# HIGH ALTITUDE BALLOON

22 January 2010

# Team Members

- Team :
  - Dominic Maga
    - Team Leader
    - Electronic circuits background
    - Cellular Communications background
  - Steve Powers
    - Equipment acquisition/repair
    - Electronic circuits background
  - Jason Bailey
    - Electronic circuits background
- Faculty Advisor:
  - Dr. Wu
- Engineering Mentors:
  - Bruce Rahn
    - Experienced Engineer
    - Extensive knowledge of balloon project
  - Andrew Crowdy
    - Former team member
  - Brent Guenther
    - Former team member

# Outline

- Previous Balloon Experiments
- Current System
- Goals
  - GPS Repeater, Paperwork, and miscellaneous tasks
  - Russ Antenna
  - Single Transmit Antenna
- Deliverables, Schedule
- Questions

# Previous Balloon Projects

- 2005-2006: First Successful Launch
- 2006-2007: Two launches
  - GPS/Tracking Failure
  - GPS/Tracking System Completed
  - Video System Used
- 2007-2008:  Two successful Launches
  - Parachute failure
  - Power system failure
- 2008-2009: Six successful launches
  - Improved power system
  - Video System
- 2009-2010: So far, two successful launches

# Current System

- Micro-Trak 300
- Free Wave
- GPS15L
- Power Bus

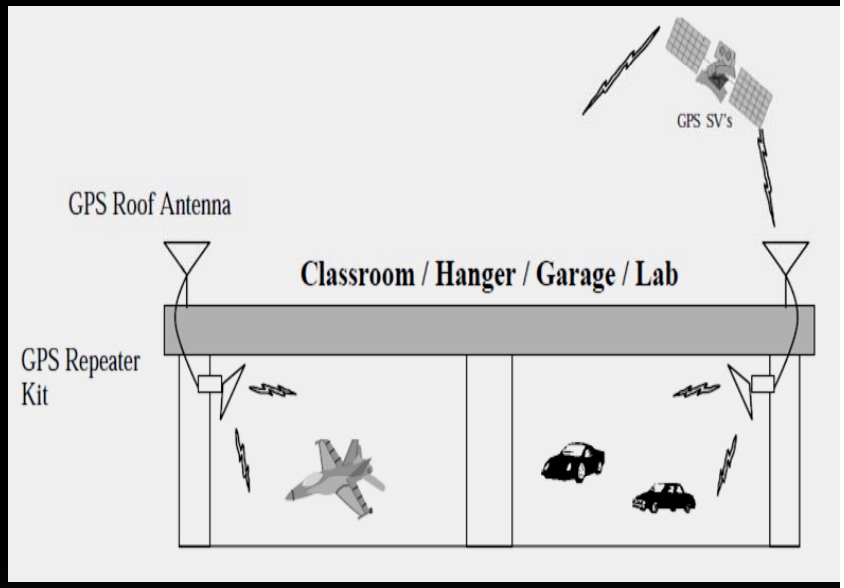



# General Goals

- Goal 1: GPS Router, Paperwork, and assistance
- Goal 2: Yagi Receive Antenna
- Goal 3: Single transmit antenna

# Goal 1: GPS Repeater and Paperwork

- Will enable team to perform full systems tests in lab.




- Manuals and wiring diagrams of all common components.

# Goal 2: Russ Receiver Antenna

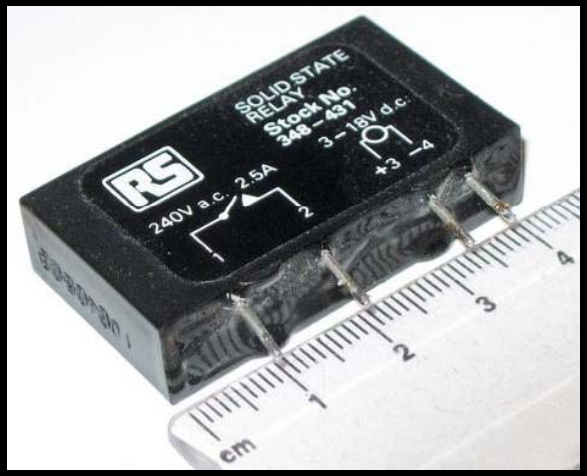
- YAESU G-5500
  - Mounting
  - “Plug and Play”
  - ±4% Error
  - Max. Load: 440 lb
- YAESU: GS-232A
  - Computer Interface
  - Software not provided
  - Manual Baud Settings

# Goal 2: Russ Receiver Antenna (cont'd)

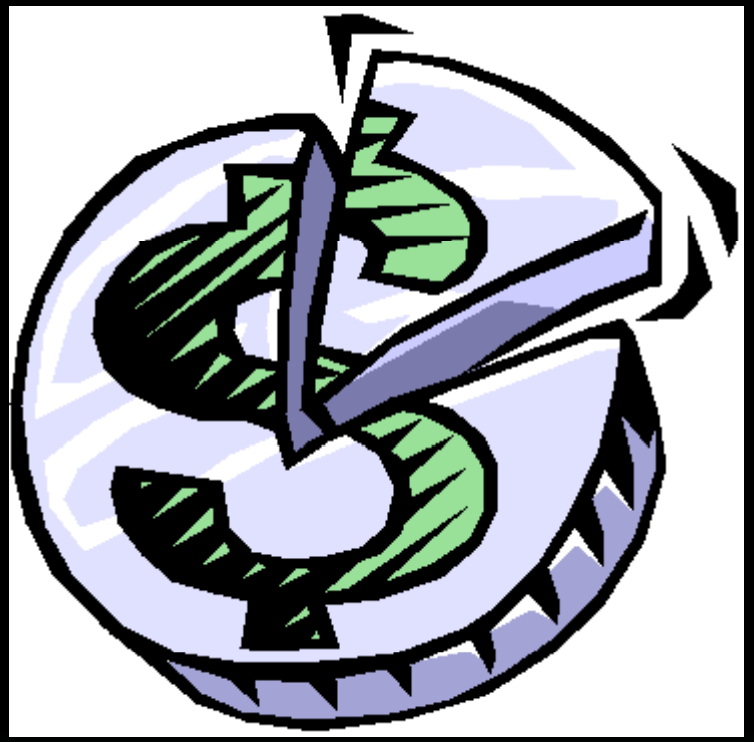
- PstRotator
  - Software for antenna rotators
  - Compatible with GS-232A

# Goal 3: Single Transmit Antenna

- Problem: Package has 2 antennas operating at different frequencies
  - 900 MHz
  - 144.39 MHz
- Goal: Use one antenna for all transmission and reception
- Possible Solution: Solid State Relay (DPST)



# Budget



- Goal 1:
  - GPS Repeater: ~$350
- Goal 2:
  - GS-232A ~$500
  - Computer ~$1500
- Goal 3:
  - Solid State Relay ~$20
  - Various Connectors and Cables <$100

# Deliverables

- Circuit that will convert from using two antennae to one antenna
- Assemble and test Russ Receiver Antenna assembly
- Place GPS Repeater on Roof of Russ
- Manuals
  - Pre-flight check list
  - Board operating manuals
  - Circuit Schematics

# Schedule

- Week 1: Meet the team and gather ideas for project topics.
- Weeks 2-3: Initial research, abstract, and initial presentation
- Weeks 4-5: Gather parts lists, and order all parts needed
- Weeks 6-10: Balloon Launches, begin assembly and testing of all parts/designs
  - Feb. 4 – Test to obtain HAM Radio License
  - Feb. 7 and Feb. 14 – Tentative Balloon Launch Dates
- Week 11: End of Quarter Presentation

# Funding

- Sponsors
  - Ohio Space Grant Consortium (OSGC)


  - The National Space Foundation (NSF)

# Questions?