



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

<b>Name(s)</b> Owen W. L'Heureux	<b>Project Number</b> <b>J0113</b>
<b>Project Title</b> <b>The Effect of Wing Configuration on Pressure</b>	
<b>Abstract</b> <b>Objectives/Goals</b> This project was an investigation of how different wing configurations affect the pressure measured on aircraft. <b>Methods/Materials</b> 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. <b>Results</b> 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. <b>Conclusions/Discussion</b> 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.	
<b>Summary Statement</b> I found that forward swept wings experience the most pressure and swept wings experience the least.	
<b>Help Received</b> The model and simulation were designed without external help and Dr. Warrick of the USGS assisted me in extracting the data.	