

Reactivity of southern Quebec aquifers to meteorological and hydrological conditions

Trong Anh Vu, Marie Larocque, Sylvain Gagné, Emmanuel Dubois, Marc-André Bourgault

Objectives :

- Establish the behaviour of Quebec's groundwater and identify controlling factors
- Make recommendations to the Ministry of Environment (MELCC) to improve the groundwater monitoring network (RSESQ) and groundwater resource management.

Results :

- **60%** of wells show **negative trends** from 2000-2018 (fig.1).
- Temperature, precipitation and river outflow display major **positive trends** in contrast.
- Groundwater levels and river outflow show **similar variation patterns** ⇒ Same controlling factor (fig.2).
- Many wells are well correlated to climate indices **SOI, NINO1+2, NINO3** and **NINO4** (fig.3).

Recommendations :

- Increase the amount of wells in high altitude, high slope areas and other underrepresented areas. Remove bad wells from analysis.

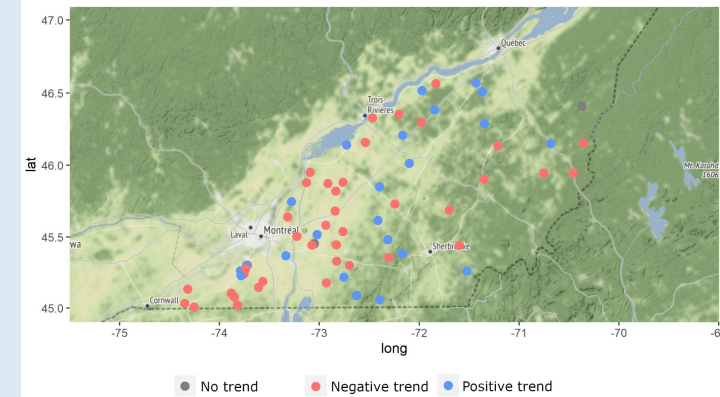


Fig.1 : Trends in groundwater levels for 2000-2018

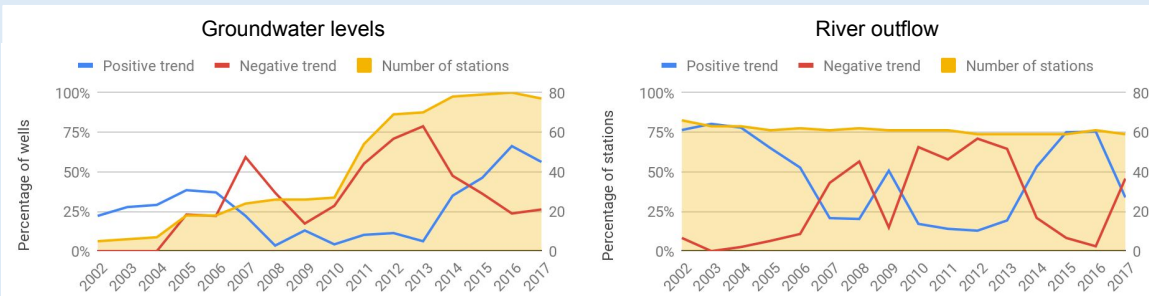


Fig.2 : Trends in a) groundwater levels and b) river outflow using 5-year sliding windows for 2000-2018

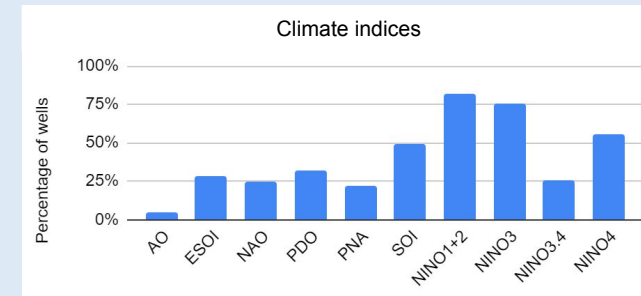


Fig.3 : Percentage of wells with significant correlations to climate indices