

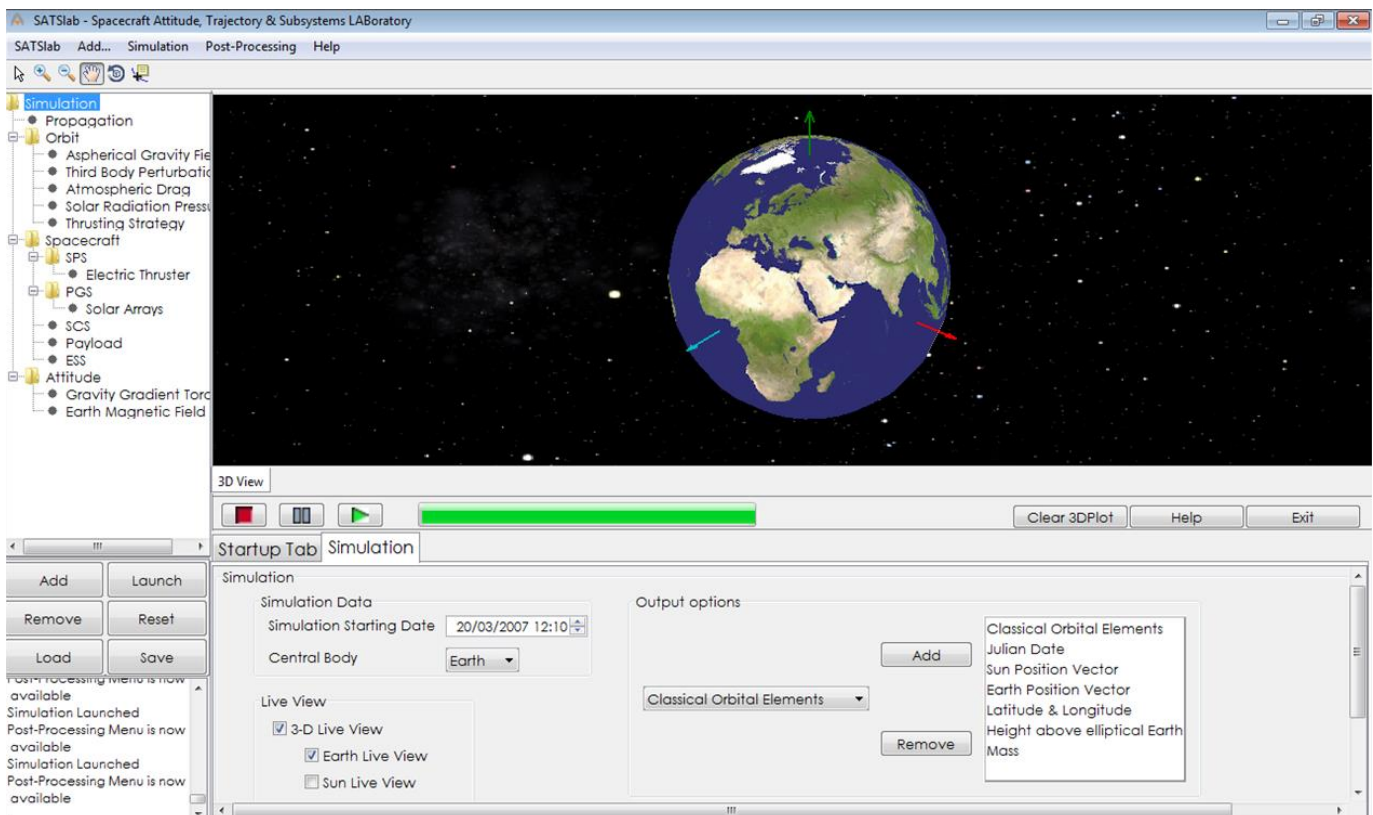


## SATSLab

### Spacecraft Attitude, Trajectory and Subsystems Laboratory

#### The dedicated solution for Electric Propulsion mission analysis

SATSLab is a cross-platform software suite developed to assist the analysis and design phases of low thrust space missions. The software sets itself apart from other space mission simulators for its unique combination of planetary/interplanetary trajectory propagation, attitude simulation, and spacecraft subsystem energy management, making it the ideal solution for accurate analysis of missions featuring electric propulsion.

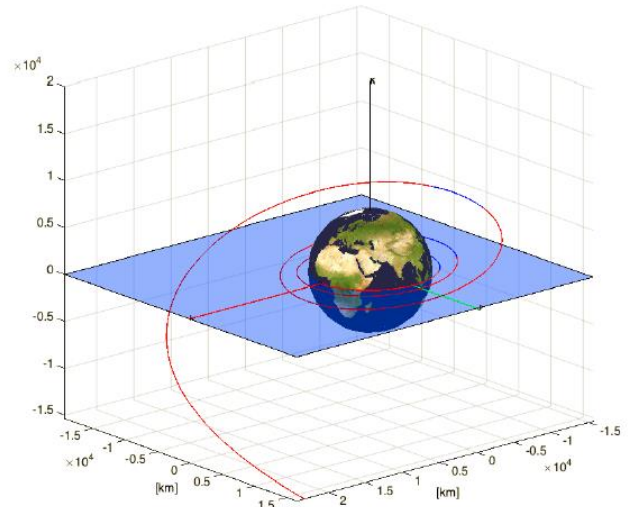


SATSLab is dedicated to the complete analysis of spacecraft status during low thrust missions, including the interplay of orbital and attitude dynamics and on-board power production and subsystem energy consumption. A variety of pre-defined thrusting strategies are implemented for quick assessment of mission profiles, with a full set of tunable parameters available for in-depth refinement. Subsystems (electric propulsion, power generation, power storage, telecommunications, payload) can be modeled at different levels of detail, allowing for preliminary analyses as well as refined spacecraft design. The telecommunication subsystem module is integrated with ground station visibility and link budgets functionalities.

## Technical Information

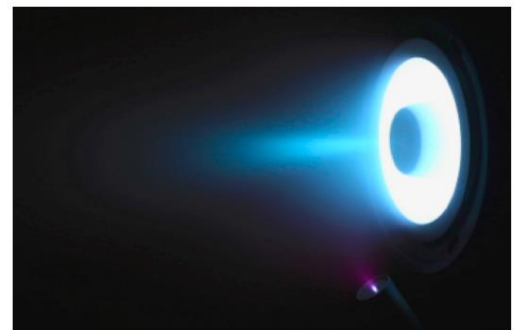
### Integration:

- Trajectory, attitude & subsystems state integration
- Various variable stepsize solvers
- Different stop conditions based on a specific spacecraft state
- Tunable integration settings, such as tolerances and maximum stepsize



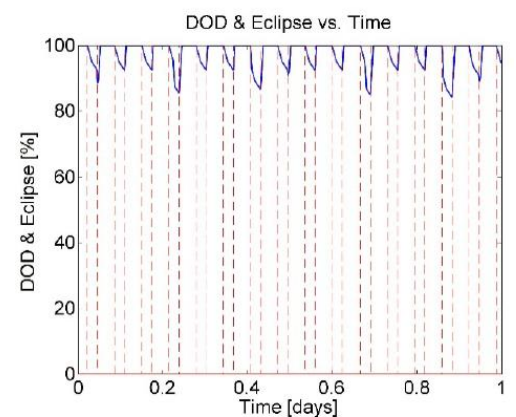
### Perturbations:

- J2 – J6 aspherical gravitational potential
- Sun, Moon and planetary third bodies
- Atmospheric drag
- Solar radiation pressure
- Planetary magnetic field



### Post – Processing:

- Data output in a set of pre-formatted graphs
- User-defined and real time plots
- Numerical data export
- Export to Celestia©



SATSLab has been developed in cooperation with University of Pisa, Department of Industrial and Civil Engineering (DICI, <http://www.dici.unipi.it/>)

**SITAEEL**

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