National Aeronautics and
Space Administration

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The Next Generation of Explorers





NASA Student Launch- Introduction

Allison Chouinard
SL Logistics Coordinator

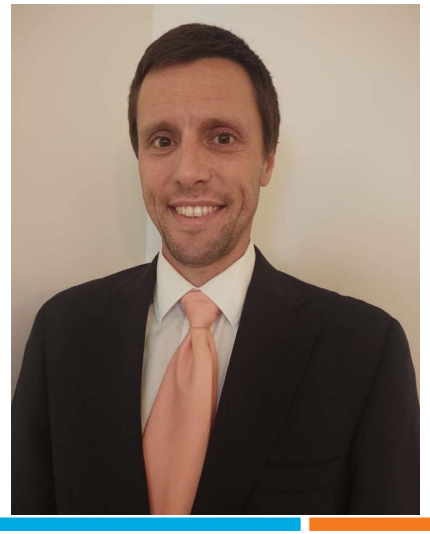
Introductions

NASA Student Launch Team

- Fred Kepner – Activity Lead
- John Eckhart – Technical Coordinator
- Zach Koch – Safety Engineer
- Allison Chouinard – Logistics Coordinator









National Association of Rocketry

- John Lyngdal – Range Safety Officer



What is NASA Student Launch?

- NASA Student Launch (SL) is a researched-based, hands-on activity.
- SL provides relevant, cost-effective research and development of rocket systems.
- SL also provides a real-life STEM experience for students.
- SL provides NASA-unique opportunities through a national STEM challenge.
- SL reaches middle schools, high schools, colleges and universities across the nation through a 9-month project to design, construct, and fly high-powered rockets with a scientific payload.
- SL teams will share the research results, which can be used in future design and development of NASA projects.

Basic Requirements

- 9-month commitment (Sept 2021 – May 2022)
- Engineering design challenge; teams must send in a proposal and be competitively selected
- Design and build a reusable rocket to a declared altitude above ground level carrying a scientific payload
- Successfully complete milestone reports and flysheets, design reviews, test launches, and a flight hardware and safety inspection
- Provide STEM engagement activities to community participants
- Develop and maintain a social media platform



Activity Timeline

August	Handbook Released Request for Proposals
September	Teams submit proposals and participating teams are selected
October	Teams announced, Kick-Off Session and workshops offered
November	Preliminary Design Review (PDR) Packages due PDR Milestone Presentations
December	Teams building/testing
January	Critical Design Review (CDR) Packages due CDR Milestone Presentations
February	Teams building/testing
March	Flight Readiness Review (FRR) Packages due FRR Milestone Presentations
April	Launch Week in Huntsville, AL or At-Home Launches
May	Post Launch Assessment Review (PLAR) due Awards Announced

SLI and USLI Differences

Student Launch Initiative	University Student Launch Initiative
Middle/high school teams must place in the top of the Team America Rocketry Challenge (TARC) or Rockets for Schools to be eligible.	Any University can submit a proposal to participate in the USLI competition.
Must send one teacher or mentor to the Advanced Rocketry Workshop (ARW).	Not required to attend ARW.
SLI is not a competition, but several awards are given.	USLI is a competition and awards are given.
Must use commercial ammonium perchlorate motors. Motor size limited to K class.	Must use commercial ammonium perchlorate motors. Motor size limited to L class.
Team chooses scientific payload with NASA's approval.	Team must complete a mission challenge defined by NASA.

NASA Engineering Life Cycle

- Student Launch challenge is modeled after the NASA Engineering Life Cycle

- Tenets of the Engineering Life Cycle
  - Plan for design, build, verification, operations and disposal of a product
  - Maintain consistency
  - Document process
  - Set expectations for team
    - Plans and Deliverables
    - Fidelity of products
    - Schedule and Budget



General SLI Requirements

Students will do 100% of the project, including design, construction, written reports, presentations, and flight preparation (with the exception of energetics, see below)

ALL SLI Teams must have a mentor:

- Mentor must maintain Level 2 NAR/TRA certification and must have flown/successfully recovered at least 2 flights in the motor to be used or a higher impulse class.
- Only the team mentor can handle black powder or any variant of ejection charges, and prepping/installation of electric matches
- The mentor is designated as the owner of the rocket for liability purposes and must travel with the team to launch week and at-home launches and testing.

ALL SLI Teams must have an advisor:

- Advisor must be an adult (ex: educator, parent etc.)
- We do not recommend that the same person be the team's advisor and mentor



General SLI Requirements

Vehicle Requirements Overview

The NASA SLI Team's vehicle will…

- carry a scientific payload of the team's discretion (approved by NASA).
- fly to a declared altitude, to be determined by team, by PDR.
- be designed to land within 2500 ft of the launch pad.
- have a dual-deployment recovery system that is fully redundant.
- contain electronic tracking devices on every un-tethered section.
- use only commercially available, certified motors and altimeters.
- be flown with team-provided motors and energetics (NASA does not provide motors or energetics)



Educational Value

More than rocketry:

- Technical writing
- Application of classroom lessons
- Presentation skills
- Budgets / Purchasing
- Timelines & schedules
- Community outreach
- Educational engagement
- Teamwork



Building a future workforce:
TARC > SLI > USLI > Internships > Workforce

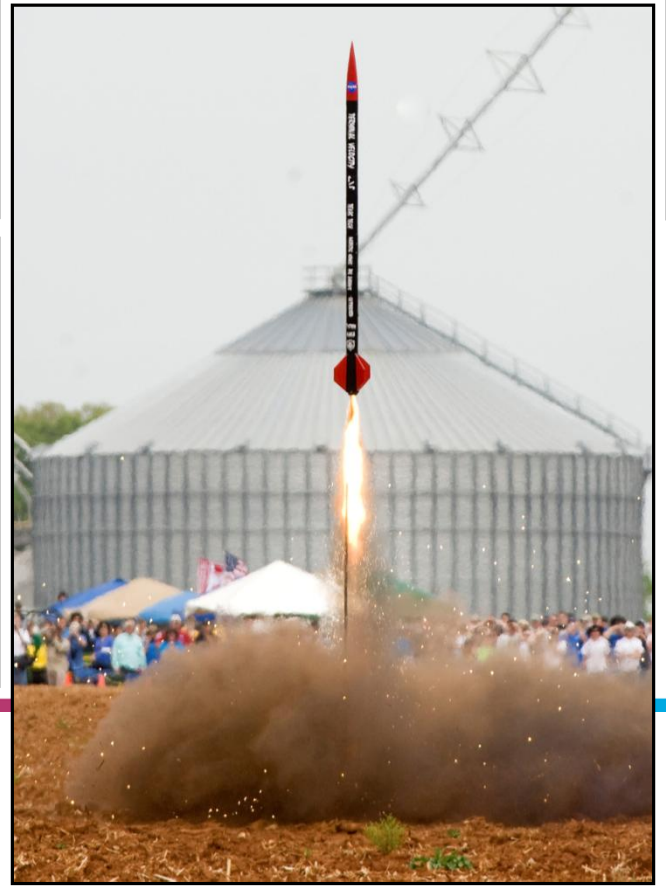
Launch Week – Huntsville, AL - April 20th – 23rd, 2022













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Contact Information

NASA Student Launch Management Team

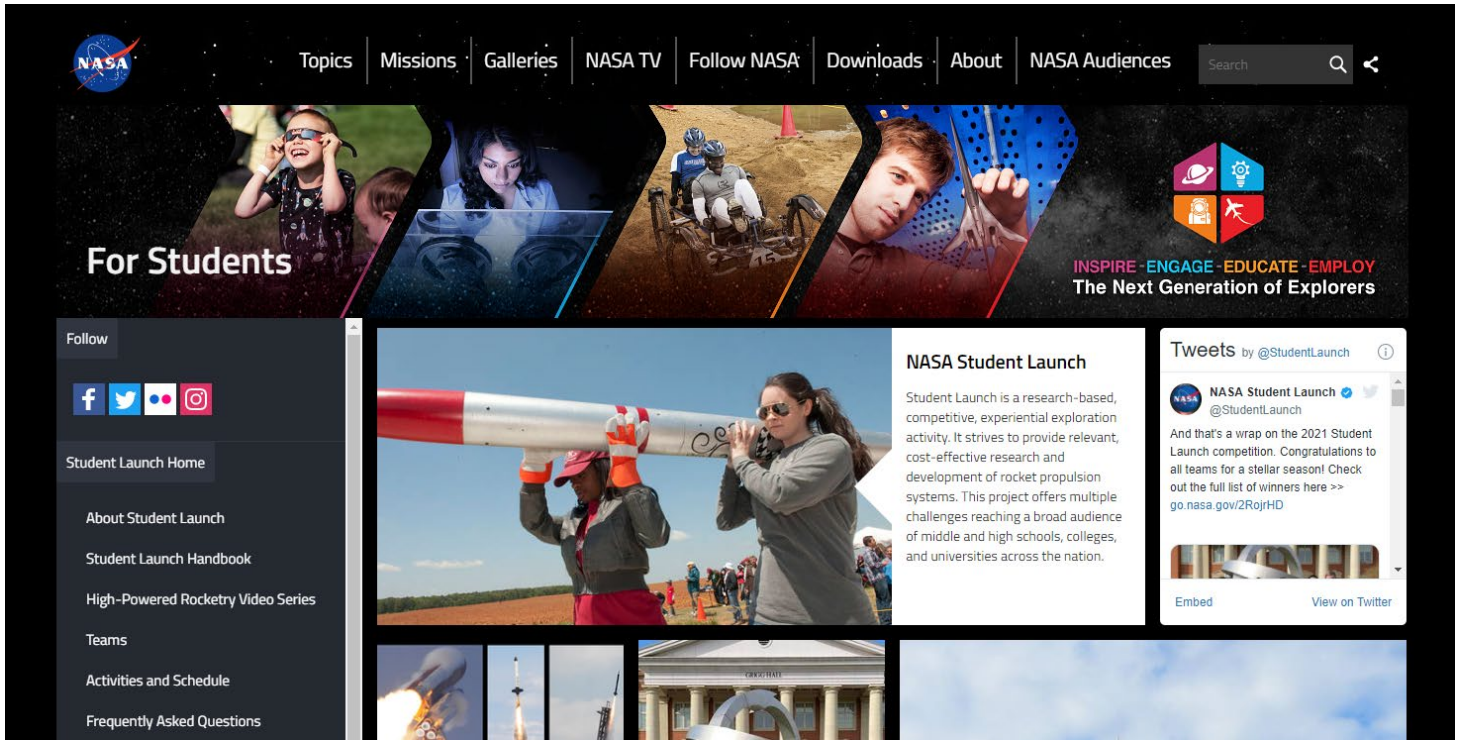
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NASA Student Launch Website



Questions