B5 Simple Features

Jan-Philipp Kolb

23 Oktober 2018

Themen dieses Abschnitts

- Der Import von Geodaten mit dem Paket simple features (`sf`).
- Die Verarbeitung der OSM-Daten mit dem Paket `sf`.
- Die Daten visualisieren mit `sf`

Das Paket `sf`

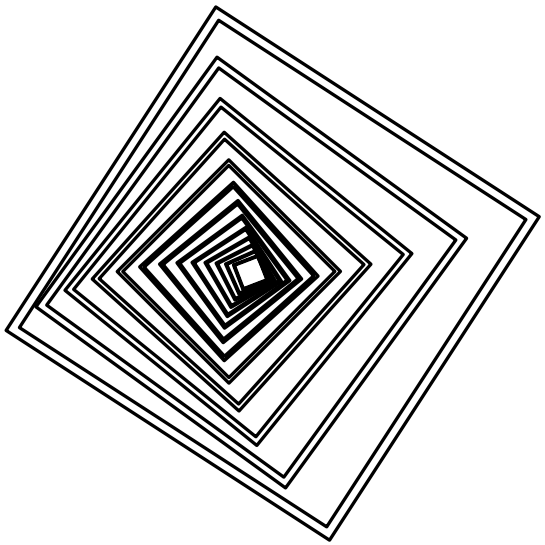
Simple Features for R

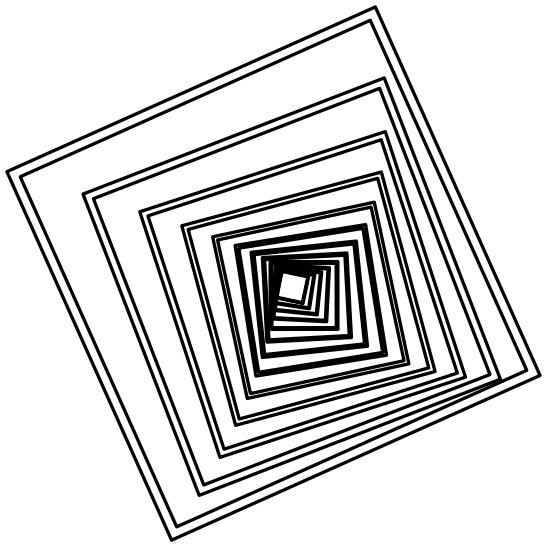
```
library(sf)
```

```
## Linking to GEOS 3.6.1, GDAL 2.2.3, proj.4 4.9.3
```

- Ein Demo ist im Paket `sf` integriert

```
demo(sf::affine)
```





Beispieldaten bekommen

```
library(osmdata)
```

```
## Data (c) OpenStreetMap contributors, ODbL 1.0. http://www.o
```

```
bb_poly <- getbb(place_name = "Amsterdam",
                 format_out = "polygon")
```

```
ls <- st_multilinestring(bb_poly)
```

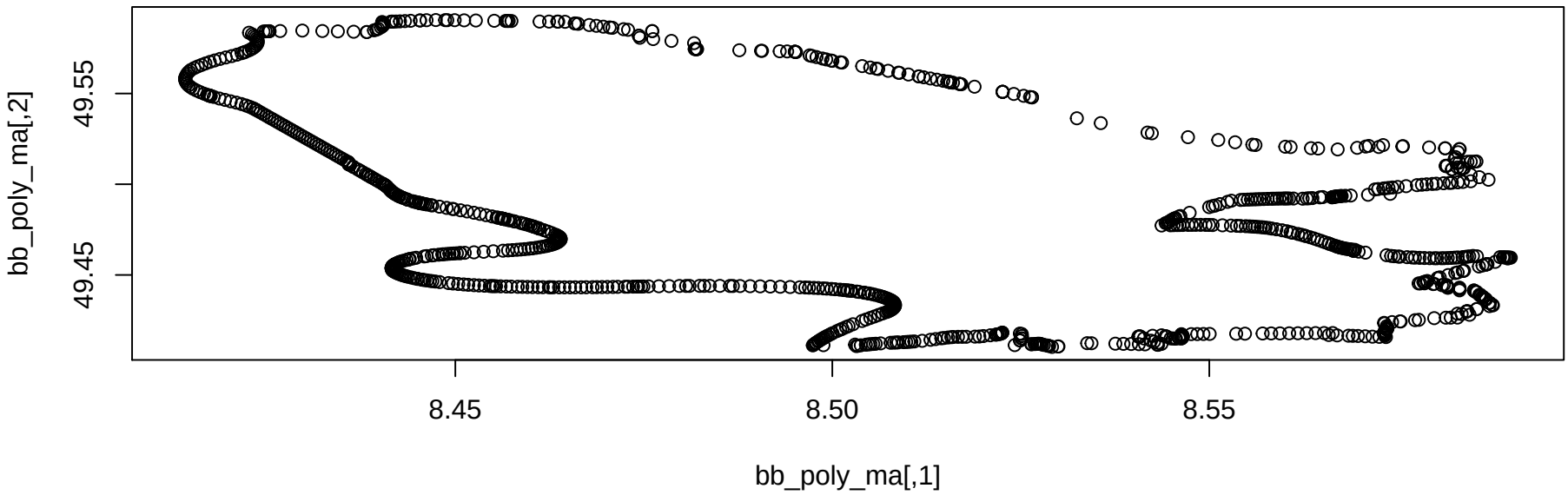
```
pol <- sf::st_polygon(bb_poly)
class(pol)
```

```
## [1] "XY"      "POLYGON" "sfg"
```

```
bb_poly_ma <- getbb(place_name = "Mannheim",
                    format_out = "polygon")
```

Das Ergebnis plotten

```
plot(bb_poly_ma)
```




```
# x <- osmdata_sf(pol)
```

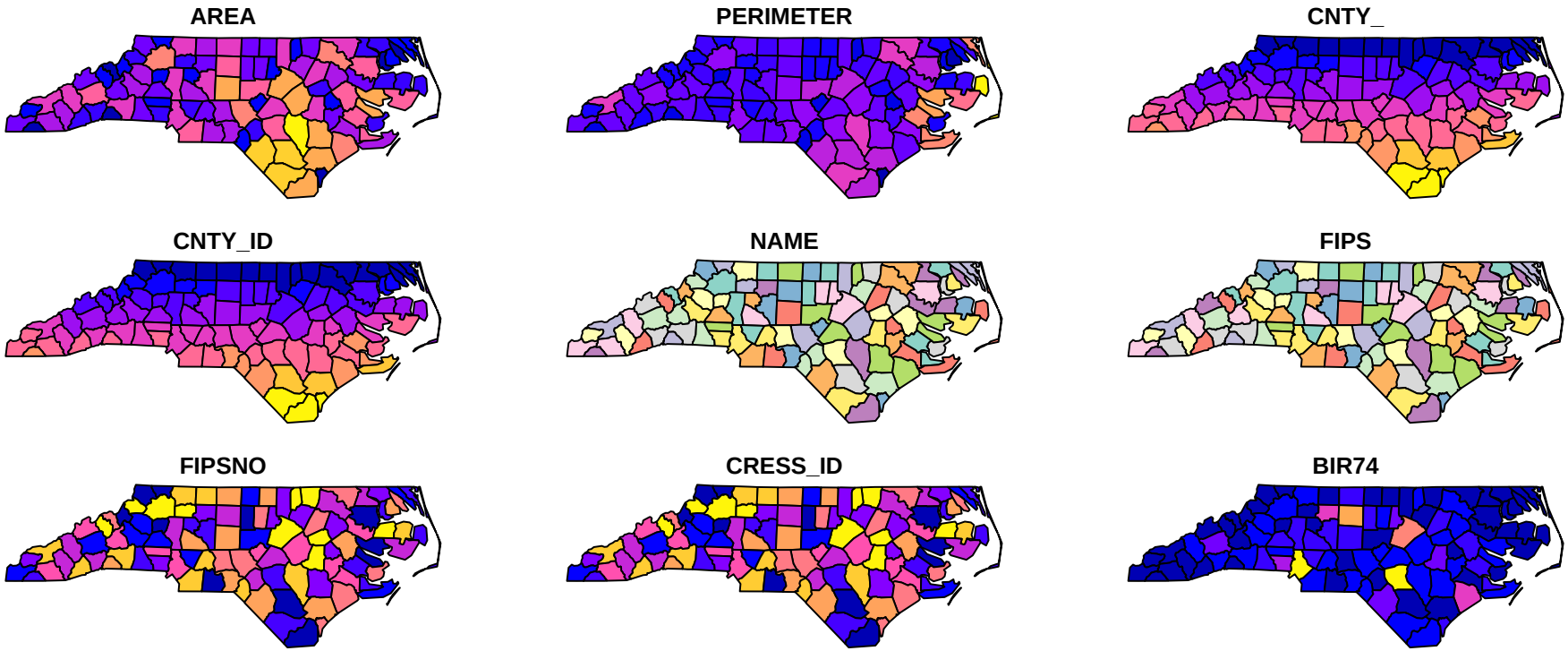
Ein Beispieldatensatz

```
demo(nc, ask = FALSE, echo = FALSE)
```

```
## Reading layer `nc.gpkg' from data source `D:\Eigene Dateien
## Simple feature collection with 100 features and 14 fields
## Attribute-geometry relationship: 0 constant, 8 aggregate, 6
## geometry type:  MULTIPOLYGON
## dimension:      XY
## bbox:           xmin: -84.32385 ymin: 33.88199 xmax: -75.45
## epsg (SRID):    4267
## proj4string:    +proj=longlat +datum=NAD27 +no_defs
```

Graphiken mit `sf`

```
plot(nc)
```



Shapefiles mit `sf` importieren

```
lon <- st_read("../data/london_sport.shp")
```

```
## Reading layer `london_sport' from data source `D:\github\ge
## Simple feature collection with 33 features and 4 fields
## geometry type:  POLYGON
## dimension:      XY
## bbox:           xmin: 503571.2 ymin: 155850.8 xmax: 561941.
## epsg (SRID):    NA
## proj4string:    +proj=tmerc +lat_0=49 +lon_0=-2 +k=0.999601
```

Das Shapefile plotten

```
plot(lon$geometry)
```

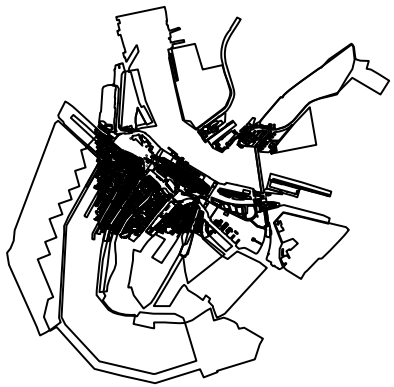
Daten vom Amsterdam Beispiel

```
datm <- st_read("../data/ams_centraal.osm","multipolygons")
```

```
## Reading layer `multipolygons' from data source `D:\github\g
## Simple feature collection with 2796 features and 25 fields
## geometry type:  MULTIPOLYGON
## dimension:      XY
## bbox:           xmin: 4.874776 ymin: 52.36088 xmax: 4.92975
## epsg (SRID):    4326
## proj4string:    +proj=longlat +datum=WGS84 +no_defs
```

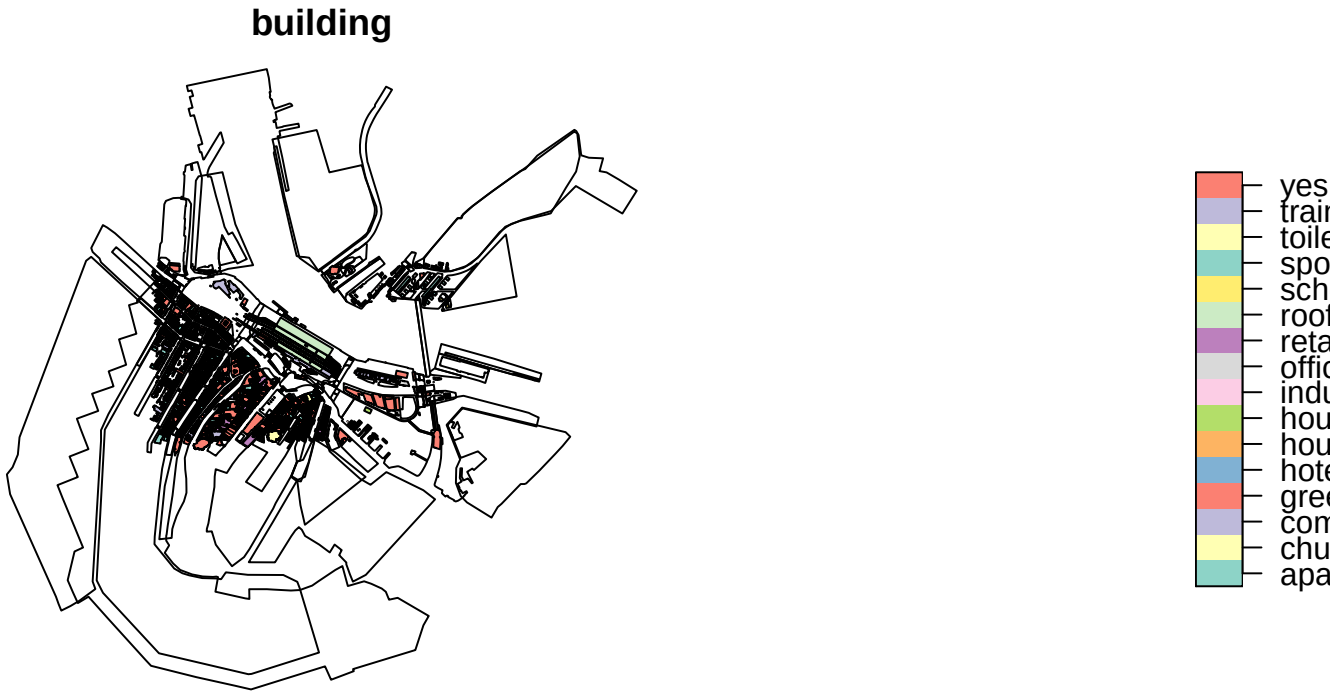
Die Funktion st_geometry

```
geom_datm <- st_geometry(datm)
plot(geom_datm)
```



Die Häuser auswählen

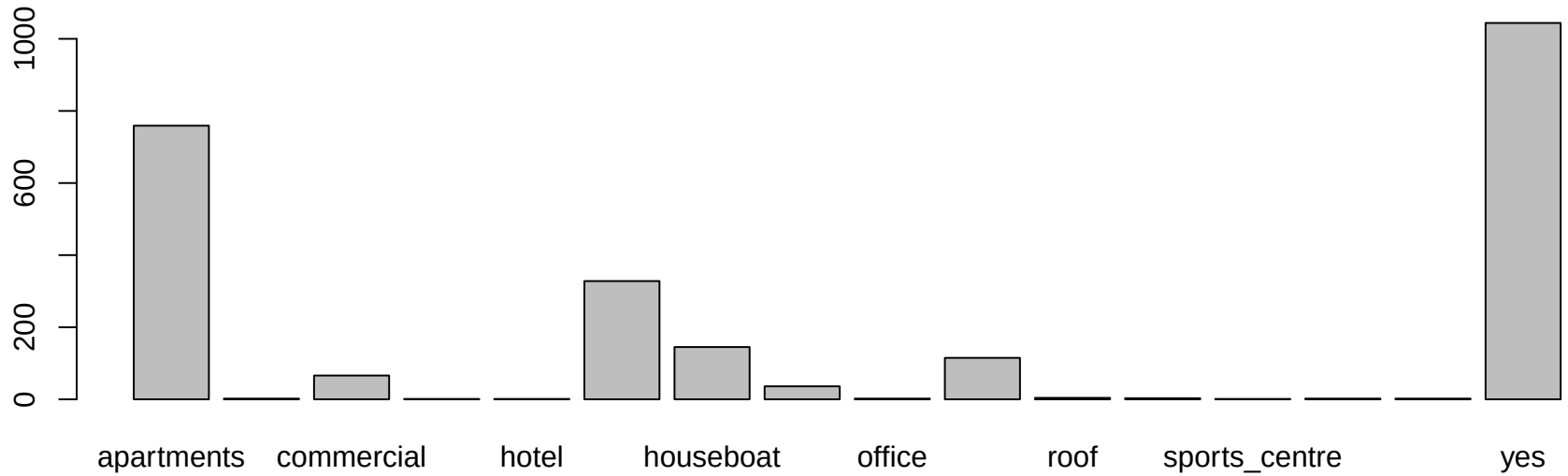
```
library(dplyr)
buis <- datm %>% select(building)
plot(buis)
```



Welche Häusertypen gibt es?

```
buis2 <- datm %>% as.data.frame %>% select(building)
```

```
datbuis <- datm[, "building", drop = TRUE]
plot(datbuis)
```

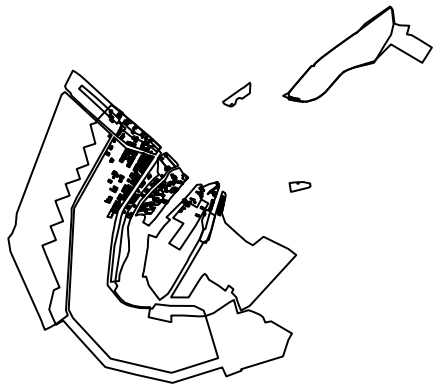


```r
houses <- datm[datm$building == "house",]
class(houses)
```

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

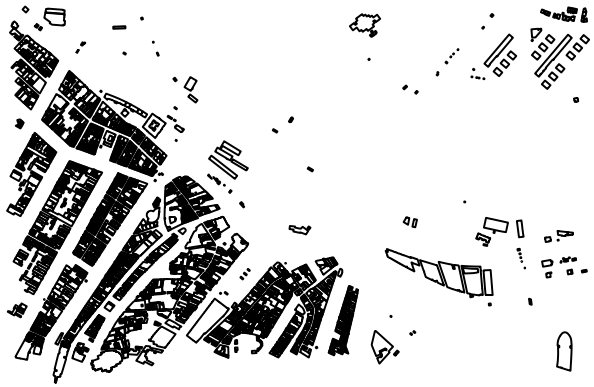
```r
## [1] "sf"         "data.frame"
dhous <- datm[houses,]

## although coordinates are longitude/latitude, st_intersects
plot(dhous$geometry)
```



Alle Häuser herausnehmen

```
houses <- datm[datm$building %in% c("house","yes",
                                    "apartments"),]
plot(st_geometry(houses))
```



Die Vignetten für das Paket `sf`

https://r-spatial.github.io/sf/reference/st_as_sf.html

https://r-spatial.github.io/sf/reference/st_read.html

https://r-spatial.github.io/sf/articles/sf1.html