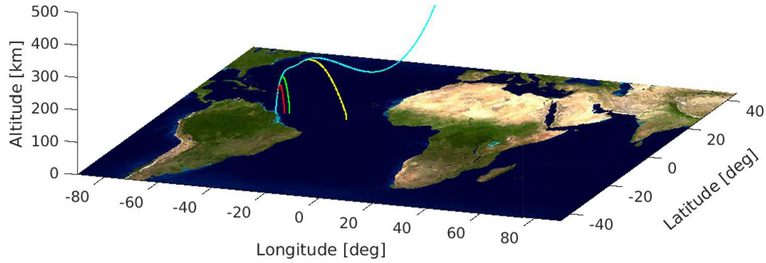
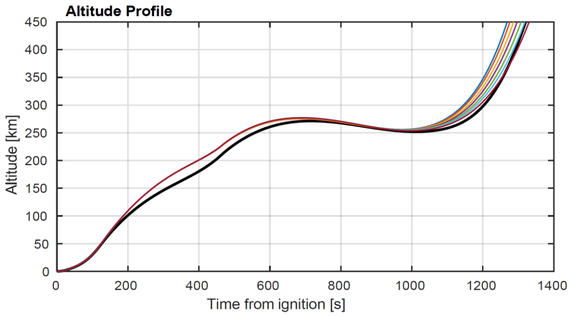
Master thesis at ESOC:
Launcher Ascent Optimization and Modelling

TECHNISCHE UNIVERSITÄT DARMSTADT

Background:

- Mission analysis at ESOC examines the feasibility of missions to unusual (e.g. interplanetary) orbits or with sensitive payloads (e.g. space telescopes, probes).
- Critical for a correct evaluation is the accurate modelling of the launcher performance and the optimization of the ascent trajectory.





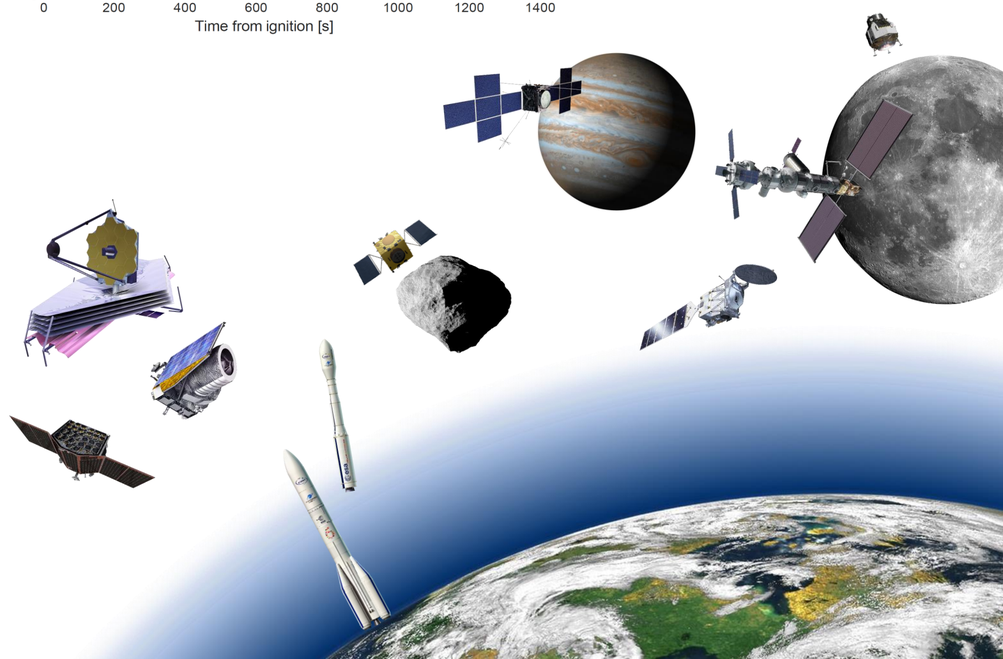
credit: ESA

Scope of this thesis:

- Extension and improvement of optimization algorithms for Ariane 6 launches
  - e.g. constraints regarding visibility to other satellites or ground-stations for flight safety considerations
  - improved convergence and speed by utilization of new optimization parameters
  - Modelling and implementation of attitude control and related constraints
- Development and calibration of a model of the new VEGA-C launcher
- Test and verification of the models with known ascent scenarios

Skillset:

- Interest and enthusiasm for space topics
- Knowledge in object-oriented programming
- Profound knowledge in astrodynamics and launch operations



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