



Antoine Stevens

Personal details

Date of birth	February 19 th 1979
Place of birth	Woluwé–St–Lambert, Brussels, Belgium
Citizenship	Belgian
Marital Status	Married

Education

2001–2008	Ph.D. , <i>Department of Geography, University of Louvain</i> , Louvain–La–Neuve, Belgium.
1999–2002	Ms.Sc. , <i>Department of Geography, University of Louvain</i> , Louvain–La–Neuve, Belgium.
February–June 2000	Ms.Sc. , <i>Department of Geography, Portsmouth University</i> , Portsmouth, United Kingdom. EU Erasmus programme
1997–1999	Bs.Sc. , <i>Department of Geography, University of Louvain</i> , Louvain–La–Neuve.
1991–1997	College , <i>Institut Saint Boniface-Parnasse</i> , Brussels. Latin–Greek section

Phd thesis

title	<i>Changes in soil organic carbon at regional scales: Strategies to cope with spatial variability</i>
supervisor	<i>Pr. Dr.</i> Bas van Wesemael, Department of Geography, University of Louvain
description	Soil Organic Carbon (SOC) stocks are characterised by a high spatial variability and a slow temporal dynamic, which reduce our ability to detect and explain SOC stock changes. The thesis represented an effort in assessing and detecting SOC stocks and SOC stock changes at the regional scale. Two strategies were explored : (i) using Imaging Spectroscopy as a tool to rapidly determine SOC contents with a high spatial resolution and (ii) using information on land use change history to decrease spatial variability within landscape units.

Professional Experience

2008–present	Post-Doc , <i>Department of Geography, University of Louvain</i> , Louvain–La–Neuve. Developing Imaging Spectroscopy to map surface soil properties at large scales. Research in the framework of the <i>DIGISOIL</i> project.
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- 2001–2008 **Research assistant**, *Department of Geography, University of Louvain, Louvain-La-Neuve*.
Research activities aim at a better understanding of the response of soils to global environmental changes and focus on the dynamic and mapping of soil organic carbon at different scales.
- 2001–2007 **Teaching assistant**, *Department of Geography, University of Louvain, Louvain-La-Neuve*.
Providing support to Lecturers, giving practical exercises (Introduction to Earth Sciences, Geographical modeling, Geomorphology, Human geography) and organization of field trips in Belgium and abroad.

Professional skills

Soil science	Good understanding of C and N dynamics into the soil and their relationships with environmental factors (e.g. land use, climate).
Imaging Spectroscopy	Expertise in hyperspectral image processing and analysis.
Field practice	Organization of several field campaigns. Good command of soil sampling and other data acquisition techniques (dGPS, ASD, ...).
Data management	Excellent working knowledge of several statistical-, mathematical-, or image-oriented programming languages able to manage large and varied databases. Theoretical and practical knowledge on Geographical Information Systems (GIS) and remote sensing softwares.
Statistics	Good understanding of standard statistical tools (e.g. OLS, PCA, GLM, ANOVA), spatial statistics (e.g. kriging, variograms) and chemometrics (e.g. PLSR).

Computer skills

Programming	R, Matlab, SAS, IDL, \LaTeX
GIS software	ArcGIS 9, Arcview, Idrisi
Remote sensing	ENVI 4
Miscellaneous	Surfer, ModelMaker, GIMP

Languages

French	Mother tong
English	Fluent
Dutch, Spanish	Basic

Fundings and project participation

- [1] *Soil organic carbon dynamics resulting from historical land use change. APEX2003 : CASI-ATM flight campaign for October*. Project funded under the **STEREO I programme** (Belgian Science Policy).
- [2] *Detecting soil carbon, its spatial variability and its components by Imaging Spectroscopy. APEX2005 : AHS flight campaign for June*. Project funded under the **STEREO I programme** (Belgian Science Policy).
- [3] *Quantifier l'évolution du stock de carbone dans le sol suite aux changements d'affectation de sol dans les Ardennes*. Project funded by the **Fond National de la Recherche Scientifique**.

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- [4] *Monitoring soil organic carbon in croplands using Imaging Spectroscopy*. Project funded under the **STEREO II programme** (Belgian Science Policy).
- [5] *Integrated system of data collection technologies for mapping soil properties – DIGISOIL*. Funded under the **EU VIIth Framework Programme** (FP7).

Publications

Peer-reviewed journals

- [1] H. M. Bartholomeus, M. E. Schaepman, L. Kooistra, A. Stevens, W. B. Hoogmoed, and O. S. P. Spaargaren. Spectral reflectance indices for soil organic carbon quantification. *Geoderma*, 145 : 28–36, 2008. URL <http://dx.doi.org/10.1016/j.geoderma.2008.01.010>.
- [2] L. Cécillon, B.G. Barthès, C. Gomez, D. Ertlen, V. Genot, V. Hedde, A. Stevens, and J.J. Brun. Assessment and monitoring of soil quality using indices based on near infrared reflectance (NIR) spectroscopy. *European Journal of Soil Science*, submitted, 2008.
- [3] A. Stevens and B. van Wesemael. Soil organic carbon dynamics at the regional scale as influenced by land use history : a case study in forest soils from southern Belgium. *Soil Use and Management*, 24 :69–79, 2008a. URL <http://dx.doi.org/10.1111/j.1475-2743.2007.00135.x>.
- [4] A. Stevens and B. van Wesemael. Soil organic carbon stock in the Belgian Ardennes as affected by afforestation and deforestation from 1868 to 2005. *Forest Ecology and Management*, in press, 2008b.
- [5] A. Stevens, B. van Wesemael, G. Vanderschrick, S. Touré, and B. Tychon. Detection of carbon stock change in agricultural soils using spectroscopic techniques. *Soil Science Society America Journal*, 70(3) :844–850, 2006. URL <http://dx.doi.org/10.2136/sssaj2005.0025>.
- [6] A. Stevens, B. van Wesemael, H. Bartholomeus, D. Rosillon, B. Tychon, and E. Ben-Dor. Laboratory, field, and airborne spectroscopy for monitoring organic carbon content in agricultural soils. *Geoderma*, 144 :395–404, 2008. URL <http://dx.doi.org/10.1016/j.geoderma.2007.12.009>.
- [7] B. van Wesemael, X. Rambaud, J. Poesen, M. Muligan, E. Cameraat, and A. Stevens. Spatial patterns of land degradation and their impacts on the water balance of rainfed treecrops : a case study in South East Spain. *Geoderma*, 133 :43–56, 2006. URL <http://dx.doi.org/10.1016/j.geoderma.2006.03.036>.

Oral communications

- [1] A. Stevens, B. van Wesemael, S. Touré, G. Vandenschrick and B. Tychon, Can hypersepctral techniques improve estimates of carbon stocks in agricultural soils? *4th EARSeL Workshop on Imaging Spectroscopy*, Warsaw, Poland, 28 April 2005.
- [2] H. Bartholomeus, M. Schaepman, L. Kooistra, A. Stevens, W. Hoogmoed and O. Spaargaren, Quantitative retrieval of Soil Organic Carbon using laboratory spectroscopy and spectral indices. *ISPRS Mid-term Symposium 2006. Remote Sensing : From Pixels to Processes*, Enschede, the Netherlands, 8–11 May 2006
- [3] A. Stevens, B.van Wesemael, H. Bartholomeus, D. Rosillon, B. Tychon, and E. Ben-Dor, (2008) Laboratory, field and airborne spectroscopy for monitoring organic carbon content in agricultural soils. *Symposium OMD 2007*, Poitiers, France, 16–19 July 2007.
- [4] A. Stevens and B. van Wesemael, Performance of different VNIR spectroscopic technique for determining soil organic carbon contents, *European Geophysical Union (EGU) Conference*, Vienna, Austria, 15–20 April 2008

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- [5] A. Stevens and B. van Wesemael, Monitoring and mapping soil organic carbon with airborne VNIR spectroscopy, *European Geophysical Union (EGU) Conference*, Vienna, Austria, 15–20 April 2008

Miscellaneous

- [1] E. Goidts and A. Stevens, Sous nos pieds, des enjeux environnementaux de taille!, *Le Soir* (23 Decembre 2007),p. 23.

Interests

- Music Member of the Louvain–La–Neuve orchestra (OSEL).
- Sport Member of the University of Louvain Yachting Club (ULYC)
Climbing, Tennis, ...
- Sciences History of Geography and Sciences.
- Scouts Scout leader during 3 years.