

# Thomas P. VAN BOECKEL – Curriculum Vitae

## 1. Personal Information

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**Full Name and Title:** Prof. Thomas P. Van Boeckel

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**Languages:** English, French (native), Dutch (basic)

**Phone:** +41 44 632 31 56

**Date of Birth:** 29<sup>th</sup> September 1985

**Google Scholar Profile:** <https://scholar.google.ch/citations?user=YILsNPMAAAAJ&hl=en>

## 2. Education

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- 09/2009 – 09/2013 **Ph.D. Thesis** “*Intensive poultry production and highly pathogenic avian influenza H5N1 in Thailand: statistical and process-based models*” (26/09/2013). Advisor: Prof. M. Gilbert. Free University of Brussels (ULB)
- 09/2007 – 09/2009 **MSc in Bioengineering, Environmental Sciences and Technology.** Free University of Brussels (ULB) (**magna cum laude**).
- 09/2003 – 09/2007 **B.A. in Bioengineering** Free University of Brussels (ULB) (**magna cum laude**)

## 3. Employment History

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- 04/2019 – **present** **ETH Zürich**, Assistant Professor (non-tenure track), Institute for Environmental Decisions.
- 10/2017 – **present** **Center for Disease Dynamics Economics and Policy**. Visiting Scholar
- 06/2015 – 04/2019 **ETH Zürich**, Postdoctoral Fellow, Institute of Integrative Biology. Advisor: Prof. Sebastian Bonhoeffer.
- 10/2013 – 04/2015 **Princeton University**, Fulbright Postdoc Fellow, Dept. of Ecology and Evolutionary Biology. Advisors: Prof. Bryan Grenfell / Prof. Simon Levin.

09/2009 – 07/2010 **University of Oxford**, Visiting Academic, Malaria Atlas Project, Dept. of Zoology.  
Advisors: Prof. Peter Gething / Prof. Simon Hay.

**5. Recently Approved Research Project - (Total since 2009 = \$4,038,000):**

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No.	Date Awarded	Project Title/Details Duration of Award	Funding Body	Total Awarded
1	9/9/2019	H2020 Mining big data for early detection of infectious disease threats	European Commission	\$690,000
2	3/7/2019	H2020 Alternatives to Veterinary Antimicrobials	European Commission	\$300,000
3	1/4/2019	Global Policies for Antimicrobial Resistance in Animals (5 years)	Swiss National Science Foundation	\$1,985,000
4	1/6/2018	Global Policies for Antimicrobial Resistance in Animals (5 years)	The Branco Weiss Foundation	\$500,000
5	1/1/2018	Resbank: a global platform for antimicrobial resistance in food animals. <i>ETH Seed Grant</i> (1 year)	ETH Zurich	\$30,500
6	13/11/2017	Piloting on-site interventions for reducing antimicrobial use in livestock farming in emerging Economies (co-PI)	JPIAMR (EU) / SNSF	\$238,000
7	30/09/2016	Postdoc Fellowship <i>Adaption to a Changing Environment</i> (1 year)	ETH Zurich, USYS	\$94,000
8	1/06/2015	ETH Fellowship. Antibiotic resistance in food animals: modelling locally, acting globally (2 years)	ETH Zurich	\$200,800

**6. Supervision of junior researchers**

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**ETH Zürich**

Management of own research assistants. Souria Nussbaumer (2017), Dr Joao Pires (2018).  
Advising of Bachelor term-papers at ETH Zurich. Laura Stefan (2015), Silvan Rossbacher (2016).

**Center for Disease Dynamics Economics & Policy (Washington DC/New Delhi)**

Managing research assistants: Charles Brower (2014-2015), Emma Glennon (2016-2017), Reshma Silvester (2018).

**Princeton University**

Managing research assistants: Julia Song (2017-2018).  
Co-advising of undergraduates thesis. Julie Sanchez (2016), Dora Chen (2017), Ruchita Balasubramanian (2018).

**7. Teaching Activities**

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**ETH Zürich**

Lecture as part of 1<sup>st</sup> year class “Health and Earth Systems” (200 undergraduate students) (December 2016 and 2017)  
Departmental seminar “introduction to spatial epidemiology with R (15 Graduates students/postdocs)”.

#### **University of Geneva**

Lecture for the Spring School of Global Health (May 2017)

#### **London School of Tropical Medicine & Hygiene, Karonga Prevention Study (Malawi)**

Introduction to GIS and GPS functionalities for health topics (July 2011).

### **9. Reviewing Activities**

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**Journals:** The Proceedings of the National Academy of Sciences, The Lancet Infectious Diseases, Epidemiology & Infection, EcoHealth, International Journal of Geo-Information, Scientific Reports.

**Grants:** Agence National de la Recherche (France).

### **10. Organization of Conferences**

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**Princeton:** Organization of a Workshop sponsored by the Department of Homeland Security, Antimicrobial Resistance at the Animal Human Interface (~25 guests, academics, government, industry representative, NGOs). February 2015.

**ETH Zurich:** Workshop on antimicrobial use in animal production (5 guest: academics and UN agencies). April 2016.

### **11. Awards**

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Fulbright Scholarship 2013 (Princeton University)

Wiener - Anspach Research Scholarship 2009 (University of Oxford)

## 12. Research Outputs

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### Publications in peer-reviewed scientific journals

Since 2009, I have authored 34 articles in peer-reviewed journals (8 as first author), including manuscripts in Science, PNAS, and The Lancet Infectious Diseases. I have also authored one policy report for the Organization of Economics Co-operation & Development, and one article in *arXiv*. On August 8<sup>th</sup>, my cumulated number of citations was 5,075, and my h-index was 23. A complete list of publication can be accessed through my [Google Scholar profile](#).

#### *Five most significant publications*

1. **Van Boeckel T.P.\***, Pires, J.\*, Silvester, R., Zhao, C., Song, J., Criscuolo N.G., Gilbert, M., Bonhoeffer, S., Laxminarayan, R.. Global Trends in Antimicrobial Resistance in Animals in Low- and Middle-Income Countries. *Science*, 365, 6459 (2019). PRESS: [The Guardian](#), [WIRED](#), [Nature News](#), [National Geographic](#), [Xinhua](#), [Times of India](#), [The East African](#), [LINK](#).
2. **Van Boeckel, T.P.**, Glennon, E.E., Chen, D., Gilbert, M., Robinson, T.P., Grenfell, B.T., Levin, S.A., Bonhoeffer, S., and Laxminarayan, R. Reducing global antimicrobial use in food animals: Consider user fees and regulatory caps on veterinary use. *Science*. 357, 1350–1352 (2017). PRESS: [World Economic Forum](#), [TIME](#), [Forbes](#), [Bloomberg](#), [New Scientist](#), [Popular Science](#), [LINK](#).
3. **Van Boeckel, T.P.**, Brower C., Gilbert, M., Grenfell, B.T., Levin, S. A., Robinson, T.P., Teillant, A., Laxminarayan R. Global antimicrobial use in food animals. *Proceedings of the National Academy of Sciences* 112 (18). PRESS: [The Guardian](#), [The Wall Street Journal](#), [PBS Frontline](#), [Vox](#), [The Atlantic](#), [NPR](#), [The times of India](#). [LINK](#)
4. **Van Boeckel, T.P.**, Gandra, S., Ashok, A., Caudron, Q., Grenfell, B., Levin, S.A., Laxminarayan, R. Global Trends in Antibiotic Consumption, 2000-2010. *The Lancet Infectious Dis.* 14, 742–750. doi:10.1016/S1473-3099(14)70780-7. PRESS: [Los Angeles Times](#). [LINK](#)
5. **Van Boeckel, T.P.**, Thanapongtharm, W., Robinson, T., Biradar, C., Xiao, X. and Gilbert, M. Improving risk models for avian influenza: the role of floods and intensive poultry production during the 2004 Thailand epidemics. 2012 PLoS One 7(11): e49528. [LINK](#)

2019.

1. **Van Boeckel T.P.\***, Pires, J.\*, Silvester, R., Zhao, C., Song, J., Criscuolo N.G., Gilbert, M., Bonhoeffer, S., Laxminarayan, R.. Global Trends in Antimicrobial Resistance in Animals in Low- and Middle-Income Countries. *Science*, 365, 6459 (2019). PRESS: [The Guardian](#), [WIRED](#), [Nature News](#), [National Geographic](#), [Xinhua](#), [Times of India](#), [The East African](#), [LINK](#).
2. Silvester, R., Pires, J., **Van Boeckel, T.P.**, Madhavan, A., Meenakshikutti, A.B., Hatha M. Occurrence of  $\beta$ -Lactam Resistance Genes and Plasmid-Mediated Resistance Among Vibrios Isolated from Southwest Coast of India. *Microbial Drug Resistance*. [LINK](#)
3. Frost, I., **Van Boeckel, T.P.**, Pires, J., Craig, J., Laxminarayan R. Global geographic trends in antimicrobial resistance: the role of international travel. *Journal of travel medicine*. [LINK](#)

2018

4. Retkute, R., Jewell, C.P., **Van Boeckel, T.P.**, Zhang, G., Xiao, X., Thanapongtharm, W., Keeling, M., Gilbert, M., Tildesley, M.J. Dynamics of the 2004 avian influenza H5N1 outbreak in Thailand: The role of duck farming, sequential model fitting and control. *Preventive veterinary medicine* 159, 171-181. [LINK](#).

5. Gilbert, M., Nicolas, G., Cinardi, G., **Van Boeckel, T. P.**, Vanwambeke, S., O., Wint, G.R.W., and Robinson T.P. Global distribution data for cattle, buffaloes, horses, sheep, goats, pigs, chickens and ducks in 2010. Scientific data.
6. Klein, E.Y., **Van Boeckel, T.P.**, Martinez, E.M., Pant, S., Gandra, S., Levin, S.A., Goossens, H., and Laxminarayan, R. Global increase and geographic convergence in antibiotic consumption between 2000 and 2015. Proceedings of the National Academy of Sciences. PRESS: [TIME](#), [NPR](#), [The Guardian](#), [PBS](#), [Neue Zürcher Zeitung](#), [LINK](#)
7. Dhingra, M.S., Artois, J., Dellicour, S., Lemey, P., Dauphin, G., Von Dobschuetz, S., **Van Boeckel, T.P.**, Castellán, D.M., Morzaria, S., Gilbert M. Geographical and historical patterns in the emergences of novel highly pathogenic avian influenza (HPAI) H5 and H7 viruses in poultry. Frontiers in Veterinary Science. [LINK](#)

2017

8. **Van Boeckel, T.P.**, Glennon, E.E., Chen, D., Gilbert, M., Robinson, T.P., Grenfell, B.T., Levin, S.A., Bonhoeffer, S., and Laxminarayan, R. Reducing global antimicrobial use in food animals: Consider user fees and regulatory caps on veterinary use. Science. 357, 1350–1352 (2017). PRESS: [World Economic Forum](#), [TIME](#), [Forbes](#), [Bloomberg](#), [New Scientist](#), [Popular Science](#), [LINK](#).
9. Robinson, T.P., Bu, D., Carrique-Mas, J., Fèvre, E.M., Gilbert, M., Grace, D., Hay, S.I., Jiwakanon, J., Kakkar, M., Kariuki, S., Laxminarayan, R., Lubroth, J., Magnusson, U., Thi Ngoc, P., **Van Boeckel, T.P.**, and Woolhouse, M.E.J. Antibiotic resistance: Mitigation opportunities in livestock sector development. ANIMAL. [LINK](#)

2016

10. Robinson, T.P., Bu, D., Carrique-Mas, J., Fèvre, E.M., Gilbert, M., Grace, D., Hay, S.I., Jiwakanon, J., Kakkar, M., Kariuki, S., Laxminarayan, R., Lubroth, J., Magnusson, U., Thi Ngoc, P., **Van Boeckel, T.P.**, and Woolhouse, M.E.J. Antibiotic resistance is the quintessential One Health issue. Trans R Soc Trop Med Hyg (2016) doi: 10.1093/trstmh/trw048. [LINK](#)
11. **Van Boeckel, T.P.**, Takahashi, S., Liao, Q., Xing, W., Lai, S., Hsiao, V., Liu, F., Zheng, Y., Chang, Z., Yuan, C., Metcalf, C.J.E., Yu, H., and Grenfell, B.T. Hand, foot, and mouth Disease in China: Critical Community Size and Spatial Vaccination Strategies. Scientific Reports, 6 (April), 10.1038/srep25248. [LINK](#)
12. Takahashi, S., Liao, Q., **Van Boeckel, T.P.**, Xing, W., Sun, J., Hsiao, V.Y., Metcalf, C.J.E., Chang, Z., Liu, F., Zhang, J., Wu, J.T., Cowling, B.J., Leung, G.M., Farrar, J.J., van Doorn, H.R., Grenfell B.T., and Yu, H. Hand, foot, and mouth disease in China: modelling epidemic dynamics of enterovirus serotypes and implications for vaccination. PLoS Medicine 10.1371/journal.pmed.1001958. [LINK](#)

2015

13. **Van Boeckel, T.P.**, Brower C., Gilbert, M., Grenfell, B.T., Levin, S. A., Robinson, T.P., Teillant, A., Laxminarayan R. Global antimicrobial use in food animals. Proceedings of the National Academy of Sciences 112 (18). PRESS: [The Guardian](#), [The Wall Street Journal](#), [PBS Frontline](#), [The Atlantic](#), [NPR](#), [The times of India](#). [LINK](#)

14. Tian, H., Zhou, S., Dong, L., **Van Boeckel T.P.**, Cui, Y., Wu Y., Cazelles, B., Huang, S., Yang, R., Grenfell, B.T., Xu, B. Avian influenza H5N1 viral and bird migration networks in Asia. *Proceedings of the National Academy of Sciences* 112(1) 172–177. [LINK](#)
15. Huaiyu Tian, Sen Zhou, Lu Dong, **Thomas P. Van Boeckel**, Yao Pei, Qizhong Wu, Wenping Yuan, Yan Guo, Shanqian Huang, Zhen Liu, Yuqi Bai, Tianxiang Yue, Bryan Grenfell, Bing Xu. Climate change suggests a shift of H5N1 risk in migratory birds. *Ecological Modelling*. [LINK](#)
16. Gilbert M., Conchedda, G., **Van Boeckel, T.P.**, Cinardi, G., Linard, C., Nicolas, G., Thanapongtharm, W., D'Aiotti, L., Wint, W., Newman, S., Robinson T.P. Income disparities and the global distribution of intensively farmed chicken and pigs. *PLoS ONE* 10(7): e0133381. [LINK](#)

2014

17. **Van Boeckel, T.P.**, Gandra, S., Ashok, A., Caudron, Q., Grenfell, B., Levin, S.A., Laxminarayan, R. Global Trends in Antibiotic Consumption, 2000-2010. *The Lancet Infectious Dis.* 14, 742–750. doi:10.1016/S1473-3099(14)70780-7. **PRESS:** *Los Angeles Times*. [LINK](#)
18. Laxminarayan, R., and **Van Boeckel, T.P.** The value of tracking antibiotic consumption. *Lancet Infect. Dis.* 14, 360–361. [LINK](#)
19. Koole, O., Houben, R.N.G.J., Mzembe, T., **Van Boeckel, T.P.**, Kayange, M., Jahn, A., Chimbwandira, F., Glynn, J.R., Crampin, A.C. Improved retention of patients starting antiretroviral treatment in Karonga District, northern Malawi, 2005-2012. *Journal of Acquired Immune Deficiency Syndromes*. [LINK](#)
20. Gilbert, M., Golding, N., Zhou, H., Wint, G. R.W., Robinson, T.P., Tatem A.J., Lai, S., Zhou, S., Jiang, H., Guo, D., Huang, Z., Messina, J.P., Xiao, X., Linard, C., **Van Boeckel, T.P.**, Martin, V., Bhatt, S., Gething, P.W., Farrar, J.J., Hay S.I., and Yu, H 2014. Predicting market risk of influenza A (H7N9) in Asia. *Nat. Commu.* 5. **PRESS:** *The New York Times*. [LINK](#)
21. Robinson, T., Wint, W., **Van Boeckel, T.P.**, Conchedda, G., Ercoli V., Palamara, E., Cinardi, G., D'Aiotti, L., and Gilbert, M. Mapping the Global Distribution of Livestock. *PLoS ONE* 9 (5), e96084. [LINK](#)
22. Weiss, D.J., Bhatt, S., Mappin, B., **Van Boeckel, T.P.**, Smith, D.L., Hay S.I., Gething, P.W. Air temperature suitability for Plasmodium falciparum malaria transmission in Africa 2000-2012: a high-resolution spatiotemporal prediction. *Malaria Journal* 13 (1), 1-11. [LINK](#)
23. Battle, K.E., Karhunen, M.S., Bhatt, S., Gething, P.W., Howes, R.E., Golding, N., **Van Boeckel, T.P.**, Messina, J.P., Shanks, G.D., Smith, D.L., et al. Geographical variation in Plasmodium vivax relapse. *Malaria journal* 13 (1), 144. [LINK](#)
24. Kärvelo, S., **Van Boeckel, T.P.**, Gilbert, M., Grégoire, J.-C., and Schroeder, M. Large-scale risk mapping of an eruptive bark beetle – Importance of forest susceptibility and beetle pressure. *For. Ecol. Manag.* 318, 158–166. [LINK](#)

2013

25. Thanapongtharm, W., **Van Boeckel, T.P.**, Biradar, C., Xiao, X. and Gilbert, M. Rivers and flooded areas identified by high resolution remote sensing improve risk prediction of highly pathogenic avian

influenza (HPAI) H5N1 in Thailand. 2013 *Geospatial Health* 8(1) 193-201. [LINK](#)

2012

26. Houben, R., **Van Boeckel, T.P.**, Mwinuka, V., Mzumara, P., Branson, K., Linard, C., Chimbwandira, F., French, N., Glynn, J. and Crampin, A.C, 2012. Monitoring the impact of decentralised chronic care services on patient travel time in rural Africa - methods and results in Northern Malawi. *International Journal of Health Geographics* 11:49. [LINK](#)
27. **Van Boeckel, T.P.**, Thanapongtharm, W., Robinson, T., Biradar, C., Xiao, X. and Gilbert, M. Improving risk models for avian influenza: the role of floods and intensive poultry production during the 2004 Thailand epidemics. 2012 *PLoS One* 7(11): e49528. [LINK](#)
28. **Van Boeckel, T.P.**, Thanapongtharm, W., Robinson, T., Daietti, L. and Gilbert, M, 2012. Predicting the distribution of intensive poultry farming in Thailand. *Agriculture, Ecosystems and Environment*, 149 : 144-153. [LINK](#)

2011

29. **Van Boeckel, T.P.**, Prosser, D., Franceschini, G., Biradar, C., Wint, W., Robinson, T. and Gilbert, M. Modelling the distribution of domestic ducks in Monsoon Asia. *Agriculture, Ecosystems and Environment*, 141(3-4): 373-380. [LINK](#)
30. Prosser, D., Wu, J., Ellis E. C., Gale, F., **Van Boeckel, T.P.**, Wint, W., Robinson, T., Xiao, X., and Gilbert, M, 2011. Modelling the distribution of chickens, ducks, and geese in China. *Agriculture, Ecosystems and Environment*, 141(3-4): 381-389. [LINK](#)
31. Gething P. W., **Van Boeckel, T.P.**, Smith, D. L., Guerra, C. A., Patil, A.P., Snow, R.W. and Hay, S.I., 2011. Modelling the global constraints of temperature on transmission of *Plasmodium falciparum* and *P. vivax*. *Parasites and Vectors*, 4:92. [LINK](#)

2010

32. Sinka, M.E., Bangs, M.J., Manguin, A., Coetzee, M., Mbogo, C.M., Hemingway, J., Patil, A.P., Temperley, W.H., Gething, P.W., Kabaria, C.W., Okara, R.M., **Van Boeckel, T.P.**, Godfray, H.C.J., Harbach, R.E. and Hay, S.I. , 2010. The dominant *Anopheles* vectors of human malaria in Africa, Europe and the Middle East: occurrence data, distribution maps and bionomic précis. *Parasites and Vectors*, 3: 117. [LINK](#)
33. Sinka, M.E., Rubio-Palis, Y., Manguin, S., Patil, A.P., Temperley, W.H., Gething, P.W., **Van Boeckel, T.P.**, Kabaria, C.W., Harbach, R.E. and Hay, S.I., 2010. The dominant *Anopheles* vectors of human malaria in the Americas: occurrence data, distribution maps and bionomic précis. *Parasites and Vectors*, 3: 72. [LINK](#)
34. Guerra, C.A., Howes, R.E., Patil, A.P., Gething, P.W., **Van Boeckel, T.P.**, Temperley, W.H., Kabaria, C.W., Tatem, A.J., Manh, B.H., Elyazar, I.R.F., Baird, J.K., Snow, R.W. and Hay, S.I., 2010. The international limits and population at risk of *Plasmodium vivax* transmission in 2009. *Public Library of Science Neglected Tropical Diseases* 4(8): e77. [LINK](#)

## 6. Invited Oral Contributions

October 2019 *GeoVET, UC Davis, CA, USA.*

Nov 2018 *International Society of Veterinary Epidemiology and Economics, Chiang Mai, Thailand.*

March 2020 *British Society for Antimicrobial Chemotherapy, Spring Conference, London, UK.*

Jan 2020 *Big Data Institute, Oxford University, UK.*

Feb 2018	<b>Faculty Interview.</b> Nanyang University of Technology, Singapore.
Jan 2018	<b>Faculty Interview.</b> University of California Berkeley, School of Public Health, CA, USA
Nov 2017	Guru Angad Dev Veterinary and Animal Sciences University, Punjab, India
Oct 2016	Institute of Global Health, University of Geneva, Switzerland.
Sept 2016	4th Int. Conf. on Responsible Use of Antibiotics in Animals, the Hague.
Sept 2016	<b>Faculty Interview.</b> U. of Washington, Institute for Health Metrics Evaluation, USA.
June 2016	<b>Faculty Interview.</b> College of Veterinary Medicine, Cornell University, NY, USA
June 2016	<b>Faculty Interview.</b> School of Public Health, Johns Hopkins University, MD, USA
Feb 2016	<b>Faculty Interview.</b> School of Global Health, Washington State University, WA, USA.
Feb 2016	<b>Faculty Interview.</b> Texas A&M, School of Vet. Med., College Station, TX, USA.
Nov 2015	International Society of Veterinary Epidemiology and Economics, Merida, Mexico.
Nov 2015	35th meeting of the Society for Ecotoxicology and Chemistry, Salt Lake City, USA
Sept 2015	Colloquium of infectiology and microbiology, University Hospital Zurich, Switzerland.
Apr 2015	<b>Faculty Interview.</b> ETH Zurich, Dpt. of Earth System Sciences.
January 2015	International Workshop on Hand Foot and Mouth Disease, China CDC, Beijing.
October 2014	Center for Infectious Disease Dynamics, Penn State, State College PA, United States
June 2014	12th conference of Ecology and Evolution of Infectious Disease, Fort Collins, USA.
March 2014	College of Global Change and Earth System Science, Beijing Normal University, China
March 2014	China Centre for Disease Control and Prevention, Beijing, China
Nov 2012	4th Int. Workshop on Modelling of Avian Influenza H5N1 in Asia, UN FAO, Rome.
Nov 2011	3rd Int. Workshop on Modelling of Avian Influenza H5N1 in Asia, Beijing, China.

## 7. Outreach activities

*Invited seminars for industry and policy makers (never remunerated)*

March 2019	6th Global Food and Feed Congress, Bangkok, Thailand.
Sept 2018	SwissRe Institute, Rüslikon, Switzerland
May 2018	Food and Agriculture Organization, Regional Office, Bangkok, Thailand.
May 2018	European Parliament, Brussels, Belgium
May 2018	<a href="#">LivestockForum (Keynote Animal Industry)</a> , Barcelona, Spain (Scheduled)
Jan 2018	<a href="#">Parliament of the United Kingdom</a> , London.
Jun 2017	European Parliament, Brussels, Belgium.
Feb 2017	European Commission Committee on Plants, Animals, Food & Feed, Brussels
Nov 2016	<a href="#">EuroTier</a> , (Keynote for Feed Industry Seminar), Hanover, Germany.
Nov 2016	<a href="#">Breizh Algae Tour</a> (Keynote for Feed Industry Seminar), Amsterdam, Netherlands.

*German speaking and national press.*

[World Economic Forum](#), [Die Zeit](#), [Echo der Zeit](#), [Aargauer Zeitung](#).

*English speaking and international press.*

[The New York Times](#), [Forbes](#), [Bloomberg](#), [Science \(editorial\)](#), [PNAS \(editorial\)](#), [WHO Bulletin](#), [The Guardian](#), [PBS Frontline](#), [The Atlantic](#), [National Public Radio](#), [The times of India](#), [The Wall Street Journal](#), [Bloomberg News](#), [New Scientist](#)...

## 9. Other publications

Laxminarayan, R., **T. P. Van Boeckel** and A. Teillant (2015), “[The Economic Costs of Withdrawing Antimicrobial Growth Promoters from the Livestock Sector](#)”, Organisation for Economic Cooperation and Development Food, Agriculture and Fisheries Papers, No. 78, OECD Publishing.

**Van Boeckel, T. P.**, Tildesley, M.J., Linard, C., Halloy, J., Keeling, M.J., and Gilbert, M. [The Nosoi commute: a spatial perspective on the rise of BSL-4 laboratories in cities](#). arXiv:1312.3283



## Major Scientific Achievements

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**Spatial Epidemiology.** I started my research career at Oxford in 2009, where I developed methods to summarize –spatially– the effect of temperature on the development of malaria parasites. This [map](#)<sup>117</sup> has been used by the [malaria atlas project](#) in subsequent studies as an input variable to map malaria prevalence. Following this formative experience, I moved back to the [Spatial Ecology Lab](#) in Brussels and developed similar tools to map [domestic ducks](#)<sup>118</sup> and [poultry systems](#)<sup>119</sup> in South Asia. These methods have since been adapted to map livestock production systems at the [global scale](#)<sup>120</sup> by my collaborators at the Food and Agriculture Organization of the United Nations. The central finding of my PhD was to identify a [fine-scale link](#)<sup>121</sup> between intensive duck farming operations and outbreaks of pandemic influenza H5N1. In my career, I had the opportunity to be involved in several collaborations to provide technical support in spatial-analysis. This help me build an all-round culture in epidemiology, across diseases and spatial scales: from predicting attacks of [bark-beetle](#)<sup>122</sup> in Sweden to mapping treatment-seeking behaviour of [HIV patients in Malawi](#)<sup>123</sup>, and modelling [childhood diseases vaccination](#) in China<sup>124</sup>.

**Global trends in antibiotic consumption in humans.** In 2013, I joined the Grenfell Lab at [Princeton](#) where I worked in close collaboration with the Center for Disease Dynamics, Economics and Policy ([CDDEP](#)), a global health think tank based in Washington DC. We published the [first study](#) to report global trends in human antibiotic consumption. We identified that whilst high-income countries have moderately reduced antibiotic consumption, the global consumption of antibiotics has increased by 36% between 2000 and 2010. Since 2014, this work has been widely cited (>1,000 citations), and discussed in editorials ([Lancet ID](#)), and newspapers ([Los Angeles Times](#)), and more recently was abundantly cited in the [Review on Antimicrobial Resistance](#) led by economist Jim O’Neill, on behalf of the UK Prime Minister. Recently, we produce an update of the trends in antibiotic use in humans, with a focus on low- and middle-income countries. Our findings were published in [PNAS](#), and also covered by the mainstream press ([TIME](#), [NPR](#), [The Guardian](#), [PBS](#)).

**Antimicrobial consumption in animals raised for food.** Following this initial effort, I assembled a team of collaborators and led independently another study to quantify the trends in antimicrobial consumption in [animals](#)<sup>11</sup>. We found that the consumption of antimicrobial could grow by as much a 67% by 2030 because of increased demand for meat, and the further intensification of the animal production. This study has received >12,000 views the first month of publication. Our findings were later adapted for a [policy report](#) for the Organization for Economic Co-operation and Development, to evaluate the impact of phasing out antimicrobials used as growth promoters in livestock. These works has received considerable attention from the scientific community (editorials: [Science](#), [PNAS](#), [WHO Bulletin](#)), from the mainstream press ([The Guardian](#), [PBS Frontline](#), [The Atlantic](#), [NPR](#), [The times of India](#),...), the financial press ([The Wall Street Journal](#), [Bloomberg News](#)). In September 2017, one year after the UN general assembly adopted a declaration urging member states to take actions on AMR we conducted the first comparative assessment of three global policies that could help curb antimicrobial consumption in animals: i) a reduction in meat consumption, ii) stricter regulation antimicrobial use, and iii) a proposal to tax veterinary antimicrobials. Our findings were published as a peer-reviewed policy forum in [Science](#). It also received coverage, in the international press ([TIME](#), [Forbes](#), [Bloomberg](#), [New Scientist](#), ...). Our latest articles on revised global trends for global antibiotic use in human medicine has received coverage, amongst other in [The economist](#).

In September 2019, we have published in the journal *Science* a study entitled “Global trends in antimicrobial resistance in animals in low- and middle-income countries” presents the first global map of antimicrobial resistance in animals, as well as a global increase in antimicrobial resistance for pig (+100%) and chicken (+200%) between 2000 and 2018. The study was covered in the international press, including in low- and middle-income outlets ([The Guardian](#), [WIRED](#), [Nature News](#), [National Geographic](#), [Xinhua](#), [Times of India](#), [The East African](#)). Since I moved back to Europe, I have engaged in a regular dialogue on antimicrobial use with the private sector: I have given seminars for feed companies during the [Global Food and Feed Congress](#), and [EuroTier](#) (the largest animal production trade fair in the world, 160,000 visitors), and recently I spoke at the [SwissRe Institute](#) to companies of the insurance sector. Since 2017, I addressed the European Commissions’ standing Committee on Plants, Animals, Food and Feed ([ScoPAFE](#)), as well as the European Parliament, Committee on Environment, Public Health and Food Safety ([ENVI](#)), and Members of [Parliament of the United Kingdom](#) about antimicrobial resistance in animal production.