010160608

January 14, 2021

[1]:
```
#gerekli kutuphaneler ice aktarildi
import rasterio
from rasterio import plot
import matplotlib.pyplot as plt
import numpy as np
%matplotlib inline
```

[2]:
```
import os
os.listdir('../ebrar_010160608/input')
```

[2]:
```
['B3.tif', 'B5.tif']
```

[3]:
```
band3 = rasterio.open('../ebrar_010160608/input/B3.tif') #green
band5 = rasterio.open('../ebrar_010160608/input/B5.tif') #nir
```

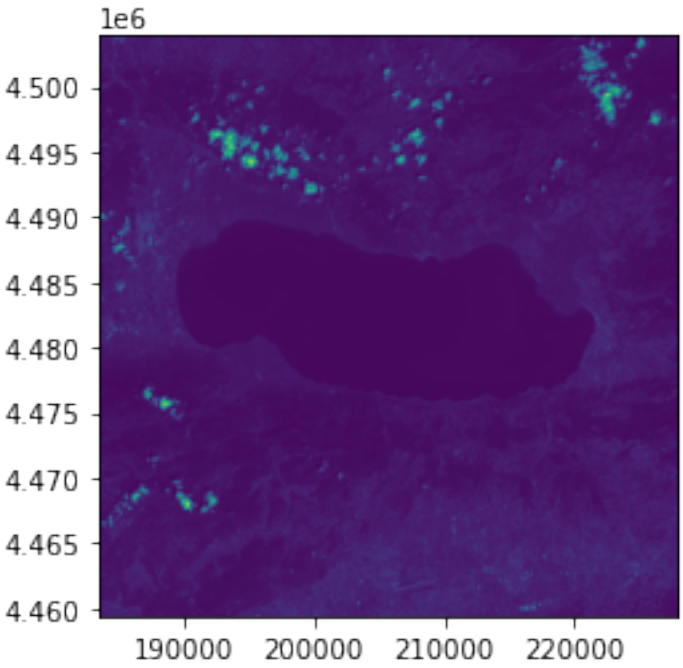
[4]:
```
#satir numaralari
band3.height
```

[4]:
```
1485
```

[5]:
```
#sutun numaralari
band3.width
```

[5]:
```
1485
```

[6]:
```
#plot
plot.show(band3)
```



[6]:
```
<AxesSubplot:>
```

[7]:
```
band3.dtypes[0]
```

[7]:
```
'uint16'
```

[8]:
```
#referans sistemi
band3.crs
```

[8]:
```
CRS.from_epsg(32636)
```

[9]:
```
#donusum parametreleri
band3.transform
```

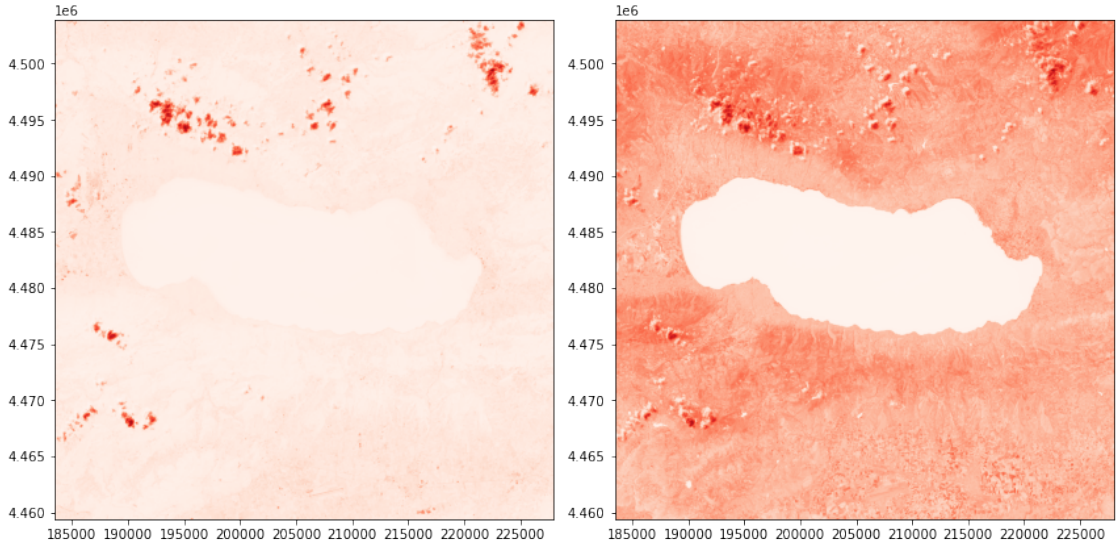
[9]:
```
Affine(30.0, 0.0, 183435.0,
       0.0, -30.0, 4503945.0)
```

[10]:
```
#raster degerleri"matrix dizisi"
band3.read(1)
```

[10]:
```
array([[11031, 10688, 10592, …,  9590,  9692,  9722],
       [10677, 10298, 11045, …,  9492,  9270,  9435],
       [11018, 10633, 10905, …,  9371,  9042,  9080],
       …,
       [10332, 10028, 10450, …,  9781,  9845, 10136],
```

```
       [ 9594, 10106, 10986, …, 10324, 10159,  9925],
       [ 9859,  9941, 10944, …, 10398, 10492, 10286]], dtype=uint16)
```

[11]:
```
#band gosterim
fig, (ax1, ax2) = plt.subplots(1, 2, figsize=(12, 6))
plot.show(band3, ax=ax1, cmap='Reds') #green
plot.show(band5, ax=ax2, cmap='Reds') #nir
fig.tight_layout()
```



[12]:
```
#nir ve yesil objeler
green = band3.read(1).astype('float64')
nir = band5.read(1).astype('float64')
```

[13]:
```
nir
```

[13]:
```
array([[20310., 20472., 21184., …, 25112., 23011., 22237.],
       [19959., 20657., 22418., …, 26087., 25653., 25864.],
       [22728., 21972., 23425., …, 26549., 27783., 30121.],
       …,
       [20332., 21023., 21297., …, 18953., 19788., 19351.],
       [22729., 23157., 22040., …, 20877., 21126., 20209.],
       [19464., 22008., 21408., …, 19740., 20030., 20089.]])
```

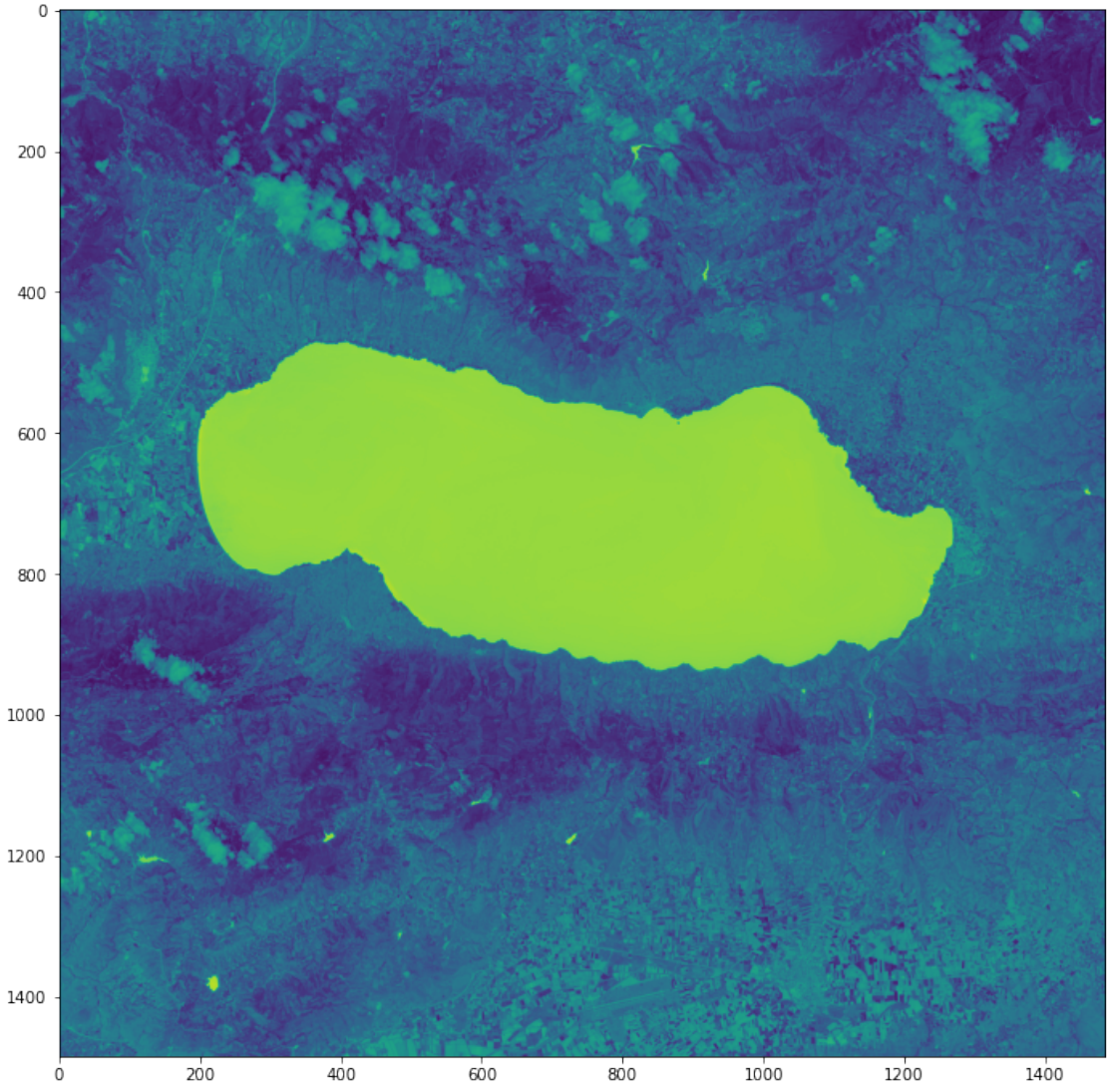
[14]:
```
#ndwi hesaplama islemi yapildi formul tanimlandi su pikselleri ayristirildi
ndwi=np.where(
    (green+nir)==0.,
    0,
    (green-nir)/(green+nir))
ndwi[:5,:5]
```

[14]:
```
array([[-0.29606586, -0.3139923 , -0.33333333, -0.38872281, -0.3317548 ],
       [-0.30297689, -0.33464707, -0.33986791, -0.32818153, -0.24442022],
       [-0.34700409, -0.34776875, -0.3646956 , -0.24877515, -0.32948973],
       [-0.37159599, -0.31521251, -0.29549784, -0.32437906, -0.39440125],
       [-0.30640438, -0.25711783, -0.33315088, -0.37931442, -0.36299939]])
```

[15]:
```
#ndwi export islemi
ndwi_ebrar_010160608 = rasterio.open('../ebrar_010160608/output/
 ↪ndwi_ebrar_010160608.tiff','w',driver='Gtiff',
                          width=band3.width,
                          height = band3.height,
                          count=1, crs=band3.crs,
                          transform=band3.transform,
                          dtype='float64')
```

[16]:
```
ndwi_ebrar_010160608.write(ndwi,1)
ndwi_ebrar_010160608.close()
```

[17]:
```
#ndwi plot
ndwi_ebrar_010160608 = rasterio.open('../ebrar_010160608/output/
 ↪ndwi_ebrar_010160608.tiff')
fig = plt.figure(figsize=(18,12))
plot.show(ndwi)
```



[17]: <AxesSubplot:>

[ ]: