SCIENCE SPOTLIGHT

When Residents Stand Together For the Climate!

GEN ACTION

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Canada

MONTRÉAL SCIENCE CENTRE

Origin Story:
What Is Urban Climate Action?

Working on a project as a group is much more motivating than working alone. When you work with others towards a common goal, you get to share ideas, help each other, and listen to different perspectives about a certain subject. When the residents of a city get together to find ways to fight climate change on a local level, that is what we call "Urban Climate Action".

Why Is It Called "Urban"?

Actions to protect the climate can happen at all different levels. So, why focus on "urban" actions? Well, when it comes to climate change, now is the time to take action! But starting provincial or nation-wide projects can take a very long time and their procedures can make the process very slow. Regulations in cities and towns are not like that, so residents can move quickly! Town officials can directly help residents with their projects. These are the types of projects that we will focus on: many small collective actions that, when combined, have a huge impact on the climate!

Finding, Recording, Learning:
A Research Chair to Understand Better

In cities and suburbs throughout Canada, people are getting together to work on all sorts of real actions that will have a positive impact on the climate. Groups have planted trees along a street to give shelter from the heat, others started a bike-share program to encourage residents to use their bikes instead of their cars, and others helped people without air conditioning during heatwaves. These projects are great and inspiring, but can we uncover what exactly is being done? How can we learn more about what kinds of collective actions are being taken and how climate, cities, and people are affected? Well, for that we need researchers!

A research chair is a group of university professors and students that investigate a certain subject for a certain period of time. Their goal is to deepen their knowledge about a subject and then make their findings public. The Canada Research Chair in Urban Climate Action is working on a list of collective actions, designed to help the climate, that have been taken throughout Canada.

Sophie L. Van Neste, a researcher and professor, heads the research chair. With the help of her team, she creates overviews and critical analysis from the data that are collected. We say "critical" because the researchers try to understand what the advantages and benefits of the actions and policies may be, but also their disadvantages and drawbacks.

"Our research chair is a multi-disciplinary group that includes researchers, historians, sociologists, urban planners, geographers, and community organizers...Our various perspectives help us move forward. It is a great collaboration."

Sophie L. Van Neste

List, discover, learn :
A research chair to better understand

Research Axes

To understand and analyze the effects and challenges of a given situation, you must look at it from all angles. The research chair has four primary research axes: urban infrastructure, climate justice, suburban living environments, and emotions.

Axis 1

Infrastructure includes any system or equipment in a city that can be used by the population. For example, water, energy, or transportation systems all have an impact on climate change. The research chair is currently studying how those infrastructures are evolving in cities, like the impacts of the creation of green backstreets in Montreal.

Axis 2

Climate justice means considering the effects that actions may have on the population, since some actions can actually make social and environmental inequalities worse. For example, say a green space is created in a city, it must be easily accessible by all, including vulnerable groups. The research chair is seeking to understand who can be of help in ensuring that the actions being taken are more just.

Axis 3

Many climate researchers are focusing on major cities. However, **suburban living environments** present different challenges since they are farther away from city centers. For example, residents often depend on their cars to get around, and that has an impact on the climate. The research chair is exploring how to take action in the suburbs and analyzes the new real estate developments in the Greater Montreal area.

Axis 4

It may seem as though **emotions** would have nothing to do with climate change, but our feelings are actually central to everything we do for the climate. We may feel overwhelmed, anxious, powerless, or disinterested when it comes to this seemingly impossible challenge. But on the other hand, we may feel angered, inspired, or motivated to take action! The research chair is analyzing how emotions influence the participation of residents. Right now, researchers are working to understand the motives of some green activist groups in the province of Quebec.

It's time for GENACTION !

Try This at Home:

Getting Started by Listening to Your Emotions

Sophie L. Van Neste says that the best way to make changes is to start by figuring out what is not working, whether that is related to the climate or not. If there is something that makes you angry, surprises you, or makes you uneasy, the fact may be that a change to a social norm needs to happen.

Once you have figured out how you feel, speak with others that feel the same way you do. You can learn and think about things together to see if certain social norms are outdated, have consequences, are disruptive, or are just simply unfair. Once this is done, you can get to work and take action on the challenges that you feel are important. For example, if the large amounts of trash being thrown away by your school cafeteria worries you, you can ask them why they are doing that and try to understand what challenges they are facing and their logic behind it. Asking questions also allows the conversation to move forward, gain new perspectives, and open the door for positive changes to happen.

"It is not because you are just a kid that you cannot have a valuable contribution, quite the opposite. Kids ask new questions and bring new perspectives that adults sometimes never considered."

Sophie L. Van Neste

Climate Action :

Seek Out, Understand, and Make Changes Together

You can get involved for the climate in your community at different levels like in your neighborhood or school. You can get involved with the student council and other clubs that are related to climate change. You can also do what researchers do and write summaries about what is happening around you and think about what improvement can be made.

That requires learning, understanding existing challenges, and considering that every action has either a positive or negative impact. Research allows us to discover what is working and see that people are meeting the challenges successfully, which helps us keep hope alive when we run into roadblocks. What is most important is not to act alone. When you start a conversation about the things you think are wrong, you can rally others to join you and then you can work together. When we work as a group, we are stronger, and we help keep each other motivated.

"Some changes can take a long time and it can sometimes be frustrating, but it is part of the learning process. Do not accept quick answers and do not get discouraged."

Sophie L. Van Neste

It's time for GENACTION!

Meet Our Local Science Hero:

Sophie L. Van Neste
Professor and Canada Research Chair in Urban Climate Action at the Institut national de la recherche scientifique

How did you start becoming interested in climate change?

"In CÉGEP, I was shocked by several events that went against protecting the environment and social justice. That is when I decided to get involved. It was born of a sense of urgency, a feeling that this affected me, and a belief that I could make a difference."

What makes a good climate change researcher?

"You cannot shy away from questioning things. You need to enjoy learning, gaining a complete understanding, and being curious and hard-working. The steps that researchers take are very important because we all have our initial hypotheses, emotions, and intentions. So, we have to buckle down!"

What is the most important thing to remember?

"Climate change is of the utmost urgency. We must act now! Yet, we need to control our negative emotions from taking over, and instead use those emotions to give us the strength to get to work, together. Only by standing united will we be able to rise to meet the challenges facing the climate."

This Science Spotlight was written based on Sophie L. Van Neste, interview by Myriam Kessiby, Montréal, Québec, August 19th, 2022

Climate Change
Past, Present, and Future

Earth is the only planet in the solar system known to support life. What makes our home so special? Earth has an atmosphere, a layer of gases between our planet and space. Some of these gases, like carbon dioxide, are called **greenhouse gases**. They are crucial parts of our atmosphere; they trap in the heat of the sun, similar to how heat is trapped in a greenhouse, or in a car on a hot day. This process, called the **greenhouse effect**, keeps Earth's temperature warm enough for living things to thrive.

The sun's rays hit our round, tilted planet unevenly. This uneven heating of Earth's surface leads to differences in temperature, which drives weather patterns. We call the patterns in temperature and weather over long periods of time **climate**. Different parts of the world have vastly different climates; it depends on how much heat they receive, as well as what landscape features are nearby. Water, mountains, ocean currents, and forests all impact our climate. In turn, living things around the world have adapted to the climate they live in.

Something, though, is changing. Over the past two hundred years, humans have been burning fossil fuels, such as coal and oil, to make energy to power our daily lives. Fossil fuels are made from decomposed plant matter and microscopic life millions of years old. This matter is full of carbon, and, burning it releases, or emits, billions of tonnes of **carbon dioxide** gas into the atmosphere every year. When too much carbon dioxide is emitted, the delicate balance of greenhouse gases maintaining

Earth's climate is upset. More and more heat is trapped, causing the planet to warm. Weather patterns change, water levels rise, storms get worse.

Climate has changed many times throughout Earth's history, from ice ages to periods much hotter than today. So why is this time any different? Scientists agree on two things. One, temperatures are rising faster than they ever have in documented climate history. Two, this climate change is driven by human activities, due primarily to greenhouse gas emissions.
Climate change is already impacting people's ways of life all over the world. Powerful storms, droughts, forest fires, and floods are threatening people's access to food, water, and safe homes.

The most important step we can take to prevent serious climate change is to reduce greenhouse gas emissions. Incredibly brave and caring people around the world are finding new ways to reduce emissions and make our communities climate resilient every single day. And you can join them! These Science Spotlights are here to help us learn more about climate change and how you can take action.

Our Commitment to the Decolonization of Science

Institutions of GenAction initiative respect and affirm the inherent and Treaty Rights of all Indigenous Peoples across what we now know as Canada. We give thanks to the Indigenous Peoples who care for this land since time immemorial and pay respect to their traditions and ways of knowing. We acknowledge their many contributions to innovations in Science, Technology, Engineering, and Mathematics, past and present, and are committed to deepening engagement and collaborating with Indigenous Peoples as partners in order to advance truth and reconciliation and the decolonization of science.

Climate Change: Past, Present, and Future is based on...Delmotte, Masson, V., P. Zhai, A. Pirani, S.L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M.I. Gomis, et al. 2021. "Summary for Policymakers. In: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change." Intergovernmental Panel on Climate Change. Cambridge University Press. In Press.