# Calibration Report: Low N Sedimentary Site Base Case

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12 November 2020

# Contents



# List of Figures



# List of Tables

### Soil Solution Results

Table 1: Average Soil Solution Concentrations of Reliable Months (2005-2006)

| | $\\mu$mol/L | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Soil Layer | Ca | Mg | K | Na | NO3 | NH4 | SO4 | Cl | PO4 | DOC | Al | Si | H+ | pH | R | HR |
| Layer 1 | 13.9 | 18.4 | 17.3 | 45.9 | 1.955 | 1.775 | 24.4 | 55.2 | 0.975 | 393 | 0.01510 | 12.3 | 17.32 | 4.76 | 40.8 | 15.3 |
| Layer 2 | 16.4 | 22.5 | 19.1 | 54.8 | 1.408 | 1.002 | 25.4 | 63.0 | 0.853 | 630 | 0.02915 | 29.4 | 24.54 | 4.61 | 62.2 | 27.8 |
| Layer 3 | 22.9 | 27.0 | 22.3 | 49.5 | 0.979 | 0.674 | 25.4 | 69.1 | 0.666 | 691 | 0.01857 | 42.2 | 19.15 | 4.72 | 70.6 | 28.2 |
| Layer 4 | 9.2 | 16.0 | 14.6 | 47.5 | 0.578 | 0.717 | 12.9 | 65.6 | 0.371 | 421 | 0.02390 | 51.1 | 20.78 | 4.68 | 42.0 | 18.2 |
| Layer 5 | 12.8 | 21.1 | 14.9 | 50.5 | 0.508 | 1.256 | 12.7 | 71.1 | 0.179 | 421 | 0.00620 | 53.1 | 9.04 | 5.04 | 46.5 | 13.7 |
| Layer 6 | 11.9 | 19.1 | 16.9 | 53.1 | 0.499 | 1.496 | 12.7 | 76.5 | 0.210 | 384 | 0.00762 | 56.9 | 10.59 | 4.98 | 41.8 | 13.0 |
| Layer 7 | 15.2 | 20.8 | 15.8 | 59.7 | 0.505 | 2.014 | 12.7 | 82.6 | 0.253 | 428 | 0.00473 | 61.3 | 7.31 | 5.14 | 48.3 | 12.8 |
| Layer 8 | 14.9 | 19.2 | 18.0 | 67.3 | 0.518 | 2.399 | 12.6 | 87.0 | 0.209 | 424 | 0.00359 | 63.6 | 5.86 | 5.23 | 49.0 | 11.6 |

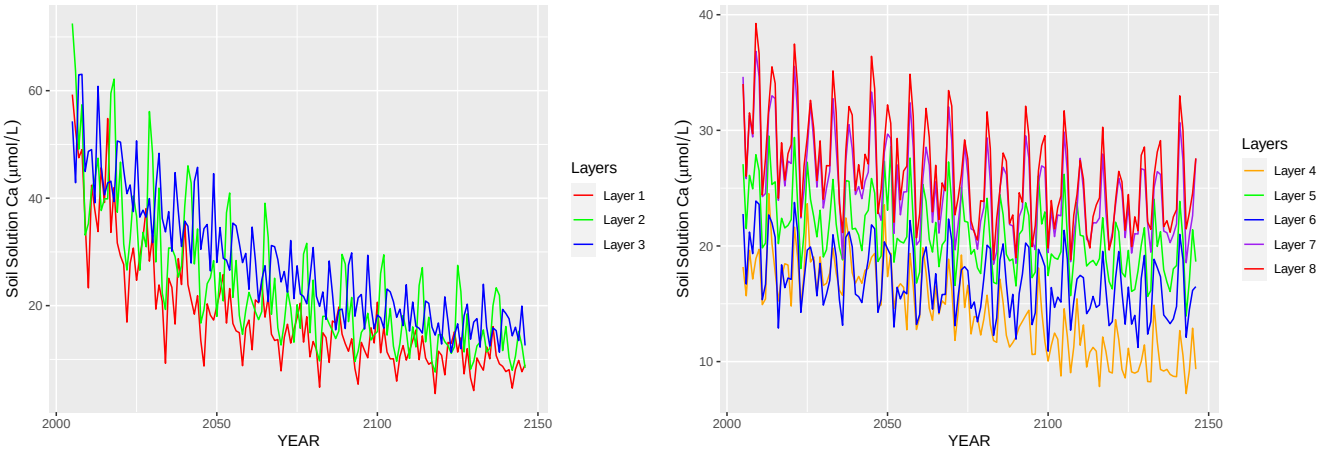



Figure 1: Monthly Calcium Concentrations by Soil Layer

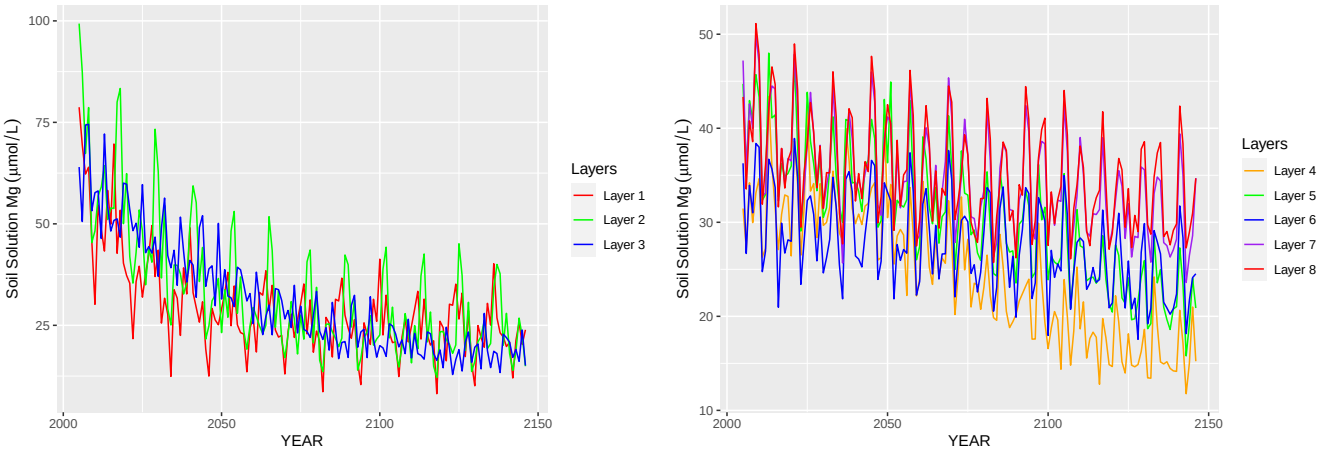



Figure 2: Monthly Magnesium Concentrations by Soil Layer

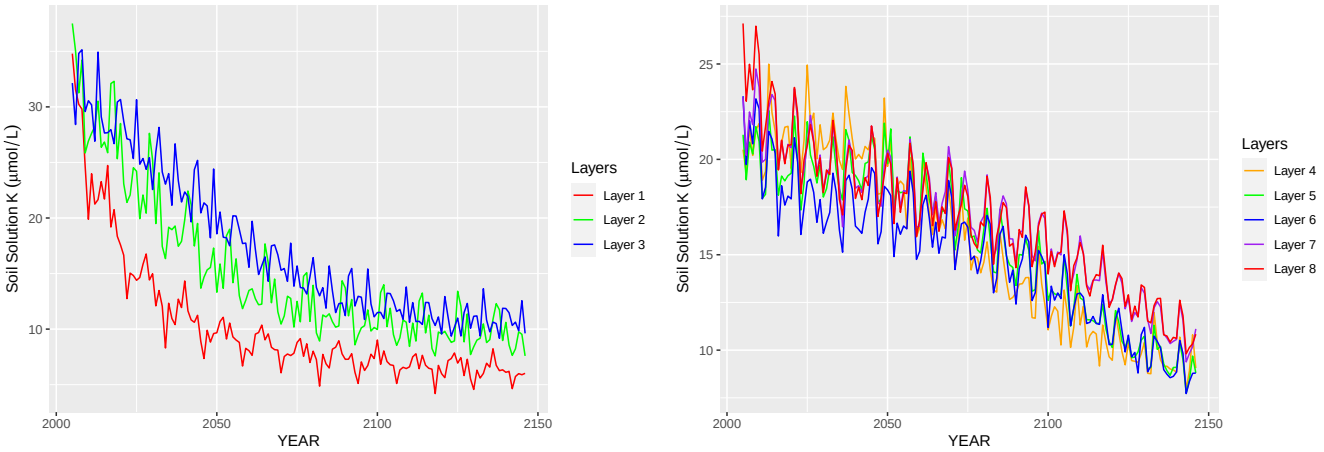



Figure 3: Monthly Potassium Concentrations by Soil Layer

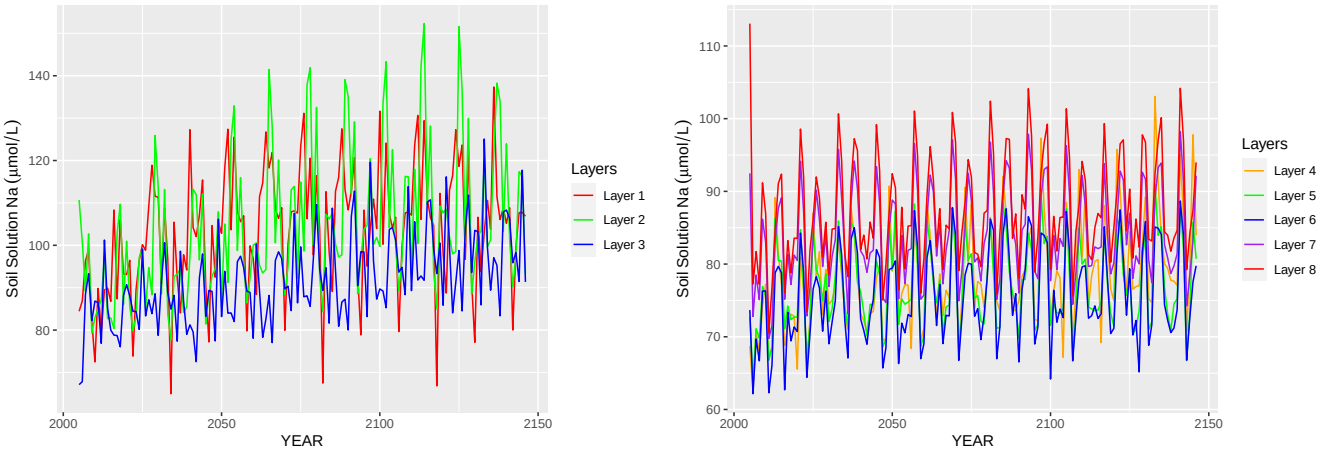



Figure 4: Monthly Sodium Concentrations by Soil Layer

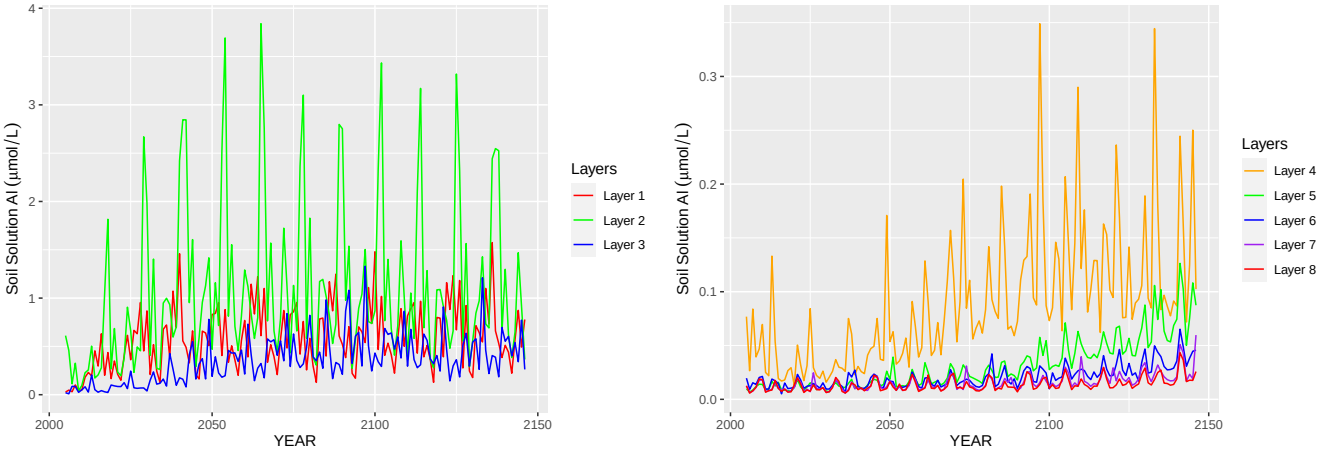



Figure 5: Monthly Aluminum Concentrations by Soil Layer

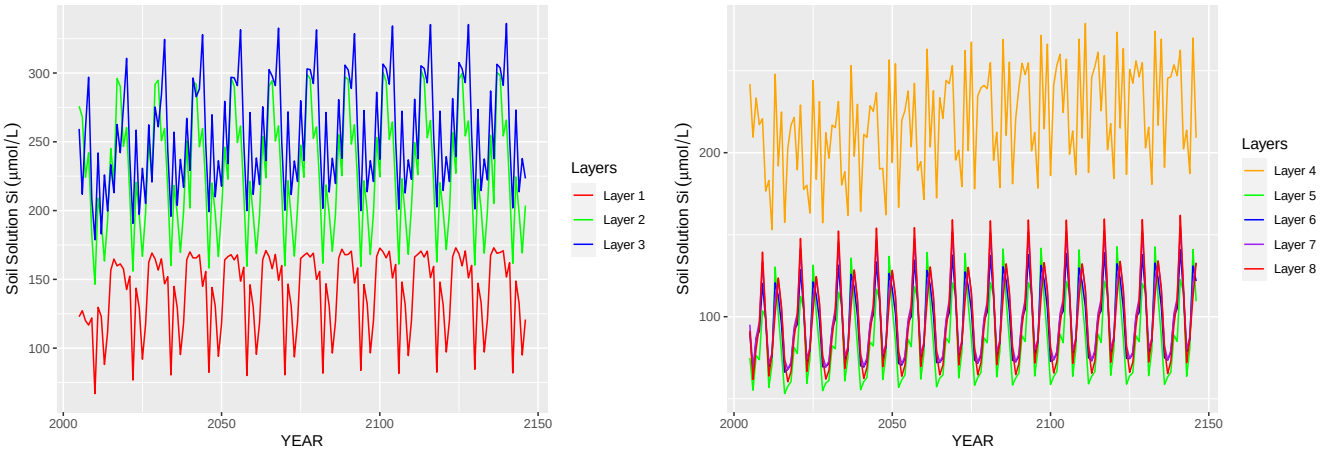



Figure 6: Monthly SiO2 Concentrations by Soil Layer

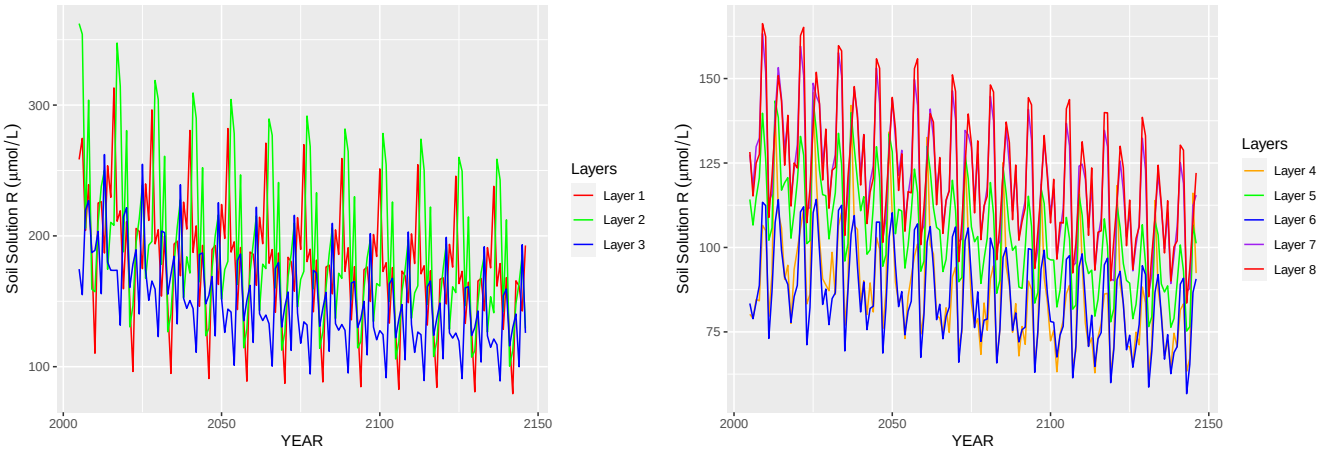



Figure 7: Monthly Organic Acid Base (R-) Concentrations by Soil Layer

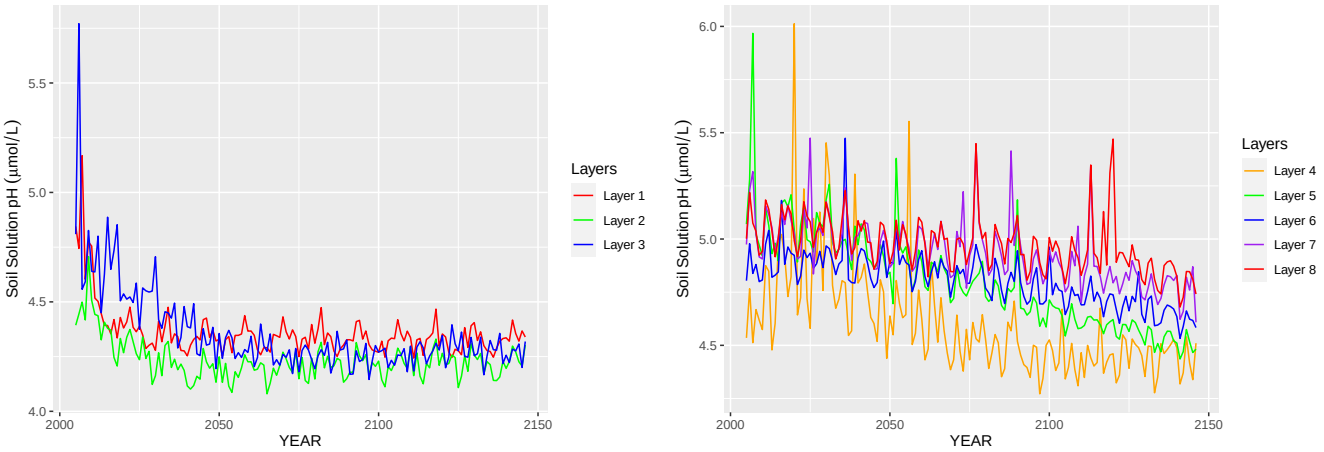



Figure 8: Monthly pH by Soil Layer

**Weathering Results**

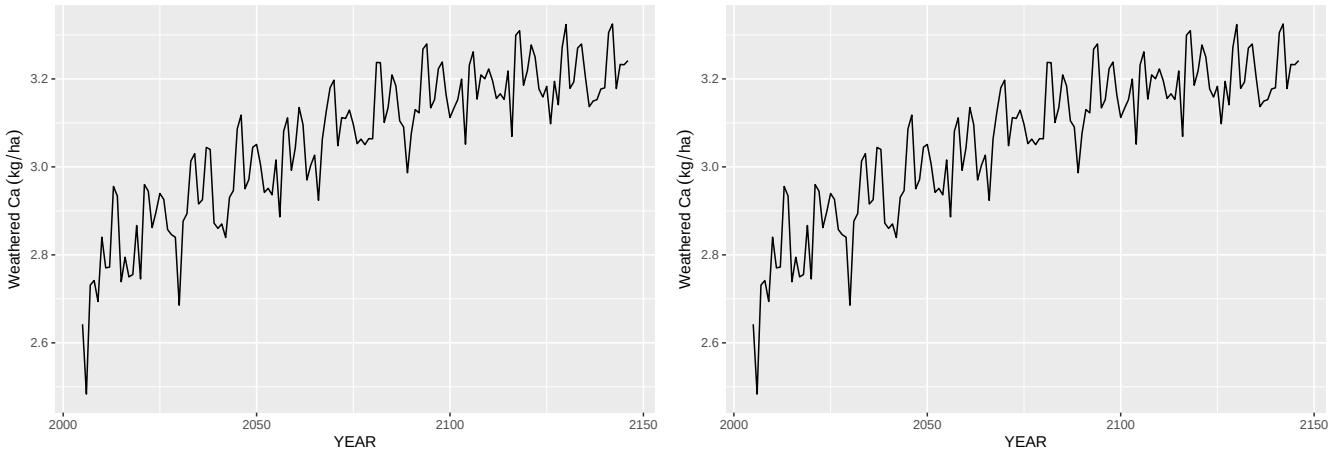



Figure 9: Figure 9: Calcium Weathering by Layer

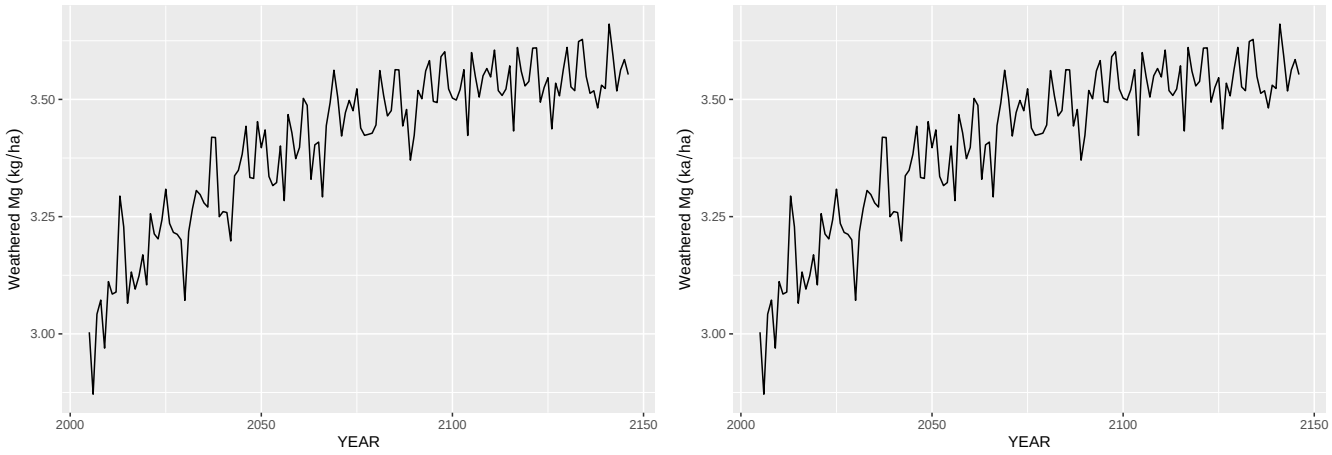



Figure 10: Figure 10: Magnesium Weathering by Layer

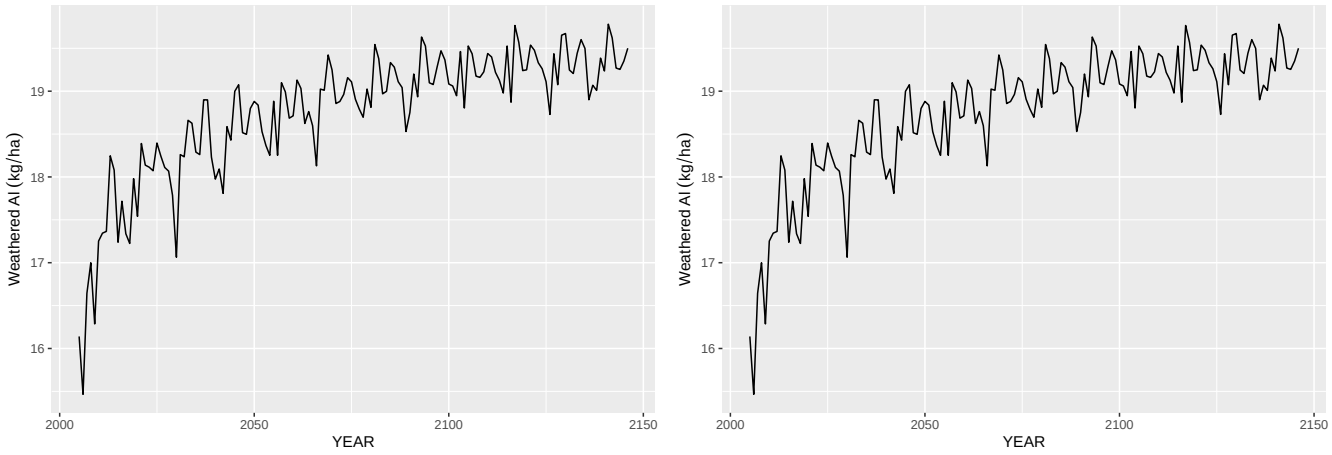



Figure 11: Figure 12: Aluminum Weathering by Layer

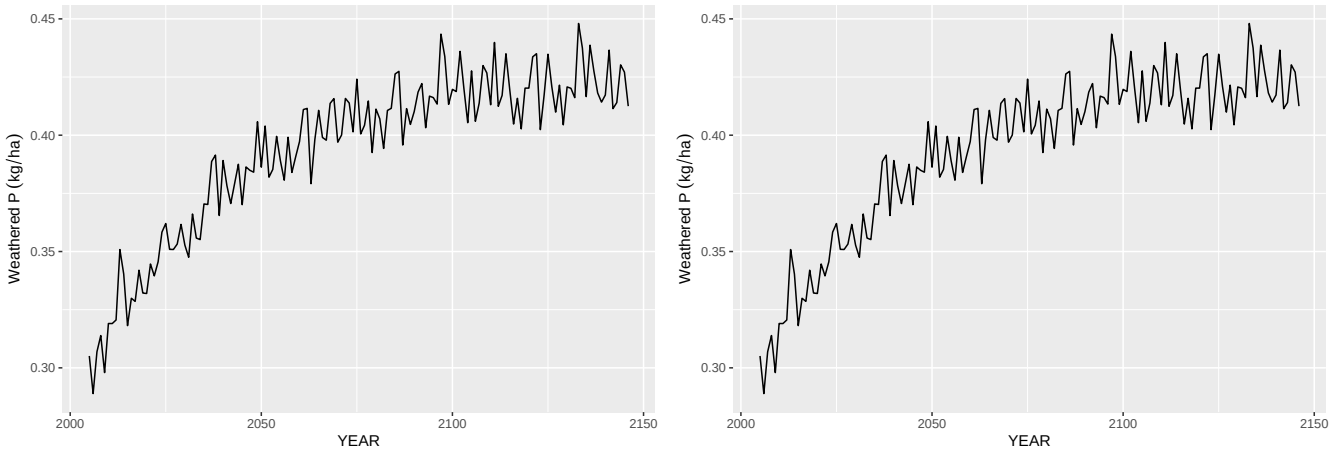



Figure 12: Figure 13: Phosphate Weathering by Layer

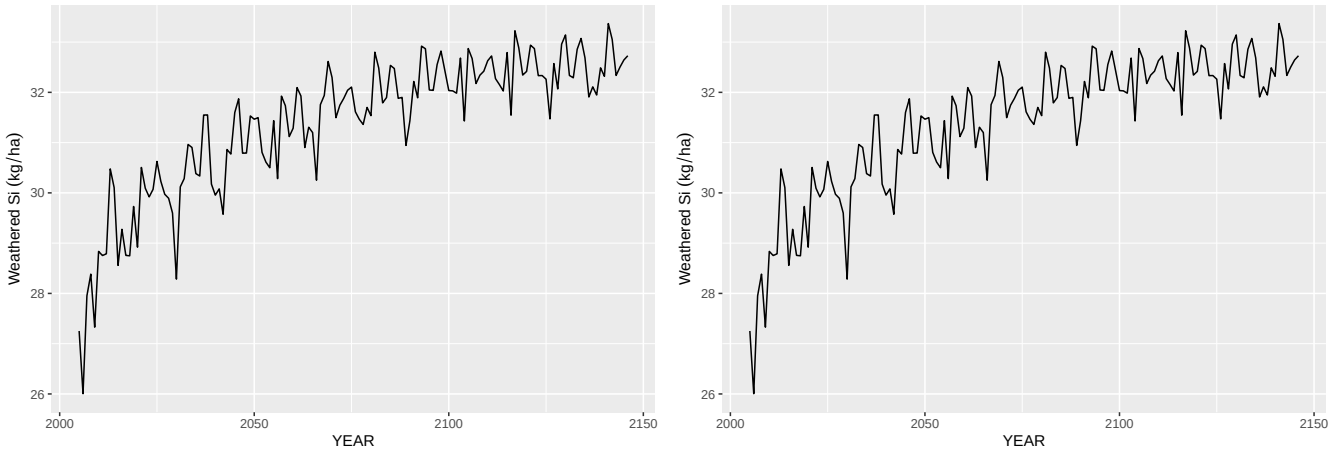



Figure 13: Figure 14: Silica Weathering by Layer

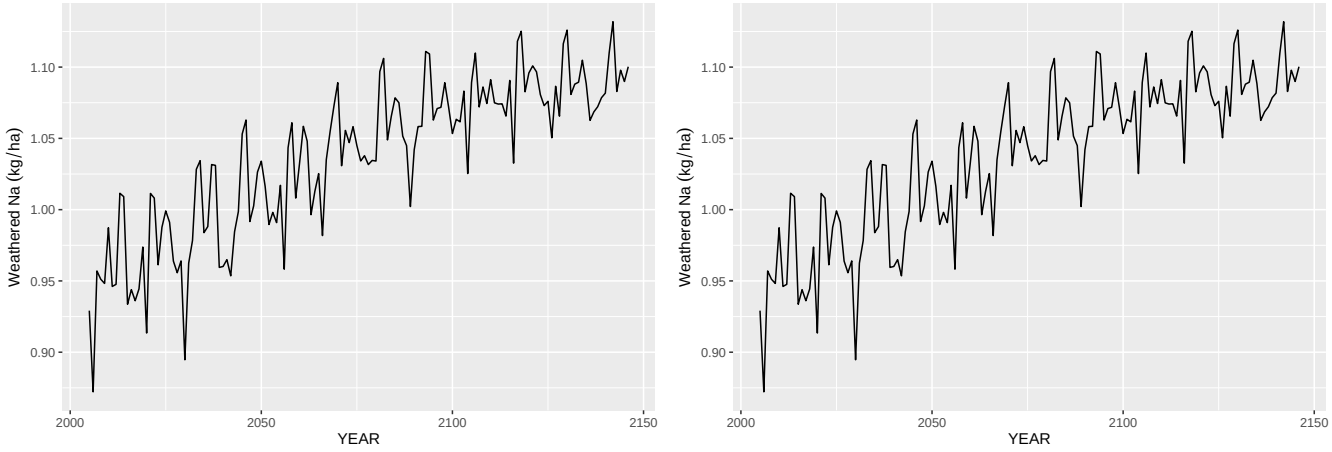



Figure 14: Figure 15: Sodium Weathering by Layer

### Litter Pool Results

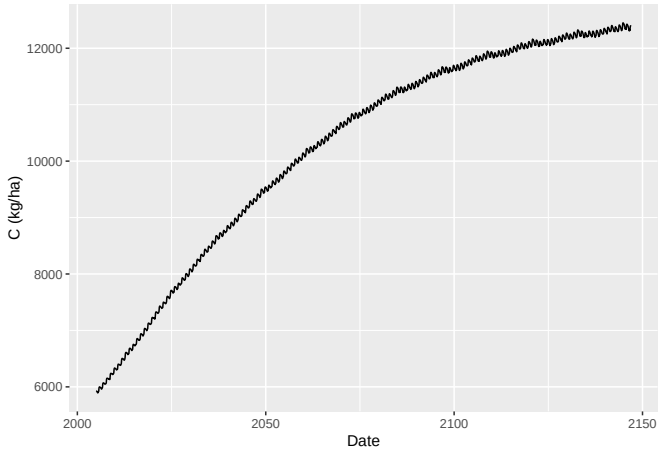
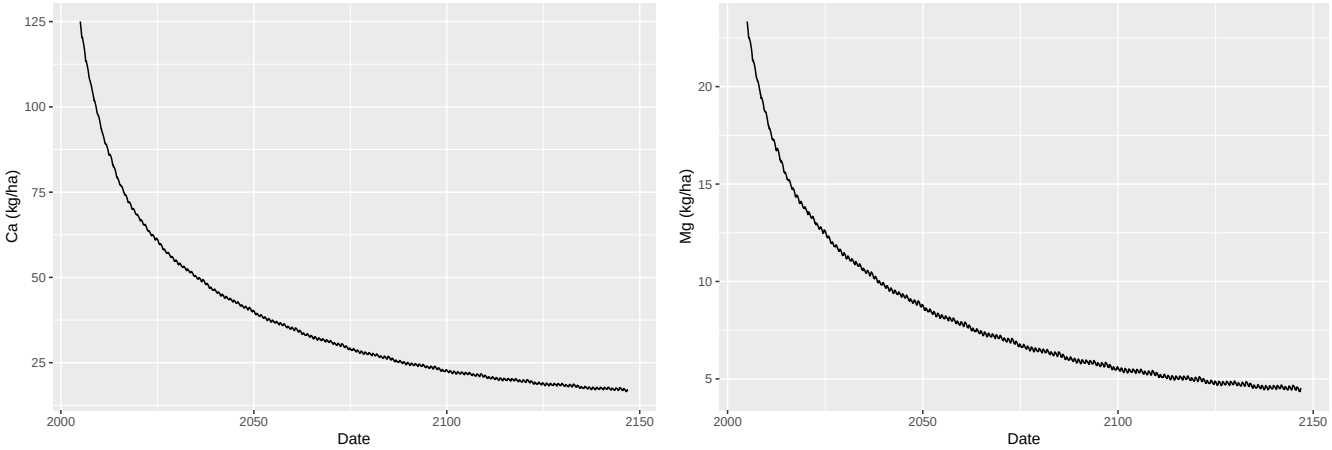


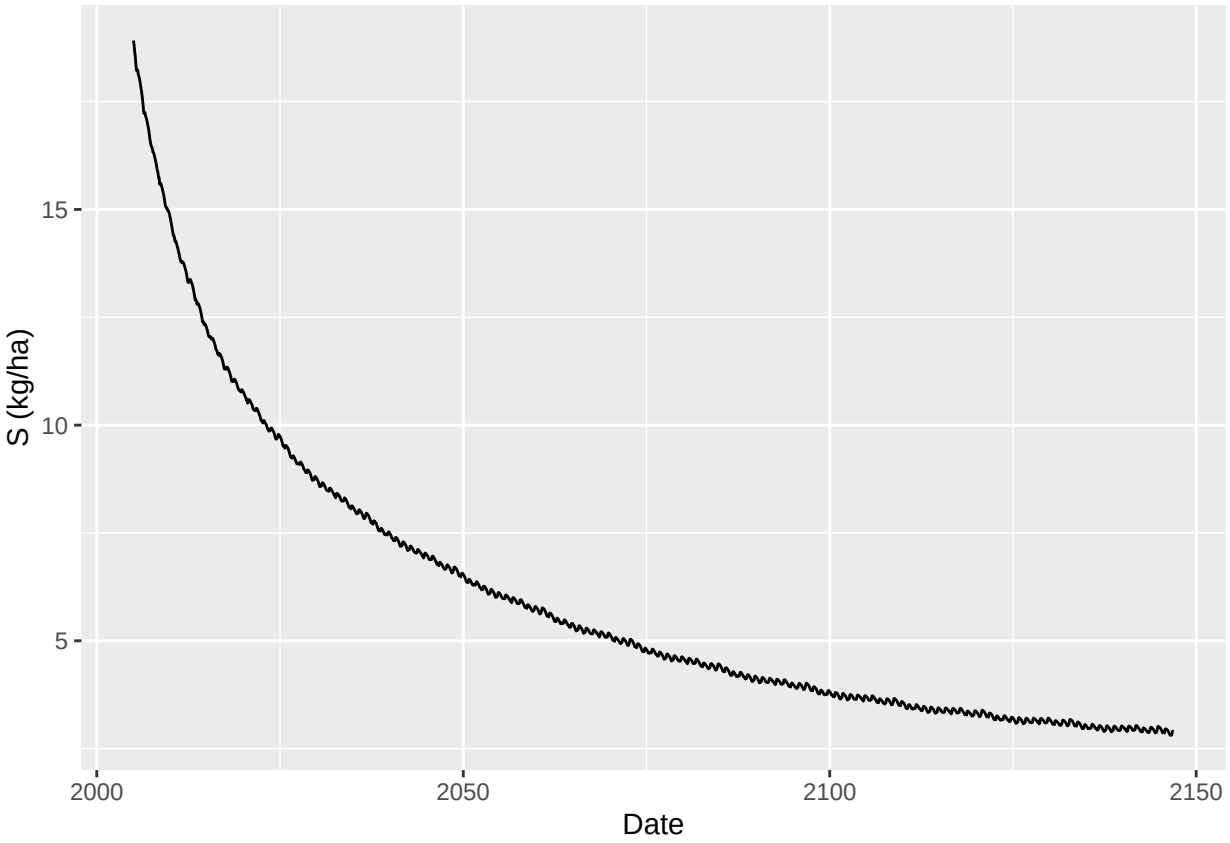

Figure 15: Litter Pool Carbon Content Over Simulation Period

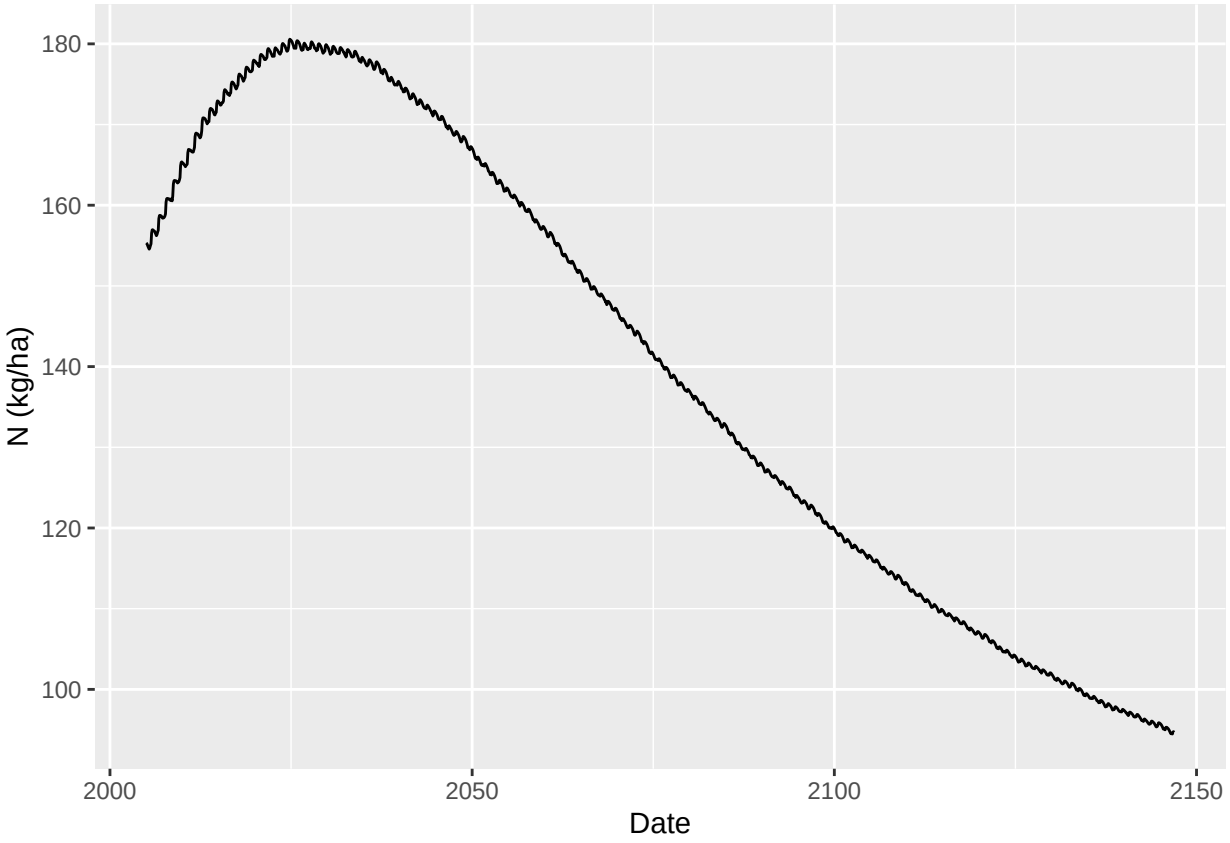


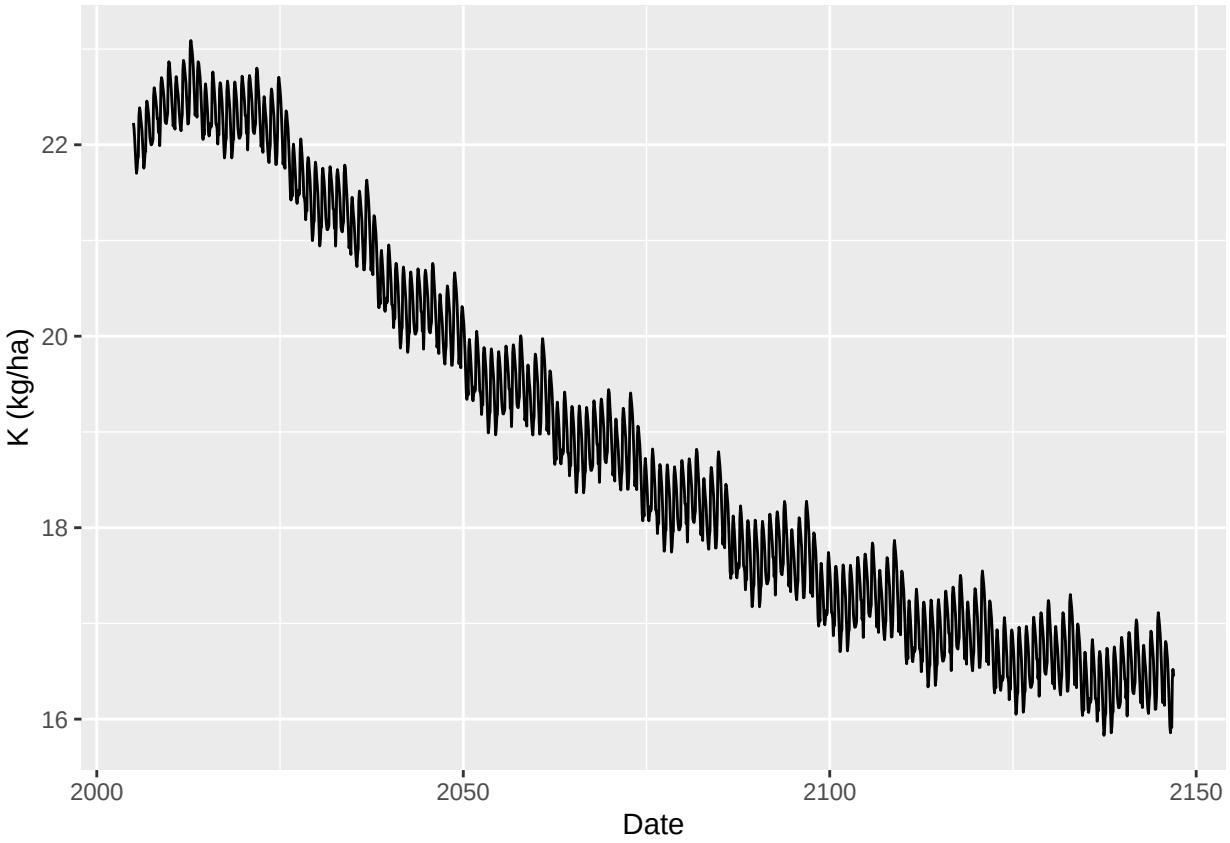

(a) Litter Calcium Content

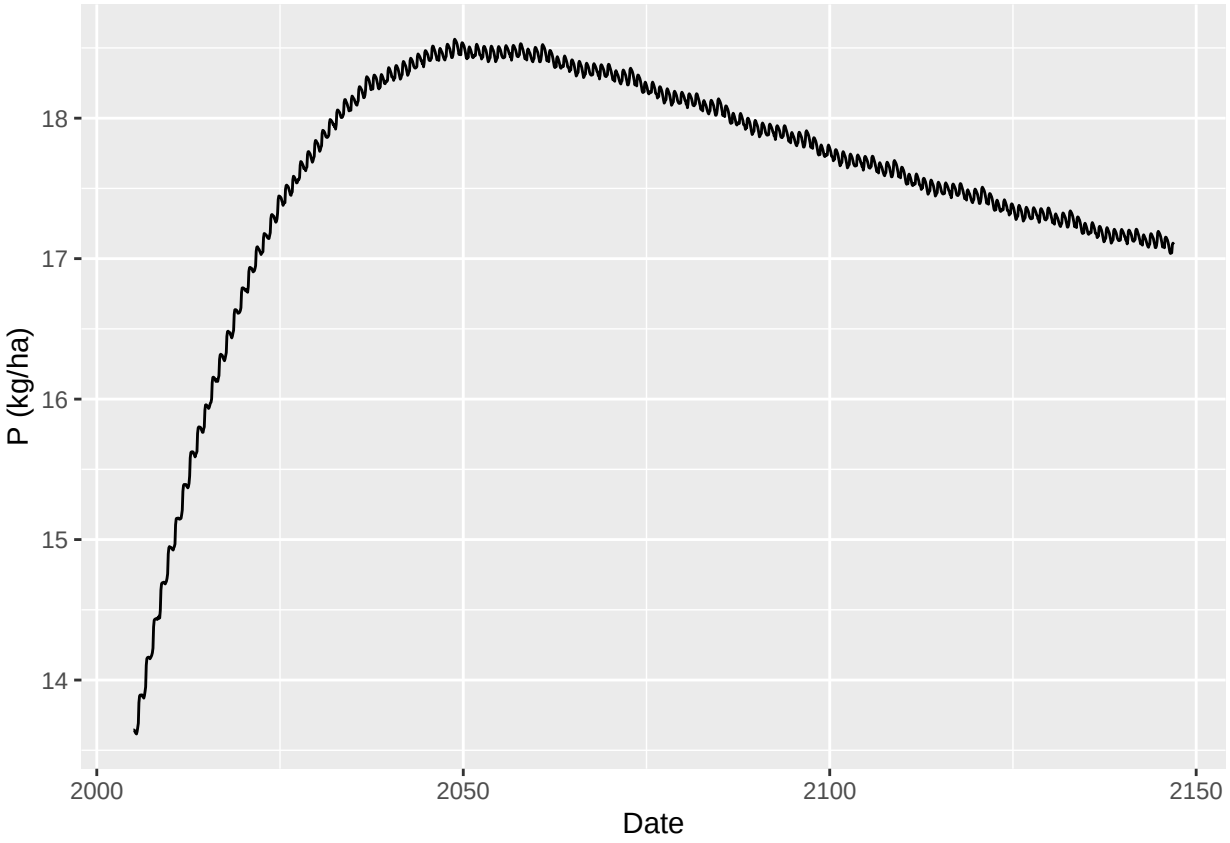
(b) Litter Magnesium Content

Figure 16: Litter Pool Nutrient Content Over Simulation Period

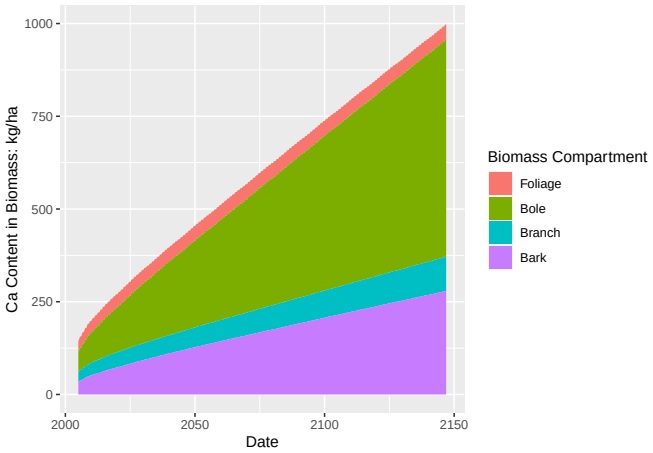

S (kg/ha)
15
10
5
2000
2050
2100
2150
Date


N (kg/ha)
180
160
140
120
100
2000
2050
2100
2150
Date

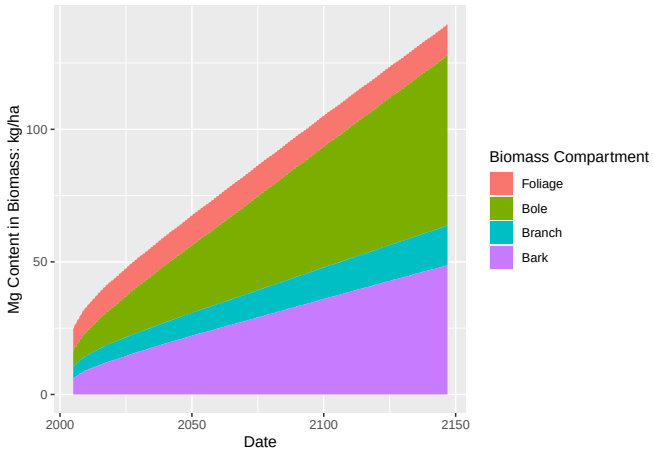

K (kg/ha)
22
20
18
16
2000
2050
2100
2150
Date


P (kg/ha)
18
17
16
15
14
2000
2050
2100
2150
Date

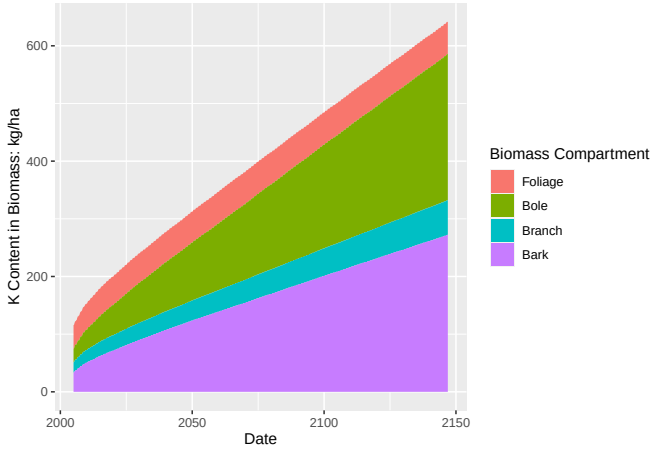
### Tree Nutrient Content




(a) Calcium content in each biomass compartment

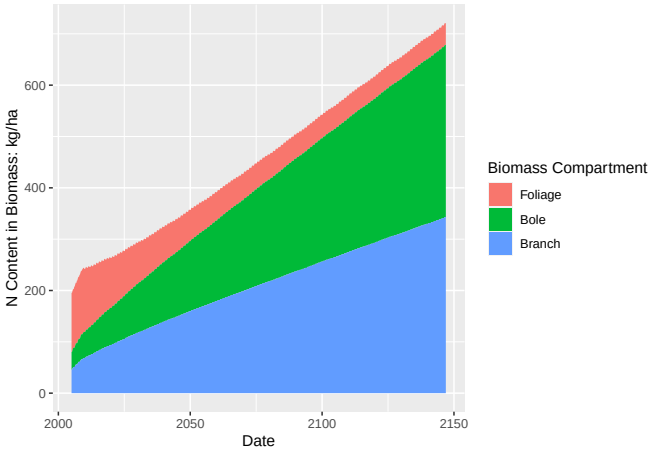



(b) Magnesium content in each biomass compartment

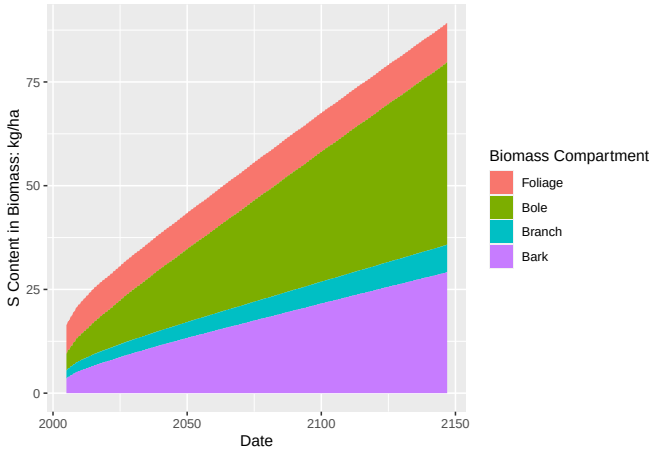



(c) Potassium content in each biomass compartment

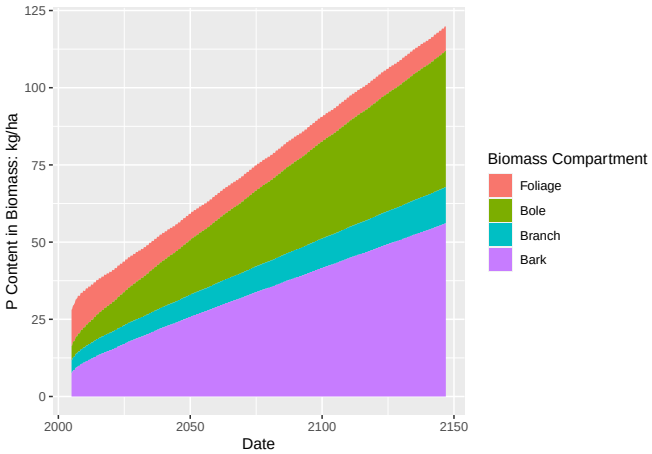
Figure 17: Base Cation Nutrient Content in Simulated Forest



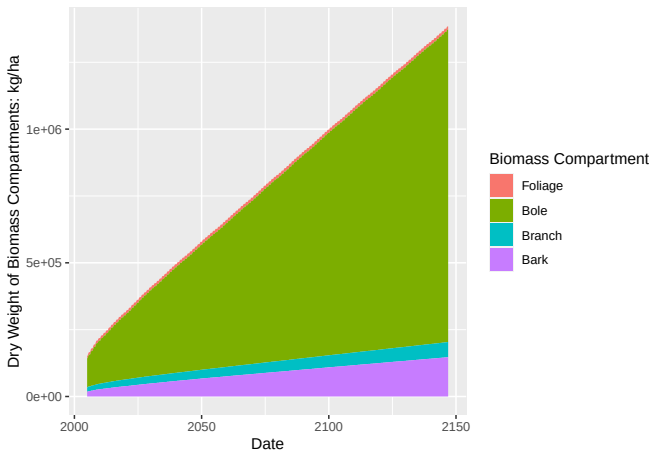

(a) Nitrogen content in each biomass compartment




(b) Sulfur content in each biomass compartment



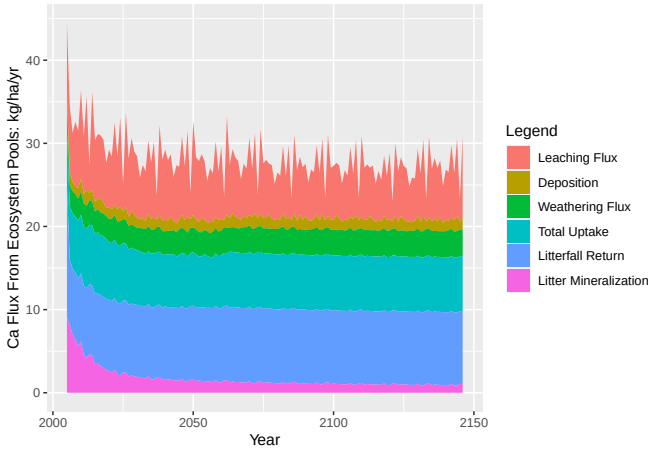

(c) Phosphorous content in each biomass compartment

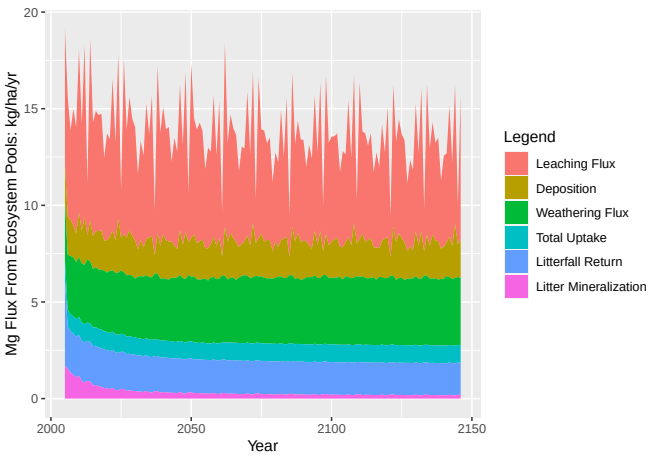



(d) Biomass of each compartment

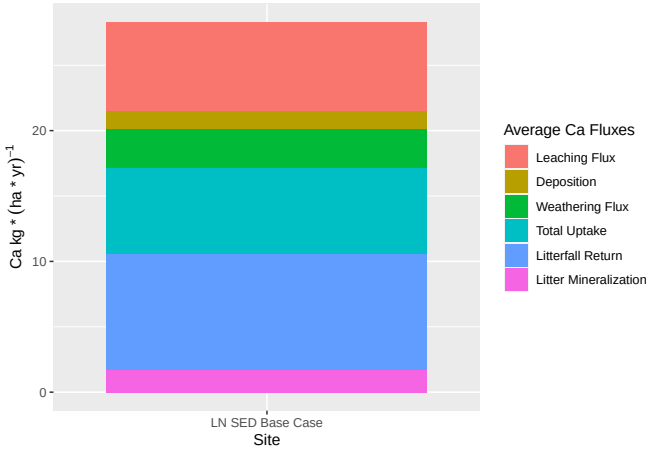
Figure 18: N, S, and P Nutrient Contents and biomass per compartment

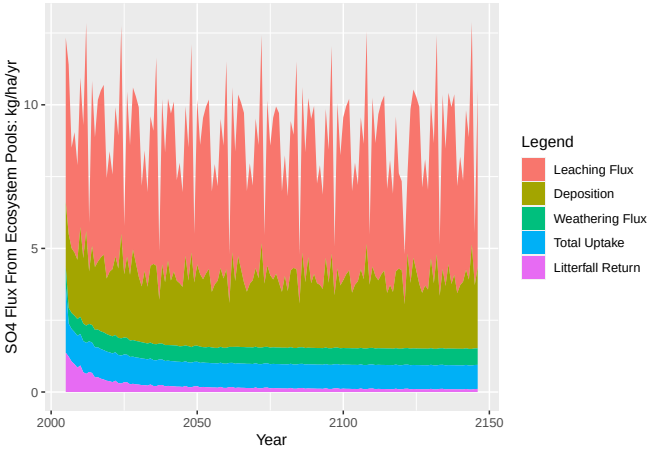
## Analysis 1: Stack Flux Data



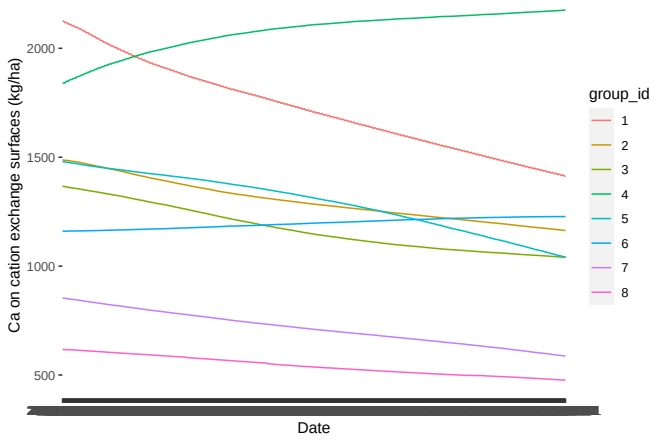



```
## No id variables; using all as measure variables
```



### Cation Exchange Capacity

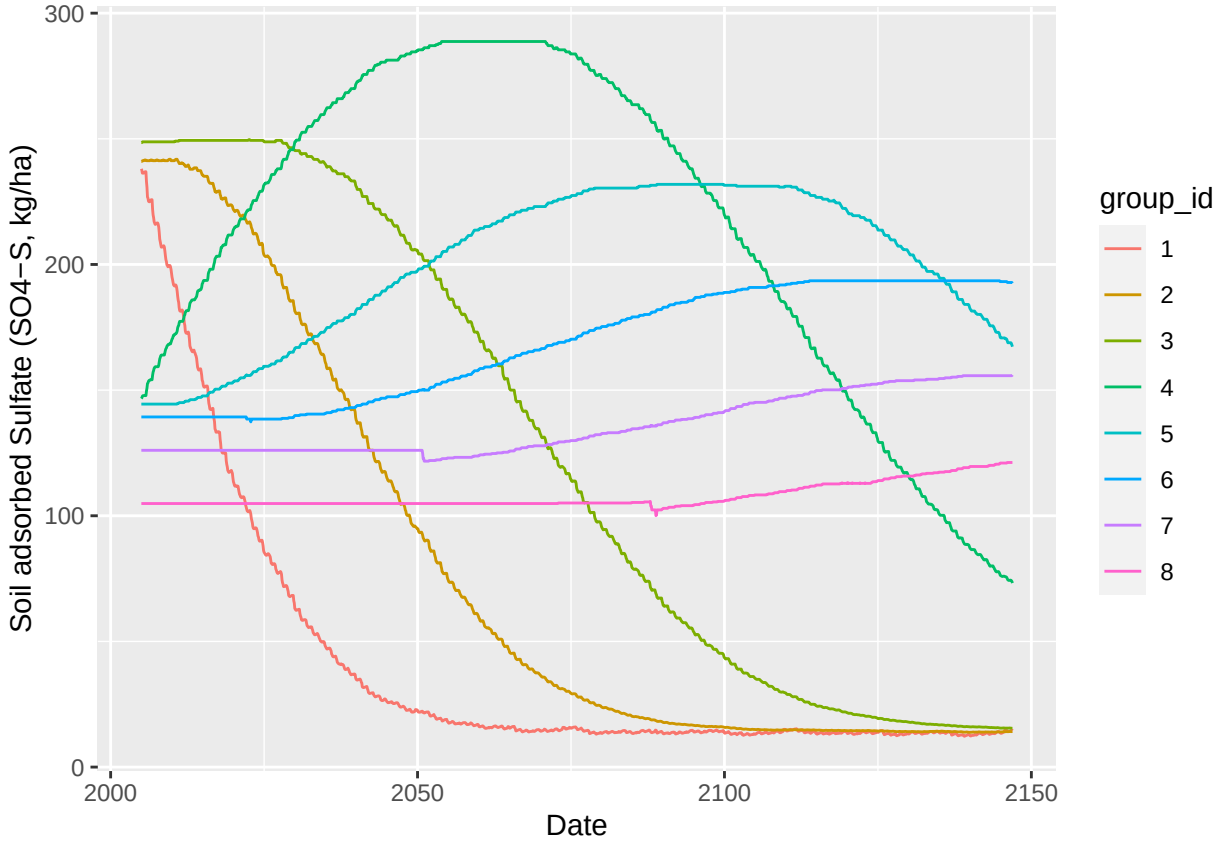



### Anion Exchange Capacity

```
AEC_All$group_id<-as.factor(AEC_All$group_id)
AEC_All$Date<-as.Date(AEC_All$Date)

SO4_AEC<-AEC_Grapher(AEC_All$SO4)
SO4_AEC+labs(y="Soil adsorbed Sulfate (SO4-S, kg/ha)")+scale_x_discrete(guide = guide_axis(check.overlap =
```

```
## Scale for 'x' is already present. Adding another scale for 'x', which will
## replace the existing scale.
```



```
PO4_AEC<-AEC_Grapher(AEC_All$PO4)
PO4_AEC+labs(y="Soil adsorbed PO4-P (kg/ha)")+scale_x_discrete(guide = guide_axis(check.overlap = TRUE))+s
```

```
## Scale for 'x' is already present. Adding another scale for 'x', which will
## replace the existing scale.
```