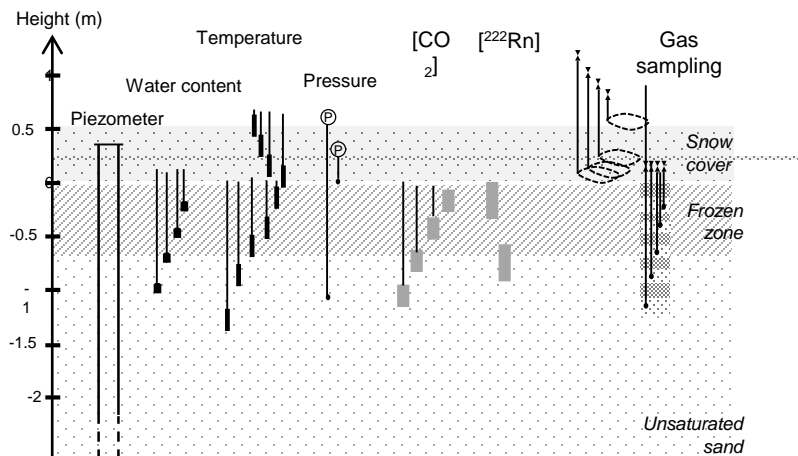


Seasonality of recharge fluxes in southern Quebec from subsurface monitoring: processes controlling recharge in seasonally frozen permeable soils

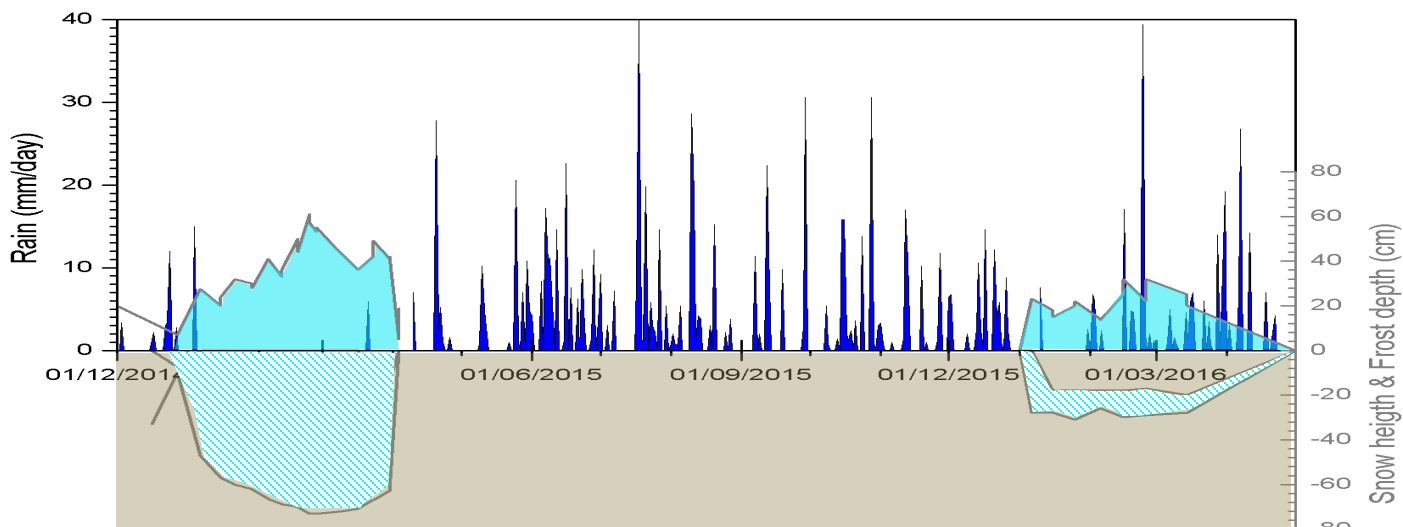
S. Guillon, F. Barbecot, M. Larocque, D. Pinti

Monitoring heat and water fluxes in soil and snow cover



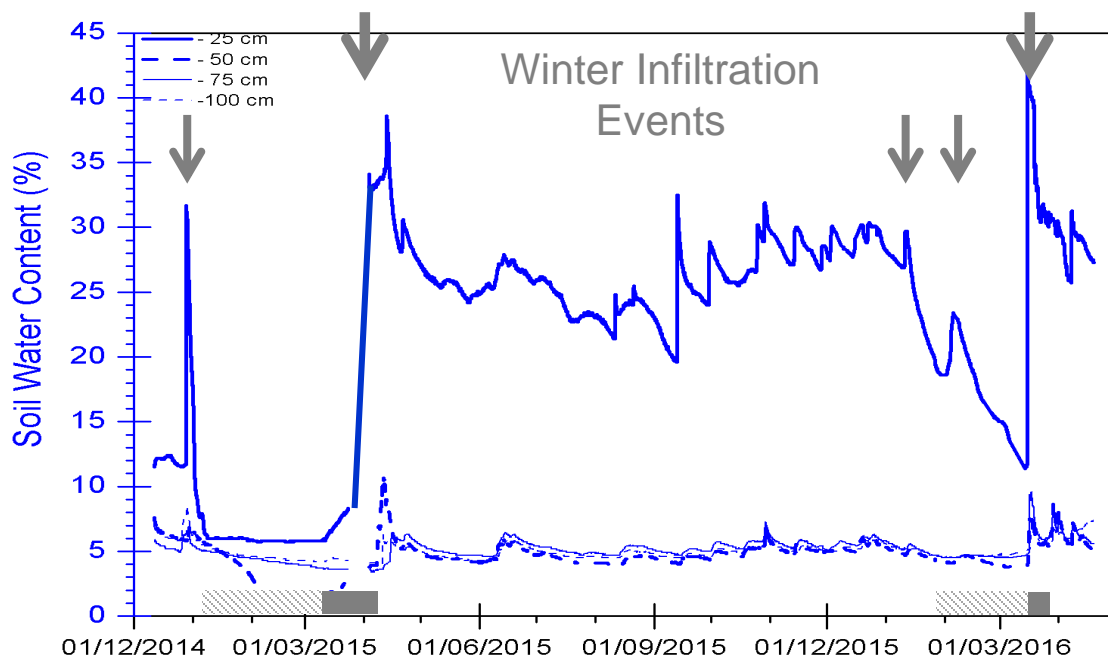
✓ Experimental site (long-term recharge observatory) in Vaudreuil-Soulanges area (Quebec, Canada)

Water infiltration during two contrasted hydrological years

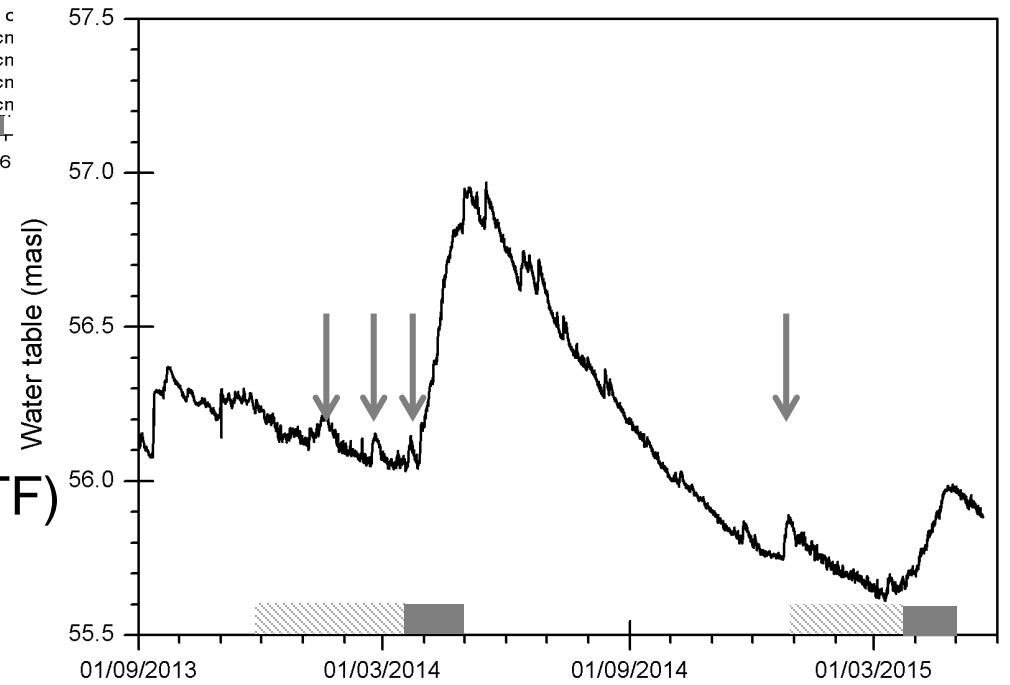
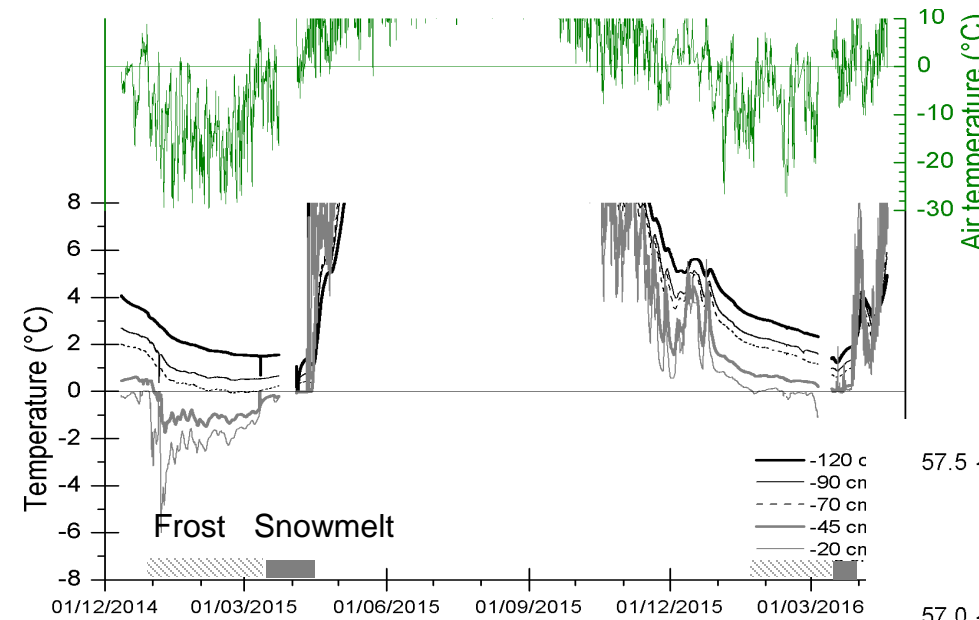


✓ Winter 2015 coldest in 115 yrs
 Winter 2016 warmer
 temperature, limited snow
 accumulation

✓ Recharge events during snow
 cover period, and associated
 with partial melting, rain events
 and partial soil thawing.



Soil and atmospheric thermal regime control water infiltration



Quantification of recharge

✓ from water table fluctuations (WTF)

$$R = \Delta H / \Delta t \times S_Y$$

($S_Y \sim 15-30\%$ in medium sand)

- ✓ from surface budget,
- ✓ from soil water content data,
- ✓ from 1D numerical model of water and heat budget (SHAW)

| Recharge (mm) from WTF with $Y_s=25\%$ | 2014-2015 | 2015-2016 |
|--|------------|------------|
| during Fall | 63 | 25 |
| during Winter | 75 | 25 |
| at Snow Melt | 250 | 100 |