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EFFECTS OF DIFFERENT ALTITUDE ON AN AIRCRAFT AND SUB ORBITAL FLIGHTS

Abstract

In year 2013 there were 37.4 million flight scheduled which makes it 1,02,465 flights per day! All these flight flies at an average altitude of 27,000 feet which means it has to undergo a huge change in temperature, pressure and oxygen levels. In this paper we deal with the effects of different altitudes on flight's aerodynamic parameters and propulsion efficiency for various kind of aircrafts such a propeller aircraft, turbo fan aircraft and turbo jet aircrafts. Latter in this paper we also try to create a MATLAB coding to estimate an optimal flight altitude for any kind of an aircraft between any two cities worldwide (Optimal flight altitude is one that uses least fuel for the flight to take place). Using such flight altitude will drastically reduce the consumption of aviation fuel worldwide and hence air travel cost. These results is then extrapolated for the inflight parameters for sub orbital flights. Here we consider two scenarios first when the sub orbital flight is released from an aircraft at an altitude and the second where flight takes off as a rocket or like an aircraft.