

***Interactive comment on* “Estimating nitrogen fluxes at the European scale by upscaling INTEGRATOR model outputs from selected sites” by G. J. Reinds et al.**

**Anonymous Referee #2**

Received and published: 13 August 2012

**General comments**

The manuscript on “Estimating nitrogen fluxes at the European scale by upscaling INTEGRATOR model outputs from selected sites” by G.J.Reinds et al. represents an interesting and very instructive presentation on N behaviour modelling in the European scale. I classify the scientific significance, scientific quality, and presentation quality as excellent, and I can give positive answer to all 15 aspects listed in the referees’ guidelines. I recommend only minor revision of the text.

**Specific comments**

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- Specify in the abstract the No. of sites in the EU27 dataset.
- What is an average size of NCU?
- Where were loams put, to sands or to clays in your division?
- Is setting up the values of weights (p. 7, l. 17) arbitrary or based on an analysis?
- The number of clusters in each land use type was set equal (50; p. 8, l. 4). Wouldn't it be better to set the number relative to the total number of data in each type?
- Grouping of Denmark to one cluster is not so apparent (p. 11, l. 30). It is clearer for example to the Czech Republic. This effect is probably caused also by low No. of sites in some countries.
- Why the results of grasslands are not discussed in chapter 3.2.1.?
- How are the clusters obtained by different methods ordered in fig. 1? Is there any correspondence between numbers of corresponding numbers, or are they random and independent?
- What are the statistical parameters described in fig. 2, means or medians,....?
- How many countries are shown in graphs on fig. 6?

### Technical corrections

- Change “manifest” to “manifested” on p. 2, l. 1.
- Use “Galloway et al., 2003; 2008...” instead of “Galloway et al., 2003; Galloway et al., 2008; ...”

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Comment**

- Be consistent in using EU27, EU 27, or EU-27 throughout the text.
- Be consistent in using the term “natural” or “forest” for the land use type.
- Put M on p. 5, l. 19 in italics. The same for symbol description for eq. 1 to 4 on p. 9.
- Put 2004 in brackets on p. 2, l. 29.
- Maechler (2009) (p. 7, l. 30) is not in the references list.
- “Medoids” (p. 10, l. 24) are not defined, though the meaning is clear.
- The largest value for N-fertilizer according to the fig. 2 is for cluster 45, not 46 as it is written in the text (p. 11, l. 21).
- Put the sentence “Simple random sampling of three sites within each of the 150 clusters yielded the 450 sites given in Figure 5.” forward. Reasoning for putting it into the context of the end of chapter 3.1 is not clear to me.
- Dot is missing after “emission” on p. 13, l.1.
- Using doi number in the references is not consistent. Follow the journal guidelines.
- Which data are put in italics in table 2, as it is mentioned in the title? I did not find any.
- Use indexes in chemical formulas in table 2.

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Interactive comment on Biogeosciences Discuss., 9, 6335, 2012.

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