



NASA'S SWOT MISSION

MISSION OVERVIEW

SpaceX is targeting Friday, December 16 for a Falcon 9 launch of **NASA's Surface Water and Ocean Topography (SWOT) mission** to low-Earth orbit from Space Launch Complex 4E (SLC-4E) at Vandenberg Space Force Base. The 10-minute launch window opens at 3:46 a.m. (11:46 UTC).

The first stage booster supporting this mission previously launched NROL-87, NROL-85, SARah-1, and two Starlink missions. Following stage separation, the first stage will land on Landing Zone 4 (LZ-4) at Vandenberg Space Force Base.

SWOT is an internationally developed mission to conduct the first global survey of Earth's surface water. It aims to provide a new understanding of the ocean's role in climate change and improve the data humanity relies upon for fresh water management.

To learn more about NASA's science missions, visit science.nasa.gov.

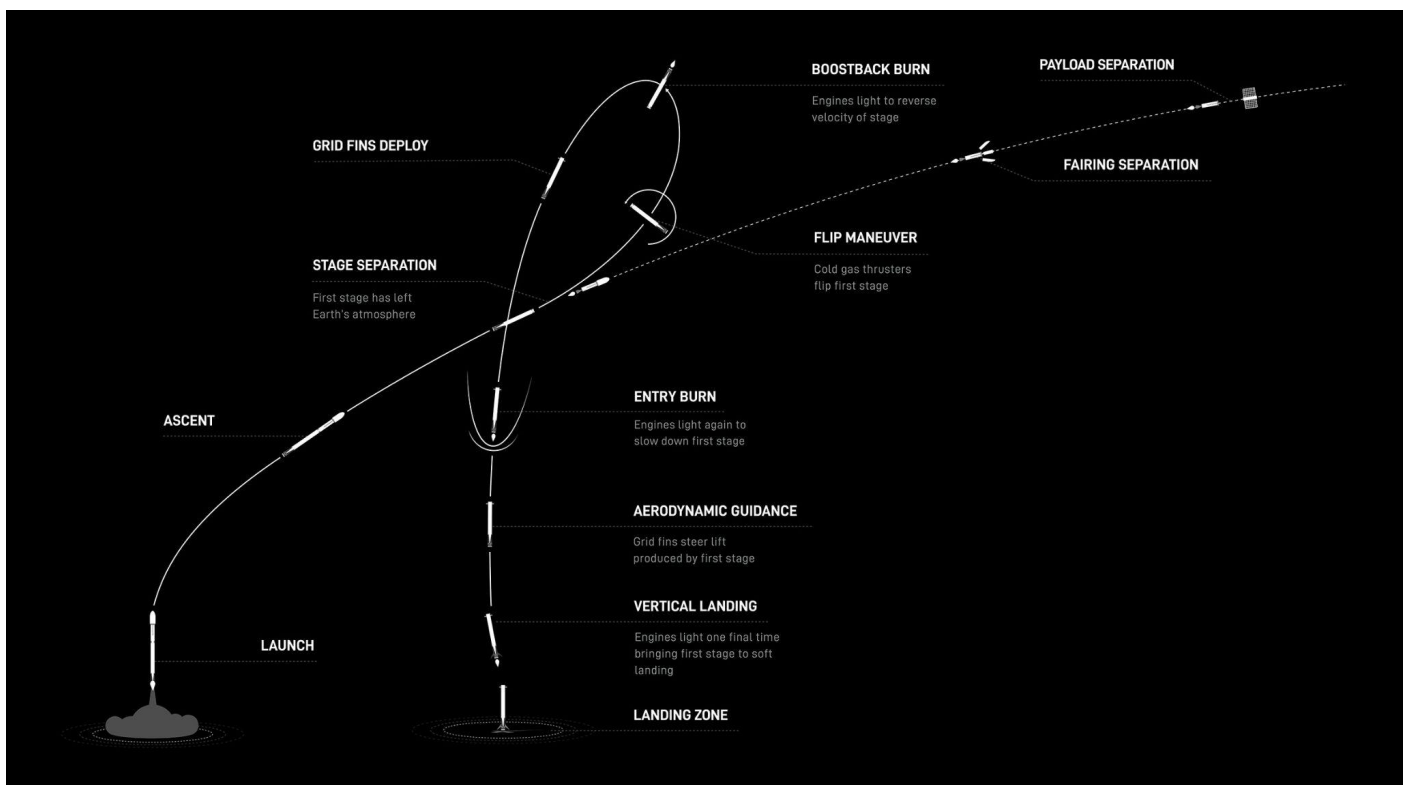
WEBCAST

SWOT mission coverage will be provided by NASA. Tune in to NASA.gov/live to watch the live broadcast, starting at 3:00 a.m. PT on Friday, December 16.

PHOTOS

High-resolution photos will be posted at [flickr.com/spacex](https://www.flickr.com/photos/spacex/).

MISSION PROFILE



MISSION TIMELINE (ALL TIMES APPROXIMATE)

COUNTDOWN

Hr/Min/Sec	Event
- 00:38:00	SpaceX Launch Director verifies go for propellant load
- 00:35:00	RP-1 (rocket grade kerosene) loading begins
- 00:35:00	1st stage LOX (liquid oxygen) loading begins
- 00:16:00	2nd stage LOX loading begins
- 00:07:00	Falcon 9 begins engine chill prior to launch
- 00:01:00	Command flight computer to begin final prelaunch checks
- 00:01:00	Propellant tank pressurization to flight pressure begins
- 00:00:45	SpaceX Launch Director verifies go for launch
- 00:00:03	Engine controller commands engine ignition sequence to start
- 00:00:00	Falcon 9 liftoff

LAUNCH, LANDING AND DEPLOYMENT

Hr/Min/Sec	Event
00:01:12	Max Q (moment of peak mechanical stress on the rocket)
00:02:16	1st stage main engine cutoff (MECO)
00:02:20	1st and 2nd stages separate
00:02:27	2nd stage engine starts
00:02:33	Boostback burn start
00:02:58	Fairing deployment
00:03:28	Boostback burn complete
00:06:02	1st stage entry burn start
00:06:14	1st stage entry burn complete
00:07:06	1st stage landing burn start
00:07:35	1st stage landing
00:08:24	2nd stage engine cutoff (SECO-1)
00:43:22	2nd stage engine starts (SES-2)
00:43:27	2nd stage engine cutoff (SECO-2)
00:52:28	SWOT deploys