

PlanetModel

5.1

Generated by Doxygen 1.8.5

Mon Jul 31 2023 11:42:58



# Contents

<b>1</b>	<b>Module Index</b>	<b>1</b>
1.1	Modules . . . . .	1
<b>2</b>	<b>Namespace Index</b>	<b>3</b>
2.1	Namespace List . . . . .	3
<b>3</b>	<b>Hierarchical Index</b>	<b>5</b>
3.1	Class Hierarchy . . . . .	5
<b>4</b>	<b>Data Structure Index</b>	<b>7</b>
4.1	Data Structures . . . . .	7
<b>5</b>	<b>File Index</b>	<b>9</b>
5.1	File List . . . . .	9
<b>6</b>	<b>Module Documentation</b>	<b>11</b>
6.1	Models . . . . .	11
6.1.1	Detailed Description . . . . .	11
6.2	Environment . . . . .	12
6.2.1	Detailed Description . . . . .	12
6.3	Planet . . . . .	13
6.3.1	Detailed Description . . . . .	13
6.3.2	Macro Definition Documentation . . . . .	13
6.3.2.1	PATH . . . . .	13
<b>7</b>	<b>Namespace Documentation</b>	<b>15</b>
7.1	jeod Namespace Reference . . . . .	15
7.1.1	Detailed Description . . . . .	15
<b>8</b>	<b>Data Structure Documentation</b>	<b>17</b>
8.1	jeod::BasePlanet Class Reference . . . . .	17
8.1.1	Detailed Description . . . . .	18
8.1.2	Constructor & Destructor Documentation . . . . .	18
8.1.2.1	BasePlanet . . . . .	18

8.1.2.2	<a href="#">~BasePlanet</a>	19
8.1.2.3	<a href="#">BasePlanet</a>	19
8.1.3	<a href="#">Member Function Documentation</a>	19
8.1.3.1	<a href="#">calculate_alt_pfix</a>	19
8.1.3.2	<a href="#">operator=</a>	19
8.1.3.3	<a href="#">register_planet</a>	19
8.1.3.4	<a href="#">set_alt_inertial</a>	19
8.1.3.5	<a href="#">set_alt_inertial</a>	19
8.1.3.6	<a href="#">set_alt_pfix</a>	20
8.1.3.7	<a href="#">set_name</a>	20
8.1.4	<a href="#">Friends And Related Function Documentation</a>	20
8.1.4.1	<a href="#">init_attrjeod__BasePlanet</a>	20
8.1.4.2	<a href="#">InputProcessor</a>	20
8.1.5	<a href="#">Field Documentation</a>	20
8.1.5.1	<a href="#">alt_inertial</a>	20
8.1.5.2	<a href="#">alt_inertial_set</a>	21
8.1.5.3	<a href="#">alt_pfix</a>	21
8.1.5.4	<a href="#">alt_pfix_set</a>	21
8.1.5.5	<a href="#">alt_pfix_transform</a>	21
8.1.5.6	<a href="#">grav_source</a>	21
8.1.5.7	<a href="#">inertial</a>	21
8.1.5.8	<a href="#">name</a>	21
8.1.5.9	<a href="#">pfix</a>	22
8.2	<a href="#">jeod::Planet Class Reference</a>	22
8.2.1	<a href="#">Detailed Description</a>	23
8.2.2	<a href="#">Constructor &amp; Destructor Documentation</a>	23
8.2.2.1	<a href="#">Planet</a>	23
8.2.2.2	<a href="#">~Planet</a>	23
8.2.2.3	<a href="#">Planet</a>	23
8.2.3	<a href="#">Member Function Documentation</a>	23
8.2.3.1	<a href="#">initialize</a>	23
8.2.3.2	<a href="#">operator=</a>	24
8.2.3.3	<a href="#">register_model</a>	24
8.2.4	<a href="#">Friends And Related Function Documentation</a>	24
8.2.4.1	<a href="#">init_attrjeod__Planet</a>	24
8.2.4.2	<a href="#">InputProcessor</a>	24
8.2.5	<a href="#">Field Documentation</a>	24
8.2.5.1	<a href="#">e_ellip_sq</a>	24
8.2.5.2	<a href="#">e_ellipsoid</a>	24
8.2.5.3	<a href="#">flat_coeff</a>	24

8.2.5.4	<a href="#">flat_inv</a>	25
8.2.5.5	<a href="#">r_eq</a>	25
8.2.5.6	<a href="#">r_pol</a>	25
8.3	<a href="#">jeod::Planet_default_data Class Reference</a>	25
8.3.1	<a href="#">Detailed Description</a>	25
8.3.2	<a href="#">Constructor &amp; Destructor Documentation</a>	26
8.3.2.1	<a href="#">~Planet_default_data</a>	26
8.3.3	<a href="#">Member Function Documentation</a>	26
8.3.3.1	<a href="#">initialize</a>	26
8.4	<a href="#">jeod::Planet_earth_default_data Class Reference</a>	26
8.4.1	<a href="#">Detailed Description</a>	26
8.4.2	<a href="#">Member Function Documentation</a>	26
8.4.2.1	<a href="#">initialize</a>	26
8.5	<a href="#">jeod::Planet_jupiter_default_data Class Reference</a>	27
8.5.1	<a href="#">Detailed Description</a>	27
8.5.2	<a href="#">Member Function Documentation</a>	27
8.5.2.1	<a href="#">initialize</a>	27
8.6	<a href="#">jeod::Planet_mars_default_data Class Reference</a>	27
8.6.1	<a href="#">Detailed Description</a>	27
8.6.2	<a href="#">Member Function Documentation</a>	28
8.6.2.1	<a href="#">initialize</a>	28
8.7	<a href="#">jeod::Planet_moon_default_data Class Reference</a>	28
8.7.1	<a href="#">Detailed Description</a>	28
8.7.2	<a href="#">Member Function Documentation</a>	28
8.7.2.1	<a href="#">initialize</a>	28
8.8	<a href="#">jeod::Planet_sun_default_data Class Reference</a>	28
8.8.1	<a href="#">Detailed Description</a>	29
8.8.2	<a href="#">Member Function Documentation</a>	29
8.8.2.1	<a href="#">initialize</a>	29
8.9	<a href="#">jeod::PlanetMessages Class Reference</a>	29
8.9.1	<a href="#">Detailed Description</a>	30
8.9.2	<a href="#">Constructor &amp; Destructor Documentation</a>	30
8.9.2.1	<a href="#">PlanetMessages</a>	30
8.9.2.2	<a href="#">PlanetMessages</a>	30
8.9.3	<a href="#">Member Function Documentation</a>	30
8.9.3.1	<a href="#">operator=</a>	30
8.9.4	<a href="#">Friends And Related Function Documentation</a>	30
8.9.4.1	<a href="#">init_attrjeod__PlanetMessages</a>	30
8.9.4.2	<a href="#">InputProcessor</a>	30
8.9.5	<a href="#">Field Documentation</a>	30

8.9.5.1	domain_error . . . . .	30
8.9.5.2	name_error . . . . .	30
8.9.5.3	registration_error . . . . .	30
<b>9</b>	<b>File Documentation</b>	<b>33</b>
9.1	base_planet.cc File Reference . . . . .	33
9.1.1	Detailed Description . . . . .	33
9.2	base_planet.hh File Reference . . . . .	33
9.2.1	Detailed Description . . . . .	34
9.3	class_declarations.hh File Reference . . . . .	34
9.3.1	Detailed Description . . . . .	34
9.4	earth.cc File Reference . . . . .	34
9.4.1	Macro Definition Documentation . . . . .	35
9.4.1.1	JEOD_FRIEND_CLASS . . . . .	35
9.5	earth.hh File Reference . . . . .	35
9.6	jupiter.cc File Reference . . . . .	35
9.6.1	Macro Definition Documentation . . . . .	35
9.6.1.1	JEOD_FRIEND_CLASS . . . . .	35
9.7	jupiter.hh File Reference . . . . .	35
9.8	mars.cc File Reference . . . . .	36
9.8.1	Macro Definition Documentation . . . . .	36
9.8.1.1	JEOD_FRIEND_CLASS . . . . .	36
9.9	mars.hh File Reference . . . . .	36
9.10	moon.cc File Reference . . . . .	37
9.10.1	Macro Definition Documentation . . . . .	37
9.10.1.1	JEOD_FRIEND_CLASS . . . . .	37
9.11	moon.hh File Reference . . . . .	37
9.12	planet.cc File Reference . . . . .	37
9.12.1	Detailed Description . . . . .	38
9.13	planet.hh File Reference . . . . .	38
9.13.1	Detailed Description . . . . .	38
9.14	planet_default_data.hh File Reference . . . . .	38
9.15	planet_messages.cc File Reference . . . . .	39
9.15.1	Detailed Description . . . . .	39
9.16	planet_messages.hh File Reference . . . . .	39
9.16.1	Detailed Description . . . . .	39
9.17	sun.cc File Reference . . . . .	39
9.17.1	Macro Definition Documentation . . . . .	40
9.17.1.1	JEOD_FRIEND_CLASS . . . . .	40
9.18	sun.hh File Reference . . . . .	40

**[Index](#)****41**





# Chapter 1

## Module Index

### 1.1 Modules

Here is a list of all modules:

Models . . . . .	11
Environment . . . . .	12
Planet . . . . .	13



## Chapter 2

# Namespace Index

### 2.1 Namespace List

Here is a list of all namespaces with brief descriptions:

<a href="#">jeod</a>	Namespace jeod . . . . .	15
----------------------	--------------------------	----



## Chapter 3

# Hierarchical Index

### 3.1 Class Hierarchy

This inheritance list is sorted roughly, but not completely, alphabetically:

jeod::BasePlanet . . . . .	17
jeod::Planet . . . . .	22
jeod::Planet_default_data . . . . .	25
jeod::Planet_earth_default_data . . . . .	26
jeod::Planet_jupiter_default_data . . . . .	27
jeod::Planet_mars_default_data . . . . .	27
jeod::Planet_moon_default_data . . . . .	28
jeod::Planet_sun_default_data . . . . .	28
jeod::PlanetMessages . . . . .	29



## Chapter 4

# Data Structure Index

### 4.1 Data Structures

Here are the data structures with brief descriptions:

<a href="#">jeod::BasePlanet</a>	
A <a href="#">BasePlanet</a> contains the base data needed to model a planet in JEOD . . . . .	17
<a href="#">jeod::Planet</a>	
Describes a planet with mass and shape . . . . .	22
<a href="#">jeod::Planet_default_data</a> . . . . .	25
<a href="#">jeod::Planet_earth_default_data</a> . . . . .	26
<a href="#">jeod::Planet_jupiter_default_data</a> . . . . .	27
<a href="#">jeod::Planet_mars_default_data</a> . . . . .	27
<a href="#">jeod::Planet_moon_default_data</a> . . . . .	28
<a href="#">jeod::Planet_sun_default_data</a> . . . . .	28
<a href="#">jeod::PlanetMessages</a>	
Specifies the message IDs used in the planet model . . . . .	29





## Chapter 5

# File Index

### 5.1 File List

Here is a list of all files with brief descriptions:

<a href="#">base_planet.cc</a>		
	Planet modeling class methods . . . . .	33
<a href="#">base_planet.hh</a>		
	Define the class BasePlanet . . . . .	33
<a href="#">class_declarations.hh</a>		
	Forward declaration of classes defined in the planet model . . . . .	34
<a href="#">earth.cc</a>		34
<a href="#">earth.hh</a>		35
<a href="#">jupiter.cc</a>		35
<a href="#">jupiter.hh</a>		35
<a href="#">mars.cc</a>		36
<a href="#">mars.hh</a>		36
<a href="#">moon.cc</a>		37
<a href="#">moon.hh</a>		37
<a href="#">planet.cc</a>		
	Planet modeling class methods . . . . .	37
<a href="#">planet.hh</a>		
	Planetary modeling constant parameter definitions . . . . .	38
<a href="#">planet_default_data.hh</a>		38
<a href="#">planet_messages.cc</a>		
	Implement the class PlanetMessages . . . . .	39
<a href="#">planet_messages.hh</a>		
	Define the class PlanetMessages, the class that specifies the message IDs used in the planet model . . . . .	39
<a href="#">sun.cc</a>		39
<a href="#">sun.hh</a>		40



## Chapter 6

# Module Documentation

### 6.1 Models

#### Modules

- [Environment](#)

#### 6.1.1 Detailed Description

## 6.2 Environment

### Modules

- [Planet](#)

### 6.2.1 Detailed Description

## 6.3 Planet

### Files

- file [base\\_planet.hh](#)  
*Define the class BasePlanet.*
- file [class\\_declarations.hh](#)  
*Forward declaration of classes defined in the planet model.*
- file [planet.hh](#)  
*Planetary modeling constant parameter definitions.*
- file [planet\\_messages.hh](#)  
*Define the class PlanetMessages, the class that specifies the message IDs used in the planet model.*
- file [base\\_planet.cc](#)  
*Planet modeling class methods.*
- file [planet.cc](#)  
*Planet modeling class methods.*
- file [planet\\_messages.cc](#)  
*Implement the class PlanetMessages.*

### Namespaces

- [jeod](#)  
*Namespace jeod.*

### Macros

- `#define` [PATH](#) "environment/planet/"

#### 6.3.1 Detailed Description

#### 6.3.2 Macro Definition Documentation

##### 6.3.2.1 `#define` [PATH](#) "environment/planet/"

Definition at line 37 of file planet\_messages.cc.



## Chapter 7

# Namespace Documentation

### 7.1 jeod Namespace Reference

Namespace jeod.

#### Data Structures

- class [Planet\\_earth\\_default\\_data](#)
- class [Planet\\_jupiter\\_default\\_data](#)
- class [Planet\\_mars\\_default\\_data](#)
- class [Planet\\_moon\\_default\\_data](#)
- class [Planet\\_default\\_data](#)
- class [Planet\\_sun\\_default\\_data](#)
- class [BasePlanet](#)

*A [BasePlanet](#) contains the base data needed to model a planet in JEOD.*

- class [Planet](#)

*Describes a planet with mass and shape.*

- class [PlanetMessages](#)

*Specifies the message IDs used in the planet model.*

#### 7.1.1 Detailed Description

Namespace jeod.





## Chapter 8

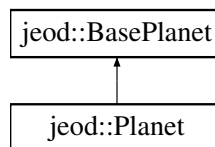
# Data Structure Documentation

### 8.1 jeod::BasePlanet Class Reference

A [BasePlanet](#) contains the base data needed to model a planet in JEOD.

```
#include <base_planet.hh>
```

Inheritance diagram for jeod::BasePlanet:



#### Public Member Functions

- [BasePlanet](#) ()  
*Construct a [BasePlanet](#) object.*
- virtual [~BasePlanet](#) ()=default
- void [set\\_name](#) (const std::string &name\_in)  
*Setter for the name.*
- virtual void [set\\_alt\\_inertial](#) (const double trans[3][3])  
*Set the fixed transformation from J2000 to alt\_inertial.*
- virtual void [set\\_alt\\_inertial](#) (const double cp[3], const double ep[3])  
*Use the celestial and ecliptic poles to set the conventional fixed transformation from J2000 to alt\_inertial.*
- virtual void [set\\_alt\\_pfix](#) (const double trans[3][3])  
*Set the fixed transformation from pfix to alt\_pfix.*
- virtual void [calculate\\_alt\\_pfix](#) (void)  
*Calculate the current transformation from J2000 to alt\_pfix using the fixed transformation between pfix and alt\_pfix.*
- virtual void [register\\_planet](#) (BaseEphemeridesManager &ephem\_manager)  
*Register a [BasePlanet](#) object with the Ephemerides Manager.*

#### Data Fields

- std::string [name](#)  
*[Planet](#) name.*
- GravitySource \* [grav\\_source](#)

*The GravitySource corresponding to the same planet represented by this.*

- EphemerisRefFrame [inertial](#)

*The planet-centered J2000 pseudo-inertial frame associated with the planet represented by this.*

- EphemerisRefFrame [alt\\_inertial](#)

*A secondary pseudo-inertial frame which can be defined by the user to be equatorial for this planet.*

- EphemerisRefFrame [pfix](#)

*The planet-centered, planet-fixed Cartesian reference frame associated with the planet represented by this.*

- EphemerisRefFrame [alt\\_pfix](#)

*A secondary planet-fixed frame which can be defined by the user.*

## Protected Attributes

- bool [alt\\_inertial\\_set](#)

*Flag to insure the alt\_inertial frame is set only once.*

- double [alt\\_pfix\\_transform](#) [3][3]

*The transform from pfix to alt\_pfix.*

- bool [alt\\_pfix\\_set](#)

*Flag to insure the alt\_pfix transform never changed.*

## Private Member Functions

- [BasePlanet](#) (const [BasePlanet](#) &)

*Not implemented.*

- [BasePlanet](#) & [operator=](#) (const [BasePlanet](#) &)

*Not implemented.*

## Friends

- class [InputProcessor](#)
- void [init\\_attrjeod\\_\\_BasePlanet](#) ()

### 8.1.1 Detailed Description

A [BasePlanet](#) contains the base data needed to model a planet in JEOD.

A [BasePlanet](#) has a name, a planet-centered inertial reference frame, and a planet-centered planet-fixed reference frame. Details of the planet's shape and mass are in the [Planet](#) class, which derives from [BasePlanet](#).

Definition at line 86 of file `base_planet.hh`.

### 8.1.2 Constructor & Destructor Documentation

#### 8.1.2.1 `jeod::BasePlanet::BasePlanet ( void )`

Construct a [BasePlanet](#) object.

Definition at line 48 of file `base_planet.cc`.

References [alt\\_pfix\\_transform](#).

8.1.2.2 `virtual jeod::BasePlanet::~~BasePlanet ( ) [virtual],[default]`

8.1.2.3 `jeod::BasePlanet::BasePlanet ( const BasePlanet & ) [private]`

Not implemented.

### 8.1.3 Member Function Documentation

8.1.3.1 `void jeod::BasePlanet::calculate_alt_pfix ( void ) [virtual]`

Calculate the current transformation from J2000 to alt\_pfix using the fixed transformation between pfix and alt\_pfix.

#### Assumptions and Limitations

calculates J2000 to alt\_pfix using a fixed transformation from pfix to alt\_pfix

Definition at line 143 of file base\_planet.cc.

References alt\_pfix, alt\_pfix\_transform, and pfix.

8.1.3.2 `BasePlanet& jeod::BasePlanet::operator= ( const BasePlanet & ) [private]`

Not implemented.

8.1.3.3 `void jeod::BasePlanet::register_planet ( BaseEphemeridesManager & ephemerides_manager ) [virtual]`

Register a [BasePlanet](#) object with the Ephemerides Manager.

#### Parameters

<i>in, out</i>	<i>ephemerides_manager</i>	Ephemerides Manager
----------------	----------------------------	---------------------

Definition at line 157 of file base\_planet.cc.

References alt\_inertial, alt\_pfix, inertial, name, jeod::PlanetMessages::name\_error, and pfix.

Referenced by jeod::Planet::register\_model().

8.1.3.4 `void jeod::BasePlanet::set_alt_inertial ( const double trans[3][3] ) [virtual]`

Set the fixed transformation from J2000 to alt\_inertial.

#### Assumptions and Limitations

- Method only works once

#### Parameters

<i>in</i>	<i>trans</i>	trans J2000->alt_inertial
-----------	--------------	---------------------------

Definition at line 70 of file base\_planet.cc.

References alt\_inertial, and alt\_inertial\_set.

Referenced by jeod::Planet\_mars\_default\_data::initialize(), and set\_alt\_inertial().

8.1.3.5 `void jeod::BasePlanet::set_alt_inertial ( const double cp[3], const double ep[3] ) [virtual]`

Use the celestial and ecliptic poles to set the conventional fixed transformation from J2000 to alt\_inertial.

### Assumptions and Limitations

- Method only works once
- Celestial and ecliptic poles are not the same

### Parameters

<i>in</i>	<i>cp</i>	celestial pole unit vector
<i>in</i>	<i>ep</i>	Ecliptic pole unit vector

Definition at line 99 of file base\_planet.cc.

References set\_alt\_inertial().

#### 8.1.3.6 void jeod::BasePlanet::set\_alt\_pfix ( const double *trans*[3][3] ) [virtual]

Set the fixed transformation from pfix to alt\_pfix.

### Assumptions and Limitations

- Method only works once

### Parameters

<i>in</i>	<i>trans</i>	trans pfix->alt_pfix
-----------	--------------	----------------------

Definition at line 122 of file base\_planet.cc.

References alt\_pfix\_set, and alt\_pfix\_transform.

Referenced by jeod::Planet\_moon\_default\_data::initialize().

#### 8.1.3.7 void jeod::BasePlanet::set\_name ( const std::string & *name\_in* ) [inline]

Setter for the name.

Definition at line 139 of file base\_planet.hh.

## 8.1.4 Friends And Related Function Documentation

#### 8.1.4.1 void init\_attrjeod\_\_BasePlanet ( ) [friend]

#### 8.1.4.2 friend class InputProcessor [friend]

Definition at line 88 of file base\_planet.hh.

## 8.1.5 Field Documentation

#### 8.1.5.1 EphemerisRefFrame jeod::BasePlanet::alt\_inertial

A secondary pseudo-inertial frame which can be defined by the user to be equatorial for this planet.

trick\_units(-)

Definition at line 114 of file base\_planet.hh.

Referenced by register\_planet(), and set\_alt\_inertial().

**8.1.5.2** `bool jeod::BasePlanet::alt_inertial_set` `[protected]`

Flag to insure the alt\_inertial frame is set only once.

trick\_units(—)

Definition at line 166 of file base\_planet.hh.

Referenced by set\_alt\_inertial().

**8.1.5.3** `EphemerisRefFrame jeod::BasePlanet::alt_pfix`

A secondary planet-fixed frame which can be defined by the user.

trick\_units(—)

Definition at line 125 of file base\_planet.hh.

Referenced by calculate\_alt\_pfix(), and register\_planet().

**8.1.5.4** `bool jeod::BasePlanet::alt_pfix_set` `[protected]`

Flag to insure the alt\_pfix transform never changed.

trick\_units(—)

Definition at line 176 of file base\_planet.hh.

Referenced by set\_alt\_pfix().

**8.1.5.5** `double jeod::BasePlanet::alt_pfix_transform[3][3]` `[protected]`

The transform from pfix to alt\_pfix.

trick\_units(—)

Definition at line 171 of file base\_planet.hh.

Referenced by BasePlanet(), calculate\_alt\_pfix(), and set\_alt\_pfix().

**8.1.5.6** `GravitySource* jeod::BasePlanet::grav_source`

The GravitySource corresponding to the same planet represented by this.

trick\_units(—)

Definition at line 102 of file base\_planet.hh.

Referenced by jeod::Planet::initialize(), and jeod::Planet::register\_model().

**8.1.5.7** `EphemerisRefFrame jeod::BasePlanet::inertial`

The planet-centered J2000 pseudo-inertial frame associated with the planet represented by this.

trick\_units(—)

Definition at line 108 of file base\_planet.hh.

Referenced by jeod::Planet::register\_model(), and register\_planet().

**8.1.5.8** `std::string jeod::BasePlanet::name`

[Planet](#) name.

trick\_units(-)

Definition at line 97 of file base\_planet.hh.

Referenced by jeod::Planet\_earth\_default\_data::initialize(), jeod::Planet\_mars\_default\_data::initialize(), jeod::Planet\_sun\_default\_data::initialize(), jeod::Planet\_moon\_default\_data::initialize(), jeod::Planet\_jupiter\_default\_data::initialize(), jeod::Planet::initialize(), jeod::Planet::register\_model(), and register\_planet().

#### 8.1.5.9 EphemerisRefFrame jeod::BasePlanet::pfix

The planet-centered, planet-fixed Cartesian reference frame associated with the planet represented by this.

trick\_units(-)

Definition at line 120 of file base\_planet.hh.

Referenced by calculate\_alt\_pfix(), jeod::Planet::register\_model(), and register\_planet().

The documentation for this class was generated from the following files:

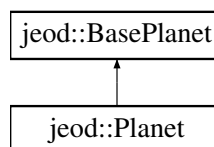
- [base\\_planet.hh](#)
- [base\\_planet.cc](#)

## 8.2 jeod::Planet Class Reference

Describes a planet with mass and shape.

```
#include <planet.hh>
```

Inheritance diagram for jeod::Planet:



### Public Member Functions

- [Planet](#) ()  
Construct a [Planet](#) object.
- [~Planet](#) () override  
Destruct a [Planet](#) object.
- void [register\\_model](#) (GravitySource &grav\_source, BaseDynManager &dyn\_manager)  
Register a [Planet](#) object with the Dynamics Manager.
- void [initialize](#) ()  
Initialize a [Planet](#) object.

### Data Fields

- double [r\\_eq](#)  
Mean planet equatorial radius.
- double [r\\_pol](#)  
Mean planet polar radius.
- double [e\\_ellipsoid](#)

- [Planet](#) ellipsoid eccentricity, a value between 0 and 1.  
double [e\\_ellip\\_sq](#)  
*The square of the planet ellipsoid eccentricity.*
- double [flat\\_coeff](#)  
[Planet](#) ellipsoid flattening coefficient, a value between 0 and 1.  
double [flat\\_inv](#)  
*Inverse of the planet ellipsoid flattening constant above.*

## Private Member Functions

- [Planet](#) (const [Planet](#) &frame)
- [Planet](#) & operator= (const [Planet](#) &frame)

## Friends

- class [InputProcessor](#)
- void [init\\_attrjeod\\_\\_Planet](#) ()

## Additional Inherited Members

### 8.2.1 Detailed Description

Describes a planet with mass and shape.

Definition at line 91 of file planet.hh.

### 8.2.2 Constructor & Destructor Documentation

#### 8.2.2.1 jeod::Planet::Planet ( void )

Construct a [Planet](#) object.

Definition at line 47 of file planet.cc.

#### 8.2.2.2 jeod::Planet::~~Planet ( void ) [override]

Destruct a [Planet](#) object.

Definition at line 64 of file planet.cc.

#### 8.2.2.3 jeod::Planet::Planet ( const Planet & frame ) [private]

### 8.2.3 Member Function Documentation

#### 8.2.3.1 void jeod::Planet::initialize ( void )

Initialize a [Planet](#) object.

## Assumptions and Limitations

- [Planet::register\\_model](#) has already been invoked.

Definition at line 112 of file planet.cc.

References `jeod::PlanetMessages::domain_error`, `e_ellip_sq`, `e_ellipsoid`, `flat_coeff`, `flat_inv`, `jeod::BasePlanet::grav_source`, `jeod::BasePlanet::name`, `jeod::PlanetMessages::name_error`, `r_eq`, `r_pol`, and `jeod::PlanetMessages::registration_error`.

**8.2.3.2 Planet& jeod::Planet::operator= ( const Planet & frame ) [private]**

**8.2.3.3 void jeod::Planet::register\_model ( GravitySource & grav\_source\_in, BaseDynManager & dyn\_manager )**

Register a [Planet](#) object with the Dynamics Manager.

Parameters

<code>in, out</code>	<code>grav_source_in</code>	GravitySource object
<code>in, out</code>	<code>dyn_manager</code>	Dynamics manager

Definition at line 76 of file planet.cc.

References `jeod::BasePlanet::grav_source`, `jeod::BasePlanet::inertial`, `jeod::BasePlanet::name`, `jeod::PlanetMessages::name_error`, `jeod::BasePlanet::pfix`, and `jeod::BasePlanet::register_planet()`.

## 8.2.4 Friends And Related Function Documentation

**8.2.4.1 void init\_attrjeod\_\_Planet ( ) [friend]**

**8.2.4.2 friend class InputProcessor [friend]**

Definition at line 93 of file planet.hh.

## 8.2.5 Field Documentation

**8.2.5.1 double jeod::Planet::e\_ellip\_sq**

The square of the planet ellipsoid eccentricity.

`trick_units(-)`

Definition at line 118 of file planet.hh.

Referenced by `initialize()`.

**8.2.5.2 double jeod::Planet::e\_ellipsoid**

[Planet](#) ellipsoid eccentricity, a value between 0 and 1.

NOTE: This parameter relates to the planet's shape, not its orbit.`trick_units(-)`

Definition at line 113 of file planet.hh.

Referenced by `initialize()`.

**8.2.5.3 double jeod::Planet::flat\_coeff**

[Planet](#) ellipsoid flattening coefficient, a value between 0 and 1.

The Earth's flattening, for example, is about 1/298.3.`trick_units(-)`

Definition at line 124 of file planet.hh.



Referenced by `jeod::Planet_jupiter_default_data::initialize()`, `jeod::Planet_sun_default_data::initialize()`, `jeod::Planet_mars_default_data::initialize()`, `jeod::Planet_moon_default_data::initialize()`, and `initialize()`.

#### 8.2.5.4 double jeod::Planet::flat\_inv

Inverse of the planet ellipsoid flattening constant above.

`trick_units(-)`

Definition at line 129 of file `planet.hh`.

Referenced by `jeod::Planet_earth_default_data::initialize()`, and `initialize()`.

#### 8.2.5.5 double jeod::Planet::r\_eq

Mean planet equatorial radius.

`trick_units(m)`

Definition at line 102 of file `planet.hh`.

Referenced by `jeod::Planet_earth_default_data::initialize()`, `jeod::Planet_sun_default_data::initialize()`, `jeod::Planet_jupiter_default_data::initialize()`, `jeod::Planet_moon_default_data::initialize()`, `jeod::Planet_mars_default_data::initialize()`, and `initialize()`.

#### 8.2.5.6 double jeod::Planet::r\_pol

Mean planet polar radius.

`trick_units(m)`

Definition at line 107 of file `planet.hh`.

Referenced by `initialize()`.

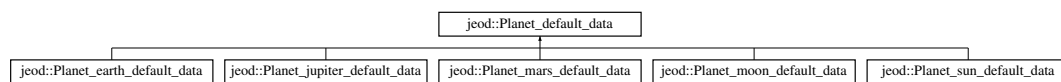
The documentation for this class was generated from the following files:

- [planet.hh](#)
- [planet.cc](#)

## 8.3 jeod::Planet\_default\_data Class Reference

```
#include <planet_default_data.hh>
```

Inheritance diagram for `jeod::Planet_default_data`:



### Public Member Functions

- virtual void `initialize` (`Planet *`)=0
- virtual `~Planet_default_data` ()

#### 8.3.1 Detailed Description

Definition at line 50 of file `planet_default_data.hh`.

### 8.3.2 Constructor & Destructor Documentation

8.3.2.1 `virtual jeod::Planet_default_data::~~Planet_default_data ( ) [inline],[virtual]`

Definition at line 53 of file `planet_default_data.hh`.

### 8.3.3 Member Function Documentation

8.3.3.1 `virtual void jeod::Planet_default_data::initialize ( Planet * ) [pure virtual]`

Implemented in `jeod::Planet_earth_default_data`, `jeod::Planet_jupiter_default_data`, `jeod::Planet_mars_default_data`, `jeod::Planet_moon_default_data`, and `jeod::Planet_sun_default_data`.

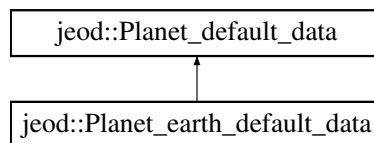
The documentation for this class was generated from the following file:

- [planet\\_default\\_data.hh](#)

## 8.4 jeod::Planet\_earth\_default\_data Class Reference

```
#include <earth.hh>
```

Inheritance diagram for `jeod::Planet_earth_default_data`:



### Public Member Functions

- void `initialize (Planet *)` override

#### 8.4.1 Detailed Description

Definition at line 54 of file `earth.hh`.

#### 8.4.2 Member Function Documentation

8.4.2.1 `void jeod::Planet_earth_default_data::initialize ( Planet * Planet_ptr ) [override],[virtual]`

Implements `jeod::Planet_default_data`.

Definition at line 33 of file `earth.cc`.

References `jeod::Planet::flat_inv`, `jeod::BasePlanet::name`, and `jeod::Planet::r_eq`.

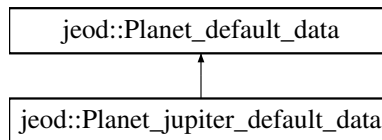
The documentation for this class was generated from the following files:

- [earth.hh](#)
- [earth.cc](#)

## 8.5 jeod::Planet\_jupiter\_default\_data Class Reference

```
#include <jupiter.hh>
```

Inheritance diagram for jeod::Planet\_jupiter\_default\_data:



### Public Member Functions

- void [initialize](#) ([Planet](#) \*) override

#### 8.5.1 Detailed Description

Definition at line 54 of file jupiter.hh.

#### 8.5.2 Member Function Documentation

**8.5.2.1** void jeod::Planet\_jupiter\_default\_data::initialize ( [Planet](#) \* *Planet\_ptr* ) [override],[virtual]

Implements [jeod::Planet\\_default\\_data](#).

Definition at line 33 of file jupiter.cc.

References [jeod::Planet::flat\\_coeff](#), [jeod::BasePlanet::name](#), and [jeod::Planet::r\\_eq](#).

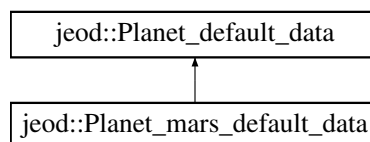
The documentation for this class was generated from the following files:

- [jupiter.hh](#)
- [jupiter.cc](#)

## 8.6 jeod::Planet\_mars\_default\_data Class Reference

```
#include <mars.hh>
```

Inheritance diagram for jeod::Planet\_mars\_default\_data:



### Public Member Functions

- void [initialize](#) ([Planet](#) \*) override

#### 8.6.1 Detailed Description

Definition at line 54 of file mars.hh.

## 8.6.2 Member Function Documentation

8.6.2.1 `void jeod::Planet_mars_default_data::initialize ( Planet * Planet_ptr ) [override],[virtual]`

Implements [jeod::Planet\\_default\\_data](#).

Definition at line 34 of file mars.cc.

References [jeod::Planet::flat\\_coeff](#), [jeod::BasePlanet::name](#), [jeod::Planet::r\\_eq](#), and [jeod::BasePlanet::set\\_alt\\_inertial\(\)](#).

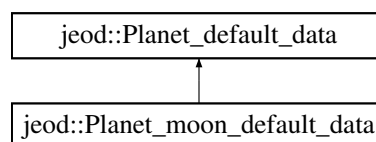
The documentation for this class was generated from the following files:

- [mars.hh](#)
- [mars.cc](#)

## 8.7 jeod::Planet\_moon\_default\_data Class Reference

```
#include <moon.hh>
```

Inheritance diagram for `jeod::Planet_moon_default_data`:



### Public Member Functions

- `void initialize (Planet *) override`

### 8.7.1 Detailed Description

Definition at line 54 of file moon.hh.

### 8.7.2 Member Function Documentation

8.7.2.1 `void jeod::Planet_moon_default_data::initialize ( Planet * Planet_ptr ) [override],[virtual]`

Implements [jeod::Planet\\_default\\_data](#).

Definition at line 33 of file moon.cc.

References [jeod::Planet::flat\\_coeff](#), [jeod::BasePlanet::name](#), [jeod::Planet::r\\_eq](#), and [jeod::BasePlanet::set\\_alt\\_pfix\(\)](#).

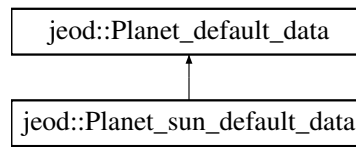
The documentation for this class was generated from the following files:

- [moon.hh](#)
- [moon.cc](#)

## 8.8 jeod::Planet\_sun\_default\_data Class Reference

```
#include <sun.hh>
```

Inheritance diagram for jeod::Planet\_sun\_default\_data:



## Public Member Functions

- void [initialize](#) ([Planet](#) \*) override

### 8.8.1 Detailed Description

Definition at line 54 of file sun.hh.

### 8.8.2 Member Function Documentation

**8.8.2.1** void jeod::Planet\_sun\_default\_data::initialize ( [Planet](#) \* *Planet\_ptr* ) [override],[virtual]

Implements [jeod::Planet\\_default\\_data](#).

Definition at line 35 of file sun.cc.

References [jeod::Planet::flat\\_coeff](#), [jeod::BasePlanet::name](#), and [jeod::Planet::r\\_eq](#).

The documentation for this class was generated from the following files:

- [sun.hh](#)
- [sun.cc](#)

## 8.9 jeod::PlanetMessages Class Reference

Specifies the message IDs used in the planet model.

```
#include <planet_messages.hh>
```

### Static Public Attributes

- static char const \* [name\\_error](#) = "environment/planet/" "name\_error"  
*Issued when the name is invalid.*
- static char const \* [registration\\_error](#) = "environment/planet/" "registration\_error"  
*Issued when the model has not been properly registered/initialized.*
- static char const \* [domain\\_error](#) = "environment/planet/" "domain\_error"  
*Issued when some value is invalid.*

### Private Member Functions

- [PlanetMessages](#) (void)
- [PlanetMessages](#) (const [PlanetMessages](#) &)
- [PlanetMessages](#) & operator= (const [PlanetMessages](#) &)

## Friends

- class [InputProcessor](#)
- void [init\\_attrjeod\\_\\_PlanetMessages](#) ()

### 8.9.1 Detailed Description

Specifies the message IDs used in the planet model.

Definition at line 83 of file planet\_messages.hh.

### 8.9.2 Constructor & Destructor Documentation

8.9.2.1 `jeod::PlanetMessages::PlanetMessages ( void )` `[private]`

8.9.2.2 `jeod::PlanetMessages::PlanetMessages ( const PlanetMessages & )` `[private]`

### 8.9.3 Member Function Documentation

8.9.3.1 `PlanetMessages& jeod::PlanetMessages::operator= ( const PlanetMessages & )` `[private]`

### 8.9.4 Friends And Related Function Documentation

8.9.4.1 `void init_attrjeod__PlanetMessages ( )` `[friend]`

8.9.4.2 `friend class InputProcessor` `[friend]`

Definition at line 85 of file planet\_messages.hh.

### 8.9.5 Field Documentation

8.9.5.1 `char const * jeod::PlanetMessages::domain_error = "environment/planet/" "domain_error"` `[static]`

Issued when some value is invalid.

`trick_units(-)`

Definition at line 103 of file planet\_messages.hh.

Referenced by `jeod::Planet::initialize()`.

8.9.5.2 `char const * jeod::PlanetMessages::name_error = "environment/planet/" "name_error"` `[static]`

Issued when the name is invalid.

`trick_units(-)`

Definition at line 93 of file planet\_messages.hh.

Referenced by `jeod::Planet::initialize()`, `jeod::Planet::register_model()`, and `jeod::BasePlanet::register_planet()`.

8.9.5.3 `char const * jeod::PlanetMessages::registration_error = "environment/planet/" "registration_error"` `[static]`

Issued when the model has not been properly registered/initialized.

`trick_units(-)`

Definition at line 98 of file planet\_messages.hh.

Referenced by `jeod::Planet::initialize()`.

The documentation for this class was generated from the following files:

- [planet\\_messages.hh](#)
- [planet\\_messages.cc](#)





## Chapter 9

# File Documentation

### 9.1 `base_planet.cc` File Reference

Planet modeling class methods.

```
#include <cstring>
#include <cstdint>
#include "environment/ephemerides/ephem_manager/include/base_ephem_manager.-
hh"
#include "utils/math/include/vector3.hh"
#include "utils/memory/include/jeod_alloc.hh"
#include "utils/message/include/message_handler.hh"
#include "../include/base_planet.hh"
#include "../include/planet_messages.hh"
```

#### Namespaces

- [jeod](#)

*Namespace jeod.*

#### 9.1.1 Detailed Description

Planet modeling class methods.

Definition in file [base\\_planet.cc](#).

### 9.2 `base_planet.hh` File Reference

Define the class BasePlanet.

```
#include "environment/ephemerides/ephem_interface/include/ephem_ref_frame.-
hh"
#include "environment/gravity/include/gravity_source.hh"
#include "utils/sim_interface/include/jeod_class.hh"
#include <string>
#include <utility>
```

## Data Structures

- class [jeod::BasePlanet](#)

A *BasePlanet* contains the base data needed to model a planet in JEOD.

## Namespaces

- [jeod](#)

Namespace *jeod*.

### 9.2.1 Detailed Description

Define the class BasePlanet.

Definition in file [base\\_planet.hh](#).

## 9.3 class\_declarations.hh File Reference

Forward declaration of classes defined in the planet model.

## Namespaces

- [jeod](#)

Namespace *jeod*.

### 9.3.1 Detailed Description

Forward declaration of classes defined in the planet model.

Definition in file [class\\_declarations.hh](#).

## 9.4 earth.cc File Reference

```
#include "environment/planet/include/base_planet.hh"
#include "environment/planet/include/planet.hh"
#include "utils/named_item/include/named_item.hh"
#include "../include/earth.hh"
```

## Namespaces

- [jeod](#)

Namespace *jeod*.

## Macros

- #define [JEOD\\_FRIEND\\_CLASS](#) Planet\_earth\_default\_data

### 9.4.1 Macro Definition Documentation

#### 9.4.1.1 #define JEOD\_FRIEND\_CLASS Planet\_earth\_default\_data

Definition at line 17 of file earth.cc.

## 9.5 earth.hh File Reference

```
#include "planet_default_data.hh"
```

### Data Structures

- class [jeod::Planet\\_earth\\_default\\_data](#)

### Namespaces

- [jeod](#)  
*Namespace jeod.*

## 9.6 jupiter.cc File Reference

```
#include "environment/planet/include/base_planet.hh"  
#include "environment/planet/include/planet.hh"  
#include "utils/named_item/include/named_item.hh"  
#include "../include/jupiter.hh"
```

### Namespaces

- [jeod](#)  
*Namespace jeod.*

### Macros

- #define [JEOD\\_FRIEND\\_CLASS Planet\\_jupiter\\_default\\_data](#)

### 9.6.1 Macro Definition Documentation

#### 9.6.1.1 #define JEOD\_FRIEND\_CLASS Planet\_jupiter\_default\_data

Definition at line 17 of file jupiter.cc.

## 9.7 jupiter.hh File Reference

```
#include "planet_default_data.hh"
```

## Data Structures

- class [jeod::Planet\\_jupiter\\_default\\_data](#)

## Namespaces

- [jeod](#)  
*Namespace jeod.*

## 9.8 mars.cc File Reference

```
#include "environment/planet/include/base_planet.hh"  
#include "environment/planet/include/planet.hh"  
#include "utils/named_item/include/named_item.hh"  
#include "../include/mars.hh"
```

## Namespaces

- [jeod](#)  
*Namespace jeod.*

## Macros

- #define [JEOD\\_FRIEND\\_CLASS](#) Planet\_mars\_default\_data

### 9.8.1 Macro Definition Documentation

#### 9.8.1.1 #define JEOD\_FRIEND\_CLASS Planet\_mars\_default\_data

Definition at line 18 of file mars.cc.

## 9.9 mars.hh File Reference

```
#include "planet_default_data.hh"
```

## Data Structures

- class [jeod::Planet\\_mars\\_default\\_data](#)

## Namespaces

- [jeod](#)  
*Namespace jeod.*

## 9.10 moon.cc File Reference

```
#include "environment/planet/include/base_planet.hh"
#include "environment/planet/include/planet.hh"
#include "utils/named_item/include/named_item.hh"
#include "../include/moon.hh"
```

### Namespaces

- [jeod](#)  
*Namespace jeod.*

### Macros

- `#define` [JEOD\\_FRIEND\\_CLASS](#) Planet\_moon\_default\_data

#### 9.10.1 Macro Definition Documentation

##### 9.10.1.1 `#define JEOD_FRIEND_CLASS Planet_moon_default_data`

Definition at line 17 of file moon.cc.

## 9.11 moon.hh File Reference

```
#include "planet_default_data.hh"
```

### Data Structures

- class [jeod::Planet\\_moon\\_default\\_data](#)

### Namespaces

- [jeod](#)  
*Namespace jeod.*

## 9.12 planet.cc File Reference

Planet modeling class methods.

```
#include <cmath>
#include <cstring>
#include <cstdlib>
#include "dynamics/dyn_manager/include/base_dyn_manager.hh"
#include "utils/message/include/message_handler.hh"
#include "../include/planet.hh"
#include "../include/planet_messages.hh"
```

## Namespaces

- [jeod](#)

*Namespace jeod.*

### 9.12.1 Detailed Description

Planet modeling class methods.

Definition in file [planet.cc](#).

## 9.13 planet.hh File Reference

Planetary modeling constant parameter definitions.

```
#include "utils/sim_interface/include/jeod_class.hh"
#include "base_planet.hh"
#include "environment/gravity/include/gravity_source.hh"
```

## Data Structures

- class [jeod::Planet](#)

*Describes a planet with mass and shape.*

## Namespaces

- [jeod](#)

*Namespace jeod.*

### 9.13.1 Detailed Description

Planetary modeling constant parameter definitions.

Definition in file [planet.hh](#).

## 9.14 planet\_default\_data.hh File Reference

## Data Structures

- class [jeod::Planet\\_default\\_data](#)

## Namespaces

- [jeod](#)

*Namespace jeod.*

## 9.15 planet\_messages.cc File Reference

Implement the class PlanetMessages.

```
#include "../include/planet_messages.hh"
```

### Namespaces

- [jeod](#)  
*Namespace jeod.*

### Macros

- #define [PATH](#) "environment/planet/"

#### 9.15.1 Detailed Description

Implement the class PlanetMessages.

Definition in file [planet\\_messages.cc](#).

## 9.16 planet\_messages.hh File Reference

Define the class PlanetMessages, the class that specifies the message IDs used in the planet model.

```
#include "utils/sim_interface/include/jeod_class.hh"
```

### Data Structures

- class [jeod::PlanetMessages](#)  
*Specifies the message IDs used in the planet model.*

### Namespaces

- [jeod](#)  
*Namespace jeod.*

#### 9.16.1 Detailed Description

Define the class PlanetMessages, the class that specifies the message IDs used in the planet model.

Definition in file [planet\\_messages.hh](#).

## 9.17 sun.cc File Reference

```
#include "environment/planet/include/base_planet.hh"
#include "environment/planet/include/planet.hh"
#include "utils/named_item/include/named_item.hh"
#include "../include/sun.hh"
```

## Namespaces

- [jeod](#)

*Namespace jeod.*

## Macros

- `#define` [JEOD\\_FRIEND\\_CLASS](#) Planet\_sun\_default\_data

### 9.17.1 Macro Definition Documentation

#### 9.17.1.1 `#define JEOD_FRIEND_CLASS Planet_sun_default_data`

Definition at line 19 of file sun.cc.

## 9.18 sun.hh File Reference

```
#include "planet_default_data.hh"
```

## Data Structures

- class [jeod::Planet\\_sun\\_default\\_data](#)

## Namespaces

- [jeod](#)

*Namespace jeod.*



# Index

- ~BasePlanet
  - jeod::BasePlanet, [18](#)
- ~Planet
  - jeod::Planet, [23](#)
- ~Planet\_default\_data
  - jeod::Planet\_default\_data, [26](#)
- alt\_inertial
  - jeod::BasePlanet, [20](#)
- alt\_inertial\_set
  - jeod::BasePlanet, [20](#)
- alt\_pfix
  - jeod::BasePlanet, [21](#)
- alt\_pfix\_set
  - jeod::BasePlanet, [21](#)
- alt\_pfix\_transform
  - jeod::BasePlanet, [21](#)
- base\_planet.cc, [33](#)
- base\_planet.hh, [33](#)
- BasePlanet
  - jeod::BasePlanet, [18](#), [19](#)
- calculate\_alt\_pfix
  - jeod::BasePlanet, [19](#)
- class\_declarations.hh, [34](#)
- domain\_error
  - jeod::PlanetMessages, [30](#)
- e\_ellip\_sq
  - jeod::Planet, [24](#)
- e\_ellipsoid
  - jeod::Planet, [24](#)
- earth.cc, [34](#)
  - JEOD\_FRIEND\_CLASS, [35](#)
- earth.hh, [35](#)
- Environment, [12](#)
- flat\_coeff
  - jeod::Planet, [24](#)
- flat\_inv
  - jeod::Planet, [25](#)
- grav\_source
  - jeod::BasePlanet, [21](#)
- inertial
  - jeod::BasePlanet, [21](#)
- init\_attrjeod\_\_BasePlanet
  - jeod::BasePlanet, [20](#)

- init\_attrjeod\_\_Planet
  - jeod::Planet, [24](#)
- init\_attrjeod\_\_PlanetMessages
  - jeod::PlanetMessages, [30](#)
- initialize
  - jeod::Planet, [23](#)
  - jeod::Planet\_default\_data, [26](#)
  - jeod::Planet\_earth\_default\_data, [26](#)
  - jeod::Planet\_jupiter\_default\_data, [27](#)
  - jeod::Planet\_mars\_default\_data, [28](#)
  - jeod::Planet\_moon\_default\_data, [28](#)
  - jeod::Planet\_sun\_default\_data, [29](#)
- InputProcessor
  - jeod::BasePlanet, [20](#)
  - jeod::Planet, [24](#)
  - jeod::PlanetMessages, [30](#)
- JEOD\_FRIEND\_CLASS
  - earth.cc, [35](#)
  - jupiter.cc, [35](#)
  - mars.cc, [36](#)
  - moon.cc, [37](#)
  - sun.cc, [40](#)
- jeod, [15](#)
- jeod::BasePlanet, [17](#)
  - ~BasePlanet, [18](#)
  - alt\_inertial, [20](#)
  - alt\_inertial\_set, [20](#)
  - alt\_pfix, [21](#)
  - alt\_pfix\_set, [21](#)
  - alt\_pfix\_transform, [21](#)
  - BasePlanet, [18](#), [19](#)
  - calculate\_alt\_pfix, [19](#)
  - grav\_source, [21](#)
  - inertial, [21](#)
  - init\_attrjeod\_\_BasePlanet, [20](#)
  - InputProcessor, [20](#)
  - name, [21](#)
  - operator=, [19](#)
  - pfix, [22](#)
  - register\_planet, [19](#)
  - set\_alt\_inertial, [19](#)
  - set\_alt\_pfix, [20](#)
  - set\_name, [20](#)
- jeod::Planet, [22](#)
  - ~Planet, [23](#)
  - e\_ellip\_sq, [24](#)
  - e\_ellipsoid, [24](#)
  - flat\_coeff, [24](#)
  - flat\_inv, [25](#)

- init\_attrjeod\_\_Planet, 24
- initialize, 23
- InputProcessor, 24
- operator=, 24
- Planet, 23
- r\_eq, 25
- r\_pol, 25
- register\_model, 24
- jeod::Planet\_default\_data, 25
  - ~Planet\_default\_data, 26
  - initialize, 26
- jeod::Planet\_earth\_default\_data, 26
  - initialize, 26
- jeod::Planet\_jupiter\_default\_data, 27
  - initialize, 27
- jeod::Planet\_mars\_default\_data, 27
  - initialize, 28
- jeod::Planet\_moon\_default\_data, 28
  - initialize, 28
- jeod::Planet\_sun\_default\_data, 28
  - initialize, 29
- jeod::PlanetMessages, 29
  - domain\_error, 30
  - init\_attrjeod\_\_PlanetMessages, 30
  - InputProcessor, 30
  - name\_error, 30
  - operator=, 30
  - PlanetMessages, 30
  - registration\_error, 30
- jupiter.cc, 35
  - JEOD\_FRIEND\_CLASS, 35
- jupiter.hh, 35
- mars.cc, 36
  - JEOD\_FRIEND\_CLASS, 36
- mars.hh, 36
- Models, 11
- moon.cc, 37
  - JEOD\_FRIEND\_CLASS, 37
- moon.hh, 37
- name
  - jeod::BasePlanet, 21
- name\_error
  - jeod::PlanetMessages, 30
- operator=
  - jeod::BasePlanet, 19
  - jeod::Planet, 24
  - jeod::PlanetMessages, 30
- PATH
  - Planet, 13
- prefix
  - jeod::BasePlanet, 22
- Planet, 13
  - jeod::Planet, 23
  - PATH, 13
- planet.cc, 37
- planet.hh, 38
- planet\_default\_data.hh, 38
- planet\_messages.cc, 39
- planet\_messages.hh, 39
- PlanetMessages
  - jeod::PlanetMessages, 30
- r\_eq
  - jeod::Planet, 25
- r\_pol
  - jeod::Planet, 25
- register\_model
  - jeod::Planet, 24
- register\_planet
  - jeod::BasePlanet, 19
- registration\_error
  - jeod::PlanetMessages, 30
- set\_alt\_inertial
  - jeod::BasePlanet, 19
- set\_alt\_pfix
  - jeod::BasePlanet, 20
- set\_name
  - jeod::BasePlanet, 20
- sun.cc, 39
  - JEOD\_FRIEND\_CLASS, 40
- sun.hh, 40