



**CALIFORNIA SCIENCE & ENGINEERING FAIR
2018 PROJECT SUMMARY**

Name(s) Owen W. L'Heureux	Project Number 38427
Project Title The Effect of Wing Configuration on Pressure	
Abstract Objectives/Goals This project was an investigation of how different wing configurations affect the pressure measured on aircraft. Methods/Materials Using an engineering application called SimScale that performs computational fluid dynamics (CFD), I set up wind tunnel simulations for three wing configurations; straight, swept, and forward swept. I kept the same fuselage with the different wings attached. Each configuration was subjected to 80 m/s winds. Results The swept wing, as predicted, did have the least pressure, but unexpectedly the forward swept wing had the most. The average pressures on the combined wing and fuselage were: 134 psi for the straight wing, -69 psi for the swept wing, and 494 psi for the forward swept wing. Conclusions/Discussion This investigation contributes to science it because provides measurements of different wing configurations. Knowing exactly how much a wing changes flight characteristics can be important for aerospace engineering and maximizing the efficiency of an aircraft, and my project makes contributions towards this.	
Summary Statement I found that forward swept wings experience the most pressure and swept wings experience the least.	
Help Received The model and simulation were designed without external help and Dr. Warrick of the USGS assisted me in extracting the data.	