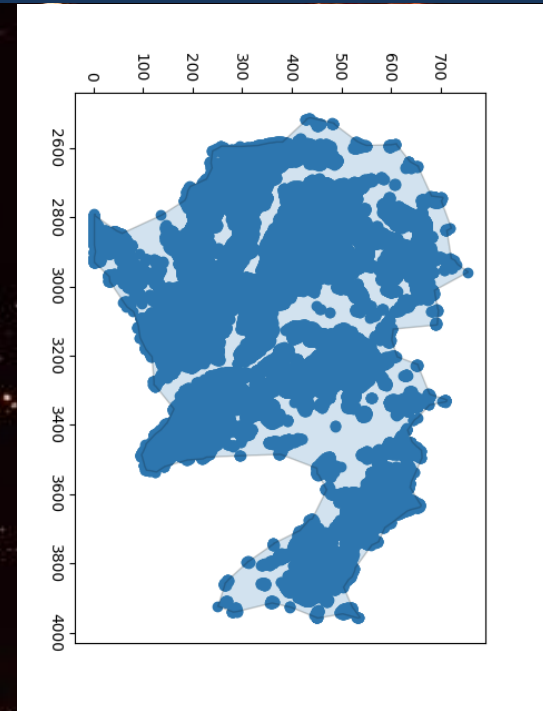


Fire mapping with Sentinel-2



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Satellite mapping of fires

- In remote areas: less costly and safer compared to heli-GPS perimeters
- Cost effective, timely business intelligence for fires being monitored
- Fire growth modelling & other predictive services require daily perimeter updates to reduce simulation error
- Complementary to other mapping methods such as airborne-GPS and IR scanning which are less frequent as fires get large and smoke conditions limit visibility
- Provide additional information about recent fire activity along a perimeter that helps refine model inputs
- Start with Sentinel-2 and add more

Satellite-based fire perimeter recipe

1. **Threshold** (create a fire mask)
2. **Flood** (identify pieces of fire)
3. **Link** (put pieces together)
4. **Trace** (a linear boundary)
 - Exclude segments less than certain size
 - Alpha hull --> geolocate the coords
 - Create KML



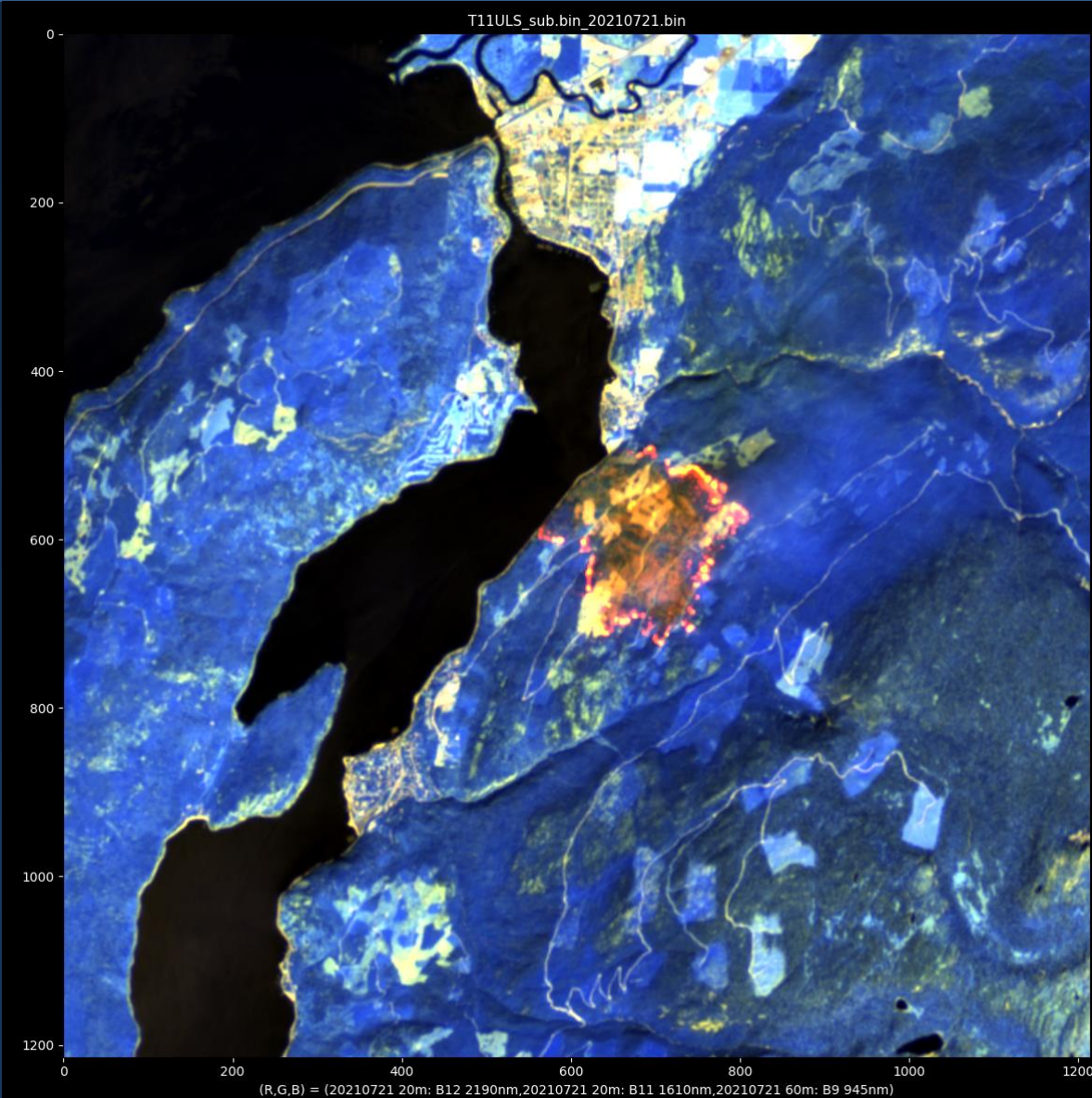
Small fire example

RGB = RGB (visible)



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RGB= (B12, B11, B9) shortwave IR

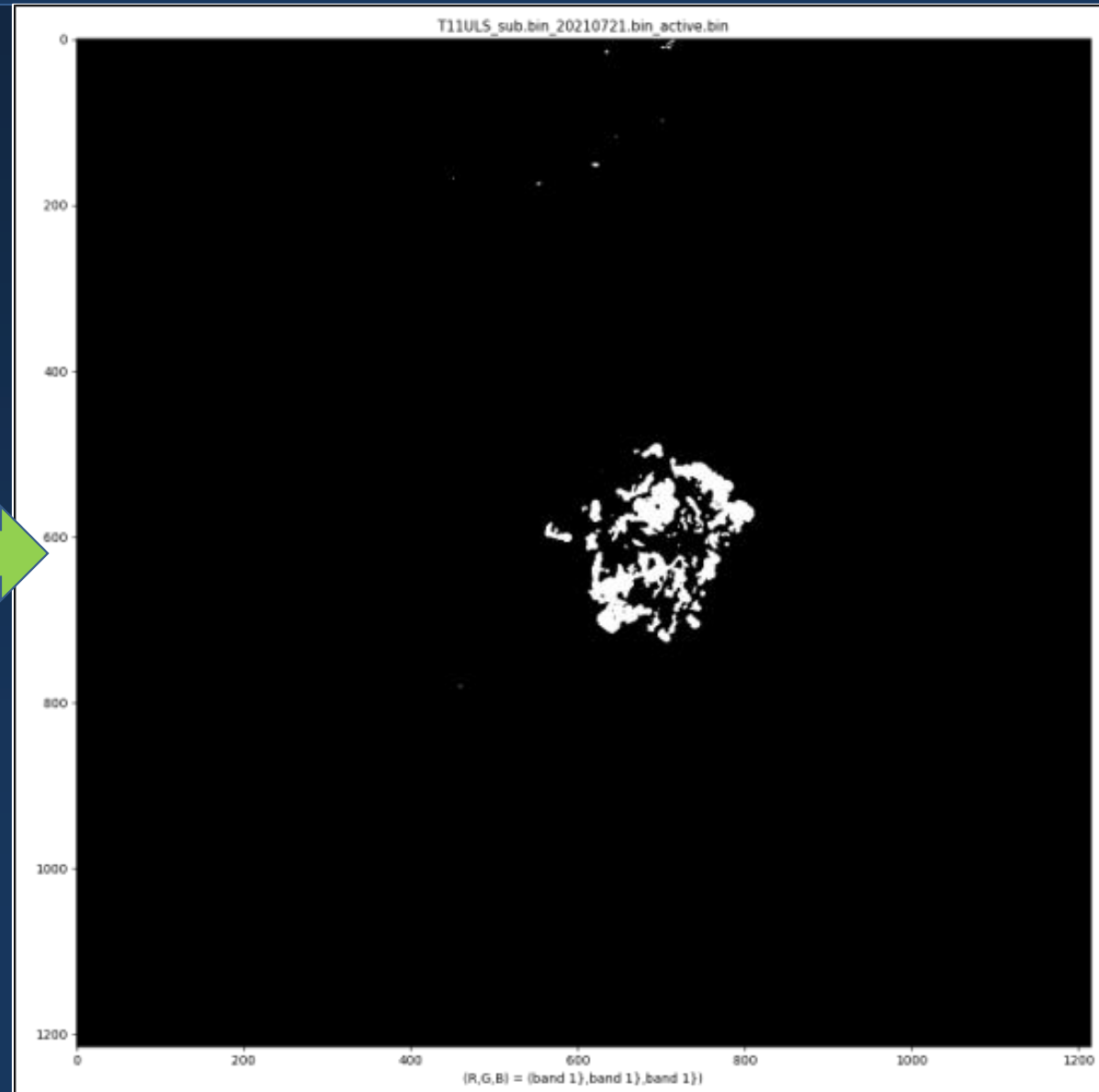
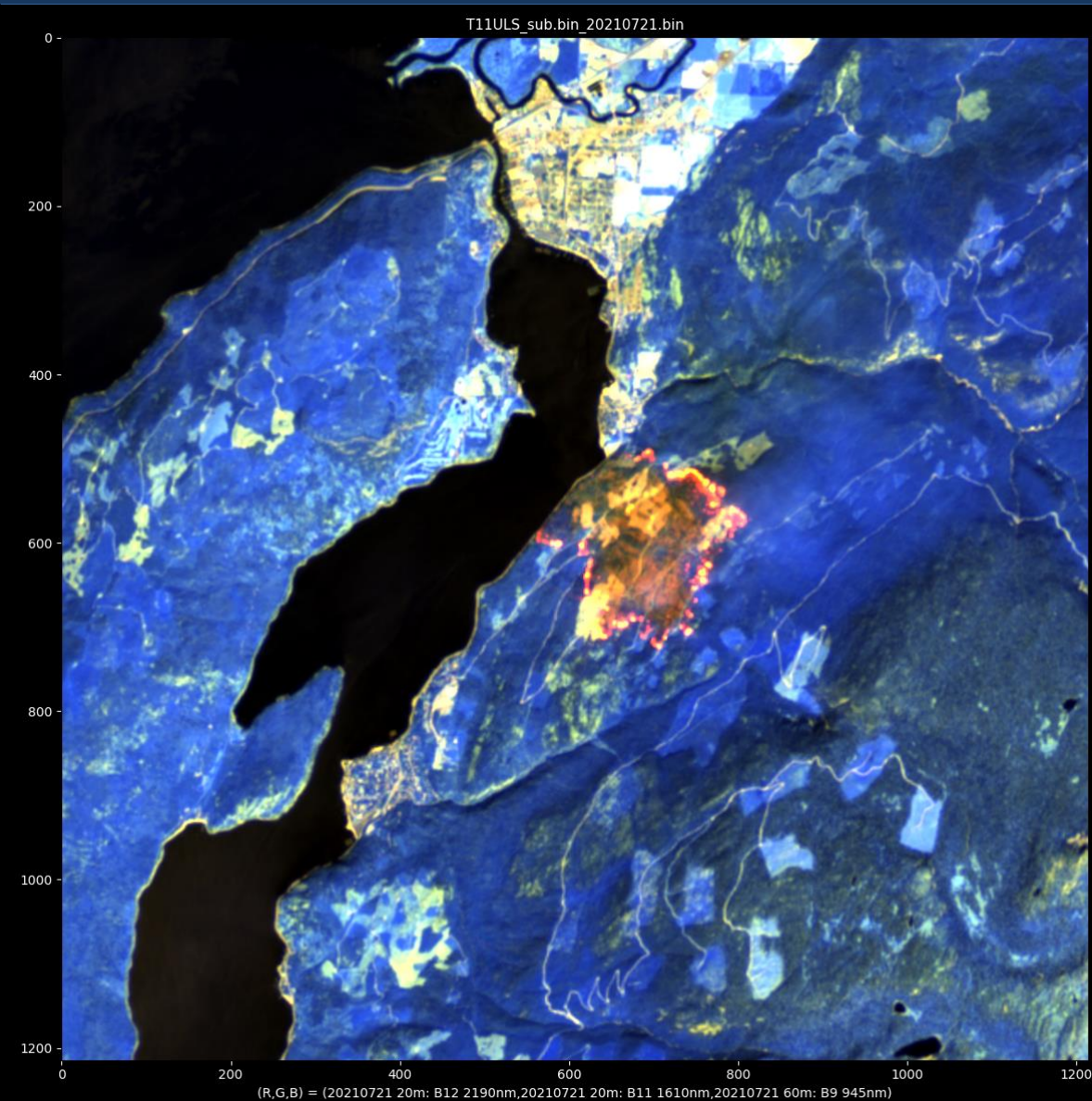


1. Threshold

[please
click here
for source
code]



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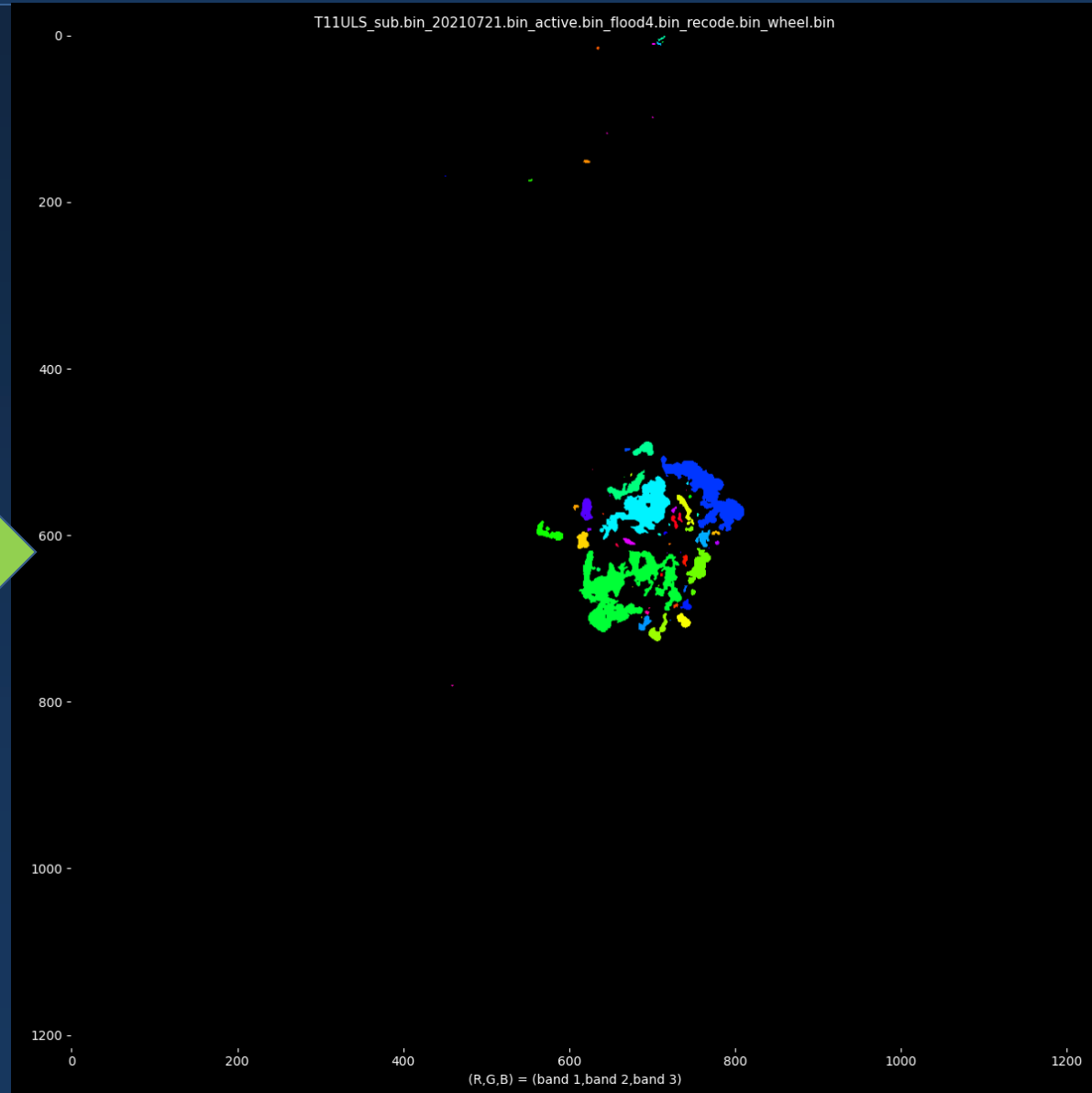
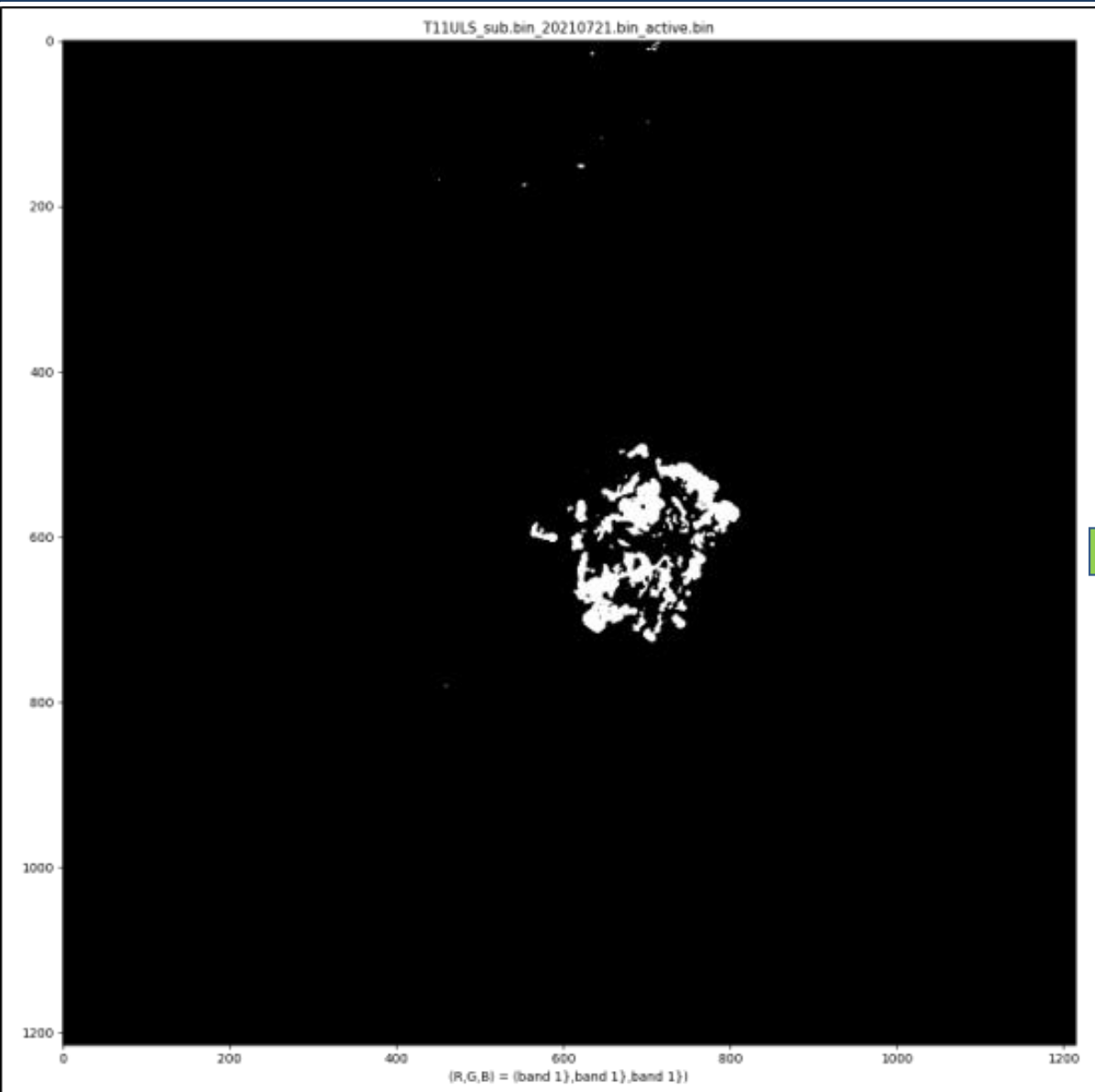


2. Flood fill

[please
click here
for source
code]

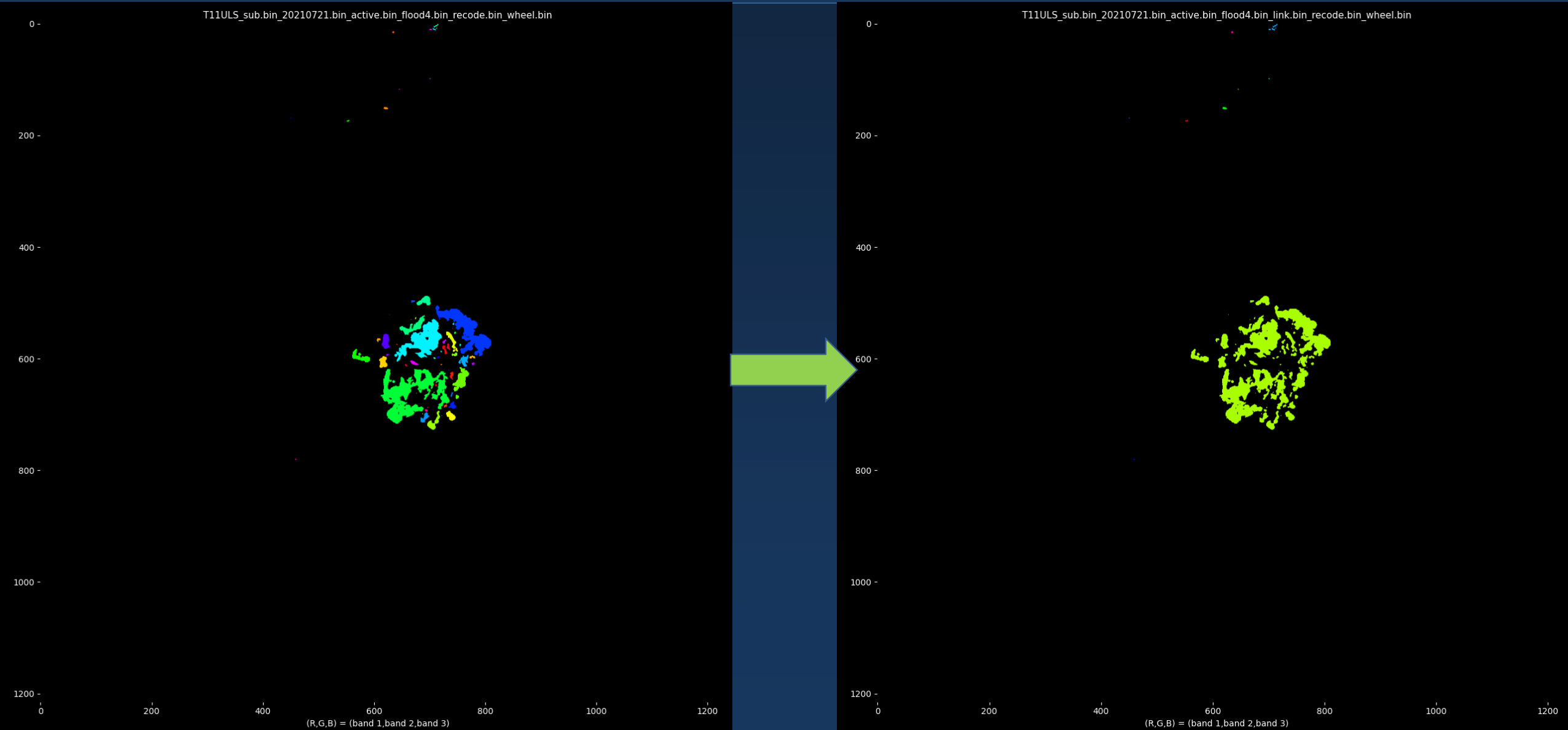


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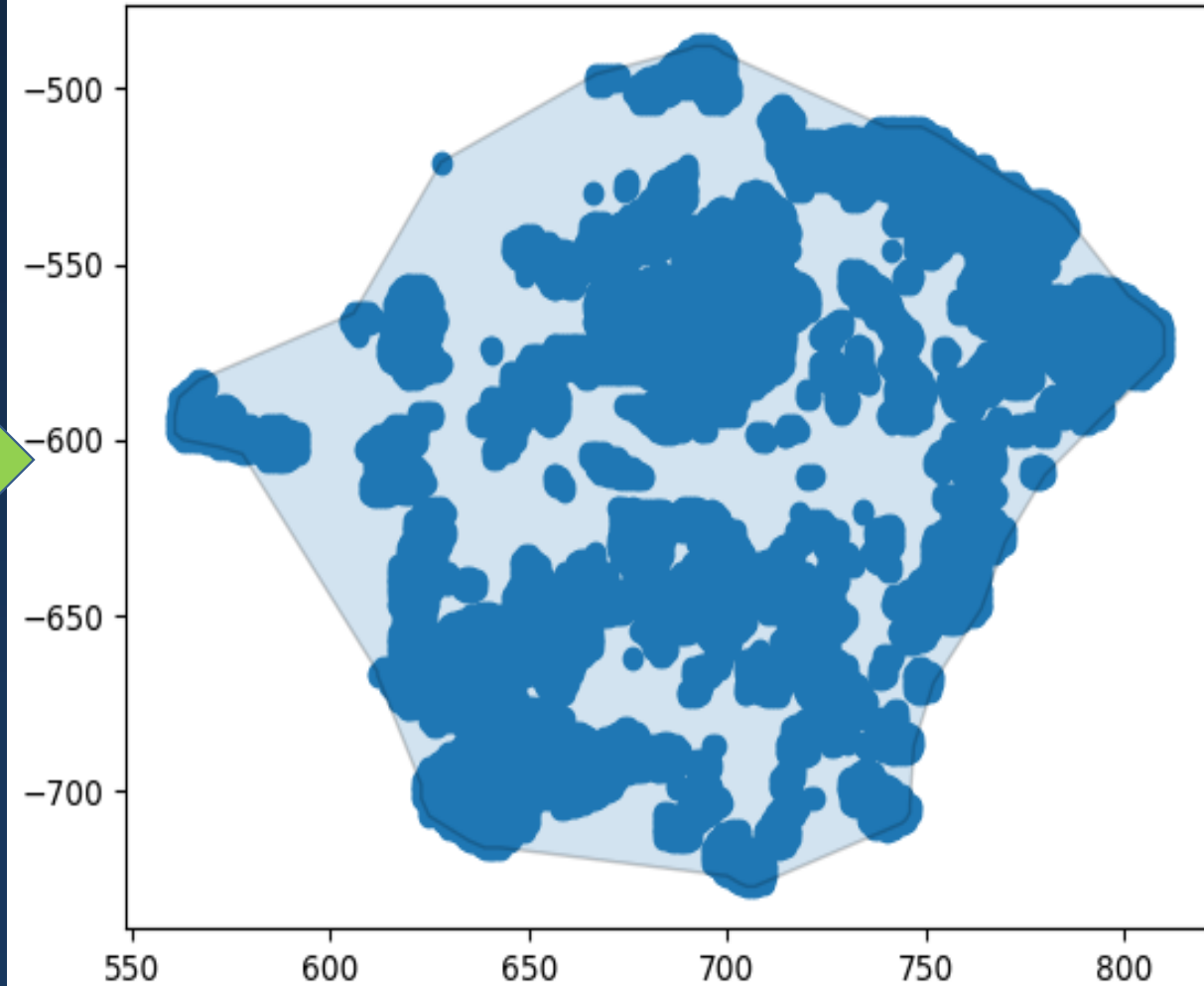
3. Link

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4. Trace

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code\]](#)



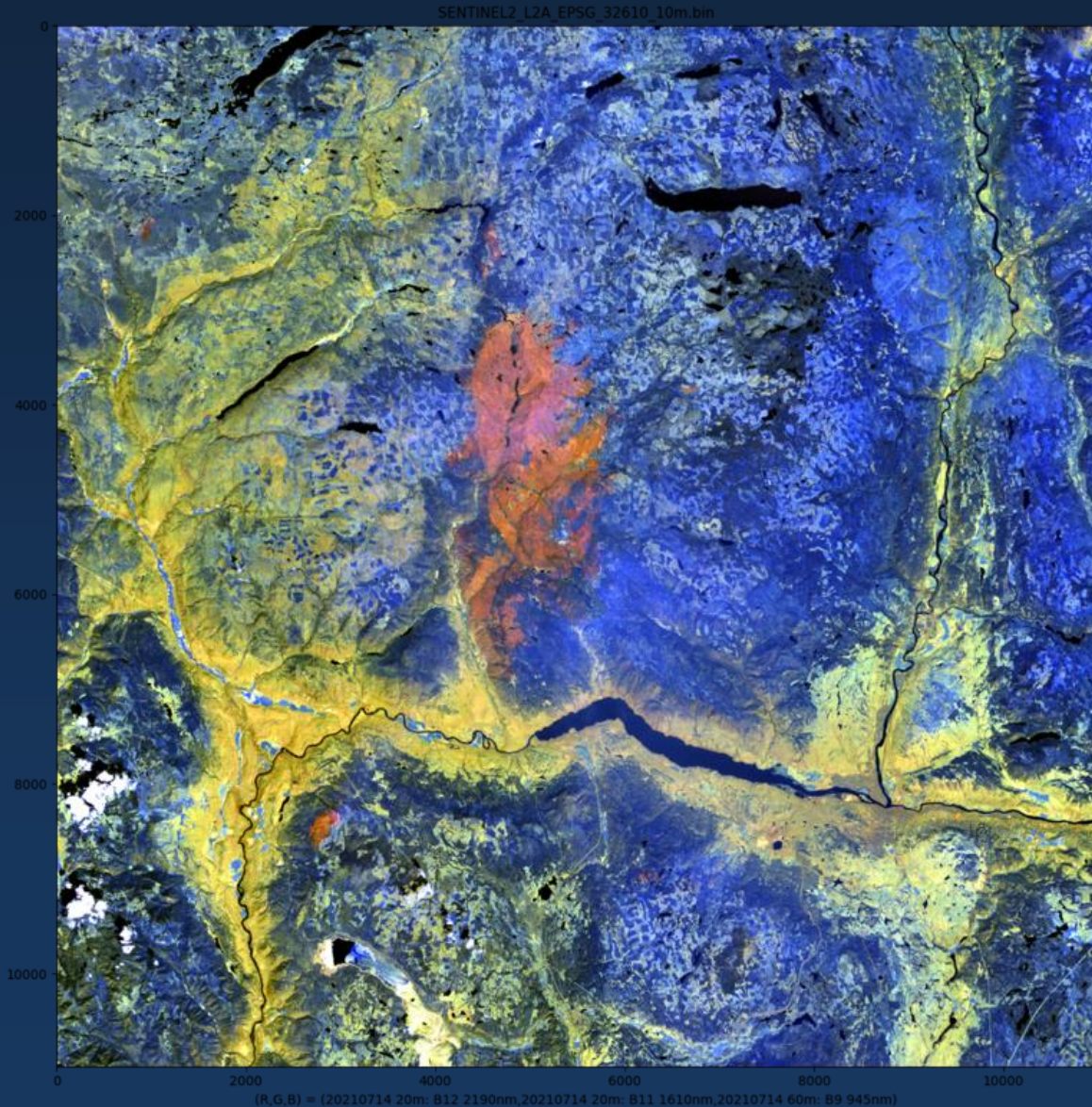
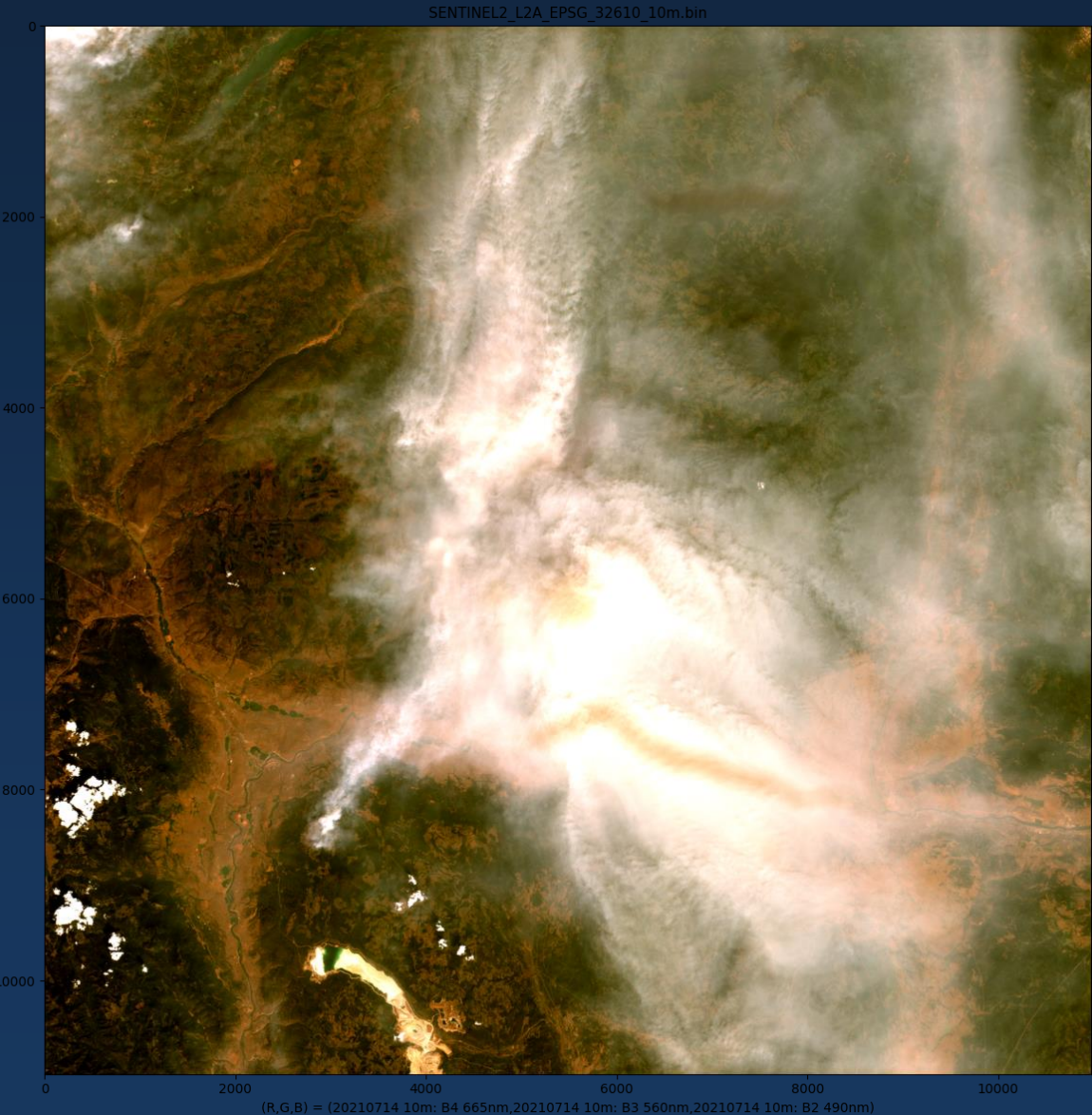
Big fire example

RGB = RGB (visible)

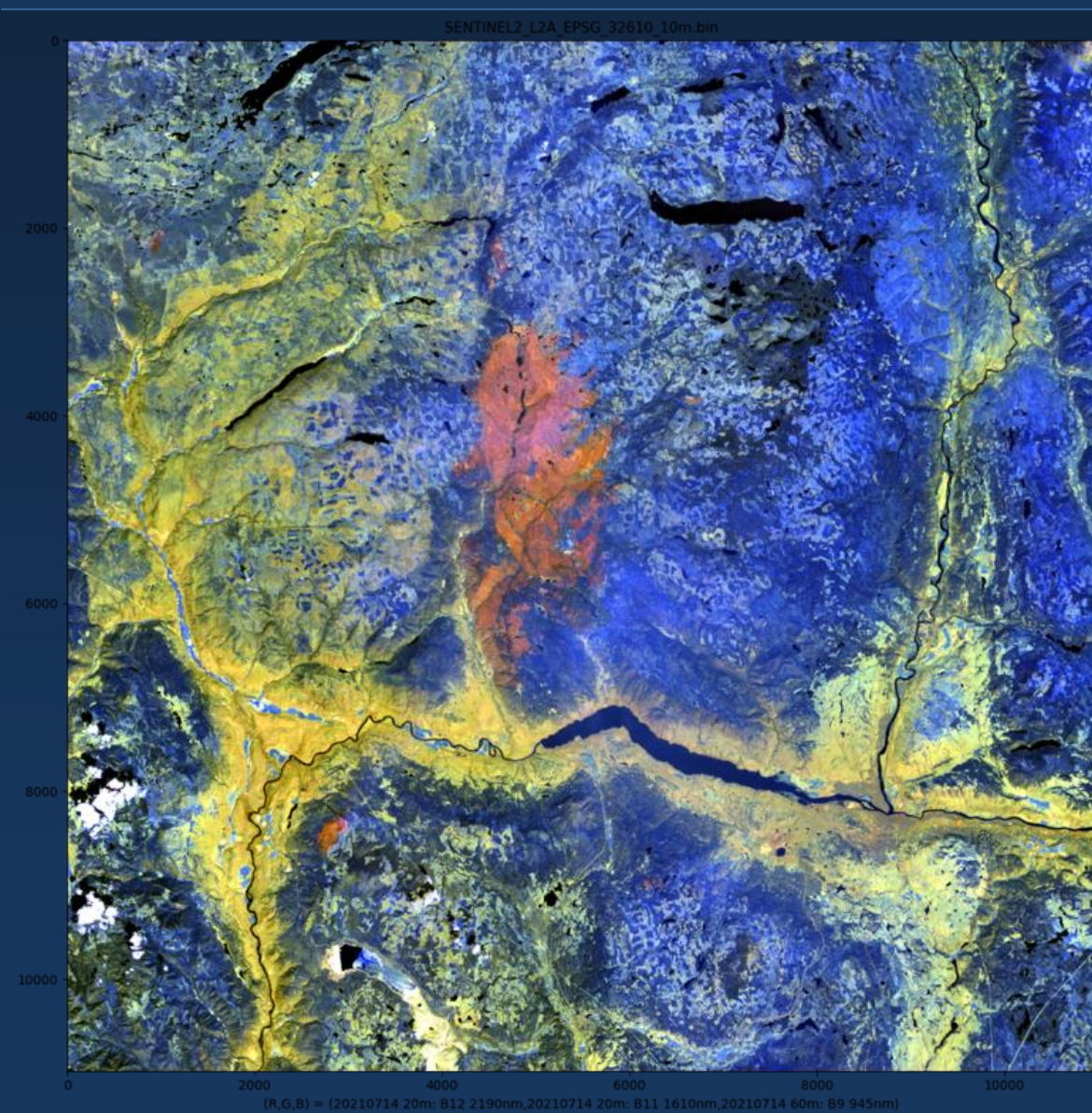


BC Wildfire Service

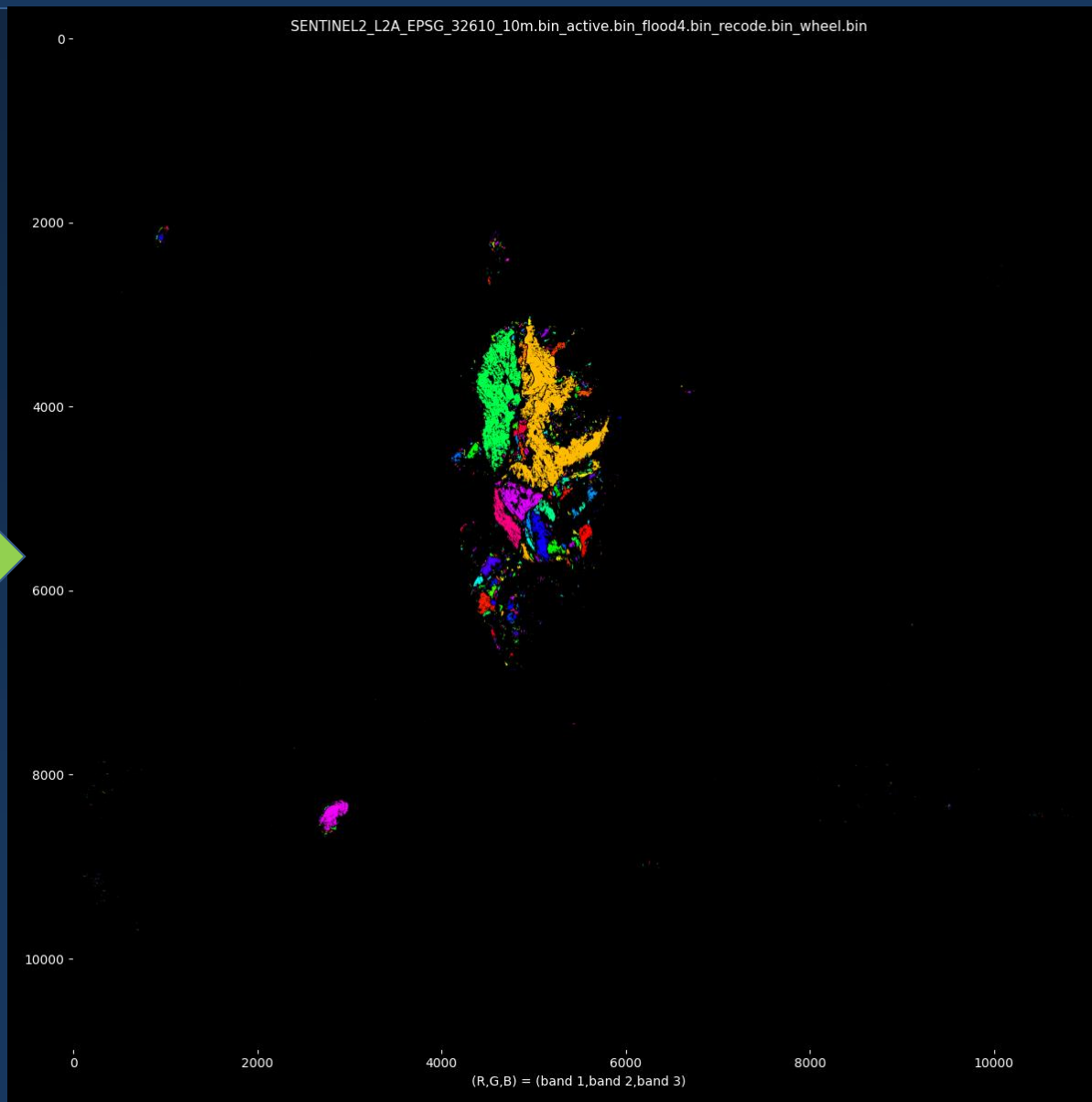
RGB= (B12, B11, B9) shortwave IR



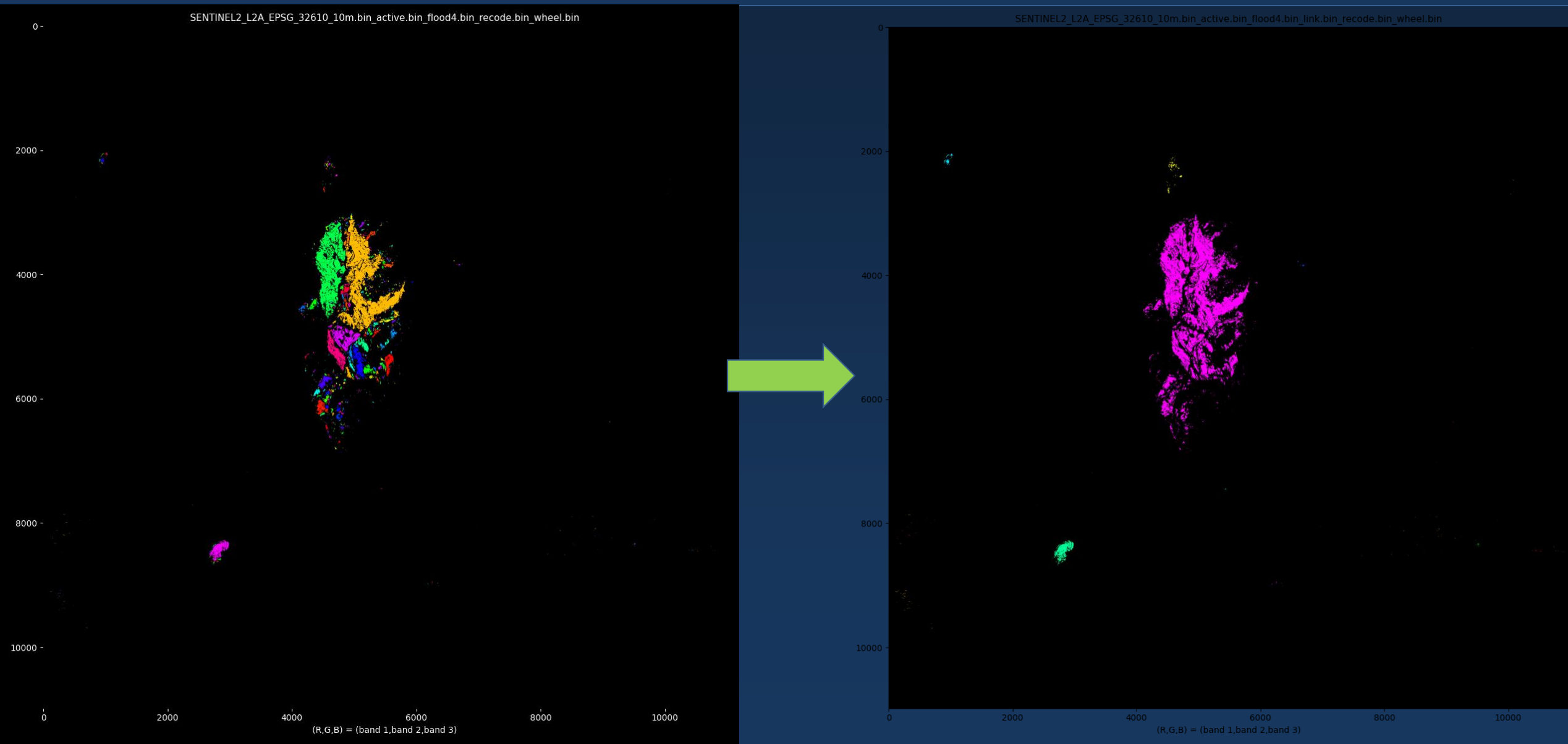
1. Threshold



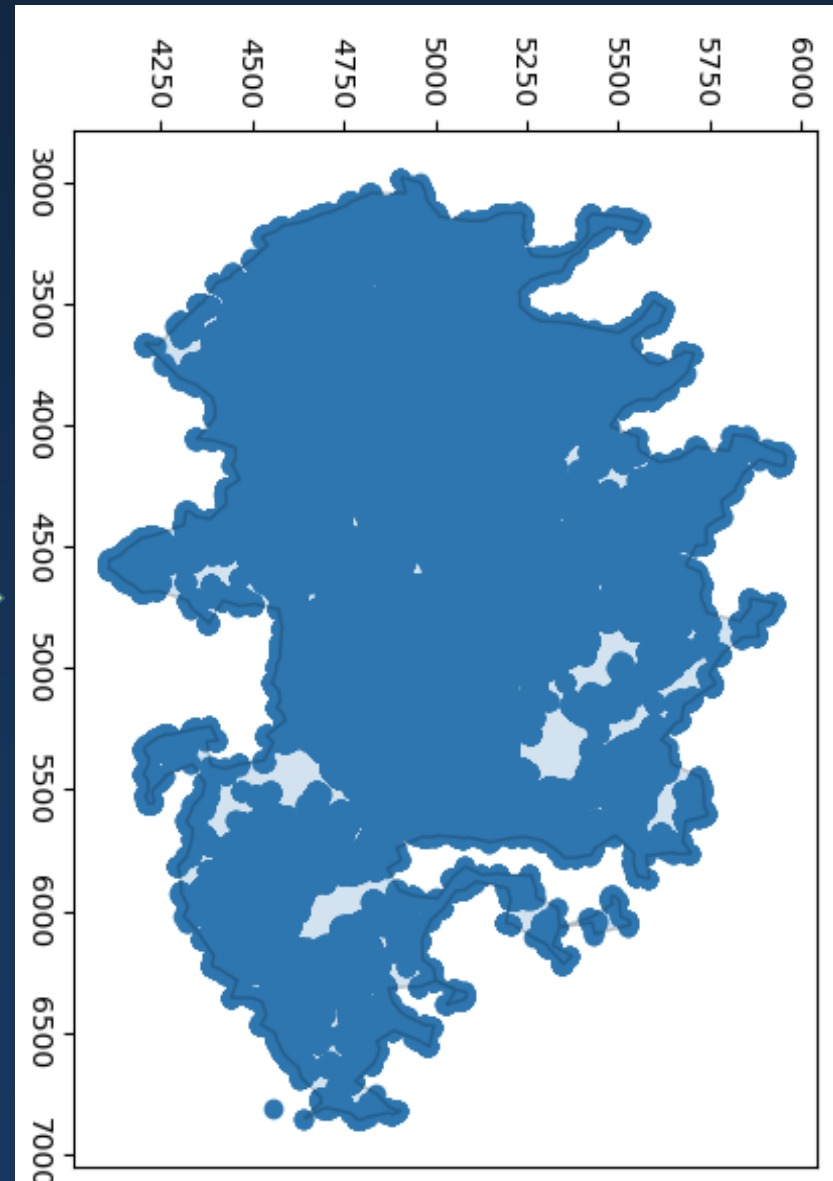
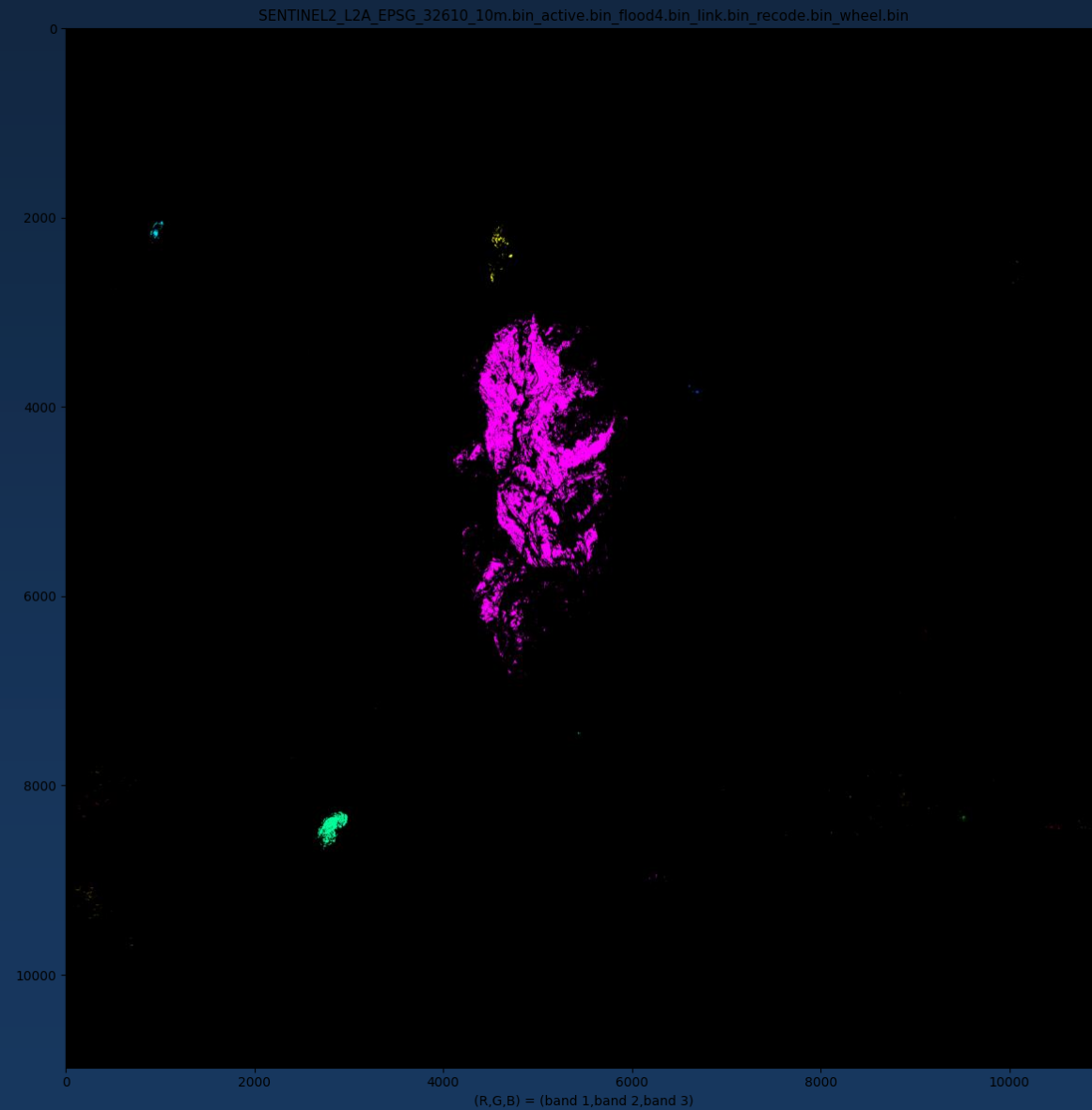
2. Flood fill



3. Link



4. Trace



Next steps



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- Work w Devona & team to meet BCWS standards
- Work w Ben & Neal to support fire simulations
- Use Sentinel2 L2A classes to select good data
- Add up detection results at each time step
- Timestamps converted from UTM to PST
- Increase revisit by adding Landsat
- Run on any Fire Number?
- Next iteration:
 - BCWS Fire Behaviour CoP (April)
 - Province of BC Remote Sensing CoP (April)