**QUESTIONS FOR MEETING**

1. Is there a considerable crosswind this simulation should calculate for?
2. What Graphs and Data is this simulation going to be useful for?
   1. Max G loading / turning radius
   2. Estimated lap completion time
   3. Speed profile
   4. Takeoff distance
3. Should I switch the model from spherical to cartesian coordinates?
   1. May be easier to implement wind factors

**ASSUMPTIONS OF CODE**

* No Wind
* Standard Atm
* Spherical coordinates
* Linear thrust model

**PROBLEMS**

Plane\_DBF

* Inconsistent equation for thrust (Line 64 & 93)
  + Looks like a linear approximation method
* Fix altitude calculations between Wichita and Tucson
* Inconsistent cruising altitude
* Stuck on flight\_phase = 1 (Report\_Graphs file ONLY)
  + Here’s a start, but it didn’t fix it completely. Someone used Wichita’s (1300) elevation when the code for flight\_phase = 1 was hard-coded for Tucson (2388+100)
  + You might have to update the plane’s altitude [x(7)] at the end of phase 0. And also adjust the desired altitude to what the altitude should be after its climb -chang

Anyway have fun with this. Let me know if there’s anything you want some help on, otherwise good luck have fun

**TO-DO**

* Combine Plane\_DBF and Plane\_DBF\_Report\_Graphs for simplicity
* Add more convenient user data input sections (top of code, use input(), etc.)
* Annotate “xs”

**SPECULATIVE TO-DO LIST**

* Implement a take-off distance flight\_phase
* Implement more accurate atmospheric data depending on location / time of year
* Implement wind

Plane\_DBF

* Possibly not vital to code / irrelevant results
* Confused about

**State Vector:**

x(1) = Time steps

x(2) = drop airspeed

x(3) = pitch angle

x(4) = flight path heading

x(5) = latitude

x(6) = longitude

x(7) = drop altitude \*\*\* Altitude relative to the ground

x(8) = mass

x(9) = heat

x(10) = thrust \*\*\* USES LINEAR APPROXIMATION

x(11) = thrust angle

x(12) = lift coefficient

x(13) = bank angle

x(14) = drag coefficient

x(15) = wing area

LINE 98 PLANE\_DBF() calls EOM\_DBF()

LINE 45 EOM\_DBF() calls STDATM()

* INPUT: Altitude
* OUTPUT: density, temperature, speed of sound