PlanetFixedModel

5.0

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6.5.1 Detailed Description

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```

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Namespace jeod.

Data Structures

- class AltLatLongState

  Specifies positional state in planetary altitude, latitude, and longitude.
- class NorthEastDown

  Defines a local North-East-Down reference frame.
- class PlanetFixedMessages

  Specifies the message IDs used in the gravity model.
- class PlanetFixedPosition

  Contains various representations of position with respect to a planet.

7.1.1 Detailed Description

Namespace jeod.

Chapter 8

Data Structure Documentation

8.1 jeod::AltLatLongState Class Reference

Specifies positional state in planetary altitude, latitude, and longitude.

`#include <alt_lat_long_state.hh>`

Public Member Functions

- AltLatLongState ()

  Construct an AltLatLongState object.
- virtual ~AltLatLongState ()

  Destructor.
- void set_data (double alt, double lat, double lon)

  Allow user to set member data.
- void get_data (double &alt, double &lat, double &lon)

  Allow user to get member data.

Data Fields

- double altitude

  An object's height above the reference surface of the local GravBody.
- double latitude

  An object's north-south angular offset from the local GravBody's reference equator.
- double longitude

  An object's east-west angular offset from the local GravBody's reference prime meridian.

Friends

- class InputProcessor
- void init_attrjeod__AltLatLongState ()

8.1.1 Detailed Description

Specifies positional state in planetary altitude, latitude, and longitude.

Definition at line 77 of file alt_lat_long_state.hh.

8.1.2 Constructor & Destructor Documentation

8.1.2.1 AltLatLongState()

```
jeod::AltLatLongState::AltLatLongState (
            void  )
```

Construct an AltLatLongState object.

Definition at line 38 of file alt_lat_long_state.cc.

References altitude, latitude, and longitude.

8.1.2.2 ~AltLatLongState()

```
virtual jeod::AltLatLongState::~AltLatLongState ( )  [inline], [virtual]
```

Destructor.

Definition at line 111 of file alt_lat_long_state.hh.

8.1.3 Member Function Documentation

8.1.3.1 get_data()

```
void jeod::AltLatLongState::get_data (
            double & alt_out,
            double & lat_out,
            double & lon_out )
```

Allow user to get member data.

Parameters

out	*alt_out*	Altitude Units: M
out	*lat_out*	Longitude Units: r
out	*lon_out*	Latitude Units: r

Definition at line 71 of file alt_lat_long_state.cc.

References altitude, latitude, and longitude.

8.1.3.2 set_data()

```
void jeod::AltLatLongState::set_data (
             double alt,
             double lat,
             double lon )
```

Allow user to set member data.

Parameters

in	*alt*	Altitude Units: M
in	*lat*	Longitude Units: r
in	*lon*	Latitude Units: r

Definition at line 53 of file alt_lat_long_state.cc.

References altitude, latitude, and longitude.

Referenced by jeod::PlanetFixedPosition::update_from_ellip(), and jeod::PlanetFixedPosition::update_from_↩spher().

8.1.4 Friends And Related Function Documentation

8.1.4.1 init_attrjeod__AltLatLongState

```
void init_attrjeod__AltLatLongState ( )  [friend]
```

8.1.4.2 InputProcessor

```
friend class InputProcessor  [friend]
```

Definition at line 79 of file alt_lat_long_state.hh.

8.1.5 Field Documentation

8.1.5.1 altitude

`double jeod::AltLatLongState::altitude`

An object's height above the reference surface of the local GravBody.

trick_units(m)

Definition at line 88 of file alt_lat_long_state.hh.

Referenced by AltLatLongState(), jeod::PlanetFixedPosition::cart_to_ellip(), jeod::PlanetFixedPosition::cart_to_spher(), jeod::PlanetFixedPosition::ellip_to_cart(), get_data(), set_data(), jeod::PlanetFixedPosition::spher_to_cart(), jeod::PlanetFixedPosition::update_from_ellip(), and jeod::PlanetFixedPosition::update_from_spher().

8.1.5.2 latitude

`double jeod::AltLatLongState::latitude`

An object's north-south angular offset from the local GravBody's reference equator.

trick_units(rad)

Definition at line 94 of file alt_lat_long_state.hh.

Referenced by AltLatLongState(), jeod::NorthEastDown::build_ned_orientation(), jeod::PlanetFixedPosition::cart_to_ellip(), jeod::PlanetFixedPosition::cart_to_spher(), jeod::PlanetFixedPosition::ellip_to_cart(), get_data(), set_data(), jeod::PlanetFixedPosition::spher_to_cart(), jeod::PlanetFixedPosition::update_from_ellip(), and jeod::PlanetFixedPosition::update_from_spher().

8.1.5.3 longitude

`double jeod::AltLatLongState::longitude`

An object's east-west angular offset from the local GravBody's reference prime meridian.

trick_units(rad)

Definition at line 100 of file alt_lat_long_state.hh.

Referenced by AltLatLongState(), jeod::NorthEastDown::build_ned_orientation(), jeod::PlanetFixedPosition::cart_to_ellip(), jeod::PlanetFixedPosition::cart_to_spher(), jeod::PlanetFixedPosition::ellip_to_cart(), get_data(), set_data(), jeod::PlanetFixedPosition::spher_to_cart(), jeod::PlanetFixedPosition::update_from_ellip(), and jeod::PlanetFixedPosition::update_from_spher().

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

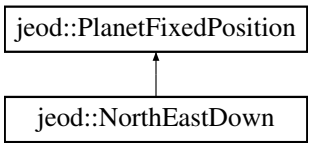
- alt_lat_long_state.hh
- alt_lat_long_state.cc

8.2 jeod::NorthEastDown Class Reference

Defines a local North-East-Down reference frame.

`#include <north_east_down.hh>`

Inheritance diagram for jeod::NorthEastDown:



Public Types

- enum AltLatLongType { undefined = -1, spherical, elliptical }

  Specifies whether the latitude is spherical or elliptical.

Public Member Functions

- NorthEastDown ()

  NorthEastDown constructor.
- virtual ~NorthEastDown ()

  NorthEastDown destructor.
- virtual void update_from_cart (double const cart[3])

  Update from Cartesian position input.
- virtual void update_from_spher (const AltLatLongState &spher)

  Update from Spherical position input.
- virtual void update_from_ellip (const AltLatLongState &ellip)

  Update from Elliptical position input.
- virtual void build_ned_orientation ()

  Build NED frame state based on current reference point information.
- virtual void set_ned_trans_states (const double pos[3], const double vel[3])

  Build NED frame state based on current reference point information.

Data Fields

- RefFrame ned_frame

  The local North-East-Down reference frame, centered at the reference point stored in the ellip_coords, sphere_↩ coords, and cart_coords data fields inherited from PlanetFixedPosition.
- AltLatLongType altlatlong_type

  Is reference point specified in spherical or elliptical coords?

Private Member Functions

- NorthEastDown (const NorthEastDown &rhs)
- NorthEastDown & operator= (const NorthEastDown &)

Friends

- class InputProcessor
- void init_attrjeod__NorthEastDown ()

Additional Inherited Members

8.2.1 Detailed Description

Defines a local North-East-Down reference frame.

Definition at line 81 of file north_east_down.hh.

8.2.2 Member Enumeration Documentation

8.2.2.1 AltLatLongType

```
enum jeod::NorthEastDown::AltLatLongType
```

Specifies whether the latitude is spherical or elliptical.

Enumerator

undefined	
spherical	
elliptical	

Definition at line 100 of file north_east_down.hh.

8.2.3 Constructor & Destructor Documentation

8.2.3.1 NorthEastDown() [1/2]

```
jeod::NorthEastDown::NorthEastDown (
            void  )
```

NorthEastDown constructor.

Definition at line 50 of file north_east_down.cc.

References altlatlong_type, and undefined.

8.2.3.2 ~NorthEastDown()

```
jeod::NorthEastDown::~NorthEastDown (
            void  )  [virtual]
```

NorthEastDown destructor.

Definition at line 60 of file north_east_down.cc.

8.2.3.3 NorthEastDown() [2/2]

```
jeod::NorthEastDown::NorthEastDown (
            const NorthEastDown & rhs )  [private]
```

8.2.4 Member Function Documentation

8.2.4.1 build_ned_orientation()

```
void jeod::NorthEastDown::build_ned_orientation (
            void  )  [virtual]
```

Build NED frame state based on current reference point information.

Definition at line 115 of file north_east_down.cc.

References altlatlong_type, jeod::PlanetFixedPosition::ellip_coords, elliptical, jeod::PlanetFixedMessages::invalid↩
_request, jeod::AltLatLongState::latitude, jeod::AltLatLongState::longitude, ned_frame, jeod::PlanetFixedPosition↩
::sphere_coords, and spherical.

8.2.4.2 operator=()

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

8.2.4.3 set_ned_trans_states()

```
void jeod::NorthEastDown::set_ned_trans_states (
            const double pos[3],
            const double vel[3] )  [virtual]
```

Build NED frame state based on current reference point information.

Parameters

in	*pos*	Cartesian position, PCPF Units: M
in	*vel*	Cartesian velocity, PCPF Units: M/s

Definition at line 168 of file north_east_down.cc.

References ned_frame, and jeod::PlanetFixedPosition::update_from_cart().

8.2.4.4 update_from_cart()

```
void jeod::NorthEastDown::update_from_cart (
             double const cart[3] )  [virtual]
```

Update from Cartesian position input.

Parameters

in	*cart*	Cartesian coords, PCPF Units: M

Definition at line 71 of file north_east_down.cc.

References jeod::PlanetFixedPosition::cart_coords, ned_frame, and jeod::PlanetFixedPosition::update_from_cart().

8.2.4.5 update_from_ellip()

```
void jeod::NorthEastDown::update_from_ellip (
             const AltLatLongState & ellip )  [virtual]
```

Update from Elliptical position input.

Parameters

in	*ellip*	Elliptical AltLatLong position

Reimplemented from jeod::PlanetFixedPosition.

Definition at line 101 of file north_east_down.cc.

References jeod::PlanetFixedPosition::cart_coords, ned_frame, and jeod::PlanetFixedPosition::update_from_↩ ellip().

8.2.4.6 update_from_spher()

```
void jeod::NorthEastDown::update_from_spher (
            const AltLatLongState & spher )  [virtual]
```

Update from Spherical position input.

Parameters

in	*spher*	Spherical AltLatLong position

Reimplemented from jeod::PlanetFixedPosition.

Definition at line 86 of file north_east_down.cc.

References jeod::PlanetFixedPosition::cart_coords, ned_frame, and jeod::PlanetFixedPosition::update_from_spher().

8.2.5 Friends And Related Function Documentation

8.2.5.1 init_attrjeod__NorthEastDown

```
void init_attrjeod__NorthEastDown ( )  [friend]
```

8.2.5.2 InputProcessor

```
friend class InputProcessor  [friend]
```

Definition at line 83 of file north_east_down.hh.

8.2.6 Field Documentation

8.2.6.1 altlatlong_type

```
AltLatLongType jeod::NorthEastDown::altlatlong_type
```

Is reference point specified in spherical or elliptical coords?

trick_units(–)

Definition at line 117 of file north_east_down.hh.

Referenced by build_ned_orientation(), and NorthEastDown().

8.2.6.2 ned_frame

`RefFrame jeod::NorthEastDown::ned_frame`

The local North-East-Down reference frame, centered at the reference point stored in the ellip_coords, sphere_↩ coords, and cart_coords data fields inherited from PlanetFixedPosition.

trick_units(–)

Definition at line 94 of file north_east_down.hh.

Referenced by build_ned_orientation(), set_ned_trans_states(), update_from_cart(), update_from_ellip(), and update_from_spher().

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

- north_east_down.hh
- north_east_down.cc

8.3 jeod::PlanetFixedMessages Class Reference

Specifies the message IDs used in the gravity model.

`#include <planet_fixed_messages.hh>`

Static Public Attributes

- static char const * invalid_request = "environment/planet_fixed/" "invalid_request"
  Issued when a selection such as an enum value is invalid.
- static char const * domain_error = "environment/planet_fixed/" "domain_error"
  Issued when a value is invalid such as an overly small radius.

Private Member Functions

- PlanetFixedMessages (void)
- PlanetFixedMessages (const PlanetFixedMessages &)
- PlanetFixedMessages & operator= (const PlanetFixedMessages &)

Friends

- class InputProcessor
- void init_attrjeod__PlanetFixedMessages ()

8.3.1 Detailed Description

Specifies the message IDs used in the gravity model.

Definition at line 85 of file planet_fixed_messages.hh.

8.3.2 Constructor & Destructor Documentation

8.3.2.1 PlanetFixedMessages() [1/2]

```
jeod::PlanetFixedMessages::PlanetFixedMessages (
            void  )  [private]
```

8.3.2.2 PlanetFixedMessages() [2/2]

```
jeod::PlanetFixedMessages::PlanetFixedMessages (
            const PlanetFixedMessages &  )  [private]
```

8.3.3 Member Function Documentation

8.3.3.1 operator=()

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

8.3.4 Friends And Related Function Documentation

8.3.4.1 init_attrjeod__PlanetFixedMessages

```
void init_attrjeod__PlanetFixedMessages ( )  [friend]
```

8.3.4.2 InputProcessor

```
friend class InputProcessor  [friend]
```

Definition at line 88 of file planet_fixed_messages.hh.

8.3.5 Field Documentation

8.3.5.1 domain_error

```
char const * jeod::PlanetFixedMessages::domain_error = "environment/planet_fixed/" "domain_↩
error"  [static]
```

Issued when a value is invalid such as an overly small radius.

trick_units(–)

Definition at line 102 of file planet_fixed_messages.hh.

Referenced by jeod::PlanetFixedPosition::cart_to_ellip(), and jeod::PlanetFixedPosition::cart_to_spher().

8.3.5.2 invalid_request

```
char const * jeod::PlanetFixedMessages::invalid_request = "environment/planet_fixed/" "invalid↩
_request"  [static]
```

Issued when a selection such as an enum value is invalid.

trick_units(–)

Definition at line 97 of file planet_fixed_messages.hh.

Referenced by jeod::NorthEastDown::build_ned_orientation().

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

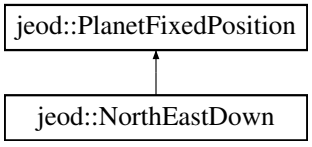
- planet_fixed_messages.hh
- planet_fixed_messages.cc

8.4 jeod::PlanetFixedPosition Class Reference

Contains various representations of position with respect to a planet.

```
#include <planet_fixed_posn.hh>
```

Inheritance diagram for jeod::PlanetFixedPosition:



Public Member Functions

- PlanetFixedPosition ()

  Construct a PlanetFixedPosition object.
- virtual ~PlanetFixedPosition ()

  Destructor.
- virtual void initialize (Planet *planet_in)

  Initialize a PlanetFixedPosition object.
- virtual void update_from_cart (const double cart[3])

  Update from Cartesian position input.
- virtual void update_from_spher (const AltLatLongState &spher)

  Update from Spherical position input.
- virtual void update_from_ellip (const AltLatLongState &ellip)

  Update from Elliptical position input.

Data Fields

- AltLatLongState ellip_coords

  An object's current position in elliptical coordinates.
- AltLatLongState sphere_coords

  The same object's current position in spherical coordinates.
- double cart_coords [3]

  The planet-centered, planet-fixed position of the object.
- Planet * planet

  The planet currently associated with this.

Static Public Attributes

- static const double Small_radius_limit = 1e-60

  Limit of ratio of radial distance to planet equatorial radius below which planetary coordinates are deemed to be invalid.

Protected Member Functions

- void cart_to_spher ()

  Convert from cartesian to spherical position.
- void cart_to_ellip ()

  Convert from cartesian to elliptical position.
- void spher_to_cart ()

  Convert from spherical to cartesian position.
- void ellip_to_cart ()

  Convert from elliptical to cartesian position.
- int get_elliptic_parameters (double r, double z, double &f, double &h, int maxIters=10)

Friends

- class InputProcessor
- void init_attrjeod__PlanetFixedPosition ()

8.4.1 Detailed Description

Contains various representations of position with respect to a planet.

Definition at line 91 of file planet_fixed_posn.hh.

8.4.2 Constructor & Destructor Documentation

8.4.2.1 PlanetFixedPosition()

```
jeod::PlanetFixedPosition::PlanetFixedPosition (
            void  )
```

Construct a PlanetFixedPosition object.

Definition at line 57 of file planet_fixed_posn.cc.

References cart_coords, and planet.

8.4.2.2 ~PlanetFixedPosition()

```
virtual jeod::PlanetFixedPosition::~PlanetFixedPosition ( )  [inline], [virtual]
```

Destructor.

Definition at line 147 of file planet_fixed_posn.hh.

8.4.3 Member Function Documentation

8.4.3.1 cart_to_ellip()

```
void jeod::PlanetFixedPosition::cart_to_ellip (
            void  )  [protected]
```

Convert from cartesian to elliptical position.

Definition at line 172 of file planet_fixed_posn.cc.

References jeod::AltLatLongState::altitude, cart_coords, jeod::PlanetFixedMessages::domain_error, ellip_coords, get_elliptic_parameters(), jeod::AltLatLongState::latitude, jeod::AltLatLongState::longitude, and Small_radius_limit.

Referenced by update_from_cart(), and update_from_spher().

8.4.3.2 cart_to_spher()

```
void jeod::PlanetFixedPosition::cart_to_spher (
            void  )  [protected]
```

Convert from cartesian to spherical position.

Definition at line 131 of file planet_fixed_posn.cc.

References jeod::AltLatLongState::altitude, cart_coords, jeod::PlanetFixedMessages::domain_error, jeod::AltLat↩LongState::latitude, jeod::AltLatLongState::longitude, planet, Small_radius_limit, and sphere_coords.

Referenced by update_from_cart(), and update_from_ellip().

8.4.3.3 ellip_to_cart()

```
void jeod::PlanetFixedPosition::ellip_to_cart (
            void  )  [protected]
```

Convert from elliptical to cartesian position.

Definition at line 250 of file planet_fixed_posn.cc.

References jeod::AltLatLongState::altitude, cart_coords, ellip_coords, jeod::AltLatLongState::latitude, jeod::AltLat↩LongState::longitude, and planet.

Referenced by update_from_ellip().

8.4.3.4 get_elliptic_parameters()

```
int jeod::PlanetFixedPosition::get_elliptic_parameters (
            double r,
            double z,
            double & f,
            double & h,
            int maxIters = 10 )  [protected]
```

Definition at line 286 of file planet_fixed_posn.cc.

References planet.

Referenced by cart_to_ellip().

8.4.3.5 initialize()

```
void jeod::PlanetFixedPosition::initialize (
            Planet * planet_in )  [virtual]
```

Initialize a PlanetFixedPosition object.

Parameters

in	*planet_in*	Associated planet

Definition at line 69 of file planet_fixed_posn.cc.

References planet.

8.4.3.6 spher_to_cart()

```
void jeod::PlanetFixedPosition::spher_to_cart (
             void  )  [protected]
```

Convert from spherical to cartesian position.

Definition at line 225 of file planet_fixed_posn.cc.

References jeod::AltLatLongState::altitude, cart_coords, jeod::AltLatLongState::latitude, jeod::AltLatLongState::longitude, planet, and sphere_coords.

Referenced by update_from_spher().

8.4.3.7 update_from_cart()

```
void jeod::PlanetFixedPosition::update_from_cart (
             const double cart[3] )  [virtual]
```

Update from Cartesian position input.

Parameters

in	*cart*	Cartesian coords, PCPF Units: M

Definition at line 82 of file planet_fixed_posn.cc.

References cart_coords, cart_to_ellip(), and cart_to_spher().

Referenced by jeod::NorthEastDown::set_ned_trans_states(), and jeod::NorthEastDown::update_from_cart().

8.4.3.8 update_from_ellip()

```
void jeod::PlanetFixedPosition::update_from_ellip (
             const AltLatLongState & ellip )  [virtual]
```

Update from Elliptical position input.

Parameters

in	*ellip*	Elliptical AltLatLong position

Reimplemented in jeod::NorthEastDown.

Definition at line 115 of file planet_fixed_posn.cc.

References jeod::AltLatLongState::altitude, cart_to_spher(), ellip_coords, ellip_to_cart(), jeod::AltLatLongState::latitude, jeod::AltLatLongState::longitude, and jeod::AltLatLongState::set_data().

Referenced by jeod::NorthEastDown::update_from_ellip().

8.4.3.9 update_from_spher()

```
void jeod::PlanetFixedPosition::update_from_spher (
             const AltLatLongState & spher )  [virtual]
```

Update from Spherical position input.

Parameters

in	*spher*	Spherical AltLatLong position

Reimplemented in jeod::NorthEastDown.

Definition at line 98 of file planet_fixed_posn.cc.

References jeod::AltLatLongState::altitude, cart_to_ellip(), jeod::AltLatLongState::latitude, jeod::AltLatLongState::longitude, jeod::AltLatLongState::set_data(), spher_to_cart(), and sphere_coords.

Referenced by jeod::NorthEastDown::update_from_spher().

8.4.4 Friends And Related Function Documentation

8.4.4.1 init_attrjeod__PlanetFixedPosition

```
void init_attrjeod__PlanetFixedPosition ( )  [friend]
```

8.4.4.2 InputProcessor

```
friend class InputProcessor  [friend]
```

Definition at line 93 of file planet_fixed_posn.hh.

8.4.5 Field Documentation

8.4.5.1 cart_coords

```
double jeod::PlanetFixedPosition::cart_coords[3]
```

The planet-centered, planet-fixed position of the object.

trick_units(m)

Definition at line 130 of file planet_fixed_posn.hh.

Referenced by cart_to_ellip(), cart_to_spher(), ellip_to_cart(), PlanetFixedPosition(), spher_to_cart(), jeod::NorthEastDown::update_from_cart(), update_from_cart(), jeod::NorthEastDown::update_from_ellip(), and jeod::NorthEastDown::update_from_spher().

8.4.5.2 ellip_coords

```
AltLatLongState jeod::PlanetFixedPosition::ellip_coords
```

An object's current position in elliptical coordinates.

Per Vallado p. 140, elliptical latitude is the angle between the equatorial plane and the surface normal on the ellipsoid at the point of interest. Similarly, elliptical longitude is assumed to be the angle between the reference meridian and the surface normal on the ellipsoid at the point of interest.trick_units(–)

Definition at line 116 of file planet_fixed_posn.hh.

Referenced by jeod::NorthEastDown::build_ned_orientation(), cart_to_ellip(), ellip_to_cart(), and update_from_ellip().

8.4.5.3 planet

```
Planet* jeod::PlanetFixedPosition::planet
```

The planet currently associated with this.

trick_units(–)

Definition at line 135 of file planet_fixed_posn.hh.

Referenced by cart_to_spher(), ellip_to_cart(), get_elliptic_parameters(), initialize(), PlanetFixedPosition(), and spher_to_cart().

8.4.5.4 Small_radius_limit

```
const double jeod::PlanetFixedPosition::Small_radius_limit = 1e-60  [static]
```

Limit of ratio of radial distance to planet equatorial radius below which planetary coordinates are deemed to be invalid.

trick_io(*o) trick_units(–)

Definition at line 102 of file planet_fixed_posn.hh.

Referenced by cart_to_ellip(), and cart_to_spher().

8.4.5.5 sphere_coords

```
AltLatLongState jeod::PlanetFixedPosition::sphere_coords
```

The same object's current position in spherical coordinates.

Per Vallado p. 140, spherical latitude is the angle measured at the planet's center from the equatorial plane to the point of interest. Similarly, spherical longitude is also assumed to be the angle measured at the planet's center from the reference meridian to the point of interest.trick_units(–)

Definition at line 125 of file planet_fixed_posn.hh.

Referenced by jeod::NorthEastDown::build_ned_orientation(), cart_to_spher(), spher_to_cart(), and update_from↩_spher().

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

- planet_fixed_posn.hh
- planet_fixed_posn.cc

Chapter 9

File Documentation

9.1 alt_lat_long_state.cc File Reference

AltLatLongState class methods.

```
#include "../include/alt_lat_long_state.hh"
```

Namespaces

- jeod

  Namespace jeod.

9.1.1 Detailed Description

AltLatLongState class methods.

9.2 alt_lat_long_state.hh File Reference

Basic orthogonal Altitude-Latitude-Longitude state definition.

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

Data Structures

- class jeod::AltLatLongState

  Specifies positional state in planetary altitude, latitude, and longitude.

Namespaces

- jeod

  Namespace jeod.

9.2.1 Detailed Description

Basic orthogonal Altitude-Latitude-Longitude state definition.

9.3 class_declarations.hh File Reference

Forward declarations of classes defined in planet-fixed position model header files.

Namespaces

- jeod

  Namespace jeod.

9.3.1 Detailed Description

Forward declarations of classes defined in planet-fixed position model header files.

9.4 north_east_down.cc File Reference

NorthEastDown class methods.

```
#include <cstdio>
#include <cmath>
#include "utils/math/include/vector3.hh"
#include "utils/message/include/message_handler.hh"
#include "utils/planet_fixed/planet_fixed_posn/include/planet_fixed_messages.↩
hh"
#include "../include/north_east_down.hh"
```

Namespaces

- jeod

  Namespace jeod.

9.4.1 Detailed Description

NorthEastDown class methods.

9.5 north_east_down.hh File Reference

Implementation of the North-East-Down reference frame.

```
#include "utils/ref_frames/include/ref_frame.hh"
#include "utils/sim_interface/include/jeod_class.hh"
#include "utils/planet_fixed/planet_fixed_posn/include/planet_fixed_posn.↩
hh"
#include "utils/planet_fixed/planet_fixed_posn/include/class_declarations.↩
hh"
```

Data Structures

- class jeod::NorthEastDown

  Defines a local North-East-Down reference frame.

Namespaces

- jeod

  Namespace jeod.

9.5.1 Detailed Description

Implementation of the North-East-Down reference frame.

9.6 planet_fixed_messages.cc File Reference

Implement the class PlanetFixedMessages.

```
#include "../include/planet_fixed_messages.hh"
```

Namespaces

- jeod

  Namespace jeod.

Macros

- #define PATH "environment/planet_fixed/"

9.6.1 Detailed Description

Implement the class PlanetFixedMessages.

9.7 planet_fixed_messages.hh File Reference

Define the class PlanetFixedMessages, the class that specifies the message IDs used in the planet-fixed model.

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

Data Structures

- class jeod::PlanetFixedMessages

  Specifies the message IDs used in the gravity model.

Namespaces

- jeod

  Namespace jeod.

9.7.1 Detailed Description

Define the class PlanetFixedMessages, the class that specifies the message IDs used in the planet-fixed model.

9.8 planet_fixed_posn.cc File Reference

Define PlanetFixedPosition class methods.

```
#include <cstddef>
#include <cmath>
#include "environment/planet/include/planet.hh"
#include "utils/math/include/vector3.hh"
#include "utils/message/include/message_handler.hh"
#include "../include/planet_fixed_messages.hh"
#include "../include/planet_fixed_posn.hh"
```

Namespaces

- jeod

  Namespace jeod.

9.8.1 Detailed Description

Define PlanetFixedPosition class methods.

9.9 planet_fixed_posn.hh File Reference

Planet centered fixed position model: alternate coordinate system definitions and transformations to those coordinate systems.

```
#include "environment/planet/include/class_declarations.hh"
#include "utils/sim_interface/include/jeod_class.hh"
#include "alt_lat_long_state.hh"
#include "environment/planet/include/planet.hh"
```

Data Structures

- class jeod::PlanetFixedPosition

  Contains various representations of position with respect to a planet.

Namespaces

- jeod

  Namespace jeod.

9.9.1 Detailed Description

Planet centered fixed position model: alternate coordinate system definitions and transformations to those coordinate systems.

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