The Near Space Explorer 2015

NearSys.com/TNSE

Welcome to the World of Amateur Near Space Exploration

Practical amateur near space exploration became possible once amateur radio was combined with GPS receivers. Together, they created wireless tracking devices that permitted everyone to follow the progress of high altitude balloon flights. The tracking of amateur near space flights has shown that high altitude weather balloons often reach altitudes in excess of 85,000 and sometimes even 100,000 feet. The environmental conditions found at these altitudes are more akin to outer space than the surface of Earth. Because of the cost of balloons, amateur near space exploration is truly the poorman's space program.

Amateur near space exploration can provide the ultimate STEM experience for K-12 students. It creates the opportunity for them to create functional models of satellites that collect science data in the space-like environment above the altitude of commercial aircraft. Amateur near space, in combination with other inquiry-based activities like robotics is one important way to reach students and maintain their early interest math and science before it has a chance to drop off as they leave junior high school. And near space exploration helps students maintain their interest throughout high school.

The Near Space Explorer is an amateur science journal for K-12 students involved in high altitude balloon-base experiments. The journal is meant as a resource for students to share their near space experiences and to help other students discover, design, and test their own near space experiments.

Onwards and Upwards

Submission Requirements

All K-12 students who have built and analyzed the results of a near space experiment are eligible to submit articles to The Near Space Explorer. However, a teacher/mentor/adult leader must first review the article for grammar and accuracy prior to submission (this counts as peer review). This journal publishes articles that are short, no more than three pages long. Students should have fun creating and submitting their article and submissions that are duplicates of prior experiments are acceptable. A mission patch is also encouraged for each experiment and the patch artwork should be included within the article (adding art to STEM changes it into STEAM). The ultimate goal of writing articles for this journal is for students to have fun creating, analyzing, and writing about their near space experience. Send submissions to nearsys@gmail.com.

It is helpful if each submission follows the outline described below. This uniformity of article layout will help future near space explorers find the information they are searching for in this journal.

1. Title
2. Author(s) name
3. Abstract (paragraph description of the article and its findings)
4. Research performed prior to starting experiment
5. Description of experiment (what was used and how)
6. Expected results
7. Procedures used to analyze data
8. Example data
9. Graphs/charts
10. Conclusions
11. Suggested sources of error/corrections/future study
12. Keywords (useful search terms for this article)

Suggested Format for Graphs

The following requirements should give the best results for each graph. Please submit the chart as separate file from the article.

1. White background
2. Black lettering
3. Title
4. Axis labels
5. Axis units
6. Legend if more than one measurement is plotted in the same graph
7. Submitted as a jpeg

Suggested Format for Images

The following requirements should give the best results for each image. Please submit the image as separate file from the article.

1. A caption for each image
2. Use contrasting colors for arrows/circles pointing out items in the image
3. Submitted as a jpeg

Contents for The Near Space Explorer 2015

The Near Space Experience

An adult leader/teacher writes a paragraph or two about their experience providing a near space experience for students in a formal or informal education setting. For example, issues to overcome or benefits. (add photo of him or her or their choice of photograph)

Elementary School Articles

Title
Author
Abstract
Background Research
Describe Experiment
Procedures Used
Example of Data
Graphs
Conclusions
Suggested Follow-on or Corrections
Keywords (for search)

Middle School Articles

Title
Author
Abstract
Background Research
Describe Experiment
Procedures Used
Example of Data
Graphs
Conclusions
Suggested Follow-on or Corrections
Keywords (for search)

High School Articles

Title
Author
Abstract
Background Research
Describe Experiment
Procedures Used
Example of Data
Graphs
Conclusions
Suggested Follow-on or Corrections
Keywords (for search)

Near Space Help

The following amateur radio groups have expressed an interest in providing near space experiences for local students. Please email them to arrange for help with the building, testing, launching, tracking, and recovering of near space experiments.

ARBONET
Austin, TX
wm@omscr.net

NearSys
Boise, Idaho
nearsys@gmail.com

The following companies sell items that students might find useful for near space experiments.

AdaFruit
Sensors
http://www.adafruit.com

Aware Electronics
Five-volt Geiger Counters
http://www.aw-el.com

NearSys LLC
BalloonSat Kits
Sensor Kits
http://nearsys.com/catalog

Sparkfun
Sensors
http://sparkfun.com