

## National Atmospheric Deposition Program Lab

From <http://nadp.sws.uiuc.edu/>

### 1. Field H Deposition (kg/ha) (measured at the field sites)

- a. How does NC compare to VA, TN, SC, and CA?  
NC has more deposition than CA, but less overall than VA, TN, and SC.
- b. What is the possible cause of this deposition?  
Industrial sources. The heaviest deposition is in the eastern states, near mountainous regions where H is likely to be deposited from precipitation to the east of industrial regions.
- c. How does the western part of NC compare to the eastern part, and why are they different?  
There is more deposition in the west than in the east. This is because clouds remain over the mountains for a long time, so more acid precipitation falls and is deposited over that region.

### 2. Measured Precipitation (cm)

- a. How does NC compare to VA, TN, SC, and CA?  
NC has more precipitation than CA and VA, but less overall than TN and SC.
- b. What is the possible cause of this deposition?  
Nearby mountains trigger the condensation of water vapor in passing clouds, causing precipitation to the east of the mountains.
- c. How does the western part of NC compare to the eastern part, and why are they different?  
The west has more rain than the east, because most of the rain falls in the mountains. This leaves less rain for the eastern part of NC.

### 3. SO<sub>4</sub> Deposition

- a. How does NC compare to VA, TN, SC, and CA?  
NC has more deposition than CA, but less than TN, VA, and slightly less than SC.
- b. What is the possible cause of this deposition?  
Industrial sources. Most of the deposition occurs in the eastern US, and near mountainous regions, which means that SO<sub>4</sub> could be deposited by precipitation.
- c. How does the western part of NC compare to the eastern part, and why are they different?  
The west has more deposition than the east. Because this region receives a greater annual precipitation, more SO<sub>4</sub> is deposited in the west.

### 4. NO<sub>3</sub> Deposition

- a. How does NC compare to VA, TN, SC, and CA?  
NC has less deposition than TN and VA, but more than CA and SC.
- b. What is the possible cause of this deposition?  
Nitrate comes from animal waste, fertilizer, and industrial sources. TN and VA may have high NO<sub>3</sub> deposition because more farms exist in these states than in NC and CA.
- c. How does the western part of NC compare to the eastern part, and why are they different?  
The west has more deposition than the east. Perhaps some nitrate traveled over from clouds in TN to become deposited in the NC mountains.

### 5. NH<sub>4</sub> Deposition

- a. How does NC compare to VA, TN, SC, and CA?  
There is more deposition in NC than in CA, VA, and SC, and less than in TN.

- b. What is the possible cause of this deposition?  
Ammonium ions come from fertilizer and the breakdown of nitrogenous waste. The large number of hog, poultry, and dairy farms in TN and NC may account for the greater amount of deposition in these states than in CA and VA, where there are a fewer number of these farms.
- c. How does the western part of NC compare to the eastern part, and why are they different?  
There is less deposition in the west than in the east. This is due to the scarcity of animal farms in the mountains, compared to the abundance of these farms in eastern NC.

## 6. Ca Deposition

- a. How does NC compare to VA, TN, SC, and CA?  
NC has less deposition than TN, slightly less than VA, and SC, but more than CA.
- b. What is the possible cause of this deposition?  
Calcium is a byproduct of mineral breakdown and of limestone addition. In the midwest, where soils may have become too acid due to bad farming, limestone has been deposited to raise the pH of this soil. Since weather primarily moves from west to east, some of this deposited Ca traveled east, but became blocked by the Appalachian mountains. This accounts for the lower Ca deposition east of the mountains than west of the mountains.
- c. How does the western part of NC compare to the eastern part, and why are they different?  
The west has slightly more deposition than the east. If Ca is carried by wind or precipitation, then more deposition will occur in areas with more precipitation (west) than areas with less precipitation (east).

## 7. Mg Deposition

- a. How does NC compare to VA, TN, SC, and CA?  
NC has more deposition than CA and VA, and about the same level of deposition as SC and TN.
- b. What is the possible cause of this deposition?  
Mg likely comes from mineral breakdown at industrial sites, and usage of fertilizer.
- c. How does the western part of NC compare to the eastern part, and why are they different?  
There is less deposition in the west than in the east. Since there is more fertilizer usage and industry in the east, there is likely to be more Mg deposition there also.

## 8. K Deposition

- a. How does NC compare to VA, TN, SC, and CA?  
NC has more deposition than CA and VA, about the same as SC, and less than TN.
- b. What is the possible cause of this deposition?  
Potassium is often found in fertilizer. Areas with many farms will likely have a larger K deposition than areas without many farms.
- c. How does the western part of NC compare to the eastern part, and why are they different?  
The west has less deposition than in the east. This is probably due to the higher usage of fertilizer in the farms in eastern NC than in the west.

## 9. Na Deposition

- a. How does NC compare to VA, TN, SC, and CA?  
NC has more deposition than VA and CA, and about the same as TN and SC.
- b. What is the possible cause of this deposition?  
Industrial sources. The Los Angeles area in CA has more deposition than in other regions of the state. Less deposition takes place in mountainous regions of the eastern US than in more industrial regions. Also, areas near the Gulf of Mexico have a large amount of deposition, perhaps from runoff from industrial regions north of the area and from salt spray from the ocean.

- c. How does the western part of NC compare to the eastern part, and why are they different?  
The west has less overall deposition than in the east. This is likely due to the lower level of industry in the mountains than in the eastern part of the state.

**10. Cl Deposition**

- a. How does NC compare to VA, TN, SC, and CA?  
NC has more deposition than CA, VA, and TN. It has less deposition than SC.
- b. What is the possible cause of this deposition?  
Chlorine is used in manufacturing and in industry. Industrial areas will likely have greater deposition than areas of low industry.
- c. How does the western part of NC compare to the eastern part, and why are they different?  
The west has much less deposition than the east. This is probably due to the presence of more industry in the east. Also, runoff from industrial regions may be responsible for the gradually increasing levels of deposition from west to east, leading to the highest deposition along the coast.