

# Climate change adaptation in public health: over 10 years of progress in Quebec

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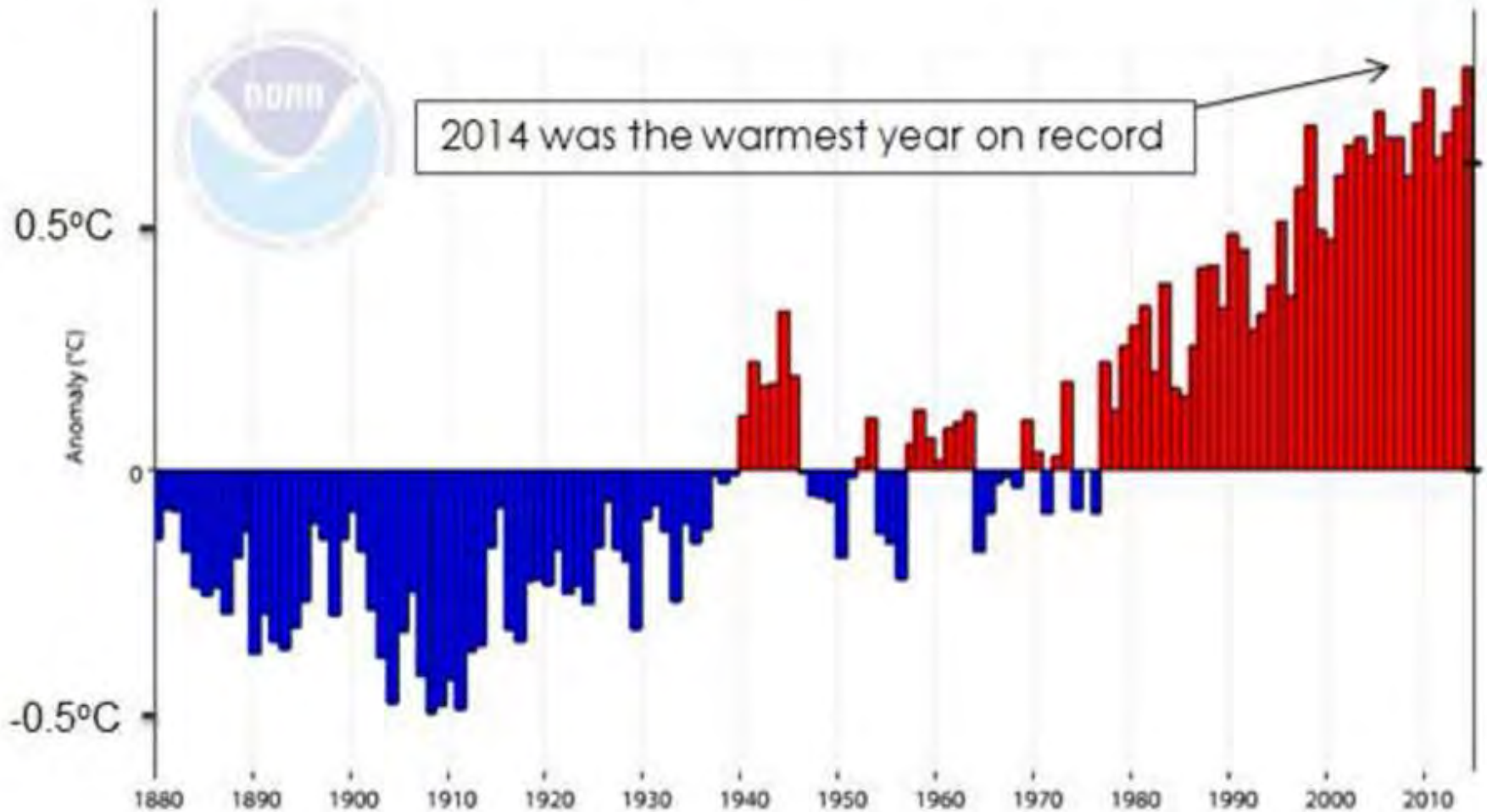
[www.inspq.qc.ca](http://www.inspq.qc.ca)

# “Warming is unequivocal”

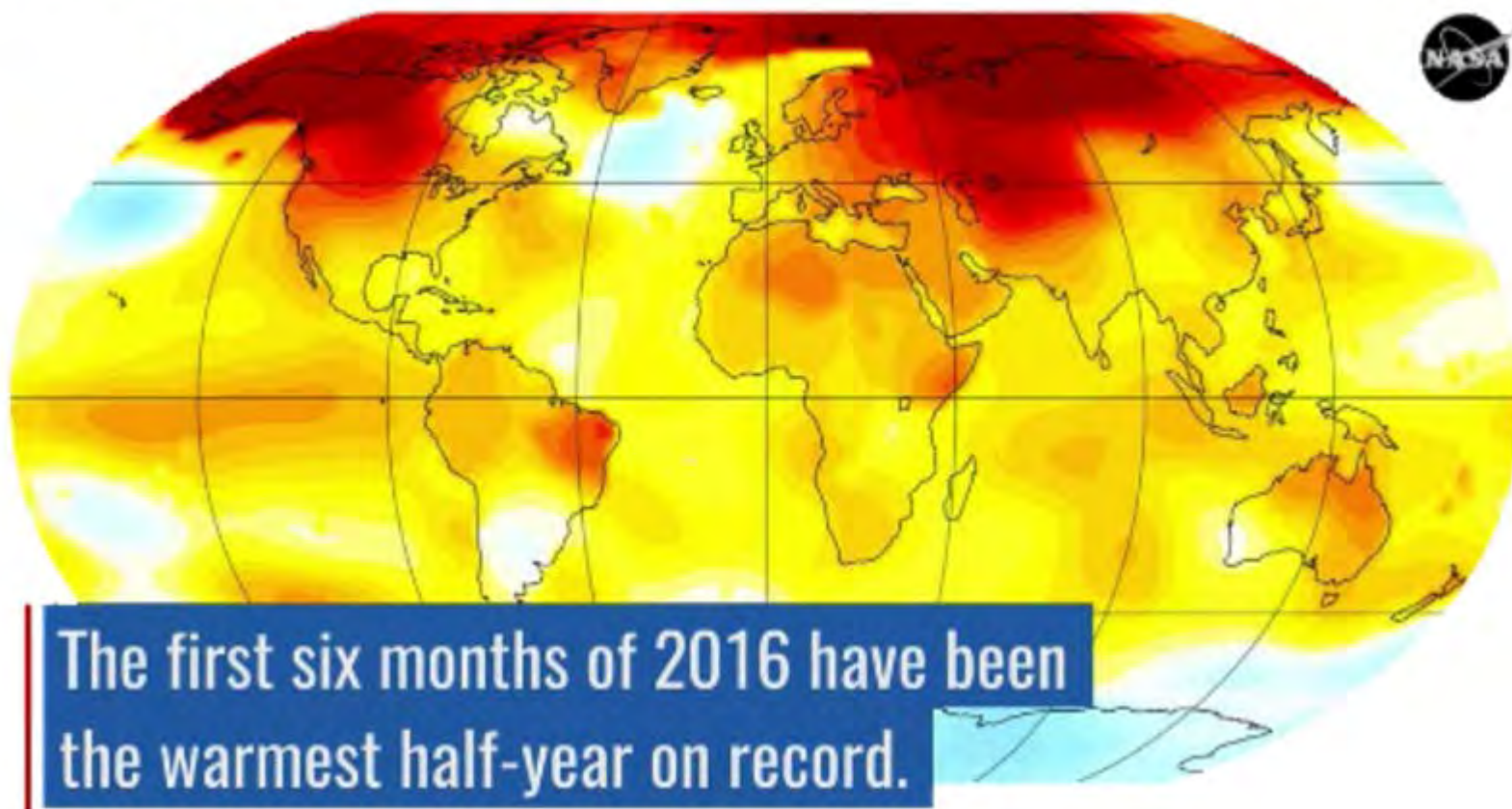
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<http://www.ec.gc.ca/>

**Global Land and Ocean Temperature Anomalies, January - December**  
(Annual anomalies relative to 20<sup>th</sup> century)

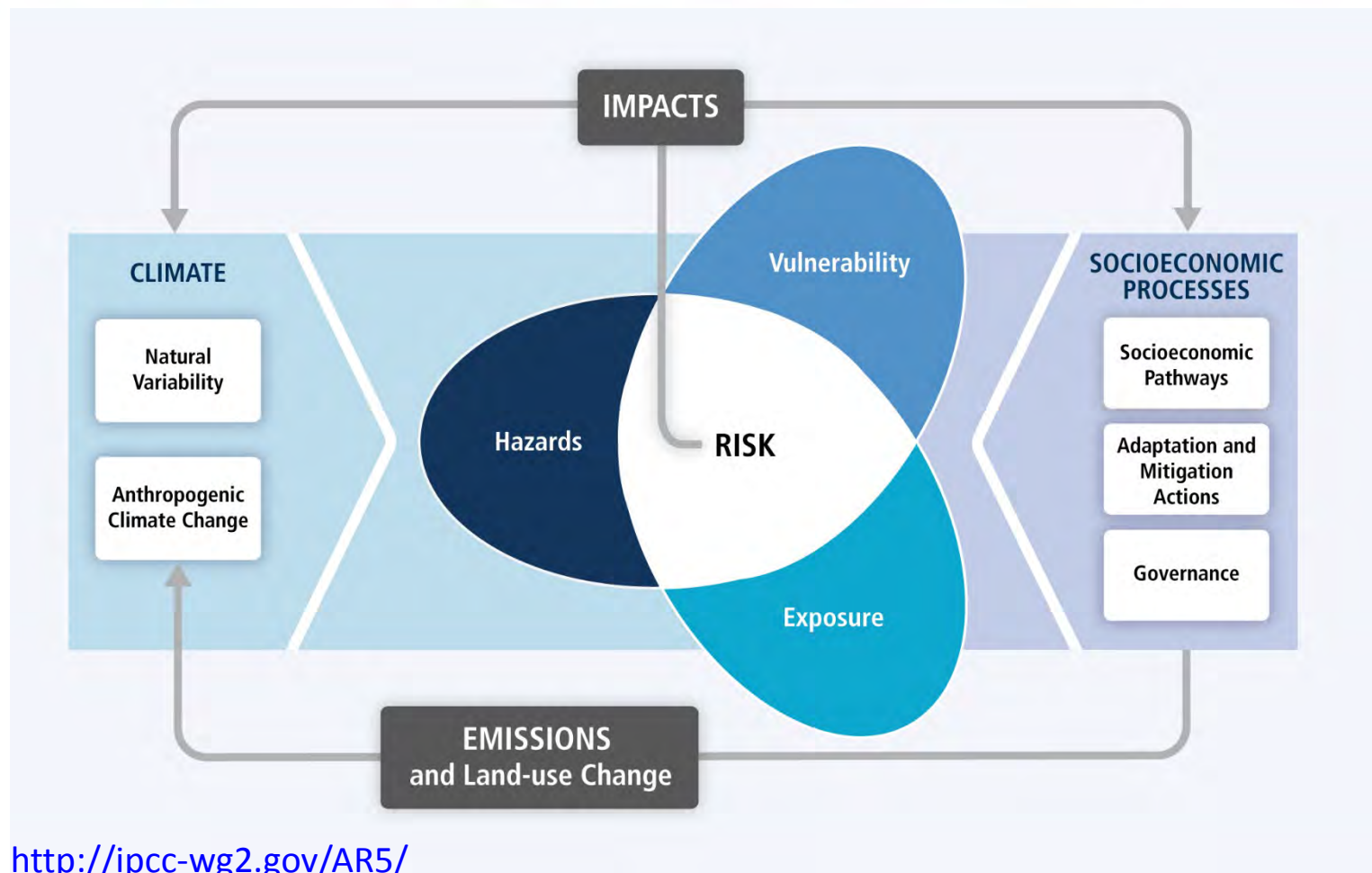


## TEMPERATURE RECORDS IN 2015, 2016... WHAT WILL 2017 HAVE IN STORE?



[http://climate.nasa.gov/climate\\_resources/143/](http://climate.nasa.gov/climate_resources/143/)

# How can we reduce the impacts?



# Good News!

## 2007: Quebec government launched the **Climate Change Action Plan (PACC)**

- Action Plan 2006-2012
  - Funded by the Green Fund (Fonds Vert)
  - \$ provided by Carbon tax and Carbon market
- ~10% Green Fund reserved for adaptation
  - Of this, ~5M \$/y allocated for Health adaptation
- → **0.63\$/ pers./ y** for health activities...



But.....

we still can do....

much with so little.....

Or...

what can be done at the state level

now that the stars are aligned in Canada !

# PACC 2006-2012

## Examples of Realizations

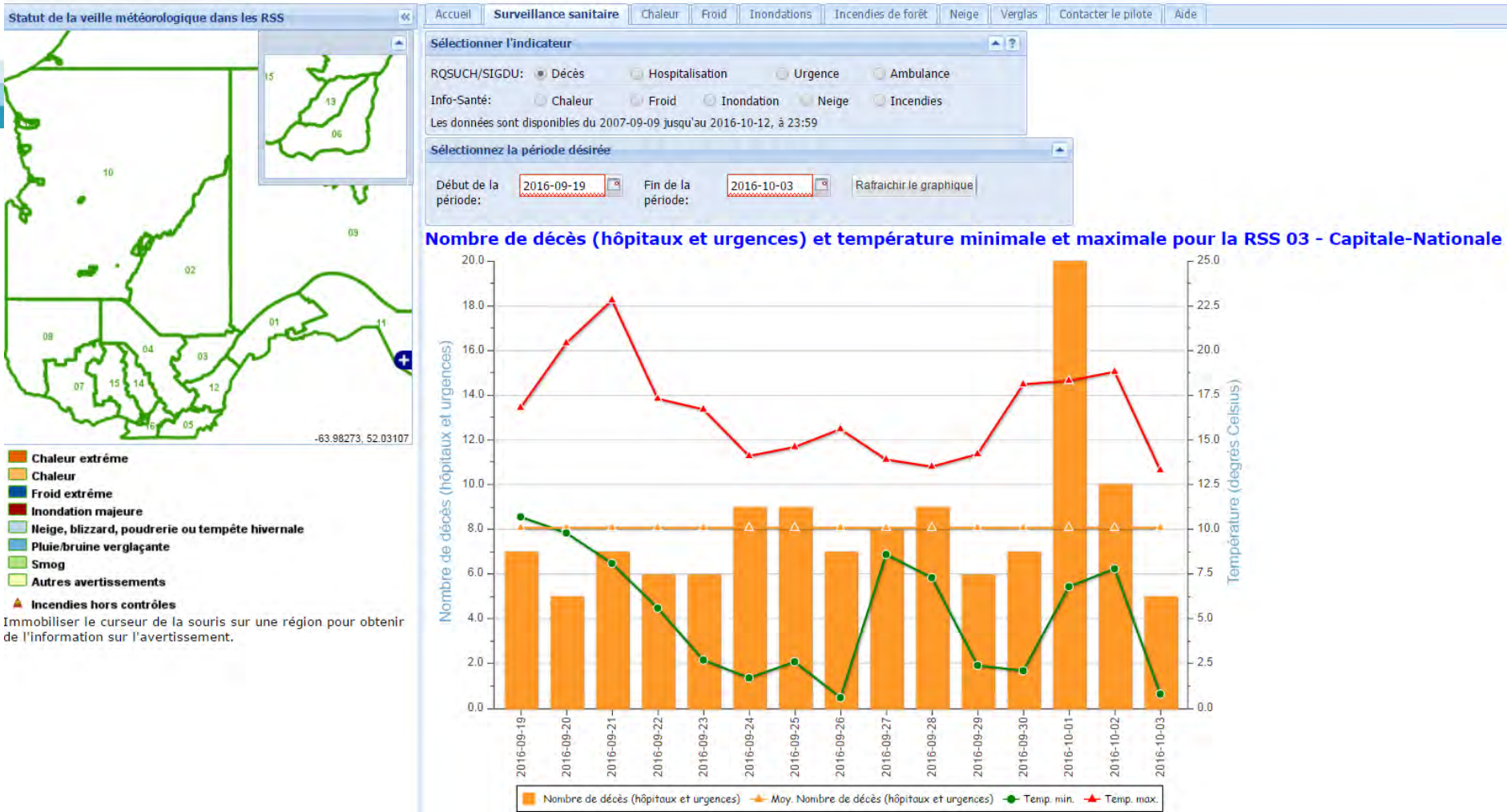
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# 1) Real-time integrated monitoring–warning and surveillance system

Development and implementation, in 2010, of the SUPREME system on the health impacts of **heat**, for all regions of Quebec

- Automated warnings based on high mortality risk thresholds
- 40 contextual indicators
- Open source
- In collaboration with federal and provincial partners



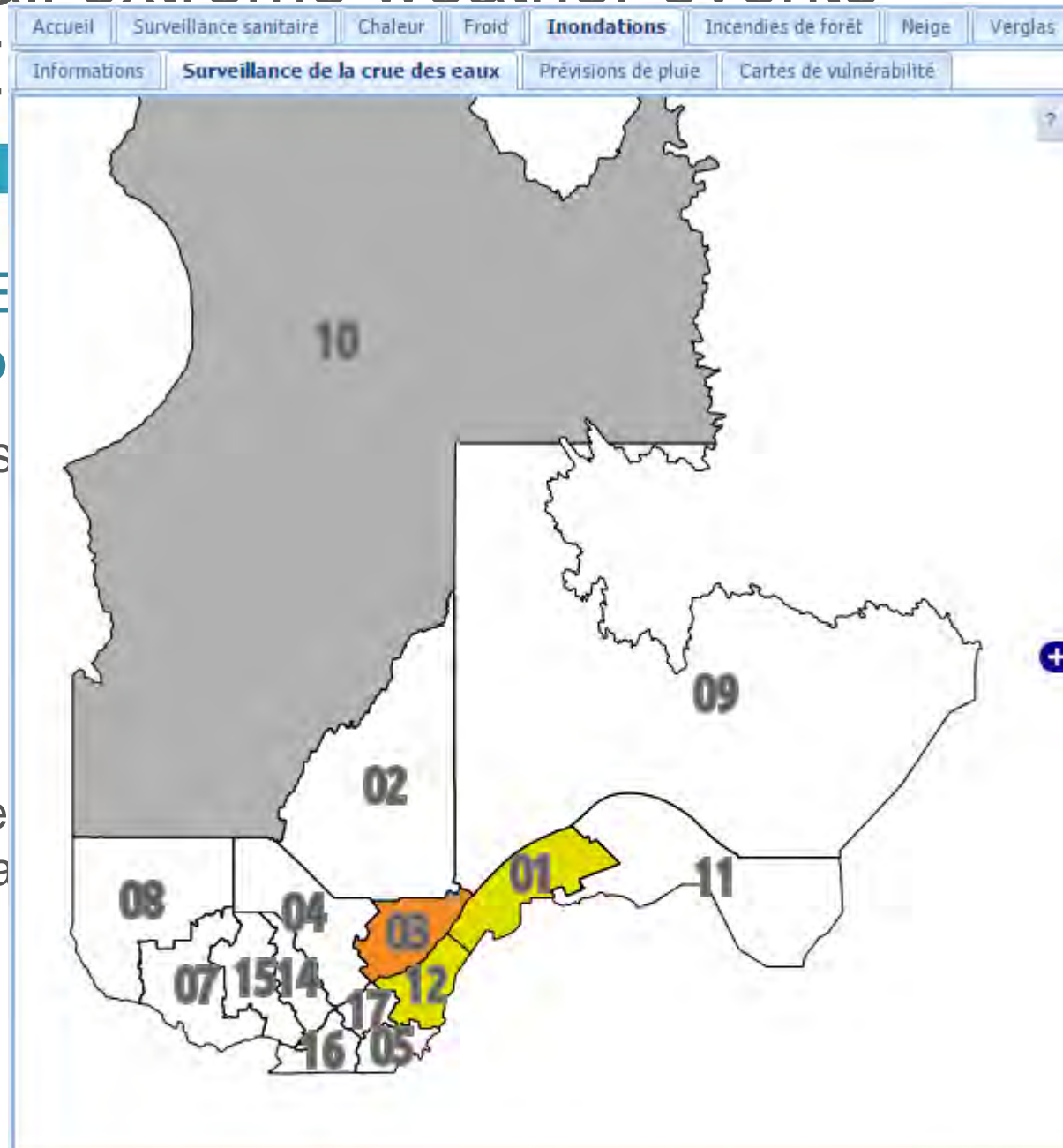
A shared platform

## 2) Inclusion of all extreme weather events into SUPREME

### Extension of SUPREME events and their co

- Winter/summer s
- Forest fires
- Floods
- Coastal erosion

In the last 5 years, be  
professionals and is a



### 3) Guides and Norms



Support the development of **guidelines and standards** for adaptation for:

- Health care facilities
- Daycare centers
- Schools
- Municipalities

**Table 13 Comparison of the various urban heat island mitigation measures**

Measure	Focus of heat reduction	Sustainability of the measure with maintenance	Additional benefits	Availability of the technology or service in Québec
<b>VEGETATION</b>				
Urban greening strategy.	City	More than 25 years.	Air and water Recreation Biodiversity	Good
Selective tree planting.	Building and city	More than 25 years.	Air and water Recreation Biodiversity	Good
Greening of parking lots.	City	More than 25 years.	Air and water	Good
Planting of vegetation around buildings.	Building and city	More than 25 years.	Air and water Biodiversity	Good
Green walls.	Building and city	More than 25 years.	Air and water Biodiversity	Good
Green roofs.	Building and city	More than 25 years.	Air and water Recreation Biodiversity	Good
<b>URBAN INFRASTRUCTURE</b>				
Reflective materials for buildings.	Building and city	10 to 25 years.	Air	Good
White roofs.	Building and city	10 to more than 25 years (variable depending on the type of covering chosen).	Air	Good
Colour coatings for high solar reflectivity.	Building and city	More than 25 years.	Air	Limited
Building insulation.	Building	More than 25 years.	n/a	Good
Thermal inertia.	Building	More than 25 years.	n/a	Good

n/a: not applicable.

**Figure 7 Impermeable paving stones with permeable joints. Pedestrian areas with paving stones that allow water percolation**

# BNQ 3019-190 Guidelines

## Countering the Urban Heat Island Effect in Parking Lot Development – A Design Guide



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du Québec

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<http://www.bnq.qc.ca/en/standardization/environment/countering-the-urban-heat-island-effect.html>

Agri-Food

Business management

Civil engineering and urban infrastructure

Construction

Customer service

Environment

Absorbing Wells

Biomethane

Compostable plastics

Composts

Composts - Determination of Respiration Rate

Control of Light Pollution

Countering the urban heat island effect

### Countering the urban heat island effect

Lutte aux îlots de chaleur urbains - Norme BNQ 3019-190 - Amé...





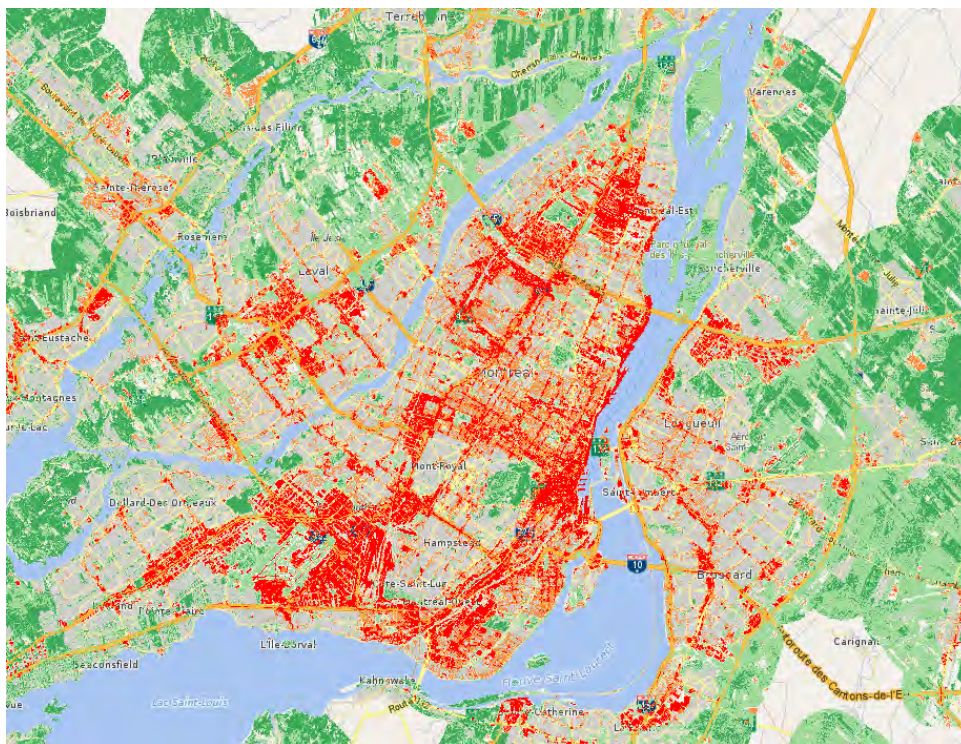
BNQ 3019-190 Guidelines  
Countering the Urban Heat Island Effect in Parking Lot Development – A Design Guide

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# Tools to support Urban Heat Island reduction

Free open access Cartography :  
<http://geoegl.msp.gouv.qc.ca/gouvouvert/>  
Very popular: 40 000 downloads



# Drugs and undesirable effects Heat

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## Médicaments et effets indésirables : recommandations cliniques en périodes de canicule

### AVANT-PROPOS

Le Plan d'action 2006-2012 sur les changements climatiques du gouvernement du Québec, intitulé *Le Québec et les changements climatiques, un défi pour l'avenir*, met à contribution plusieurs ministères et organismes québécois. Le Fonds vert, une redevance sur les carburants et les combustibles fossiles, assure majoritairement le financement de 26 actions s'articulant autour de deux grands objectifs : la réduction ou l'évitement des émissions de gaz à effet de serre et l'adaptation aux changements climatiques.

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## 4) Pilot projects (reduction

### Funding of 44 projects

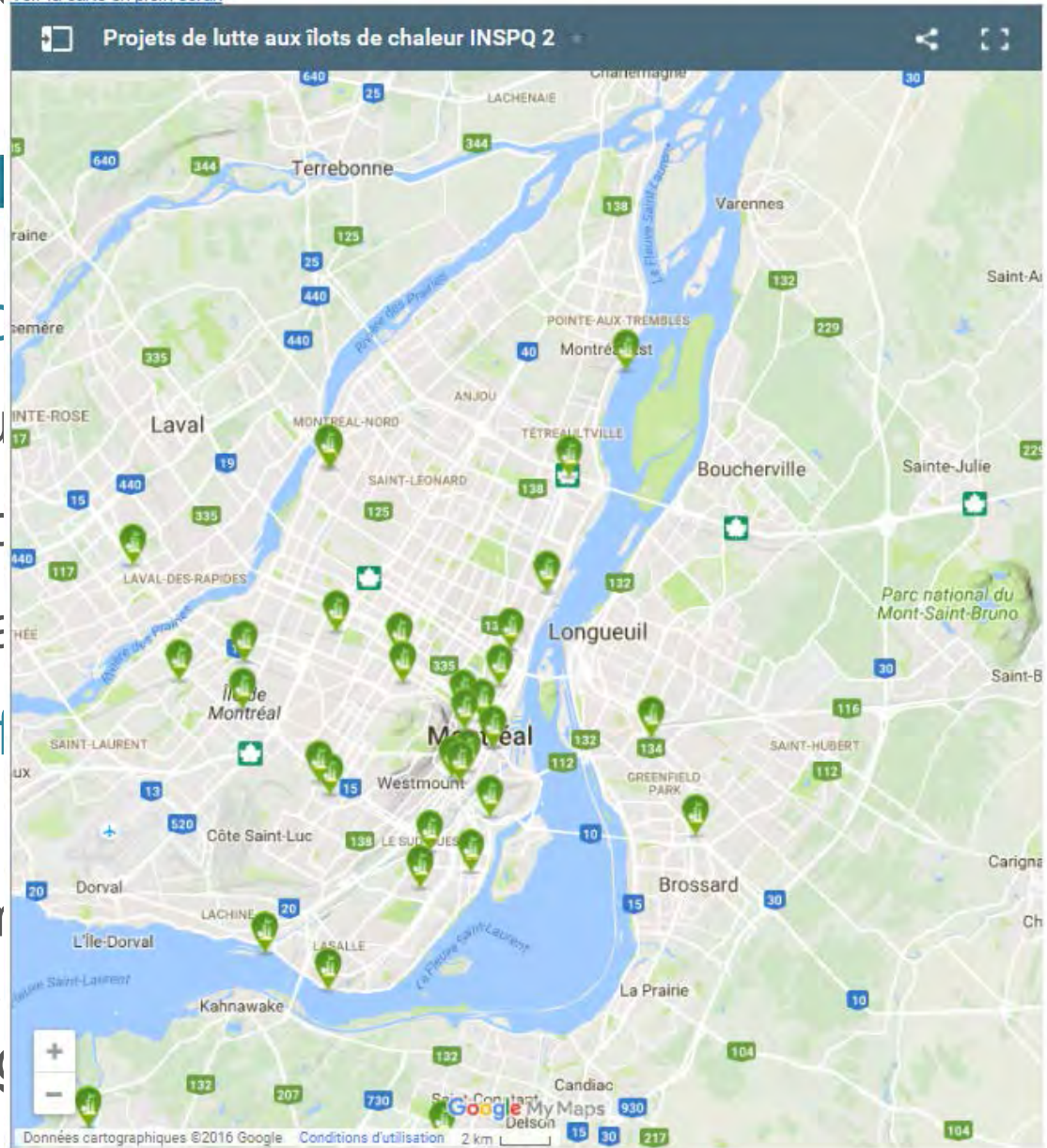
- \$ matching requirement
- Applying our recommendations
- NGOs, municipalities

### Evaluation of their effectiveness on the quality of life

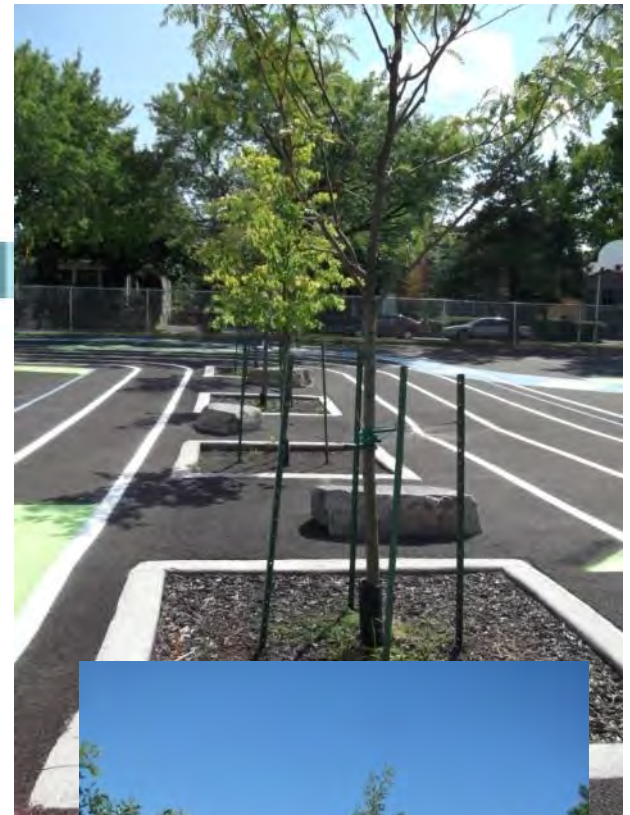
- In coll. Environnement Canada, Institut de la statistique du Québec, modélisation et simulation, micrométéorologie

Découvrez les projets de démonstration sur la carte

[Voir la carte en plein écran](#)



# Pilot Projects - parking



# Pilot Projects - Roofs



# Pilot Projects - Shading

## In public housing



# Pilot Projects – Quality of life improvement

Especially for vulnerable populations



**Before**



**After**

# Pilot Projects – Evaluations

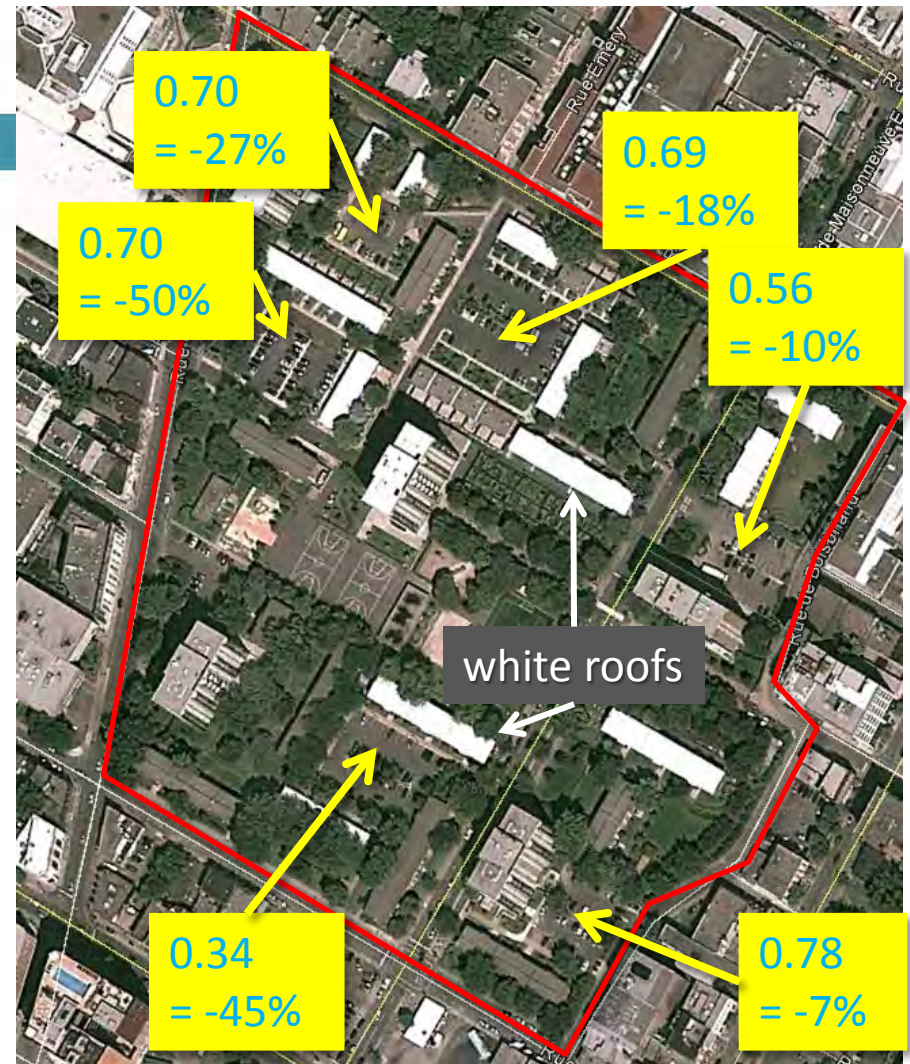
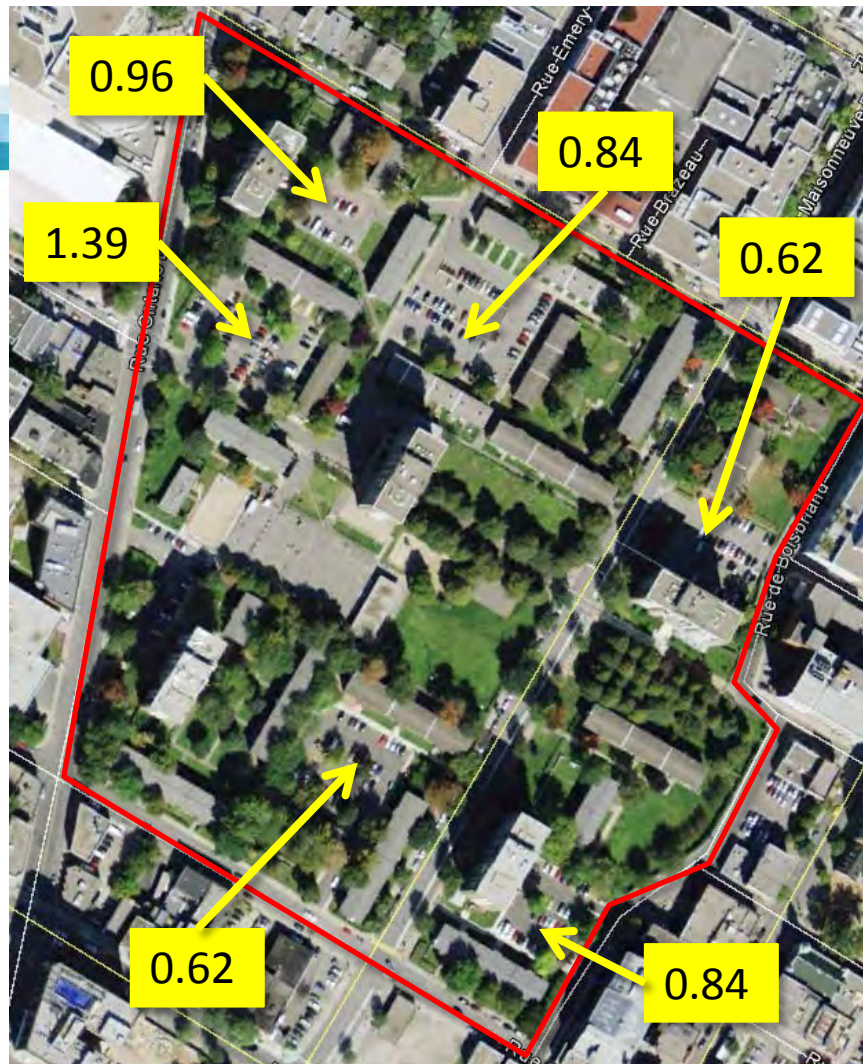
## Qualitative evaluation

- All projects :
  - Included participatory methods and communication and maintenance plans
  - Improved quality of life, social activities, exercise, security perception (survey b/a)

## Quantitative evaluation (UHI reduction)

- Cooler in general (between 0 and – 3,7 °C)
- But... larger scale projects were more effective

# Pilots - Thermal improvement performance (%)



Public Housing Jeanne-Mance in Montreal

## 5) Research projects

### Using research when literature cannot inform us :

- heat/air pollution **risks**
- fragility **fractures** in elders
- **ragweed** allergies
- heat alert **thresholds**
- **zoonotic** infectious diseases
- health impact assessment
- deprived and **vulnerable** populations
- indoor air quality
- **green spaces** health impact
- mapping **permafrost** risk to thawing in Arctic Quebec for healthcare centers and workers

## 6) Communication

### Major efforts in dissemination of information and results

- **Training** for health/other professionals
- **Presentations** to general public and experts
- Creation of the *MonClimatMaSanté* **web site**
  - On health impacts of CC and ways to adapt  
[www.monclimatmasante.qc.ca](http://www.monclimatmasante.qc.ca)
- French Community of practice in CC and Health
  - [www.comclimat.com/fr](http://www.comclimat.com/fr)

## Mon climat, ma santé

POUR MIEUX S'ADAPTER AUX CHANGEMENTS CLIMATIQUES

Mon Climat

Ma Santé

Ma Région

M'adapter

Ressources

BLOGUE

OQACC

A A A



### Herbe à poux : nouvel appel de propositions

Bonne nouvelle! Le ministère de la Santé et des Services sociaux annonce le lancement d'un nouvel...

En savoir plus



### Ashton Hayes, Angleterre : des leçons à tirer!

Connaissez-vous Ashton Hayes? Ce petit village d'Angleterre a réussi, en 10 ans, à réduire ses émissions de gaz à effet...

En savoir plus



### Herbe à poux : faites-lui la vie dure!

Du 15 juillet au 15 août, c'est le temps de tondre, faucher ou arracher l'herbe à poux afin d'en empêcher sa dispersion. La coupe de l'herbe à poux...

En savoir plus

public expert

VERS L'ESPACE GRAND PUBLIC



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Mon Climat Ma Santé



?  
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## Communauté de pratique internationale en santé et adaptation aux changements climatiques

ComClimat

Pourquoi participer

Partenaires

Actualités

Évènements

### ComClimat

**Bienvenue dans la Communauté de pratique internationale en santé et adaptation aux changements climatiques !**

Dans la dernière décennie, les scientifiques ont commencé à mieux comprendre les effets des changements climatiques sur la santé des populations et ont établi que les changements climatiques ne sont plus uniquement un problème environnemental, mais bien un problème pour la santé au sens large. Les effets négatifs des changements climatiques sur la santé peuvent être directs ou indirects. Ces effets se retrouvent, entre autres, au niveau des changements dans le développement habituel des maladies et de la morbidité, de la nourriture, de l'eau et des conditions sanitaires, des logements, des événements extrêmes, et de la population. La mitigation des changements climatiques ne peut être la seule avenue

### Connexion utilisateur

Courriel ou nom d'utilisateur \*

Mot de passe \*

Se connecter

[Demander un nouveau mot de passe](#)

**DEVENIR MEMBRE »**

# Did it work ? What's the recipe ?

[www.inspq.qc.ca](http://www.inspq.qc.ca)



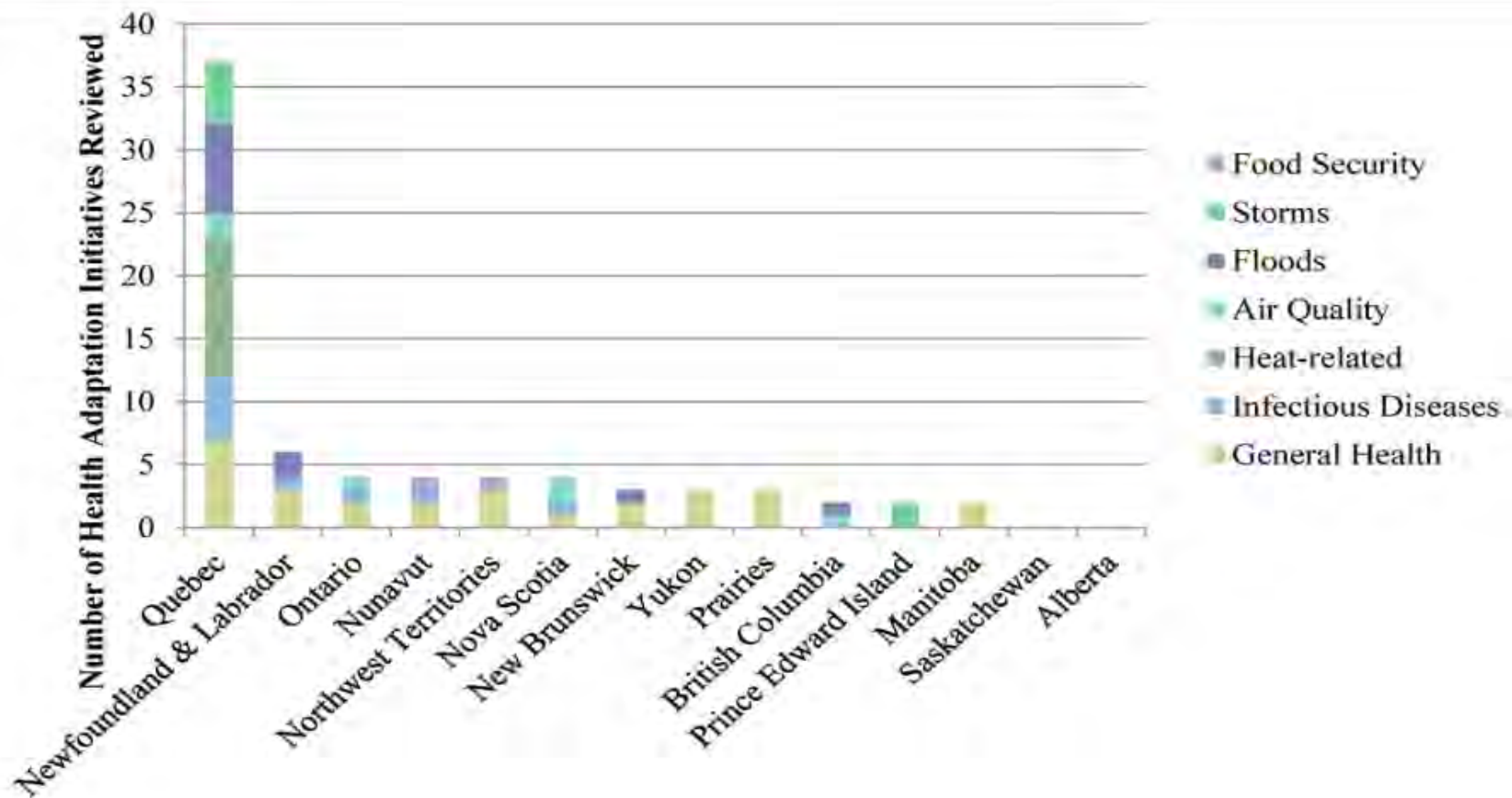
# Did it work?

## Evaluation of actions in PACC 2006-12

### External evaluation program

- For all internal and external projects funded
- Budget earmarked for evaluation at the end of each project
- Documents good and repeatable adaptation methods, and the not so good too.
- Helps not to repeat bad ideas. And to improve good ones.

# Overall, our program is a real success:



Types of climate change risks addressed by provincial health adaptation initiatives

Source : Austin, S.E et al. Public Health Adaptation to Climate Change in Canadian Jurisdictions

(2015). <http://www.mdpi.com/1660-4601/12/1/623/htm>

# But, what's the recipe of such a success ?

## Approach for projects implementation

- Open and participatory
- Based on science
- Targeted on the needs of users
- Repeat, improve and avoid past mistakes

## Keys for success:

- Multiannual Financing (not yearly)
- Adequate Planning
- Mobilization of Partners and End-Users

# CC Action Plan 2013-2020

## Consolidating our last orientations

## Emphasis on KT, Prevention and preparedness

[www.inspq.qc.ca](http://www.inspq.qc.ca)

# Knowledge Transfer

- **Web media (starting)** – Showing action in CC adaptation



- Continuing activities for the International francophone **Community of practice** in CC and Health (America, Europe, Africa) (ComClimat)
- **Training** on CC Health impacts and Adaptation
  - Local – for health professionals
  - International – for health and other professionals (MOOC)



# Observatories

- Québec Multipartite Observatory on **zoonosis** and Climate change adaptation

- INSPQ/ UdeMontréal / PHAC/9 more
- Scientific expertise ↔ Public policy

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Bulletin de l'Observatoire  
multipartite québécois sur les  
zoonoses et l'adaptation aux  
changements climatiques

Volume 1 • Numéro 2

SEPTEMBRE 2014

- Québec Observatory on Climate change **adaptation behaviours** (U Laval)

- Monitoring individual and organisational behaviours
- Studies determinants of adaptation behaviours' adoption



Observatoire québécois  
de l'adaptation  
aux changements climatiques

# Tools and Support

- Interactive online **Atlas on the vulnerabilities** of the Quebec population to climate hazards
  - Designed for local and regional stakeholders (U Laval)



- Automatic telephonic **Alert System for Heat and Air Pollution**
  - Designed for elders with chronic diseases



- Maintaining and improving **SUPREME**
  - Evaluation, upgrades, new thresholds.



# Improving public policy

## Governmental strategy for the reduction of ragweed and other allergen pollens 2015-2017

- Mobilize and Support municipalities
- Mobilize Large land owners
- Support documents, financial support, etc.
- Map risk of presence of ragweed by satellite images



# Projects on Urban heat islands reduction


- Large scale Projects
  - Montreal and Québec
  - NGOs in partnership with cities, communities, private sector, health sector
    - Inventory of green structures and vulnerable sites
    - Mobilize stakeholders
    - Coach communities for project realization



INTERVENTIONS LOCALES  
EN ENVIRONNEMENT  
ET AMÉNAGEMENT URBAIN

 milieux de vie  
en santé

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## Projets

☐ CITOYENS ET  
COMMUNAUTAIRES

☐ ÉTABLISSEMENTS  
DE SANTÉ

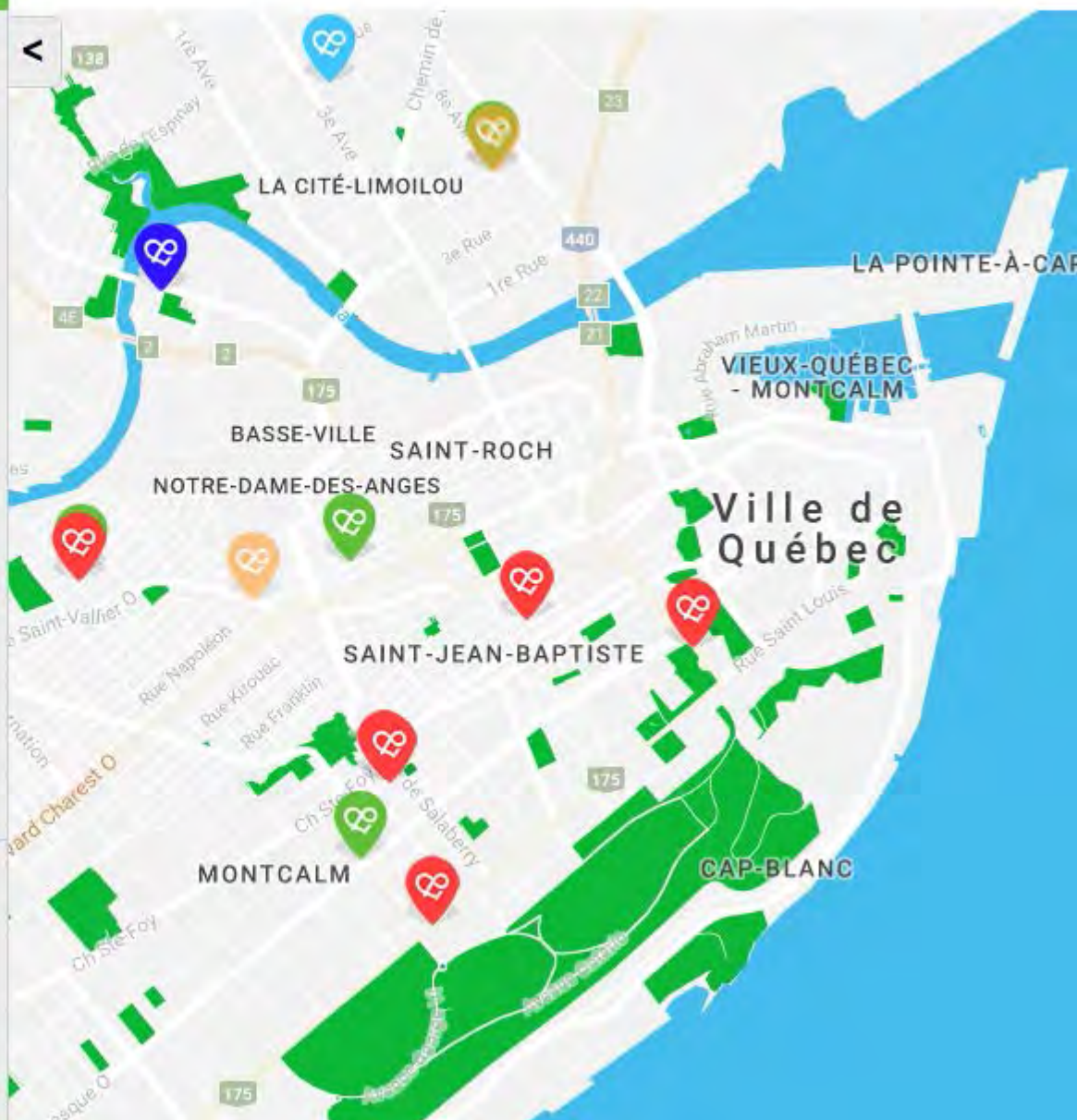
☐ ENTREPRISES

☐ INSTITUTIONS

☐ PROMOTEURS  
IMMOBILIER

☐ ACTUALITÉS  
ET ÉVÉNEMENTS

☐ NOS COUPS  
DE CŒUR



# ILEAU



INTERVENTIONS LOCALES  
EN ENVIRONNEMENT  
ET AMÉNAGEMENT URBAIN

Le projet

Passer à l'action

Partenaires

Cont

☐ Citoyen

☐ Entreprise

☐ Institution



Nos 10  
Indicateurs

☐ Anjou

☐ Mercier-Hochelaga-Maisonneuve

☐ Montréal-Nord

☐ Rivière-des-Prairies-Pointe-aux-Trembles

☐ Saint-Léonard

☐ Accessibilité

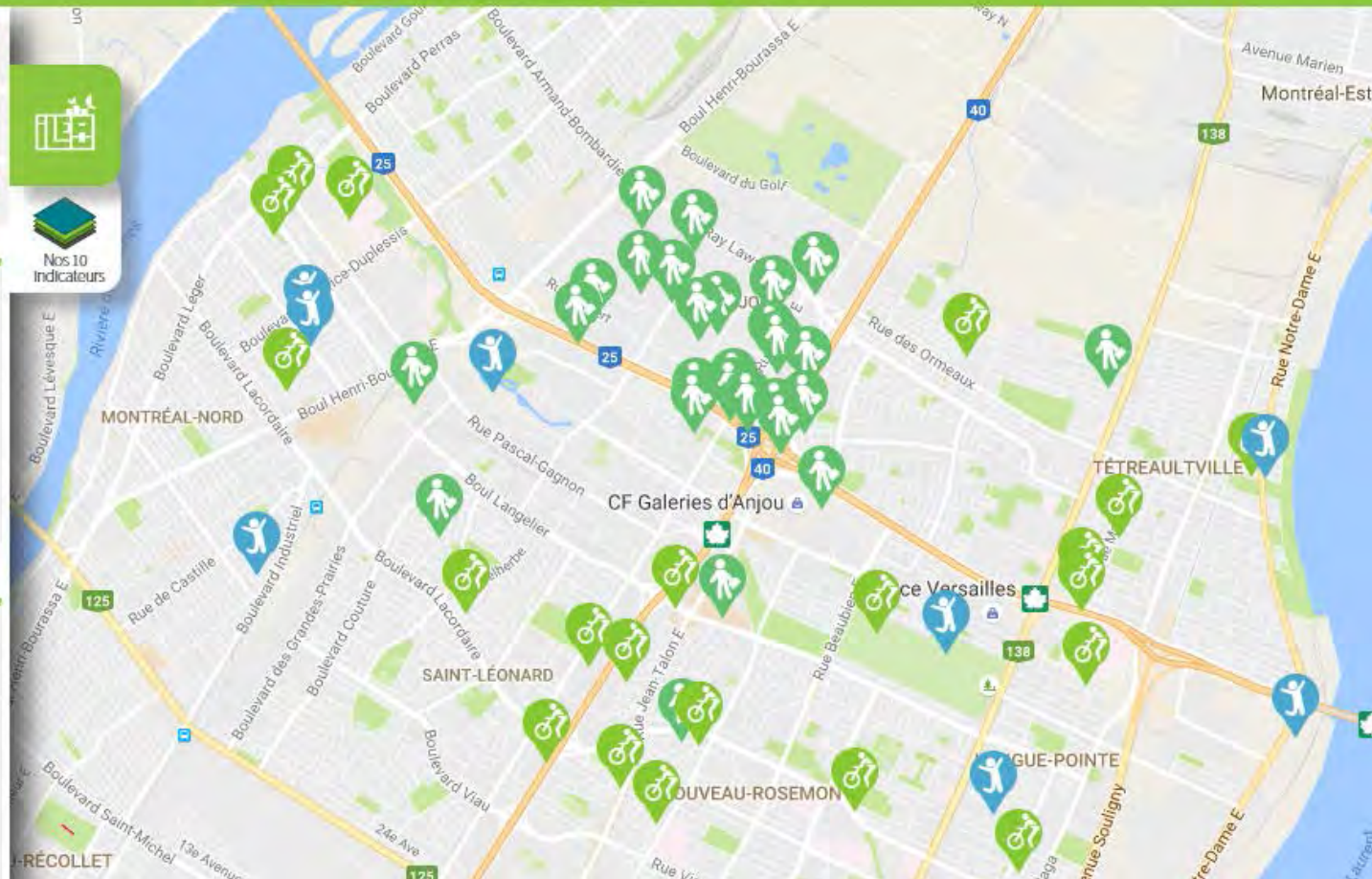
☐ Biodiversité

☐ Mur végétal

☐ Stationnement

☐ Toit blanc

☐ Toit vert



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# Continuing to support Applied Research

- Impacts and benefits of future scenarios of transportation and land planning (UdeMontréal)
- Evaluation of response to psychosocial needs in rural communities affected by climate hazards (UQAR)
- Evaluation of Urban green spaces influence on mental health and wellbeing – emphasis on social inequalities (UQAM)
- Evaluation of urban agriculture as a green infrastructure of individual and collective resilience to global change
- Characterizing the relations between extreme heat, indoor temperatures and physical and perceived health in elders of urban dwellings (DSP Montérégie)
- And more!

# What's next?

## PACC 2013-2020 – post 2017

[www.inspq.qc.ca](http://www.inspq.qc.ca)



# Continuing 2013-2017 activities



But still waiting for budget confirmation...

Continuing activities.... And opening up new sectors of research:


- Workers and heat, zoonosis, and mental health

# Merci!

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