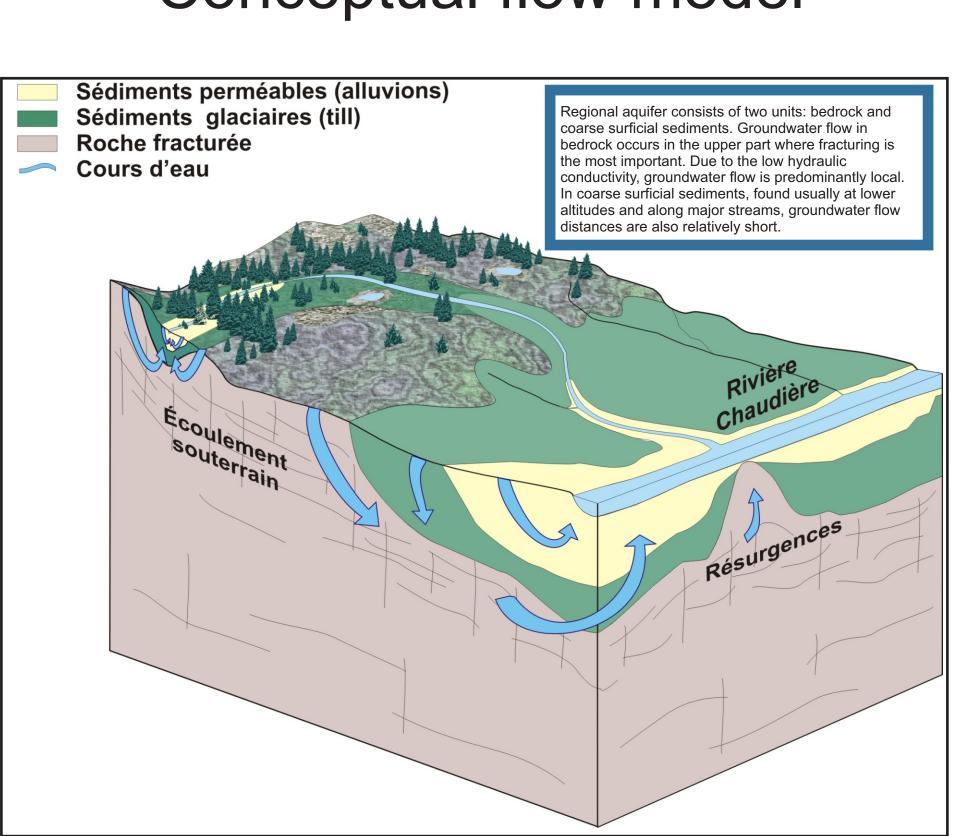
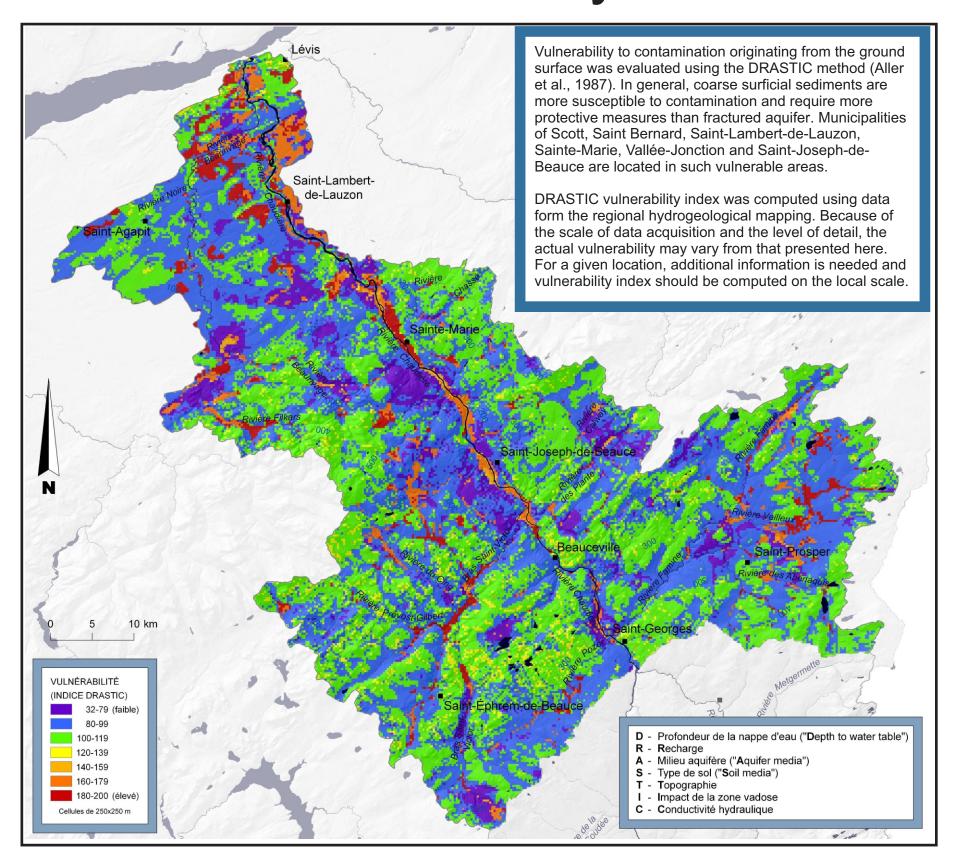
ABSTRACT

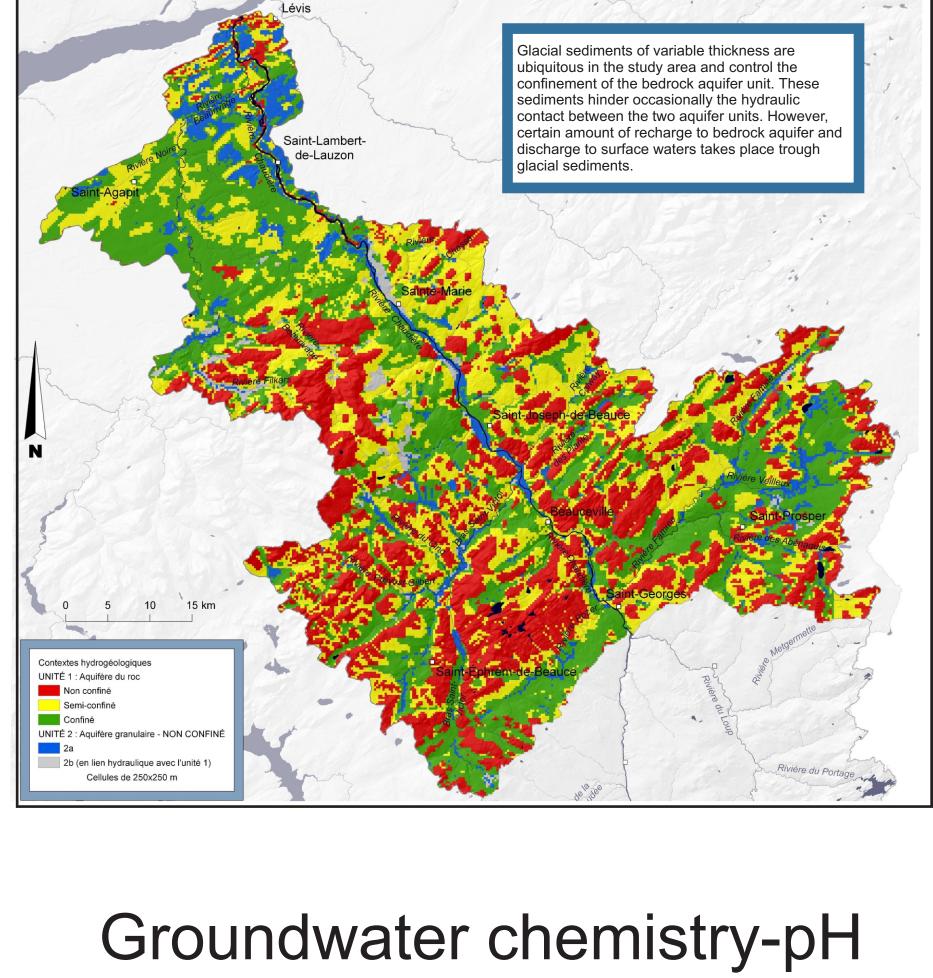
Located south of Quebec City, the Chaudière River Watershed encompasses an area of 6700 km², from the American border to the St. Lawrence River. It is mainly agricultural region where approximately 65% of the population relies on groundwater for its main source of water. The regional aquifer consists of fractured rocks of the Appalachian geological province and sparse coarse surficial sediments. This poster presents results of a regional hydrogeological study focusing on the development of a conceptual model for the regional groundwater flow. Estimated average recharge rates is 64 mm for fractured bedrock and 273 mm for coarse sediments. Over 600 measurements of groundwater levels show a close correlation with topography. The mean hydraulic conductivity of the bedrock is relatively low (K=1x10⁻⁷ m/s), suggesting mainly local groundwater flow. Chemical analyses of 155 groundwater samples show that groundwater is of good quality relative to the drinking water standards.

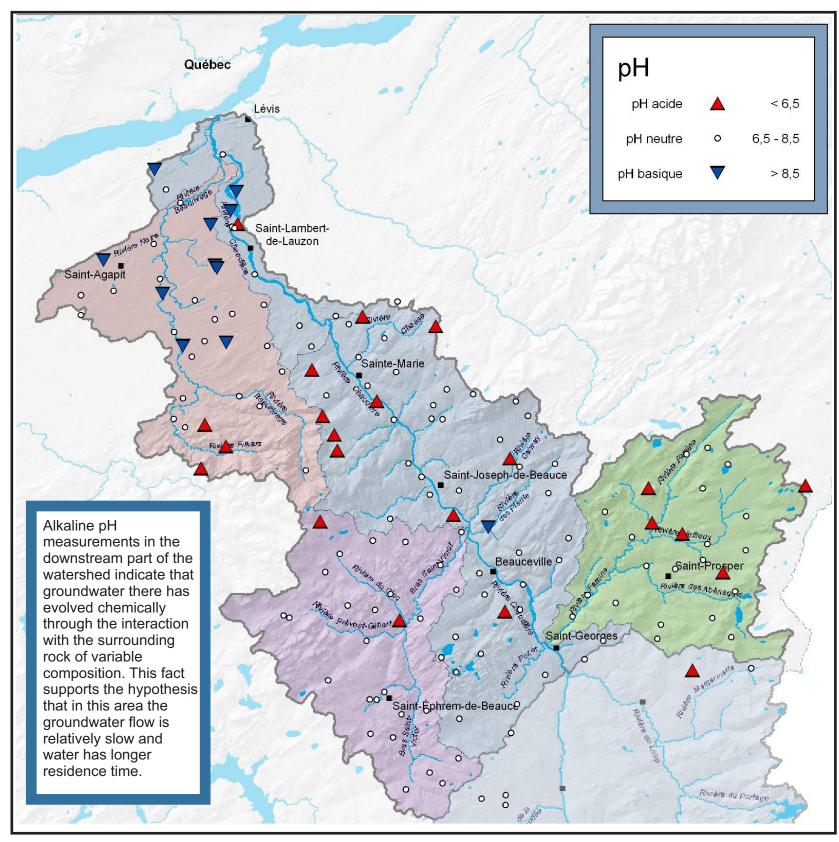


Conceptual flow model

Vulnerability







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For more information, please contact N. Benoit (Nicolas.Benoit@NRCan-RNCan.gc.ca).

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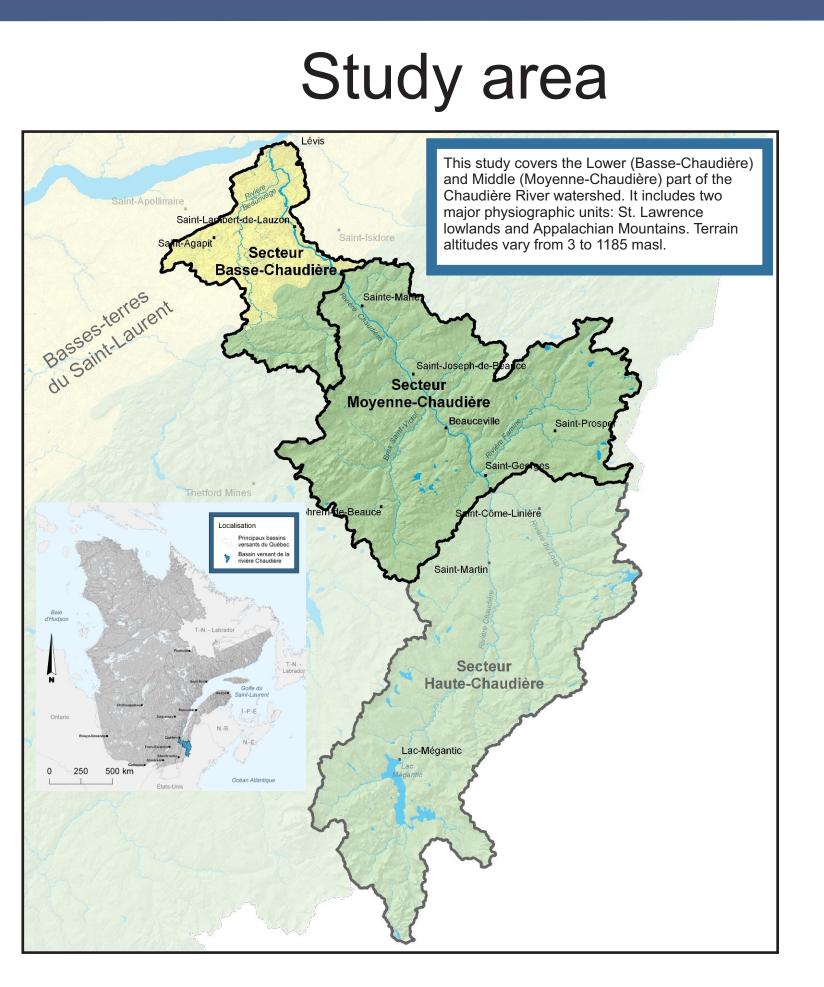
TECSULT | AECOM, Montréal, Quebec

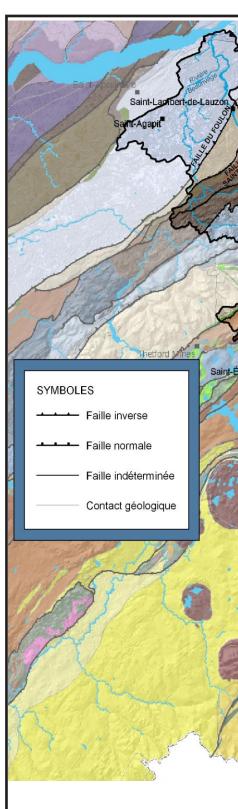
Ruebec Ministry of Environment, Québec, Quebec

Watershed Conservation Authority, Sainte-Marie, Quebec

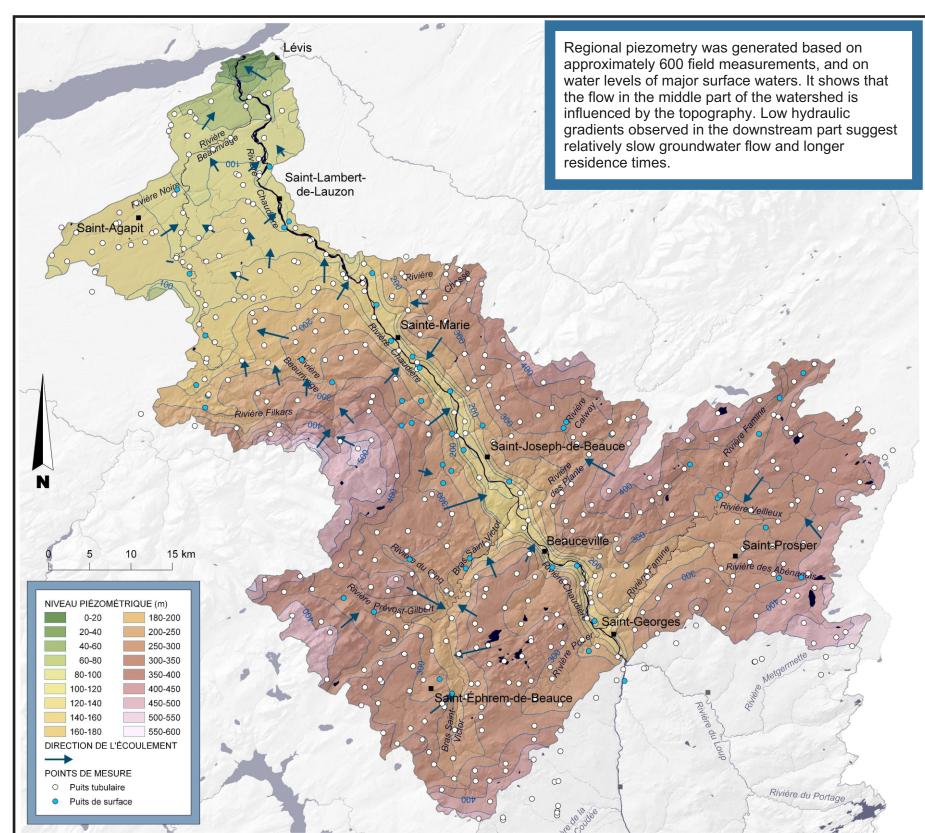
HYDROGEOLOGY OF THE CHAUDIÈRE RIVER WATERSHED, QUEBEC

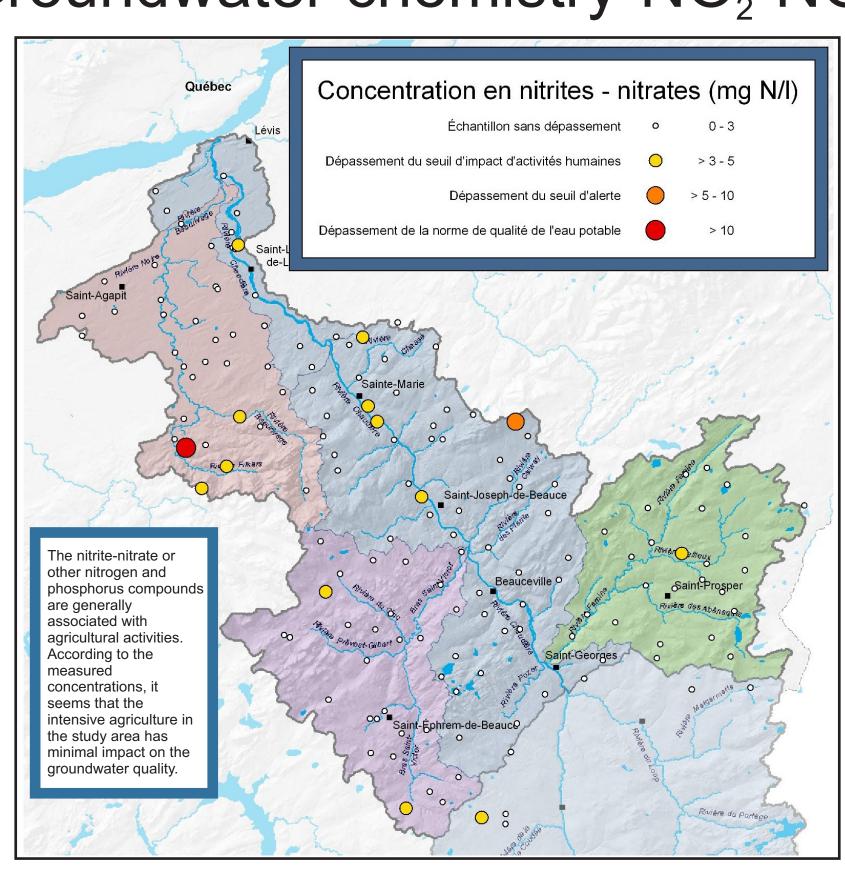
N. Benoit¹,G. Forest², M. Nastev¹, N. Roy³, D. Blanchette⁴, and A. Fréchette⁵





Hydrogeological context





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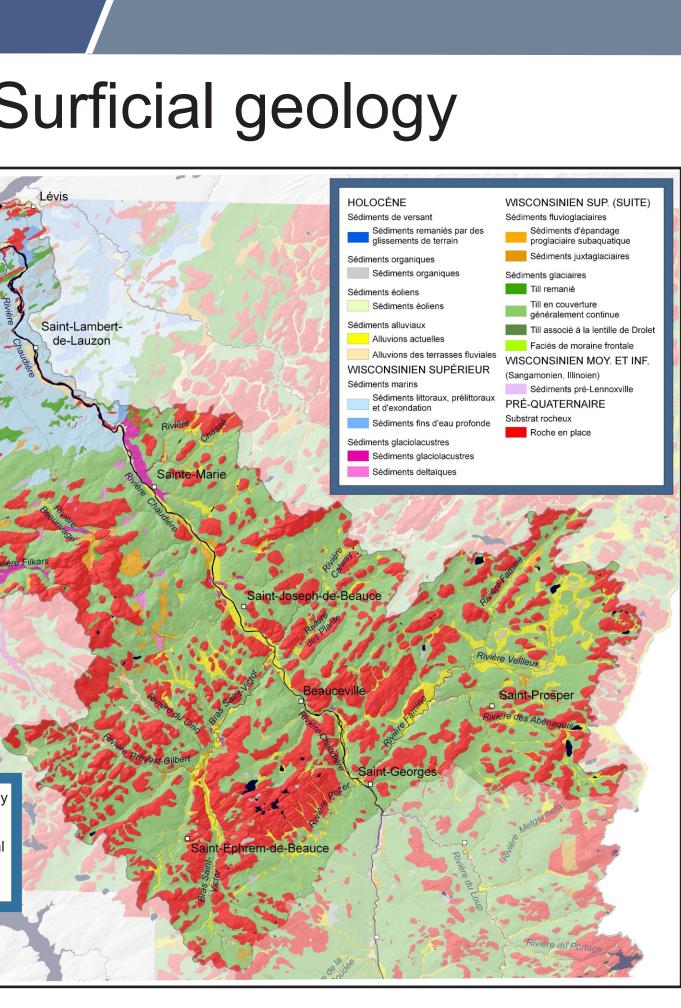
2013

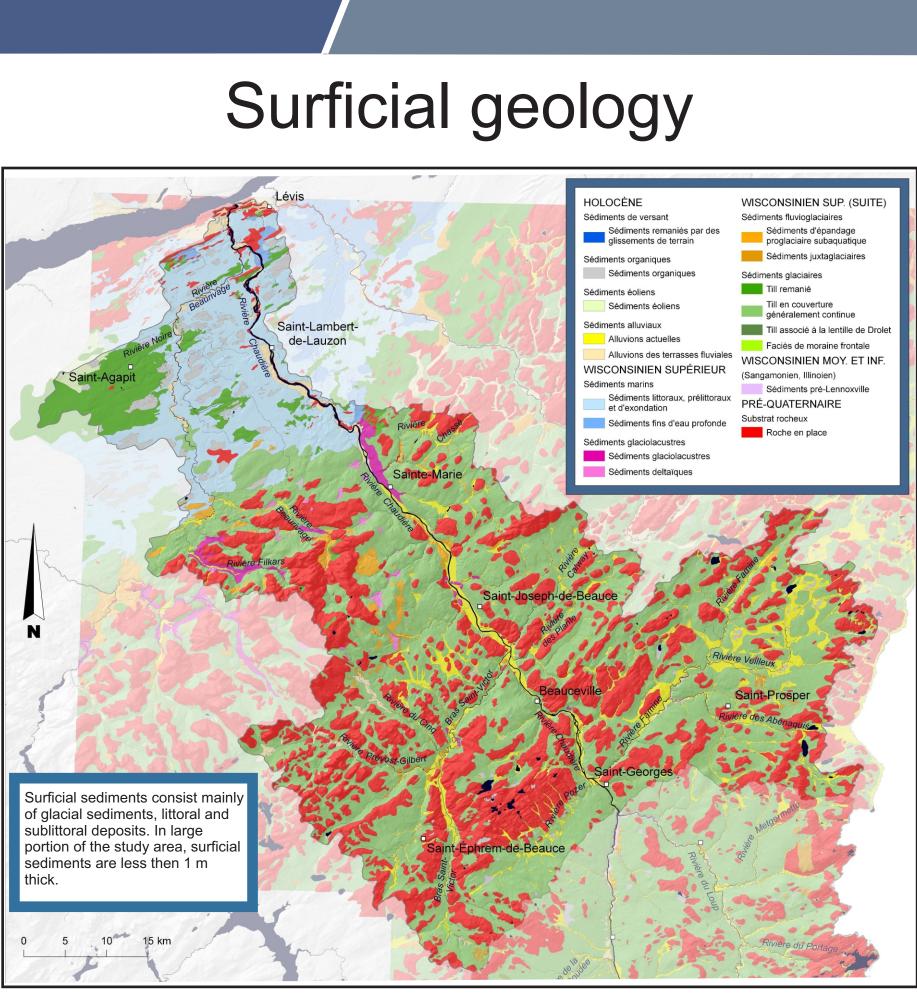
Bedrock geology

	Bedrock consists mainly of sediment weakly metamorphosed with negligit porosity controls the permeability an	ole primary porosity. Secondar	.y	
Seint-Isidore		Géologie simplifiée du ro)C	
month	JOST INTELS	Roches intrusives		
Sainte-Maine		APPALACHES - CEINTURE DE GASPÉ	PÉ) DÉVONIEN	
		Formation de Frontenac Grès, schiste, basalte	MOYEN	
SAMT-OSEPH	the starting	Groupe de Saint-Francis Grès, siltstone, ardoise	SILURIEN	
Falle Seint-Joseph-d	Bally A Charles	APPALACHES - ZONE DE DUNNAGE	1	
Beauce	ville Saint-Prosper	Groupe de Magog Grès, tuf, schiste, siltstone volcanoclastite, mudslate		
SMESSERTE S	Baint-Georges	Mélange de Saint-Daniel Argilite bréchique, volcanite		
	Sec. A	Formation de Clinton Volcanite		
the Beauce Sulfar Saint-	Côme-Linière	Mélange de Chesham Ardoise, schiste, grès, tuf	1	
Saint-Marti		Mélange ophiolitique de la rivière des Plante métagrès, métagabbro		
mer.	and a start of the	Serpentinite	1	
10-30		APPALACHES - ZONE DE HUMBER	1	
	N State	Groupe de Sainte-Rosalie Shale, ardoise		
P. C.	and the second s	Mélange de la rivière Etchemin Mélange tectonique et olistostromal	ORDOVICIEN SUPÉRIEUR - CAMBRIEN MOYEN	
Lac-Mégantic Street	Stores of	Formation de Bulstrode Schiste, grès, calcaire		
Laffic St		Formation de Lévis Schiste, conglomérat, calcaire		
- AN	PLATE-FORME DU SAINT-LAURENT	Groupe de l'Ile d'Orléans Schiste, grès, conglomérat		
K / Bast	(ORDOVICIEN MOY SUP.) Shale, grès, calcaire	Groupe de Rosaire <i>Quartzite, ardoise, phyllade</i>		
XIII ~	APPALACHES (CAMBRIEN - ORDOVICIEN)	Groupe de Sillery Schiste, grès, conglomérat	CAMBRIEN MOYEN	
73	Formation de la rivière Arnold (massif de Chain Lakes) <i>Migmatite, amphibolite</i>	Groupe de Caldwell Ardoise, phyllade, grès,		
<u>w</u>	PROVINCE DE GRENVILLE (ARCHÉEN - PROTÉROZOÏQUE) Gneiss, quartzite, calcaire cristallin amphibolite, mangérite	basalte, andésite Groupe de Saint-Roch Ardoise, phyllade, grès, conglomérat, basalte	NÉOPROTÉ- ROZOÏQUE	

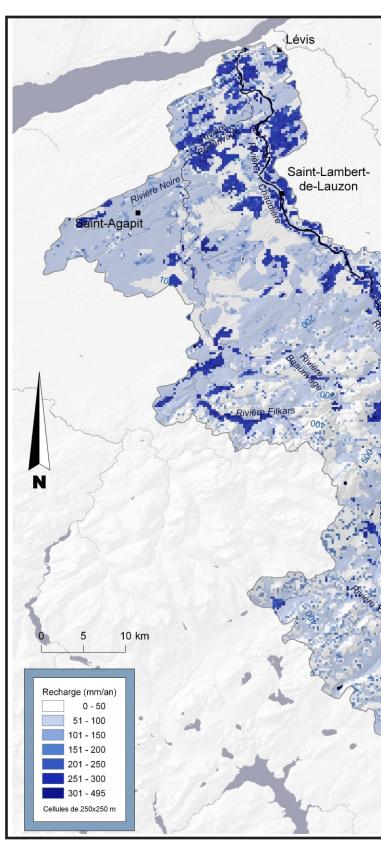
Piezometry

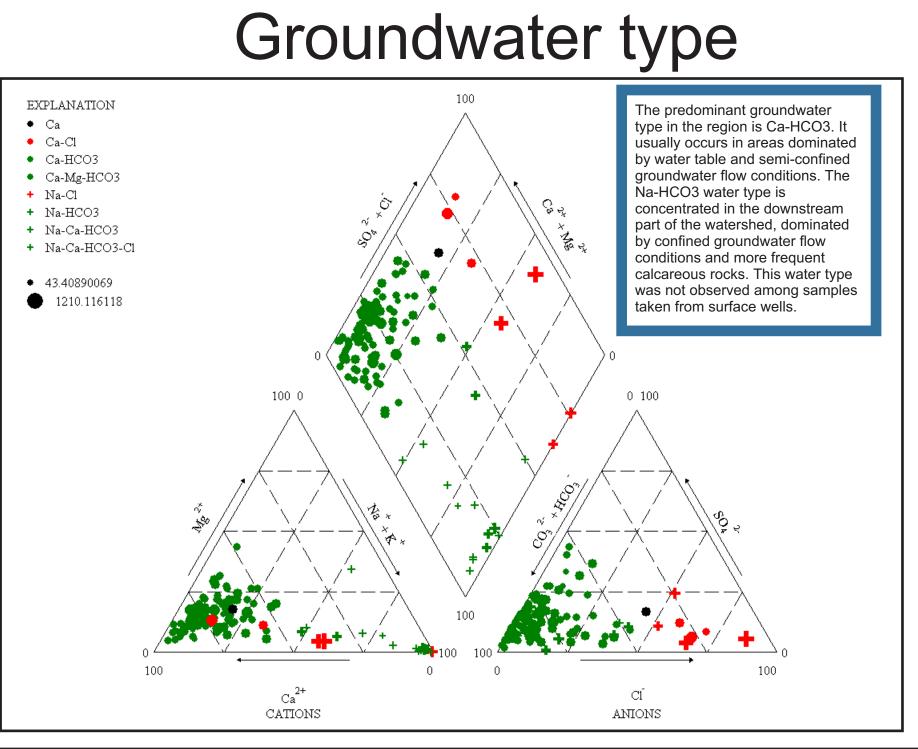
Groundwater chemistry-NO₂-NO₃











This poster presentation is based on the results from the "Projet eaux souterraines de la Chaudière" (COBARIC et UPA 2008), carried out under funding provided by the "Conseil pour le développement de l'agriculture du Québec (CDAQ)", through the Canada-Quebec Water Supply Expansion Program (PAECQ), a Federal-Provincial initiative by Agriculture and Agri-Food Canada (AAFC) and the Québec Ministry of Agriculture, Fisheries and Food (MAPAQ) COBARIC et UPA 2008. Atlas des eaux souterraines du bassin versant de la rivière Chaudière : secteurs de la Basse-Chaudière et de la Moyenne-Chaudière. CD-Rom

Presented at the Canadian Water Resources Association, Québec Date presented: June 2009

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Recharge was assessed using the hydrological model HELP (Schroeder, 1994). Recharge was ssumed as the amount of infiltration water reachin he first regional aquifer unit (bedrock or coarse surficial sediments when present). The average annual recharge is estimated to 81 mm (~64 mm for bedrock and ~273 mm for surficial sediments). Assuming a maximum thickness of 100 m and average porosity of 1%, this recharge represents approximately 6% of the water stored in the aquifer.

