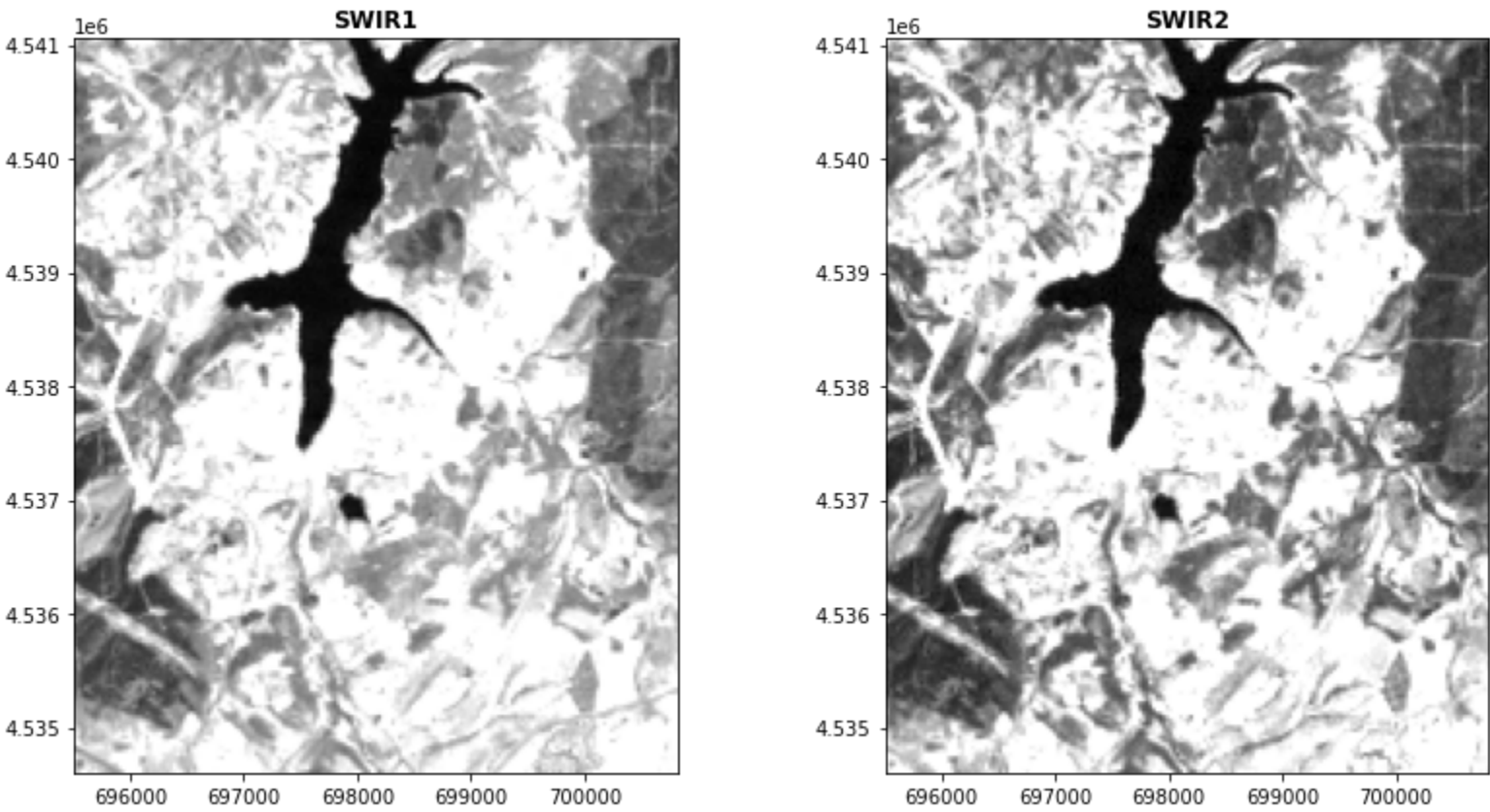


```
In [1]: import rasterio
        from rasterio import plot
        import matplotlib.pyplot as plt
        import numpy as np
        %matplotlib inline
```

```
In [2]: band4=rasterio.open("B5_swir1.tif")
        band5=rasterio.open("B7_swir2.tif")
```

```
In [3]: fig, (ax1, ax2) = plt.subplots(1, 2, figsize=(12, 6))
        plot.show(band4, ax=ax1, cmap='gray', title='SWIR1')
        plot.show(band5, ax=ax2, cmap='gray', title='SWIR2')
        fig.tight_layout()
```

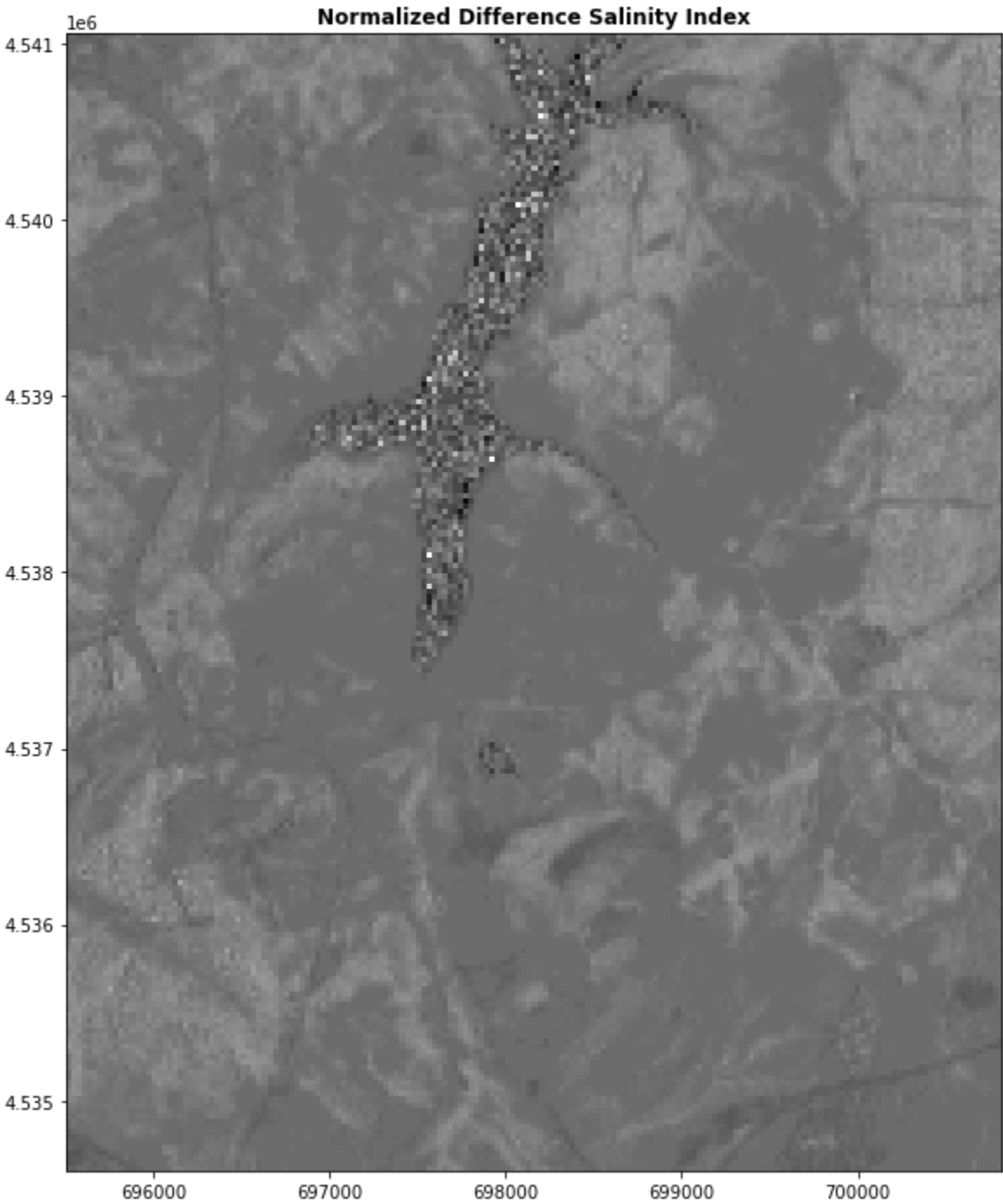


```
In [4]: swir1=band4.read(1).astype('float64')
        swir2=band5.read(1).astype('float64')
```

```
In [5]: NDSI=np.where(
        (swir1+swir2)==0.,
        0,
        (swir1-swir2)/(swir1+swir2))
```

```
In [6]: NDSI_image = rasterio.open('NDSI_image.tiff', 'w', driver='Gtiff',
        width=band4.width,
        height = band4.height,
        count=1, crs=band4.crs,
        transform=band4.transform,
        dtype='float64')
        NDSI_image.write(NDSI,1)
        NDSI_image.close()
```

```
In [7]: NDSIimg = rasterio.open('NDSI_image.tiff')
        fig = plt.figure(figsize=(18,12))
        plot.show(NDSIimg, cmap='gray', title='Normalized Difference Salinity Index')
```



```
Out[7]: <AxesSubplot:title={'center': 'Normalized Difference Salinity Index'}>
```