AlbertaSat

Image Courtesy of NASA & Nanoracks

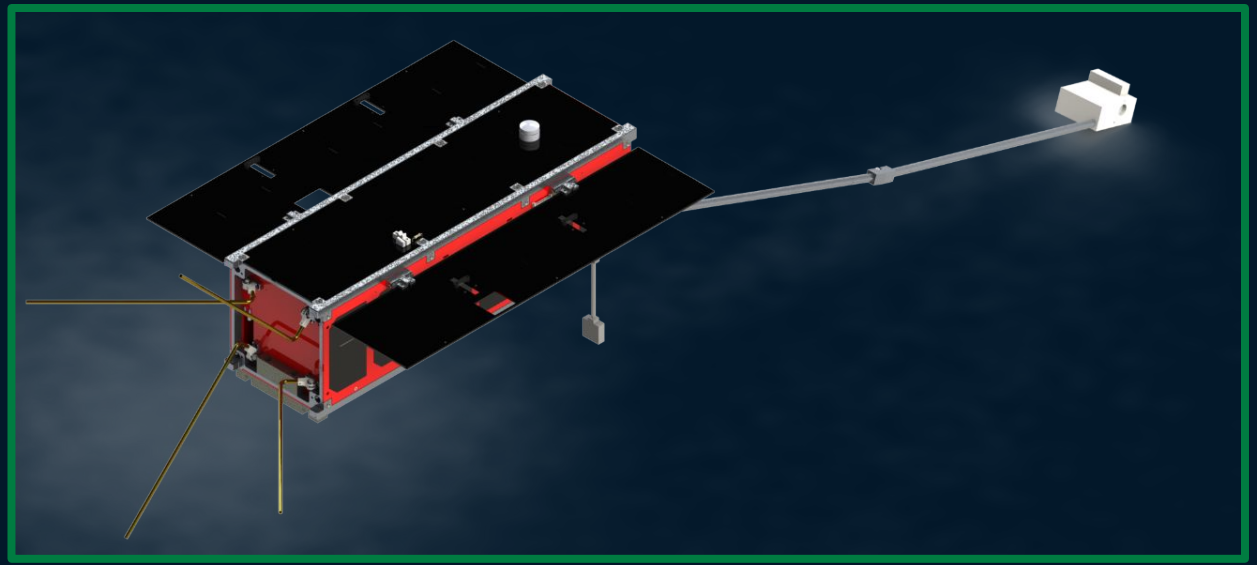
Wildfire Sciences with AlbertaSat's Ex-Alta 2 Satellite

We are a student group who builds satellites

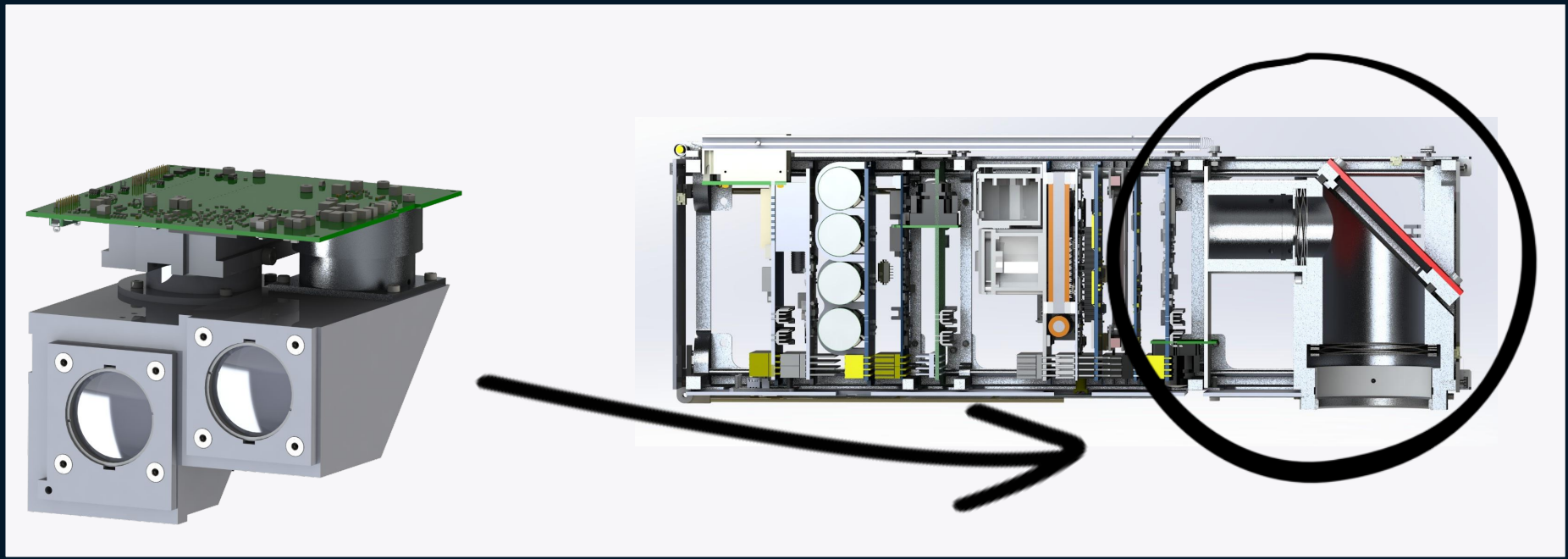
Ex-Alta 1

Ex-Alta 2: the wildfire camera

The scientific purpose of Ex-Alta 2 is to track and assess wildfires, and to predict the behaviour of future wildfires.



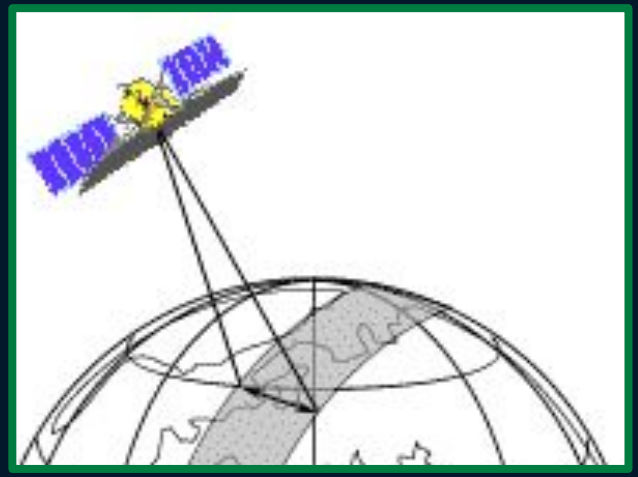
IRIS, Ex-Alta 2's imager

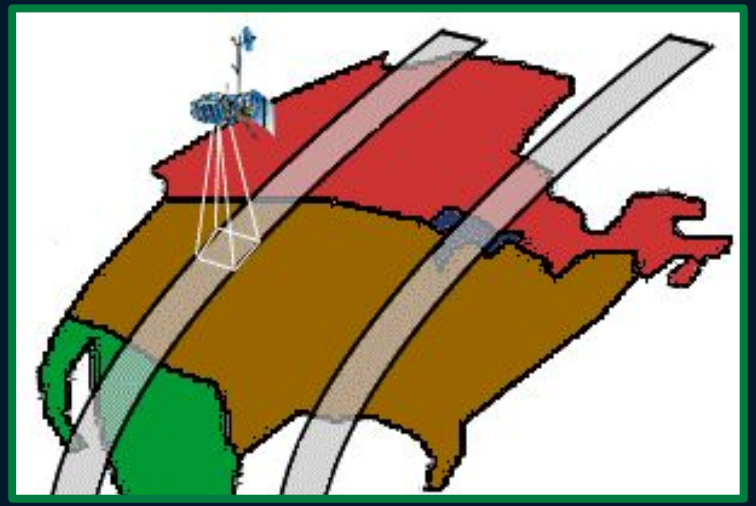


Satellites take images one strip at a time

Rather than taking one big picture, satellites like Ex-Alta 2 take images in strips, often known as swaths

The individual swaths are combined to create a larger image





By looking at vegetation, flame intensity, and smoke, scientists can learn a lot about the behaviour of a wildfire, and alert communities that may be at risk

Ex-Alta 2 studies wildfire properties

01 **Active burn detection** — How bright a wildfire is

Ex-Alta 2 studies wildfire properties

02 **Vegetation analysis** How loaded a region is

Ex-Alta 2 studies wildfire properties

02 **Vegetation analysis** How loaded a region is

Aspen Poplar

Lodgepole Pine

Black Spruce

Ex-Alta 2 studies wildfire properties

03 **Post burn effects**

The change in a region caused by a wildfire

Ex-Alta 2 studies wildfire properties

04 **Smoke and aerosol detection**

How much light is reflected by smoke

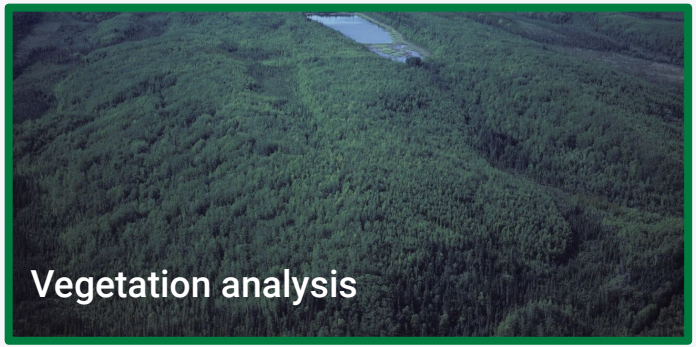
What wildfire properties can Ex-Alta 2 study?

01 Active burn detection

02 Vegetation analysis

03 Post burn effects

04 Smoke and aerosol detection



Check your understanding

Determining wind direction

Where are the flames?

Where is the smoke?

Which direction is the smoke going?

You are a weather analyst for CSA who specializes in wildfire imaging. You are using images from Ex-Alta 2 to predict the behaviour of an ongoing wildfire. Your job is to figure out where the flames are and which direction the smoke is headed to alert towns which may be affected by the fire.

ACTIVITY

1. Assemble the swaths into an image.

Determine:

2. The direction of the smoke.
3. Which towns may come into contact with the flames? (red circle)
4. Which towns will be affected by smoke? (yellow circle)

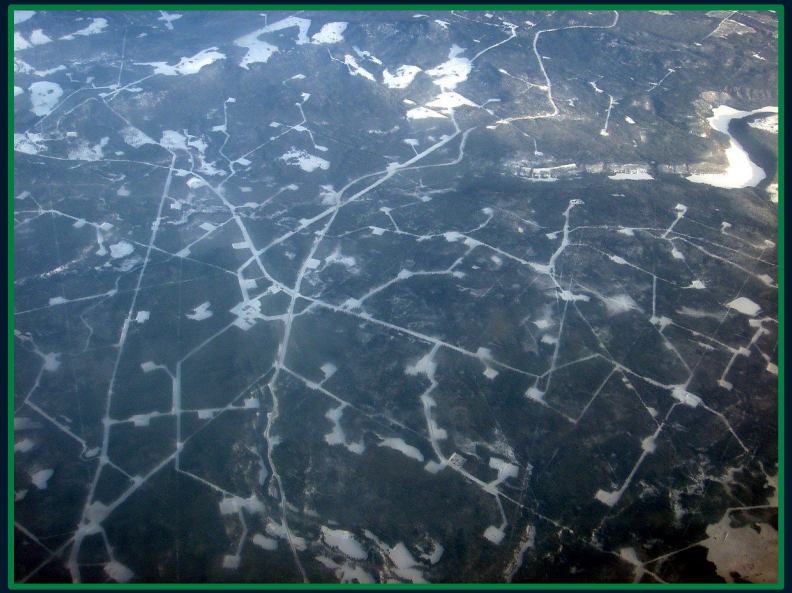
Active Fire	
Direction of smoke	
Town may come into contact with flames	
Town affected by smoke	

Why is wildfire imaging important?

- Wildfire imaging provides scientists with the proper data to study wildfires and protect us from them
- Images of smoke plumes can help firefighters know where wildfires are occurring
- Vegetation regrowth can also be monitored through satellite imaging

Humans effect on wildfires

Oil and Gas



Logging

62% of Alberta wildfires were caused by humans in 2021

Do your part to prevent wildfires

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