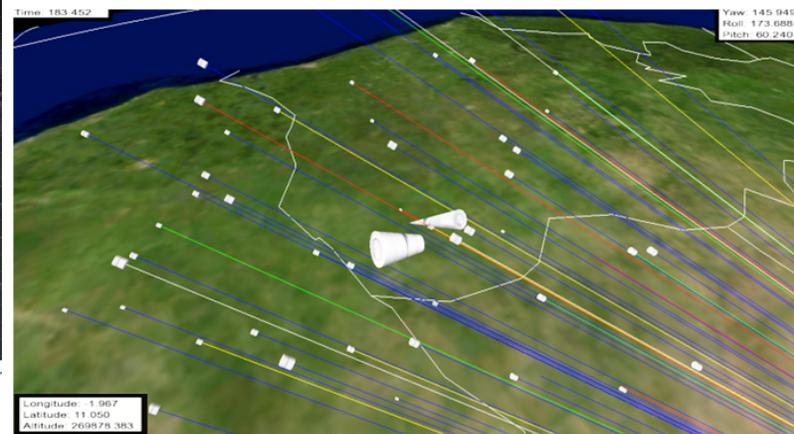




# TGx

## Trajectory Generator External



**Trajectory Generator External (TGx)** is produced by the Threat Modeling Center (TMC) to provide the Ballistic Missile Defense community with an easy-to-use desktop tool for the generation and analysis of high quality trajectory kinematic threat data. With TGx, the end user is able to generate trajectory data (e.g., timepoints, positions, velocities, orientations, and objects) in the user's choice of fidelity (6-DoF, 3+3-DoF, Fast 3-DoF) and in many of the commonly requested formats, including: TMSS High Resolution, SMHR, DICE, STK, JRAAC, TCS ASCII, TCS Binary, 14 Column, 17 Column, and user-defined delimited output. TGx uses the same missile models, physics engine, and environmental models as the TMC's Trajectory Generator, which is used to produce threat kinematic data for MDA test events.

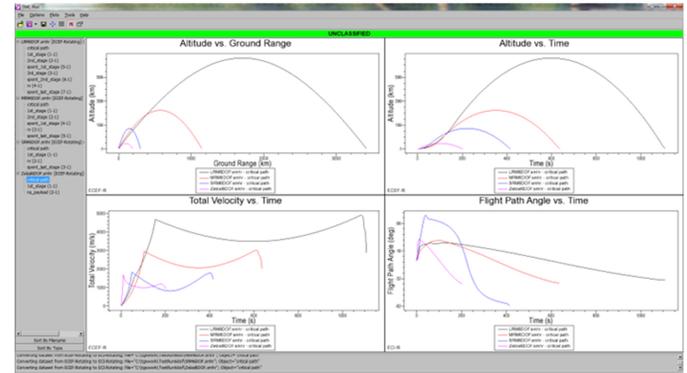
Additionally, TGx provides the end user with multiple tools for the analysis of trajectory data. Analysts are able to plot generated trajectory data in two-dimensions as well as observe object behaviors in a three-dimensional playback animation.

TGx maximizes flexibility by allowing the user to select parameters such as Earth Model, Rotation, Atmosphere, Gravity Model, Time Step, and Coordinate Frame, and provides data on Countermeasures, Launch & Separation Debris, Solid Fuel Chuffing, Parent/Child relationships, Event Flags, Thrust Conditions, Center of Gravity Offsets for all Objects, Post-Burnout Maneuvers, and many other parameters.

TMC missile models are built and baselined using assessments, specifications, and references provided by the Intelligence Community (NASIC, MSIC, ONI and NGIC) and MDA, and include the full spectrum of Ballistic Missiles - ICBMs, IRBMs, MRBMs, SRBMs, and SLBMs - and Rockets. Capabilities based missile models are based on specifications and references provided by MDA. These missile models are the same models used to represent threat systems in wargaming, training, analysis, and real-world events.

TGx allows the user to select individual objects for output viewing and specific data rates for those objects, and also has the ability to create footprints for multiple RV missile systems.

TGx allows the end-user to meet quick turn-around times for trajectory data generation, and has a GUI that is optimized for ease of use. TGx is currently supported on Windows® and Linux® platforms. A TGx Software Users Manual is included in the delivery, and in-depth training is available.



### TGx Features

- User-Friendly Interface
- Intelligence- & Capability-Based Missile Models
- Classified & Unclassified Missile Databases
- Graphing & Data Analysis
- Three Dimensional Trajectory Animation
- Two Dimensional Plotting
- Targeting Options
  - Graphical
  - Coordinate Entry
  - Range Azimuth
  - Table Format
- Community Standard Output Formats
- Batch Mode Processing
- Sensor Volume Visualization
- Multiple Scenario Definition Storage
- User Controlled Object Propagation
- Selectable Environment Parameters
  - Earth Models
  - Rotation
  - Atmosphere Models
  - Gravity Models
- Selectable Fidelity Mode (6-Dof, 3+3 Dof, Fast 3-Dof)
- Run Summary Output
- User Preferences

