

# Soil NH<sub>4</sub>, NO<sub>3</sub>, NO<sub>3</sub>-leaching concentration, Soil water NH<sub>4</sub>, NO<sub>3</sub>, CH<sub>4</sub>, N<sub>2</sub>O

- General comments: in some files there is a line for every day, some only if there is data
- Not all data in the database (yet)
- Sometimes collection times very long for suction cup
- How to mark data which is under detection limit? “NaN”, 0?
- Error estimates missing
- What means NaN, -999, empty cell...

# Data availability

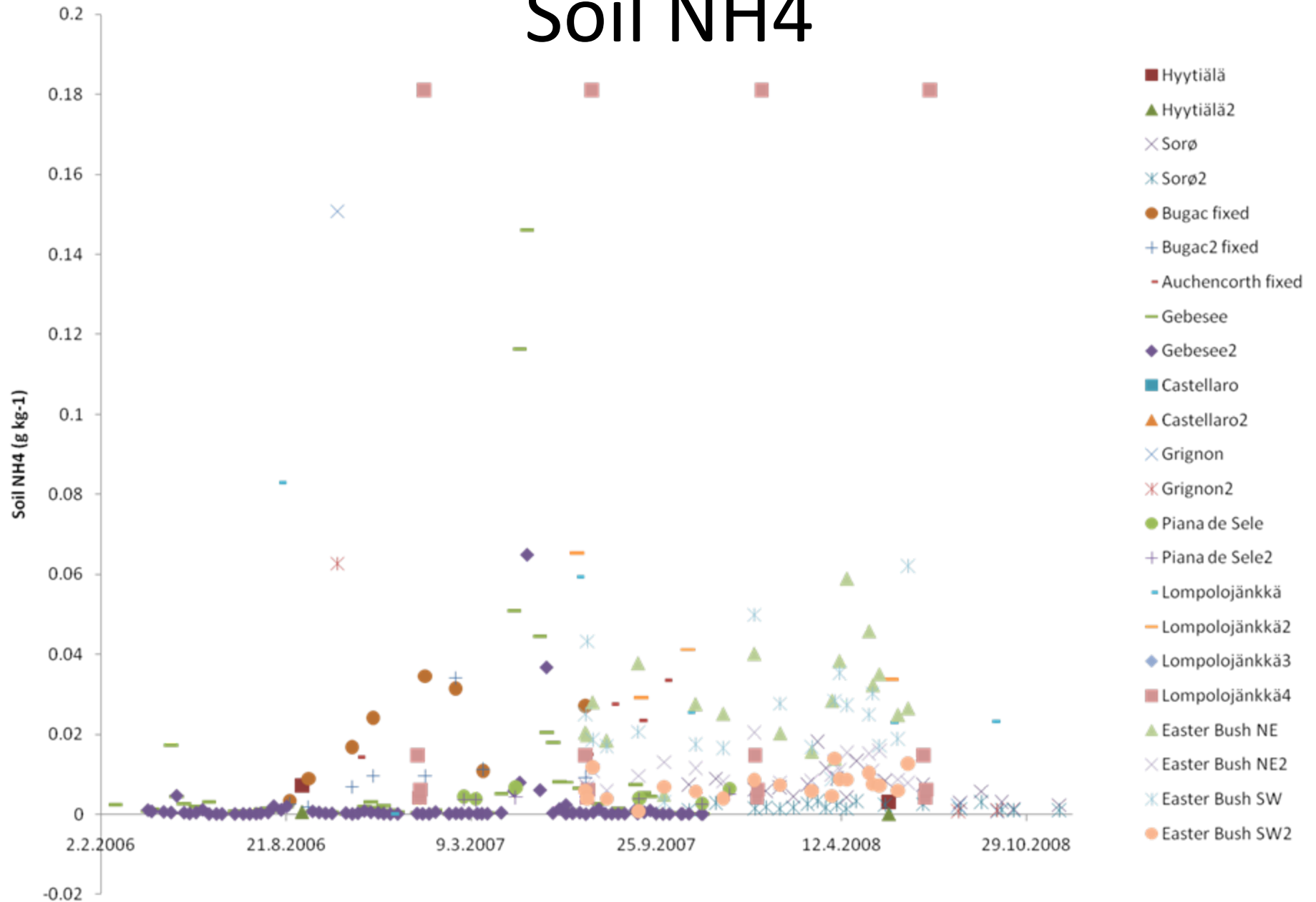
| Site           | 2006                               | 2007 | 2008 | 2006                 | 2007 | 2008 | 2006                                  | 2007 | 2008 | 2006                                     | 2007 | 2008 | 2006                                     | 2007 | 2008 | 2006                                                   | 2007 | 2008 | 2006                                                  | 2007 | 2008 |
|----------------|------------------------------------|------|------|----------------------|------|------|---------------------------------------|------|------|------------------------------------------|------|------|------------------------------------------|------|------|--------------------------------------------------------|------|------|-------------------------------------------------------|------|------|
|                | Soil NH <sub>4</sub> concentration |      |      | Soil NO <sub>3</sub> |      |      | NO <sub>3</sub> <sup>-</sup> leaching |      |      | Soil water NH <sub>4</sub> concentration |      |      | Soil water NO <sub>3</sub> concentration |      |      | Dissolved N <sub>2</sub> O concentration in soil water |      |      | Dissolved CH <sub>4</sub> concentration in soil water |      |      |
| Easter Bush NE | -                                  | x    | x    | -                    | x    | x    | X                                     | X    | -    | -                                        | -    | -    | -                                        | -    | -    | -                                                      | x    | X    | -                                                     | x    | X    |
| Easter Bush SW | -                                  | x    | x    | -                    | x    | x    | X                                     | X    | -    | -                                        | x    | -    | -                                        | x    | -    | -                                                      | x    | X    | -                                                     | x    | X    |
| Speulder       | -                                  | -    | -    | -                    | -    | -    | -                                     | -    | -    | -                                        | -    | -    | -                                        | -    | -    | -                                                      | -    | -    | -                                                     | -    | -    |
| Oensingen      | -                                  | -    | -    | -                    | -    | -    | -                                     | -    | -    | -                                        | -    | x    | -                                        | -    | -    | -                                                      | -    | -    | -                                                     | -    | -    |
| Soroe          | -                                  | (x)  | X    | -                    | (x)  | X    | -                                     | -    | -    | X                                        | X    | X    | X                                        | X    | X    | -                                                      | -    | -    | -                                                     | -    | -    |
| Lompolonjänkkä | X                                  | x    | X    | X                    | x    | X    | -                                     | x    | -    | -                                        | -    | X    | -                                        | -    | X    | -                                                      | -    | X    | -                                                     | -    | X    |
| Piana de Sele  | -                                  | x    | -    | -                    | X    | -    | -                                     | X    | -    | -                                        | -    | -    | -                                        | -    | -    | -                                                      | -    | -    | -                                                     | -    | -    |
| Grignon        | x                                  | x    | -    | x                    | x    | -    | -                                     | -    | -    | -                                        | -    | -    | -                                        | -    | -    | -                                                      | -    | -    | -                                                     | -    | -    |
| Höglwald       | -                                  | -    | -    | -                    | -    | -    | -                                     | -    | -    | -                                        | -    | -    | -                                        | -    | -    | -                                                      | -    | -    | -                                                     | -    | -    |
| Castellaro     | -                                  | -    | -    | X                    | -    | -    | -                                     | x    | x    | -                                        | -    | -    | -                                        | -    | -    | -                                                      | -    | -    | -                                                     | -    | -    |
| Gebesee        | x                                  | X    | -    | X                    | X    | -    | -                                     | -    | -    | -                                        | -    | -    | -                                        | -    | -    | -                                                      | -    | -    | -                                                     | -    | -    |
| Auchencorth    | x                                  | x    | -    | X                    | x    | -    | X                                     | x    | x    | -                                        | -    | -    | -                                        | -    | -    | -                                                      | -    | x    | -                                                     | -    | x    |
| Bugac          | x                                  | x    | -    | X                    | X    | x    | X                                     | X    | -    | -                                        | -    | -    | -                                        | -    | -    | -                                                      | -    | -    | -                                                     | -    | -    |
| Hyytiälä       | x                                  | -    | x    | X                    | -    | x    | x                                     | -    | -    | X                                        | X    | -    | X                                        | X    | -    | -                                                      | -    | -    | -                                                     | -    | -    |

# Soil NH<sub>4</sub>, general

- Bugac, units are in mg/kg, should be g/kg (already reported in the file)
- Lompolojänkkä "extra" measurements the same during all the years
- Lompolojänkkä soil NH<sub>4</sub> is soil water NH<sub>4</sub>?
- Some sites only few (if any) measurements
- Analysis late...

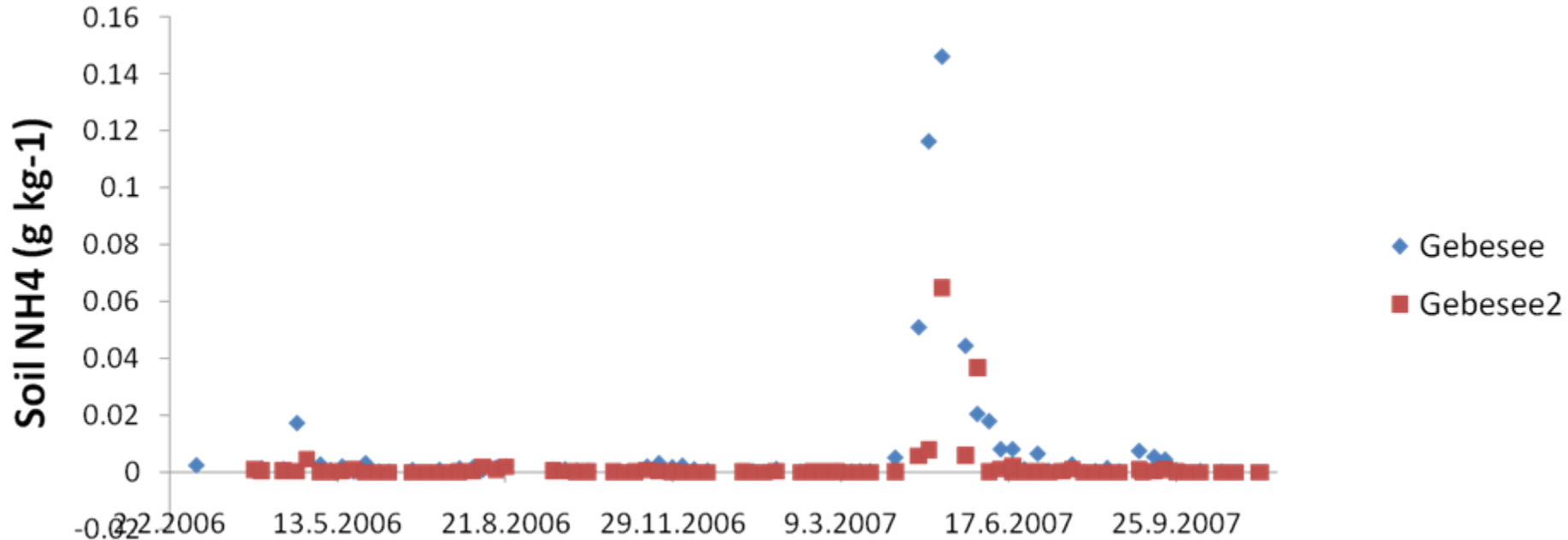
| SITE              | Number of measurements |
|-------------------|------------------------|
| Hyytiälä          | 2                      |
| Hyytiälä2         | 2                      |
| Sorø              | 30                     |
| Sorø2             | 30                     |
| Bugac fixed       | 8                      |
| Bugac2 fixed      | 8                      |
| Auchencorth fixed | 5                      |
| Gebesee           | 78                     |
| Gebesee2          | 77                     |
| Castellaro        | 0                      |
| Castellaro2       | 0                      |
| Grignon           | 3                      |
| Grignon2          | 3                      |
| Piana de Sele     | 6                      |
| Piana de Sele2    | 6                      |
| Lompolojänkkä     | 6                      |
| Lompolojänkkä2    | 4                      |
| Lompolojänkkä3    | 0                      |
| Lompolojänkkä4    | 16                     |
| Easter Bush NE    | 20                     |
| Easter Bush NE2   | 20                     |
| Easter Bush SW    | 20                     |
| Easter Bush SW2   | 20                     |

# Soil NH<sub>4</sub>

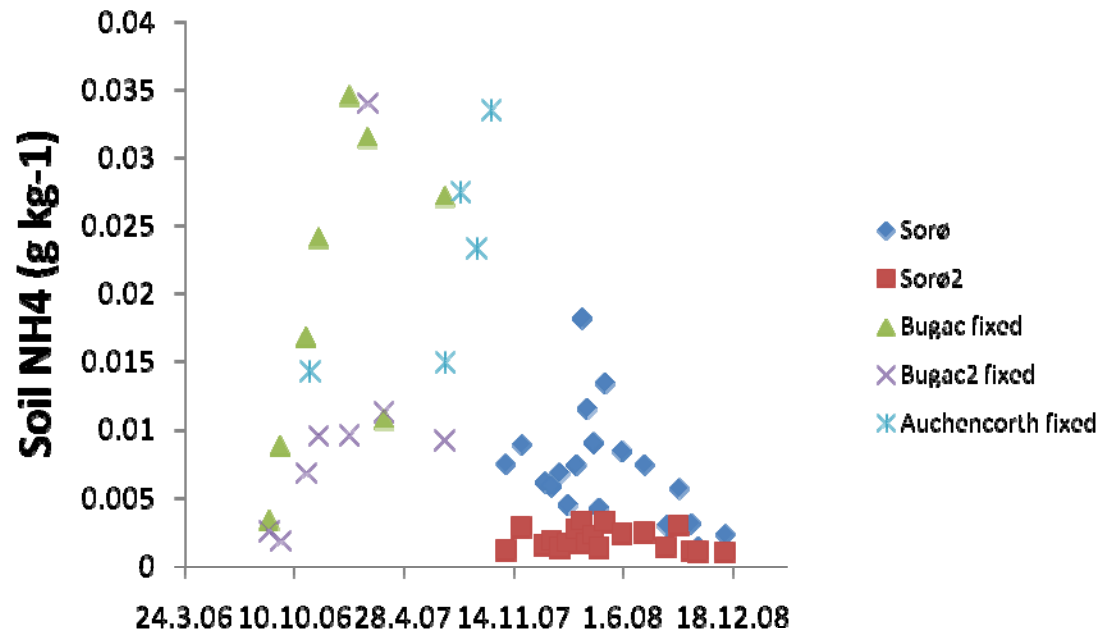
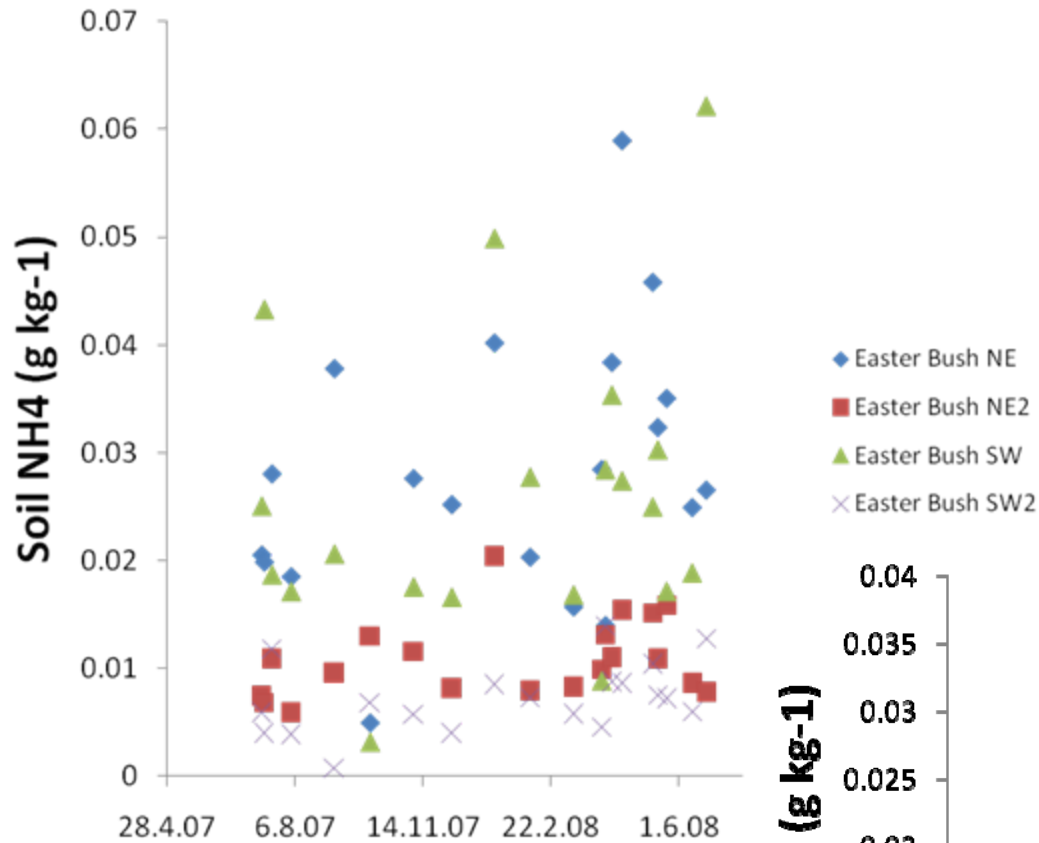


# Soil NH<sub>4</sub>

- Gebesee has some extreme values (upto 30 g kg<sup>-1</sup>) from april 2007, values decreasing, high N-input?



# NH4 Patterns?

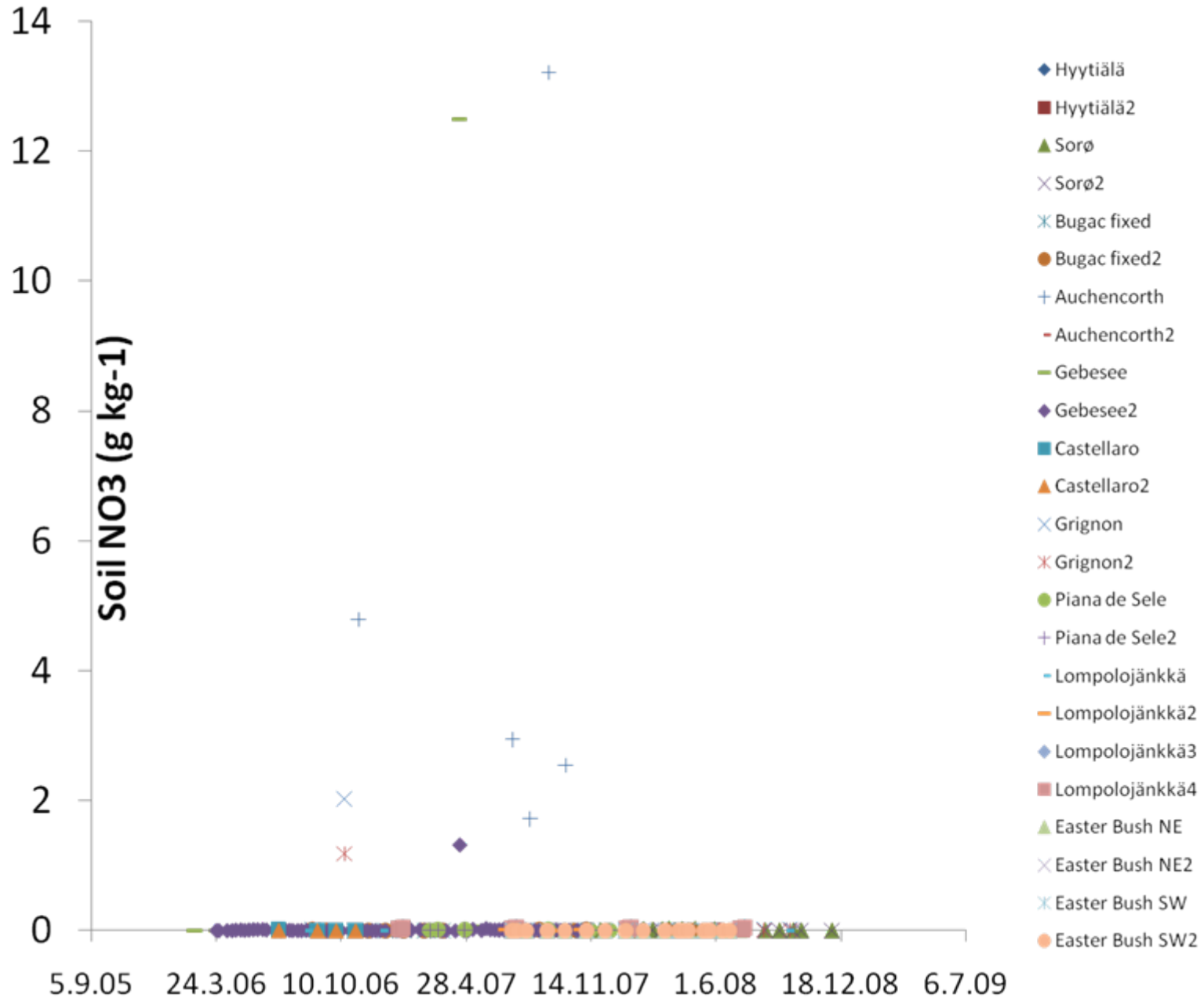


# Soil NO<sub>3</sub>, general

- Gebesee again high 17.4.2007
- Auchencorth, all data points very high, units?
- Grignon 15.10.2006

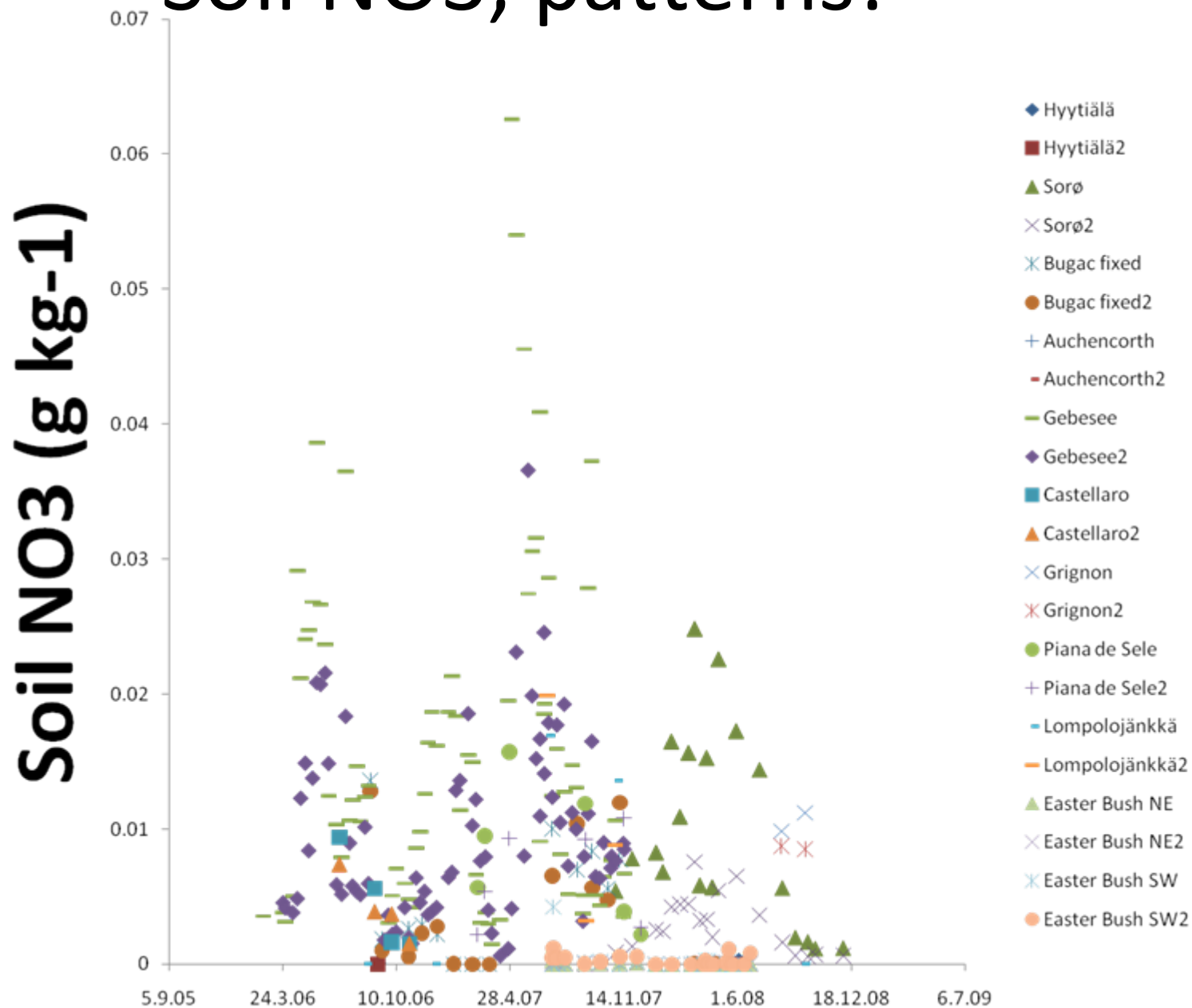
| SITE            | # of meas. |
|-----------------|------------|
| Hyytiälä        | 2          |
| Hyytiälä2       | 2          |
| Sorø            | 30         |
| Sorø2           | 30         |
| Bugac fixed     | 15         |
| Bugac fixed2    | 15         |
| Auchencorth     | 5          |
| Auchencorth2    | 0          |
| Gebesee         | 79         |
| Gebesee2        | 78         |
| Castellaro      | 4          |
| Castellaro2     | 4          |
| Grignon         | 3          |
| Grignon2        | 3          |
| Piana de Sele   | 6          |
| Piana de Sele2  | 6          |
| Lompolojänkkä   | 6          |
| Lompolojänkkä2  | 4          |
| Lompolojänkkä3  | 16         |
| Lompolojänkkä4  | 16         |
| Easter Bush NE  | 20         |
| Easter Bush NE2 | 20         |
| Easter Bush SW  | 20         |
| Easter Bush SW2 | 20         |

# Soil NO3





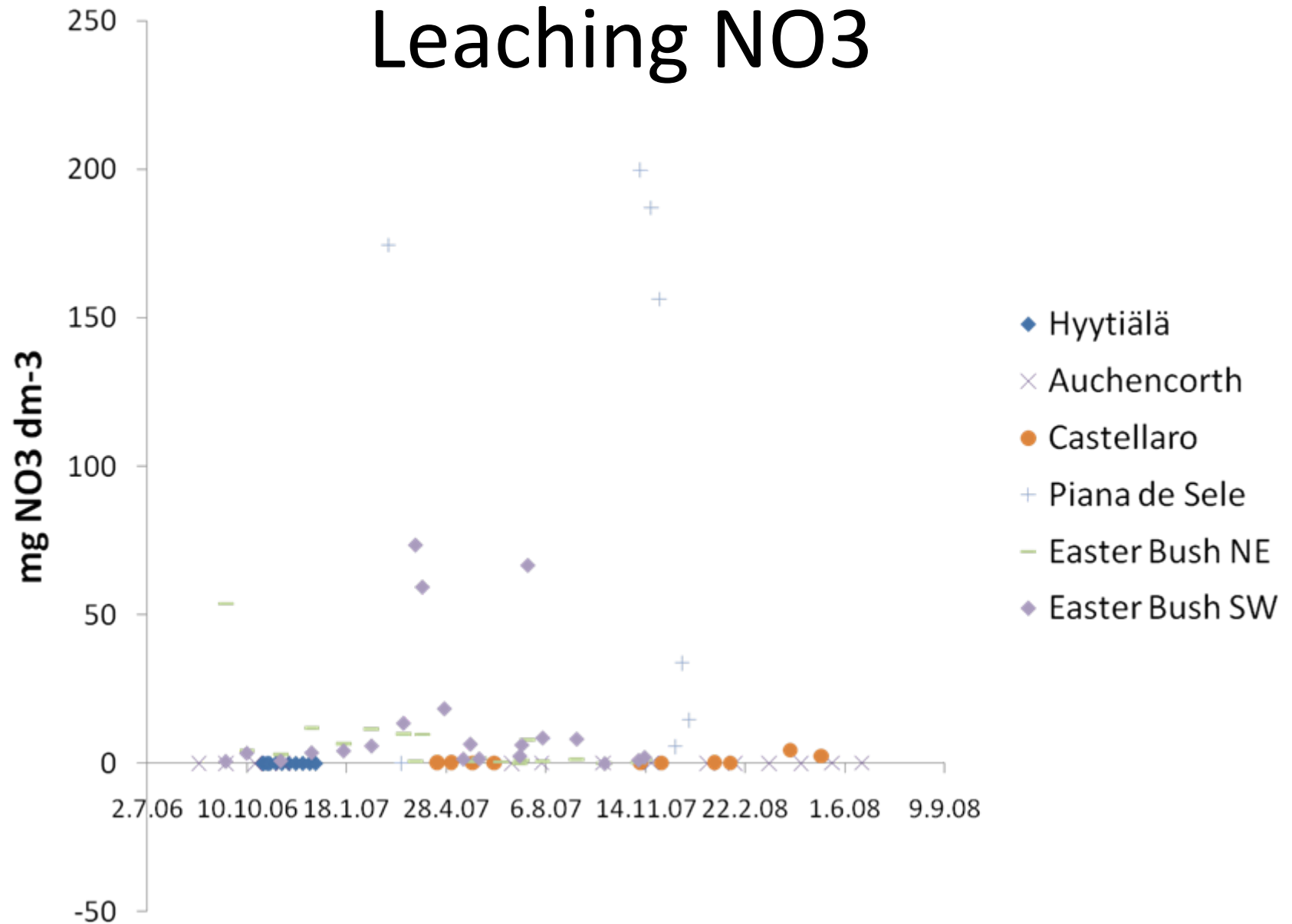
# Soil NO<sub>3</sub>, patterns!



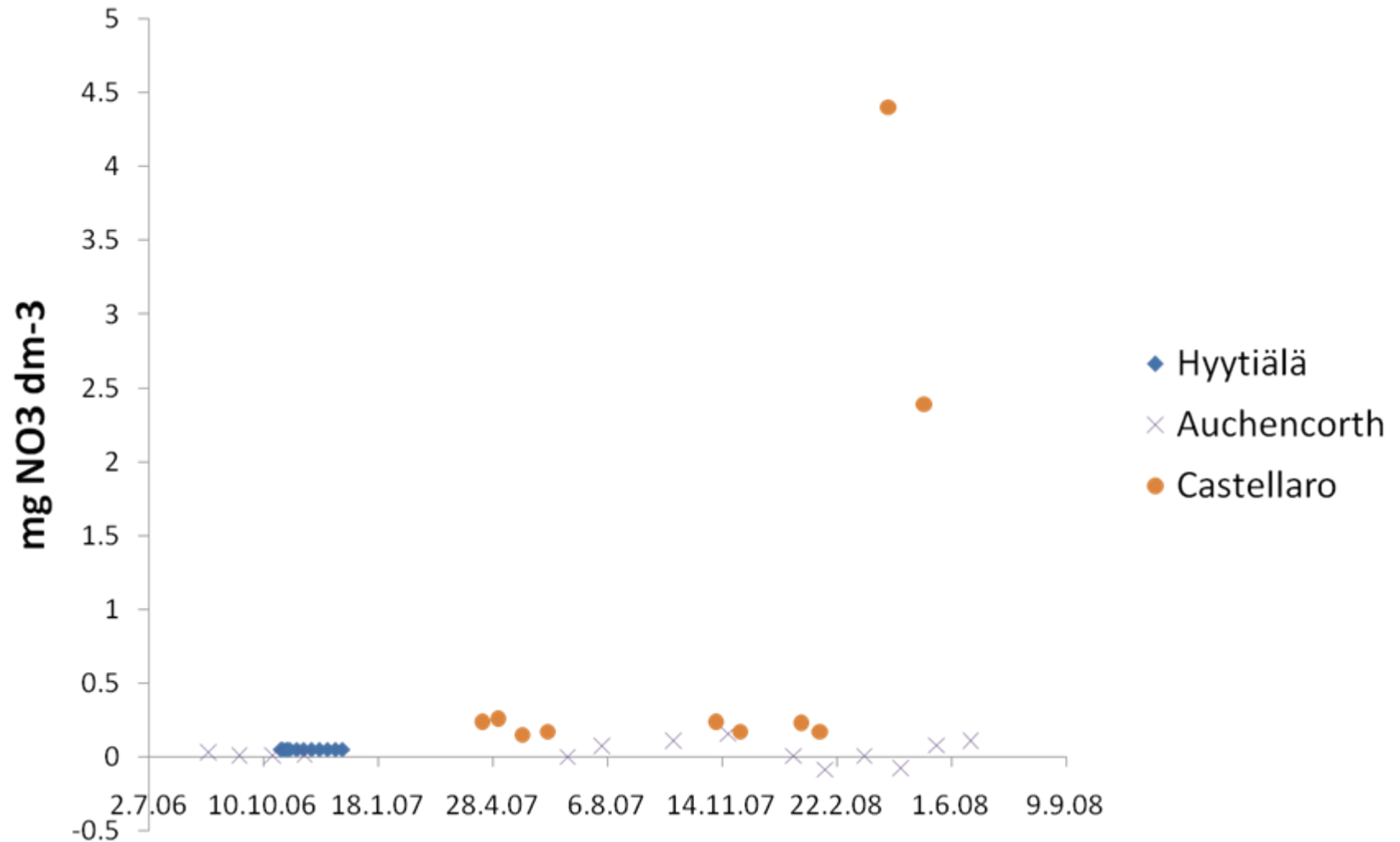
# Leaching NO<sub>3</sub>

- Easter Bush, some text in data cells (2007/II, 2008/I)
- Lompolojännä unit ng N m<sup>-2</sup> s<sup>-1</sup>, others mg NO<sub>3</sub> dm<sup>-3</sup>
- "Huge" leaching at Piana de Sele, Easter Bush?
- Half of the sites no data at all

# Leaching NO3



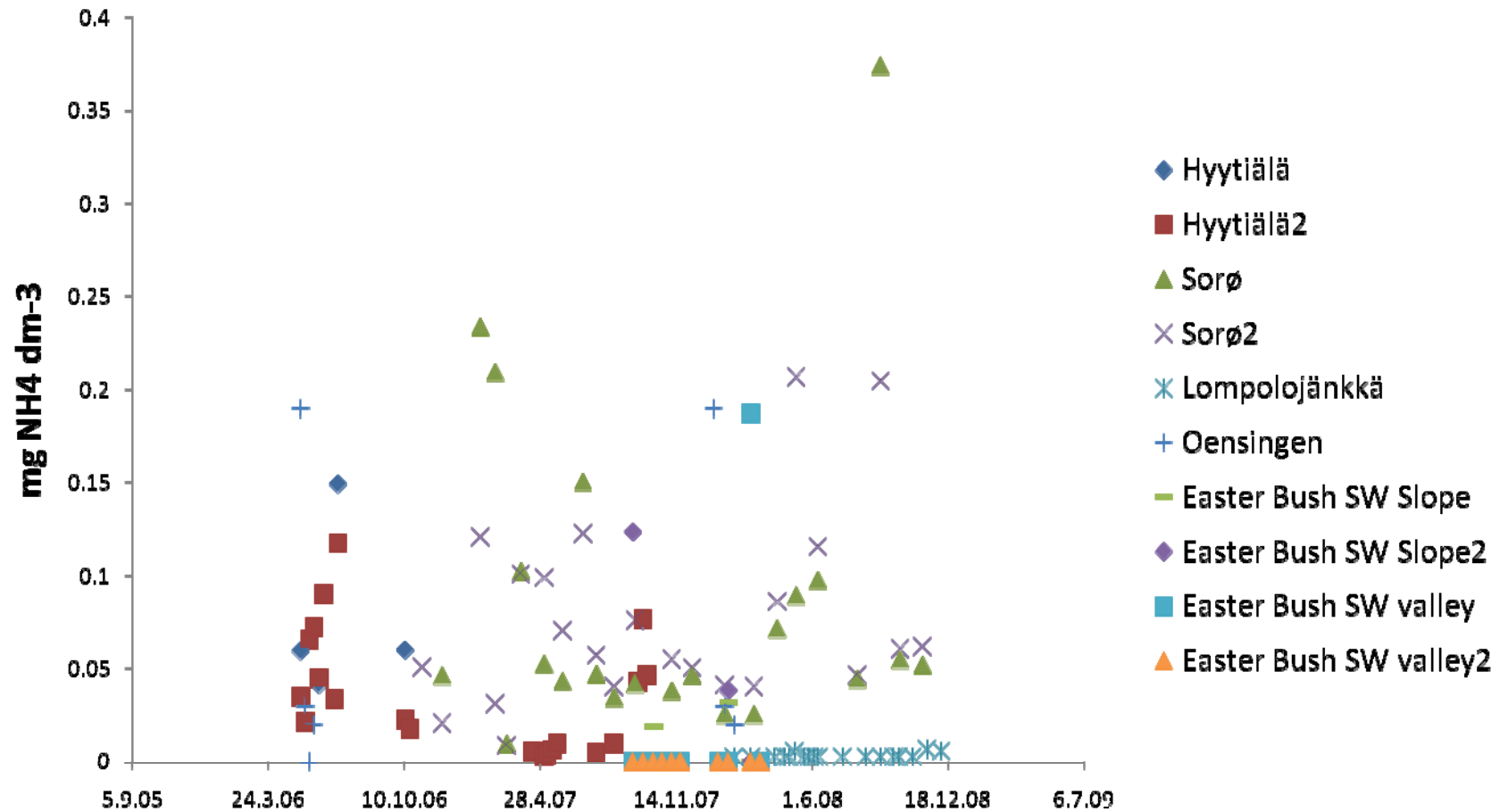
# Leaching NO<sub>3</sub>, small values



# Soil water NH<sub>4</sub>

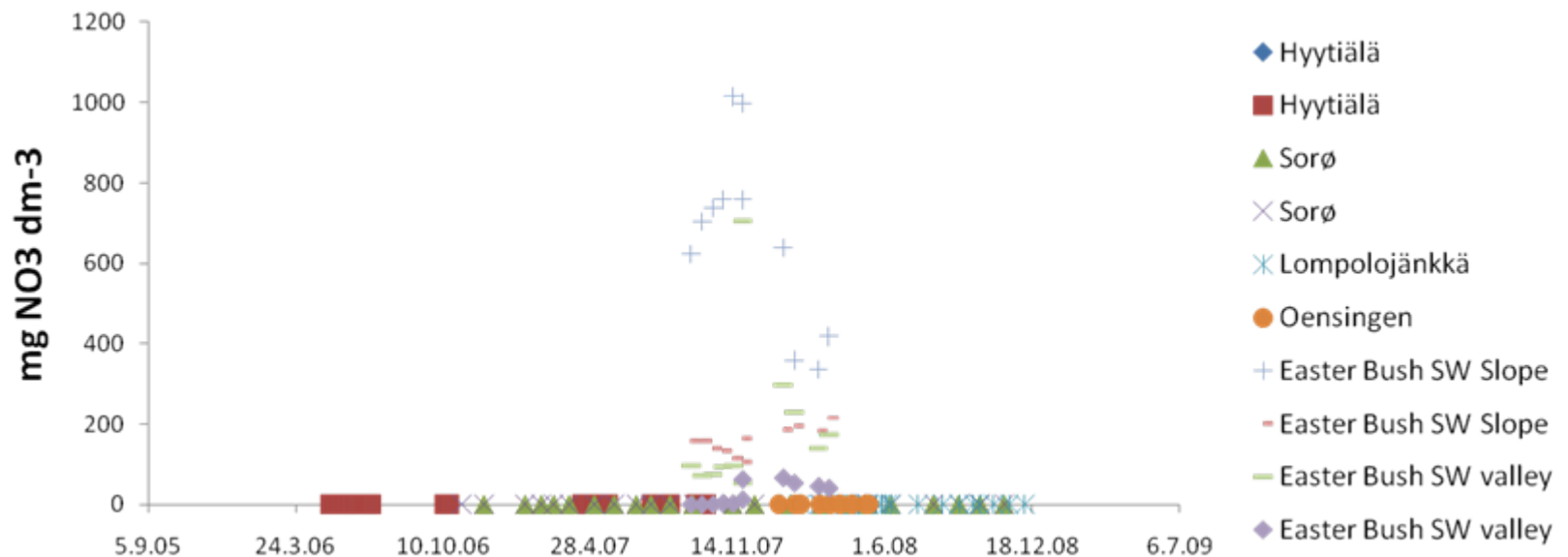
- Most sites do not have suction cups
- Oensingen (and others): very long sampling period
- Easter Bush, standard error or standard deviation (varies, check that they are right) dates partly missing
- Easter Bush 12.9.07 0.8mg NH<sub>4</sub> dm<sup>-3</sup>
- Lompolojännkä, concentrations from stream

# Soil water NH<sub>4</sub>

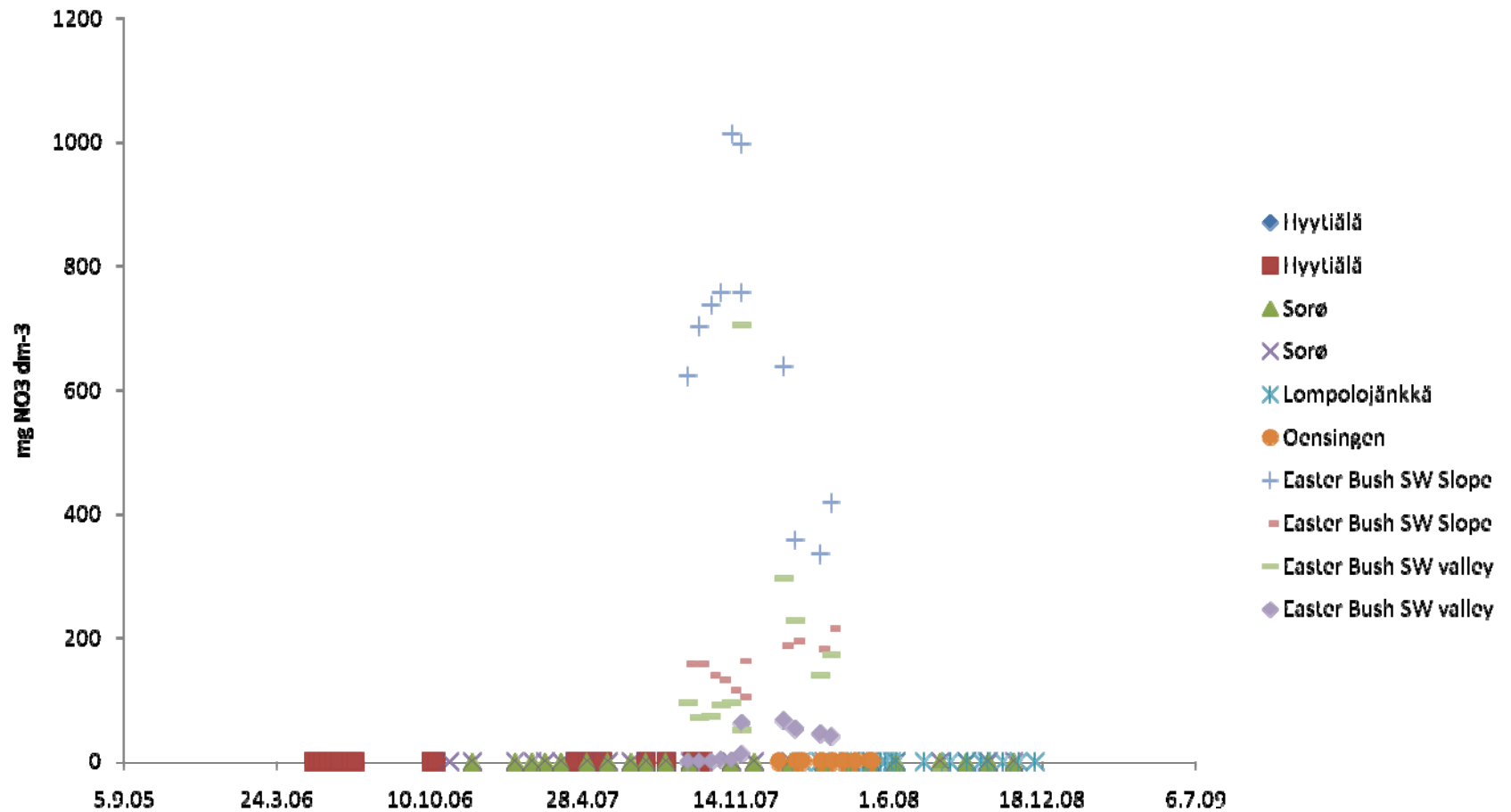


# Soil water NO3

- Lompolojänkkä, concentrations from stream
- Easter Bush, very high values, are the units mg NO3 dm<sup>-3</sup> or still ppm?

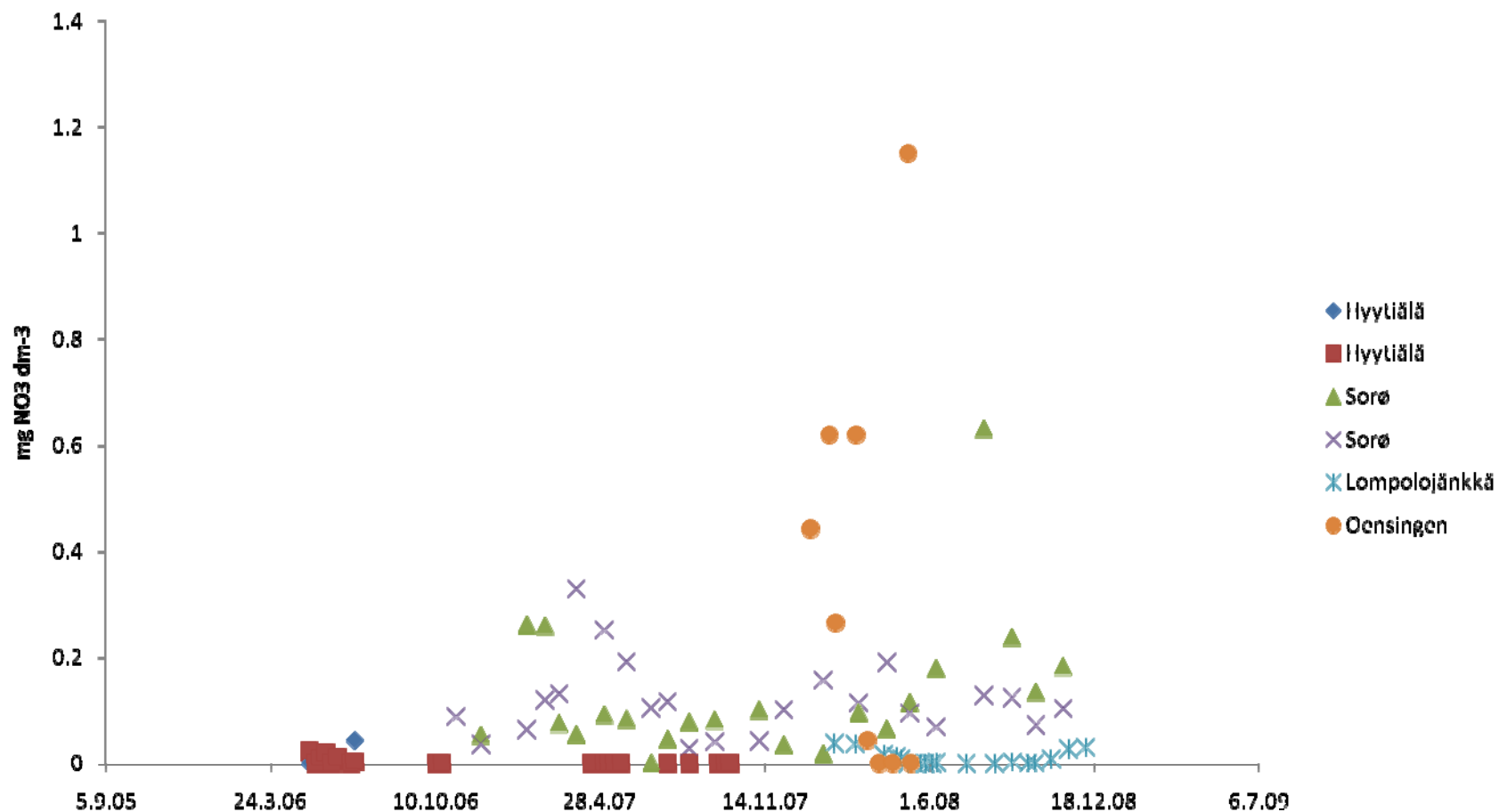


# Soil water NO3



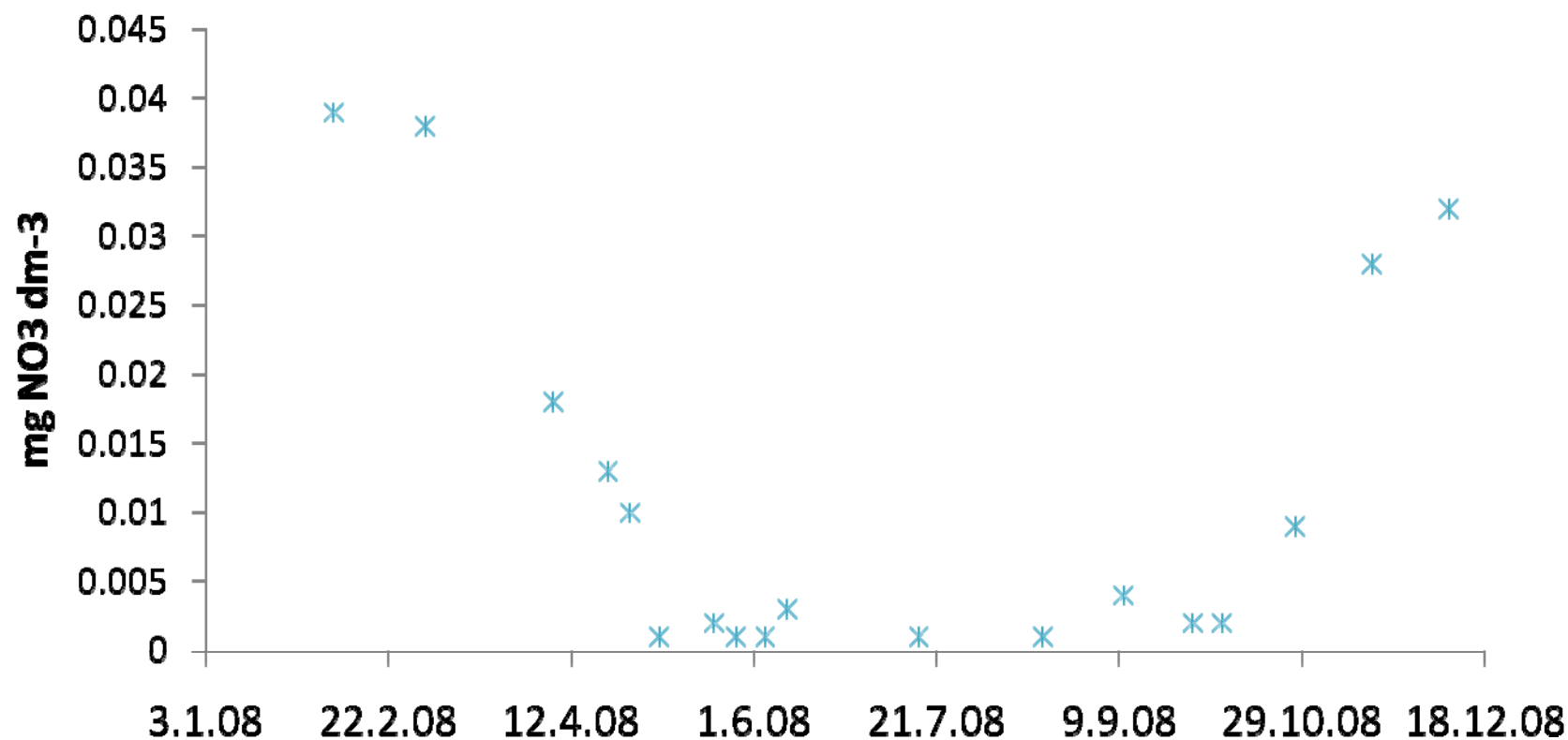


# Soil water NO3



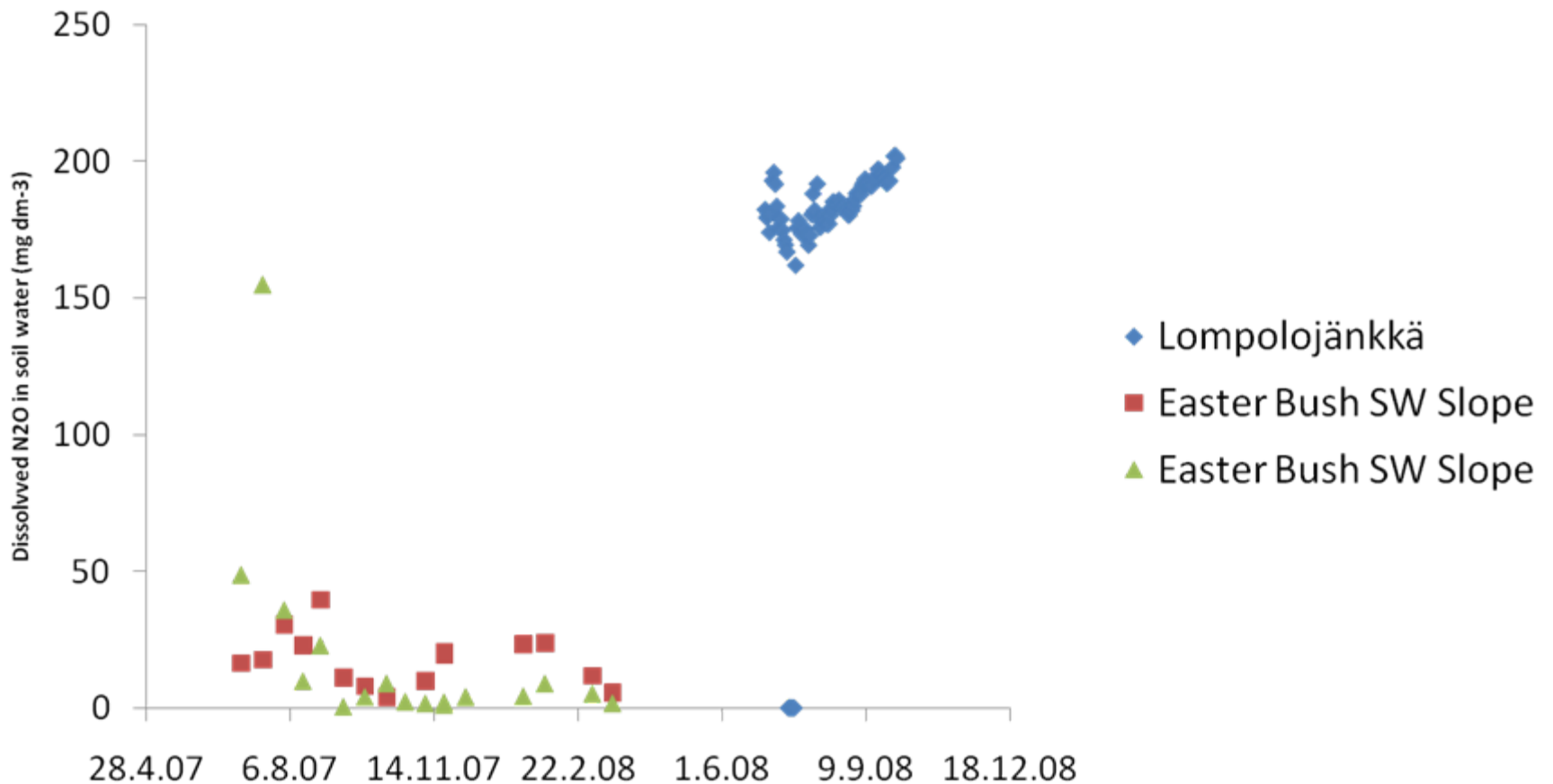
# Soil water NO3

## Soil water NO3, Lompolojänkkä

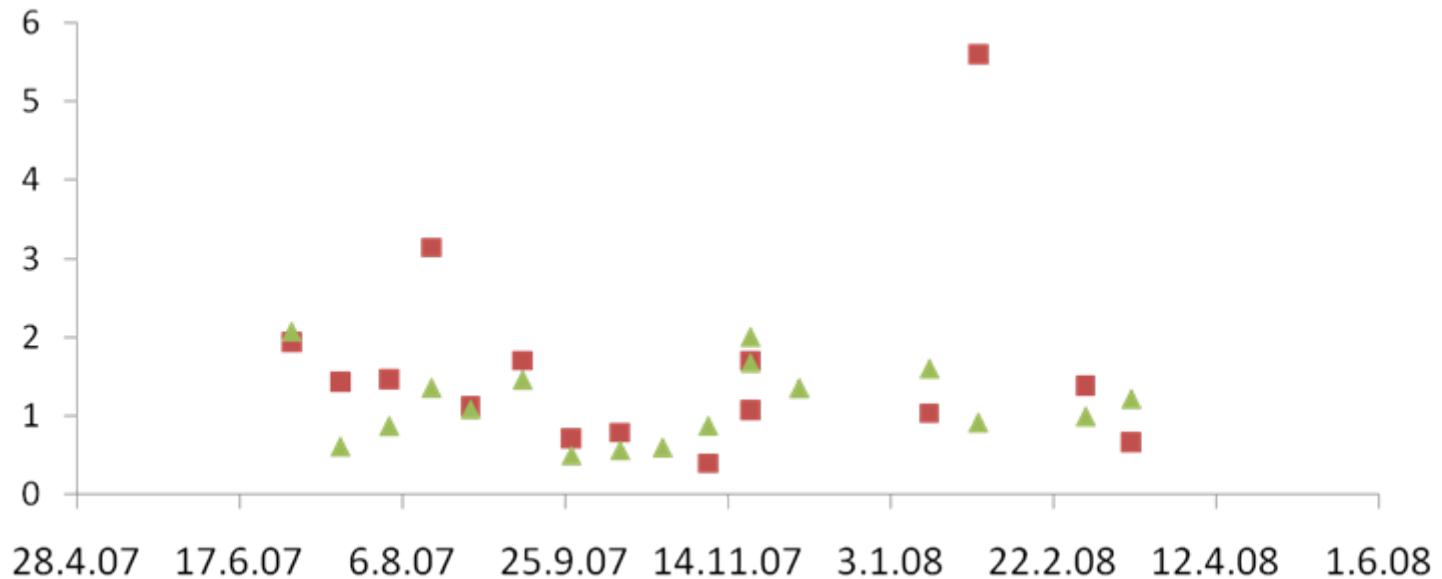
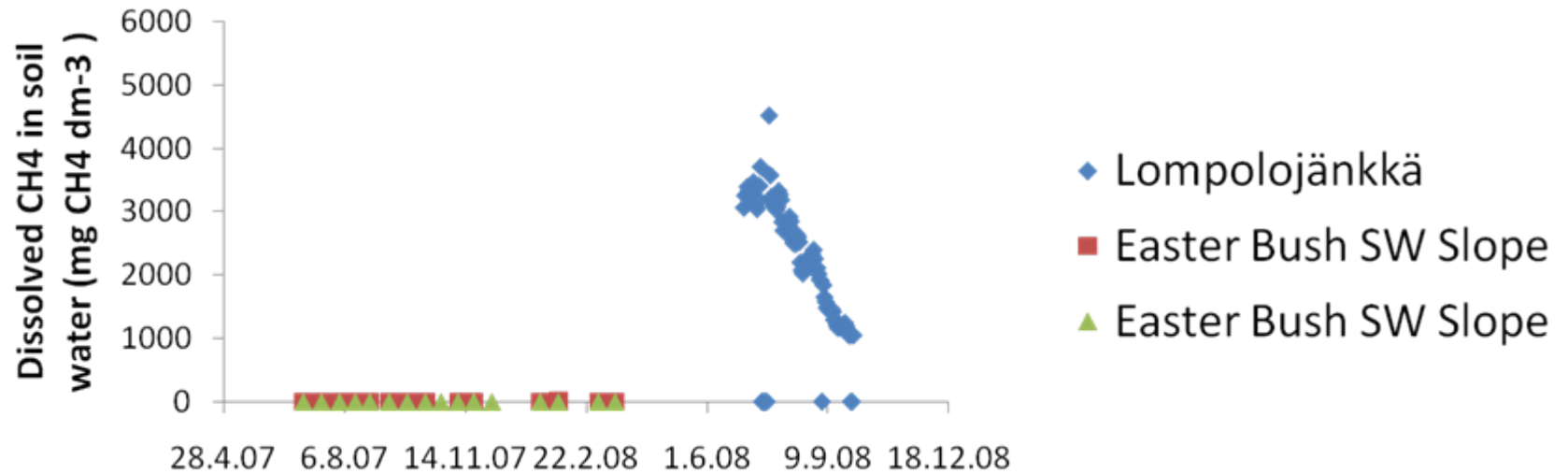


# Soil water N<sub>2</sub>O

- There is data for Auchencorth, but no dates



# Soil water CH<sub>4</sub>



Leaching/Runoff Hyytiälä, kg ha<sup>-1</sup>,  
2006

Annual-NO<sub>3</sub>-N 0.08

Annual-NH<sub>4</sub>-N 0.24

Annual-tot-N 1.02