Summary of the paper:
In this study, multiple tracers were used to identify dominant runoff generation mechanisms over two hydrologic years in Star-east and Star-west watersheds. Principal component analysis was used to reduce the complexity that may arise by analyzing every tracer combination. The study concluded that streamflow during early melt was dominated by hillslope groundwater. As snowmelt peaked, the entire landscape became connected and all the water sources contributed to streamflow (the proportion from different sources is not computed). During the Fall season, hillslope and bedrock groundwater became the major sources of streamflow in Star West watershed (proportions not computed), however the sources were unresolved in the Star East watershed. The authors then went on to conclude the subsurface flow pathways in this region are complex and this complexity along with slow release of groundwater from glacial till ensures hydrologic resilience in this region.

This study tries to resolve the seasonal sources of streamflow which is a very interesting research topic and definitely fit for this journal. However, quantitative estimates of source proportions are missing from this study which is possible to compute given the number of tracer variables that were monitored.

Major comments:

1. The abstract and introduction talks in detail about the concept of hydrologic resilience, however I do not find any attempt to quantify this statistic in the remainder of this article (except a very brief discussion on recession rates at the end). I will recommend either quantifying resilience or removing it (at least from the abstract).
2. The source apportionment which is the key focus of this study was done qualitatively because TVR was below 2. A TVR value below 2 signifies that sources are not completely differentiable. In such cases, the uncertainty in the contribution of different sources is higher, which does not mean that an EMMA is useless. I will encourage the authors to undertake a simple EMMA and report the results for the same. An easy way to do this will be using one anion and one cation (reason in #3 below) and some variant of an EMMA. On the point of violation of assumptions, instead of a conventional EMMA, a Bayesian mixing model can be used where the error distribution can be parameterized and later verified.
3. On visual inspection of Figure 4, it seems that Cl^- is markedly different from the other tracers. Most of the cations are positively correlated and offer complementary information. Is this the case? If yes, why not simply use one anion and one cation instead of doing a principal component analysis using all the tracers. The problem with PCA is that readers do not know which tracers influence PC1/PC2 and to what extent, losing physical significance. This will also ensure that an EMMA model can be setup in a very simple way (using one cation and one anion as the tracers)
4. Sections 5.2 and 5.3 can be combined into one section, that will make it easier to read the sections and also help avoid repetitions.

Minor comments:

1. The number of sources are different in different parts of this article (eg: P1L15, P3L67, P5L112, P9L232, etc.). I will recommend using the same number of sources at different instances in the article.
2. How many of the 11 snowmelt samples came from North York Creek? (P5L124)

3. Were EC measurements also taken? These can also be used to verify if the seep water is coming from a groundwater pool. (P11L249)
4. Water temperature has been discussed at different places in the article, however there are no figures of water temperature in the article. I will recommend to include at least one figure for water temperature.
5. The reported hillslope groundwater includes riparian water and soil water. How is a riparian zone part of hillslope? (P11L260)
6. Section 5.3 indicates some kind of a hysteresis pattern in the PC plots of streamflow (anticlockwise direction in Star west (Figures 5, 6) and clockwise direction in Star east (Figures 7, 8)). I will encourage more discussion about the reason behind this.
7. There is no work done on the water age, how have old or new water been defined? (P1L18, P18L418, L420, etc.)