

2024

Annual Report



**LAUNCHING RESEARCH INTO SPACE AND
BRINGING SPACE DOWN TO EARTH**

INSTITUTE AT A GLANCE

The [Institute for Earth and Space Exploration \(Western Space\)](#) is the leading interdisciplinary organization for research and training in space science and technology in Canada. Our mission is to launch research into space and to bring space down to Earth for the benefit of all.

We at Western Space aim to develop and maintain a diverse and inclusive environment that fosters collaborative, interdisciplinary research, innovation, and capacity development in the space domain.

Research Priorities

Earth Observation for Societal Impact



Planetary Science & Astronomy



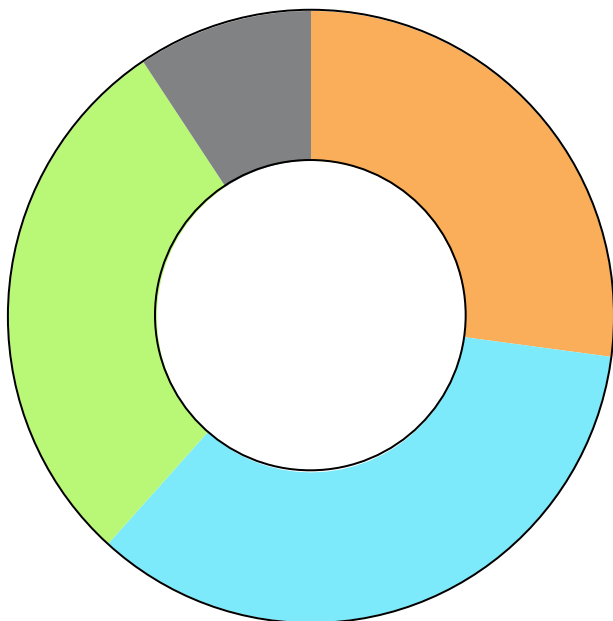
Space & Remote Health



Advancing Space Technology

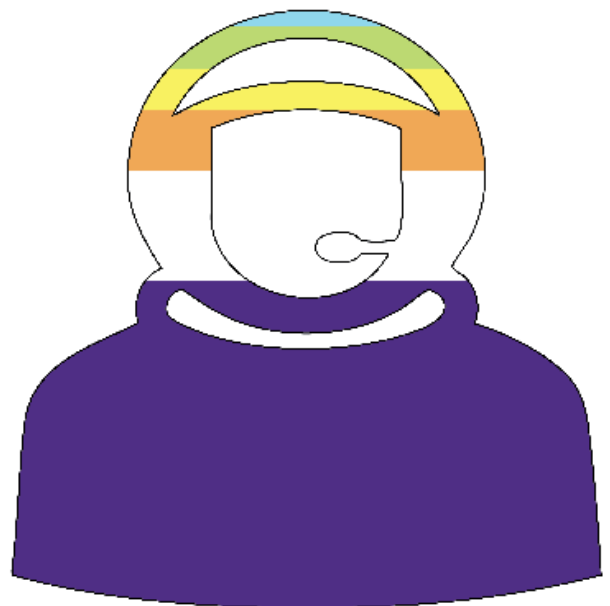


Membership Overview



■ Affiliate (29)
 ■ Collaborative Student (31)
 ■ Faculty (37)
 ■ Other Student (10)

Member Affiliation

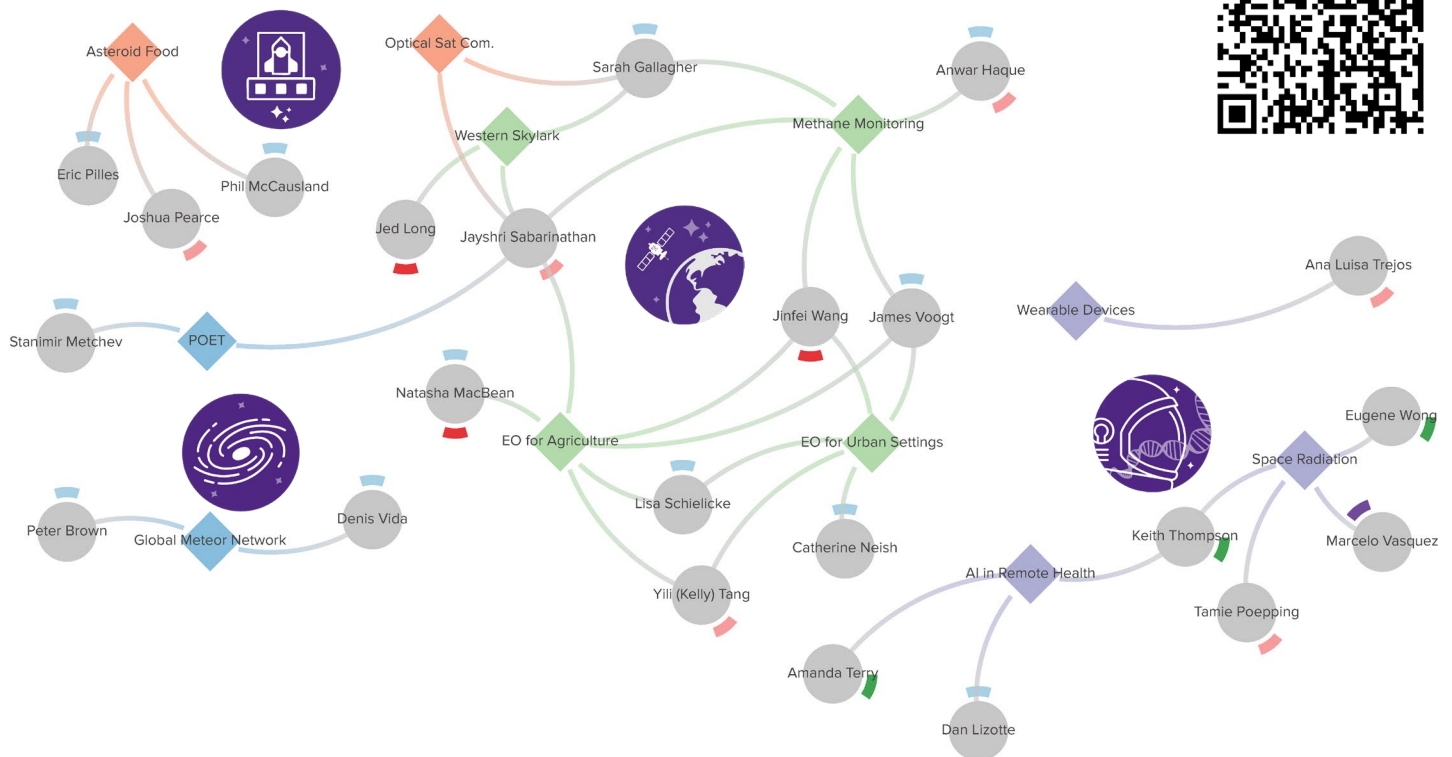


■ Science (43)
 ■ Social Science (7)
 ■ Engineering (15)
 ■ Health Sciences (7)
 ■ Schulich School of Medicine & Dentistry (8)
 ■ Other (Law, Ivey, Education) (3)

NETWORK MAP OF RESEARCH PRIORITIES

This map showcases how members are connected to the institute's research priorities. Explore the connections by clicking [here](#).

Western Space Research Activity Mapping



- Researchers
- ◆ Space Health Research Activities
- ◆ Earth Observation Research Activities
- ◆ Space Technology Research Activities
- ◆ Astronomy Research Activities
- Science
- Schulich School of Medicine & Dentistry
- Engineering
- Canadian Nuclear Labs
- Asteroid Food
- Optical Satellite Communications
- Western Skylark CubeSat
- Methane Emissions Monitoring
- Earth Observation for Agriculture
- Earth Observation for Urban Settings
- POET Mission
- Global Meteor Network
- Wearable Devices
- AI in Remote Health
- Space Radiation

METHANE MONITORING AT THE LONDON LANDFILL

The methane emissions monitoring project is an ongoing initiative supported by Environment and Climate Change Canada and [Western's Carbon Solutions Program](#) to partner with the City of London to address landfill emissions. Using a combination of ground-based, drone, and satellite data collection, the team successfully developed new, robust methods for high resolution, high sensitivity methane monitoring from drones and satellites.

This successful project will be a model going forward for developing new partnerships that leverage remote-sensing observations to address societal challenges.



The project demonstrated multi-modal approach to methane monitoring.



The project leveraged expertise in engineering, computer science, and geography.



The team shared results with CleanTech Conference, Environment Canada, and Space Canada.



Environment and
Climate Change Canada

Environnement et
Changement climatique

CANADIAN SPACE HEALTH RESEARCH SYMPOSIUM

To explore dynamic and complex problems concerning space and remote health, Western Space and the [Bone and Joint Institute](#) co-hosted a [three-day symposium](#) with the Canadian Space Health Research Network. The interdisciplinary event included research from radiation biology to mental health in remote communities.

The symposium featured guest keynote addresses from Canadian astronaut Dr. Dave Williams and the director of the NASA Houghton-Mars Project Pascal Lee, a workshop on space health risk mitigation by the Canadian Space Agency (CSA), and a book launch at Cronyn Observatory.



200+ attendees including physicians, biomedical researchers, psychologists, and planetary scientists participated.



Event themes included microgravity, confinement and isolation, remote community care, and radiation.



New partnership with the Canadian Nuclear Laboratories formed, resulting in co-supervision of two summer research interns.



Western  Bone and Joint Institute


MYANT
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Canadian Nuclear Laboratories | Laboratoires Nucléaires Canadiens

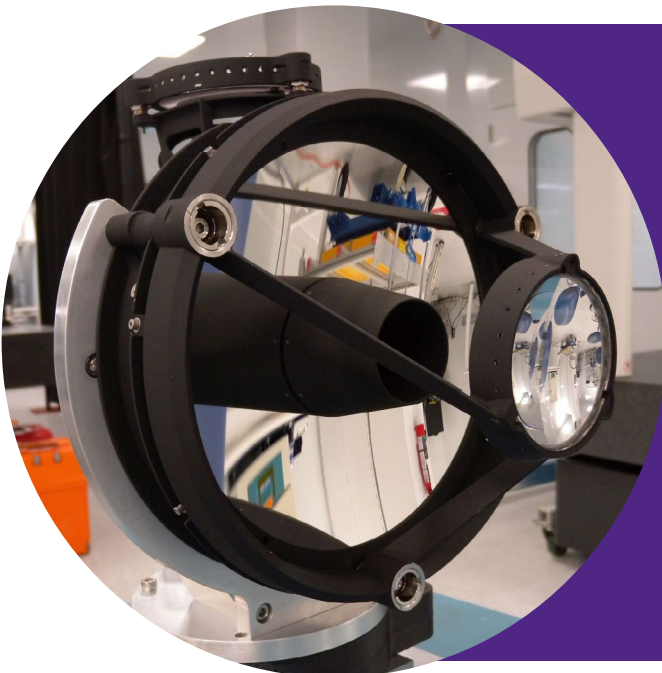
 **McCAIGINSTITUTE**
FOR BONE AND JOINT HEALTH



UNIVERSITY OF CALGARY
FACULTY OF ARTS
DEPARTMENT OF PSYCHOLOGY

POET EXOPLANET FINDER

Led by astronomers [Stanimir Metchev](#) (Western) and Jason Rowe (Bishop's University), the [POET mission](#) is a pan-Canadian partnership of seven academic institutions, three government agencies, and industry. POET will search for Earth-like planets around small stars near the Sun using high-precision infrared imaging. In 2025, the team will test POET cameras with a stratospheric balloon flight from northern Ontario.



POET will find Earth-like worlds for James Webb Space Telescope follow-up.



CSA funded the STRATOS campaign for summer 2025.



The team submitted \$31M Canada Foundation for Innovation grant application.



WESTERN SKYLARK

The [Western Skylark cubesat](#), led by [Jayshri Sabarinathan](#), will collect data on migratory birds from the global Motus network for transmission to our satellite ground station. This will enable near real-time wildlife tracking.

A brand new mission control facility is under development in the Western Interdisciplinary Research Building. This facility was funded by Western's Strategic Priorities Fund and will become a hub for the Skylark, POET, HiRISE, and other interdisciplinary research teams in 2025.



35+ students will participate in all aspects of the space mission lifecycle, from concept to operations and data utilization.



Skylark is supported by a \$350,000 CSA grant.



Skylark will launch in June 2026!



EXOLAUNCH



The Skylark mission patch was selected from submissions gathered through outreach to local youth.

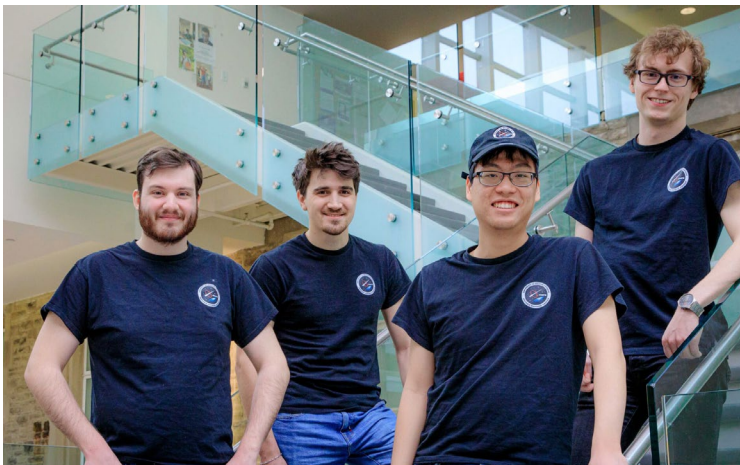
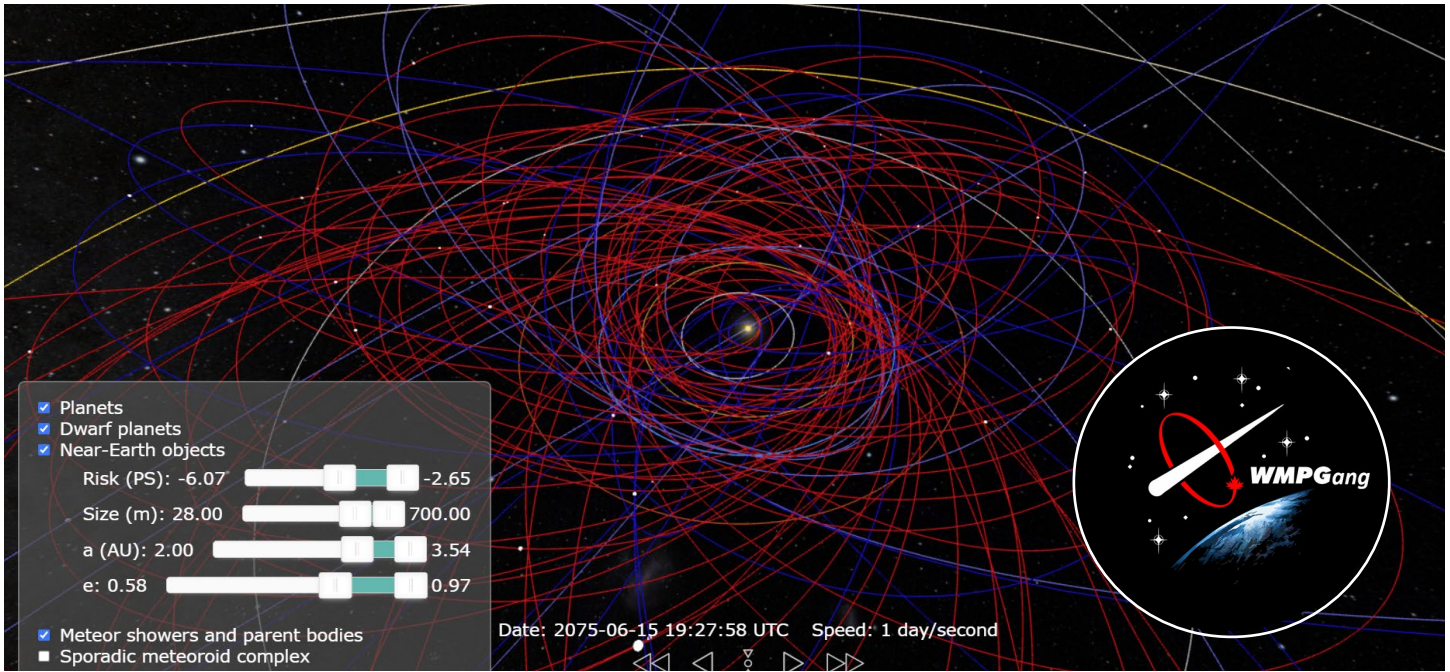
ECLIPSE CAMPAIGN



In collaboration with [Cronyn Observatory](#), Western Space donated more 12,000 pairs of eclipse glasses for the total solar eclipse. Our members worked directly with public health authorities, media outlets, schools, and community organizations to offer safety tips and to place Western as the public authority on safe eclipse international recognition, reaching 59,000 people on social media and generating the highest number of simultaneous CTV streams in the history of the television station.



NASA SPACE APPS GLOBAL WINNERS



The WMPGang (L to R): Dakota Cecil, Maximilian Vovk, Ian Chow and Simon Van Schuylenbergh.

The [WMPGang](#) won the [Best Use of Science Award in the annual NASA competition](#). This event engages a global community to use space data to solve problems on Earth. Teams from 163 countries entered nearly 10,000 projects in to the challenge. One of the 10 awardees, our team of four graduate students created [SkyShield](#) – a 3D orrery app that uses real data to identify meteoroid threats to space infrastructure. It also allows users to visualize and explore the solar system.

IN THE NEWS

Western Space members were featured in 60+ news articles in global media, including [Forbes](#), [CBC](#), [CTV](#), and [Global News](#).



Social Media

 1,184 followers (+388) 

 1570 followers (+260) 

 1,916 followers (+114) 

Total Impressions: 185,000

Publications



Member of Western Space published over 159 journal articles (avg. of 4.3 per member).

FUNDERS



A YEAR IN REVIEW

Looking back on 2024, the Western Space team has a lot to celebrate! Coordinated drone and satellite sweeps of the London City landfill started to monitor emissions of the potent greenhouse gas, methane. Another highlight was the Canadian Space Health Research Symposium, co-hosted on campus with the Bone and Joint Institute. At that event, we welcomed visitors from seven countries and launched a partnership with the Canadian Nuclear Laboratories. The WMPGang graduate student team (sponsored by Western Space) competed in the NASA Space Apps Challenge and won the Best Use of Science award from more than 9,900 global projects. These are just a few of the activities we undertook to facilitate interdisciplinary research and grow our network.

We have fully moved into our section of the seventh floor of the Western Interdisciplinary Research Building and are in the final stages of setting up the new Mission Control space for remote operations, training, and instrument planning and development. Going forward, this infrastructure will be a valuable resource for our members to develop new research partnership opportunities.

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Space Exploration



Western



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