

Tutorial - Geospatial data - Part 2

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2023-11-30

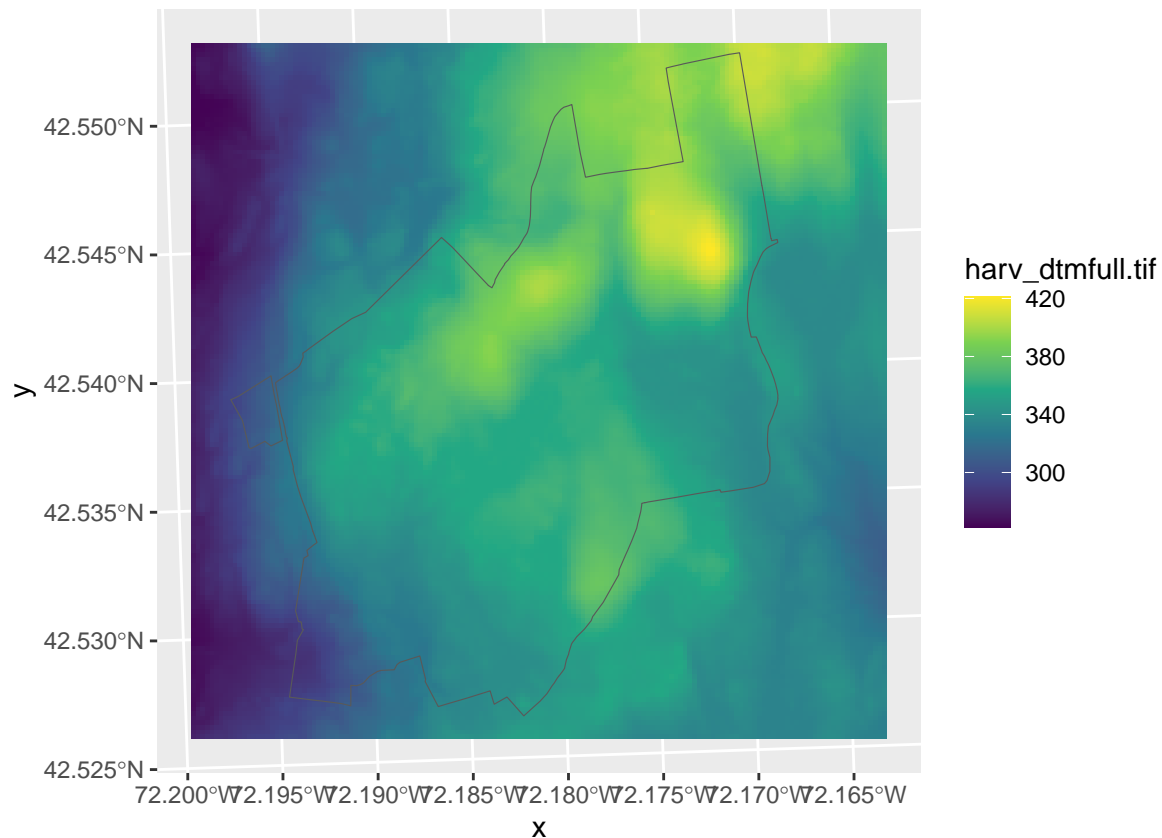
Load R packages

```
library(stars)
library(sf)
library(ggplot2)
```

Reading vector and raster data

```
harv_boundary <- read_sf("../data/harv/harv_boundary.shp")
harv_dtm <- read_stars("../data/harv/harv_dtmfull.tif")
```

```
ggplot() +
  geom_stars(data = harv_dtm) +
  scale_fill_viridis_c() +
  geom_sf(data = harv_boundary, fill = "transparent")
```



Cropping the raster data using the boundary from the vector data

```
harv_dtm_cropped <- st_crop(harv_dtm, harv_boundary)
```

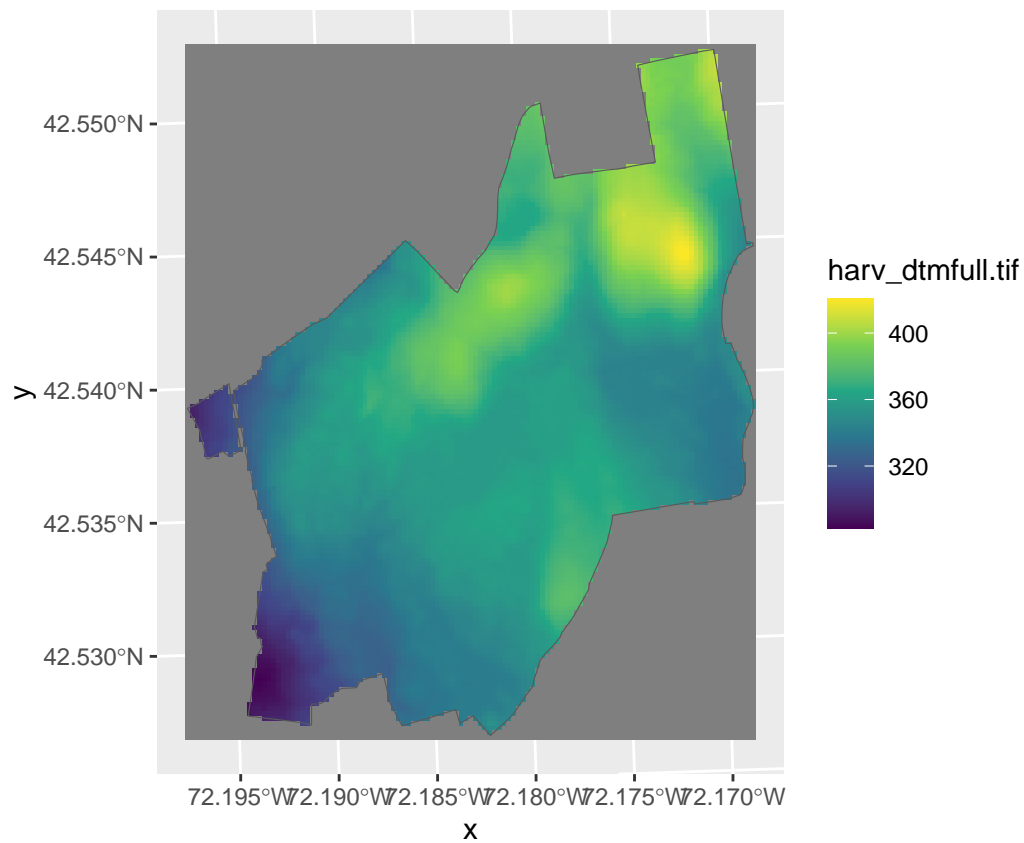
```
harv_dtm
```

```
## stars object with 2 dimensions and 1 attribute
## attribute(s):
##           Min. 1st Qu. Median      Mean 3rd Qu.      Max.
## harv_dtmfull.tif 262.4644 326.6716 344.049 342.3217 362.798 420.8233
## dimension(s):
##   from to offset delta      refsys point x/y
## x    1 150 730000     20 WGS 84 / UTM zone 18N FALSE [x]
## y    1 150 4715000    -20 WGS 84 / UTM zone 18N FALSE [y]
```

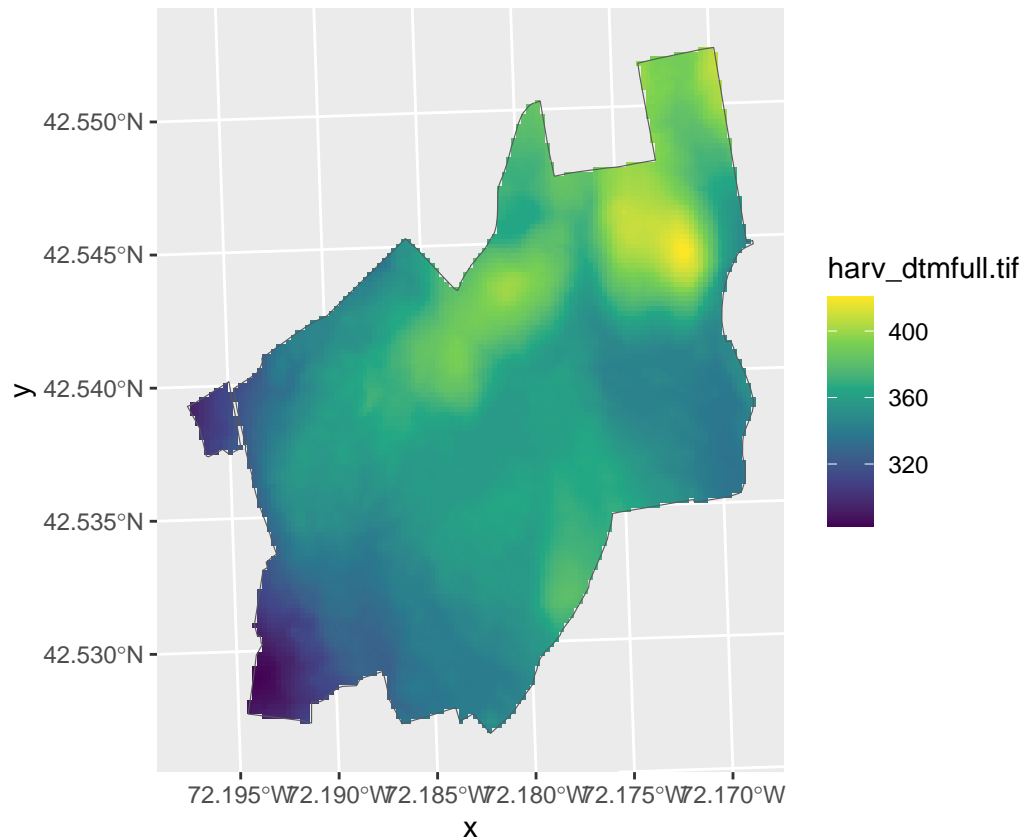
```
harv_dtm_cropped
```

```
## stars object with 2 dimensions and 1 attribute
## attribute(s):
##           Min. 1st Qu. Median      Mean 3rd Qu.      Max. NA's
## harv_dtmfull.tif 282.6686 343.8786 357.7104 357.562 370.615 420.8233 8039
## dimension(s):
##   from to offset delta      refsys point x/y
## x     9 127 730000     20 WGS 84 / UTM zone 18N FALSE [x]
## y     2 146 4715000    -20 WGS 84 / UTM zone 18N FALSE [y]
```

```
ggplot() +
  geom_stars(data = harv_dtm_cropped) +
  scale_fill_viridis_c() +
  geom_sf(data = harv_boundary, fill = "transparent")
```



```
ggplot() +
  geom_stars(data = harv_dtm_cropped) +
  scale_fill_viridis_c(na.value = "transparent") +
  geom_sf(data = harv_boundary, fill = "transparent")
```

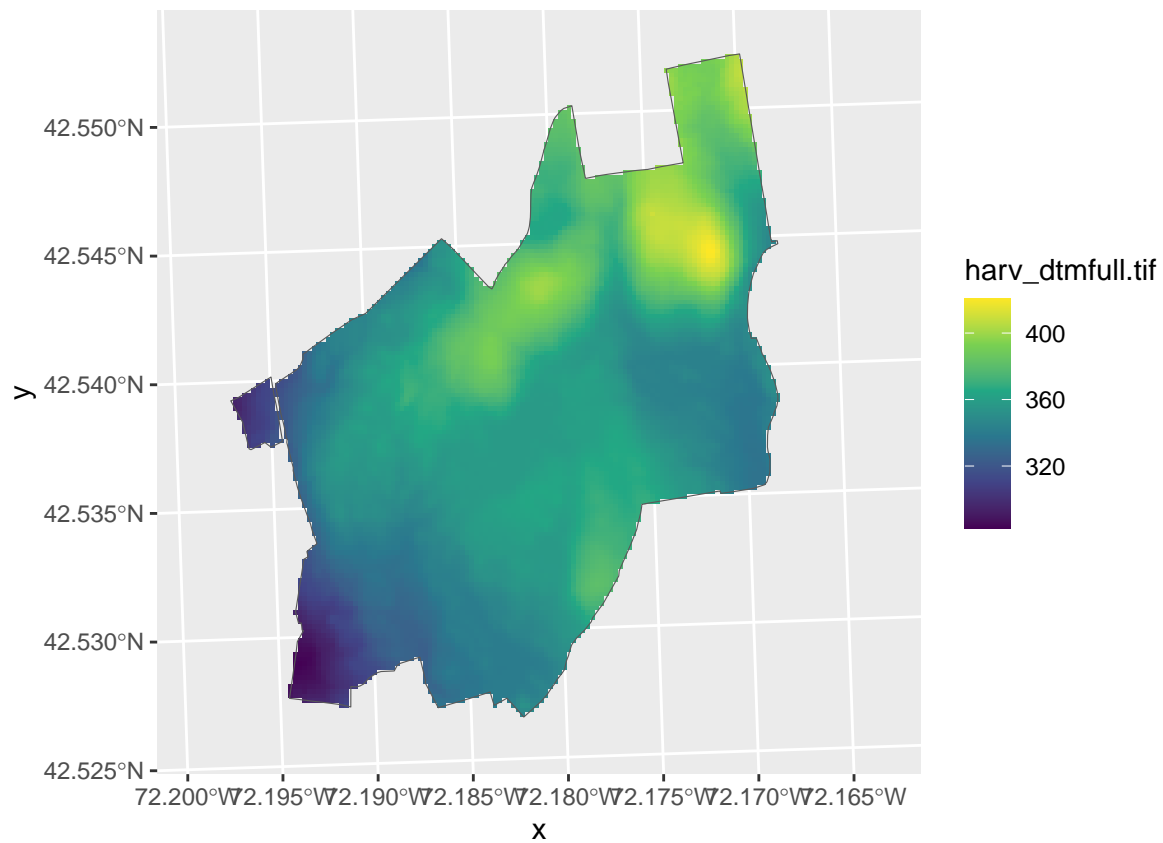


Masking instead of cropping

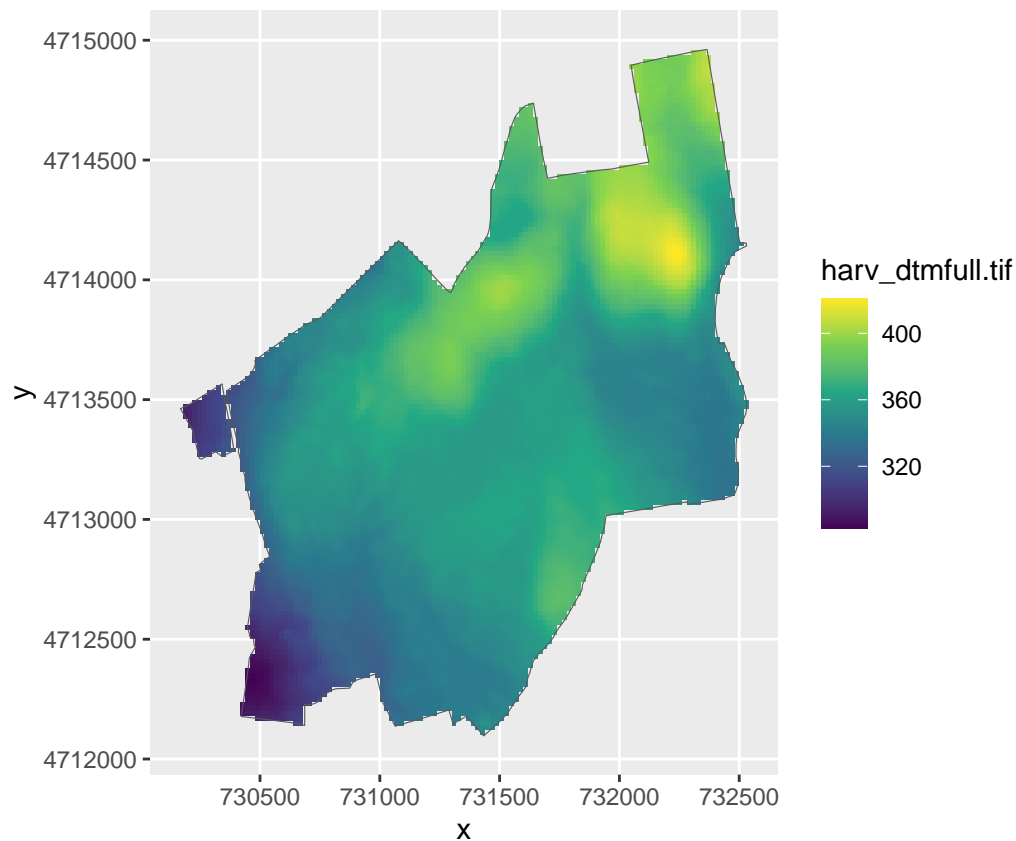
```
harv_dtm_masked <- st_crop(harv_dtm, harv_boundary, crop = FALSE)
harv_dtm_masked
```

```
## stars object with 2 dimensions and 1 attribute
## attribute(s):
##               Min. 1st Qu.  Median    Mean 3rd Qu.    Max. NA's
## harv_dtmfull.tif 282.6686 343.8786 357.7104 357.562 370.615 420.8233 13284
## dimension(s):
##   from to offset delta      refsys point x/y
## x   1 150 730000    20 WGS 84 / UTM zone 18N FALSE [x]
## y   1 150 4715000  -20 WGS 84 / UTM zone 18N FALSE [y]
```

```
ggplot() +
  geom_stars(data = harv_dtm_masked) +
  scale_fill_viridis_c(na.value = "transparent") +
  geom_sf(data = harv_boundary, fill = "transparent")
```



```
ggplot() +
  geom_stars(data = harv_dtm_cropped) +
  scale_fill_viridis_c(na.value = "transparent") +
  geom_sf(data = harv_boundary, fill = "transparent") +
  coord_sf(datum = st_crs(harv_dtm))
```



Cropping with a box

```
bbox <- st_bbox(c(xmin = 731000, ymin = 4713000, xmax = 732000, ymax = 4714000), crs = st_crs(harv_dtm))
```

```
harv_dtm_small <- st_crop(harv_dtm, bbox)
```

```
harv_soils <- read_sf("../data/harv/harv_soils.shp")
```

```
harv_soils_small <- st_crop(harv_soils, bbox)
```

```
## Warning: attribute variables are assumed to be spatially constant throughout
## all geometries
```

```
ggplot() +
  geom_stars(data = harv_dtm_small) +
  scale_fill_viridis_c(na.value = "transparent") +
  geom_sf(data = harv_soils_small, fill = "transparent")
```

