

Tugas 3 Pengolahan Citra Digital

Nama : Rosa Amalia Nursinta

NIM : 11190940000041

Import Modul

In [1]:

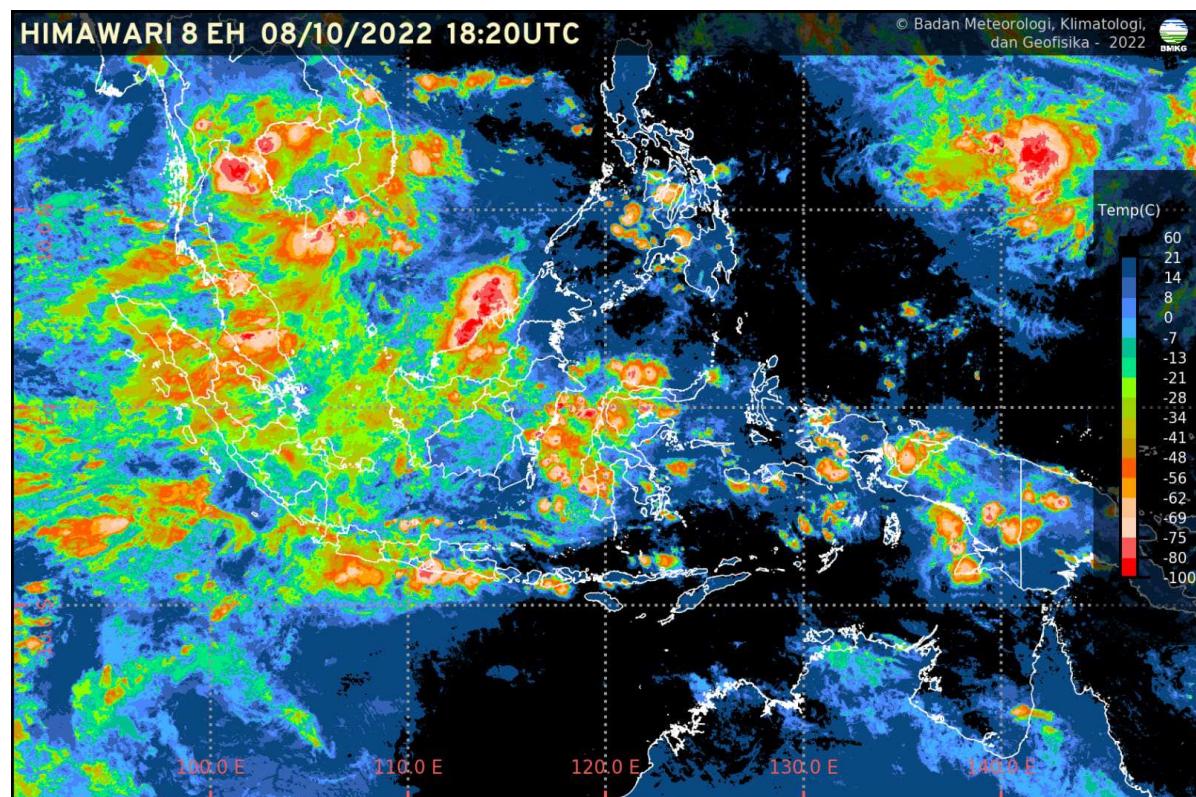
```
from PIL import Image
import numpy as np
import random
import matplotlib.pyplot as plt
%matplotlib inline
```

Load Image

In [23]:

```
# Load gambar 1
img = Image.open('Himawari81.jpeg')
img
```

Out[23]:



In [24]:

```
# Melihat pixel gambar 1
```

```
pic = np.array(img)
```

```
pic
```

```
[ 2,  0,  3]],
```

```
[[ 0,  0,  0],  
 [ 0,  0,  0],  
 [ 0,  0,  2],  
 ...,
```

```
[ 2,  1,  0],  
 [ 1,  0,  0],  
 [ 1,  0,  0]],
```

```
...,
```

```
[[ 0,  4,  0],  
 [ 0,  5,  0],  
 [ 0,  5,  5],  
 ...,
```

```
[ 1,  0,  0],  
 [ 1,  0,  0],  
 [ 0,  0,  0]],
```

In [29]:

```
# Melihat ukuran pixel gambar 1
```

```
print(f'shape of the image{pic.shape}')
```

```
print(f'height {pic.shape[0]} pixels')
```

```
print(f'width {pic.shape[1]} pixels')
```

```
shape of the image(1068, 1600, 3)
```

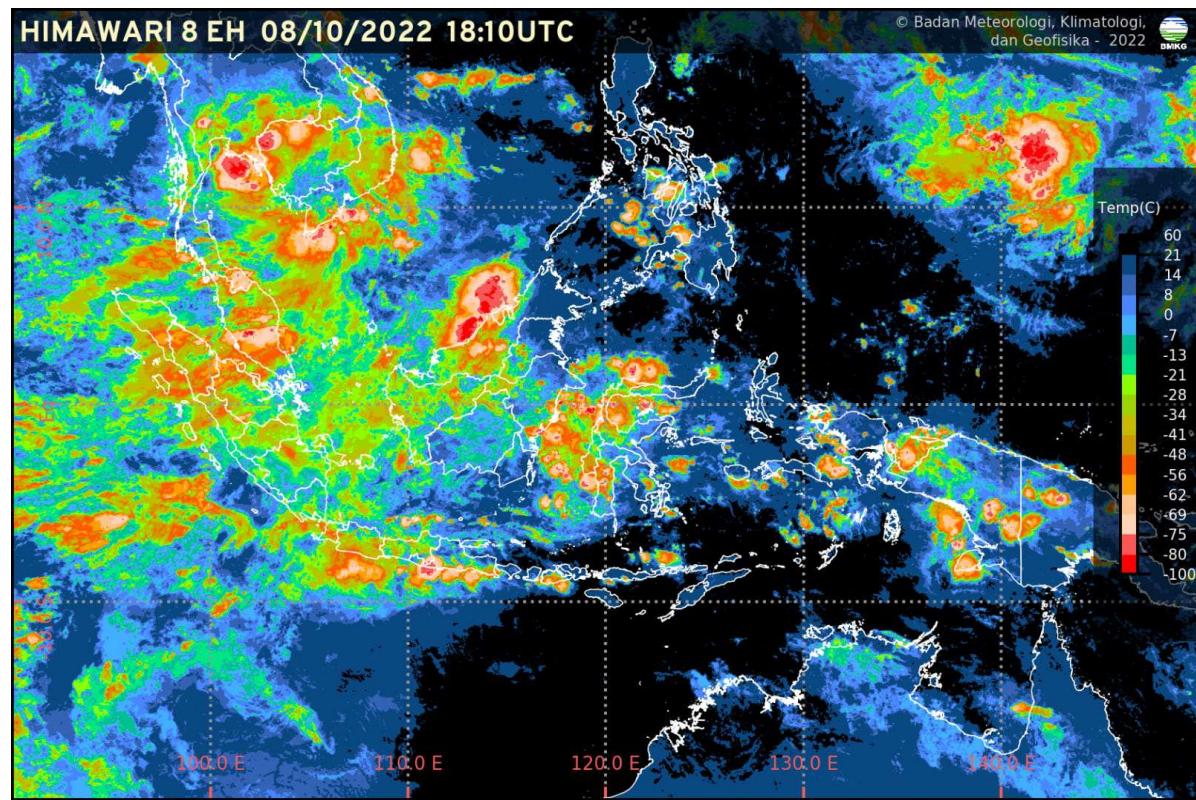
```
height 1068 pixels
```

```
width 1600 pixels
```

In [25]:

```
# Load gambar 2
img1 = Image.open('Himawari82.jpeg')
img1
```

Out[25]:



In [26]:

```
# Melihat pixel gambar 2
pic1 = np.array(img)
pic1
```

Out[26]:

```
array([[ [ 2,  1,  0],
       [ 2,  1,  0],
       [ 1,  1,  0],
       ...,
       [ 1,  0,  5],
       [ 2,  0,  6],
       [ 2,  0,  6]],

      [[ 1,  0,  0],
       [ 0,  0,  0],
       [ 0,  0,  0],
       ...,
       [ 1,  0,  2],
       [ 2,  0,  3],
       [ 2,  0,  3]],

      [[ 0,  0,  0],
       [ 0.,  0.,  0.]])
```

In [32]:

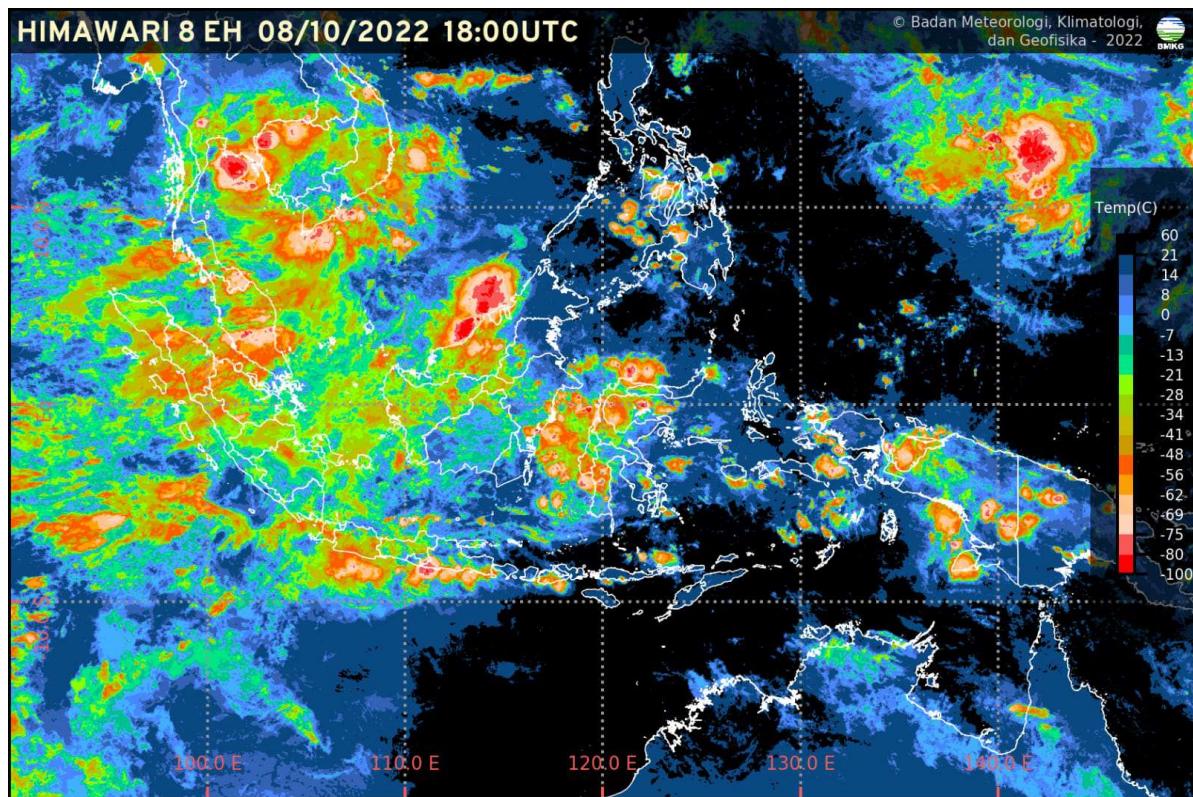
```
# Melihat ukuran pixel gambar 2
print(f'shape of the image{pic1.shape}')
print(f'height {pic1.shape[0]} pixels')
print(f'width {pic1.shape[1]} pixels')
```

```
shape of the image(1068, 1600, 3)
height 1068 pixels
width 1600 pixels
```

In [27]:

```
# Load gambar 3
img2 = Image.open('Himawari83.jpeg')
img2
```

Out[27]:



In [33]:

```
# Melihat pixel gambar 3
pic2 = np.array(img)
pic2

[[ 1,  0,  0],
 [ 1,  0,  0],
 [ 0,  0,  0]],

[[ 7,  5,  0],
 [ 0,  5,  0],
 [ 0,  6,  0],
 ...,
 [ 1,  0,  0],
 [ 1,  0,  0],
 [ 0,  0,  0]],

[[11,  0,  0],
 [ 2,  1,  0],
 [ 0,  4,  0],
 ...,
 [ 1,  0,  0],
 [ 1,  0,  0],
 [ 0,  0,  0]]], dtype=uint8)
```

In [34]:

```
# Melihat ukuran pixel gambar 3
print(f'shape of the image{pic.shape}')
print(f'height {pic1.shape[0]} pixels')
print(f'width {pic1.shape[1]} pixels')

shape of the image(1068, 1600, 3)
height 1068 pixels
width 1600 pixels
```

rata-rata nilai Red-Green-Blue

In [42]:

```
j1 = (pic1 + pic + pic2)
j1
```

Out[42]:

```
array([[[ 6,  3,  0],
       [ 6,  3,  0],
       [ 3,  3,  0],
       ...,
       [ 3,  0, 15],
       [ 6,  0, 18],
       [ 6,  0, 18]],

      [[ 3,  0,  0],
       [ 0,  0,  0],
       [ 0,  0,  0],
       ...,
       [ 3,  0,  6],
       [ 6,  0,  9],
       [ 6,  0,  9]],

      [[ 0,  0,  0],
       [ 0,  0,  0].
```

In [43]:

```
r = j1[:, :, 0]
g = j1[:, :, 1]
b = j1[:, :, 2]

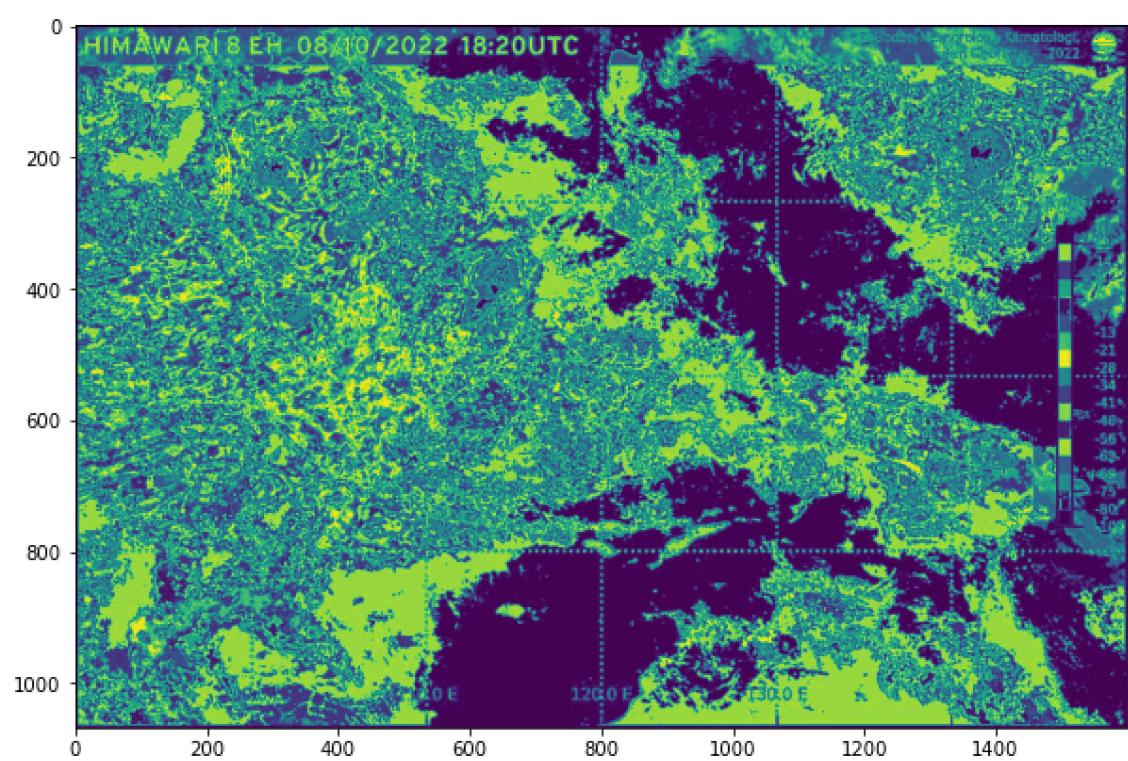
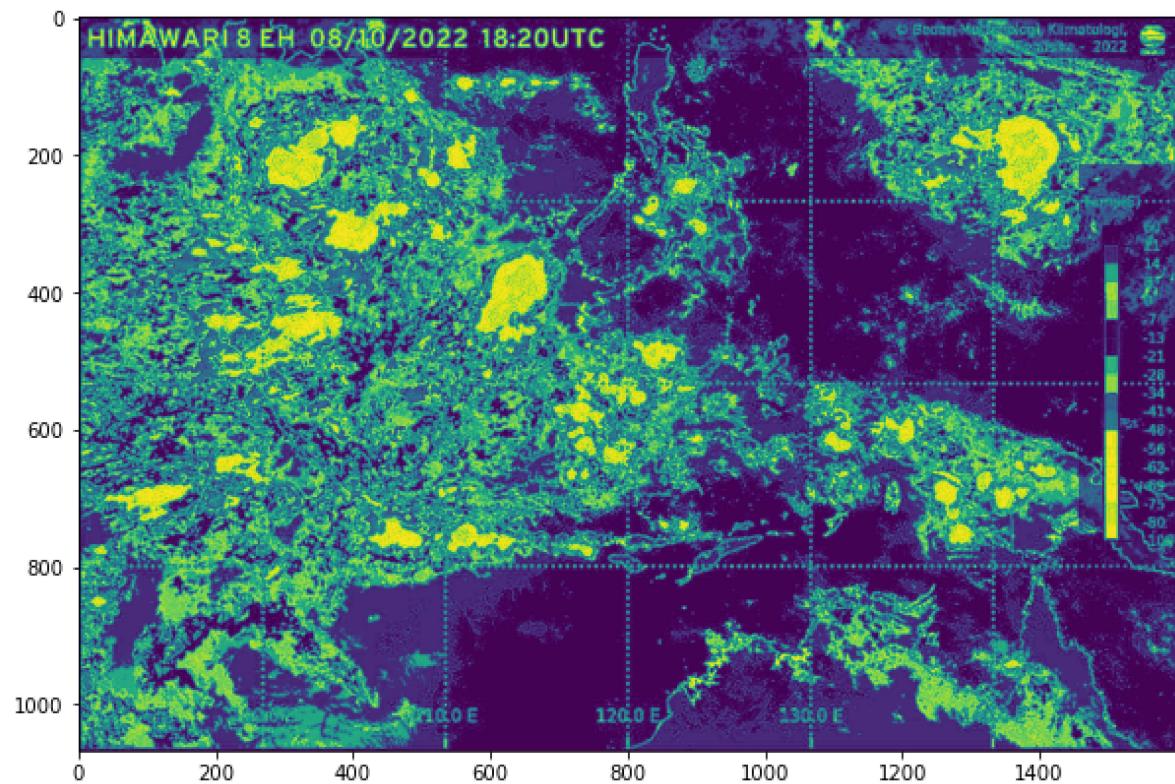
# Memperoleh rata-rata nilai Red/Green/Blue
mean_r = r/3
mean_g = g/3
mean_b = b/3
```

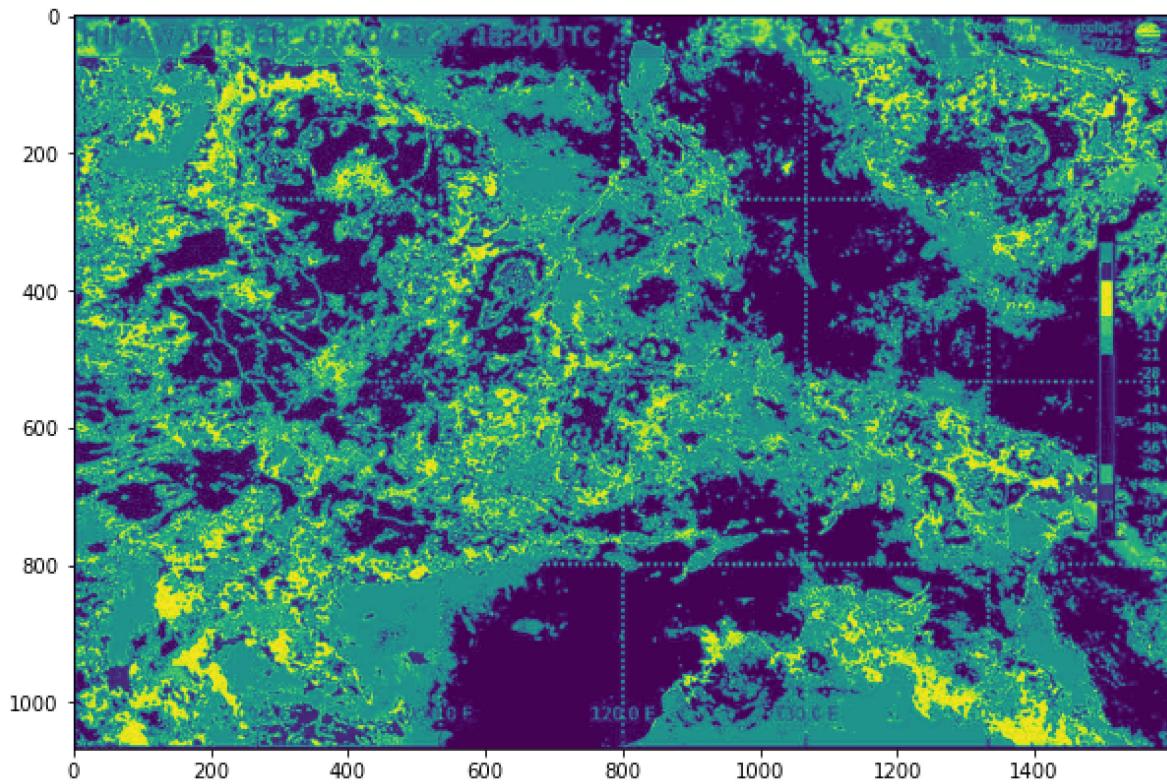
In [44]:

```
plt.figure(figsize = (10,10))
plt.imshow(mean_r)
plt.show()
```

```
plt.figure(figsize = (10,10))
plt.imshow(mean_g)
plt.show()
```

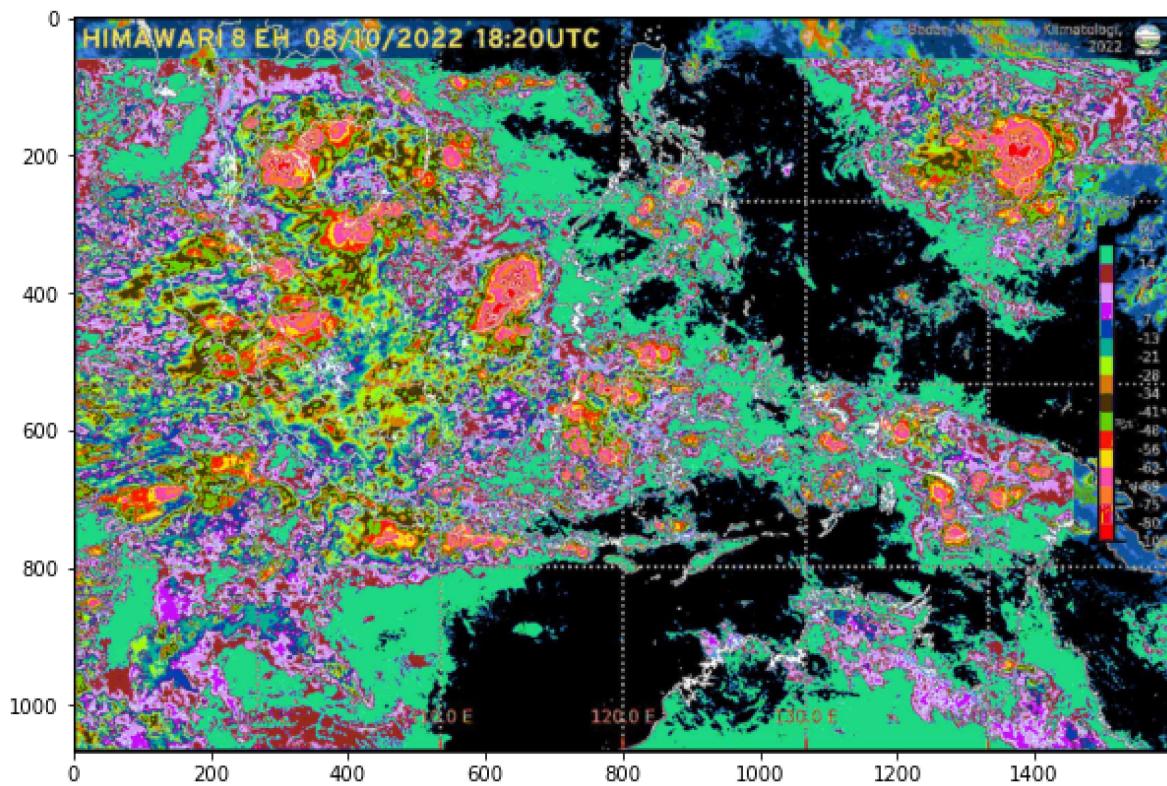
```
plt.figure(figsize = (10,10))
plt.imshow(mean_b)
plt.show()
```





In [45]:

```
# Diperoleh citra baru dari rata-rata nilai red/green/blue
plt.figure(figsize = (10,10))
plt.imshow(j1)
plt.show()
```

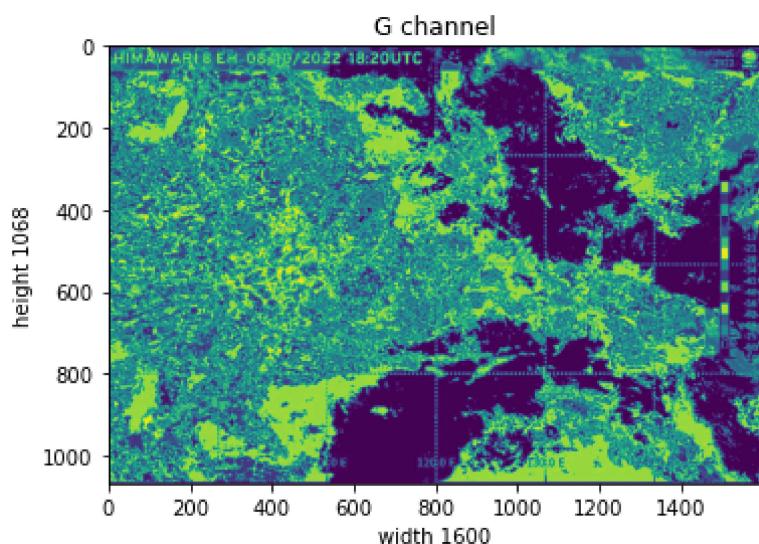
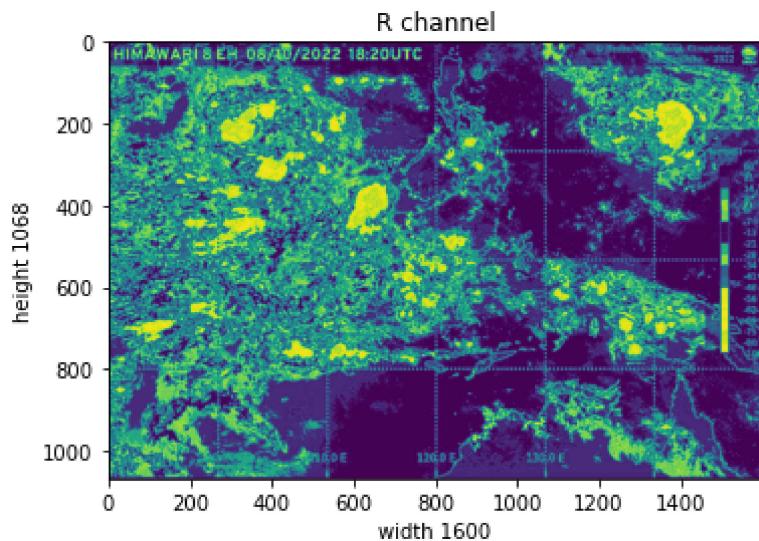


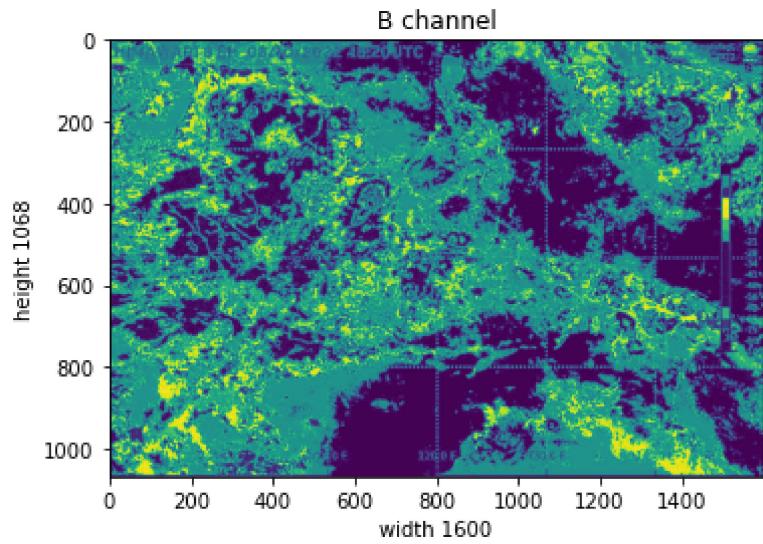
In [46]:

```
plt.title('R channel')
plt.ylabel('height {}'.format(j1.shape[0]))
plt.xlabel('width {}'.format(j1.shape[1]))
plt.imshow(j1[ :, :, 0])
plt.show()

plt.title('G channel')
plt.ylabel('height {}'.format(j1.shape[0]))
plt.xlabel('width {}'.format(j1.shape[1]))
plt.imshow(j1[ :, :, 1])
plt.show()

plt.title('B channel')
plt.ylabel('height {}'.format(j1.shape[0]))
plt.xlabel('width {}'.format(j1.shape[1]))
plt.imshow(j1[ :, :, 2])
plt.show()
```





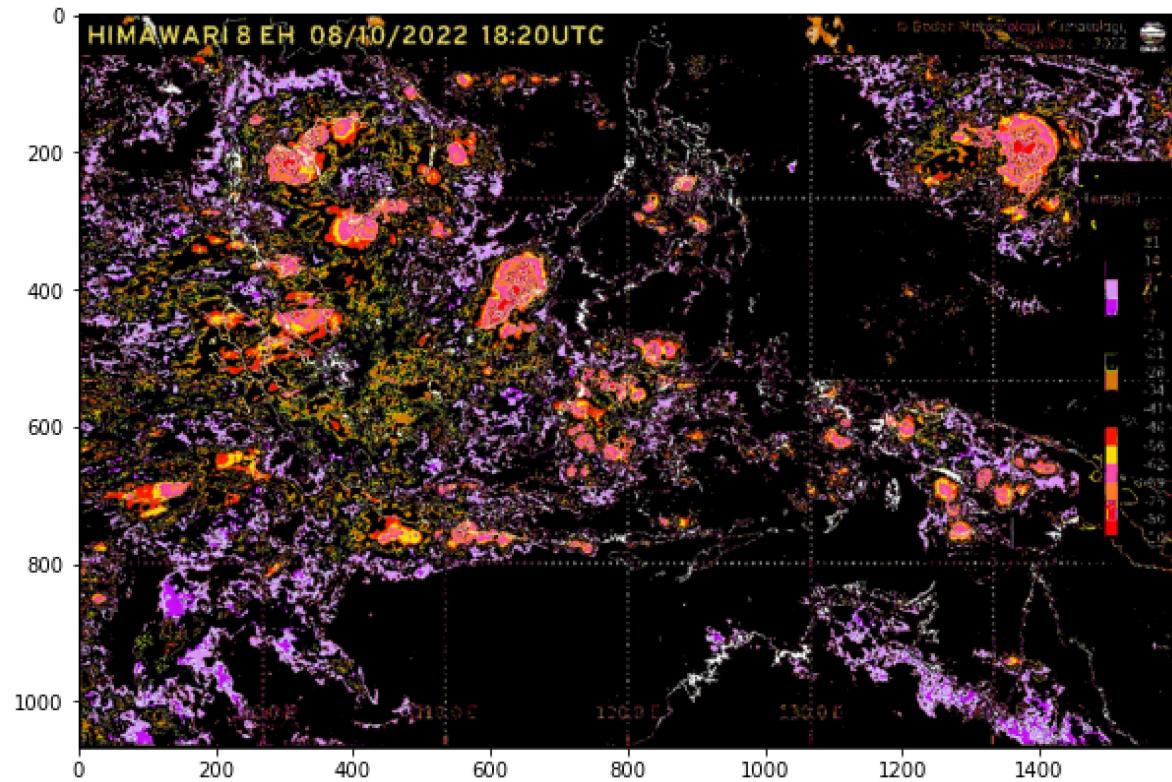
Memisahkan Tiap Channel RGB

In [47]:

```
red_mask = j1[:, :, 0] < 180
j1[red_mask] = 0
plt.figure(figsize=(10, 10))
plt.imshow(j1)
```

Out[47]:

```
<matplotlib.image.AxesImage at 0x22c718ea250>
```

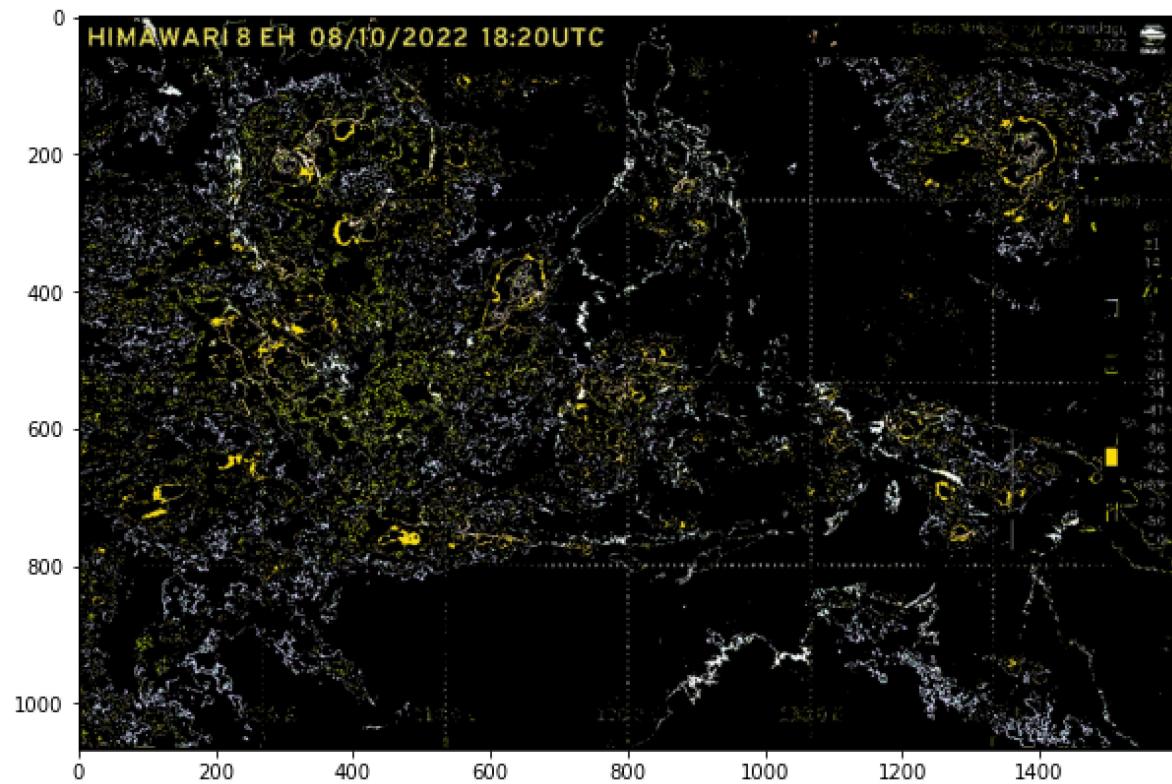


In [48]:

```
green_mask = j1[:, :, 1] < 180
j1[green_mask] = 0
plt.figure(figsize=(10, 10))
plt.imshow(j1)
```

Out[48]:

```
<matplotlib.image.AxesImage at 0x22c0071f3a0>
```

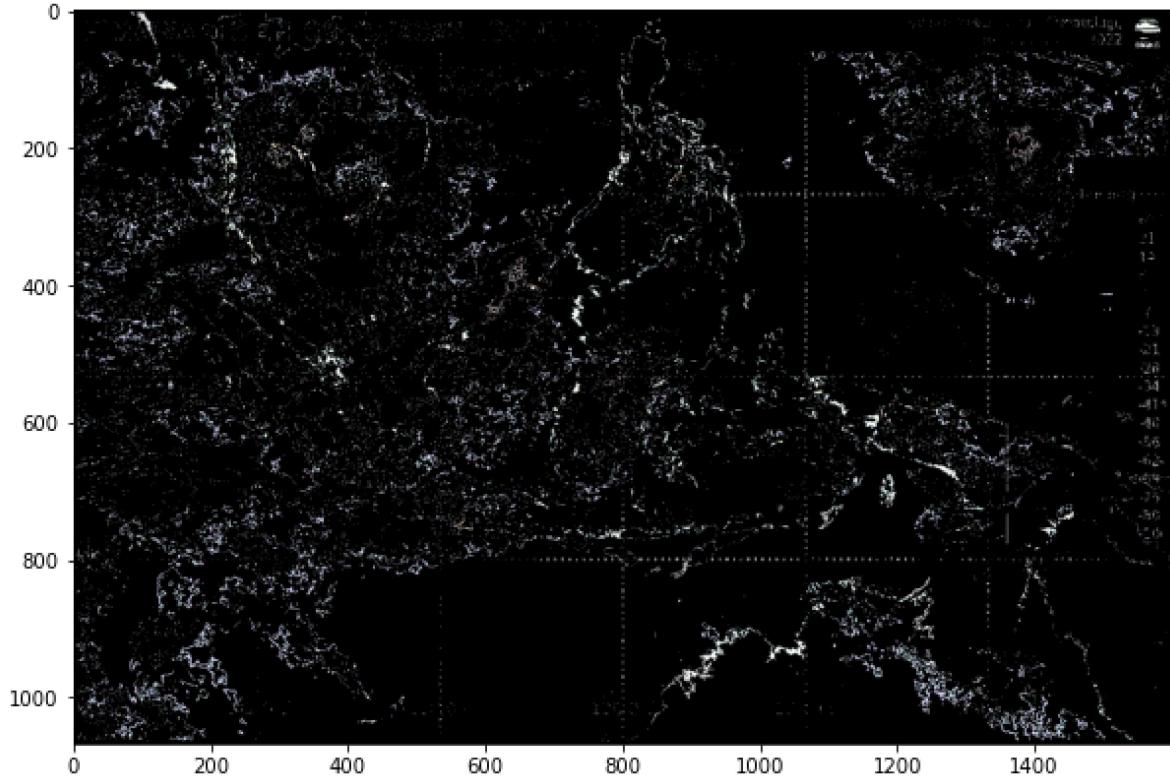


In [49]:

```
blue_mask = j1[:, :, 2] < 180  
j1[blue_mask] = 0  
plt.figure(figsize=(10, 10))  
plt.imshow(j1)
```

Out[49]:

```
<matplotlib.image.AxesImage at 0x22c00256520>
```



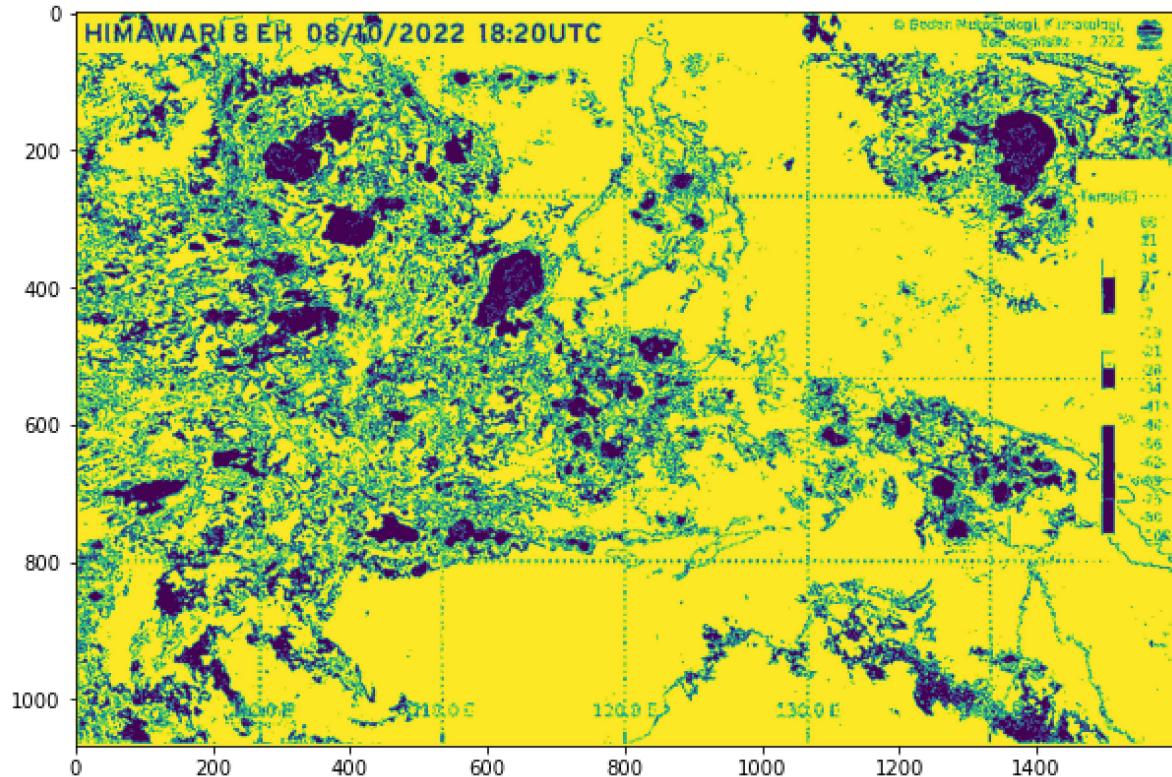
Menyatukan Setiap Channel Menjadi Sebuah Citra

In [56]:

```
join_mask = np.logical_and(red_mask, green_mask, blue_mask)
j1[join_mask] = 0
plt.figure(figsize=(10,10))
plt.imshow(join_mask)
```

Out[56]:

<matplotlib.image.AxesImage at 0x22c006d8f10>



In []:

In []:

