

## Call for Applications – Training school

# Ammonia, greenhouse gas, and aerosol transmission from livestock systems: An interdisciplinary approach on measuring, modelling and mitigation



Sept 17-20, 2019 Venue: Leibniz Institute for Agricultural Engineering and Bioeconomy (ATB), Potsdam/Germany

### Objectives

Gaseous (NH<sub>3</sub>, GHG) and aerosol (e.g. bacteria) emissions from animal housing and manure management systems pose a worldwide threat for environmental, animal, and human health. Measurement of source strength, emissions, and transmission pathways are still challenging, and influencing factors are not yet fully understood, let alone is it possible to control them.

The interdisciplinary training school provides hands-on training in measuring and modelling such sources and transmissions. Common measurement methods, conventional and emerging data analysis approaches as well as emission flow modelling techniques will be presented and discussed by experienced scientists from European and international institutions. In addition, we open up the opportunity for in-depth collaboration. The summer school will be accompanied by an intercultural training giving insights into mechanisms and opportunities of intercultural communication and collaboration.

### Who can participate

Postgraduate students, Early Career Investigators, and PostDocs dealing with monitoring and modelling indoor climate and gaseous emissions from animal production systems, transmission of particles and gases, atmospheric modelling, etc., from a wide range of disciplines; also from relevant research fields such as animal welfare, aerosol transmission or adaptation to climate change (particularly in hot climates).

### Timeline

May, 6<sup>th</sup> Application opens (via email, cf. Cost & Appl.)  
June, 9<sup>th</sup> Application closes

### What you can expect

Four days in an international, interdisciplinary group, training in state-of-the art and emerging methods for measuring, data collection and processing, and modelling. You will strengthen collaboration and foster international contacts in your field and beyond:

- Day 1 Excursion to farms (together with participants from the COST action livAGE), on-going research projects, poster session
- Day 2+3 Trainings on on-farm data measurement; data collection, evaluation and processing; wind tunnel experiments; empirical & mechanistic modelling approaches; artificial neuronal networks, intercultural training, video production training
- Day 4 Bio-aerosol characterization and transmission

### Costs & Application

There is no participation fee. You can apply for accommodation and travelling cost imbursement. COST action LivAGE can provide a grant for trainees to support their participation in the TS (the grant may or may not fully cover a trainee's cost for participation).

**Please send a short letter of application (incl. your scientific topics and CV) to [summerschool@atb-potsdam.de](mailto:summerschool@atb-potsdam.de).** We will provide you with information on imbursement procedures, which depend on your affiliation/country of origin.

June, 14<sup>st</sup> Information on participation  
Sept, 16<sup>th</sup> Arrival participants in Potsdam

### Preliminary programme (as of May 2<sup>nd</sup> 2019)

Monday, 16 <sup>th</sup> Sept 2019 +++ 5 <sup>th</sup> COST meeting LivAGE +++			
		Arrival of training school participants	Hotels
Tuesday, 17 <sup>th</sup> Sept 2019 +++ 5 <sup>th</sup> COST meeting LivAGE & Training School +++			
09:00 - 09:30	30'	Welcome Address / A. Prochnow Introduction to Training School Program / T. Amon	ZTW
09:45 - 10:15	30'	Departure Excursion	Bus
10:15 - 11:45	90'	Dairy barn, naturally ventilated <sup>1)</sup>	LVAT Groß Kreutz
	30'	Lunch	Packed Lunch
12:15 - 13:45	90'	Innovative Software solutions - PLF	Paretz, tbd
	30'	Transfer	
14:15 - 15:45	90'	Overview of ongoing projects in Germany: - EmiMin & EmiDat / Prof. Dr. E. Gallmann - SOARiAL / Prof. Dr. U. Nübel - Reduce / Prof. Dr. E. Hartung - BeLuVa (CFD) / Dr. S. Hempel - INFECTIONS'21- Leibniz research alliance / Prof. Dr. U. Schaible	ZTW
16:00 - 19:30	210'	Training "Communication in interdisciplinary teams"	ZTW
19:30 - 21:00		Dinner	ZTW/ATB
<sup>1)</sup> Lectures on <b>Experimental measurement design</b> for quantification of ON-Farm <b>gas emission fluxes</b> (NH <sub>3</sub> , GHG) – on the basis of CO <sub>2</sub> balance methods, measuring protocol and quality control; <b>Sampling</b> (urine, dung, slurry); <b>Heatload monitoring</b> ; short video shooting for communication of scientific contents			

Wednesday, 18 <sup>th</sup> Sept 2019 +++ Training School +++			
09:00 - 10:30	60'	Poster Tour (PhD projects), Expectations of Participants	ZTW
10:30 - 12:00	90'	Introduction: 1 <sup>st</sup> round as interactive format: 'Topic Cafe'-Format (2*30' per participant, selected from four topics: 'Data Collection', 'Evaluation Strategies', 'Empirical Modeling', 'Mechanistic Modeling')	ZTW
12:00 - 13:00	60'	Lunch	ZTW
13:00 - 15:00	120'	(a) 2 <sup>nd</sup> round 'Topic Cafe'-Format (2*30' per participant, selected from four topics: 'Data Collection', 'Evaluation Strategies', 'Empirical Modeling', 'Mechanistic Modeling') - continued (b) Short "best-practice fact sheets" as outcome of four topic cafés, by teachers	ZTW
15:00 - 16:00	60'	Guided Tour ATB	ATB
16:00 - 19:00	210'	Training session I (with input data from excursion) "Empirical Modeling" a) Classical regressions models b) Artificial network analysis	ZTW
19:30 - 22:00		Dinner (optional with invited speech)	tbd; downtown Potsdam

Thursday, 19 <sup>th</sup> Sept 2019 +++ Training School +++			
09:00 - 12:00	180'	Training session II (with input data from excursion) "Mechanistic Modeling" a) 'Computational Fluid Dynamics Modeling' b) 'Reaction Kinetics Modeling'	ZTW
12:00 - 13:00	60'	Lunch	Catering/ ZTW
13:00-14:00	60'	Lecture: Windtunnel Experiments	Wind tunnel
14:00 - 16:00	90'	Training session III 'Validation Process' Comparison of results from On-farm measurements (Tr I), mechanistic modelling and CFD simulation (Tr II) with windtunnel (L)	ZTW
16:15 - 17:15	60'	Team-Building/Speed-Dating (Joint publication activity: fostering collaboration through mutual discussion of draft versions of PhD students' draft publications; research stay planning (e.g. STSM/Short Term Scientific Mission))	ZTW
17:15 - 17:45	30'	Plenary (Feedback 'Blitzlicht' of participants; Summary organizers; Farewell)	ZTW
		Departure	

Friday, 20 <sup>th</sup> Sept 2019 +++ Training School on Bio-Aerosols +++			
09:00 - 9:15	15'	Introduction 'Relevance of bio-aerosols for animal husbandry' (Prof. Schaible?)	ZTW
09:15-09:45	30'	Lecture 'Bio-physical characterisation of aerosol, using <i>Mycobacterium bovis</i> (Prof. Gutschmann, E. Pfrommer) and influenza viruses (NN) as an example'	
9:45 – 10:45	60'	Demonstration in Lab Measurement and monitoring of bio-aerosol from animal housing - Impinger, impactor, dust sampler - Microbiological methods for germ screening	Laboratory
11:00 – 11:30	30'	Training Session: Numerical Model of transmission processes and risk assessment	ZTW
11:30 - 12:30	60'	Farewell Lunch (optional)	Catering/ ZTW
		Departure	