

# **State-Wide STEM Student Engagement with High-Altitude Ballooning**

**Annual High-Altitude Conference 2020**

## **ABSTRACT:**

Science, Technology, Engineering, and Math (STEM) are an integral part of a modern K-12 education curriculum. As such, students should be exposed to, and engage in, STEM related activities that induce excitement. High-altitude ballooning provides a cost effective, experiential, fun, creative, and safe project that students across the country could engage in. The Near-Space Balloon Challenge (NSBC), supported by the North Dakota Space Grant Consortium (NDSGC), is an annual year-long event in which middle and high school students across the state of North Dakota participate in a hands-on STEM high-altitude ballooning project. The challenge implements aspects of the scientific method, engineering design, mission preparedness, creativity, and overall teamwork. It requires the students to develop a scientific hypothesis about the tiers of the atmosphere, design and build a payload to test that hypothesis, and analyze the data that was collected. All of which culminate to the excitement of launching a large balloon to the edge of space. Projects can be in any STEM related topic, allowing the students to be creative. Past experiments have ranged from ozone detection, plant survivability, to microbes in the atmosphere. Through the success of this endeavor, the NDSGC provides the framework for other institutions to implement similar projects for STEM engagement in K-12 education related to high-altitude ballooning.