Simulation: James Webb Space Telescope

You have to create a model of the a three-body problem and apply it to the motion of JWST (Sun, Earth, and JWST) on a Halo Orbit at L2. You have to code up the equations of motion and simulate it for a year. You have to show the simulation results from various perspectives (Solar system, Earth-fixed, etc.). Focus on:

- understanding model assumptions, clearly stating these assumptions, and stating justification for making them
- figuring out the data you need and finding relevant information
- verification and validation of results
- collaboration - sharing of knowledge and information (but not report/code)

I have created a discussion topic for this assignment. I expect everyone to participate - you are free to talk about assumptions you are making, approach you are taking (e.g., reference frames and axis systems), data sources you are using (you can even post data/links in the discussion board), how you are validating/verifying you code, and how to create movies from simulation outputs. You cannot share your code or your report. The minimum deliverables are:

1. Movie(s) of the simulation embedded in the discussion
2. Report and code of the project submitted to this assignment

Feel free to do extra work ☺. For example:

1. Talk about and show via simulation the stability of a Halo orbit at L2
2. Talk about and simulate some part of the launch to orbit trajectory
3. Talk about and show via simulation some aspect of station keeping
4. Compare the simulations using two different reference frames (Sun-fixed inertial, Sun-Earth-L2 rotating frame)
5. Compare the simulations using two different axis systems (Cartesian, Polar)
6. Simulate the effect of relaxing an assumption