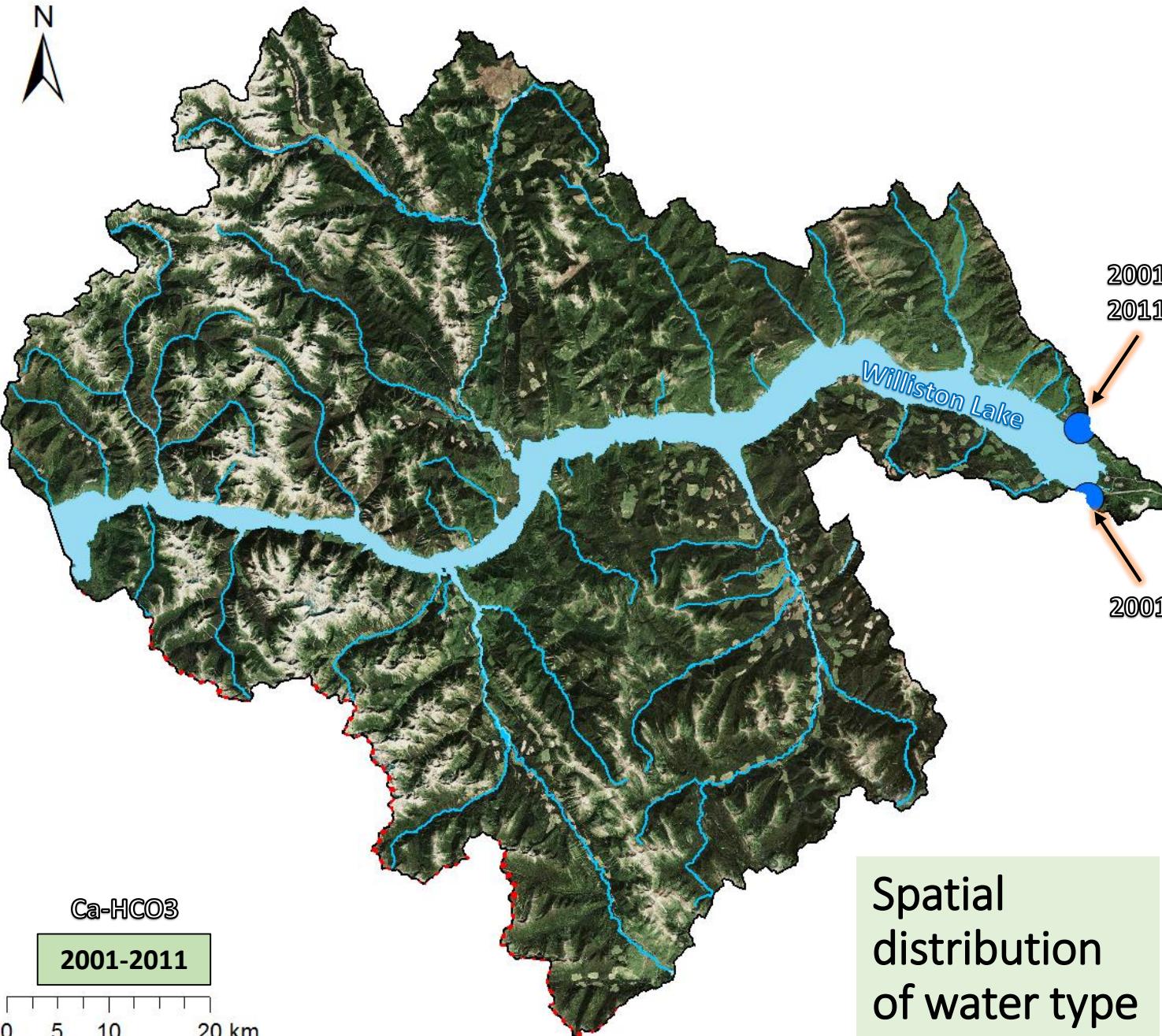


11.- Peace Arm (3 samples)

Marimekko chart



N

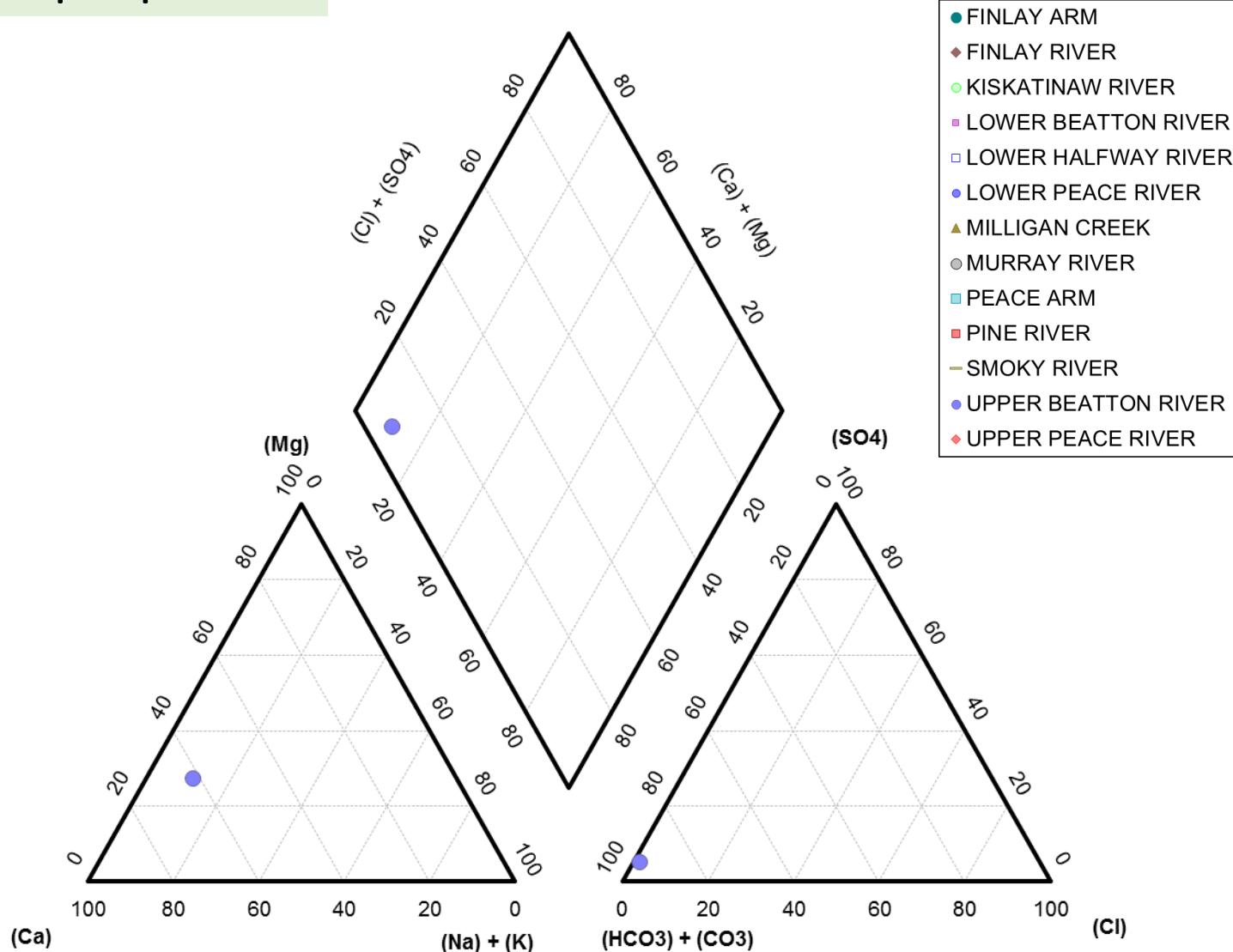


Legend

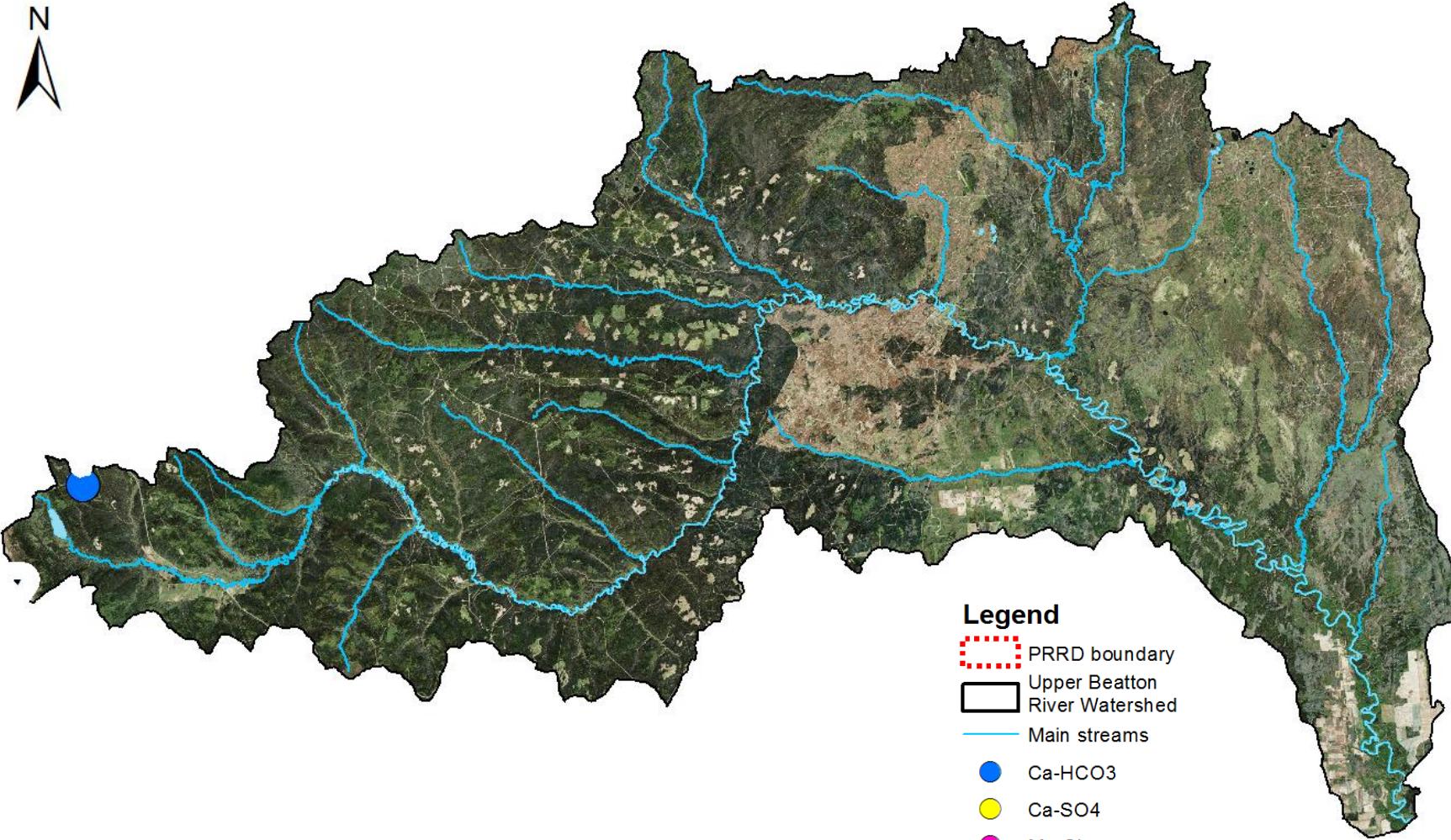
- PRRD boundary
- Peace Arm Watershed
- Main streams
- Ca-HCO₃
- Ca-SO₄
- Mg-Cl
- Mg-HCO₃
- Al-HCO₃
- Fe-HCO₃
- Na-Cl
- Na-HCO₃
- Na-SO₄

12.- Upper Beatton River (1 samples)

Piper plot



N
↗



Ca-HCO₃

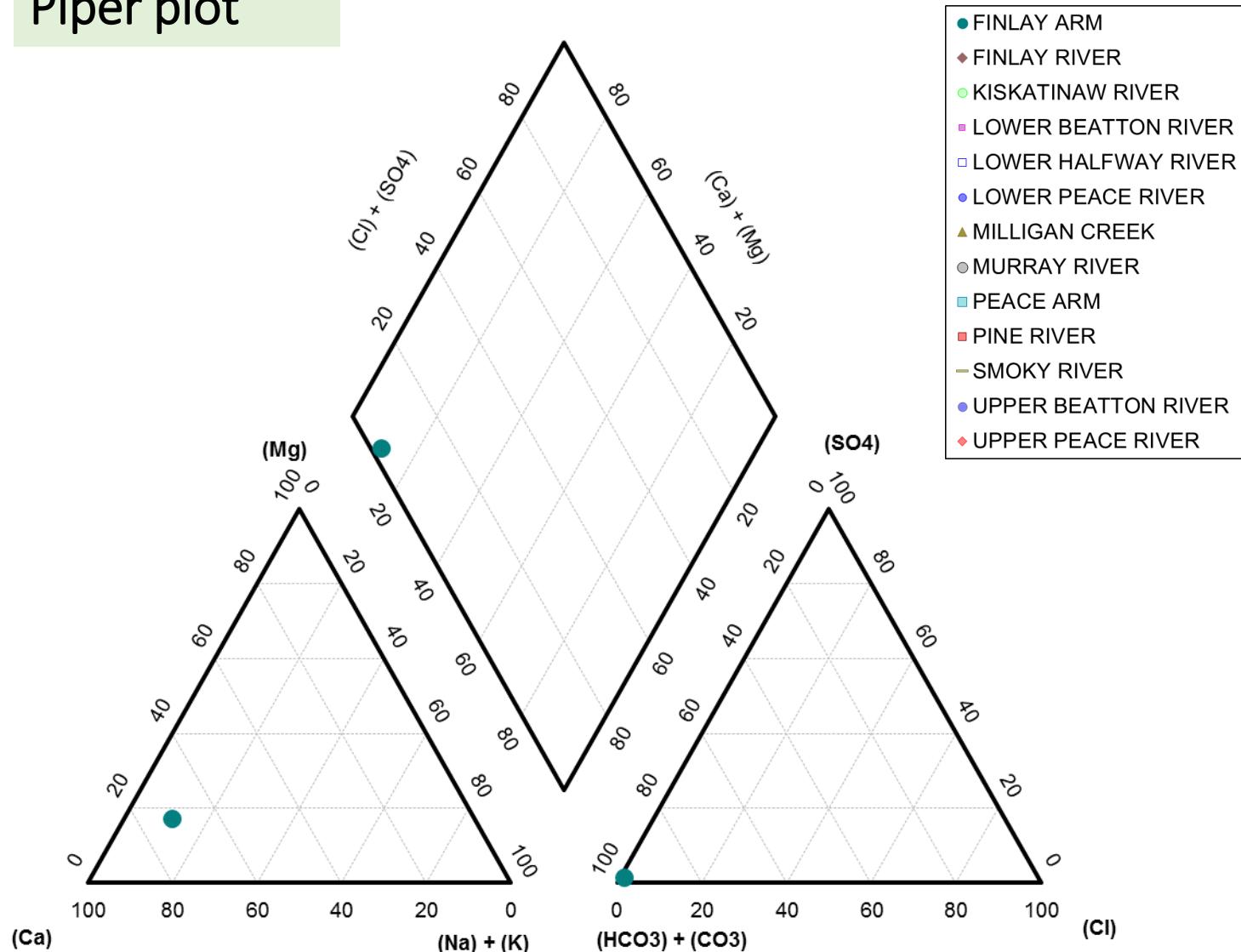
2001

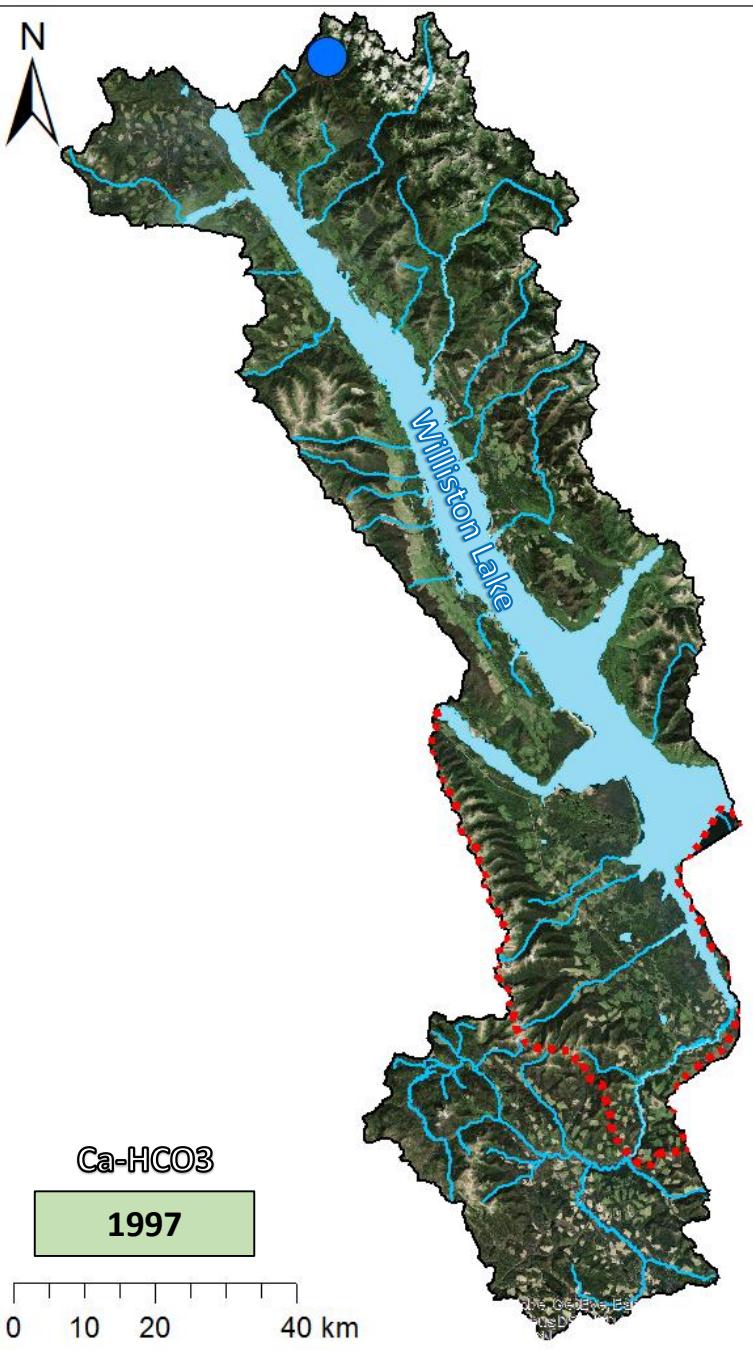
0 5 10 20 km

Spatial distribution of water type

13.- Finlay Arm (1 samples)

Piper plot





Spatial
distribution
of water type