

sf: le nouveau spatial



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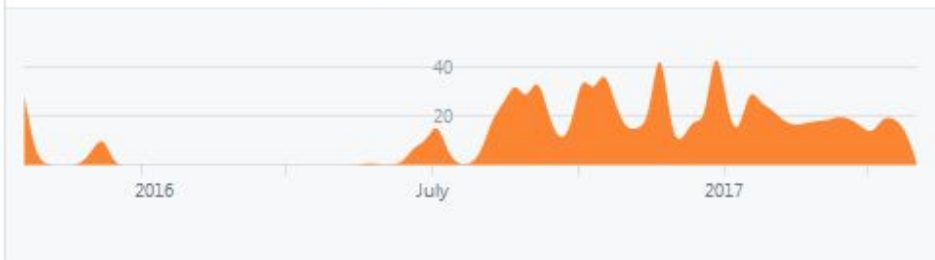
sf: simple features (ISO 19125-1:2004)



edzer

948 commits / 70,453 ++ / 28,027 --

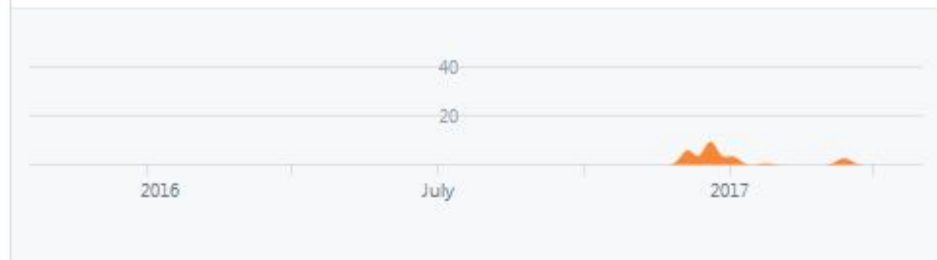
#1



etiennebr

34 commits / 1,380 ++ / 608 --

#2



```
data.frame(x=1:5) %>% dput
#> structure(list(x = 1:5),
#>   .Names = "x",
#>   row.names = c(NA, -5L),
#>   class = "data.frame")
```

```
df <- data.frame(x=1:5, y=1:5)
pts <- st_as_sf(df, coords=c("x", "y"))
```

```
class(pts)
```

```
#> [1] "sf" "data.frame"
```

Simple feature collection with 5 features and
0 fields

geometry type: POINT

dimension: XY

bbox: xmin: 1 ymin: 1 xmax: 5 ymax: 5

epsg (SRID): NA

proj4string: NA

geometry

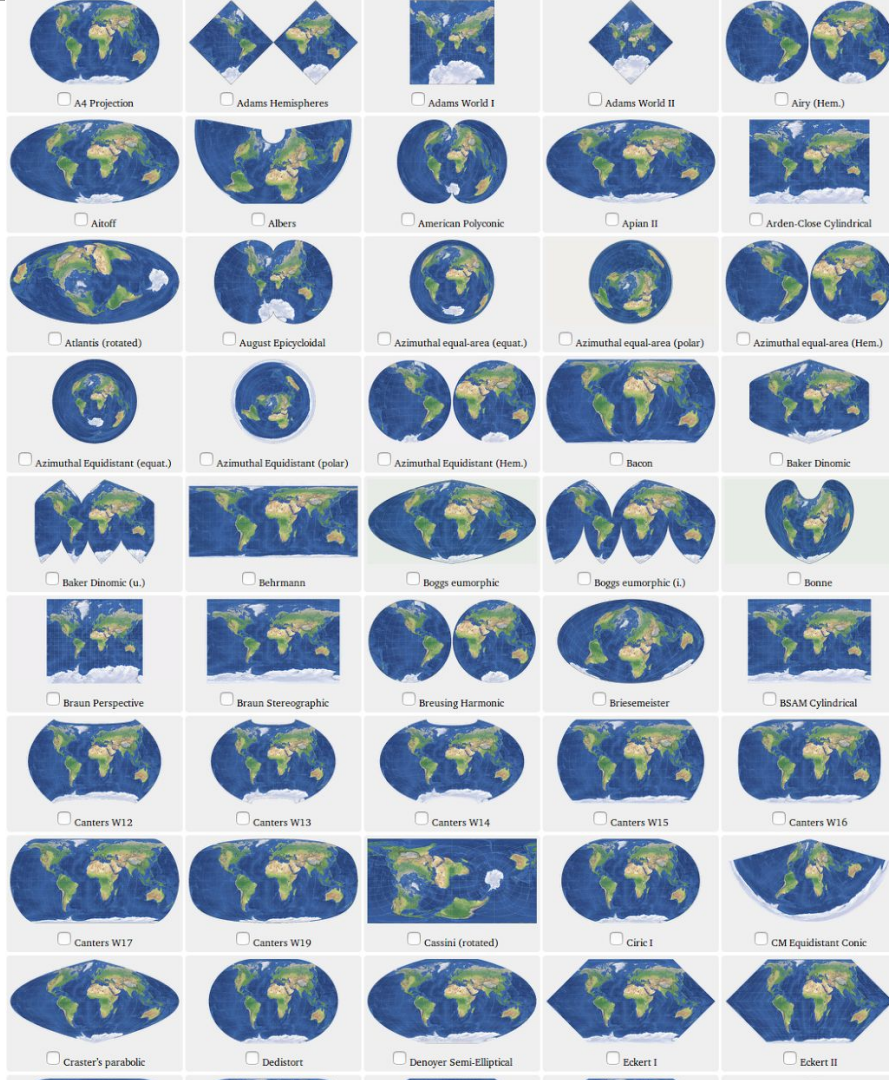
1 POINT(1 1)

2 POINT(2 2)

3 POINT(3 3)

4 POINT(4 4)

5 POINT(5 5)



sf

`data.frame (S3)`
`Pts[ou $`

sp

`Class Spatial* (S4)`
`pts@`

Étude de cas

POLYONES D'ÉTENDUE D'INONDATION DÉRIVÉ D'IMAGE RADARSAT-2

Étendue dérivée des inondations pour la région de Lac des Deux Montagnes, Lac St-Pierre, Gatineau au Québec. Source: RADARSAT-2 (F4F) Descending, Polarisation: HH+HV. Dimension minimale des polygones: "2.5" Les polygones de l'étendue des eaux libres liées aux inondations sont issus d'un système opéré par le Secteur de la Politique Stratégique et des Résultats (SPSR) de Ressources Naturelles Canada (RNCAN) utilisant de l'imagerie satellitaire. Ils sont fournis au MSP, ses partenaires et au grand public. **Avis: Ce produit représente l'étendue de l'eau en milieu ouvert et végétalisé. Il est dérivé de données RADARSAT-2 avec un outil développé au Centre canadien de télédétection de Ressources [-]**

 Télécharger

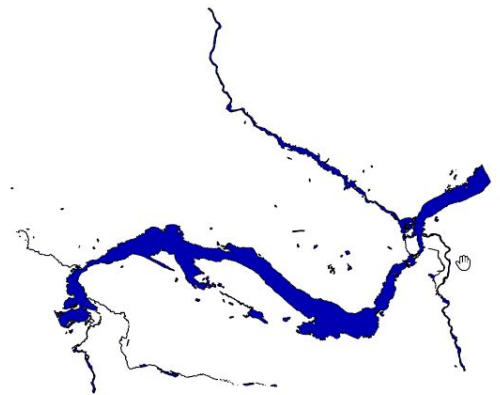
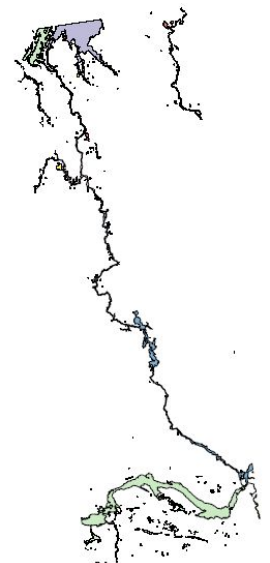
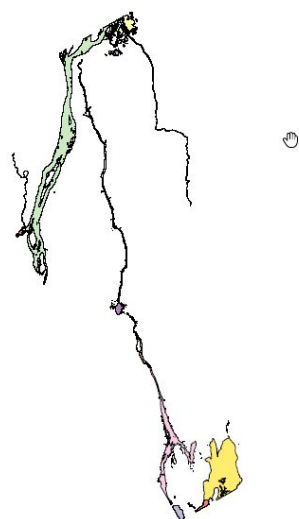
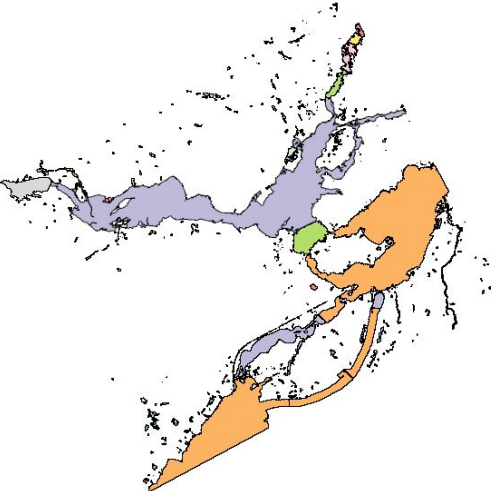
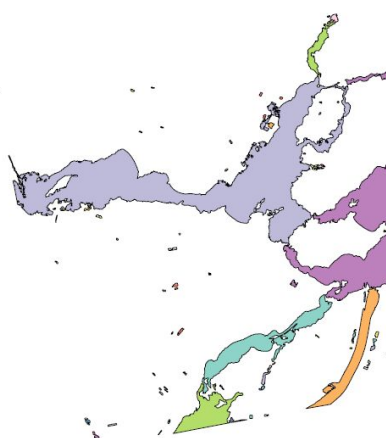
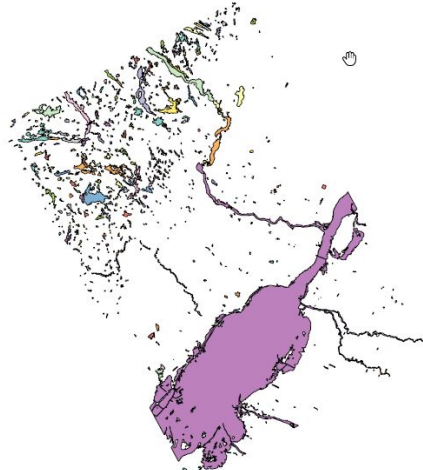
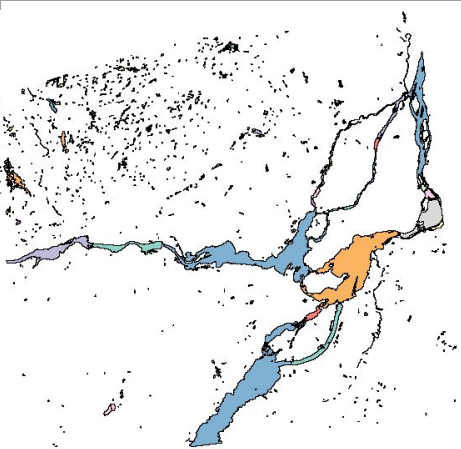
Fiche descriptive

Champ	Valeur
Mise à jour (fichier ou lien)	2017-05-10 13:21 UTC
Diffusion initiale	2017-05-10 13:21 UTC
Format	SHP
Licence	Creative Commons - Attribution 4.0
Taille du fichier	
Identifiant	0cae6b80-4ebd-4b02-b6f4-b73317eef38e
Source (URL)	https://drive.google.com/drive/folders/0BwRQPGaR_T0uZEtlZTEwSHVNNDQ?usp=sharing

Données Québec:

<https://www.donneesquebec.ca/recherche/fr/dataset/cartographie-des-inondations-majeures-avril-mai-2017/>

```
shp <- st_read("flood_qc_2017.shp")
```



```
devtools::install_github("edzer/sfr")
```

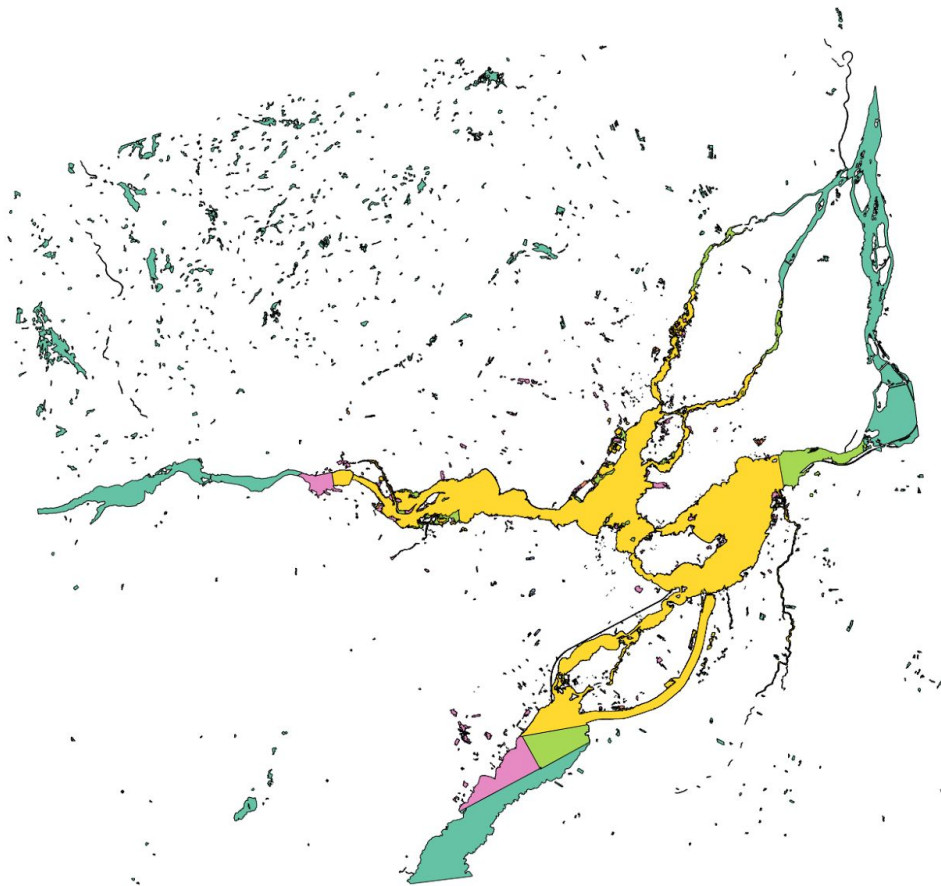
```
library(sf)
```

```
library(tidyverse)
```

```
eau <- map(lf, st_read) %>%  
  invoke(rbind, .)
```

```
plot(eau[, "DATE.UTC"])
```

DATE.UTC



Simple feature collection with 2480 features and 6 fields

geometry type: GEOMETRY

dimension: XY

bbox: xmin: 1561212 ymin: -173225 xmax: 1679150 ymax: -62962.5

epsg (SRID): 3978

proj4string: +proj=lcc +lat_1=49 +lat_2=77 +lat_0=49 +lon_0=-95 +x_0=
+units=m +no_defs

A tibble: 2,480 x 7

	feature_id <fctr>	md_id <fctr>	area_h <dbl>
1	fc44affdf71d48c0aa94c2d222b62860	50234ef96d9d47c59d2f4330633cdf72	
11:13:20			
2	38f42b2f83ea490e885da62d1c130a9a	dd9c4d445f6b4813966ed7eb23a95a5e	
11:13:20			
3	a76d86e74bf740fc9e894227fa41c4a7	ac4200f07d7642149302d44530e097c9	7
4	c32ef33ed50c4ea0bf3832633643a0de	007feb3c8d7d4e8aacadd7102b118de6	5
5	d9b4e78fce8043aca40a3fcc176e9500	d288a1c1023941e29b36340b9db41de4	2



Ile Mercier

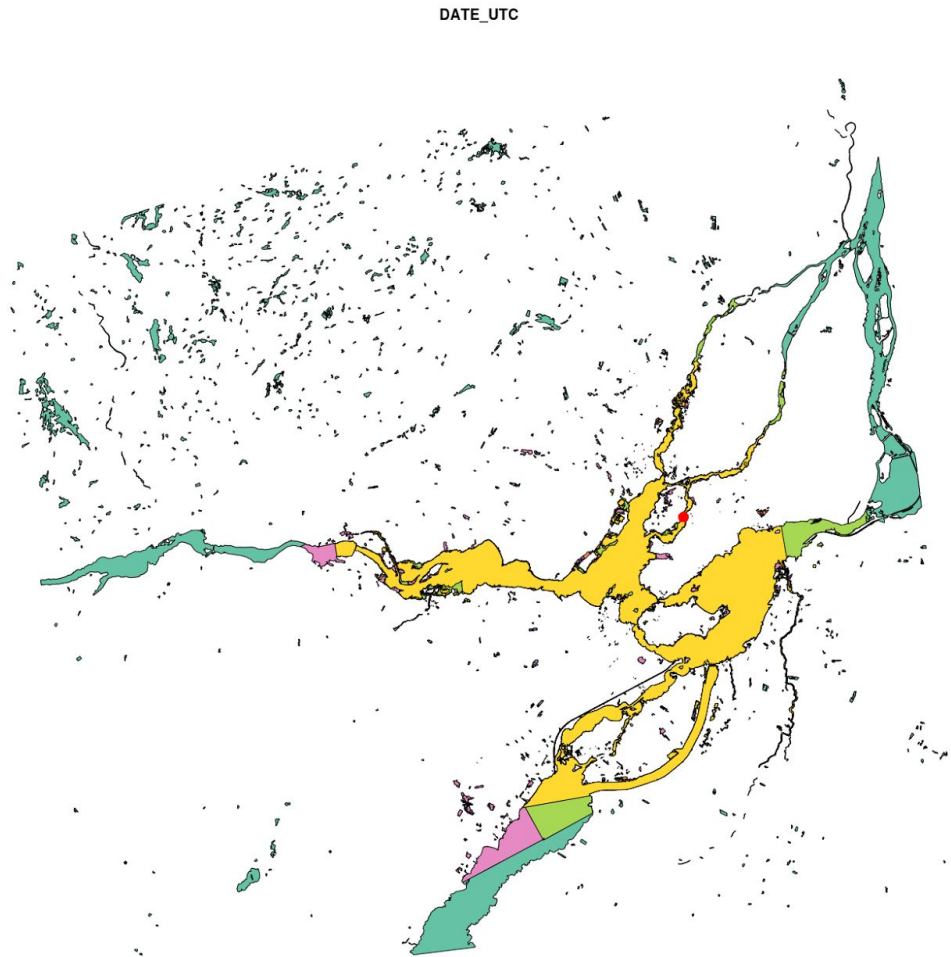
a

```
pt <- tibble(desc = "Ile Mercier",
              lat = 45.4823,      # google earth
              lon = -73.8753)

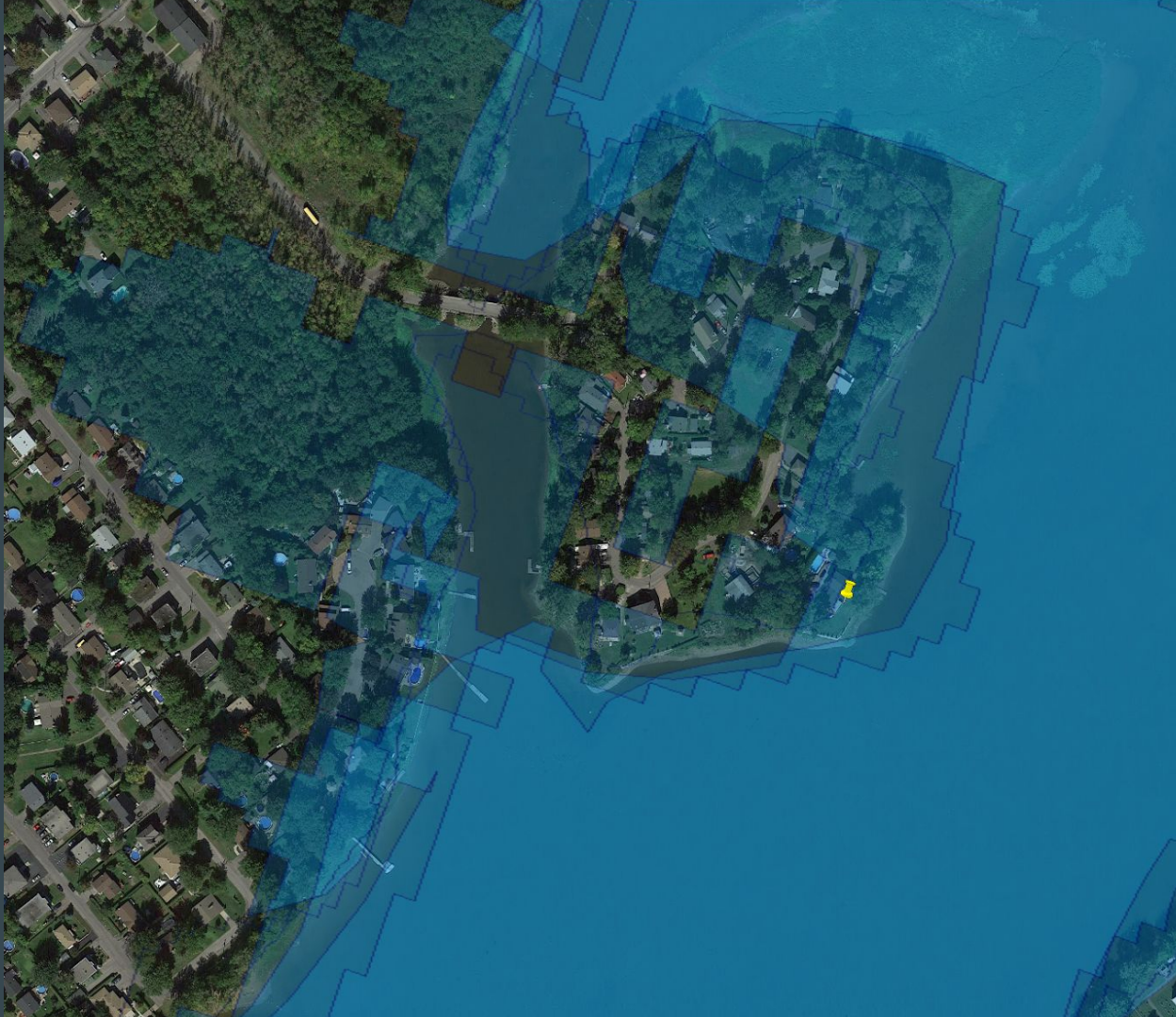
#> # A tibble: 1 × 3
#>   desc      lat      lon
#>   <chr>    <dbl>   <dbl>
#> 1 Ile Mercier 45.48298 -73.87789
```

```
pt <- pt %>%  
  st_as_sf(coords = c("lon", "lat"),  
            crs=4326) %>%  
  st_transform(3978) # Atlas Lambert
```

```
plot(pt,  
     cex = 2,  
     pch = 16,  
     col = 2,  
     add = TRUE)
```



```
st_write(eau, "eau.kml")
```



Joint spatial

```
pt %>%  
  st_join(eau)
```

Simple feature collection with 4 features and 3 fields

geometry type: POINT

dimension: XY

bbox: xmin: 1645915 ymin: -118083.2 xmax: 1645915 ymax: -118083.2

epsg (SRID): 3978

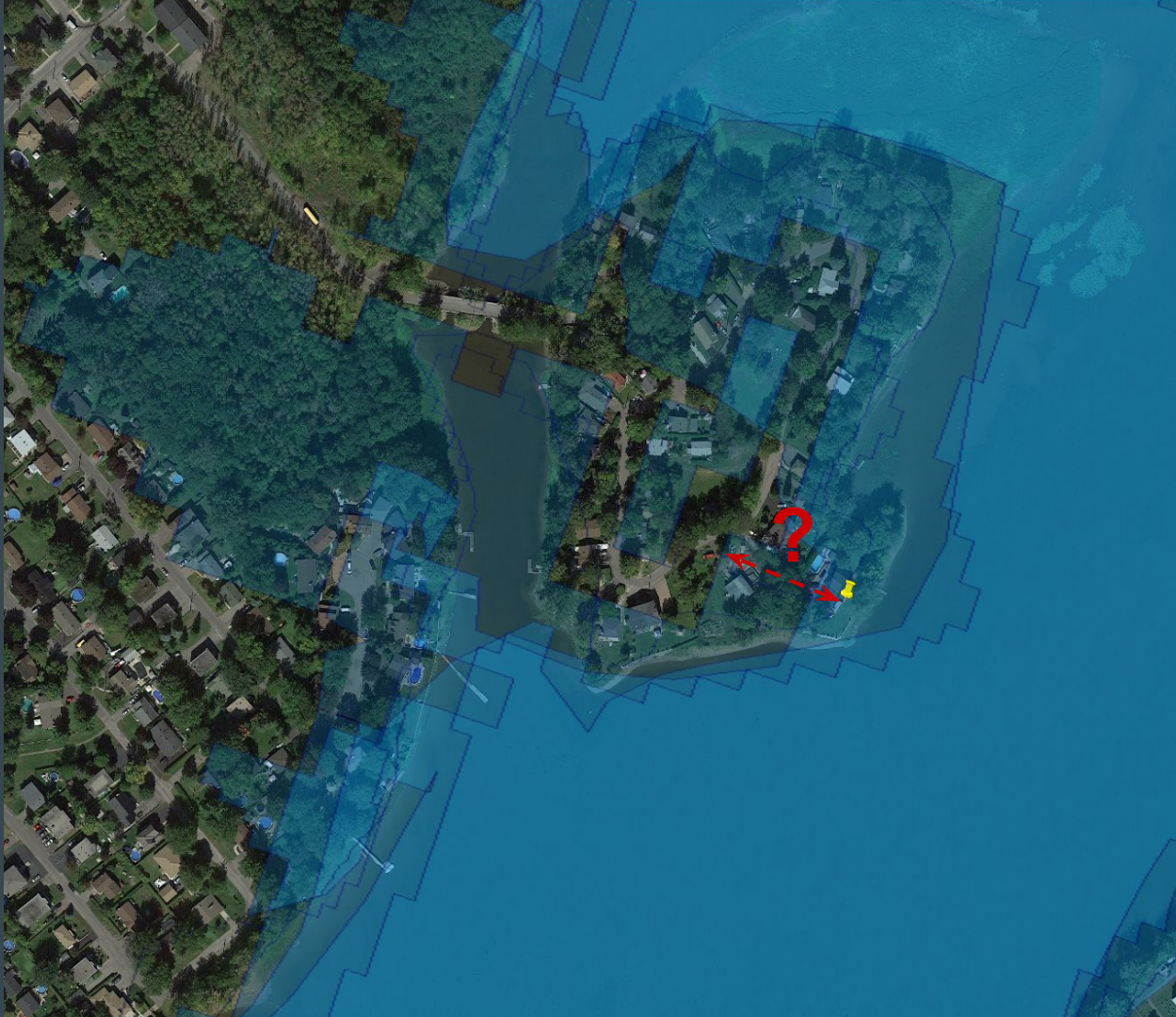
proj4string: +proj=lcc +lat_1=49 +lat_2=77 +lat_0=49 +lon_0=-95 +x_0=0 +y_0=0

+units=m +no_defs

	desc	area_ha		utc	geometry
1	Ile Mercier	17690.98	2017-05-04	10:52:37	POINT(1645915.25206666 -118083.2)
1.1	Ile Mercier	18833.60	2017-05-06	22:54:32	POINT(1645915.25206666 -118083.2)
1.2	Ile Mercier	35628.67	2017-05-13	22:50:22	POINT(1645915.25206666 -118083.2)
1.3	Ile Mercier	43454.44	2017-05-21	10:56:46	POINT(1645915.25206666 -118083.2)

Joint spatial

```
pt %>%  
  st_join(eau) %>%  
  group_by(desc) %>%  
  summarise(max = max(utc),  
            min = min(utc),  
            n = n()) %>%  
  mutate(duree = max - min)
```

Summarise

```
eau_chrono <- eau %>%  
  st_zm() %>%  
  group_by(utc) %>%  
  summarise(area = sum(area_ha))  
  
# conversion vers lignes  
niveau <- eau_chrono %>%  
  st_cast("MULTILINESTRING")
```

Calcul de distance

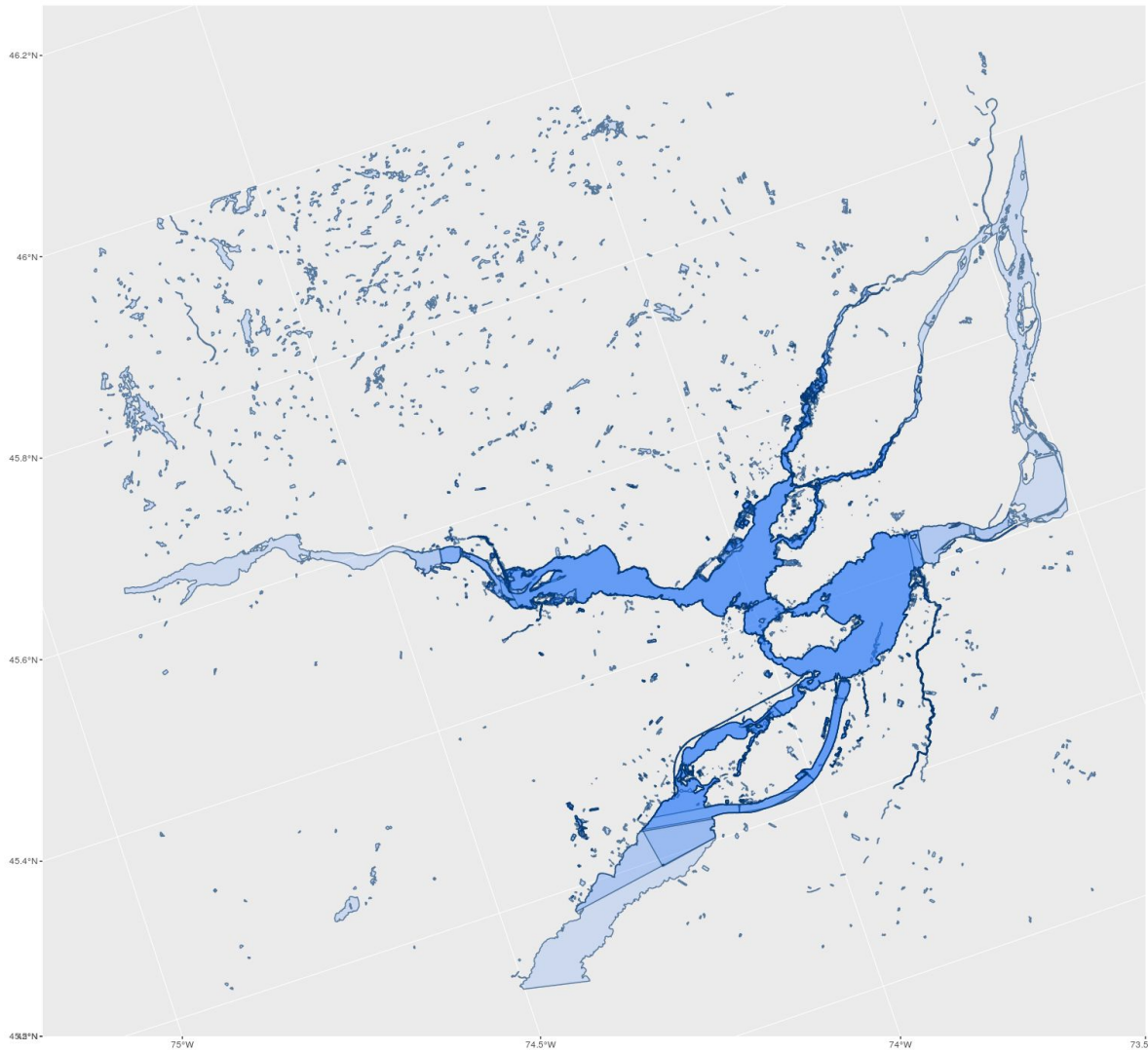
```
niveau %>%  
  mutate(distance = st_distance(pt, geometry) %>%  
as.numeric) %>%  
  group_by(utc) %>%  
  summarise(distance = min(distance)) %>%  
  filter(distance < 100)  
  arrange(utc)
```

```
Simple feature collection with 6 features and 2 fields
geometry type:  MULTILINESTRING
dimension:      XY
bbox:           xmin: 1561212 ymin: -173225 xmax: 1679150 ymax:
-62962.5
epsg (SRID):    3978
proj4string:     +proj=lcc +lat_1=49 +lat_2=77 +lat_0=49 +lon_0=-95
+x_0=0 +y_0=0 +ellps=GRS80 +towgs84=0,0,0,0,0,0 +units=m +no_defs
# A tibble: 6 x 3
```

		utc	distance	geometry
		<dtm>	<dbl>	<simple_feature>
1	2017-04-23	11:13:20	30.876316	<MULTILINESTR...>
2	2017-04-27	10:56:46	20.450808	<MULTILINESTR...>
3	2017-05-04	10:52:37	17.702157	<MULTILINESTR...>
4	2017-05-06	22:54:32	48.403599	<MULTILINESTR...>
5	2017-05-13	22:50:22	11.699020	<MULTILINESTR...>
6	2017-05-21	10:56:46	4.326965	<MULTILINESTR...>

```
devtools::install_github("hadley/ggplot2")
```

```
ggplot(eau_chrono) +  
  geom_sf()
```



Encore plus !

Lecture rapide

Association automatique des
extensions

Connexion à PostGIS (d'autres à
venir)

Merci

<http://r-spatial.org>

<https://github.com/edzer/sfr>

<http://edzer.github.io/sfr/>

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