# KEES JAN VAN GROENIGEN, PHD

Assistant Research Professor
Center for Ecosystem Science and Society
Northern Arizona University
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## EDUCATION

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| 2007 | PhD, Wageningen University, the Netherlands.<br>Project: Linking soil C and N dynamics in managed ecosystems under elevated $CO_2$.<br>Advisors: Prof. Nico van Breemen and Prof. Chris van Kessel.<br>Thesis and defence were both rated "very good" (i.e. top 20%). |
| 2002 | MSc Soil Science, Wageningen University, the Netherlands.<br>Project: Chemical litter characteristics of Kauri (*Agathis australis*) and resulting influence on organic matter dynamics.<br>Advisors: Prof. Nico van Breemen and Dr. Peter Buurman. |
| 1999 | BSc Soil, Water and Atmosphere, Wageningen University, the Netherlands.<br>Passed the propaedeutic exam *cum laude*. |

## PROFESSIONAL POSITIONS

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| 2015-present | Assistant Research Professor. Center for Ecosystem Science and Society, Northern Arizona University, Flagstaff, AZ, USA. |
| 2013-2014 | Postdoctoral scholar. Center for Ecosystem Science and Society, Northern Arizona University, Flagstaff, AZ, USA. |
| 2010-2013 | - IRC-Marie Curie Research fellow. Department of Botany, Trinity College Dublin, Ireland.<br>- Visiting scientist. Merriam Powell Center for Environmental Research, Northern Arizona University, Flagstaff, AZ, USA. |
| 2007-2010 | Research fellow. Department of Botany, Trinity College Dublin, Ireland. |
| 2002-2006 | - Postgraduate researcher (0.5 fte). Laboratory of Soil Science and Geology, Wageningen University, the Netherlands.<br>- Professional researcher (0.5 fte). Department of Plant Sciences, University of California – Davis, CA, USA. |
| 2000-2001 | Research assistant. Department of Agronomy and Range Science, University of California – Davis, CA, USA. |

## SCHOLARSHIPS AND AWARDS

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| 2014 | The C.T. de Wit graduate school travel grant (€3800,-) |
| 2010 | IRC-Marie Curie International Mobility Fellowship in Science, Engineering and Technology (€212.976,-) |

## PROFESSIONAL SERVICES

2012-2015 Section editor, *Plant and Soil.*

2002-present Reviewer for the following journals: *Agriculture, Ecosystems and Environment*; *Biogeochemistry; Biogeosciences; Ecology; Ecology Letters; European Journal of Soil Biology; European Journal of Soil Science; Field Crops Research; Frontiers in Ecology and Environment; Geoderma; Global Change Biology*; *GCB Bioenergy*; *Journal of Ecology*; *Journal of Environmental Quality; Journal of Soils and Sediments; Nature Climate Change; Nature Geoscience; Plant and Soil; Proceedings of the National Academy of Sciences; Rapid Communications in Mass Spectrometry; Science of the Total Environment; Soil Biology and Biochemistry; Soil Research* and *Soil Science.*

2012-2014 Outstanding Student Paper Awards (OSPA) Judge at AGU Fall Meeting.

2011-2012 Consulting editor, *Plant and Soil*.

2006-2009 Reviewer of research proposals and pre-proposals for the Department of Energy (USA) - National Institute for Climate Change Research.

## TEACHING EXPERIENCE

2011-present Guest lecturer at Northern Arizona University:
- Meta-Analysis in Ecology and Evolution (MSc).
- Introduction to Ecology (BSc).
- Microbial Ecology (MSc).
- Ecosystems and Climate Change (BSc).
- Plants and Climate (BSc).

2015 Guest lecturer at IBED Masterclass (MSc), University of Amsterdam.

2013 External thesis advisor, BSc student Joanne de Jong, Wageningen University.

2009-2012 Guest lecturer at Trinity College Dublin:
- Global Environmental Change (BSc).
- Scientific paper review class (BSc).

2007-2010 Supervising lab- and fieldwork of 2 graduate students:
- Marta Dondini. PhD project: "Tracking soil C input under *Miscanthus*".
- Niamh Smyth. MSc project: "Estimation of DOC and DON concentrations under *Miscanthus* x *giganteus* and *Lolium perenne*".

## OTHER ACADEMIC ACTIVITIES

2011-2015
- Member of search committee for post doctoral scholars in the Center for Ecosystem Science and Society, Northern Arizona University.
- Joined a month-long international field expedition to study microbiology of hot springs in Yunnan province, China.
- Poster judge Undergraduate Research and Design Symposium, Northern Arizona University.

2007-2010
- Research coordinator for the project "Managing soil organic C in Irish agricultural systems", Trinity College Dublin. This project employed 3 post doctoral researchers and 2 graduate students.
- Post doctoral representative at departmental meetings, Trinity College Dublin.
- Organizer of monthly research group meetings, Trinity College Dublin.
- Wrote content for the website of the Ecophysiology and Soil Science research group at Trinity College Dublin.

## PUBLICATIONS IN REFEREED JOURNALS

1. **van Groenigen KJ**, Xia J, Osenberg CW, Luo Y, Hungate BA (2015). Application of a two-pool model to soil carbon dynamics under elevated $CO_2$. *Global Change Biology* 21, 4293-4297.
2. Lubbers IM, **van Groenigen KJ**, Brussaard L, van Groenigen JW (2015). Reduced greenhouse gas mitigation potential of no-tillage soils through earthworm activity. *Scientific Reports* 5, 13787.
3. Pittelkow CM, Linquist BA, Lundy M, Liang X, **van Groenigen KJ**, Lee J, van Gestel N, Six J, Venterea RT, van Kessel C (2015). When does no-till yield more? A global meta-analysis. *Field Crops Research* 183, 156-168.
4. Lundy M, Pittelkow CM, Linquist BA, Liang X, **van Groenigen KJ**, Lee J, Six J, Venterea RT, van Kessel C (2015). Nitrogen fertilization reduces yield declines following no-till adoption. *Field Crops Research* 183, 204-210.
5. Dijkstra P, Salpas E, Fairbanks D, Miller EB, Hagerty SB, **van Groenigen KJ**, Hungate BA, Marks JC, Koch GW, Schwartz E (2015). High carbon use efficiency in soil microbial communities is related to balanced growth, not storage compound synthesis. *Soil Biology & Biochemistry* 89, 35-43.
6. Pittelkow CM, Liang X, Linquist BA, **van Groenigen KJ**, Lee J, Lundy ME, van Gestel N, Six J, Venterea RT, van Kessel C (2015). Productivity limits and potentials of the principles of conservation agriculture. *Nature* 517, 365-368.
7. Hagerty SB, **van Groenigen KJ**, Allison SD, Hungate BA, Schwartz E, Koch GB, Kolka RK, Dijkstra P (2014). Accelerated microbial turnover but constant growth efficiency with warming in soil. *Nature Climate Change* 4, 903-906.
8. van Groenigen JW, Lubbers IM, Vos HMJ, Brown GG, De Deyn GB, **van Groenigen KJ** (2014). Earthworms increase plant production: a meta-analysis. *Scientific Reports* 4, 6365.
9. **van Groenigen KJ**, Qi X, Osenberg CW, Luo Y, Hungate BA (2014). Faster decomposition under increased atmospheric $CO_2$ limits soil carbon storage. *Science* 344, 508-509.
10. Linquist B, Liu L, van Kessel C, **van Groenigen KJ** (2013). Enhanced efficiency nitrogen fertilizers for rice systems: meta-analysis of yield and nitrogen uptake. *Field Crops Research* 154, 246-254.
11. **van Groenigen KJ**, Forristal D, Smyth N, Jones M, Hungate BA, Schwartz E, Dijkstra P (2013). Using metabolic tracer techniques to assess the impact of tillage and straw management on microbial carbon use efficiency in soil. *Soil Biology and Biochemistry* 66, 139-145.
12. Lubbers IM, **van Groenigen KJ**, Fonte SJ, Six J, Brussaard L, van Groenigen JW (2013). Greenhouse-gas emissions from soils increased by earthworms. *Nature Climate Change* 3, 187-194.
13. **van Groenigen KJ**, van Kessel C, Hungate BA (2013). Increased greenhouse-gas intensity of rice production under future atmospheric conditions. *Nature Climate Change* 3, 288-291.
14. van Kessel C, Venterea R, Six J, Adviento-Borbe MA, Linquist B, **van Groenigen KJ** (2013). Climate, duration and N placement determine $N_2O$ emissions in reduced tillage systems: a meta-analysis. *Global Change Biology* 19, 33-44.
15. Dauber J, Brown C, Fernando AL, Finnan J, Krasuska E, Ponitka J, Styles D, Thrän D, **van Groenigen KJ**, Weih M, Zah R (2012). Bioenergy from "surplus" land: environmental and socio-economic implications. *BioRisk* 7, 5-50.
16. Linquist B, Adviento-Borbe MA, Pittelkow C, **van Groenigen KJ** (2012). Fertilizer management practices and greenhouse gas emissions from rice systems: a quantitative analysis and review of the literature. *Field Crops Research* 135, 10-21.
17. Brown JR, Blankinship JC, Niboyet A, **van Groenigen KJ**, Dijkstra P, Hungate BA (2012). Effects of multiple global change treatments on soil $N_2O$ fluxes in annual grassland. *Biogeochemistry* 109, 85-100.

18. Linquist B, **van Groenigen KJ,** Adviento-Borbe A, Pittelkow C, Van Kessel C (2012). An agronomic assessment of greenhouse gas emissions from major cereal crops. *Global Change Biology* 18, 194-209.
19. **van Groenigen KJ**, Osenberg C, Hungate BA (2011). Increased soil emissions of potent greenhouse gases under increased atmospheric $CO_2$. *Nature* 475, 214-216.
20. **van Groenigen KJ**, Hastings A, Forristal D, Roth B, Jones M, Smith P (2011). Soil C storage as affected by tillage and straw management: an assessment using field measurements and model predictions. *Agriculture, Ecosystems and Environment* 140, 218-225.
21. **van Groenigen KJ**, Bloem J, Bååth E, Boeckx P, Rousk J, Bode S, Forristal D, Jones M (2010). Abundance, production and stabilization of microbial biomass under conventional and reduced tillage. *Soil Biology and Biochemistry* 42, 48-55.
22. van Groenigen JW, Velthof G, Oenema O, **van Groenigen KJ**, van Kessel C (2010). Towards an agronomic assessment of $N_2O$ emissions: a case study for arable crops. *European Journal of Soil Science* 61, 903-913.
23. Dondini M, **van Groenigen KJ**, Del Galdo I, Jones M (2009). Carbon sequestration under *Miscanthus*: a study of $^{13}C$ distribution in soil aggregates. *Global Change Biology Bioenergy* 1*,* 321-330.
24. Hungate BA, **van Groenigen KJ**, Six J, Jastrow JD, Luo Y, de Graaff MA, van Kessel C, Osenberg CW (2009). Assessing the effect of elevated $CO_2$ on soil carbon: a comparison of four meta-analyses. *Global Change Biology* 15*,* 2020-2034*.*
25. **van Groenigen KJ**, Six J, Harris D, van Kessel C (2007). Elevated $CO_2$ does not favor a fungal decomposition pathway. *Soil Biology and Biochemistry* 39, 2168-2172*.*
26. de Graaff MA, **van Groenigen KJ**, Six J, Hungate B, van Kessel C (2006). Interactions between plant growth and soil nutrient cycling under elevated $CO_2$: a meta-analysis*. Global Change Biology* 12, 2077-2091.
27. **van Groenigen KJ**, Six J, Hungate BA, de Graaff MA, van Breemen N, van Kessel C (2006). Element interactions limit soil C storage. *PNAS* 103, 6571-6573.
28. **van Groenigen KJ**, Gorissen A, Six J, Harris D, Kuikman P, van Groenigen JW, Van Kessel C (2005). Decomposition of $^{14}C$-labeled roots in a pasture soil exposed to 10 years of elevated $CO_2$. *Soil Biology and Biochemistry* 37, 497-506.
29. **van Groenigen KJ**, Six J, Harris D, Blum H, van Kessel C (2003). Soil $^{13}C$-$^{15}N$ dynamics in an $N_2$-fixing clover system under long-term exposure to elevated atmospheric $CO_2$. *Global Change Biology* 9, 1751-1762.
30. **van Groenigen KJ**, Harris D, Horwath W, Hartwig UA, van Kessel C (2002). Linking $^{13}C$- and $^{15}N$-dynamics in aggregates of a pasture soil after 8 years of elevated atmospheric $CO_2$. *Global Change Biology* 8, 1094-1108.

## REFEREED BOOK CHAPTERS

1. **van Groenigen KJ**, de Graaff MA, Six JW, Harris D, Kuikman P, van Kessel C (2006). The impact of elevated atmospheric $CO_2$ on soil C and N dynamics: a meta-analysis. In: Nösberger J, Long SP, Norby RJ, Stitt M, Hendrey GR, Blum H (Eds.) *Managed ecosystems and $CO_2$ case studies, processes and perspectives*. Springer-Verlag, Berlin Heidelberg, pp. 373-392.
2. **van Groenigen KJ** (2007). Linking soil C and N dynamics in managed ecosystems under elevated $CO_2$. *PhD thesis, Wageningen University, ISBN 90-8504-626-2.*

## PUBLICATIONS UNDER REVIEW

1. Luo Y, Ahlström A, Allison SD, Batjes NH, Brovkin V, Carvalhais N, Chappell A, Ciais P, Davidson E, Finzi A, Georgiou K, Guenet B, Hararuk O, Harden JW, He Y, Hopkins F, Jiang L, Koven C, Jackson RB, Jones C, Lara M, Liang J, McGuire AD, Parton W, Peng C, Randerson J, Salazar A, Sierra C, Smith M, Tian H, Todd-Brown KEO, Torn M, **van Groenigen KJ**, Wang YP, West TO, Wei Y, Wieder WR, Xia J, Xu X, Xu X, Zhou T (2015). Towards more realistic projections of soil carbon dynamics by Earth System Models. *Under review with Global Biogeochemical Cycles.*
2. Liu XJ, **van Groenigen KJ**, Dijkstra P, Hungate BA (2015). Increased plant uptake of native soil nitrogen with fertilizer addition: a result of plant- and microbe- mediated mechanisms. *Under review with Soil Biology and Biochemistry.*
3. Van Gestel N, Shi Z, **van Groenigen KJ**, Luo Y, Osenberg C, Dukes JS, Andresen LC, Michelsen A, Schuur T, Hungate BA (2015). Little change in soil carbon storage with warming. *Under review with Nature.*

## NON-REFEREED PUBLICATIONS

1. Lubbers IM, **van Groenigen KJ**, Fonte SJ, Six J, Brussaard L, van Groenigen JW (2013). Greenhouse-gas emissions from soils increased by earthworms: opening a can of worms. *"The Carbon Brief"* (*http://www.carbonbrief.org/blog/2013/02/greenhouse-gas-emissions-from-soils-increased-by-earthworms-opening-a-can-of-worms).*
2. van Groenigen JW, Velthof G, Oenema O, **van Groenigen KJ**, van Kessel C (2011). Best nitrogen management practices to decrease greenhouse gas emissions. *Better Crops* 95, 16-17.

## INVITED INTERDEPARTMENTAL SEMINARS

1. **van Groenigen KJ** (2015). Microbial feedbacks to elevated atmospheric $CO_2$. *University of Amsterdam, Institute for Biodiversity and Ecosystem Dynamics, Amsterdam, the Netherlands.*
2. **van Groenigen KJ** (2014). Faster decomposition under increased atmospheric $CO_2$ limits soil carbon storage. *Wageningen University, Department of Soil Quality, Wageningen, the Netherlands.*
3. **van Groenigen KJ** (2013). Future atmospheric conditions increase the greenhouse-gas intensity of rice production. *University of Oklahoma, Department of Microbiology and Plant Biology, Norman, USA*
4. **van Groenigen KJ** (2011). From the ground up: soil and plant feedbacks to rising atmospheric $CO_2$. *Northern Arizona University Biology Departmental Seminar, Flagstaff, USA.*

## INVITED ORAL PRESENTATIONS (CONFERENCES AND WORKSHOPS)

1. **van Groenigen KJ** (2015) Informing soil carbon models with data from global change experiments: challenges and opportunities. *AGU Fall Meeting, San Francisco, USA.*
2. **van Groenigen KJ,** van Kessel C, Pittelkow C, Linquist B, Six J, Venterea R, Lee J, Lundy M, Liang X, van Gestel N (2015). Meta-analysis in agricultural research: strengths, limitations and challenges. *ASA, CSSA & SSSA International Annual Meeting, Minneapolis, USA.*
3. **van Groenigen KJ,** Qi X, Osenberg CW, Luo Y, Hungate BA (2014). Faster decomposition under increased atmospheric $CO_2$ limits soil carbon storage. *Workshop: Representing soil carbon dynamics in global land models to improve future IPCC assessments, Breckenridge, USA.*
4. **van Groenigen KJ**, Osenberg CW, Hungate BA (2011). Elevated $CO_2$ increases soil emissions of potent greenhouse gases and stimulates soil C turnover. *AGU Fall Meeting, San Francisco, USA.*

## ORAL PRESENTATIONS (CONFERENCES AND WORKSHOPS)

1. **van Groenigen KJ**, van Gestel N, Xia J, Osenberg CW, Luo Y, Hungate BA (2015). Application of a two-pool model to ecosystem carbon dynamics under global change. *Wageningen Soil Meeting, Wageningen, the Netherlands.*

2. van Groenigen JW, **van Groenigen KJ**, Lubbers I (2015). Does the effect of earthworms on the soil greenhouse gas balance differ between farming systems? *Wageningen Soil Meeting, Wageningen, the Netherlands.*
3. Dijkstra P, Hagerty S, **van Groenigen KJ**, Hungate BA, Marks JC, Koch GW, Schwartz E (2015) Biochemistry and ecology of carbon use efficiency in soil ecosystems. *ESA Annual Meeting, Baltimore, USA.*
4. van Groenigen JW, Lubbers IM, Vos HMJ, Brown GG, De Deyn GB, **van Groenigen KJ** (2014). Earthworms increase crop yield. But how? A meta-analysis. *ISEE-10, Athens, USA.*
5. Linquist B, **van Groenigen KJ,** Liu L (2013). Enhanced efficiency nitrogen fertilizers for rice systems: meta-analysis of effects on yield and nitrogen uptake. *Annual ASA Meeting, Tampa, USA.*
6. Pittelkow CM, Liang X, Lundy ME, **van Groenigen KJ**, Lee J, Venterea RT, Linquist B, van Kessel C (2013). Meta-analysis on yield and no-tillage: I. Climate, water, and no-till duration. *Annual ASA Meeting, Tampa, USA.*
7. Liang X, Pittelkow CM, **van Groenigen KJ**, Six J, Linquist B, van Kessel C, Lundy ME (2013). Meta-analysis on yield and no-tillage: II. Management of crops, residue, and nitrogen. *Annual ASA Meeting, Tampa, USA.*
8. Dijkstra P, **van Groenigen KJ**, Hagerty S, Salpas E, Fairbanks D, Hungate B, Koch G, Schwartz E, Thomas S, Hedlund B (2013). C cycling in microbial communities – metabolic pathways and efficiencies in soils and hot springs*. Symposium: China-US Collaborative Research on Life in Terrestrial Geothermal Springs. Kunming, China.*
9. Dijkstra P, **van Groenigen KJ**, Hagerty S, Hungate BA, Koch G, Schwartz E (2012). Measuring and modeling C flux rates through the central metabolic pathways in microbial communities using position-specific $^{13}$C-labeled tracers. *AGU Fall Meeting, San Francisco, USA.*
10. Linquist B, **van Groenigen KJ**, Adviento-Borbe A, Pittelkow C, van Kessel C (2011). Greenhouse gas emissions and yield-scaled global warming potential of major cereal crops. *Wageningen Soil Meeting, Wageningen, the Netherlands.*
11. Linquist B**, van Groenigen KJ**, Adviento-Borbe A, Pittelkow C, van Kessel C (2011). An agronomic assessment of greenhouse gas emissions from major cereal crops. *Annual ASA Meeting, San Antonio, USA.*
12. Hastings A, Wattenbach M, Dondini M, **van Groenigen KJ**, Jones M, Smith P (2010). Modelling long term trends in soil organic matter dynamics using long term experiments. *International Symposium on Soil Organic Matter Dynamics in Long-Term Experiments and Their Modelling, Kursk, Russia.*
13. Peterse F, Schouten S, Fierer N, Jackson R, Nicol G, Weijers J, **van Groenigen KJ**, Wiesenberg G, Jia G, Sinninghe Damsté J (2009). Environmental controls on the bacterial tetraether membrane lipid distribution in soils: Implications for the MBT/CBT temperature proxy. *IMOG, Bremen, Germany.*
14. van Kessel C, van Groenigen JW, **van Groenigen KJ**, Oenema O, Velthof GL (2009). Towards an agronomic assessment of $N_2O$ emissions. *Annual ASA Meeting, Pittsburgh, USA.*
15. **van Groenigen KJ** (2005)**.** The impact of elevated $CO_2$ on soil C and N dynamics: a meta-analysis**.** *Sense Summer Symposium, Ede, the Netherlands.*
16. **van Groenigen KJ**, de Graaff MA, Six J, van Kessel C (2004). Soil C and N dynamics in natural and managed ecosystems under elevated atmospheric $CO_2$. *Annual ASA Meeting, Seattle, USA.*
17. **van Groenigen KJ**, Gorissen A, Six J, Harris D, Kuikman P, van Groenigen JW, van Kessel C (2003). Decomposition of $^{14}$C-labeled roots in a pasture soil exposed to 10 years of elevated atmospheric $CO_2$ concentration. *Annual ASA Meeting, Denver, USA.*
18. **van Groenigen KJ**, Harris D, Horwath W, Hartwig UA, van Kessel C (2001). Linking $^{13}$C and $^{15}$N dynamics in a pasture soil after 8 years of elevated $CO_2$. *Annual ASA Meeting, Charlotte, USA.*

## POSTER PRESENTATIONS (CONFERENCES AND WORKSHOPS)

1. Hagerty S, **van Groenigen KJ**, Schwartz E, Hungate BA, Koch, GW, Dijkstra P (2015) Influence of varying nitrogen availability on soil microbial growth efficiency. *ESA Annual Meeting, Baltimore, USA.*
2. Dijkstra P, **van Groenigen KJ** (2015). High carbon use efficiency is not explained by production of storage compounds. *EGU General Meeting, Vienna, Austria.*
3. **van Groenigen KJ**, van Gestel N, Hungate BA (2014). A new approach to synthesizing results from global change experiments. *TES SBR PI Meeting, Potomac, USA.*
4. **van Groenigen KJ**, Forristal D, Jones MB, Schwartz E, Hungate BA, Dijkstra P (2013). Using isotopic tracers to assess the impact of tillage and straw management on the microbial metabolic network in soil. *AGU Fall Meeting, San Francisco, USA.*
5. Hagerty S, **van Groenigen KJ**, Schwartz E, Hungate BA, Dijkstra P (2013). Effects of temperature on microbial C metabolism in peat. *AGU Fall Meeting, San Francisco, USA.*
6. **van Groenigen KJ**, van Kessel C, Hungate BA (2012). Future atmospheric conditions increase the greenhouse-gas intensity of rice production. *AGU Fall Meeting, San Francisco, USA.*
7. Hungate B**, van Groenigen KJ**, Osenberg, C (2011). Soil C turnover under elevated $CO_2$; an integrative meta-analytic approach. *Wageningen Soil Meeting, Wageningen, the Netherlands.*
8. Lubbers IM, Fonte SJ, Six J, **van Groenigen KJ**, Brussaard L, van Groenigen JW (2011). Earthworm effects on the greenhouse gas balance of soil: are earthworms good or bad for global warming? *Wageningen Soil Meeting, Wageningen, the Netherlands.*
7. **van Groenigen KJ**, Osenberg CW, Hungate BA (2010). Soil emissions of $CH_4$ and $N_2O$ in natural and managed ecosystems under elevated $CO_2$. *AGU Fall Meeting, San Francisco, USA.*
8. **van Groenigen KJ**, Jones MB (2008). Reduced soil tillage affects the concentration, production and stabilization of microbial biomass. *AGU Fall Meeting, San Francisco, USA.*
9. Smyth NM, **van Groenigen KJ**, Jones MB (2008) Estimation of DOC fluxes under *Miscanthus* and *Lolium* pasture; effects of land use change. *Eurosoil 2008, Vienna, Austria.*
10. Dondini M, **van Groenigen KJ**, Jones MB (2008). Soil $^{13}C$ dynamics in aggregates across a soil profile under an established *Miscanthus* system. *AGU Fall Meeting, San Francisco, USA.*
11. **van Groenigen KJ**, Albanito F, Carroll F, Dondini M, Fitton N, Abdalla M, Smyth NM, Burke J, Williams M, Jones M (2008). Carbon and nitrogen fluxes in Irish agricultural systems: impacts of climate change and land management. *Environ, Dundalk, Ireland.*
12. **van Groenigen KJ**, de Graaff MA, Chung H, Six J, Hungate BA, van Kessel C (2006). Plant growth and soil organic matter dynamics under elevated $CO_2$: a meta-analysis. *World Congress of Soil Science, Philadelphia, USA.*
13. de Graaff MA, **van Groenigen KJ,** Six J, Hungate BA, van Kessel C (2005). Plant growth and soil nutrient cycling under elevated $CO_2$: a meta-analysis. *AGU Fall Meeting, San Francisco, USA.*
14. **van Groenigen KJ**, Gorissen A, Six J, Harris D, Kuikman P, van Groenigen JW, van Kessel C (2004). Decomposition of $^{14}C$-labeled roots in a pasture soil exposed to 10 years of elevated $CO_2$. *The International Free Air $CO_2$ Enrichment (FACE) Workshop: short- and long term effects of elevated $CO_2$ on managed ecosystems*, *Ascona, Switzerland.*
15. **van Groenigen KJ**, Horwath WR, Harris D, van Kessel C (2001). Stability of SOM in pasture soils exposed to long term elevated $CO_2$ concentrations. *Annual ASA Meeting, Charlotte, USA.*

## PUBLIC OUTREACH

Interviews about my 2014 *Science* publication:

- www.laboratoryequipment.com, for their column "Scientist of the week":
  *http://www.laboratoryequipment.com/news/2014/05/scientist-week-kees-jan-van-groenigen*
- www.greenwire.com, www.climatewire.com (behind paywall)
- Dutch newspaper *NRC Handelsblad*:
  *http://www.nrc.nl/handelsblad/van/2014/april/26/bodem-boert-de-co2-weer-omhoog-1369606*

Interview about my 2013 *Nature Climate Change* publication:

- Capitol Public Radio (USA):
  *http://archive2.capradio.org/articles/2012/10/23/rice-crops-may-accelerate-climate-change,-study-says*

Interviews about my 2011 *Nature* publication:

- Dutch newspaper *de Volkskrant*:
  *http://www.volkskrant.nl/vk/nl/2844/Archief/archief/article/detail/2805689/2011/07/15/Klimaatgroen-lekt-gassen.dhtml*
- News agency Reuters:
  *http://mobile.reuters.com/article/corporateResponsibility/idUSTRE76C4ZE20110713*

Interview about my 2006 *PNAS* publication:

- Dutch newspaper *NRC Handelsblad*:
  *http://vorige.nrc.nl/dossiers/energie_en_milieu/klimaatverandering/article1671768.ece*

## REFERENCES

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| Bruce Hungate | Regents Professor in Ecosystem Ecology<br>Director, Center for Ecosystem Science and Society<br>Northern Arizona University, Flagstaff<br>E-mail: bruce.hungate@nau.edu<br>Tel. work: (+1) 928 523 0925 |
| Chris van Kessel | Professor in Agroecology<br>Department Chair<br>Department of Plant Sciences<br>University of California, Davis<br>E-mail: cvankessel@ucdavis.edu<br>Tel. work: (+1) 530 752 7323 |
| Hans Lambers | Winthrop Professor<br>Editor-in-Chief of *Plant and Soil*<br>School of Plant Biology<br>The University of Western Australia, Crawley<br>E-mail: hans.lambers@uwa.edu.au<br>Tel. work: (+61) 6488 7381 |
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| Mike Jones | Professor in Botany<br>Department of Botany<br>Trinity College, Dublin<br>E-mail: mike.jones@tcd.ie<br>Tel. work: (+353) 1 896 1769 |