# Environmental change examples, 2022

## Fires

Mariah: BC plateau 2017

Kathryn: White Rock Lake 2021

Adam: Hugh Allen 2018

## Water

Ramona: Great Salt Lake

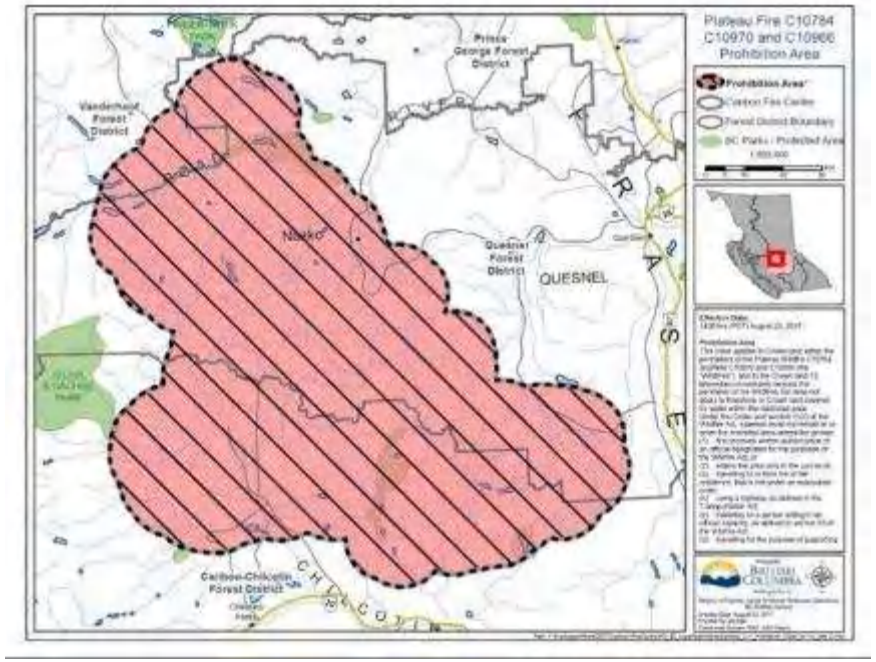
Ryan: Lake Chad

James: Georgia Strait/Vancouver

## Urban / Glaciers

Xiaolu: Beijing

Megan: Llewellyn Glacier





# BC Plateau Wildfire

Combination of the Chezacut, Tautri, Bishop's Bluff, Baezaeko, Wentworth Creek, and Arc Mountain wildfires.

In August 2017 it was estimated to be 467,462 hectares, making it the largest fire in BC history.

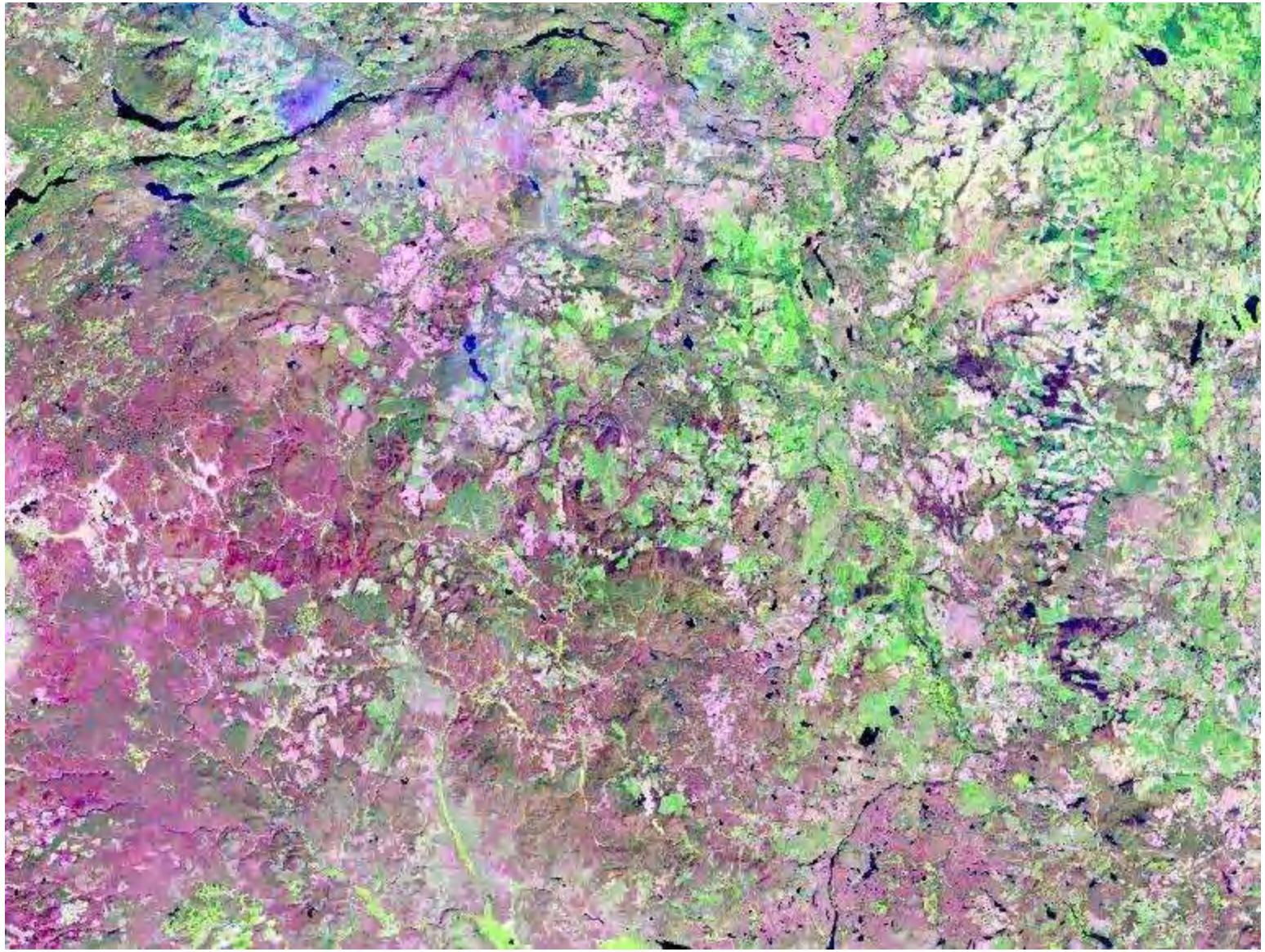
West of Quesnel and northwest of Williams Lake.

My first fire as a junior initial attack wildland firefighter for the BC Wildfire Service.

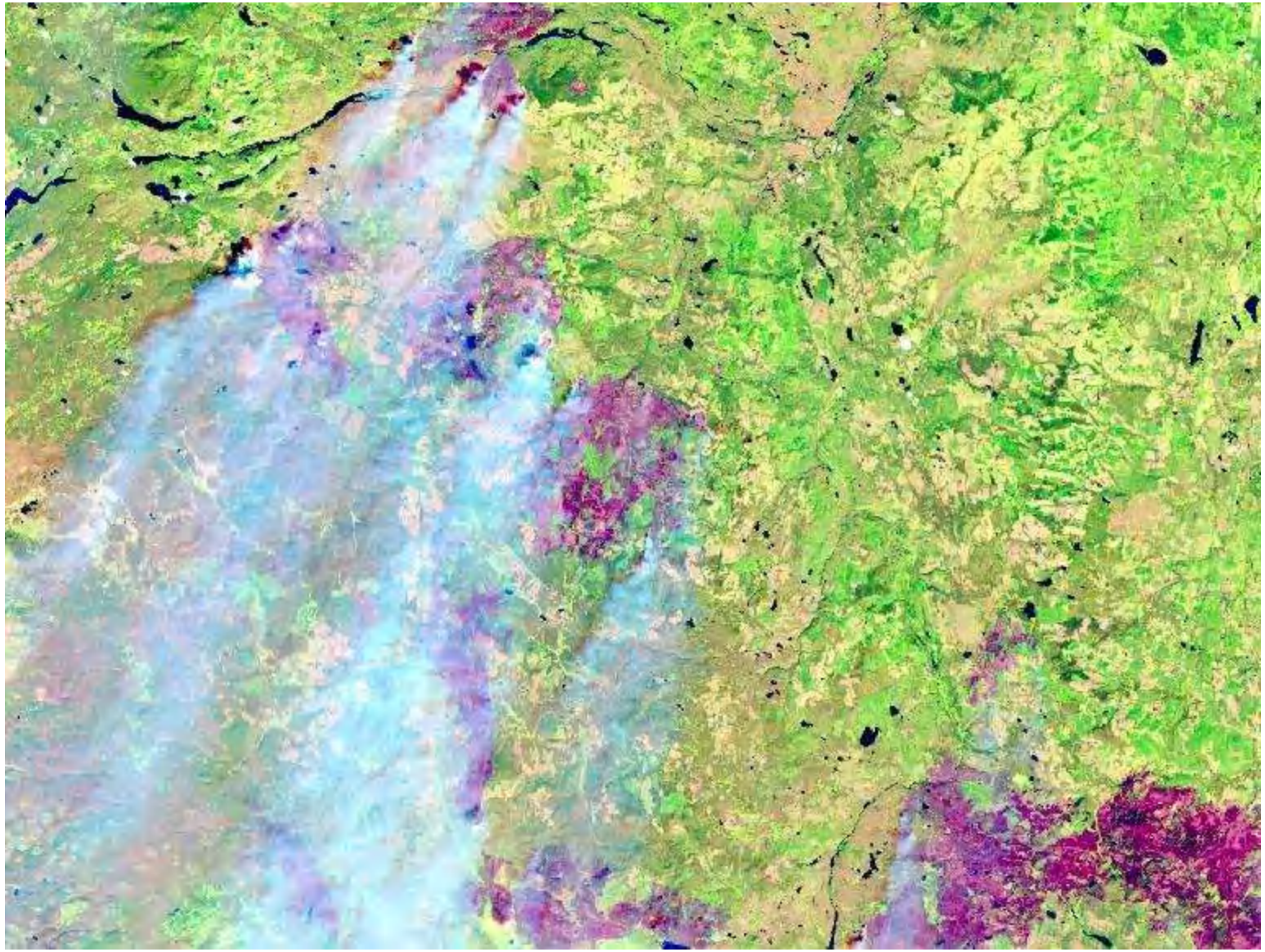
References:
https://www.wltribune.com/news/the-plateau-fire-burning-west-of-quesnel-and-northwest-of-williams-lake-is-now-estimated-to-be-467462-hectares/

https://www2.gov.bc.ca/gov/content/safety/wildfire-status/about-bcws/wildfire-history/remembering-2017

Landsat 8
July 22, 2014
Nazko region



Landsat 8
August 4, 2017
Nazko region

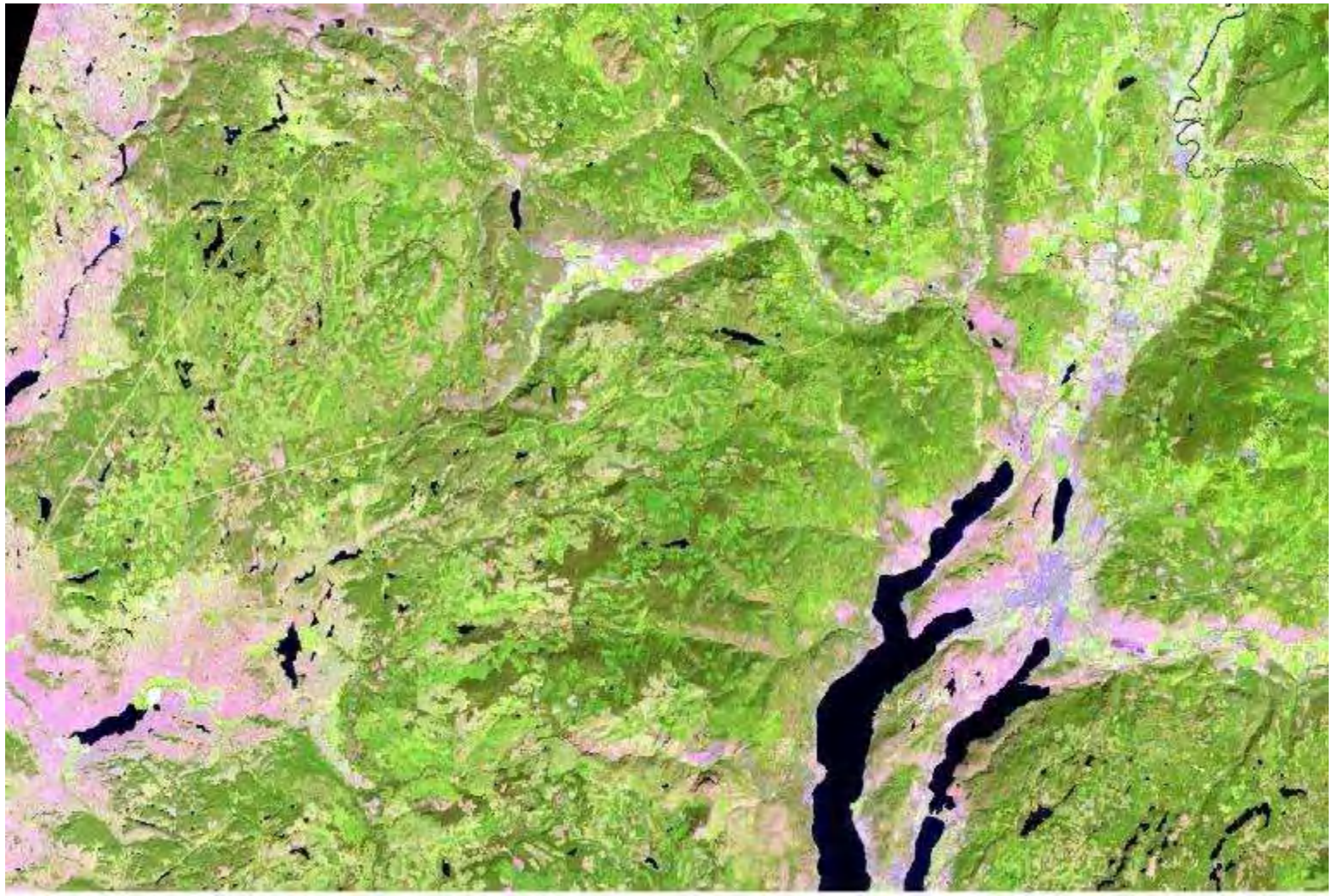


# White Rock Lake Fire 2021

- Lightning-caused fire
- Discovered on July 13, 2021
- Burned over 83 000 hectares
- Destroyed 36 structures in Monte Lake

Benjamin Smith, July 26, 2021

August 16, 2020



25km

July 18, 2021

Estimated 3000 hectares

25km

August 3, 2021

Estimated 32000 hectares

25km

August 30, 2022

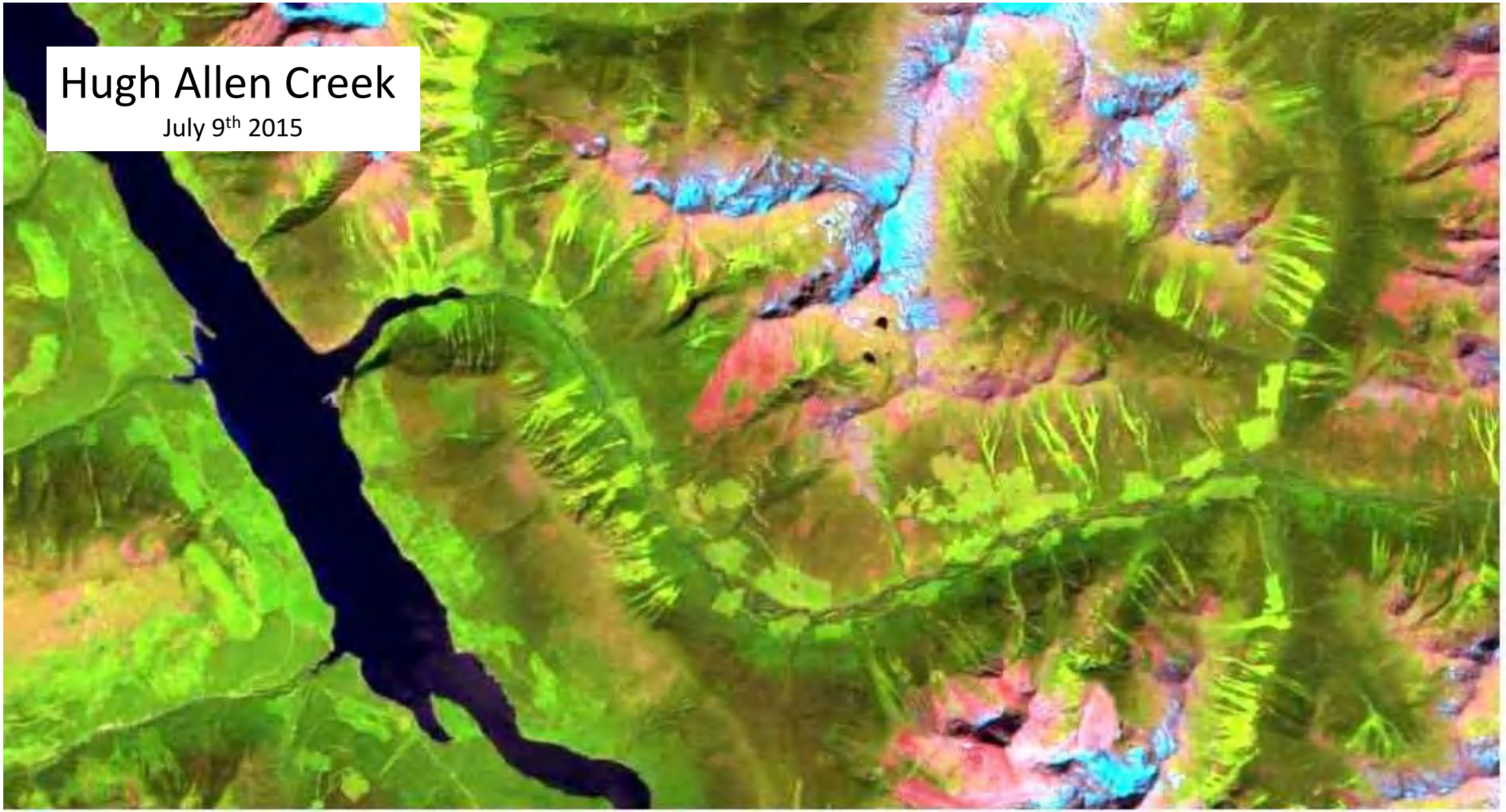
25km

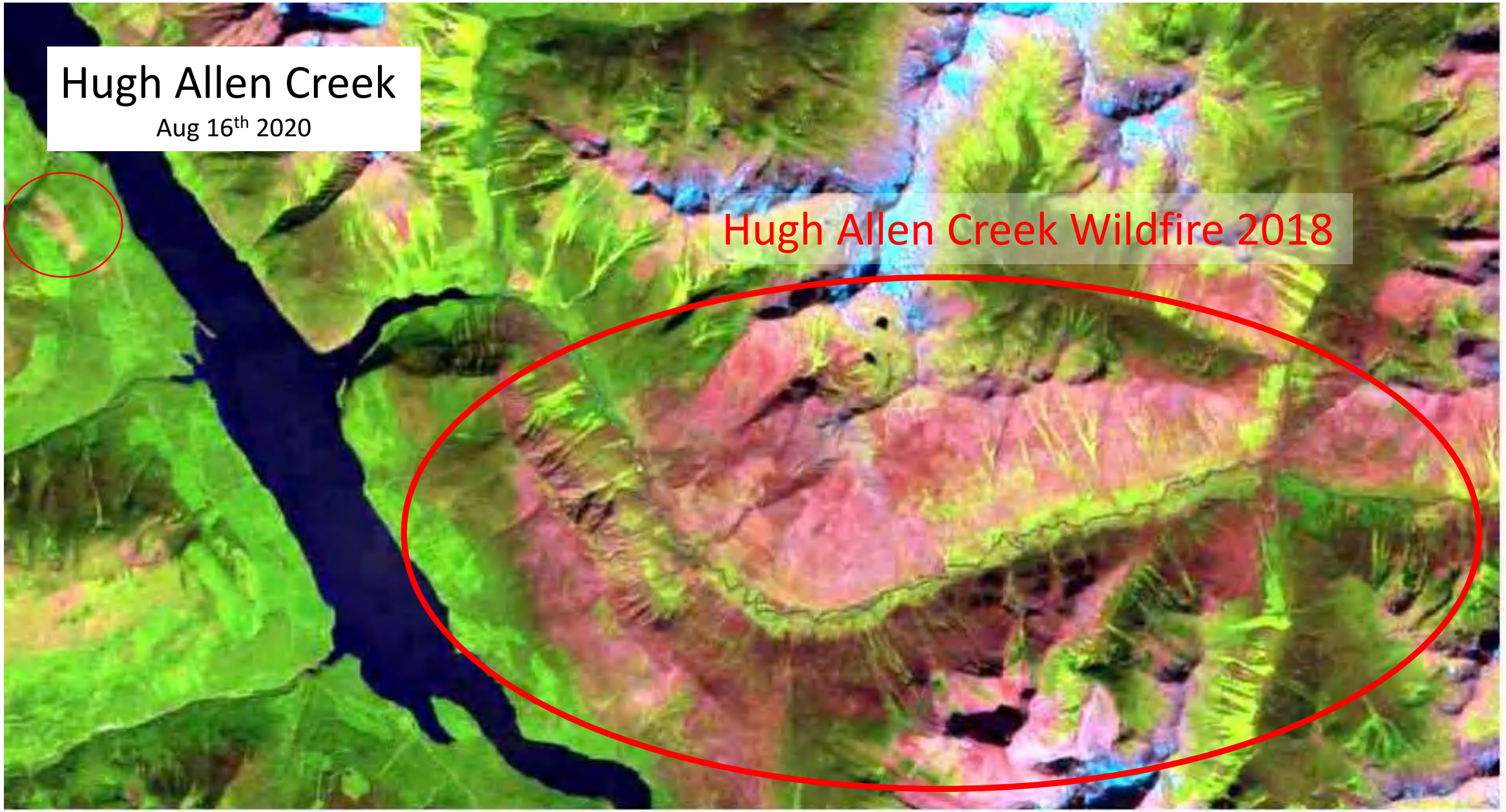
# Hugh Allen Creek Fire
# Before and After

- Large fire occurred in August 2018.
- 60 km to the south east of Valemount, BC.
- ~10k ha affected.
- Severe fire, burnt timber from rivers edge all the way into the alpine.
- Large number of planted cut blocks damaged in fire.

# Hugh Allen Creek

July 9th 2015




Hugh Allen Creek
Aug 16th 2020
Hugh Allen Creek Wildfire 2018

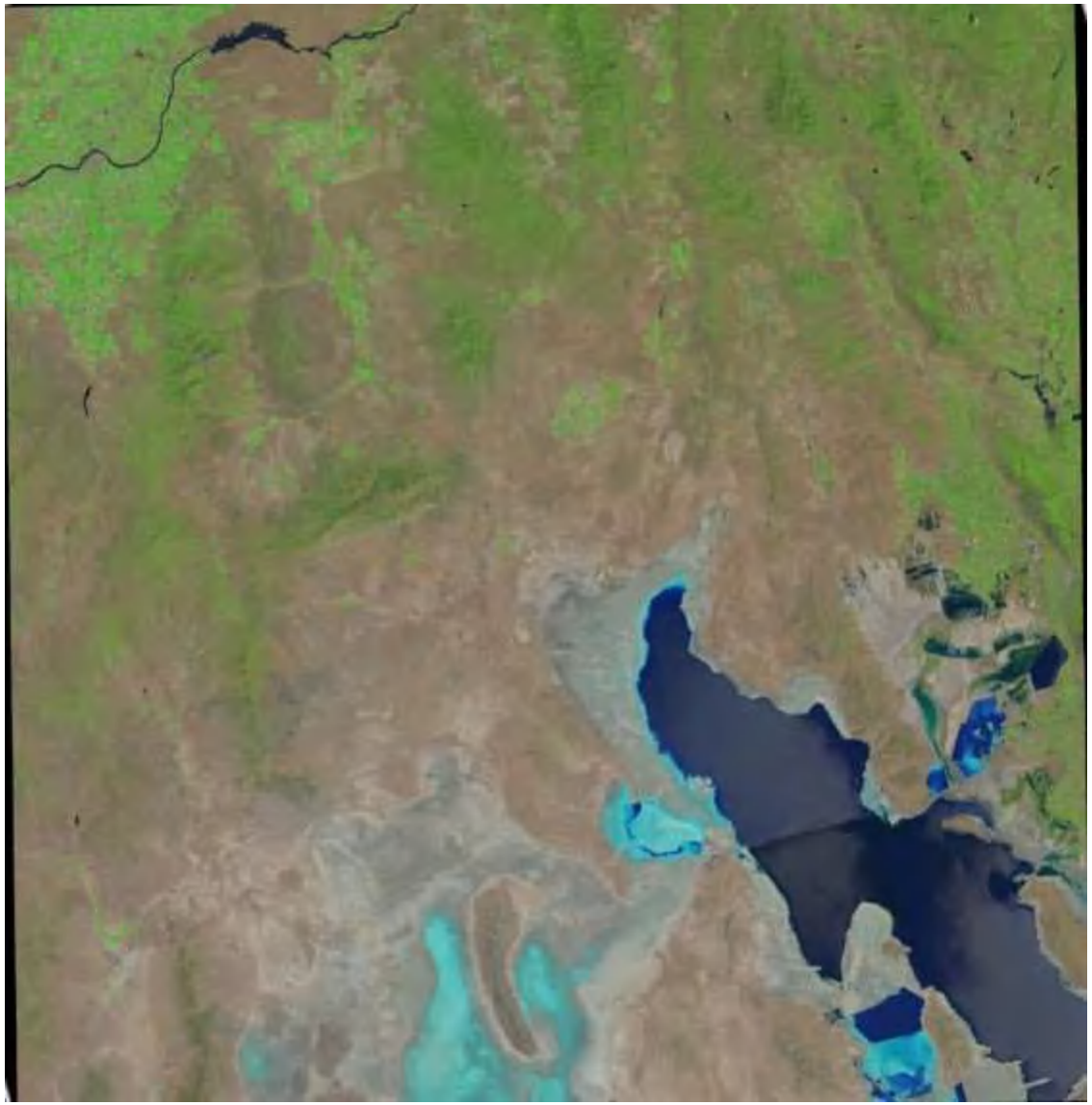
# The Great Salt Lake, Utah

1986 to 2022

Environmental Changes:

- Reduction in Lake Size
- Change in Lake Colour
- Loss of vegetation

Great Salt Lake, June 22, 1986, Landsat 5 image



Great Salt Lake, June 25, 2022, Landsat 8 image

20km

# Is Lake Chad Drying Up?

# The Lake Chad hydrology under current climate change

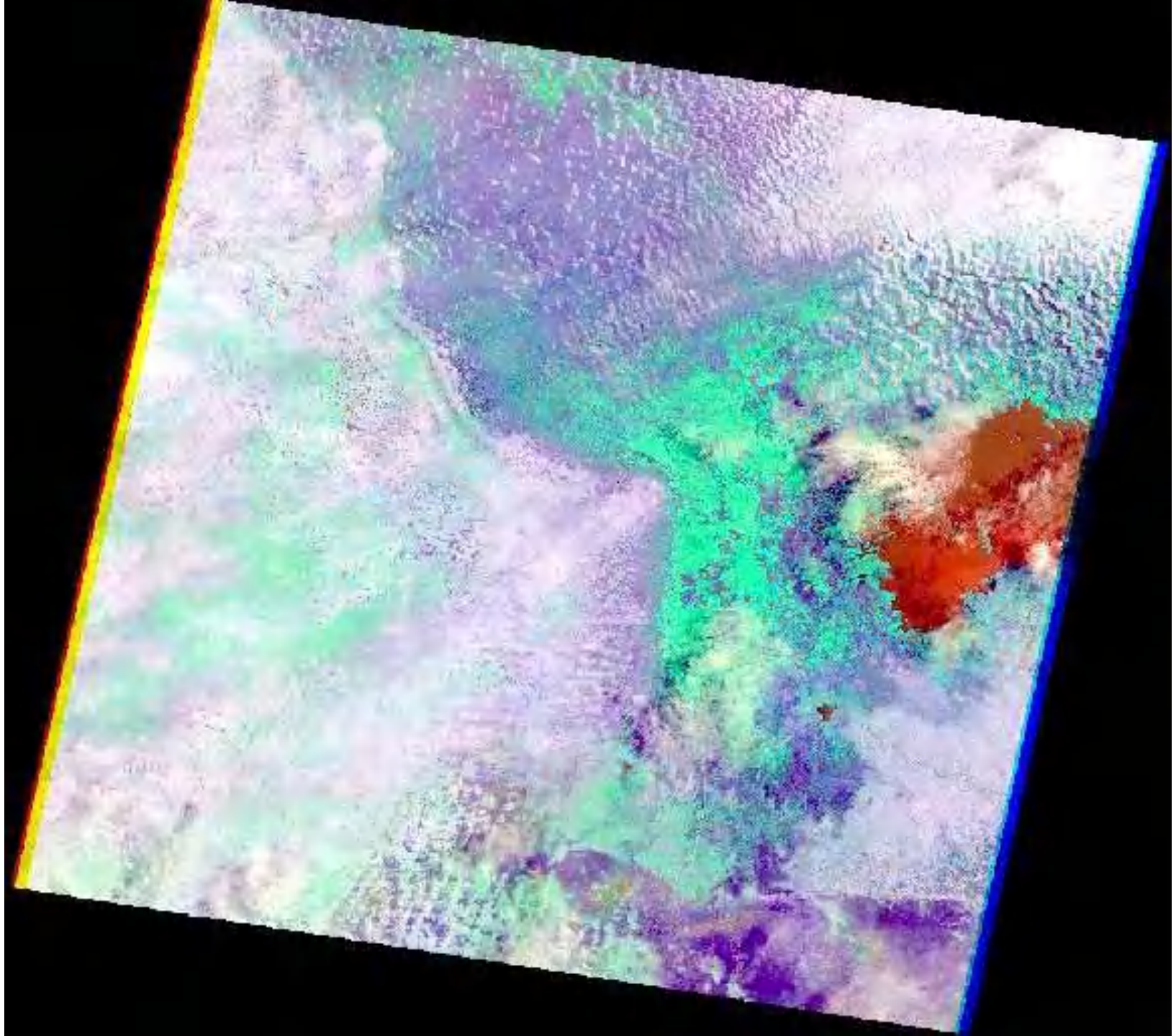
Binh Pham-Duc, Florence Sylvestre, Fabrice Papa, Frédéric Frappart, Camille Bouchez & Jean-Francois Crétaux

*Scientific Reports* **10**, Article number: 5498 (2020) | Cite this article



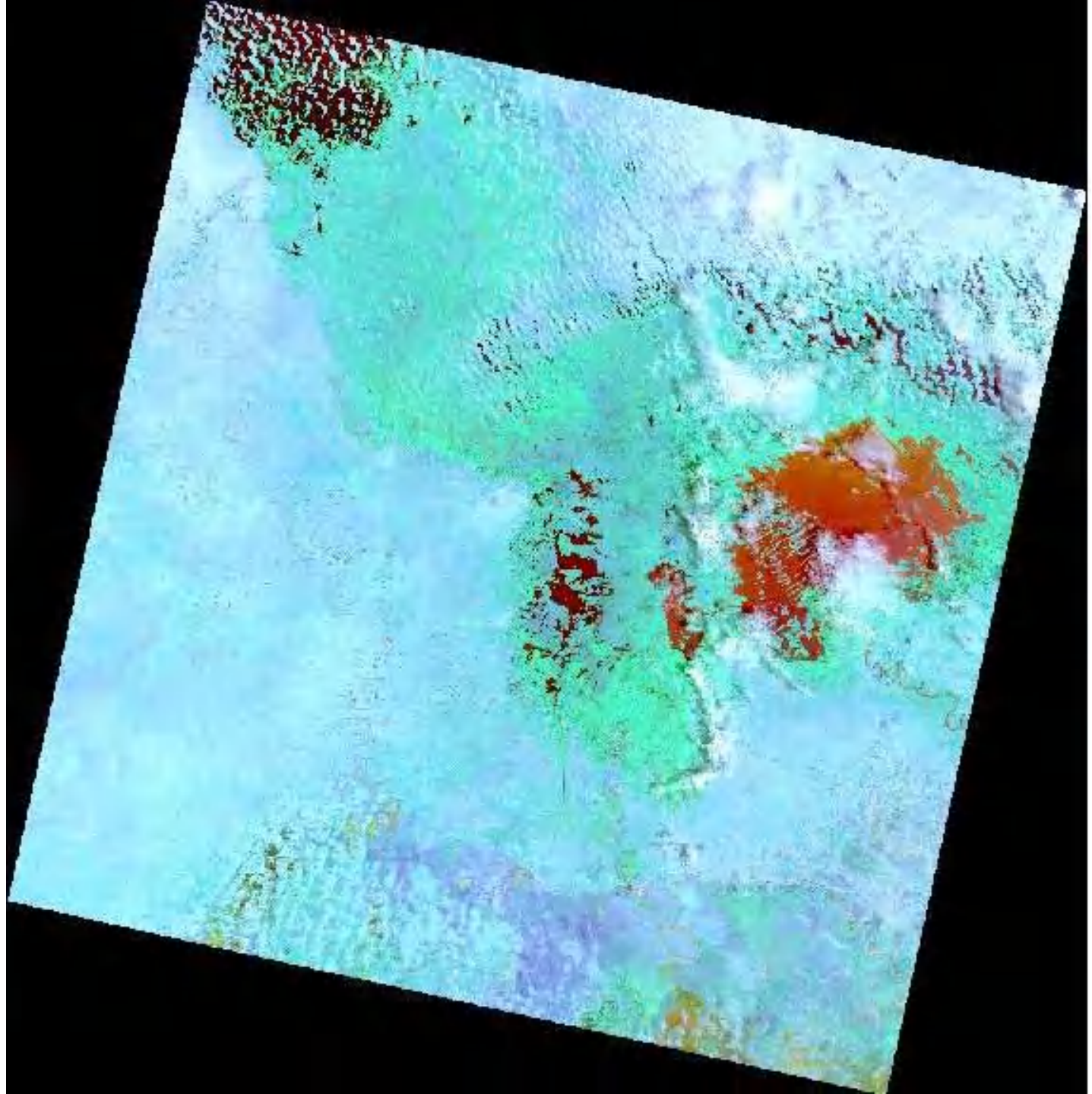
## Abstract

Lake Chad, in the Sahelian zone of west-central Africa, provides food and water to ~50 million people and supports unique ecosystems and biodiversity. In the past decades, it became a symbol of current climate change, held up by its dramatic shrinkage in the 1980s. Despites a partial recovery in response to increased Sahelian precipitation in the 1990s, Lake Chad is still facing major threats and its contemporary variability under climate change remains highly uncertain. Here, using a new multi-satellite approach, we show that Lake Chad extent has remained stable during the last two decades, despite a slight decrease of its northern pool. Moreover, since the 2000s, groundwater, which contributes to ~70% of Lake Chad's annual water storage change, is increasing due to water supply provided by its two main tributaries. Our results indicate that in tandem with groundwater and tropical origin of water supply, over the last two decades, Lake Chad is not shrinking and recovers seasonally its surface water extent and volume. This study provides a robust regional understanding of current hydrology and changes in the Lake Chad region, giving a basis for developing future climate adaptation strategies.



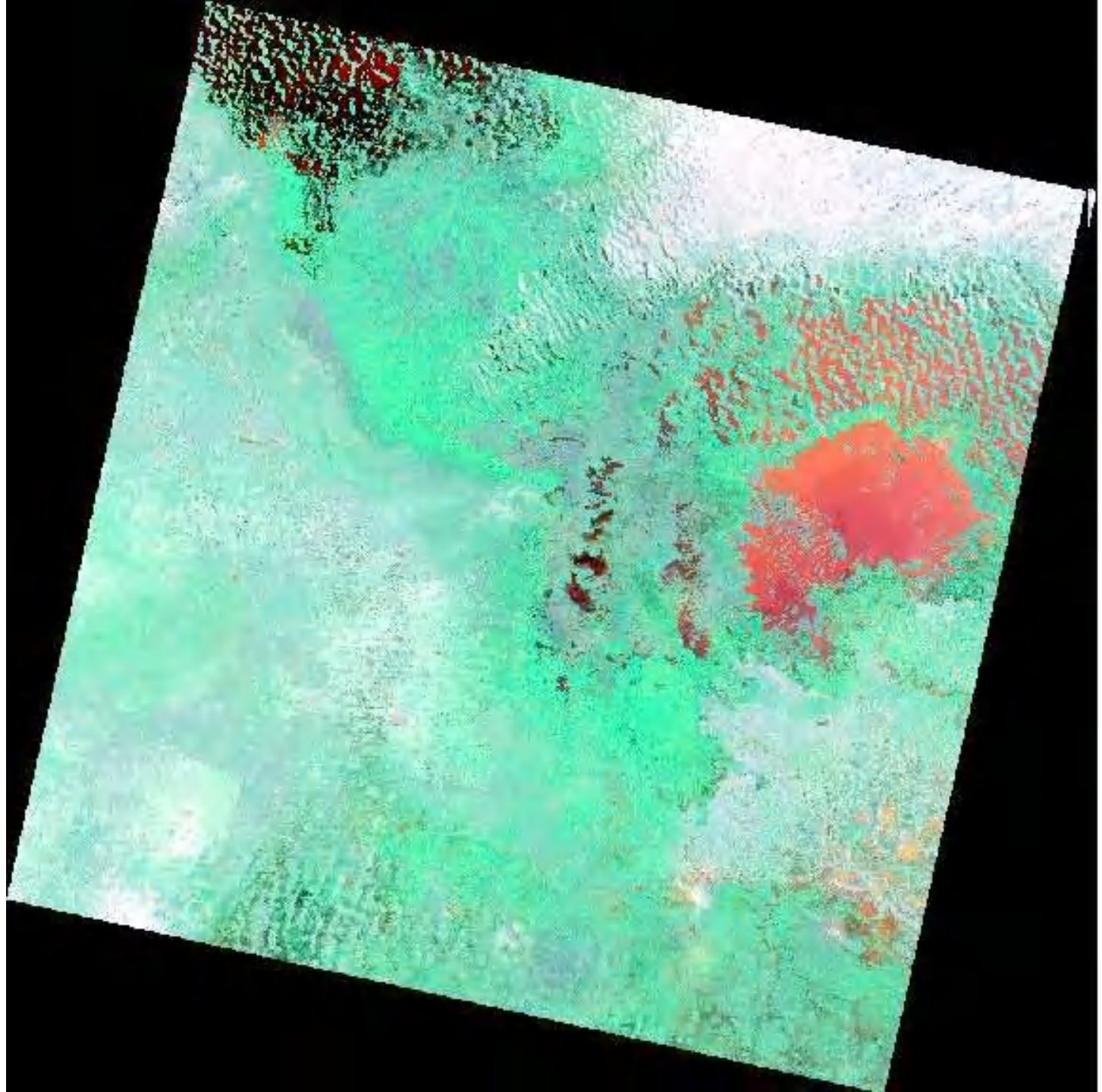
Lake Chad,
North Central Africa
September 1984

50km



Lake Chad,
North Central Africa
September 2013

50km



Lake Chad,
North Central Africa
September 2022

50km

# Greater Vancouver/Georgia Strait

- Sediment in Georgia strait - sediment deposition from Fraser river
- Urban development in Greater Vancouver- Constantly being developed
- Regrowth of trees on Galiano Island - logging stopped in 1980s

Side note: The 1987 photo was taken during high tide and
the 1997 photo was taken during low tide.

Greater Vancouver/Georgia Strait 1987

Scale: 265,000

R:1 G:2 B:3

Greater Vancouver/Georgia Strait 1997

Scale: 265,000

R:1 G:2 B:3

Greater Vancouver/Georgia Strait 1997


Scale: 265,000

R:1 G:2 B:3

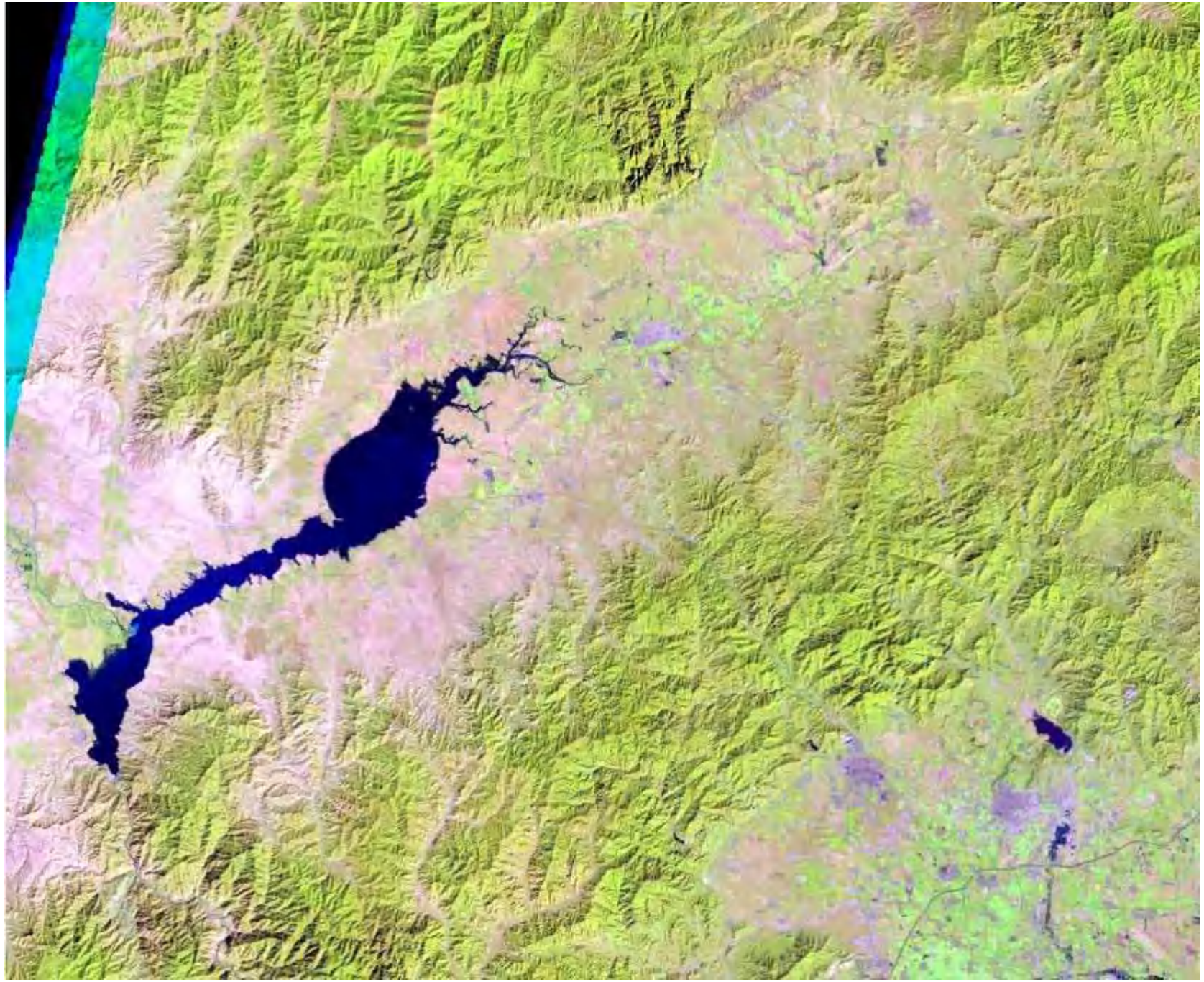
Environmental change

Xiaolu Wang Date: November 8, 2022

Google earth map

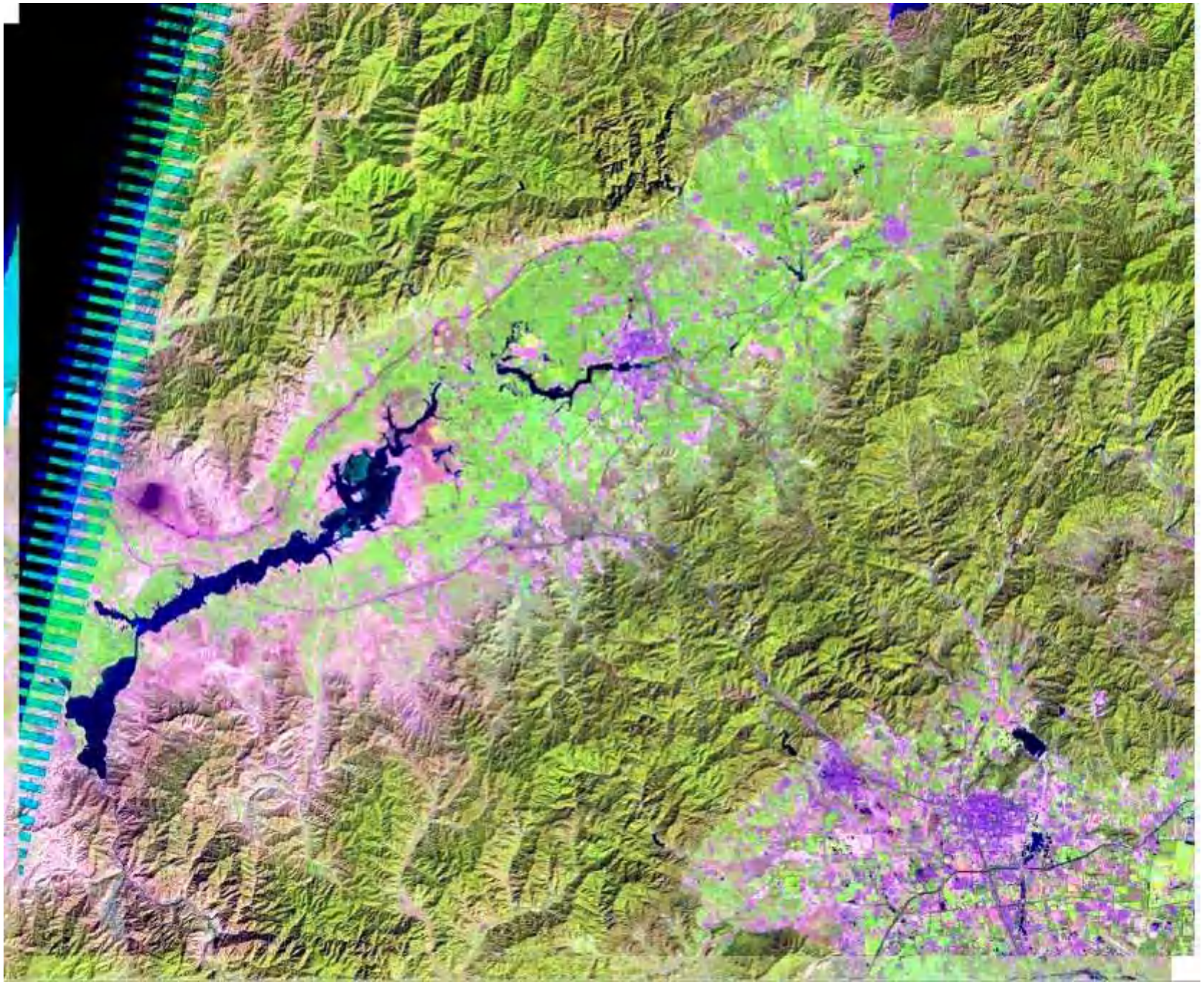
Location: 40°23'45.22"N  115°56'47.50"E

Northeast corner of Beijing, China.

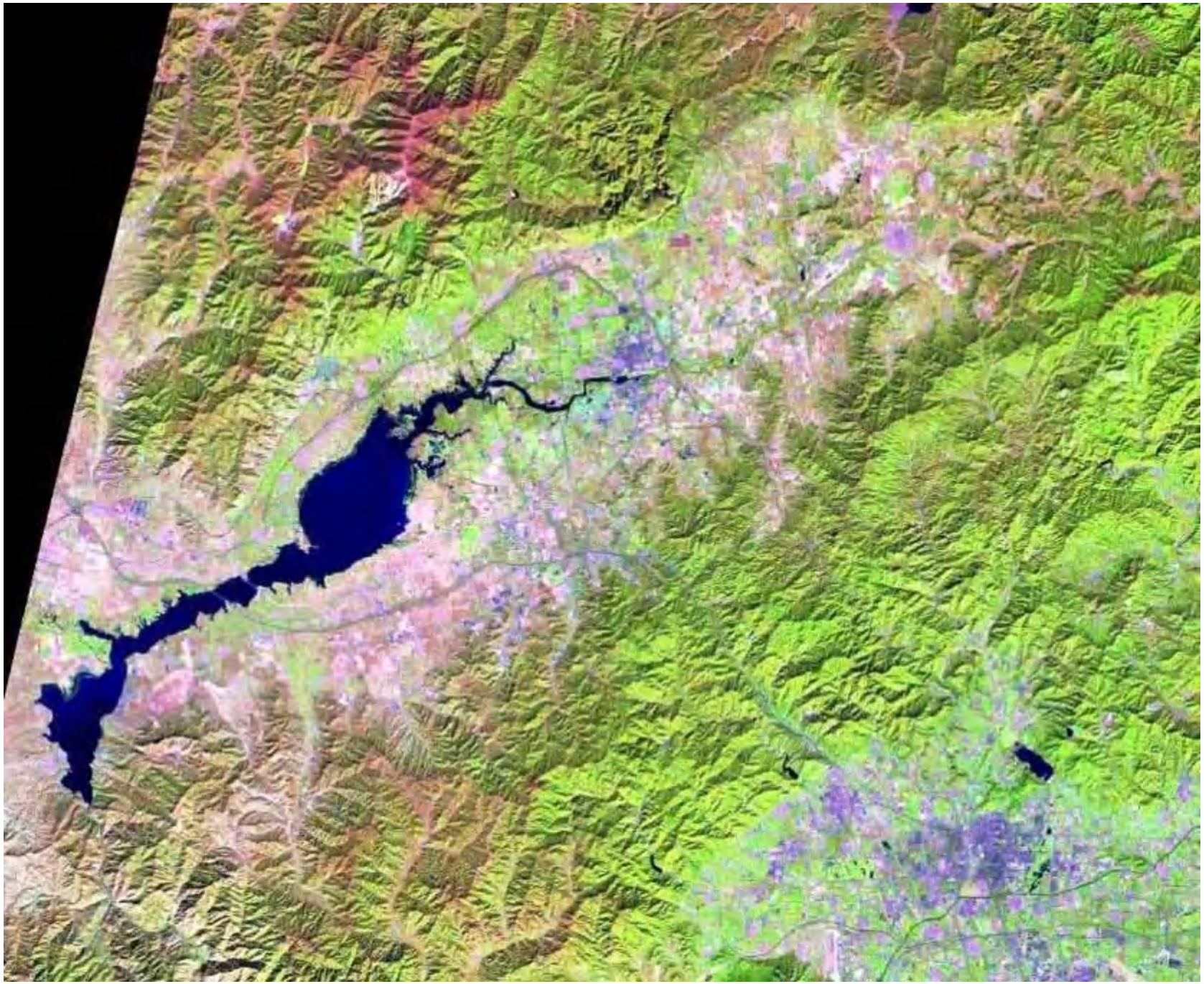
Landsat 5
Date: September 18, 1999

- Guanting lake
- The valley was included in Beijing city from 1998.



Landsat 5
Date: September 8, 2004.

- Guanting lake became the Guanting reservoir to provide the water for city of Beijing
- One major bridge was built cross the Granting reservoir
- More buildings were built



Landsat 8 OLI
Date: October 6, 2020

- Guanting reservoir was inhabitant to use because the low water level.
- One high speed train was built around the area
- More residential areas were built.

# Llewellyn Glacier and Juneau Icefield

## Changes Megan Howe

A) ~1km long piece of the SE terminus broke off into the proglacial lake (2018).

B) Channel flowing into Llewellyn inlet changes shape

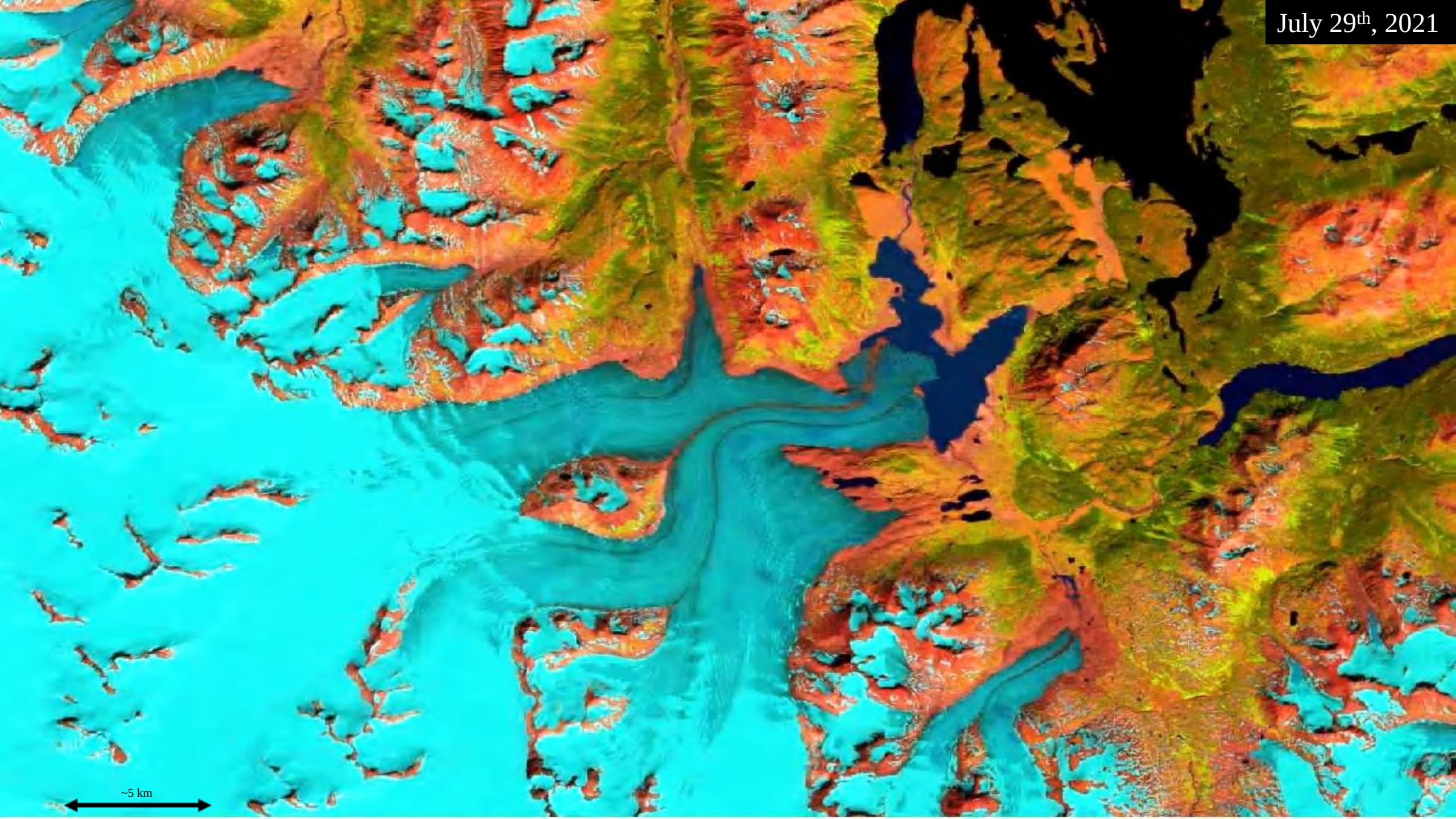
C/D) Willison Glacier and other surrounding glaciers retreat

E) Snow line is lower in 2021

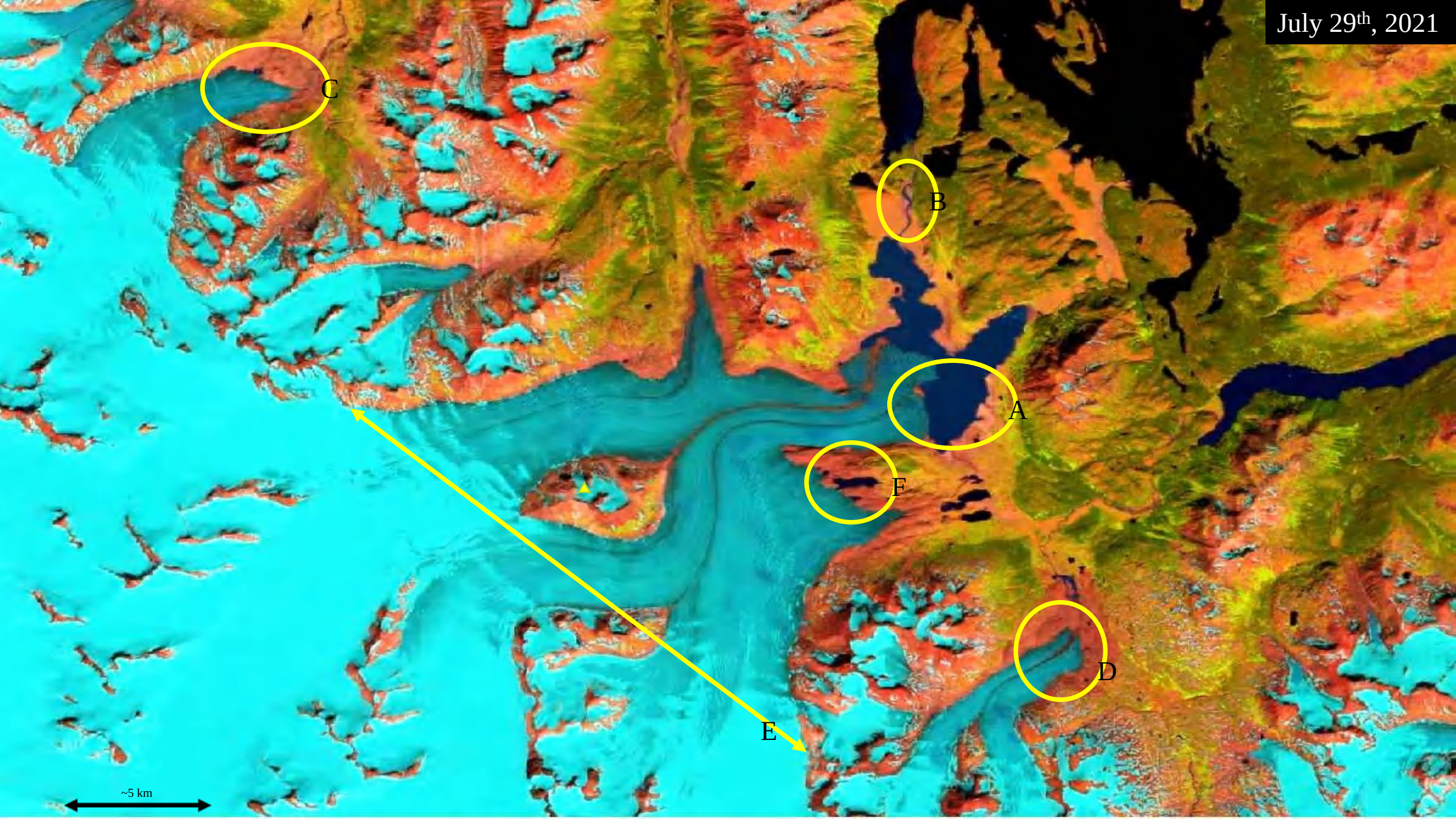
F) Lake becomes more exposed

Llewellyn Nunatak 8V 548300 E, 6547200 N


August 1st, 2013
~5 km


July 29th, 2021
~5 km


August 1st, 2013
C
B
A
F
D
E
~5 km


July 29th, 2021
C
B
A
F
D
E
~5 km