



## TROPICS

PRESS KIT

DOUBLE FEATURE

LAUNCH 1 | Complete - Launched May 8, 2023

## ROCKET LIKE A HURRICANE

LAUNCH 2 | No earlier than 22 May, 2023 UTC

## COMING TO A STORM NEAR YOU

Rocket Lab USA, Inc.  
rocketlabusa.com



# LAUNCH INFORMATION



## TWIN MISSION

Rocket Lab will launch NASA's Time-Resolved Observations of Precipitation Structure and Storm Intensity with a Constellation of Smallsats (TROPICS) mission across two separate Electron launches.



## LAUNCH SITE

Launch Complex 1 – Pad B  
Mahia, New Zealand



## DAILY LAUNCH WINDOWS

**LAUNCH 1: Rocket Like A Hurricane**  
MISSION SUCCESS: 8 May 2023

### LAUNCH 2: Coming To A Storm Near You

Daily launch window of 70 minutes. The launch window will shift roughly 30 mins earlier each day of the window through June 24.

Time Zone	Window
NZST 22 May	17:30 – 18:40
UTC 22 May	05:30 – 06:40
PDT 21 May	22:30 – 23:40
EDT 22 May	01:30 – 02:40

Full time slots next page.



## ORBIT

# 550km

Circular Orbit



## SATELLITES

# 4

Two launched on each Electron



## INCLINATION

# 32

Degrees

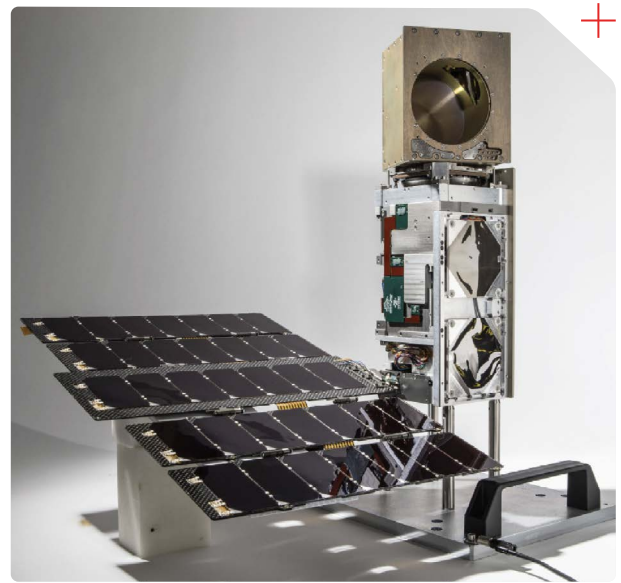


## CUSTOMER

# NASA

Two dedicated launches

# MISSION OVERVIEW



## T R O P I C S

### Time-Resolved Observations of Precipitation structure and storm Intensity with a Constellation of Smallsats

NASA's TROPICS constellation will monitor the formation and evolution of tropical cyclones, including hurricanes, and will provide rapidly updating observations of storm intensity. This data will help scientists better understand the processes that affect these high-impact storms, ultimately leading to improved modeling and prediction.

Rocket Lab will launch the constellation across two separate missions on Electron rockets from Launch Complex 1 on New Zealand's Mahia Peninsula. Rocket Lab was selected to launch the TROPICS missions as part of NASA's Venture-class Acquisition of Dedicated and Rideshare (VADR) launch services contract.

The constellation, which is part of NASA's Earth System Science Pathfinder Program, consists of four CubeSats that require launch to a specific orbit at an altitude of 550 kilometers and inclination of about 30 degrees.

All four satellites need to be deployed into their operational orbit within a 60-day period, making Electron the ideal launch vehicle as it enables dedicated launch to unique orbits on highly responsive timelines. The two missions were initially scheduled to lift-off from Launch Complex 2 at the Mid-Atlantic Regional Spaceport within NASA's Wallops Flight Facility in Virginia but will now take place at Launch Complex 1 in New Zealand to support a Q2 launch window that will see the satellites reach orbit in time for the North American 2023 hurricane season.

Each TROPICS satellite will host a high-performance radiometer scanning across the satellite track at 30 RPM to provide temperature profiles using seven channels near the 118.75 GHz oxygen absorption line, water vapor profiles using 3 channels near the 183 GHz water vapor absorption line, imagery in a single channel near 90 GHz for precipitation measurements, and a single channel at 205 GHz for cloud ice measurements. This observing system offers an unprecedented combination of horizontal and temporal resolution to measure environmental and inner-core conditions for tropical cyclones (TCs) on a nearly global scale and is a profound leap forward in the temporal resolution of several key parameters needed for detailed study of high-impact meteorological events.

Rocket Lab will not be attempting to recover Electron's first stage for either of these missions.



# LAUNCH SITE

LAUNCH COMPLEX 1 – MAHIA, NEW ZEALAND



NASA's TROPICS mission will lift off from Launch Complex 1 Pad B on New Zealand's Mahia Peninsula with two dedicated launches.

An FAA-licensed spaceport, Launch Complex 1 can provide up to 120 launch opportunities every year. From the site it is possible to reach orbital inclinations from sun-synchronous through to 30 degrees, enabling a wide spectrum of inclinations to service the majority of the satellite industry's missions to low Earth orbit.

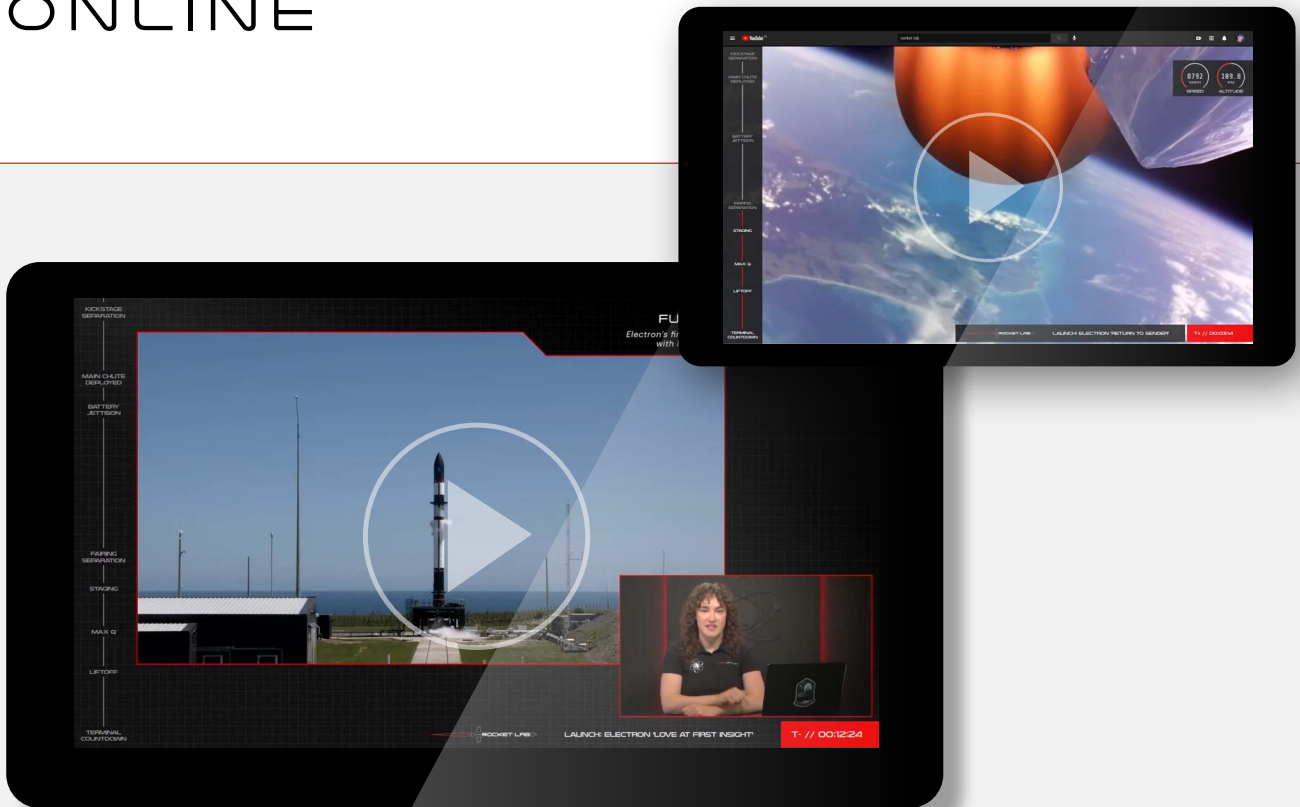
Located within Launch Complex 1 are Rocket Lab's private range control facilities, two 100K satellite cleanrooms,

a launch vehicle assembly facility which can process multiple Electrons at once, and administrative offices. Operating a private orbital launch site alongside its own range and mission control centres allows Rocket Lab to reduce the overhead costs per mission, resulting in a cost-effective launch service for satellite operators.

In addition to Launch Complex 1, Rocket Lab operates an additional launch site, Launch Complex 2, at the Mid-Atlantic Regional Spaceport within NASA's Wallops Flight Facility on Virginia's Eastern Shore. Launch Complex 2 can support up to 12 missions per year.

By operating two launch complexes in two hemispheres, Rocket Lab provides customers with flexible, responsive launch opportunities.

# VIEWING A LAUNCH ONLINE



## LIVE STREAM

The live stream is viewable at:

[rocketlabusa.com/  
live-stream](https://rocketlabusa.com/live-stream)

## LAUNCH FOOTAGE & IMAGES

Images and footage of launch will be available shortly after a successful mission at:

[www.flickr.com/photos/rocketlab](https://www.flickr.com/photos/rocketlab)

## UPDATES

For information on launch day visit:

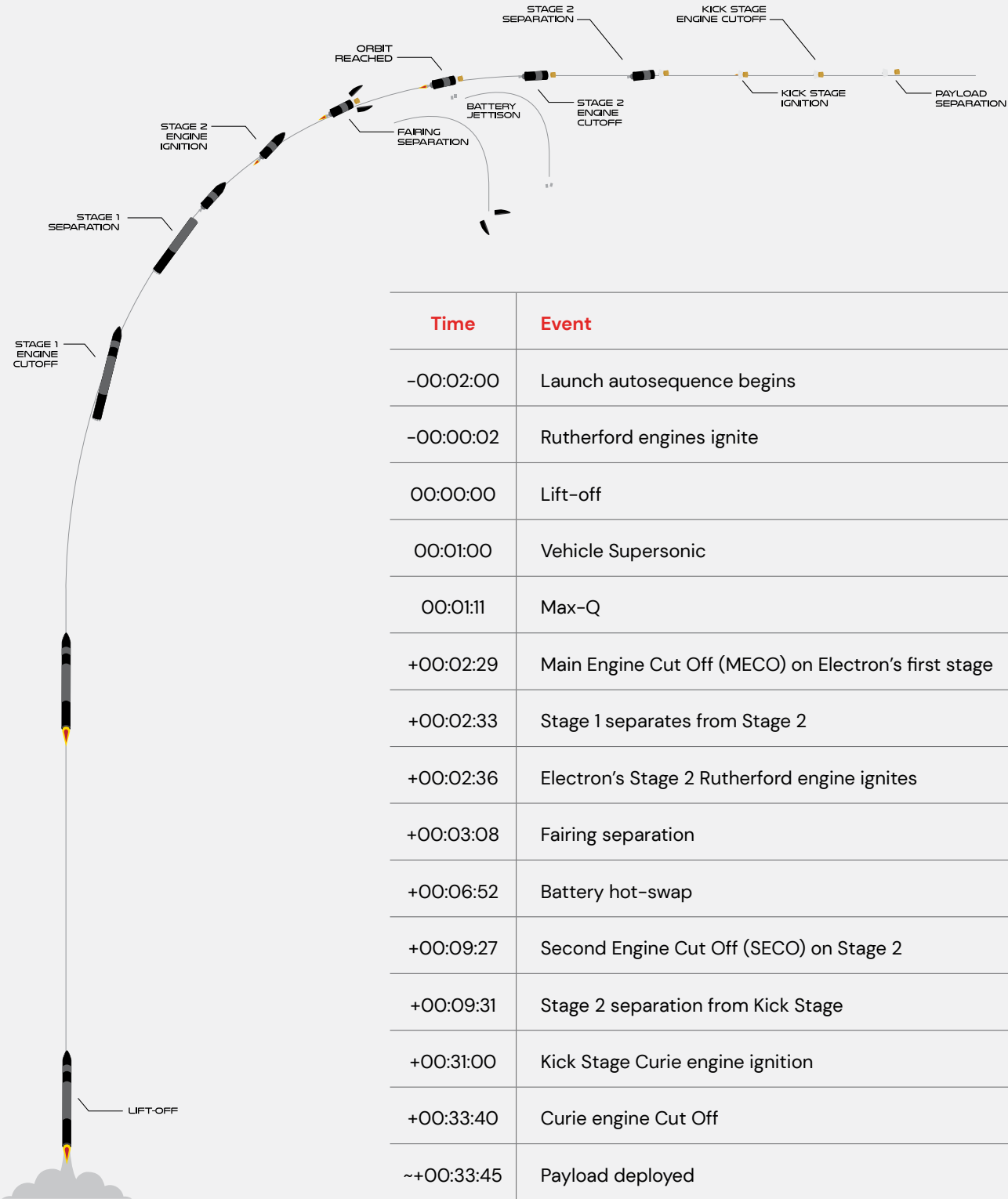
[rocketlabusa.com/next-mission](https://rocketlabusa.com/next-mission)

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# TIMELINE OF LAUNCH EVENTS



# ELECTRON LAUNCH VEHICLE

## OVERALL

### LENGTH

18m

### DIAMETER (MAX)

1.2m

### STAGES

2 + Kick Stage

### VEHICLE MASS (LIFT-OFF)

13,000kg

### MATERIAL/STRUCTURE

Carbon Fiber Composite/Monocoque

### PROPELLANT

LOX/Kerosene

## PAYLOAD

### NOMINAL PAYLOAD

320kg / 440lbm To 500km

### FAIRING DIAMETER

1.2m

### FAIRING HEIGHT

2.5m

### FAIRING SEP SYSTEM

Pneumatic Unlocking, Springs

## STAGE 2

### PROPULSION

1x Rutherford Vacuum Engine

### THRUST

5800 LBF Vacuum

### ISP

343 Sec

## INTERSTAGE

### SEPARATION SYSTEM

Pneumatic Pusher

## STAGE 1

### PROPULSION

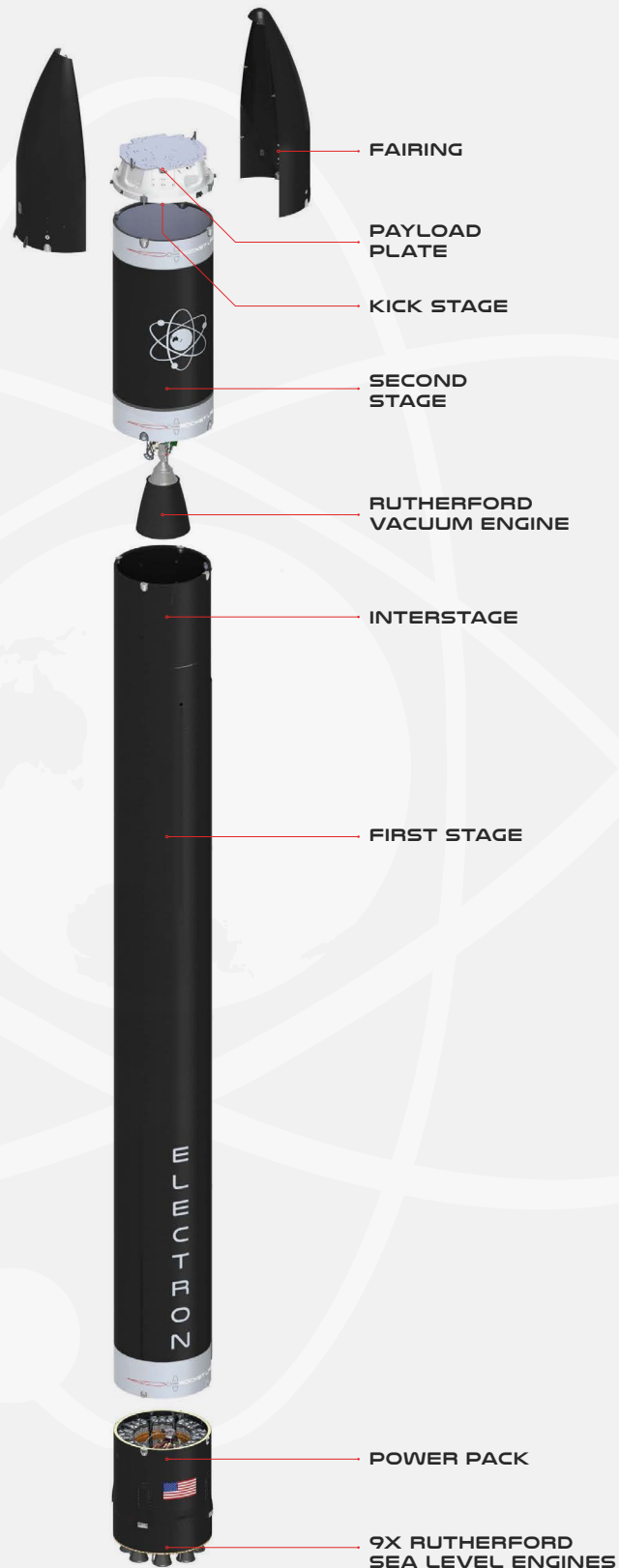
9x Rutherford Sea Level Engines

### THRUST


5600 LBF Sea Level (Per Engine)


### ISP

311 Sec





## CONTACT US


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