

GEO 2023 VET

Expanding boundaries:
Interdisciplinary geospatial research
for the One Health Era

Program

September 19th - 21st 2023

Silvi Marina, Teramo, Italy

8:30am - 9:00am

Opening Ceremony

Chair: **Annamaria Conte**

SESSION

From Science to Policy: GIS and One Health integration

Chair: **Michael Ward**

- 9:00am Keynote Talk: "The challenges of real-time science communication and decision support in a pandemic context: building the plane instruments after take-off"
Speaker: **Marius Gilbert**, Vice-rector of research and Head of the Spatial Epidemiology Lab (SpELL), Université Libre de Bruxelles, Belgium
- 9:40am Senior Oral Talk: "Communication Breakdown – Of disease clusters, a trillium and One Health"
Speaker: **Olaf Berke**, Department of Population Medicine, OVC, University of Guelph, Canada
- 10:05am "The use of spatial metrics to select regions for enhanced bovine tuberculosis control measures in Ireland"
Speaker: **Jamie Tratalos**, Centre for Veterinary Epidemiology and Risk Analysis, University College Dublin, Ireland
- 10:20am "Poultry intensification and emergence of Highly Pathogenic Avian Influenza"
Speaker: **Maria Fernanda Vincenti Gonzalez**, Université Libre de Bruxelles, Belgium
- 10:35am "Precision epidemiology in practice: applications to better prevent and control endemic diseases in the US swine industry"
Speaker: **Beatriz Martínez-López**, CADMS, Department of Medicine & Epidemiology, School of Veterinary Medicine, University of California, Davis, USA
- 10:50am "How to combine spatio-temporal information and Danger theory for animal disease surveillance?"
Speaker: **Bahdja Boudoua**, INRAE, France

11:00am - 11:30am coffee break

SESSION

Exploring Novel Data Sources and Operational Tools

Chair: **Guy McGrath**

- 11:30am Senior Oral Talk: "Mapping global coldspots of veterinary capacity"
Speaker: **Nicola G. Criscuolo**, ETH Zürich, Switzerland
- 11:55am "Anthropogenic and environmental factors associated with koala deaths occurring through vehicle collisions and dog attacks in South East Queensland, Australia"
Speaker: **Mark Stevenson**, Melbourne Veterinary School, Faculty of Science, The University of Melbourne, Australia
- 12:10am "Epidemic intelligence data and disease risk mapping: the case of Crimean-Congo haemorrhagic fever (CCHF)"
Speaker: **Angela Fanelli**, Department of Veterinary Medicine, University of Bari, Italy
- 12:25am "Geospatial Methods for Reporting During the United States 2022-2023 Highly Pathogenic Avian Influenza (HPAI) Outbreak and Ongoing Emergency Response Preparedness"
Speaker: **Andrew Fox**, U.S. Department of Agriculture (USDA) Center for Epidemiology and Animal Health (CEAH), USA

1:00pm - 2:00pm lunch

SESSION

Climate, human and environmental impact on animal health

Chair: **Annalise Tran**

- 2:00pm Keynote Talk: "Decision-support tools to track and predict climate-sensitive infectious diseases at cascading spatial scales"
Speaker: **Rachel Lowe**, ICREA Research Professor at Barcelona Supercomputing Center – Centro Nacional de Supercomputación (BSC-CNS), Spain
- 2:40pm Senior Oral Talk: "Impact of climate change on soil-borne and vector-borne diseases"
Speaker: **Cyril Caminade**, Abdus Salam International Centre for Theoretical Physics, Italy
- 3:05pm "Contribution of climate change to the emergence of West Nile virus in Europe"
Speaker: **Diana Erazo**, Université Libre de Bruxelles (ULB), Belgium
- 3:20pm "Reducing data collection costs through sensitivity analysis of spatial data in GLEAM"
Speaker: **Armando Rivera Moncada**, Université Libre de Bruxelles (ULB), Belgium
- 3:35pm "Predicting socioeconomic and intervention-related factors influencing the risk of vector-borne diseases using Demographic and Health Surveys; a case study of malaria"
Speaker: **Camille Morlighem**, Department of Geography, University of Namur, Belgium; ILEE, University of Namur, Belgium

3:50pm – 4:15pm coffee break

SESSION

Spatial methods in ecology and epidemiology

Chair: **Marius Gilbert**

- 4:15pm "Using joint species distribution models to improve predictions of co-infection in veterinary epidemiology"
Speaker: **Francisca Powell-Romero**, School of Veterinary Science, The University of Queensland, Gatton, Qld, Australia
- 4:30pm "Combining key hazard- and exposure-related drivers to model the probability of occurrence of TBE human cases in Europe"
Speaker: **Francesca Dagostin**, Fondazione Edmund Mach, Italy
- 4:45pm "Reducing uncertainty in spatial analysis involving fragmented farms"
Speaker: **Guy McGrath**, University College Dublin, Ireland
- 5:00pm "Mapping bioclimatic suitability for cattle ticks in Ecuador"
Speaker: **Ximena Pérez-Otáñez**, Université Catholique de Louvain, Belgium
- 5:15pm "Remote sensing as an additional tool for modelling spatiotemporal dynamics of questing *Ixodes ricinus* on Italian northwestern Alps"
Speaker: **Alessandro Bellato**, Università di Torino, Dipartimento di Scienze Veterinarie, Italy

5:30pm **Poster Session**

6:30pm **Closure of the day**

7:00pm **Free time: Shuttle bus to Pescara**

SESSION

Expanding boundaries of Remote Sensing

Chair: **Cyril Caminade**

- 8:30am Keynote Talk: **"Infectious water-associated diseases: the role of the environment"**
Speaker: **Shubha Sathyendranath**, *Merit Remote Sensing Scientist, Plymouth Marine Laboratory, UK*
- 9:10am Senior Oral Talk: **"Mapping Global Bushmeat Activities to Improve Zoonotic Spillover Surveillance"**
Speaker: **Soushieta Jagadesh / Thomas Van Boeckel**, *ETH Zürich, Zurich, Switzerland*
- 9:35am **"How to integrate satellite-derived indicators into models of animal mobility?"**
Speaker: **Annelise Tran**, *CIRAD – Center for International Cooperation in Agricultural Research for Development, France*
- 9:50am **"Use of Satellite Earth Observation to monitor aquaculture sites in coastal Abruzzo region, Adriatic Sea"**
Speaker: **Carla Ippoliti**, *IZS-Teramo, Italy*
- 10:05am **"How the scale of temperature measures affects the estimate of transmission of mosquito-borne diseases"**
Speaker: **Sebastian Napp**, *Centre de Recerca en Sanitat Animal (CRESA)-Institut de Recerca i Tecnologia Agroalimentàries (IRTA), Barcelona, Spain*
- 10:20am **"Tick's suitability habitat maps and tick-host relationships in wildlife. A One Health approach based on multitemporal remote sensed data, entropy and Meta® population dataset in Aosta Valley, NW Italy."**
Speaker: **Annalisa Viani**, *IZS PLV S.C. Valle d'Aosta—CeRMAS (National Reference Center for Wildlife Diseases), Quart, Italy*
- 10:35am Senior Oral Talk: **"Landscape phylogeography — using viral gene sequences to compare and explain the heterogeneous spatial dynamics of virus epidemics"**
Speaker: **Simon Dellicour**, *Spatial Epidemiology Lab (SpELL), Université Libre de Bruxelles (ULB), Belgium*

11:00am – 11:30am coffee break

SESSION

Modelling for ASF emergency

Chair: **Paolo Calistri**

- 11:30am Senior Oral Talk: **"Choice of Landscape Discretisation Affects the Rate of Spread in Wildlife Disease Models"**
Speaker: **Mossa Merhi Reimert**, *University Of Copenhagen, Denmark*
- 11:55am **"Examining the Impact of Fencing on the Front Wave of African Swine Fever in the Korean Wild Boar Population"**
Speaker: **Jun-Sik Lim**, *Ecole Nationale Vétérinaire de Toulouse, France*
- 12:10am **"Elucidating African swine fever transmission cycle dynamics at the domestic-wildlife interface: Multihost epidemic modeling in Romania"**
Speaker: **Brandon Hayes**, *IHAP, University of Toulouse, INRAE, ENVT, Toulouse, France*
- 12:25am **"Spatially explicit agent-based modeling as a tool in aiding African swine fever mitigation and eradication in Thailand"**
Speaker: **Peerawat Chintrakulchai / Beatriz Martínez-López**, *CADMS, School of Veterinary Medicine, University of California, Davis, USA*
- 12:40am **"Spatial analysis to inform African Swine Fever spread modelling in Laos"**
Speaker: **Michael Ward**, *Sydney School of Veterinary Science, The University of Sydney, Australia*

1:00pm – 2:00pm lunch

SESSION

Artificial intelligence for One Health

Chair: **Rowland Kao**

- 2:00pm Keynote Talk: "Issues and challenges in fair and robust AI models"
Speaker: **Elisa Ficarra**, *Department of Engineering "Enzo Ferrari" University of Modena and Reggio Emilia, Italy*
- 2:40pm Senior Oral Talk: "Shade from Space: Utilizing Satellite Imagery to Assess Shade Provision on New Zealand Dairy Farms"
Speaker: **Matthew Edwards**, *EpiVet, New Zealand*
- 3:05pm "Earth Observation-based Self Organizing Map for Northern Africa regions"
Speaker: **Annamaria Conte**, *IZS-Teramo, Italy*
- 3:20pm "Predicting spatially explicit swine premises using deep learning and aerial imagery to improve disease monitoring and surveillance"
Speaker: **Felipe Sanchez**, *Center for Geospatial Analytics, Department of Population Health and Pathobiology, College of Veterinary Medicine, North Carolina State University, USA*
- 3:35pm "Artificial Intelligence and Remote Sensing: innovative methods for West Nile Disease in Italy"
Speaker: **Lorenzo Bonicelli**, *Department of Engineering "Enzo Ferrari" University of Modena and Reggio Emilia, Italy*

3:50pm – 4:15pm coffee break

- 4:15pm **Roundtable:** "GeoVet science into practice for One Health"
Moderator: **Barbara Alessandrini**

5:30pm **Poster Session**

6:30pm – 6:45pm **Closure of the day and group photo**

8:00pm **social dinner**

SESSION

Network analysis for transmission pathways

Chair: **Beatriz Martínez-López**

- 8:30am Keynote Talk: **"Emergent infection disease problems under environmental land management"**
Speaker: **Rowland Kao**, *Professor of Veterinary Epidemiology and Data Science Roslin Institute & School of Physics and Astronomy, University of Edinburgh, UK*
- 9:10am Senior Oral Talk: **"Landscape Connectivity and travel corridors routes for predicting the spread of ASF in European wild boar"**
Speaker: **Jaime Bosch**, *VISAVET Health Surveillance Centre and Animal Health Department, Complutense University of Madrid, Spain*
- 9:35am **"Multihost foot-and-mouth disease dissemination model: why using just cattle data neglects the disease spread potential and covered transmission routes"**
Speaker: **Nicolas Cespedes Cardenas**, *North Carolina State University, USA*
- 9:50am **"Integration of spatial and network analysis to undercover community exposure to zoonotic vector-borne diseases: the example of Ross River Virus during the COVID19 lockdown in Brisbane Australia"**
Speaker: **Tatiana Proboste**, *University of Queensland, Australia*
- 10:05am **"On the interaction between bovine and bubaline trade network in epidemic spreading"**
Speaker: **Giacomo Zoppi**, *Data Analysis and Modeling Unit, Department of Veterinary Sciences, University of Torino, Italy*
- 10:20am **"Development and application of a network model to understand the epidemiological and economic burden of an aquaculture disease outbreak under different control strategies"**
Speaker: **Sarah Alewijnse**, *Centre for Environment Fisheries and Aquaculture Science, UK*
- 10:35am **"Movenet: a toolkit facilitating the use of livestock movement networks in veterinary public health"**
Speaker: **Carlijn Bogaardt**, *School of Computing Science, University of Glasgow, UK*

10:50am – 11:30am coffee break

SESSION

Genetics and Bioinformatics

Chair: **Olaf Berke**

- 11:30am **"Development of an operational tool for genomic and phenotypic surveillance of antimicrobial resistance: applications for swine pathogens in the United States"**
Speaker: **Ruwini Rupasinghe**, *CADMS, Department of Medicine & Epidemiology, School of Veterinary Medicine, University of California, Davis, USA*
- 11:45am **"Geographical isolation in an interconnected world: application of phylodynamic and phylogeographic methods for the investigation of Porcine circovirus type 4 history"**
Speaker: **Giulia Faustini**, *Department of Animal Medicine, Production and Health (MAPS), University of Padua, Italy*
- 12:00am **"Unravelling the epidemiology of *Mycobacterium bovis* in North Cameroon using genomic, environmental and demographic data"**
Speaker: **Gianluigi Rossi**, *University of Edinburgh, UK*

12:15am "West Nile Virus in Europe: a return ticket to Africa"
Speaker: **Giulia Mencattelli**, IZS-Teramo, Fondazione Edmund Mach, University of Trento, Italy

12:30am "Antimicrobial resistance in food animals: priority drugs maps to guide global surveillance"
Speaker: **Cheng Zhao**, ETH Zürich, Zurich, Switzerland

1:00pm – 2:00pm lunch

SESSION

Spatio-temporal surveillance and modelling

Chair: **Mark Stevenson**

2:00pm "Disentangling the role of wild bird species in Avian Influenza transmission to domestic poultry"
Speaker: **Diletta Fornasiero**, IZSVe, Italy

2:15pm "Estimating the coverage of slaughterhouse surveillance for bovine tuberculosis"
Speaker: **Jose HH Grisi-Filho**, Universidade de São Paulo, Brazil

2:30pm "Modelling transmission of avian influenza in wild birds using a spatiotemporal cellular automata model"
Speaker: **Yangfan Liu**, Department of Veterinary and Animal Sciences, Faculty of Health and Medical Sciences, University of Copenhagen, Denmark

2:45am "Spatial distribution of poultry farms using point pattern modelling: a methodology to address disease transmission risks."
Speaker: **Marie-Cécile Dupas**, University of Brussels (ULB), Belgium

3:00am "Assessing the risk of arbovirus outbreaks in non-endemic regions"
Speaker: **Bruno Valdemar Guerrero Borges**, Basque Center for Applied Mathematics, Spain

3:15am "Surveillance data and early warning models of highly pathogenic avian influenza in East Asia, 2020-2022"
Speaker: **Lene Jung Kjær**, University of Copenhagen, Denmark

3:30am "A raster-based compartmental model combining the host's density and movements, driven by vector suitability"
Speaker: **Luca Candeloro**, IZS-Teramo, Italy

4:00pm – 5:00pm

Closure of the conference – Awards – Next GeoVet

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