



Welcome



# Poker Flat Research Range Environmental Impact Statement Public Scoping Meeting



May 2011



# Scoping Meeting Agenda



- **Welcome**
- Geophysical Institute Overview
- Sounding Rockets Program Overview
- Environmental Impact Statement Overview
- Public Comment
- Closing Remarks



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# Why are we here?



- Overview of Sounding Rocket Program at the University of Alaska's Poker Flat Research Range
- Brief you on the environmental study being done for this program
- Discuss recovery of payloads and spent rocket stages



# What is NASA's Sounding Rockets Program?



- NASA Wallops Flight Facility manages the Program for NASA's Science Mission

## 3 critical elements:

- Unique, cutting edge science missions
- Platform for the conception, testing, and development of new technology
- Training ground for students, young researchers and engineers

## Two important features of the program:

- Low Cost
- Rapid, quick response





# What is NASA's Sounding Rockets Program?



The Program conducts 20-30 missions per year from fixed and mobile launch sites around the world to meet the needs of researchers and scientists. Launch vehicle success rate is ~98%



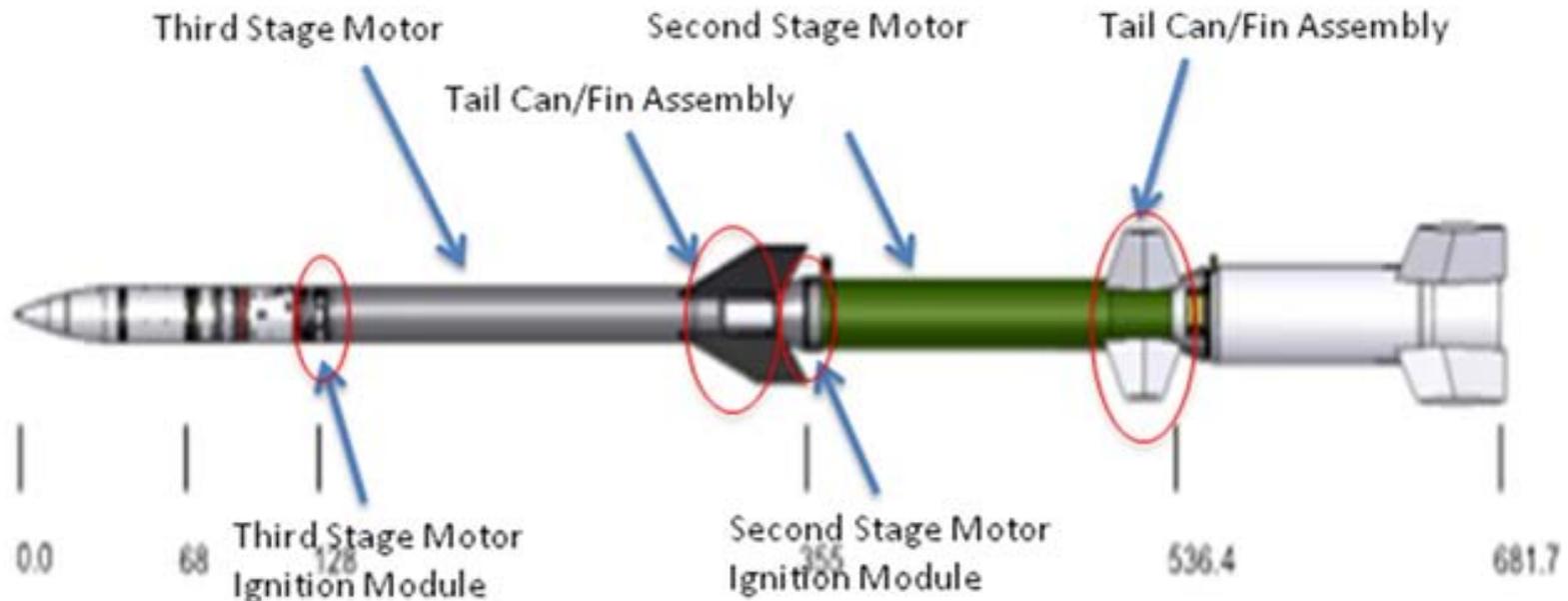
*Missions are conducted in partnership with universities and government agencies*



# What is a Sounding Rocket?



Name is derived from nautical term meaning “measurement.”



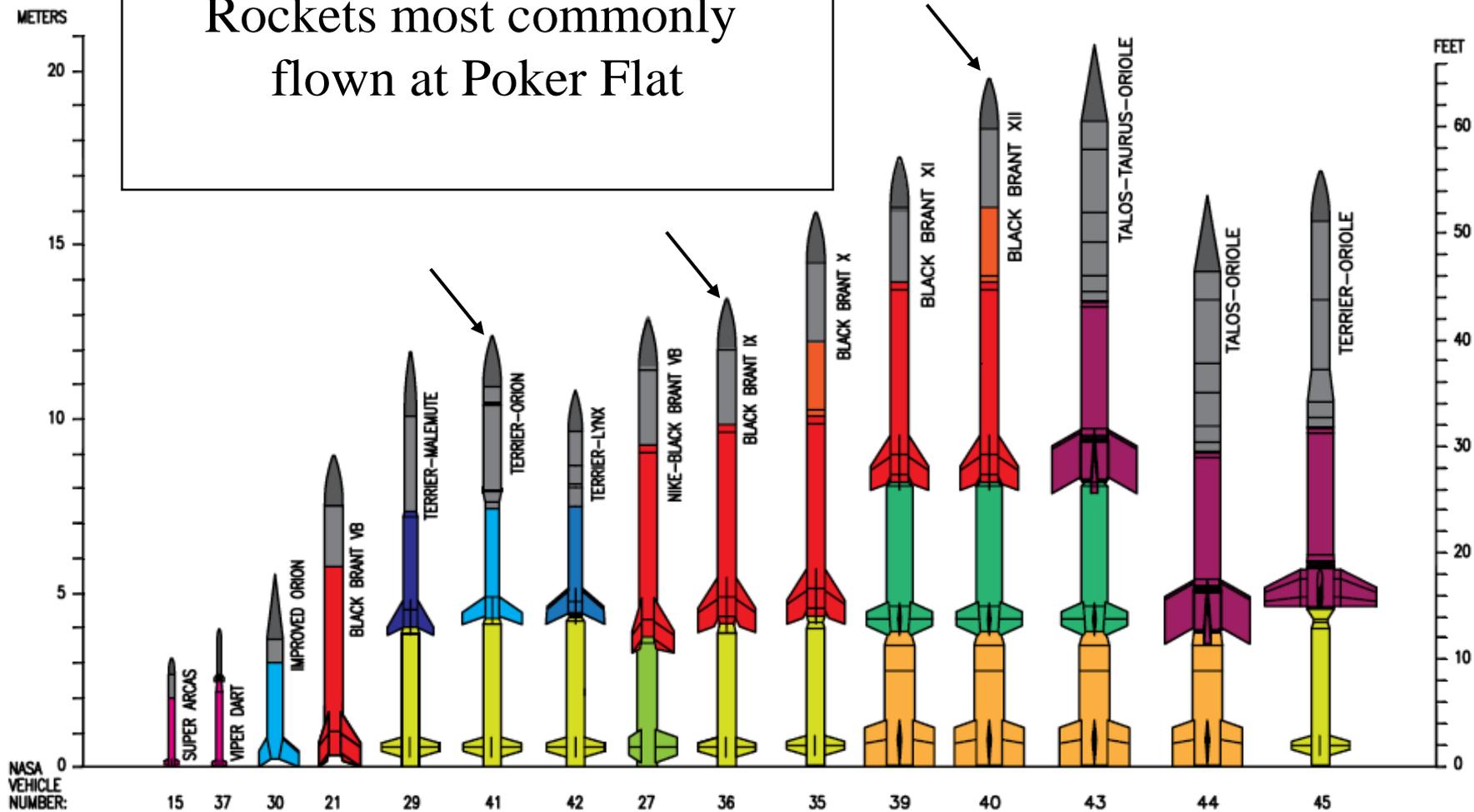
*Sounding rockets are a variety of sizes ranging from the the single-stage Super Arcas which stands at 7 feet to the largest, the four-stage Black Brant XII which stands 65 feet tall.*



# Sounding Rocket "Stable"



Rockets most commonly flown at Poker Flat



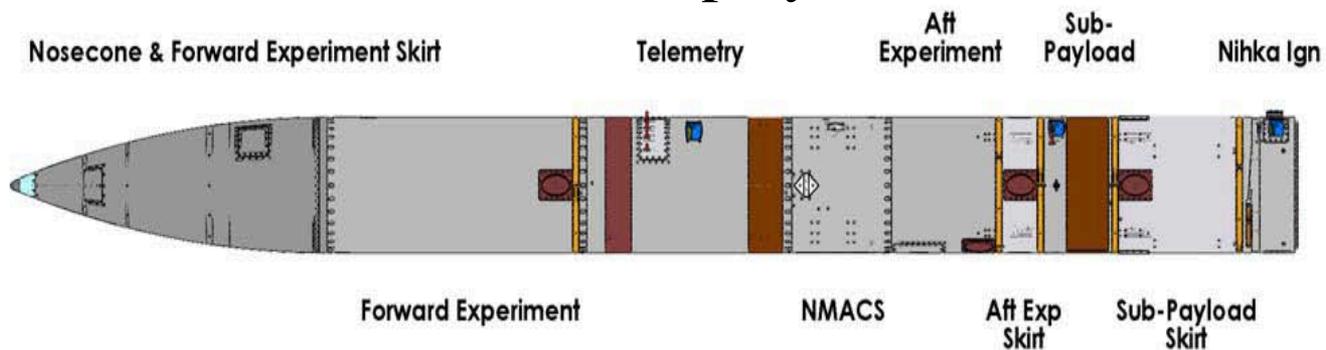


# Sounding Rocket Components: Payload

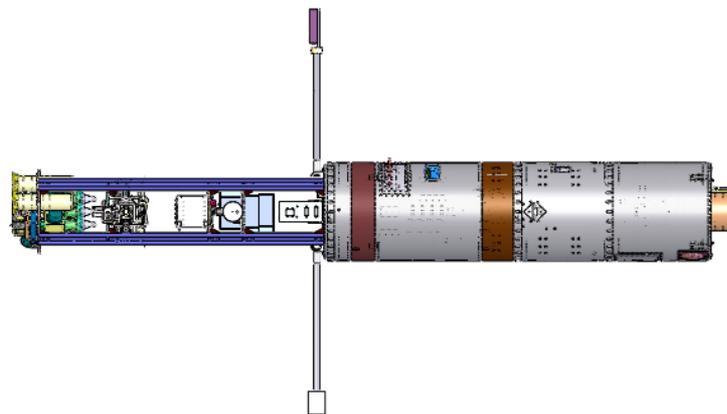


The payload is the scientific experiment(s) onboard the rocket

## Pre-deployment



## Post-deployment

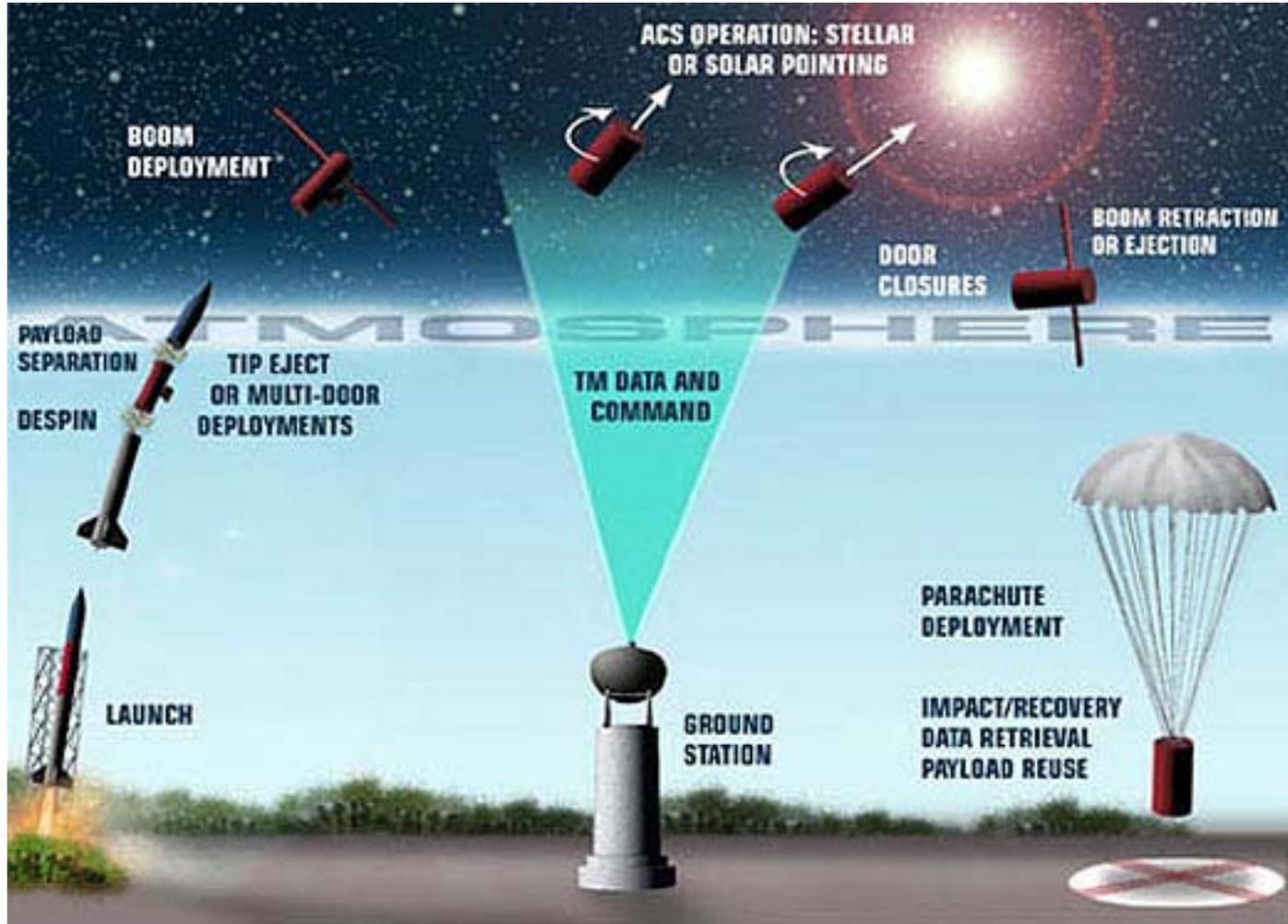




# Sounding Rocket Flight Path



Example of a telescope-class payload flight





# Why Sounding Rockets?



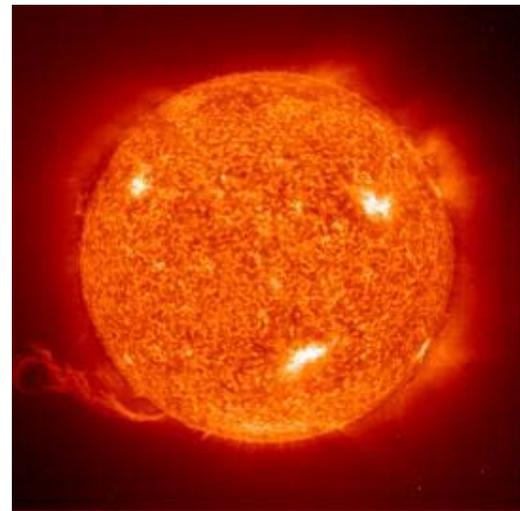
- Rockets permit the only means to study the lower ionosphere (50 - 95 mi) and middle atmosphere (25 - 50 mi) with direct measurements
- Can measure areas that neither orbiting satellites, aircraft, nor balloons can measure; both in time and space
- Can be launched when and where the science of interest is occurring such as studies of the aurora which we have to wait to develop
- Multiple payloads (clusters) can be launched on a single rocket
- Multiple, simultaneous launches can be conducted to study the entire spatial area



# Science Missions at Poker Flat



- Sun-Earth connection
  - Major focus of NASA's Science Mission
  - Poker Flat is ideal location to study the aurora
- Atmospheric air quality:
  - Air Sampler Missions (University of Pittsburg)
    - Sample middle atmospheric air pollutants
  - Polar Nitrous Oxide Mission (Virginia Tech)
    - Measure nitrous oxide in lower atmosphere
    - Nitrous oxide is believed to be a destroyer of ozone (winter ozone hole)





# Needs for Science at Poker Flat



- The aurora contains a large range of unexplained phenomena that can only be explored with sounding rockets
- The Arctic upper atmosphere is an essential region of the earth's environment; must be measured if we are to understand how the Earth and the Sun interact
- Everyday examples of how understanding these phenomena can improve life on Earth
  - Health: the magnetosphere and atmosphere protect living things from radiation from the Sun; ozone research; climate change
  - Communications: satellite, radio, and TV signals can be affected by solar radiation
  - Power systems: geomagnetic storms can cause power outages
  - Corrosion: the aurora induces strong electrical currents along good conductors such as oil and gas pipelines resulting in corrosion
  - Migratory animals: birds, bees, and other creatures that use Earth's magnetic fields to navigate are affected by geomagnetic fluctuations



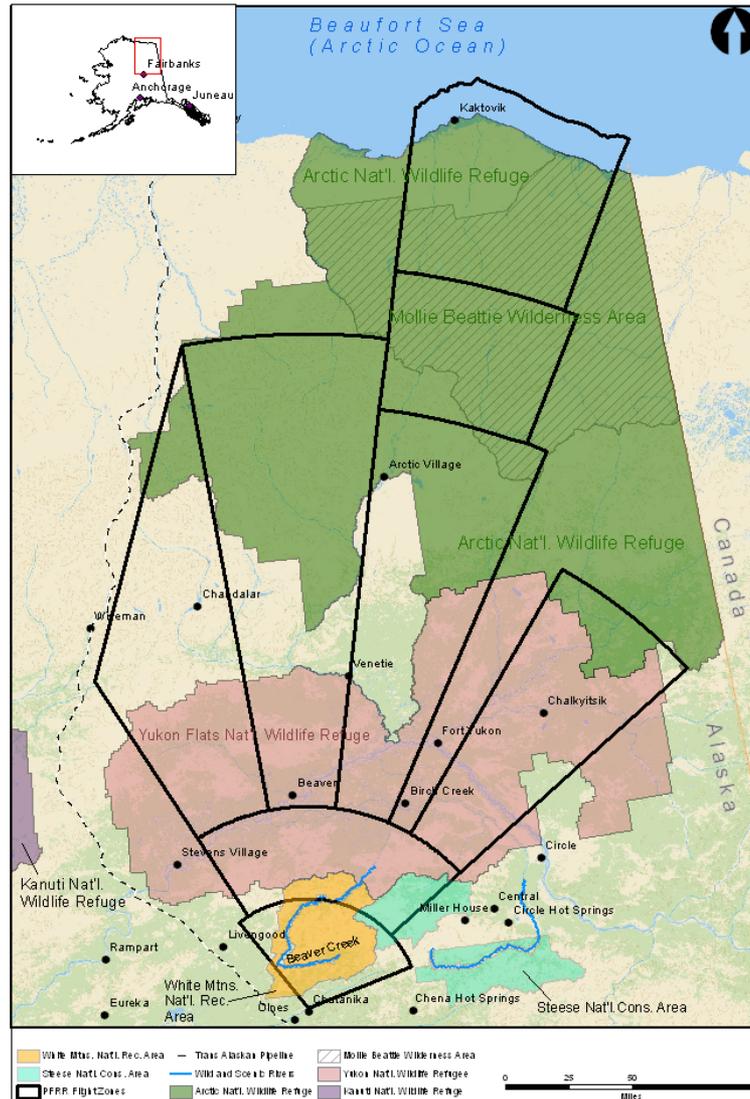
# Poker Flat Range Boundary



## Landowners:

- USFWS Arctic NWR
- USFWS Yukon Flats NWR
- BLM Steese National Conservation Area & White Mtns NRA
- State of Alaska
- Native Corporations
- Native Villages & Reservations

Poker Flat Research Range Launch Corridor





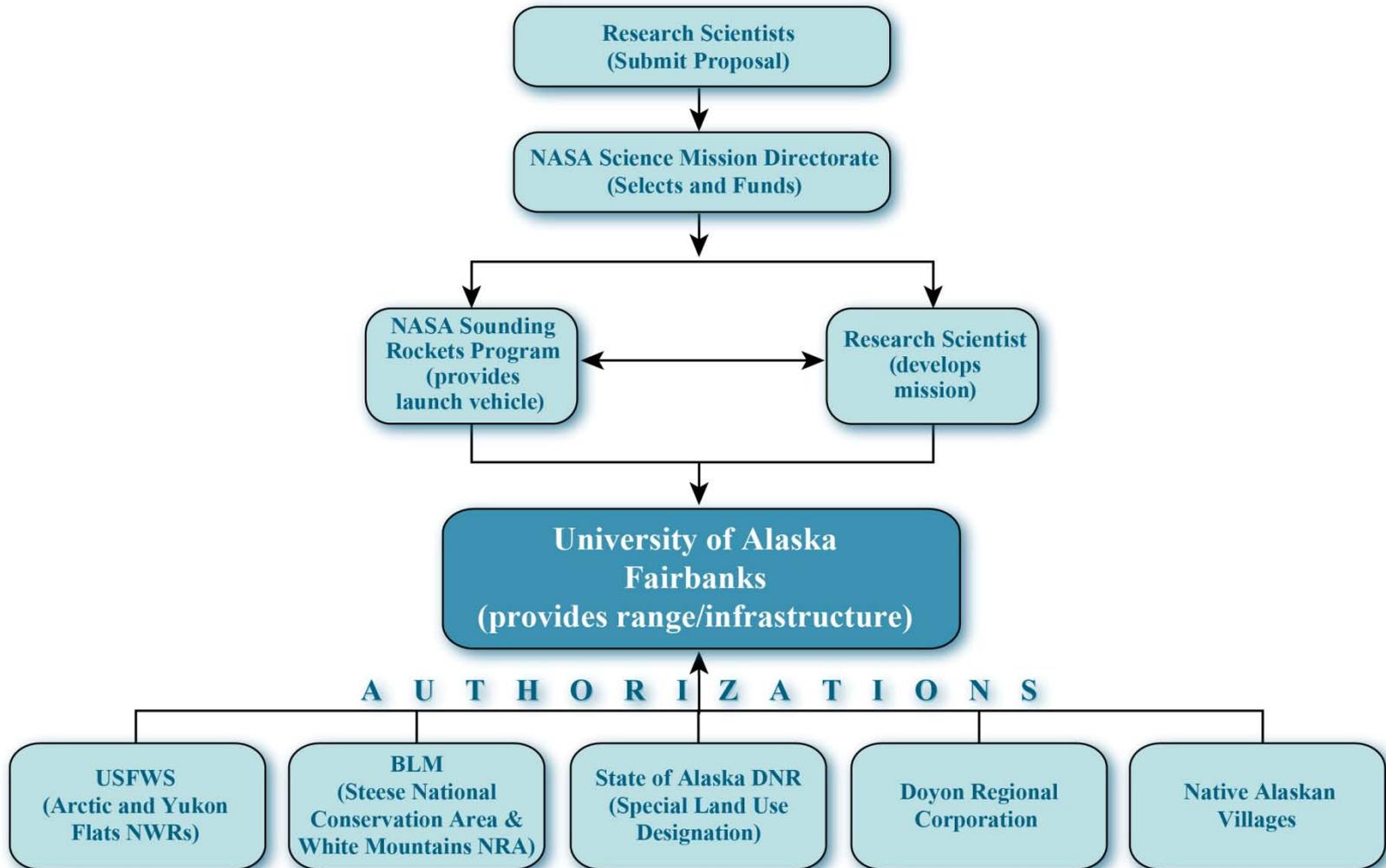
# Safety



- Safety is the top priority of both NASA and UAF, Poker Flat
- Independent NASA Safety Office manages the safety program for all Sounding Rocket operations
  - Poker Flat reviews and approves all safety plans for launches at Poker Flat
- Strict safety standards specific to both NASA and Poker Flat are followed to ensure we provide protection for:
  - Public and workers
  - Property (pipeline, nearby houses, villages, etc.)
  - Range boundaries
  - Special use areas (e.g., Mollie Beattie Wilderness Area)
- Stand-off distances from all impacting objects are used to protect these areas



# Organizational Relationships





# Sounding Rockets at Poker Flat



- The Program began launching from Poker Flat Research Range in 1969
- Primary launch season at Poker Flat is in the winter months (January – March)
- All 41 missions over the past 10 years have been launched in this time period
  - Most in January and February
- Launch schedules are driven by scientific requirements
  - 8 launched in 2009
  - 2 launched in 2010
  - 3 launched in 2011



# Advantages of Poker Flat



- **Only** permanent high-latitude launch site in the U.S. that supports northerly launches
- Launch pads at Poker Flat are directly within the Earth's auroral zone
- Range permits multiple, near simultaneous launches
- Range permits land recovery of many classes of rocket payloads
- Range includes established, ground based research instruments (e.g., radar, magnetometers, all-sky cameras, lidars) to complement missions
- Launch range is near a major university (University of Alaska, Fairbanks)
- Range has good road access and excellent logistics support



## What is Proposed?



- Continuing launch operations at Poker Flat with **same activity level** as last 10 years
  - Average of 4 launches annually
  - Majority of launches in winter
  - Safety remaining top priority of operations
  - Formal recovery program developed as part of “Clean Range Policy”
  - Enhanced rewards initiative as part of recovery program



## Alternatives Being Considered



- Continuing the Program in its present form and at the current level of effort
- Continuing Program launches from Poker Flat within the existing flight zones with differing requirements for identification and recovery of spent stages and payloads
- Modifying the trajectories of the existing flight zones, conducting launches at other high-latitude launch sites, thereby avoiding the federally-managed lands
- Discontinuing sounding rocket launches in Alaska

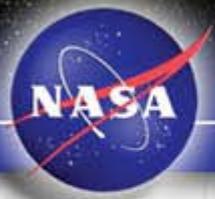


# Recovery



- An informal plan has been in place for years to address recovery of spent stages and payloads
  - Boosters (1<sup>st</sup> stage) are frequently recovered
  - Primarily on State lands, only a few miles from existing launch pads
- New emphasis being put on payloads and rocket stages that land down range
  - Historically very difficult to locate
  - New technology will help
  - Enhanced rewards program





# Recovery



- Plan will contain a multi-prong approach to locating these items
- Recently, the public has identified additional spent stages
  - Plans are in progress to recover these stages this summer
- Public awareness campaign/ enhanced rewards program will be part of the new clean range policy



Photos provided by the public and USFWS



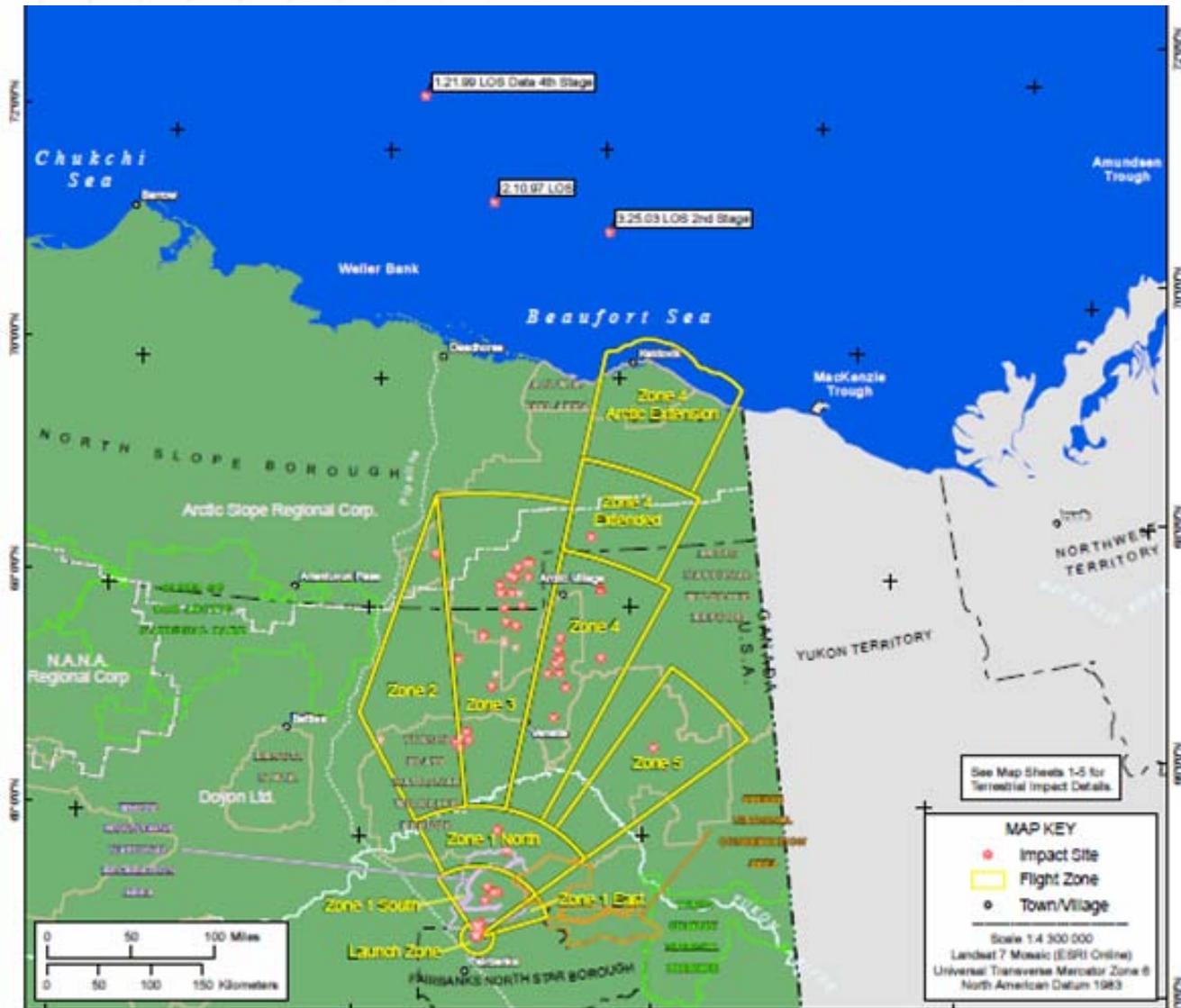
# Recovery



- **Goal is to implement and maintain a clean range policy to the fullest extent practicable**
- Recovery of items will be assessed on a case-by-case basis to ensure minimal impact to the environment
- A specific line item in the Poker Flat budget would be allocated for recovery operations



# Poker Flat Boundaries & Typical Impact Locations





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# NEPA Overview



*“There shall be an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to the proposed action.”*

– National Environmental Policy Act of 1969

- The **National Environmental Policy Act of 1969 (NEPA)** established a national policy to protect the environment by requiring Federal agencies to consider the effects of their actions on the human environment prior to implementing the action and to give the public the opportunity to participate in the planning process.
- Purpose of NEPA is to **assess and compare** the impacts and benefits of the Proposed Action and reasonable Alternatives.



# NEPA, graphically speaking



*Air Quality*

*Socioeconomics*

*Water Quality*

*Cultural Resources*

*Wildlife*

*Environmental Justice*



# A Bit of History....



- Program has long track record of environmental stewardship
- Two Programmatic EISs prepared (1973 and 2000)
  - Annual internal reviews to ensure missions are within scope of existing document
- Potential changes to management of downrange lands triggered need to prepare Poker Flat-focused Environmental Assessment (EA) (spring 2010)
- Concerns raised by project stakeholders during EA scoping (fall 2010)
- Decision made to prepare site-specific EIS (winter 2010)



# The Environmental Impact Statement



- Prepared by Federal agencies when the potential exists for “significant” impacts to environmental resources
- Most rigorous level of analysis prescribed by NEPA
- Gives the same hard, comparative look at all alternatives
- Several public involvement opportunities



# EIS Process Flow



 Opportunities for Public Involvement

Notice of Intent to Prepare EIS  
Published in *Federal Register*

Public Scoping Period

Preparation of Draft EIS

Draft EIS Review and  
Public Comment Period

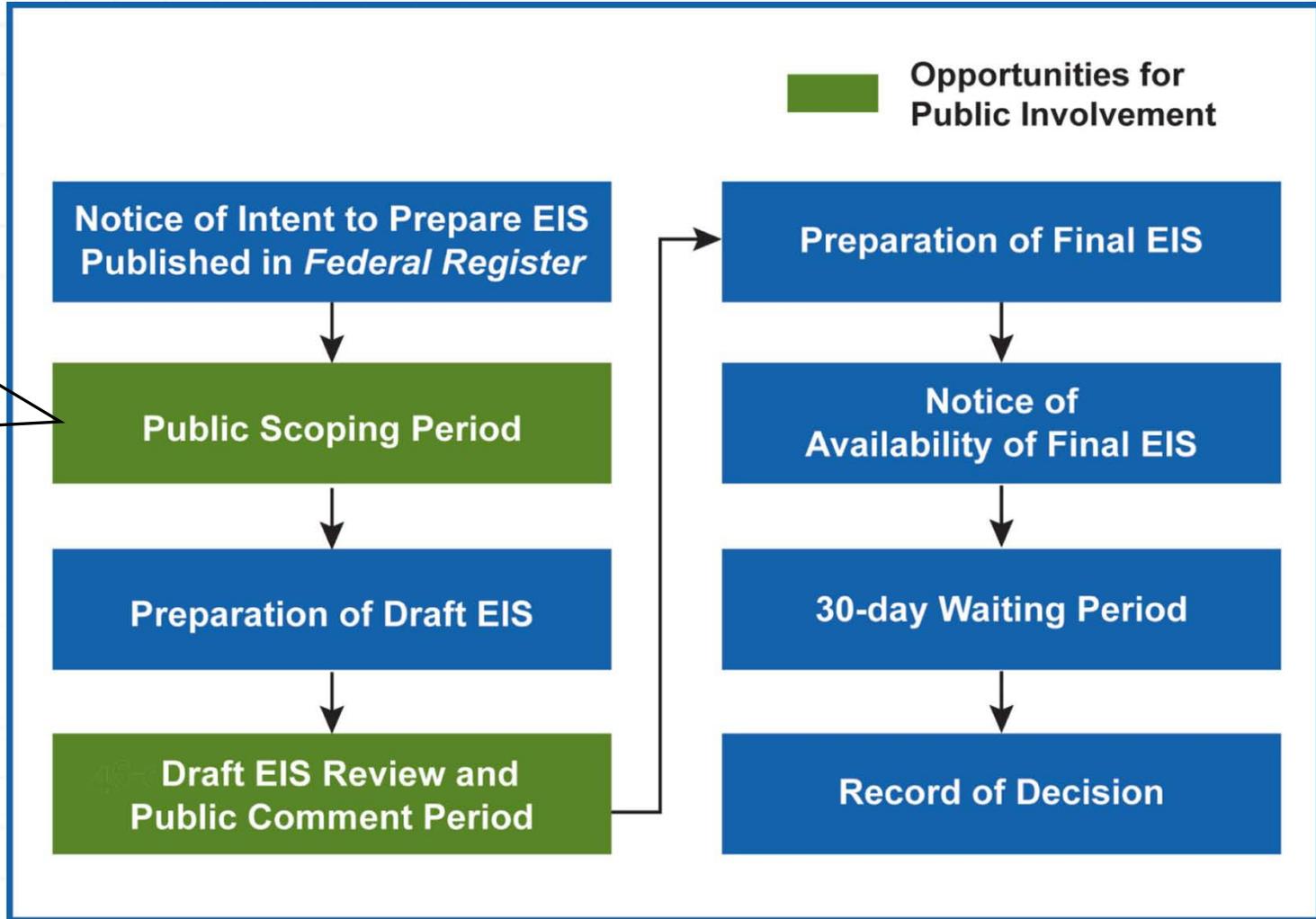
Preparation of Final EIS

Notice of  
Availability of Final EIS

30-day Waiting Period

Record of Decision

We are here in the process.





# Scoping Process



- NASA – Lead Agency
- BLM, UAF, and USFWS - Cooperating Agencies
- Public involvement is a vital part of the NEPA process

## **Scoping period: April 13 – June 1, 2011**

- *Federal Register* Notice
- Advertisements in local newspapers
- Direct mailings
- Public meetings
- Website –  
[http://sites.wff.nasa.gov/code250/pfrr\\_eis.html](http://sites.wff.nasa.gov/code250/pfrr_eis.html)



# EIS Scoping



- Provides an early opportunity to help shape the EIS analysis
  - Project alternatives
  - Environmental concerns
- Will help NASA identify significant issues to provide particular focus
- Today the public can opt to comment to the project team on the scope of the EIS or to submit written comments



# Tentative Focus Areas



- Special use lands
  - Subsistence
  - Wild Rivers
  - Wilderness
  - Recreational Areas

*Your input will help us refine the scope and depth of the analysis*



# Current Schedule



- Scoping Spring 2011
- Availability of Draft EIS Winter 2011
- Availability of Final EIS Summer 2012
- Record of Decision Fall 2012



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# Written Input



Your feedback is welcomed and multiple options are offered:

- Submit written comments
- Submit oral comments
- Submit written comments via email to:  
[Joshua.A.Bundick@nasa.gov](mailto:Joshua.A.Bundick@nasa.gov)
- Mail/fax written comments for receipt by June 1, 2011 to:

Joshua Bundick

Poker Flat Research Range EIS

NASA Goddard Space Flight Center's Wallops Flight Facility

Wallops Island, Virginia 23337

(757) 824.1819 (fax)



# Closing Remarks



- Thank you for attending, your input is a valued part of this process