



June 04, 2024

Climate and Air Dispersion Analysis to Understand the Spread of the Avian Influenza Virus in Canada

Opportunity: Fully Funded M.A.Sc. Position

Start Date: Fall 2024 or Winter 2025

Program: Mechanical/Civil/Environmental Engineering, University of Guelph

Application Deadline: Search Continues Until Position is Filled

Overall Project:

Understanding and mitigating the spread of Avian Influenza Virus (AIV) in poultry facilities (chicken farms) across Canada is of utmost economic importance. The overall project aims to address this challenge by: 1) elucidating the impact of climate change on global emergence and transmission of AIV; 2) defining the impact of environmental factors on the transmission of AIV; 3) developing mitigation strategies for reducing the transmission of AIV; and 4) developing a decision support framework to take into account climate change, environmental factors, and mitigation strategies.

M.A.Sc. Position Activities:

As chicken farms are frequently infected with AIV, a central hypothesis to investigate is how climate change, air dispersion, or wild-life migration patterns contribute to infection incidents. The applicant will retrieve and analyze a list of chicken farms in which AIV infections have been reported (e.g. in provinces of Ontario, Alberta, and British Columbia). The applicant will statistically analyze the infection incidents in relation to environmental variables (e.g. temperature and wind) for the locations and times of interest. The applicant will run air dispersion models to investigate the origins/destinations of the air masses that are involved with infected facilities to identify possible sources for AIV. The dispersion models are based on forward-backward trajectory analysis of air parcels based on meteorological models (e.g. FLEXPART, HYSPLIT). The applicant may wish to engage with other research team members to help conduct field sampling of environmental variables or contribute to the development of the decision support system. The applicant will participate in knowledge dissemination activities such as attending conferences, seminars, workshops, publishing journal articles, distributing open-source software, and more.

Desired Skills:

Amir A. Aliabadi, Ph.D., P.Eng.

Associate Professor

Atmospheric Innovations Research (AIR) Laboratory

Environmental Engineering, School of Engineering

RICH 2515, University of Guelph, Guelph, ON, Canada, N1G 2W1

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The most desired skills involve statistical analysis, computer programming, and analysis of large datasets. Historically, applicants with core engineering or science degrees have fitted in the Atmospheric Innovations Research (AIR) lab programs very well. Knowledge in Python, C, C++, and/or Fortran programming is an asset. Scientific documentation (papers, theses, and presentations) in the AIR lab should be prepared using LaTeX.

Equity, Diversity, and Inclusion (EDI):

Applicants will be recruited considering EDI best practices to ensure a transparent, open, and standard process that is fair to all. The AIR lab promotes the inclusion of gender, racial, visible, indigenous, and other minority trainees. Equity-seeking groups are encouraged to apply.

About University of Guelph:

The University of Guelph, situated on treaty lands and territory of the Mississaugas of the Credit of the Anishinaabek Peoples, is the third largest employer in Guelph, a city of approximately 130,000 people, located about an hour drive west of Toronto, Ontario. University of Guelph is a top-ranked comprehensive university in Canada with an enrolment of more than 30,000 undergraduate and graduate students across over 40 academic units. University of Guelph is a unique place, with transformative research and teaching and a distinctive campus culture. People who learn and work here are shaped and inspired by a shared purpose: To Improve Life.

Application Process:

For further information, applicants can contact Dr. Amir A. Aliabadi at aliabadi@uoguelph.ca. Please provide your 1) CV, 2) research statement, 3) unofficial transcripts, 4) sample publications, and 5) contact list of 3 references. Potential applicants will be invited to participate in an interview process. To be considered, they also need to simultaneously apply to the University of Guelph following this link: <https://www.uoguelph.ca/engineering/grad/application-process>. Details about the AIR lab are available via www.aaa-scientists.com.

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