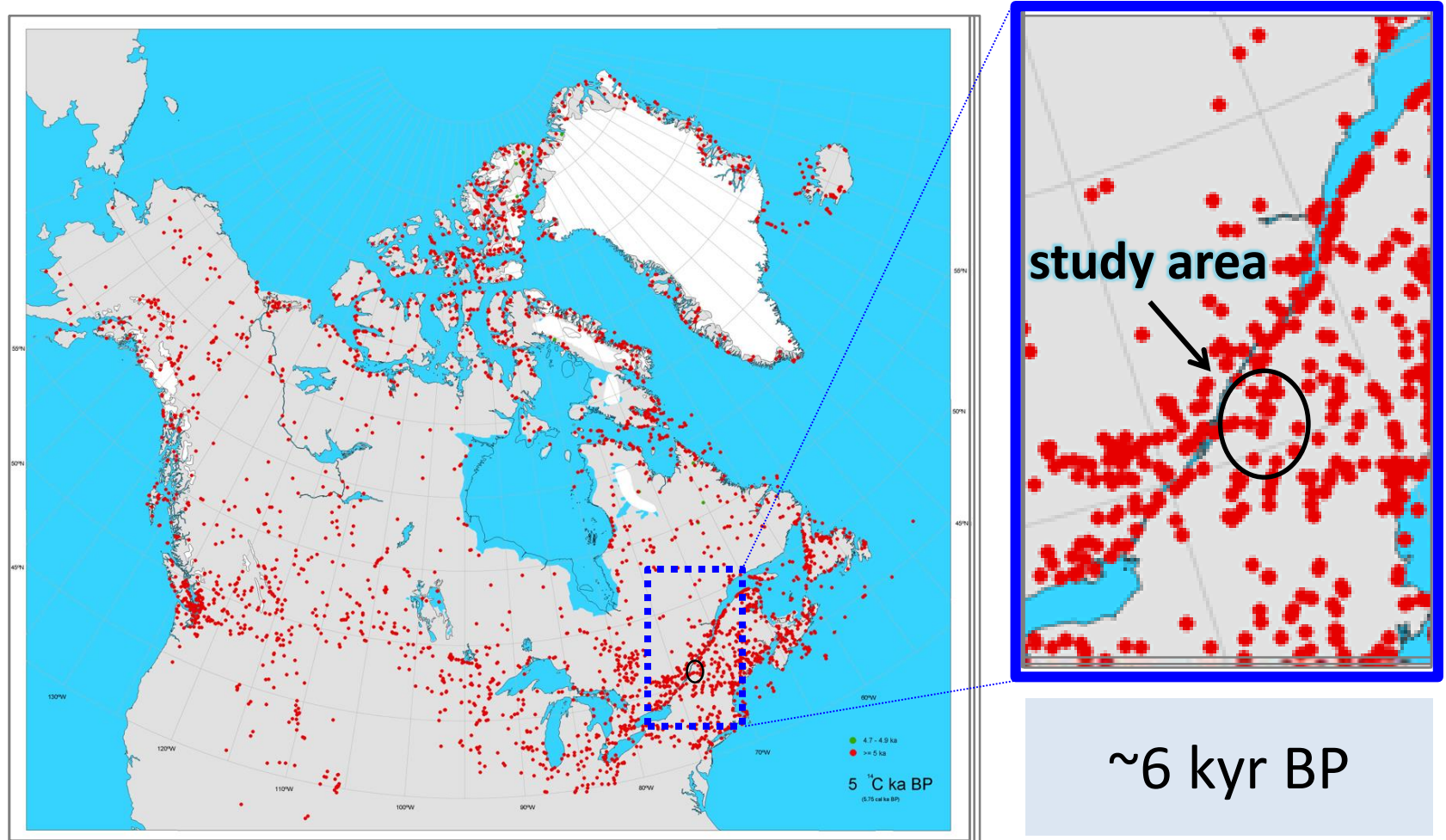


Modeling of the palaeo-hydrogeological evolution of a fractured-rock aquifer following the Champlain Sea Transgression in the St. Lawrence Valley (Quebec)

Marc Laurencelle, René Lefebvre, John Molson, Michel Parent



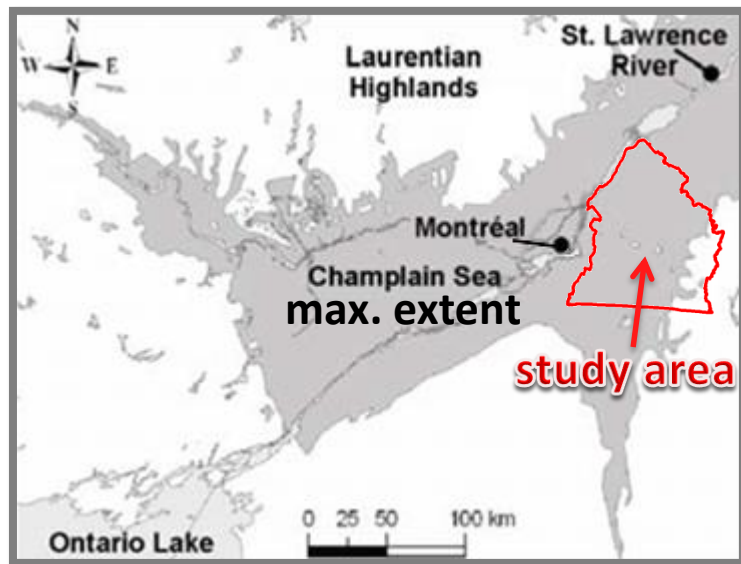
Source: Dyke, A.S., Moore, A. And Robertson, L. 2003 : Deglaciation of North America, G.S.C., O.F. 1574.

Abstract n° 2343 ; E-poster spot n° 1 ; 4:40 pm to 5:00 pm

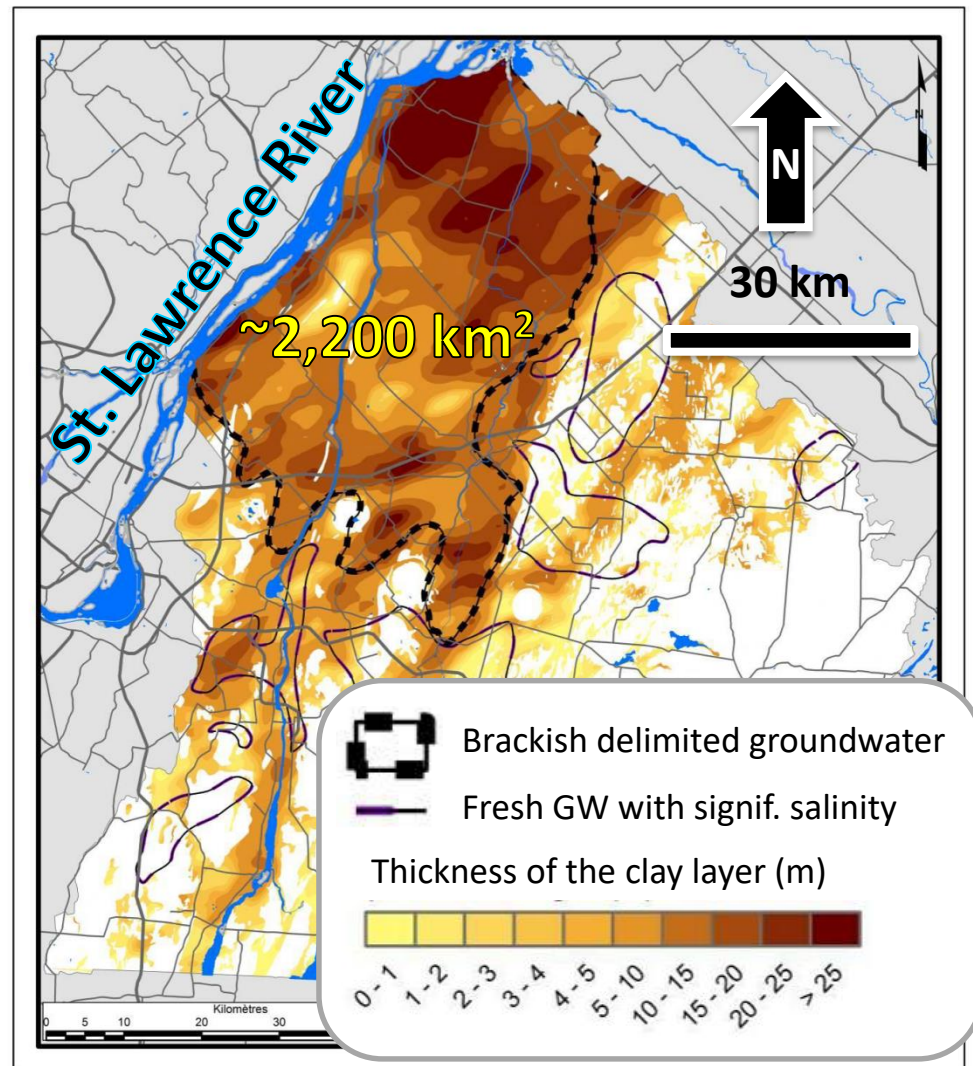
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A regional fractured-rock aquifer system partly filled with brackish waters (TDS \leq \sim 10 g/L), at shallow depths!...



Source: Beaudry et al., 2011. G.S.C. O.F. 6960



Abstract n° 2343 ; E-poster spot n° 1 ; 4:40 pm to 5:00 pm

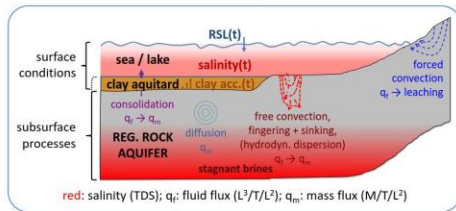
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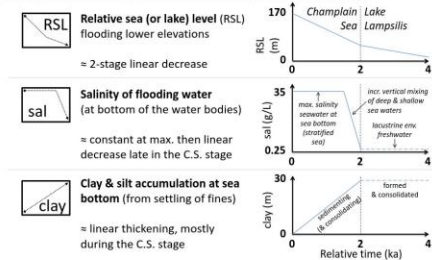
3. METHODS

Numerical modeling is required to represent this coupled flow & transport problem (water density depends on salinity), in a system with complex geometry (e.g. topography) with spatial and temporal variations of model parameters and boundary conditions.

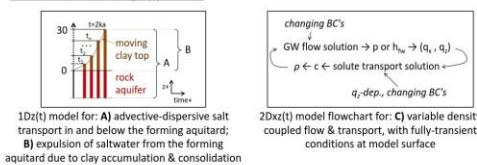
Conceptualisation of the palaeo-problem:



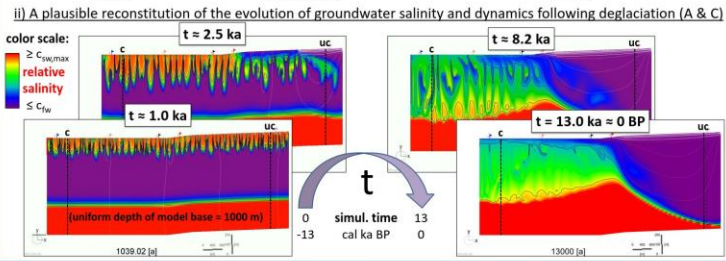
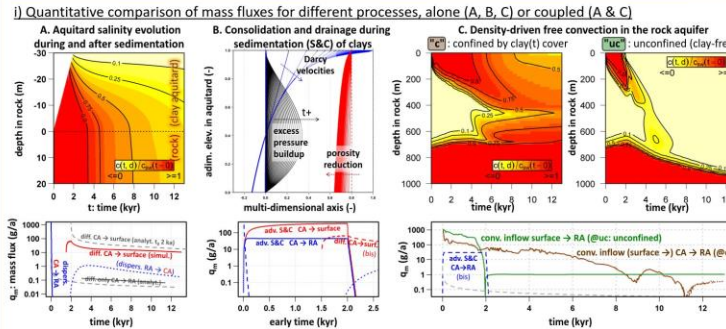
Conceptualization of palaeo-conditions (at model surface):



Numerical modeling approach:



4. RESULTS



5. CONCLUSION

Oh, sorry... but that's a surprise!...

- explain present-day state of the system
- reconstruction evol. of GW salinity & dynamics following deglaciation
- resp. importance of physical processes:
 - diffusion of salts
 - marine clay consolid. induced water fluxes
 - density-driven free convection
 - gravity-driven flow & leaching of salts

Cropped preview of my poster, so that you have to come to the e-poster session to see the full version, this afternoon...