GEO VET 2023

Expanding boundaries:
Interdisciplinary geospatial research
for the One Health Era

Program

September 19th – 21st 2023

Silvi Marina, Teramo, Italy

IZS
TERAMO

8:30am - 9:00am

Opening Ceremony
Chair: Annamaria Conte

SESSION 1

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**, *Universite 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 2

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 3

Climate, human and enviromental 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 4

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 fragmentated 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 5

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: **Cheng Zhao / 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 / Tommaso Orusa,** *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"

11:00am – 11:30am   coffee break

SESSION 6

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 7

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   **"Forecasting West Nile Virus Circulation through Sentinel and Landsat Imagery and Graph Neural Networks"**
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 8

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 9

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 10

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**