JIAAO GUO

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EXPERIENCE

Geospatial Research Coordinator, University of Calgary & ABMI
September 2022 – August 2024 (full-time); September 2024 – June 2025 (part-time)
- o Coordinating annual research workshop, summer fieldtrips (preparation, safety check, wrap-up) of Boreal Ecosystem Recovery and Assessment (BERA) program.
- o Assisting remotely sensed data acquisition (PlanetScope orders), distribution (ABMI's LiDAR) and management (LiDAR processing in R/LasTools, satellite images co-registration in Python) between Alberta Biodiversity Monitoring Institute (ABMI) and BERA
- o As a member of ABMI's Earth-Observation (EO) Insight team, assisting on updating annual spectral regeneration product of forest Harvest Areas of ABMI's human footprint Inventory (HFI) for 2020 and 2021; testing performance of PlanetScope images of algal bloom monitoring in Alberta lakes.
- o Coordinating ABMI and BERA's monthly social events; facilitating regular technical interactions between BERA and ABMI staff; exchanging data between ABMI and BERA group members.
- o Seeking and coordinating external research partners (e.g., Alberta Energy Regulator) and funding application process led by Applied Geospatial Research Group (AGRG) and ABMI.

Associate Machine Learning Developer, AltaML
September 2024 – current (Contract)
- o Labelling high-resolution and hyperspectral satellite images using object-based classification workflow for feeding into machine learning models.
- o Geometric and radiometric correction of remotely sensed images

Remote Sensing Analyst, NWT Centre for Geomatics, Government of Northwest Territories
August 2020 – August 2022 (full-time)
- o Satellite & airborne-based image processing and distribution to Government clients.
- o Spatial data management include storing, processing, publishing, server testing, and metadata generation. Major author of raster data management guide for the centre.
- o Assisting long-term landscape change detection using cloud-based Landsat stacks; helping intergovernmental and academia to identify the changes using Landsat derived product.
- o Spatial analysis for projects including landfill airspace capacity, hiking trail cost-distance simulations, object-based classification for glaciers and ice patches, flood inundation mapping.
- o Operational mapping for wildfire control during the summer seasons.

Research Assistant, Canadian Mountain Network
July 2020 – Current (part-time)
- o Task-based mapping and spatial analysis for Canadian mountain environment, working with Dr. Graham McDowell, who led the Canadian Mountain Assessment (CMA) initiative.
- o GIS analyst and cartographer for *Hills Thought to be Mountains* project led by Canadian Mountain Network's co-research director, Dr. Murray Humphries at McGill University.

GIS Specialist; Research Assistant, Department of Geography, University of Calgary
December 2018 – August 2020
- o Developed / implement a mapping "toolkit" for the Accelerating Implementation of RenewableEnergy (AI-RE) project in Canmore, Alberta, funded by Community Energy Knowledge-Action Partnership (CEKAP).
- o Using spatial analysis to understand sidewalk-width patterns and generate a web-mapping app for promoting a walkable & safe Calgary during the COVID-19 pandemic.
- o Developed and still maintain map series of influenza outbreaks in Alberta for TARRANT Viral Watch team, Family Medicine at Cumming School of Medicine.

SKILLS

GIS: ArcGIS Desktop, ArcGIS Online, ArcGIS Pro, FME, QGIS, Whitebox Geospatial
Programming/Web language: Python (sample work), JavaScript, HTML, Markdown
Remote sensing: PCI Geomatics, Erdas Imagine, ENVI, eCognition Developer, LASTools, CloudCompare, Google Earth Engine API, ESA SNAP Tool, DNRGarmin
Database management: MySQL, PostgreSQL/PostGIS
Statistical tool: R, Python

PUBLICATION

Guo J, Fast V, Teri P, Calvert K. (2020) Integrating Land-Use and Renewable Energy Planning Decisions: A Technical Mapping Guide for Local Government. *ISPRS International Journal of Geo-Information*; 9(5):324. https://doi.org/10.3390/ijgi9050324

Guo, J., & Fast, V. (2019). Growing Up, Growing Out: Comparing Spatial Patterns of Urban Populations in Canada. *Geomatica*, 73(2): 45-61. https://doi.org/10.1139/geomat-2019-0011

Guo, J., & Fast, V. (2019). Spatial Insights on Urban Density: A Case Study of Calgary. Proceedings of the 7th Conference on Spatial Knowledge and Information Canada, 7(3), 2. http://ceur-ws.org/Vol-2323/

Fast, V., & Guo, J. (2021). Putting Pedestrians First: Sidewalk Infrastructures, Width Patterns and COVID-19. *GI_Forum*, 9(2):242-250. https://doi.org/10.1553/giscience2021_02_s242

McDowell, G., & Guo, J. (2021). A Nationally Coherent Characterization and Quantification of Mountain Systems in Canada. *Mountain Research and Development*, 41(2), R21. https://doi.org/10.1659/MRD-JOURNAL-D-20-00071.1

McDowell, G., Stevens, M., Marshall, S., Higgs, E., Jacob, A., Johnson, G. M. J., ... & Lancaster, S. (2023). Canadian Mountain Assessment: Walking Together to Enhance Understanding of Mountains in Canada. In *Canadian Mountain Assessment*. University of Calgary Press. https://ucp.manifoldapp.org/projects/9781773855103 (Chapter contributor)

Humphries, M. M., Bowser, A. K., Guo, J., & Menzies, A. K. (2024). Hills thought to be mountains: A geobiocultural characterization of island highlands in Canada's continental plain. *The Canadian Geographer/Le Géographe canadien*, 69 (1), e12964. https://doi.org/10.1111/cag.12964

Carpino, O., Wright, S., Guo, J., van der Sluijs, J., Connon, R., & Quinton, W. (2025). Detecting Forest-Wetland Changes in Northwestern Canada's Discontinuous Permafrost Region Using Landsat Trend Analysis. *Ecohydrology*, 18(1), e2759. https://doi.org/10.1002/eco.2759

EDUCATION

Doctor of Philosophy, University of Calgary, Calgary AB
September 2024 – current
- o Research on peatland disturbance from mineral roads using drone-based remote sensing

Master of Geographic Information Systems, University of Calgary, Calgary AB
September 2017 – August 2019
- o Courses taken include advanced GIS, GIS-based Python programming, urban GIS, advanced remote sensing, spatial-statistics. Thesis: "Mapping Renewable Energy Capacity in Canmore, Alberta: Implementing a Standardized Mapping Framework and GIS-based MCDA".

Bachelor of Science, Environmental Science, University of Western Ontario, London ON
September 2013 – April 2017
- o Courses taken include GIS, decision making in GIS, cartography, and remote sensing. Honor thesis: "Estimating the Complete Surface Temperature of the Greater Toronto Area" using MODIS thermal bands and Environment Canada's Surface Prediction System.

CONFERENCES & PUBPLIC SPEECH

Canada's National Geomatics Expo 2024
October 2024 – Calgary AB
- o Title: Democratizing and Operationalizing Satellite-based Vegetation Recovery Monitoring in Canadian Boreal Forests

Aurora Research Institute Summer Speaker Series
August 2022 – Inuvik, NT
- o Title: Long Term Change Detection using Landsat Satellites

GI-Forum 2021
August 2021 – Vienna, Austria (Virtual)
- o Title: Putting Pedestrians First: Sidewalk Infrastructures, Width Patterns, and COVID-19

56th Annual Geography Department Conference (University of Calgary)
March 2019 – Calgary, AB
- o Title: Comparative urban density: analyzing Calgary's 14 new communities

7th Conference on Spatial Knowledge and Information Canada
February 2019 – Banff, AB
- o Title: Spatial Insights on Urban Density: A Case Study of Calgary
  Best Presentation Award at Spatial Knowledge and Information (SKI) Canada

Canadian Association of Geographers, Ontario Divisions (CAGONT) 2019
November 2019 – Guelph, ON
- o Title: Mapping Renewable Energy Opportunities for a Small Municipality: A Case Study in Canmore, AB

Canada Energy Regulator: GIS Day Conference, Calgary (2019)
November 2019– Calgary, AB
- o Title: Land-based Renewable Energy Mapping: A Local Planning Guide for Canmore,Alberta

SCOLARSHIP

Alberta Graduate Excellence Scholarship (Fall 2024, $11,000)
Faculty of Graduate Studies Doctoral Scholarship (Fall 2025, $15,000)

EXTRACURRICULAR ACTIVITIES

Firefighter (on-call volunteer-based), Fire Department, Town of Inuvik
September 2021– August 2022
- o Have 300+ hours of standard firefighter training; responded to fire calls as paged by the chief officer; fire alarm and extinguisher checked and helped fire prevention awareness education to the local communities.

Weekly Volunteer, Wing Kei Senior Care Centre (Calgary)
October 2018 –March 2020 (suspended due to COVID-19)
- o Assist the recreational programs to accompany elderly residents (300+ hours).

Weekly Volunteer, University of Calgary
September 2018 – April2019
- o Student Wellness Centre: International gradstudents peer support.
- o International Student Services: guide and provide resources to international students.