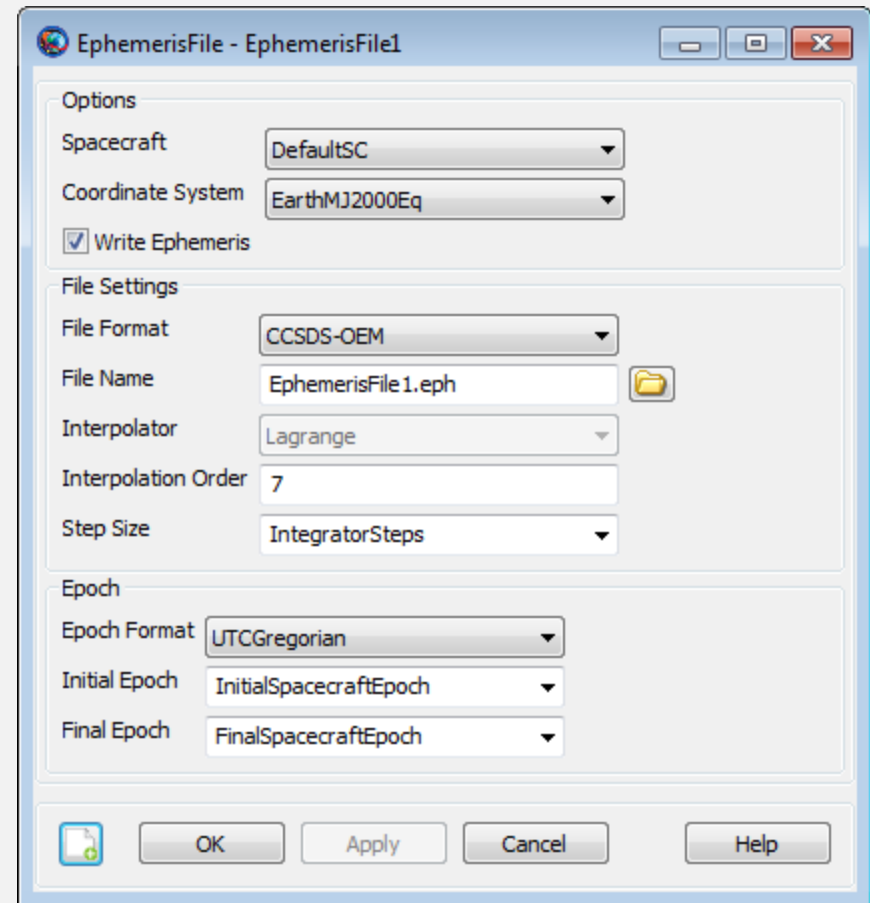
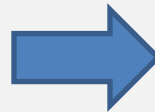
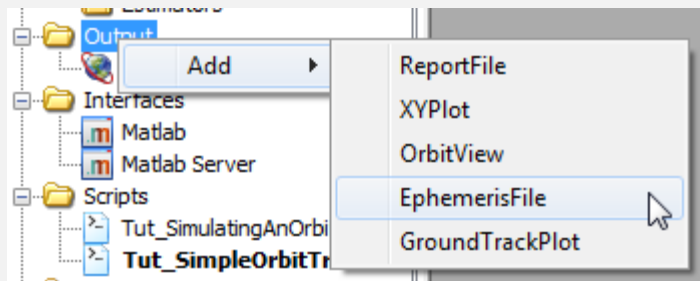


# Simple Orbit Transfer (extra exercises)

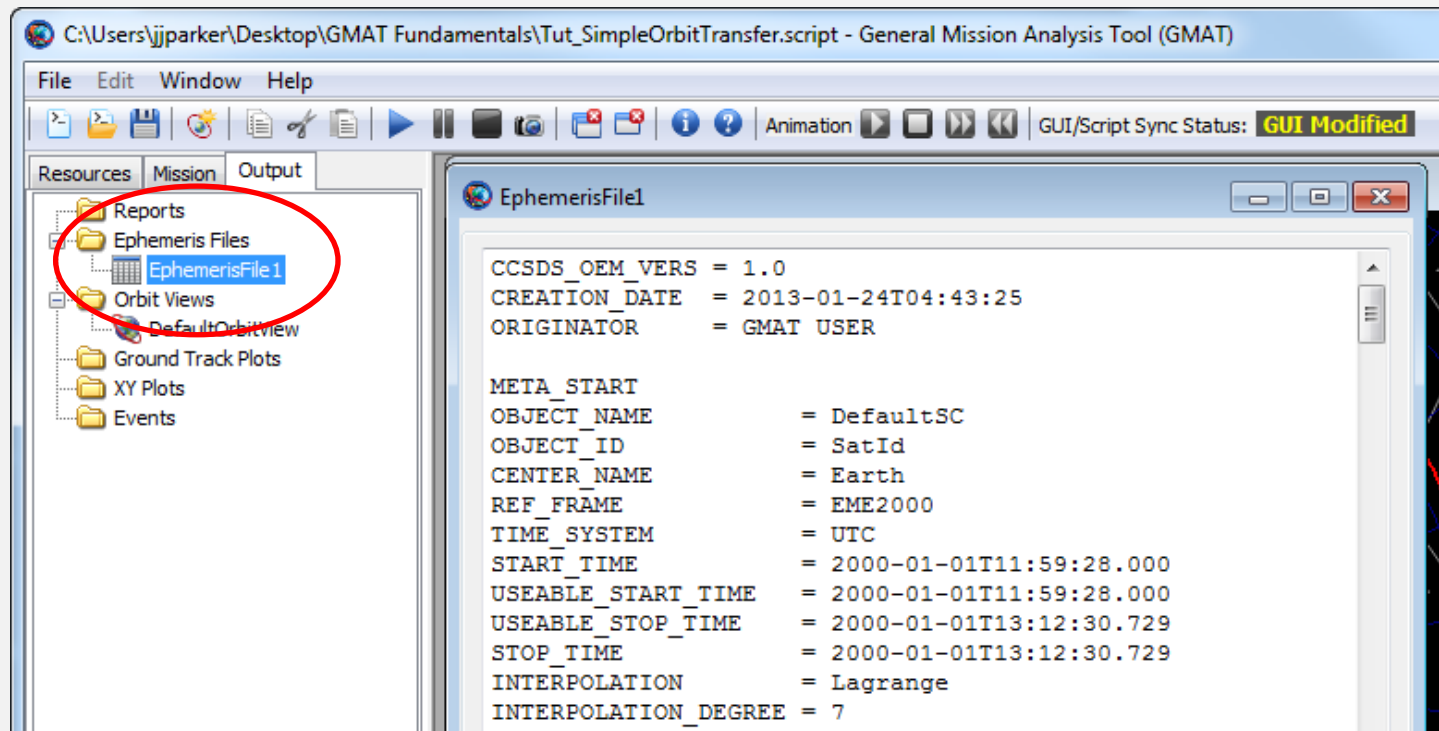
GMAT Fundamentals  
Joel Parker  
June 30, 2014

NASA Goddard Space Flight Center

# 1. Write Ephemeris File

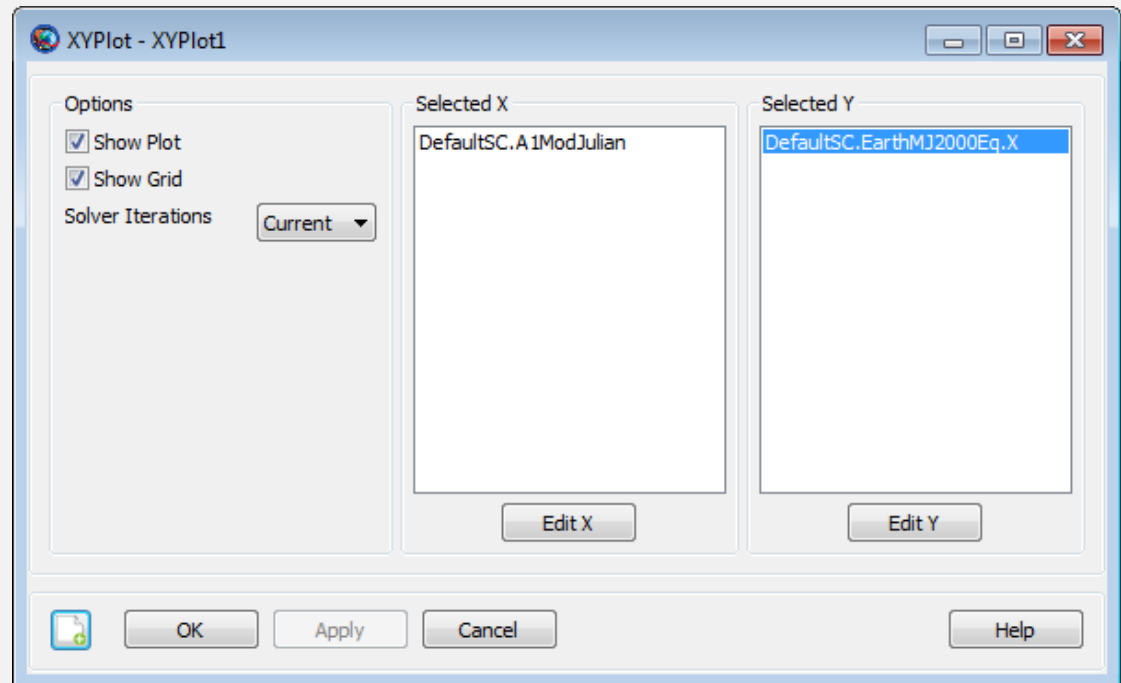
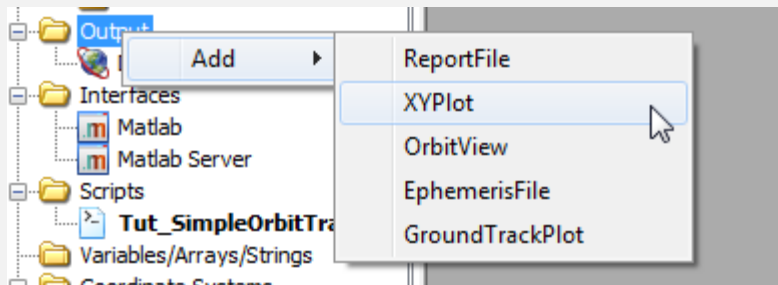


# 1. Write Ephemeris File

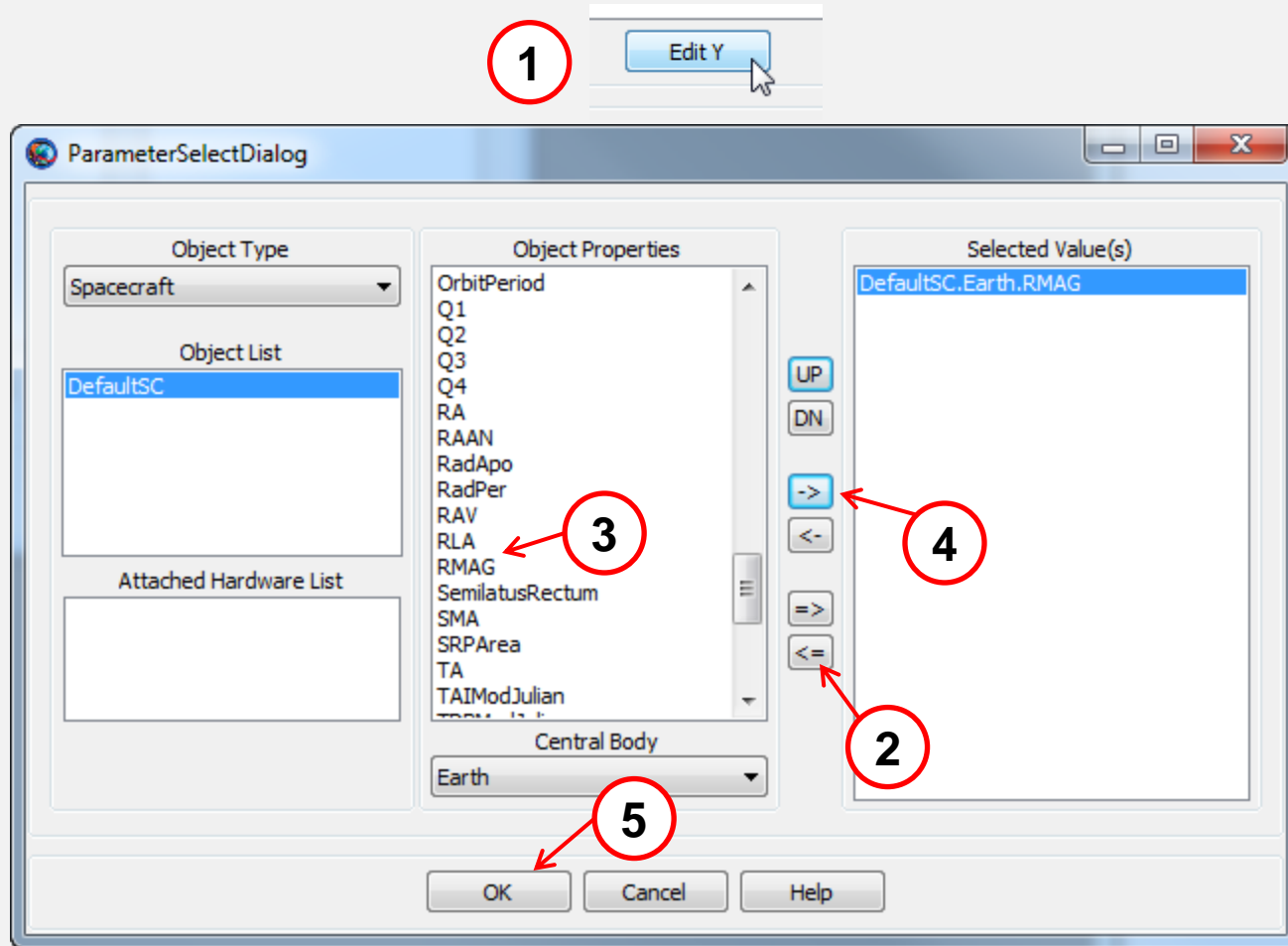


```
Create EphemerisFile EphemerisFile1
EphemerisFile1.Spacecraft = DefaultSC
EphemerisFile1.FileFormat = CCSDS-OEM
```

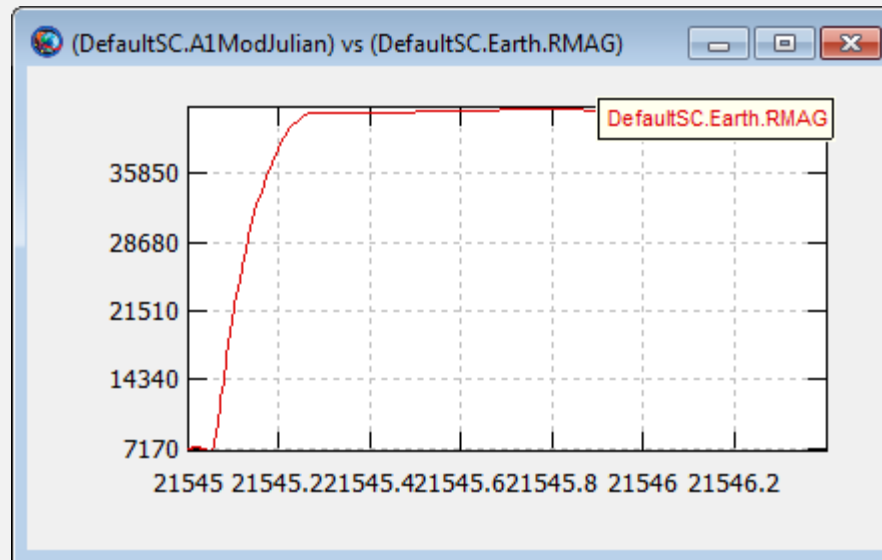
## 2. Create Plot



## 2. Create Plot

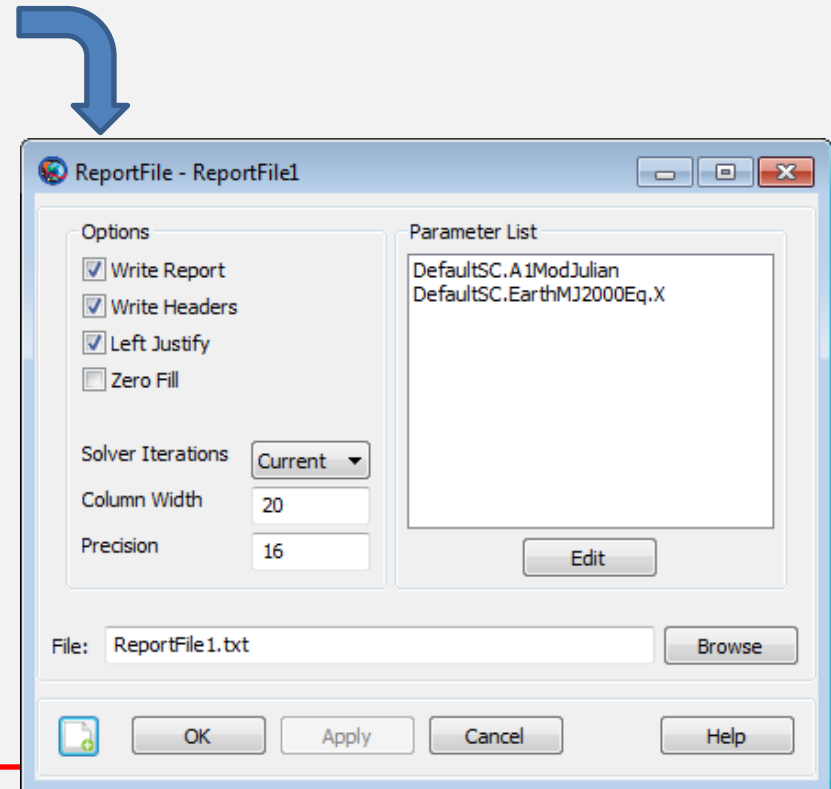
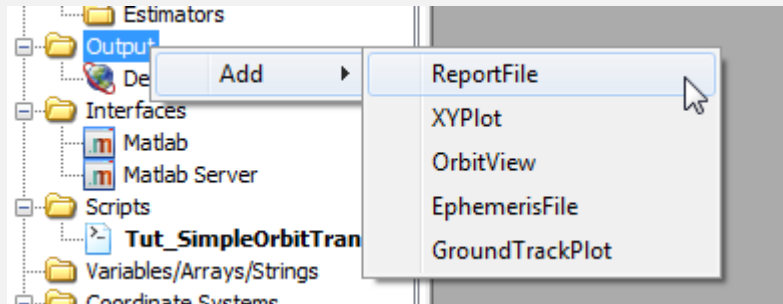


## 2. Create Plot

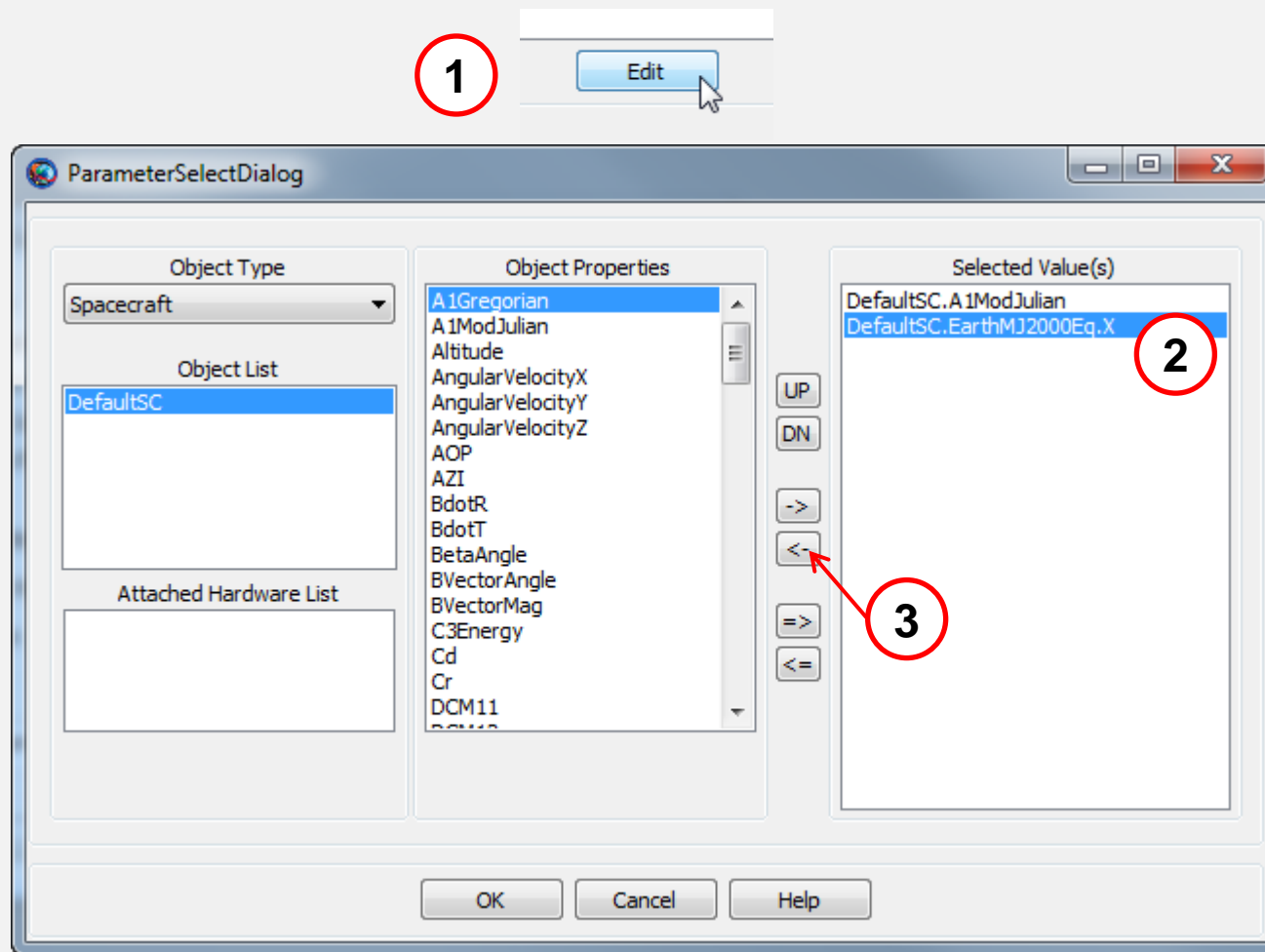


```
Create XYPlot XYPlot1
XYPlot1.XVariable = DefaultSC.A1ModJulian
XYPlot1.YVariables = {DefaultSC.Earth.RMAG}
```

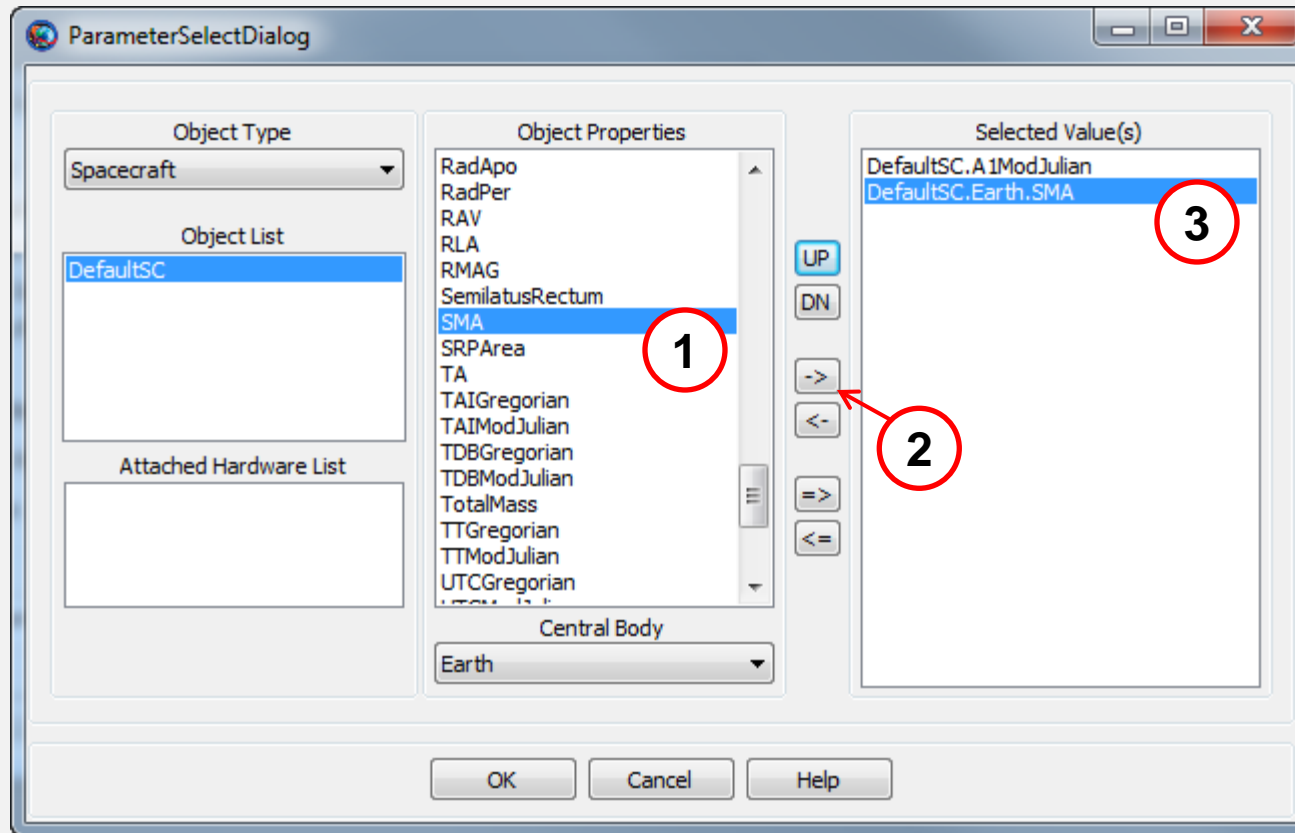
# 3. Create Propagation Report



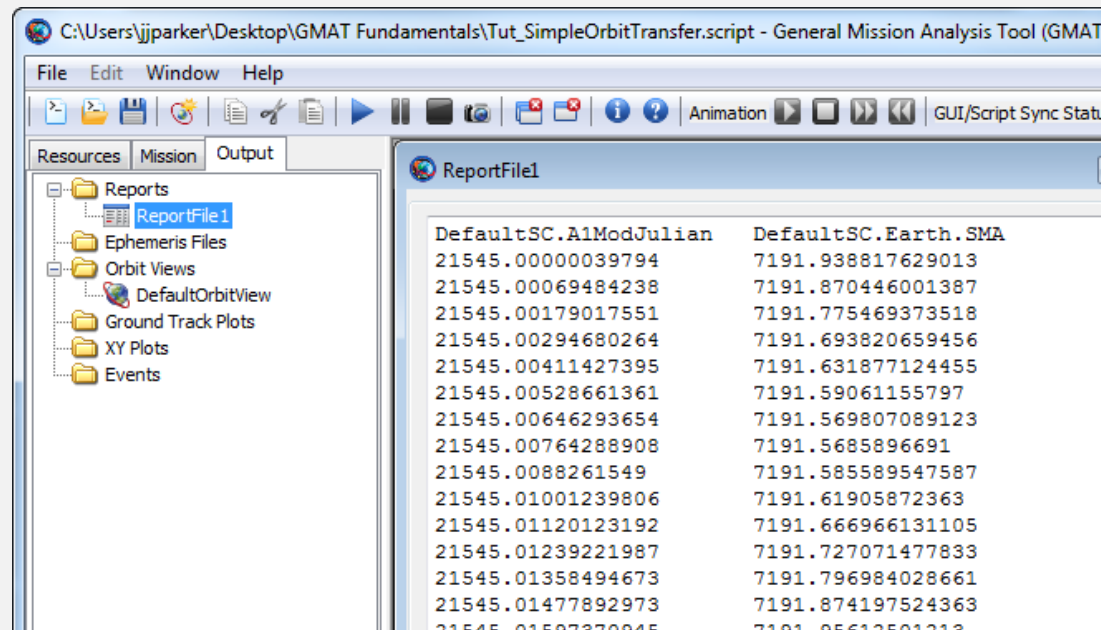
# 3. Create Propagation Report



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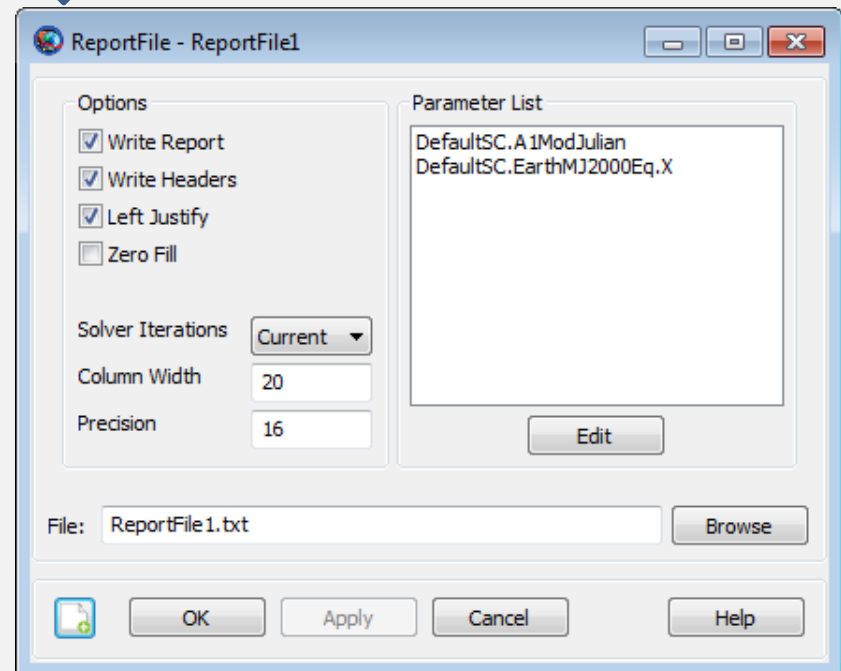
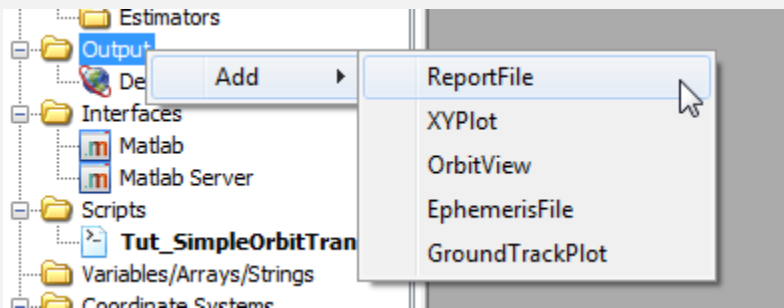


# 3. Create Propagation Report

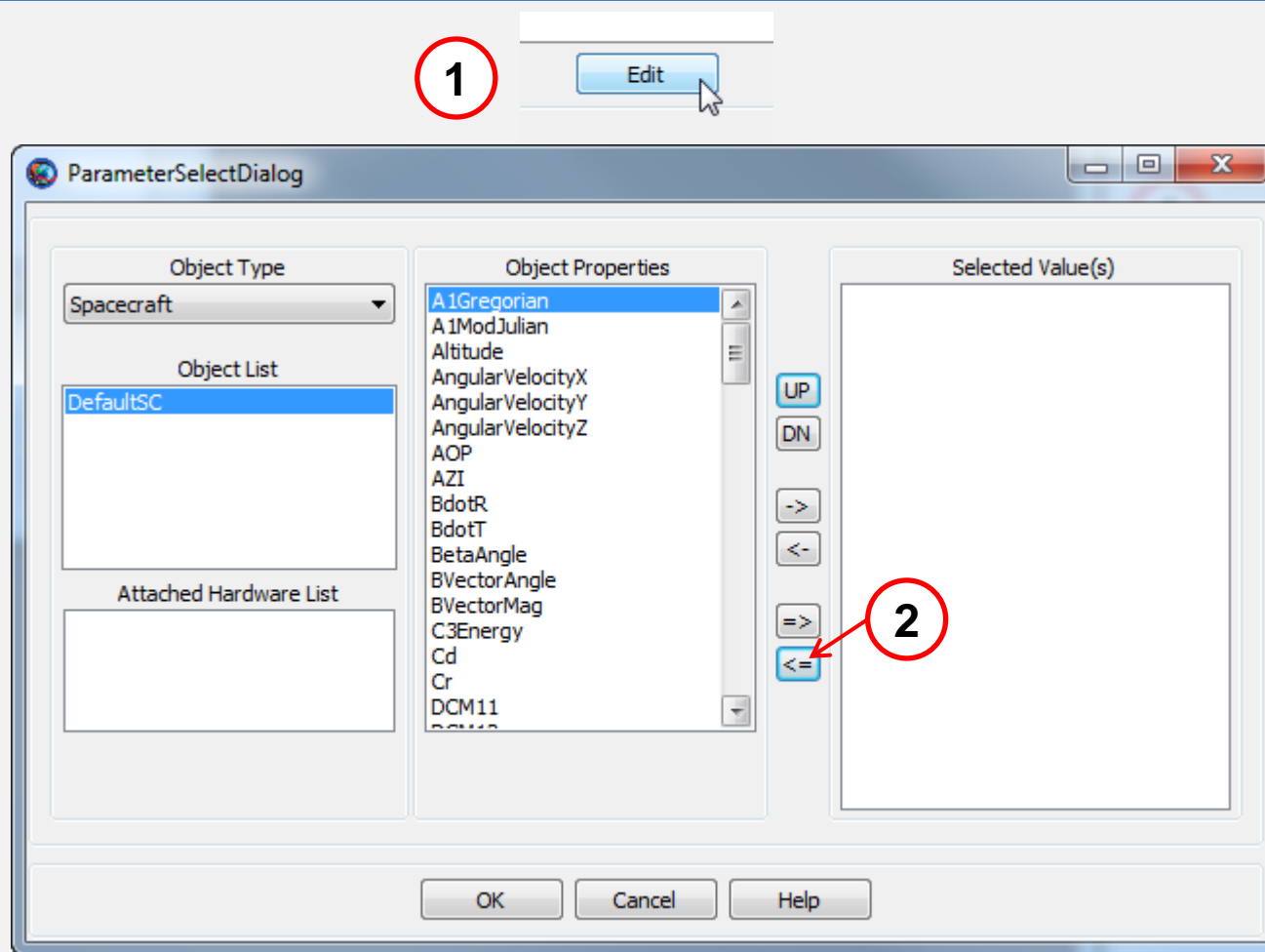


```
Create ReportFile ReportFile1
ReportFile1.Add = {DefaultSC.A1ModJulian, DefaultSC.Earth.SMA}
```

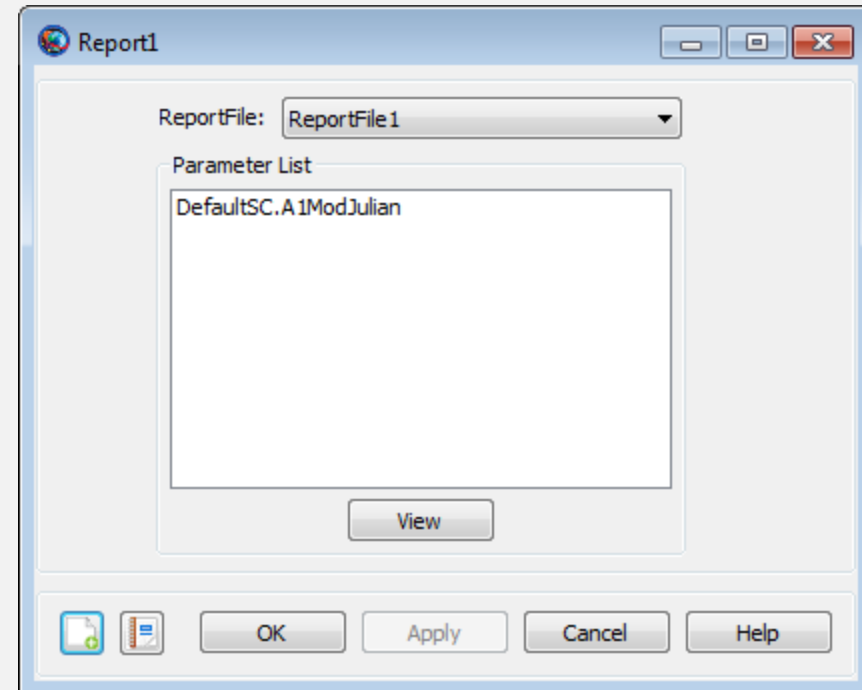
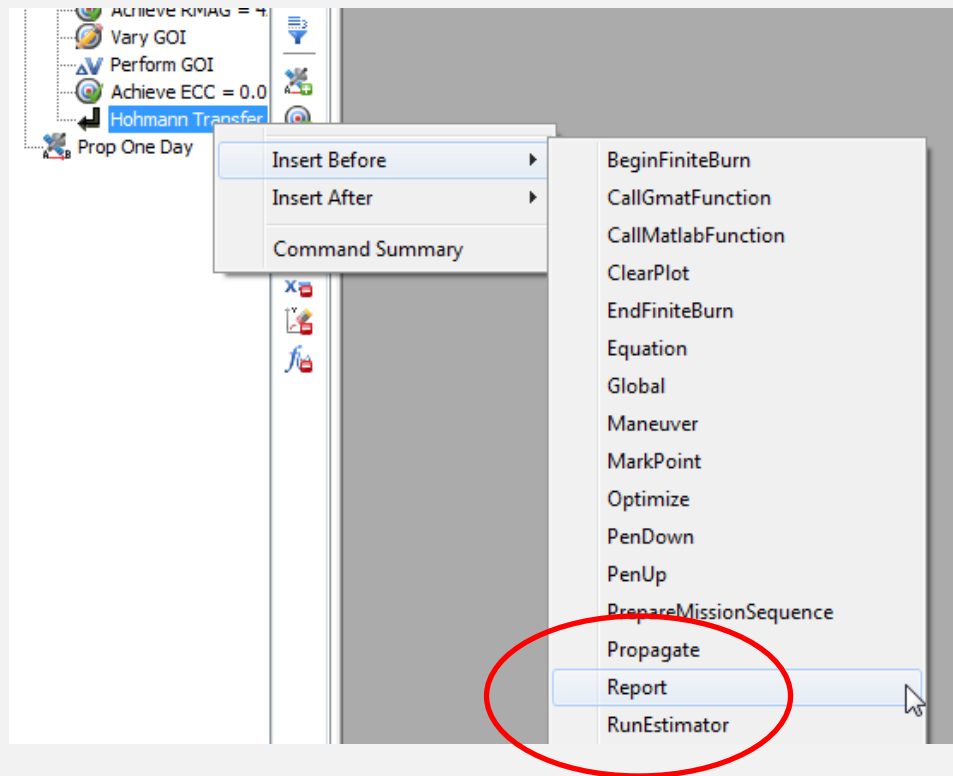
# 4. Report Values



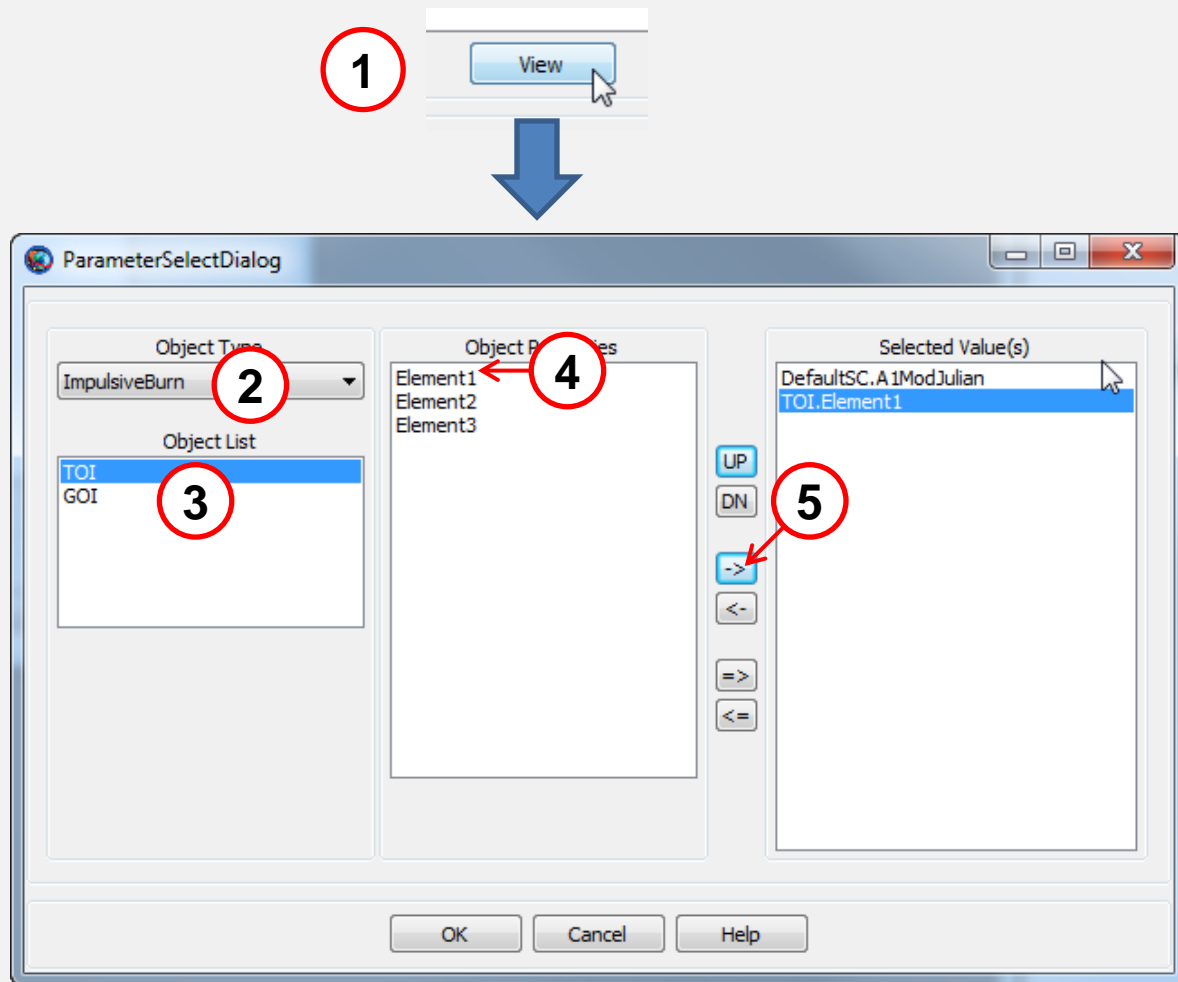
# 4. Report Values



# 4. Report Values

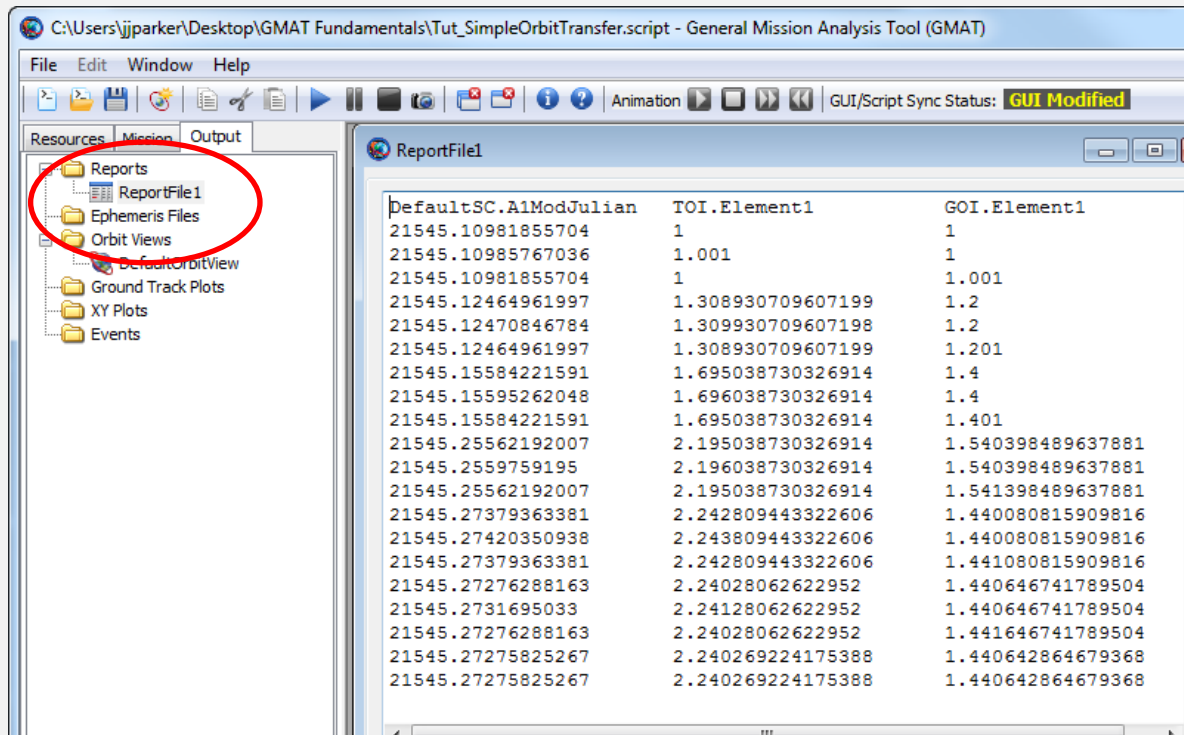


# 4. Report Values



**6** Perform same steps to add GOI.Element1.

# 4. Report Values



Create ReportFile ReportFile1

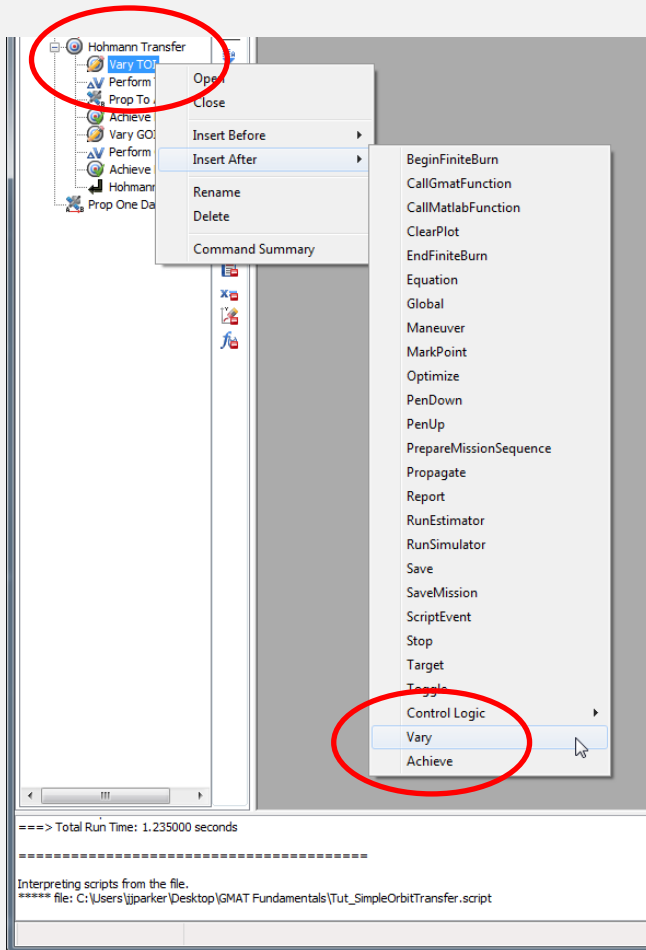
% ...

BeginMissionSequence

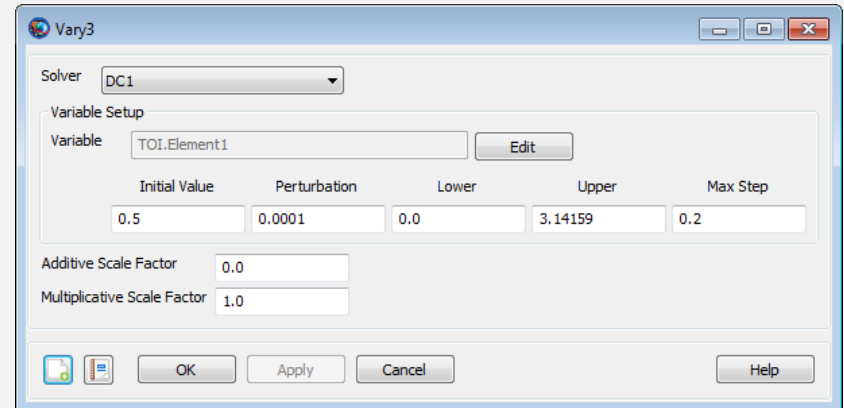
% ...

Report ReportFile1 DefaultSC.A1ModJulian TOI.Element1 GOI.Element1

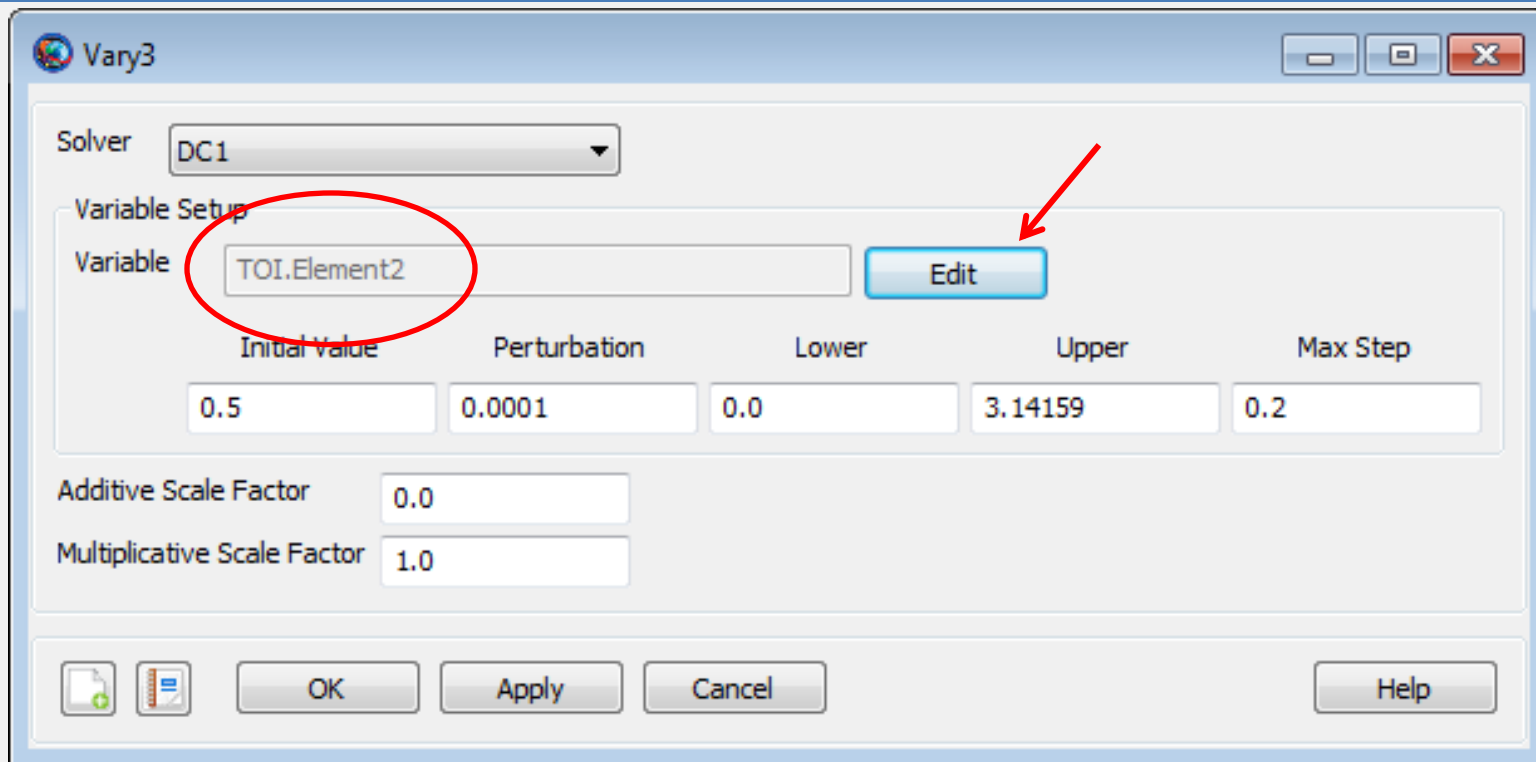
# 5. Target Inclination



Open new **Vary3**:



# 5. Target Inclination

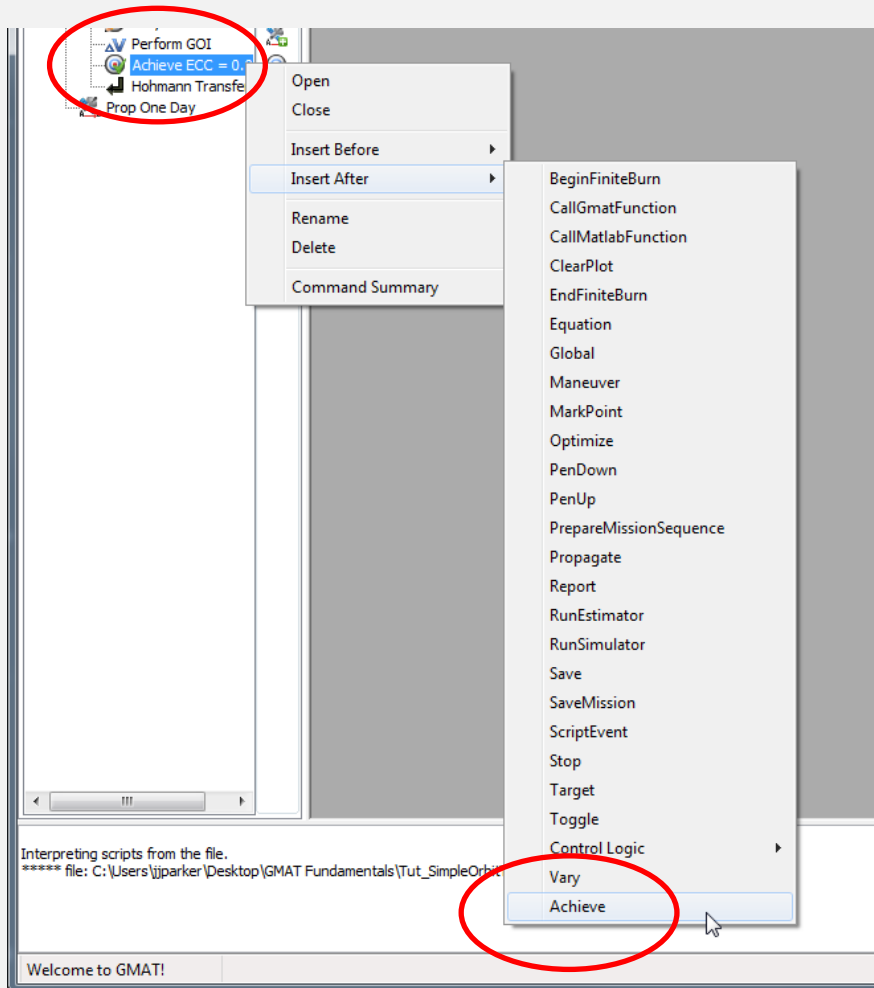


The screenshot shows the 'Vary3' dialog box with the following configuration:

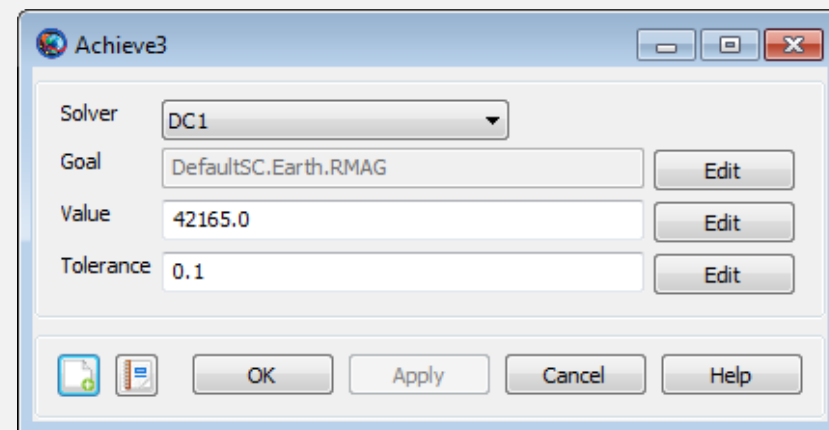
- Solver:** DC1
- Variable Setup:**
  - Variable:** TOI.Element2 (highlighted with a red circle)
  - Edit:** (button with a red arrow pointing to it)
- Initial Value:** 0.5
- Perturbation:** 0.0001
- Lower:** 0.0
- Upper:** 3.14159
- Max Step:** 0.2
- Additive Scale Factor:** 0.0
- Multiplicative Scale Factor:** 1.0

At the bottom, there are icons for file operations and buttons for OK, Apply, Cancel, and Help.

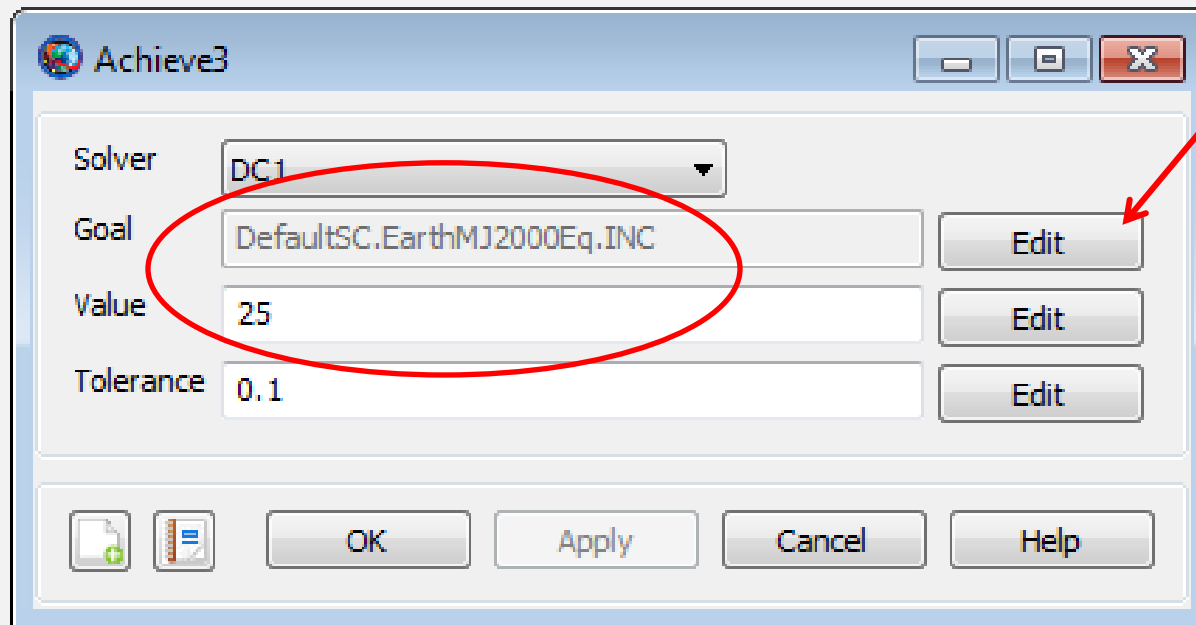
# 5. Target Inclination



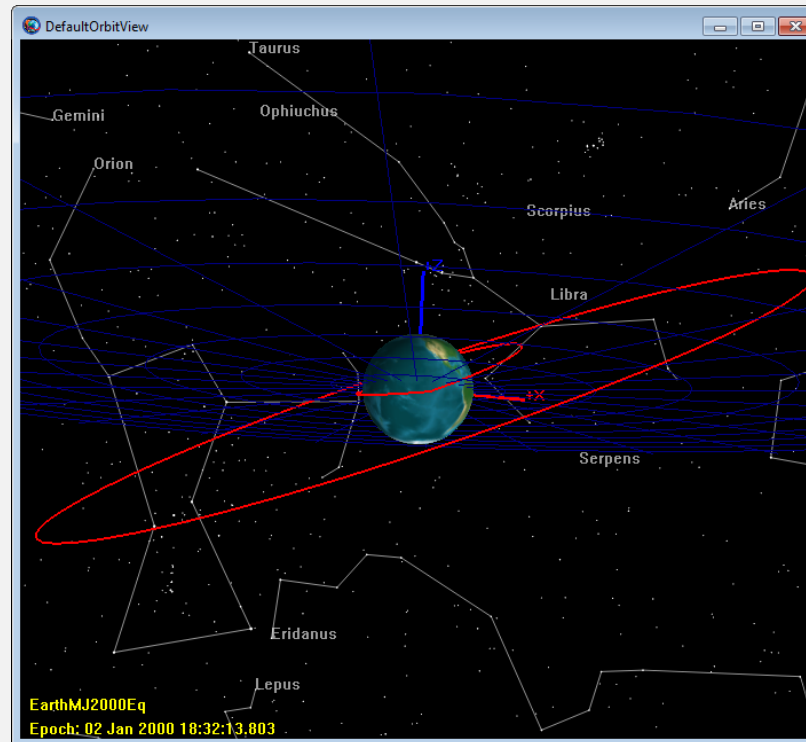
Open new **Achieve3**:



# 5. Target Inclination



# 5. Target Inclination



```
Vary DC1(TOI.Element2 = 0.5)
```

```
% ...
```

```
Achieve DC1(DefaultSC.EarthMJ2000Eq.INC = 25)
```