Assignment_Four Geochemistry

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Statement of Problem

The "average" concentrations of the mantle and CI chondrites are observed by normalization, and the element names are presented on the x-axis and the normalized values are presented on the y-axis. All values will be presented as tibble.

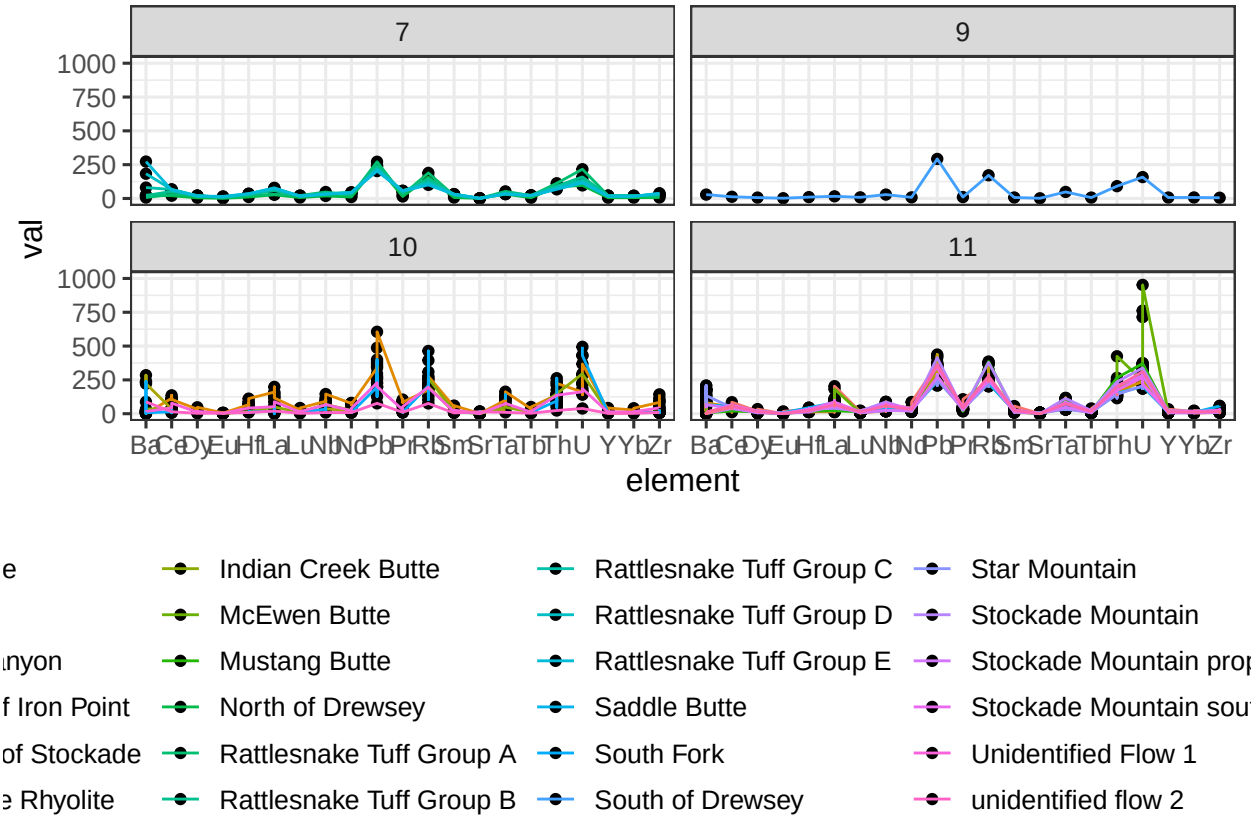
Methods

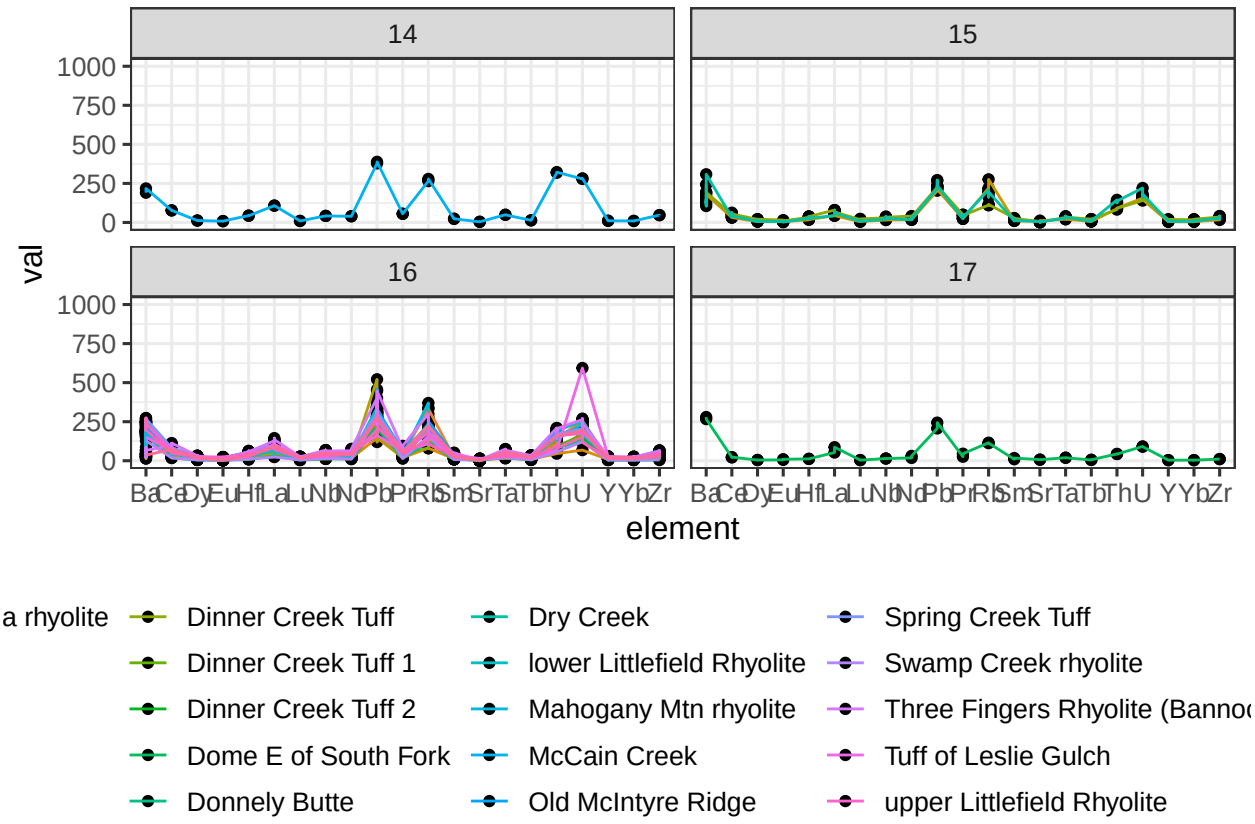
Using ggplot make a graph, let x is element name and y is the normalized values, there are two graphs, one is the average concentrations of mantle, the other one is the average concentrations of CI chondrites. I retrieved the data from Google sheet the professor provided. I created a new table by joining different sheets from Google sheet. Using the values from ICP data divided by the data from mantle and CI chondrites.Plotting the average values on the graphs and seperate this data by the Age of different Unit.

Results

In these graphs, we can see the average element data of mantles. Through the samples of different Ages, we can see that the sample ages of most Units are concentrated in 11 and 16, and have relatively similar element averages. It can be seen that the Units of Ages 11 and 16 have a relatively large correlation.

```
## v Reading from "Assignment 4 database".

## v Range ''ICP_INAAdata'!A:AB'.

## v Reading from "Assignment 4 database".

## v Range ''Samples'!A:F'.

## Joining, by = "SampleID"

## v Reading from "Assignment 4 database".

## v Range ''Constants'!G2:H26'.

## Joining, by = "element"

## Warning: Removed 271 rows containing missing values (geom_point).

## Warning: Removed 3 row(s) containing missing values (geom_path).
```




14
15
16
17
1000
750
500
250
0
val
Ba Ce Dy Eu Hf La Lu Nb Nd Pb Pr Rb Sm Sr Ta Tb Th U Y Yb Zr
element
a rhyolite
Dinner Creek Tuff
Dinner Creek Tuff 1
Dinner Creek Tuff 2
Dome E of South Fork
Donnely Butte
Dry Creek
lower Littlefield Rhyolite
Mahogany Mtn rhyolite
McCain Creek
Old McIntyre Ridge
Spring Creek Tuff
Swamp Creek rhyolite
Three Fingers Rhyolite (Bannoc
Tuff of Leslie Gulch
upper Littlefield Rhyolite

In these graphs, we can see the average element data of CI Chondrite.

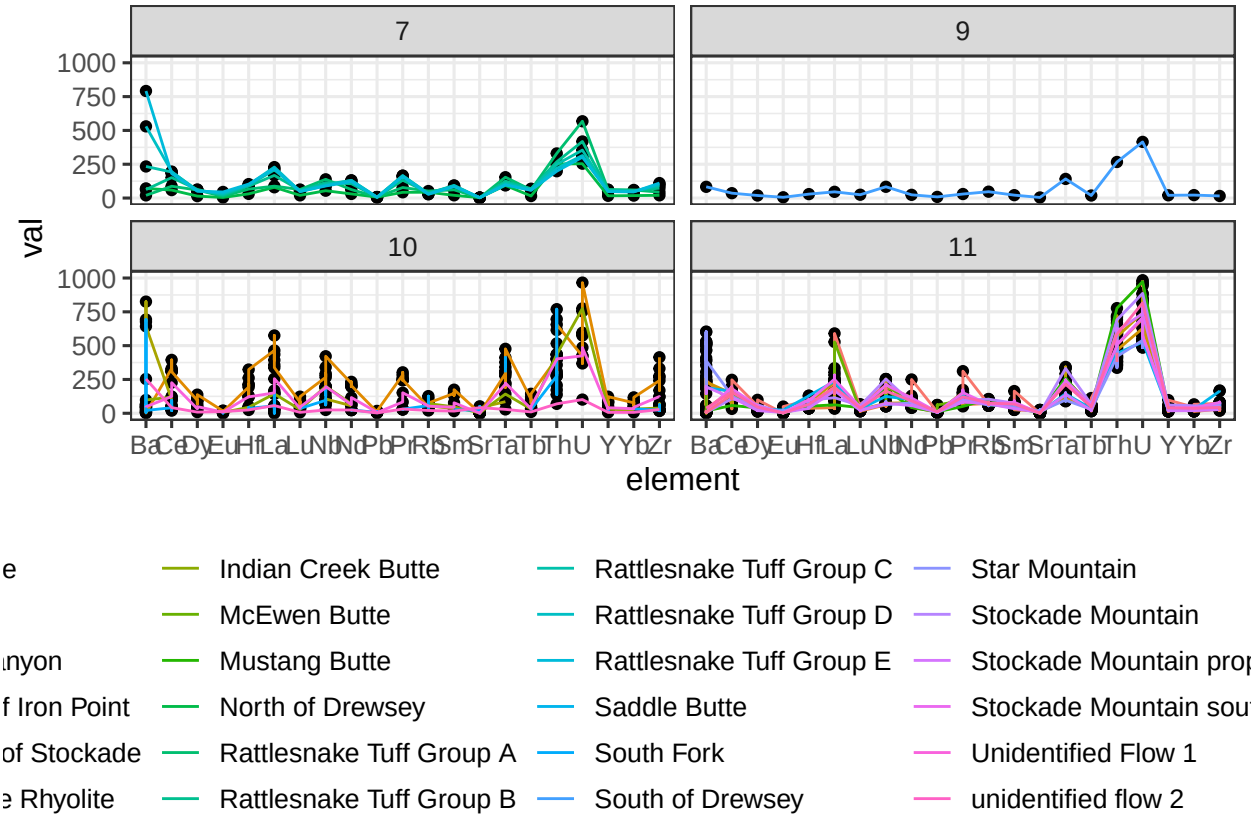
```
## v Reading from "Assignment 4 database".
```

```
## v Range ''Constants'!J2:K26'.
```

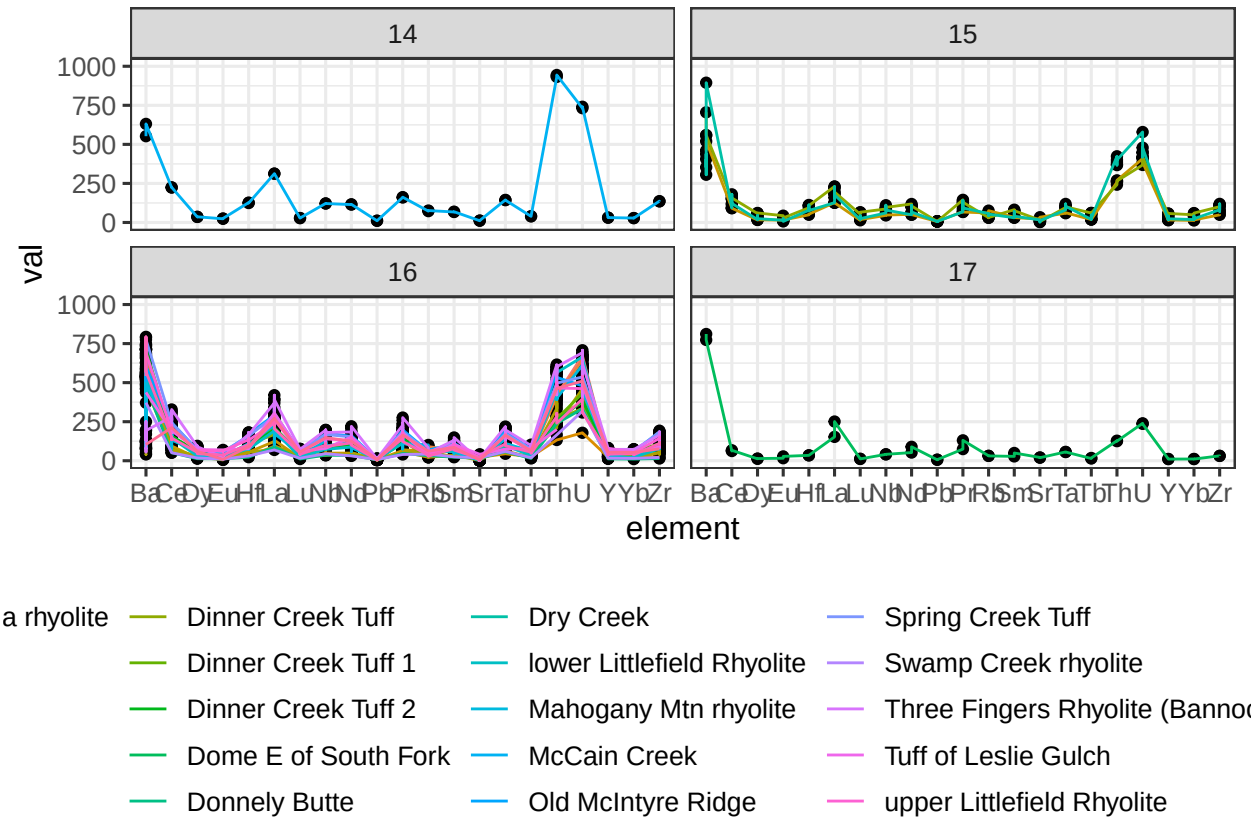
```
## Joining, by = "element"
```

```
## Warning: Removed 275 rows containing missing values (geom_point).
```

```
## Warning: Removed 3 row(s) containing missing values (geom_path).
```




```
## Warning: Removed 1 rows containing missing values (geom_point).
```


14
15
16
17
1000
750
500
250
0
val
Ba Ce Dy Eu Hf La Lu Nb Nd Pb Pr Rb Sm Sr Ta Tb Th U Y Yb Zr
element
a rhyolite
Dinner Creek Tuff
Dinner Creek Tuff 1
Dinner Creek Tuff 2
Dome E of South Fork
Donnely Butte
Dry Creek
lower Littlefield Rhyolite
Mahogany Mtn rhyolite
McCain Creek
Old McIntyre Ridge
Spring Creek Tuff
Swamp Creek rhyolite
Three Fingers Rhyolite (Banno
Tuff of Leslie Gulch
upper Littlefield Rhyolite

Conclusion