**Background**

The Superboom Caustic Analysis and Measurement Project (SCAMP) is a collaborative effort between Sonic Boom Research, Inc. and NASA Dryden Flight Research Center. This project aims to evaluate the effects of sonic booms on Earthquake Warning Systems in order to prevent such systems from experiencing false alarms due to sonic booms. The area of interest includes the Antelope Valley, California, and its surroundings, with a focus on the high-altitude far field and the Black Mountain Supersonic Corridor. This region is chosen due to its proximity to the Edwards Air Force Base and the Black Mountain Range.

NASA conducts regular sonic boom experiments in the vicinity of Edwards Air Force Base, and accelerometers were positioned to record during these experiments. The results from these experiments help to evaluate the effects of sonic booms on Earthquake Warning Systems. This project focuses on the response of the ground to the sonic boom.

**Surface Response to Pressure Wave**

Sonic booms generate pressure waves that propagate through the Earth's surface. The pressure waves can cause vibrations and displacements in the ground, which can be measured using accelerometers. In this experiment, four high-rate accelerometers were deployed in various array configurations. The data collected from these accelerometers helps to determine the best means for hardening an Earthquake Warning System against false positives from sonic booms.

**Superboom Caustic Analysis and Measurement Project**

The Superboom Caustic Analysis and Measurement Project (SCAMP) is a NASA project designed to characterize the spatial evolution of a sonic boom head wave (or caustic) along a 3 km array of microphones. The experiment was set up near the Cuddeback Dry Lake in the Antelope Valley, California. This project involves the deployment of four high-rate accelerometers on various sites around the Cuddeback Dry Lake. The accelerometers were deployed in various array configurations to monitor the response of the ground to the sonic boom.

**Surface Data**

The surface data collected during the experiment includes the acceleration recorded by the accelerometers. The data is integrated to obtain the displacement, and the frequency spectrum is calculated using the FFT algorithm. The figure below shows a record of a sonic boom recorded by a microphone and an accelerometer.

**Discussion**

The data collected during the experiment helps to evaluate the effects of sonic booms on Earthquake Warning Systems. The results from this experiment can be used to develop better algorithms for detecting and mitigating false positives due to sonic booms.

**Conclusions**

The results from this experiment demonstrate the potential of using sonic booms to improve Earthquake Warning Systems. The accelerometers deployed in various array configurations recorded high-frequency vibrations caused by the sonic boom, which can be used to trigger an alarm. The data collected during the experiment can be used to develop better algorithms for detecting and mitigating false positives due to sonic booms.

**References**


