



UNIVERSITY OF
SASKATCHEWAN

CFREF Legacy – Don't Let Your Initiative's "Apogée" Be Now; Design It to Last

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BE WHAT THE WORLD NEEDS

USask CFREFs

- **First competition**
 - **Designing Crops for Global Food Security – Plant Phenotyping and Imaging Research Centre (P2IRC)**
 - **USask only academic member**
 - **\$37M**
 - **USask Global Institute for Food Security (GIFs)**
- **Second competition**
 - **Global Water Futures (GWF)**
 - **USask in partnership with universities of Waterloo, Wilfrid Laurier and McMaster**
 - **\$78M**
 - **USask Global Institute for Water Security**



CFREF: Designing Crops for Global Food Security



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Plant Phenotyping and
Imaging Research Centre

P2IRC.USASK.CA



GIFS

GLOBAL INSTITUTE
FOR FOOD SECURITY



**CANADA
FIRST**
RESEARCH
EXCELLENCE
FUND

**APOGÉE
CANADA**
FONDS
D'EXCELLENCE
EN RECHERCHE

- Fundamentally change the plant-breeding process and make it possible to develop new varieties with specific desired traits — all at a previously unimaginable speed and scale.
- Establish deep collaboration between technology (Computer Science and Engineering) and agricultural sciences (Plant Sciences and Soil Science).
- Build commercialization and revenue generation capacity through GIFS' technology platforms.

P2IRC Highlights



GIFS

GLOBAL INSTITUTE
FOR FOOD SECURITY



NSERC CREATE in Computational Agriculture

HQP target 168; revised to 237; achieved 450+



GIFS' Omics and Precision Analytics Lab

Commercialization target \$1M; revised to \$100K; achieved \$4M



PlotVision

Partnerships target 10; revised to 54; achieved: 70+



GIFS' Policy and Regulation Program

New faculty target 4; achieved 4;
70+ faculty engaged across 20+ departments

P2IRC Impact

Met or exceeded targets

70+

faculty engaged
(4 supported faculty hires)

1000+

media stories
reported

\$4.0M

commercial revenue
(OPAL, PlotVision)

\$500k

sponsored
research secured

450+

HQP
trained

430+

papers
published

30

IP disclosures
submitted

20

open-source software
repositories submitted

180+

invited
talks delivered

7

P2IRC
Symposiums held

70+

industry
partnerships

130+

academic
collaborations

P2IRC breeding analytics	➤➤➤	FCC Accelerated Breeding Program at GIFS
P2IRC genomics	➤➤➤	GIFS Omics and Precision Analytics Lab (OPAL) GIFS Data Management and Analytics
P2IRC HQP training	➤➤➤	NSERC CREATE in Computational Agriculture
P2IRC Social Science Platform	➤➤➤	GIFS Policy and Regulatory Program
P2IRC PlotVision tool	➤➤➤	GIFS Data Management and Analytics Platform FCC Accelerated Breeding Program at GIFS
P2IRC Commercialization	➤➤➤	GIFS Business & Innovation (25+ new contracts since P2IRC ended)
P2IRC Flagship research projects	➤➤➤	The Nutrien Centre for Sustainable and Digital Agriculture (\$15M investment)

Global Water Futures (GWF)



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Global Water Futures
GWF.USASK.CA



GWF aims:

- a) to **place Canada as a global leader in water science for cold regions,**
- b) to **address the strategic needs of the Canadian economy** in adapting to change and managing the risks of uncertain water futures and extreme events.

GWF mission:

- Improve capability for water-related disaster warning
- Diagnosing and predicting water futures and future impacts on society and ecosystems
- Develop new models, tools and approaches for managing water-related risks



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WATERLOO



GWF as of April 2024

Awarded
\$ 77.84 M

over 9 years
2016 - 2025

from
CANADA FIRST
RESEARCH EXCELLENCE FUND
APOGÉE CANADA
FONDS D'EXCELLENCE EN RECHERCHE

65 Projects & Core Teams

23
Canadian universities

213
faculty investigators

558
partner organizations

2644
publications

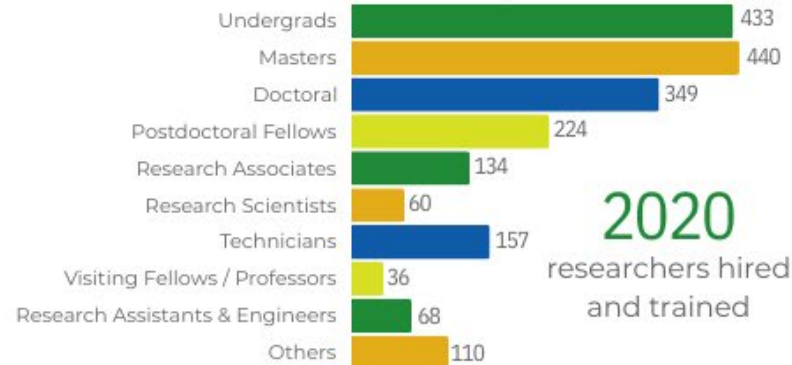
3243
presentations

4595
media stories

27
Deployable
measurement
systems

76
In situ freshwater
and hydrological
observation sites

31
University-based
environmental
and aquatic
analysis facilities



GWF supports
5 Global Programs

futureearth
research for global sustainability

WORLD METEOROLOGICAL ORGANIZATION

UNESCO

WCRP
World Climate Research Programme

UNITED NATIONS

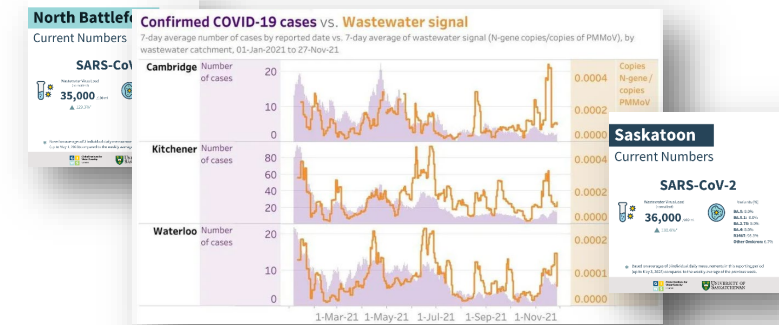
\$364 M
GWF Project & Core Team
Funding



● cash and formal in-kind contributions
● CFREF
● historical data sets (in-kind)
● Tri Agency, CFI, and other federal funding

GWF Outputs and Outcomes

- **Improvements to water policies and practices**
 - Provinces, federal government, user communities, managers and general public
- **Trained the next generation** of young professionals and future leaders
 - >2000 HQP trained
 - **CREATE in Food & Water Nexus** at USask
- Proposed a national water agency—the **Canada Water Agency**—created by the Federal government in Oct 2024
- Implemented an ambitious, novel **intersectional strategy for equity, diversity, and inclusion** in water research
- **Combined science and art** to better communicate the challenges of water security during climate change
- **UN Legacy:** International Year for Glaciers' Preservation – 2025; UN Decade of Action for Cryospheric Science – 2025-2034



Covid-19 wastewater surveillance



GWF EDI protocols



The Virtual Water Gallery

GWF Sustainability

- CFI- funded MSI **Global Water Futures Observatories (GWFO)** facility
 - Canada's premier national freshwater research facility
 - Instrumented water observing sites, supported by deployable observing systems and major laboratories, providing open access water data
 - Data informs the development and testing of water prediction models, monitors changes in water sources, underpins diagnosis of risks to water security and helps design solutions to ensure the long-term sustainability of Canadian water resources

