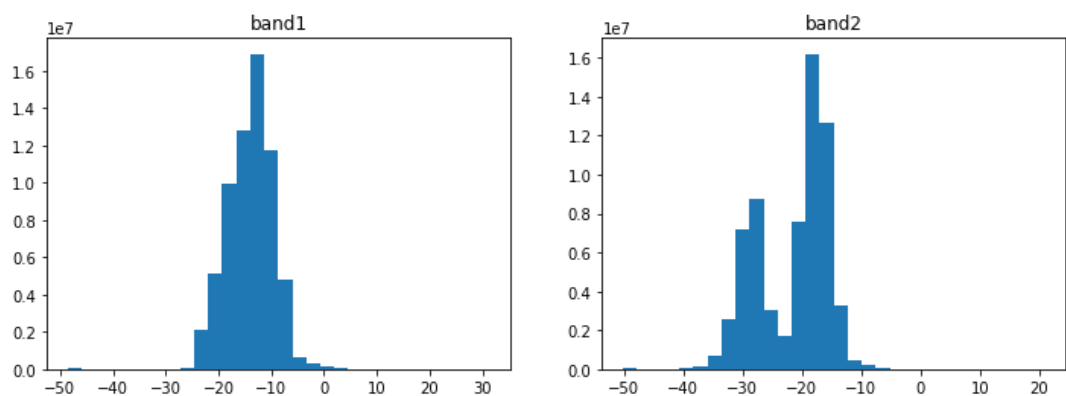```
In [1]: import numpy as np
        import matplotlib.pyplot as plt
        import pandas as pd
        %matploblib inline
```
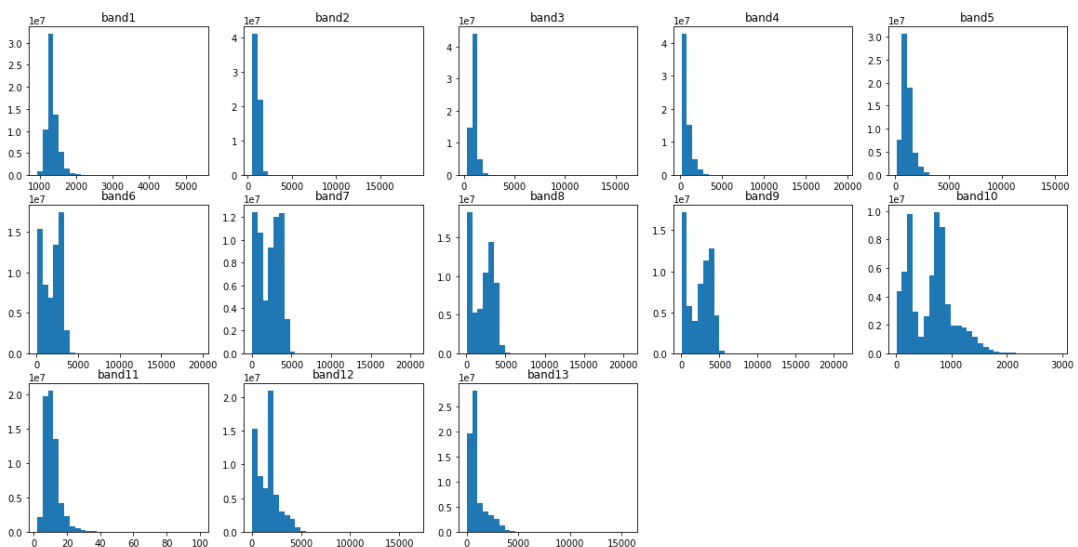
# EDA

### Val

```
In [13]: s1_val=np.load('/data/PublicData/DF2020/val/s1_val.npy')
         plt.subplots(figsize=(12,4))
         for i in range(2):
             plt.subplot(1,2,i+1)
             plt.hist(s1_val[:,i,:,:].reshape(-1),bins=30)
             plt.title('band'+str(i+1))
         plt.show()
```



```
In [21]: s1_val=np.load('/data/PublicData/DF2020/val/s2_val.npy')
         plt.subplots(figsize=(20,10))
         for i in range(3):
             for j in range(5):
                 if 5*i+j<13:
                     plt.subplot(3,5,5*i+j+1)
                     plt.hist(s1_val[:,5*i+j,:,:].reshape(-1),bins=30)
                     plt.title('band'+str(5*i+j+1))
         plt.show()
```
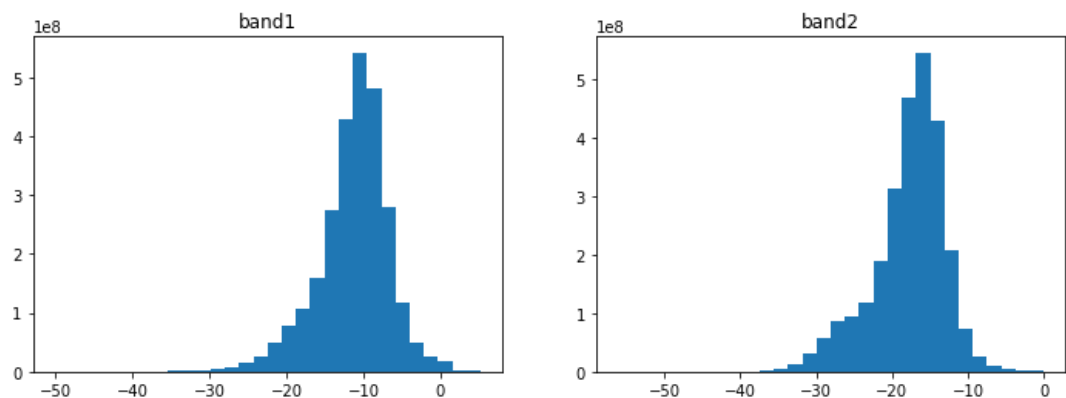
In [22]: `del s1 val`

Spring

In [19]: `s1 spring=np.load('/data/PublicData/DF2020/trn/s1 trn spring.npy')`

In [24]: `print(s1 spring.shape)`

```
(40883, 2, 256, 256)
```

In [25]:
```python
plt.subplots(figsize=(12,4))
for i in range(2):
    plt.subplot(1,2,i+1)
    plt.hist(s1_spring[:,i,:,:].reshape(-1),bins=30)
    plt.title('band'+str(i+1))
plt.show()
```
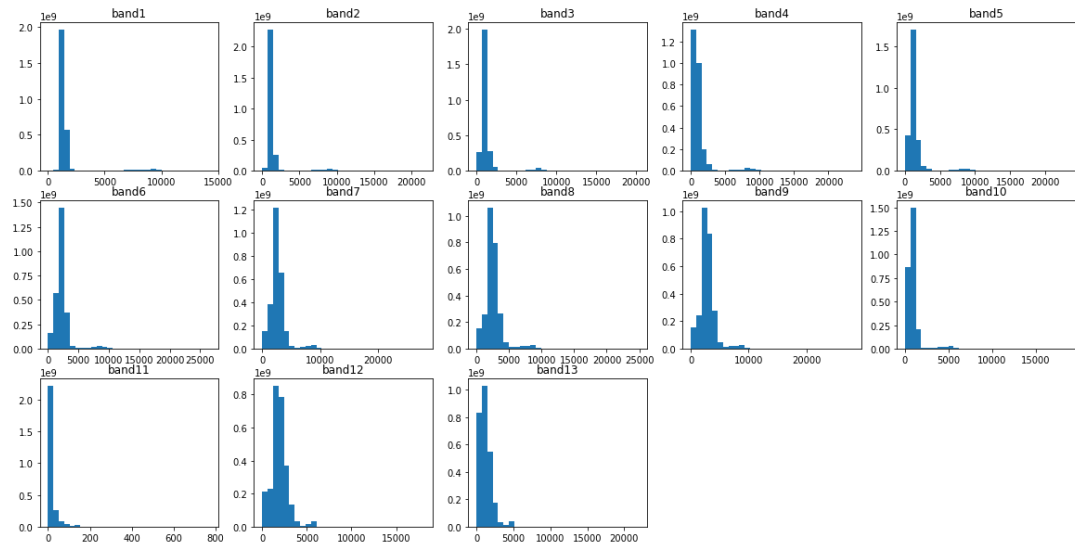

In [26]: `del s1 spring`

In [27]: `s2 spring=np.load('/data/PublicData/DF2020/trn/s2 trn spring.npy')`

In [28]: `s2 spring.shape`

Out[28]: `(40883, 13, 256, 256)`

```python
In [29]: plt.subplots(figsize=(20,10))
         for i in range(3):
             for j in range(5):
                 if 5*i+j<13:
                     plt.subplot(3,5,5*i+j+1)
                     plt.hist(s2_spring[:,5*i+j,:,:].reshape(-1),bins=30)
                     plt.title('band'+str(5*i+j+1))
         plt.show()
```
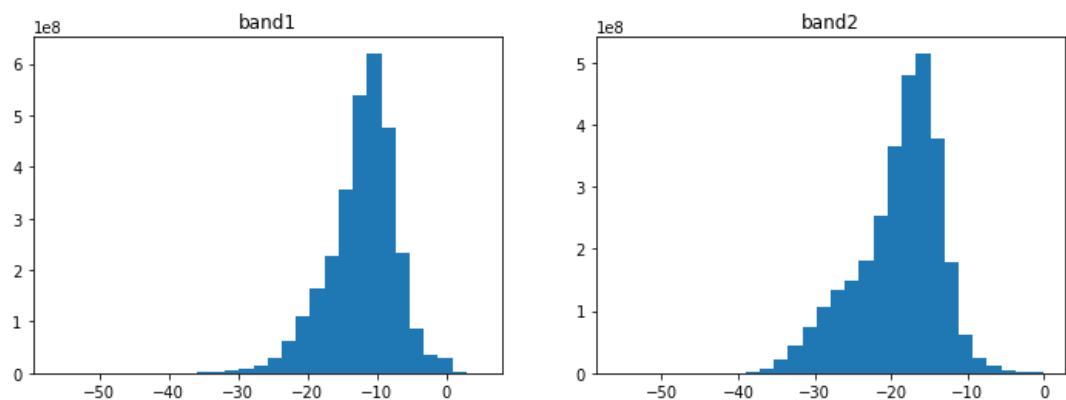


```python
In [30]: del s2 spring
```

Summer

```python
In [31]: s1 summer=np.load('/data/PublicData/DF2020/trn/s1 trn summer.npy')
```

```python
In [32]: print(s1 summer.shape)
```

(45753, 2, 256, 256)

```python
In [33]: plt.subplots(figsize=(12,4))
         for i in range(2):
             plt.subplot(1,2,i+1)
             plt.hist(s1_summer[:,i,:,:].reshape(-1),bins=30)
             plt.title('band'+str(i+1))
         plt.show()
```
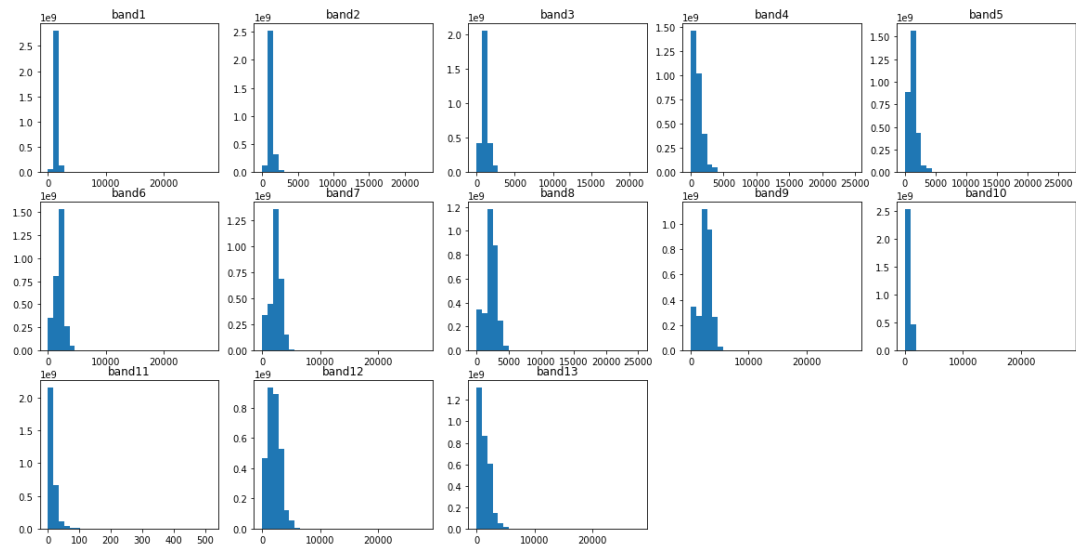


```python
In [34]: del s1 summer
```

In [35]:
```python
s2 summer=np.load('/data/PublicData/DF2020/trn/s2 trn summer.npy')
```

In [37]:
```python
print(s2 summer.shape)
```

```
(45753, 13, 256, 256)
```

In [38]:
```python
plt.subplots(figsize=(20,10))
for i in range(3):
    for j in range(5):
        if 5*i+j<13:
            plt.subplot(3,5,5*i+j+1)
            plt.hist(s2_summer[:,5*i+j,:,:].reshape(-1),bins=30)
            plt.title('band'+str(5*i+j+1))
plt.show()
```


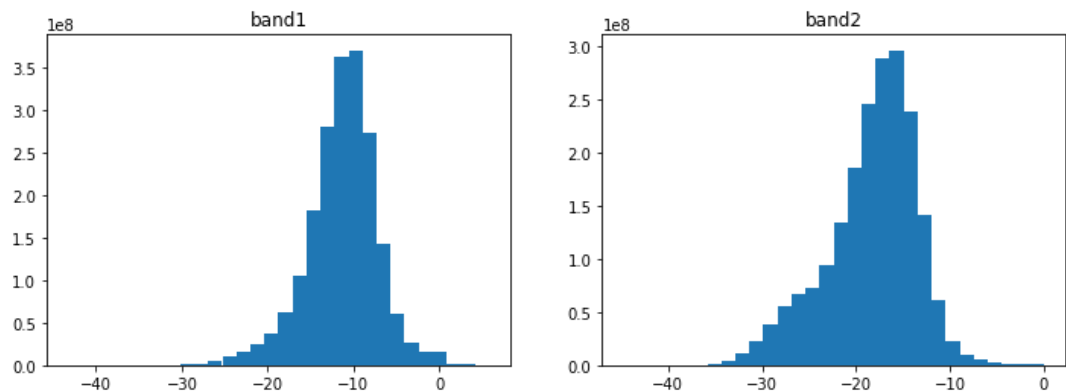In [45]:
```python
del s2 summer
```

Fall 1

In [39]:
```python
s1 fall part1=np.load('/data/PublicData/DF2020/trn/s1 trn fall part1.npy')
```

In [41]:
```python
print(s1 fall part1.shape)
```

```
(30501, 2, 256, 256)
```

```
In [42]: plt.subplots(figsize=(12,4))
         for i in range(2):
             plt.subplot(1,2,i+1)
             plt.hist(s1_fall_part1[:,i,:,:].reshape(-1),bins=30)
             plt.title('band'+str(i+1))
         plt.show()
```
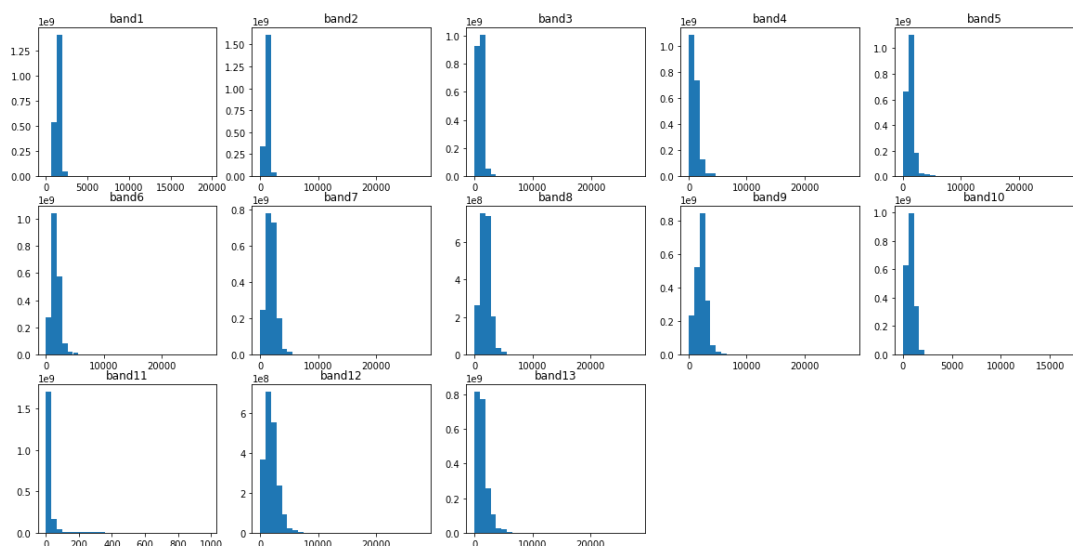


```
In [46]: del s1 fall part1
```

```
In [47]: s2 fall part1=np.load('/data/PublicData/DF2020/trn/s2 trn fall part1.npy')
```

```
In [48]: print(s2 fall part1.shape)
```

```
(30501, 13, 256, 256)
```

```
In [49]: plt.subplots(figsize=(20,10))
         for i in range(3):
             for j in range(5):
                 if 5*i+j<13:
                     plt.subplot(3,5,5*i+j+1)
                     plt.hist(s2_fall_part1[:,5*i+j,:,:].reshape(-1),bins=30)
                     plt.title('band'+str(5*i+j+1))
         plt.show()
```
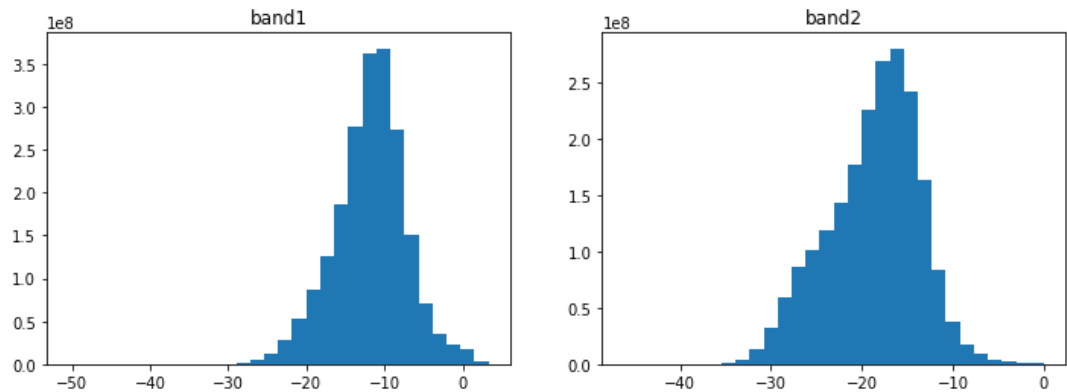


```
In [50]: del s2 fall part1
```

Fall 2

In [51]:
```python
s1_fall_part2=np.load('/data/PublicData/DF2020/trn/s1_trn_fall_part2.npy')
```

In [52]:
```python
print(s1_fall_part2.shape)
```

(31700, 2, 256, 256)

In [53]:
```python
plt.subplots(figsize=(12,4))
for i in range(2):
    plt.subplot(1,2,i+1)
    plt.hist(s1_fall_part2[:,i,:,:].reshape(-1),bins=30)
    plt.title('band'+str(i+1))
plt.show()
```
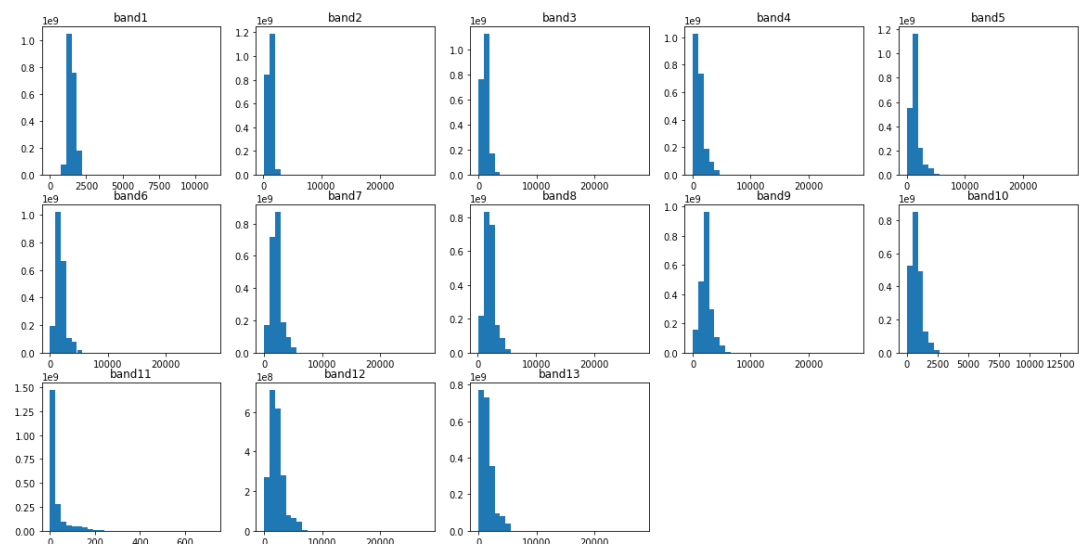

In [54]:
```python
del s1_fall_part2
```

In [55]:
```python
s2_fall_part2=np.load('/data/PublicData/DF2020/trn/s2_trn_fall_part2.npy')
```

In [56]:
```python
print(s2_fall_part2.shape)
```

(31700, 13, 256, 256)

In [57]:
```python
plt.subplots(figsize=(20,10))
for i in range(3):
    for j in range(5):
        if 5*i+j<13:
            plt.subplot(3,5,5*i+j+1)
            plt.hist(s2_fall_part2[:,5*i+j,:,:].reshape(-1),bins=30)
            plt.title('band'+str(5*i+j+1))
plt.show()
```
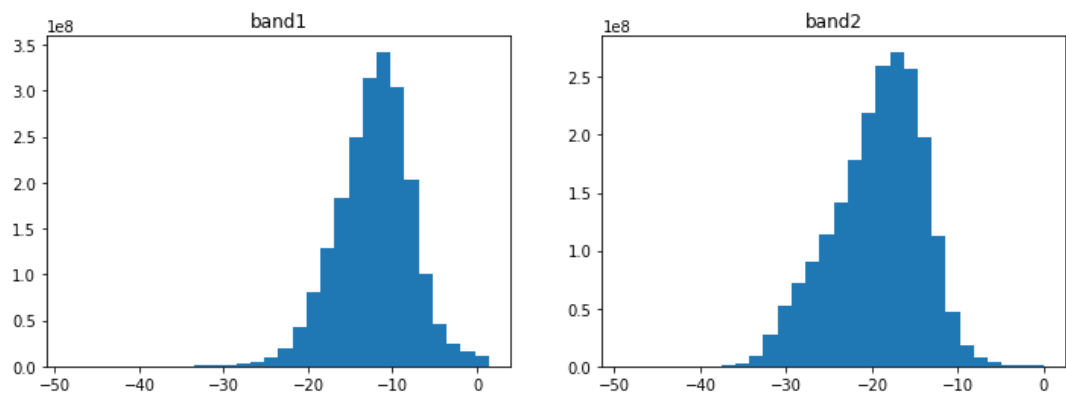
```
In [59]: del s2 fall part2
```

Winter

```
In [60]: s1 winter=np.load('/data/PublicData/DF2020/trn/s1 trn winter.npy')
```

```
In [61]: print(s1 winter.shape)
```

```
(31825, 2, 256, 256)
```

```
In [62]: plt.subplots(figsize=(12,4))
         for i in range(2):
             plt.subplot(1,2,i+1)
             plt.hist(s1_winter[:,i,:,:].reshape(-1),bins=30)
             plt.title('band'+str(i+1))
         plt.show()
```



```
In [63]: del s1 winter
```

```
In [64]: s2 winter=np.load('/data/PublicData/DF2020/trn/s2 trn winter.npy')
```

```
In [65]: print(s2 winter.shape)
```

```
(31825, 13, 256, 256)
```

```python
In [66]: plt.subplots(figsize=(20,10))
         for i in range(3):
             for j in range(5):
                 if 5*i+j<13:
                     plt.subplot(3,5,5*i+j+1)
                     plt.hist(s2_winter[:,5*i+j,:,:].reshape(-1),bins=30)
                     plt.title('band'+str(5*i+j+1))
         plt.show()
```