fwidbmgr

0.1

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Contents

Chapter 1

FWI database manager

fwidbmanager is a custom application developed to store/retrieve meteo data and fire weather indexes in/from a postgresql database.

Presently fwi indexes are computed on a dayly basis taking as input the following data:

- a 174x177 point grid of Lumbardy starting from point (1436301.375 4916704.500) with 1500 meters resolution expressed in Gauss-Boaga (EPSG:3003). To each grid point the following information are associated
  1. *nometeo* a flag indicating the fact that no meteo data are associated to the grid point
     - 1 means that no meteo data are associated to the grid point
     - 0 means that meteo data are associated to the grid point
  2. *name* a symbolic name representing the grid point row and column in the format [row]-[column] with values starting from 1
  3. *mask* a flag indicating that the grid point is inside the region border
     - 1 means that the grid point is inside the region border
     - 0 means that the grid point is outside the region border
  4. *dz/dx* how z coordinate changes in the x direction
  5. *dz/dy* how z coordinate changes in the y direction
  6. *lake_mask* a flag indicating if the the point falls inside a lake area
     - 1 means that the grid point is inside a lake area
     - 0 means that the grid point is outside a lake area
  7. *urban_weight* a real parameter between 0.0 and 1.0 indicating the urban weight
  8. *p* the point geometry in the form (x, y, z)
- a set of GRIB files on the previous grid containing the following meteo data
  - temperature
    1. *xb* T background field
    2. *xa* T analysis field
    3. *tidi* T integral data influence
  - humidity
    1. *tdb* TD background field
    2. *ta* T analysis field
    3. *tda* ??????
    4. *rha* RH analysis field
    5. *rhidi* RH integral data influence
    6. *hdxa* HUMIDEX analysis
  - wind speed

1. *bu* u background
2. *bv* v background
3. *bhu* horizontal u background
4. *bhv* horizontal v background
5. *bvw* background vertical wind
6. *avw* analysis bertical wind
7. *au* u analysis
8. *av* v analysis
9. *ahu* horizontal u analysis
10. *ahv* horizontal v analysis
11. *adiv* analysis divergence
12. *avor* ??????
13. *wsidi* WS integral data influence

– cumulated rain

1. *xpa* precipitation analysis
2. *ridiw* wet integral data influence
3. *ridid* dry integral data influence
4. *snow_covering* snow covering factor
5. *snow_dissolution* snow dissolution factor

Chapter 2

Distribution folder structure

The application resides on disk in a specific folder to be defined by the environment variable `FWIDBMGR_HOME`. For example `FWIDBMGR_HOME=~/fwidbmgr`

Folder structure following:

config Contains the needed configuration files:

- *fwidbmgr.conf* is the application main configuration file
- *fwiscale.ini* (description is needed) not used at the moment
- *LogConfig.xml* is the log4cxx configuration file

log Contains the log file:

- *fwidbmgrDailyLog.log*

sql Contains the sql files containing the needed queries to create the fwi database from scratch

- *create_fwidb.sql* (description is needed)
- *create_fwi_indexes_table.sql* (description is needed)
- *create_grid_table.sql* (description is needed)
- *create_images_table.sql* (description is needed)
- *create_meteo_input_table.sql* (description is needed)
- *create_provinces_table.sql* (description is needed)
- *create_regions_table.sql* (description is needed)
- *partition_fwi_indexes_table.sql* (description is needed)
- *partition_meteo_input_table.sql* (description is needed)
- *postgis-64.sql* (description is needed)
- *spatial_ref_sys.sql* (description is needed)

Chapter 3

Application configuration file

The application configuration is done via a config file which format is driven by libconfig++ specifications. See the related codumentation at http://www.hyperrealm.com/libconfig/

The following sections describe briefly the main configuration parameters to be set in the configuration file.

- Database connection
- Application paths
- Applications files
- Application images

3.1 Database connection

The first configuration parameters to be set are those related to the database connection. You need postgres superuser credentials and the ones of a standard postgres user that must be setup in the database server before running the application. Database connection needed parameters are:

- *host* the network name or IP address of the machine running postgresql server e.g "localhost"
- *port* e.g 5432 is the standard postgresql port change it accordingly to your system setup
- *dbname* the database name e.g. "fwidb"
- *user* the standard postgres user e.g. "meteo"
- *password* standard user password e.g. "secret"
- *superuser* e.g. postgres
- *superpwd* postgres user password

3.2 Application paths

To be done.

3.3 Application files

This is a big configuration section with many subsections.

To be done

3.4 Application images

To be done

Chapter 4

Namespace Index

4.1 Namespace List

Here is a list of all documented namespaces with brief descriptions:

Chapter 5

Class Index

5.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

Chapter 6

File Index

6.1 File List

Here is a list of all documented files with brief descriptions:

Chapter 7

Namespace Documentation

7.1 fwi Namespace Reference

main fwidbmgr namespace

Classes

- class CommandLineArguments

  Command line arguments class.

7.1.1 Detailed Description

main fwidbmgr namespace

Computed indexes

- *FFMC* - Fine Fuel Moisture Code
- *DMC* - Duff Moisture Code
- *DC* - Drought Code
- *ISI* - Initial Spread Index
- *BUI* - Build Up Index
- *FWI* - Fire Weather Index

Index	Low	Moderate	High	Very high	Estreme
FFMC	0 - 81	81 - 88	88 - 90.5	90.5 - 92.5	92.5+
DMC	0 - 13	13 - 28	28 - 42	42 - 63	63+
DC	0 - 80	80 - 210	210 - 274	274 - 360	360+
ISI	0 - 4	4 - 8	8 - 11	11 - 19	19+
BUI	0 - 19	19 - 34	34 - 54	54 - 77	77+
FWI	0 - 5	5 - 14	14 - 21	21 - 33	33+

Not computed indexes

- *FFDC* - Forest Fire Danger Code
- *SFDC* - Scrub Fire Danger Code

- *GFDC* - Grass Fire Danger Code

FFMC *(Fine Fuel Moisture Code)* is a numerical rating of the moisture content of surface litter and other cured fine fuels. It shows the relative ease of ignition and flammability of fine fuels. The moisture content of fine fuels is very sensitive to the weather.

Even a day of rain, or of fine and windy weather, will significantly affect the FFMC rating.

The system uses a time lag of two-thirds of a day to accurately measure the moisture content in fine fuels.

The FFMC rating is on a scale of 0 to 99. Any figure above 70 is high, and above 90 is extreme.

DMC *(Duff Moisture Code)* is a numerical rating of the average moisture content of loosely compacted organic layers of moderate depth.

The code indicates the depth that fire will burn in moderate duff layers and medium size woody material.

Duff layers take longer than surface fuels to dry out but weather conditions over the past couple of weeks will significantly affect the DMC.

The system applies a time lag of 12 days to calculate the DMC.

A DMC rating of more than 30 is dry, and above 40 indicates that intensive burning will occur in the duff and medium fuels.

Burning off operations should not be carried out when the DMC rating is above 40.

DC *(Drought Code)* is a numerical rating of the moisture content of deep, compact, organic layers.

It is a useful indicator of seasonal drought and shows the likelihood of fire involving the deep duff layers and large logs.

A long period of dry weather (the system uses 52 days) is needed to dry out these fuels and affect the Drought Code.

A DC rating of 200 is high, and 300 or more is extreme indicating that fire will involve deep sub-surface and heavy fuels.

Burning off should not be permitted when the DC rating is above 300.

ISI *(Initial Spread Index)* indicates the rate fire will spread in its early stages. It is calculated from the FFMC rating and the wind factor.

The open-ended ISI scale starts at zero and a rating of 10 indicates high rate of spread shortly after igition.

A rating of 16 or more indicates extremely rapid rate of spread.

BUI *(Build Up Index)* index shows the amount of fuel available for combustion, indicating how the fire will develop after initial spread.

It is calculated from the Duff Moisture Code and the Drought Code.

The BUI scale starts at zero and is open-ended. A rating above 40 is high, above 60 is extreme.

FWI *(Fire Weather Index)* Information from the ISI and BUI is combined to provide a numerical rating of fire intensity - the Fire Weather Index.

The FWI indicates the likely intensity of a fire. The FWI is divided into four fire danger classes: Low 0 - 7 Moderate 8 - 16 High l7 - 31 Extreme 32+

FFDC *(Forest Fire Danger Code)* Based on predicted generated "fire intensity (kw/m?)" in forest type vegetation (pine, beech).

This code denotes how difficult it would be to control a fire in this vegetation type should one start. (Low, Moderate, High, Very High, Extreme)

SFDC *(Scrub Fire Danger Code)* Based on predicted generated "fire intensity (kw/m?)" in scrub type vegetation (manuka, gorse, broom).

This code denotes how difficult it would be to control a fire in this vegetation type should one start. (Low, Moderate, High, Very High, Extreme)

GFDC *(Grass Fire Danger Code)* Based on predicted generated "fire intensity (kw/m?)" in grass type vegetation (dry grass, tussock).

This code denotes how difficult it would be to control a fire in this vegetation type should one start. (Low, Moderate, High, Very High, Extreme)

7.2 grid Namespace Reference

Contains all grid related classes.

7.2.1 Detailed Description

Contains all grid related classes.

Chapter 8

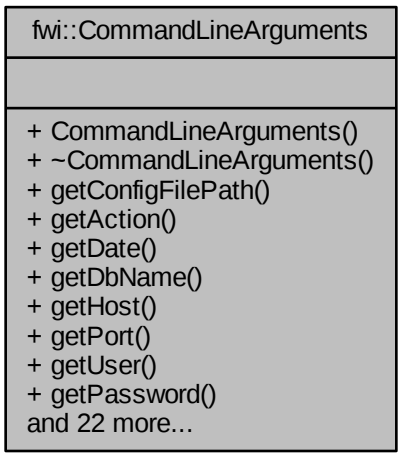
Class Documentation

8.1 fwi::CommandLineArguments Class Reference

Command line arguments class.

`#include <CommandLineArguments.h>`

Collaboration diagram for fwi::CommandLineArguments:



Public Member Functions

- CommandLineArguments ()

  Standard constructor.
- virtual ~CommandLineArguments ()

  Destructor.
- string getConfigFilePath () const

  Config file path getter.
- string getAction () const

  Action getter.

- string getDate () const

  Date getter.
- string getDbName () const

  Database name getter.
- string getHost () const

  Host getter.
- int getPort () const

  Port getter.
- string getUser () const

  User getter.
- string getPassword () const

  Password getter.
- bool getHelp () const

  Help argument presence.
- PGconn * getPGConnection (Config &cfg, bool create=false)

  Gets postgresql connection.
- void closePGConnection ()

  Gently close postgresql connection.
- void setConfigFilePath (string cfgpath)

  ConfigFilePath setter.
- void setAction (string action)

  Action setter.
- void setDate (string date)

  Date setter.
- void setHost (string host)

  Host setter.
- void setDbName (string dbname)

  Database name setter.
- void setPort (int port)

  Port setter.
- void setUser (string user)

  User setter.
- void setPassword (string password)

  Password setter.
- void setHelp (bool help)

  Help flag setter.
- bool isSetAction ()

  Checks for action setting.
- bool isSetDate ()

  Checks for date setting.
- bool isSetHost ()

  Checks for host setting.
- bool isSetDbName ()

  Checks for database name setting.
- bool isSetPort ()

  Checks for port setting.
- bool isSetUser ()

  Checks for user setting.
- bool isSetPassword ()

  Checks for password setting.
- bool isSetHelp ()

Checks for help setting.

- bool canTryDbConnection ()

  Checks if a database connection could be done based on current settings.

- string getConnectionString ()

  Gets the connection string based on current settings.

8.1.1 Detailed Description

Command line arguments class.

```
This class stores and manages command line arguments passed to fwidbmgr.<br />
<h2>fwidbmgr synopsys</h2>
<i>fwidbmgr -a action [-d date] [-D database] [-H host] [-P port] [-U user] [-p password] [-h]</i><br />
The possible actions for <b>fwidbmgr</b> are:<br />
<table border="0">
  <tr><td><b>create</b></td><td>create an empty database structure</td></tr>
  <tr><td><b>createstdgrid</b></td><td>creates the standard 177x174 point grid</td></tr>
  <tr><td><b>fillnometeo</b></td><td>fills nometeo field in standard grid</td></tr>
  <tr><td><b>fillregionmask</b></td><td>fills mask field in standard grid</td></tr>
  <tr><td><b>in</b></td><td>save in db input data for date given by option date</td></tr>
  <tr><td><b>out</b></td><td>save in db output data of fwi indexes computation</td></tr>
  <tr><td><b>outimg</b></td><td>save in db output images</td></tr>
</table>
```

- *date* must be a valid date in ISO 8601 format ex. (2012-03-22)
- *database* is the database name to be used
- *host* is the database host name or IP address
- *port* is the postgresql port
- *user* is the database user that has the proper rights
- *where* password is the user password

  h –> prints this text

Definition at line 64 of file CommandLineArguments.h.

8.1.2 Member Function Documentation

8.1.2.1 bool fwi::CommandLineArguments::canTryDbConnection ( )

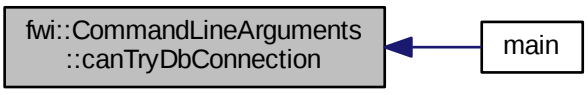
Checks if a database connection could be done based on current settings.

Returns

true if can try connection else false

Definition at line 204 of file CommandLineArguments.cpp.

Here is the caller graph for this function:



8.1.2.2 void fwi::CommandLineArguments::closePGConnection ( )

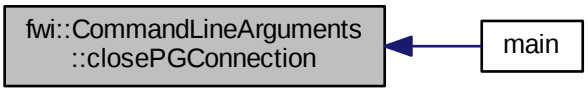
Gently close postgresql connection.

See also

postgresql documentation at http://www.postgresql.org/

Definition at line 106 of file CommandLineArguments.cpp.

Here is the caller graph for this function:



8.1.2.3 string fwi::CommandLineArguments::getAction ( ) const

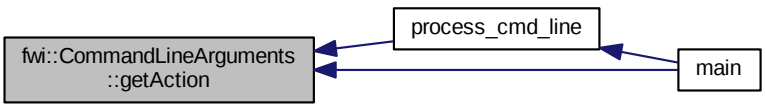
Action getter.

Returns

action argument

Definition at line 43 of file CommandLineArguments.cpp.

Here is the caller graph for this function:



8.1.2.4 string fwi::CommandLineArguments::getConfigFilePath ( ) const

Config file path getter.

Returns

configFilePath argument

Definition at line 38 of file CommandLineArguments.cpp.

8.1.2.5 string fwi::CommandLineArguments::getConnectionString ( )

Gets the connection string based on current settings.

Returns

the connection string

Definition at line 214 of file CommandLineArguments.cpp.

8.1.2.6 string fwi::CommandLineArguments::getDate ( ) const

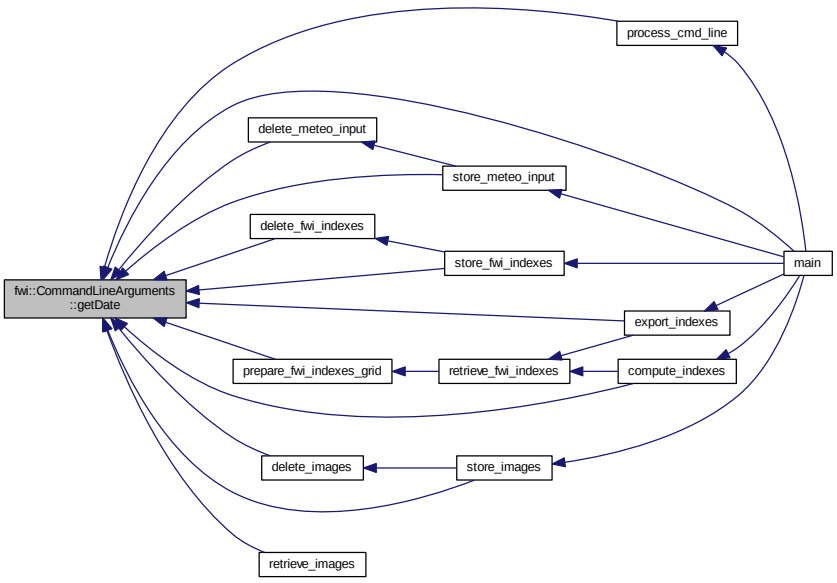
Date getter.

Returns

date argument

Definition at line 48 of file CommandLineArguments.cpp.

Here is the caller graph for this function:



8.1.2.7 string fwi::CommandLineArguments::getDbName ( ) const

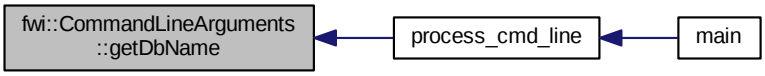
Database name getter.

Returns

database name argument

Definition at line 53 of file CommandLineArguments.cpp.

Here is the caller graph for this function:



8.1.2.8 bool fwi::CommandLineArguments::getHelp ( ) const

Help argument presence.

Returns

true help argument passed to program else false

Definition at line 78 of file CommandLineArguments.cpp.

8.1.2.9 string fwi::CommandLineArguments::getHost ( ) const

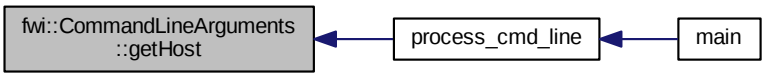
Host getter.

Returns

host argument

Definition at line 58 of file CommandLineArguments.cpp.

Here is the caller graph for this function:



8.1.2.10 string fwi::CommandLineArguments::getPassword ( ) const

Password getter.

Returns

password argument

Definition at line 63 of file CommandLineArguments.cpp.

8.1.2.11 PGconn * fwi::CommandLineArguments::getPGConnection (Config & *cfg*, bool *create* = `false`)

Gets postgresql connection.

Parameters

cfg	configuration class from libconfig++
create	if true create a new connection

Returns

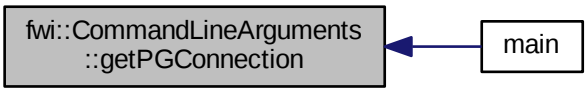
postgresql connection

See also

libconfig++ documentation at `http://www.hyperrealm.com/libconfig/`
postgresql documentation at `http://www.postgresql.org/`

Definition at line 83 of file CommandLineArguments.cpp.

Here is the caller graph for this function:



8.1.2.12 int fwi::CommandLineArguments::getPort ( ) const

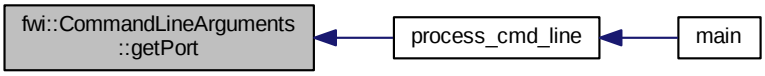
Port getter.

Returns

port argument

Definition at line 68 of file CommandLineArguments.cpp.

Here is the caller graph for this function:



8.1.2.13 string fwi::CommandLineArguments::getUser ( ) const

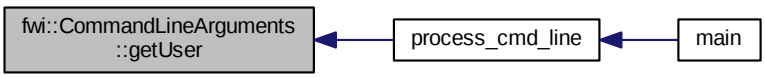
User getter.

Returns

user argument

Definition at line 73 of file CommandLineArguments.cpp.

Here is the caller graph for this function:



8.1.2.14 bool fwi::CommandLineArguments::isSetAction ( )

Checks for action setting.

Returns

true if action is set else false

Definition at line 160 of file CommandLineArguments.cpp.

8.1.2.15 bool fwi::CommandLineArguments::isSetDate ( )

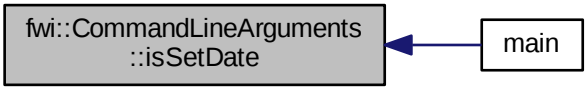
Checks for date setting.

Returns

true if date is set else false

Definition at line 165 of file CommandLineArguments.cpp.

Here is the caller graph for this function:



8.1.2.16 bool fwi::CommandLineArguments::isSetDbName ( )

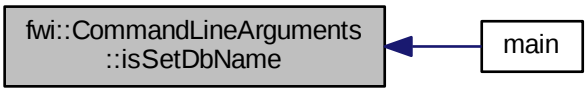
Checks for database name setting.

Returns

true if database name is set else false

Definition at line 175 of file CommandLineArguments.cpp.

Here is the caller graph for this function:



8.1.2.17 bool fwi::CommandLineArguments::isSetHelp ( )

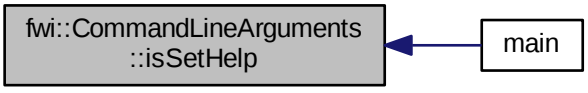
Checks for help setting.

Returns

true if help is set else false

Definition at line 195 of file CommandLineArguments.cpp.

Here is the caller graph for this function:



8.1.2.18 bool fwi::CommandLineArguments::isSetHost ( )

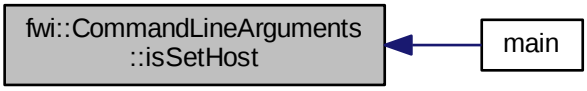
Checks for host setting.

Returns

true if host is set else false

Definition at line 170 of file CommandLineArguments.cpp.

Here is the caller graph for this function:



8.1.2.19 bool fwi::CommandLineArguments::isSetPassword ( )

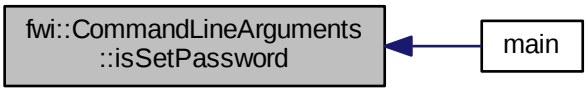
Checks for password setting.

Returns

true if password is set else false

Definition at line 180 of file CommandLineArguments.cpp.

Here is the caller graph for this function:



8.1.2.20 bool fwi::CommandLineArguments::isSetPort ( )

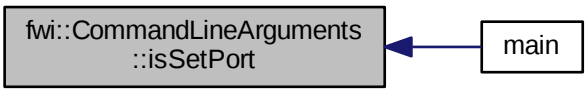
Checks for port setting.

Returns

true if port is set else false

Definition at line 185 of file CommandLineArguments.cpp.

Here is the caller graph for this function:



8.1.2.21 bool fwi::CommandLineArguments::isSetUser ( )

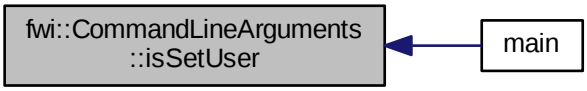
Checks for user setting.

Returns

true if user is set else false

Definition at line 190 of file CommandLineArguments.cpp.

Here is the caller graph for this function:



8.1.2.22 void fwi::CommandLineArguments::setAction (string *action*)

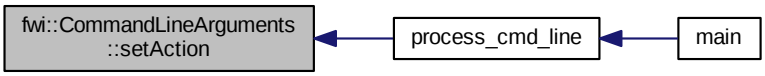
Action setter.

Parameters

action	action to set

Definition at line 120 of file CommandLineArguments.cpp.

Here is the caller graph for this function:



8.1.2.23 void fwi::CommandLineArguments::setConfigFilePath (string *cfgpath*)

ConfigFilePath setter.

Parameters

cfgpath	configFilePath to set

Definition at line 115 of file CommandLineArguments.cpp.

8.1.2.24 void fwi::CommandLineArguments::setDate (string *date*)

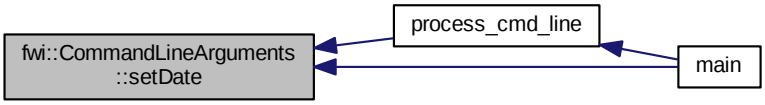
Date setter.

Parameters

date	date to set

Definition at line 125 of file CommandLineArguments.cpp.

Here is the caller graph for this function:



8.1.2.25 void fwi::CommandLineArguments::setDbName (string *dbname*)

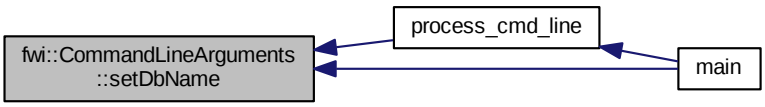
Database name setter.

Parameters

dbname	databasee name to set

Definition at line 130 of file CommandLineArguments.cpp.

Here is the caller graph for this function:



8.1.2.26 void fwi::CommandLineArguments::setHelp (bool *help*)

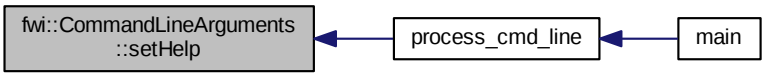
Help flag setter.

Parameters

help	help flag to set

Definition at line 155 of file CommandLineArguments.cpp.

Here is the caller graph for this function:



8.1.2.27 void fwi::CommandLineArguments::setHost (string *host*)

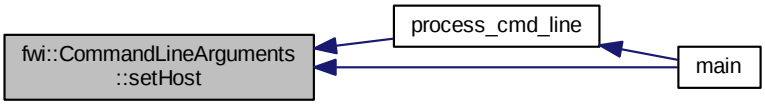
Host setter.

Parameters

host	host to set

Definition at line 135 of file CommandLineArguments.cpp.

Here is the caller graph for this function:



8.1.2.28 void fwi::CommandLineArguments::setPassword (string *password*)

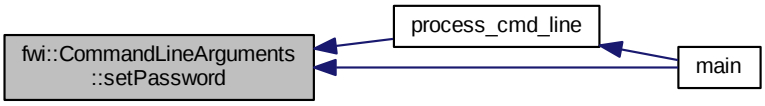
Password setter.

Parameters

password	password to set

Definition at line 140 of file CommandLineArguments.cpp.

Here is the caller graph for this function:



8.1.2.29 void fwi::CommandLineArguments::setPort (int *port*)

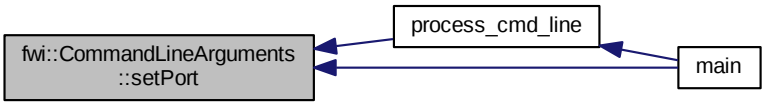
Port setter.

Parameters

port	port to set

Definition at line 145 of file CommandLineArguments.cpp.

Here is the caller graph for this function:



8.1.2.30 void fwi::CommandLineArguments::setUser (string *user*)

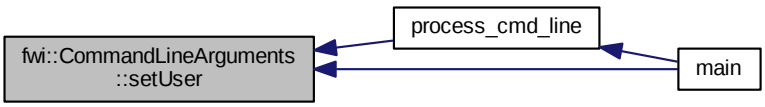
User setter.

Parameters

user	user to set

Definition at line 150 of file CommandLineArguments.cpp.

Here is the caller graph for this function:



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

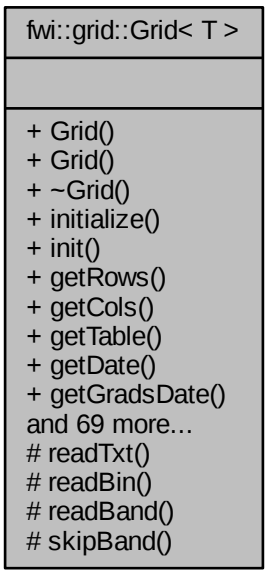
- include/CommandLineArguments.h
- src/CommandLineArguments.cpp

8.2 fwi::grid::Grid< T > Class Template Reference

3-dimensional grid

`#include <Grid.h>`

Collaboration diagram for fwi::grid::Grid< T >:



Public Types

- typedef grid_t::index index

  typedef helper

Public Member Functions

- Grid (int varnum=GRD_DEFAULT_VARNUM)

  Standard constructor.
- Grid (int rows, int cols, std::string table=GRD_DEFAULT_TABLE, int type=GEOGRID, float xstart=GRD_X_START, float ystart=GRD_Y_START, float xstep=GRD_X_STEP, float ystep=GRD_Y_STEP, COORDINATE_DIRECTION xdir=INCREASING, COORDINATE_DIRECTION ydir=INCREASING, int varnum=GRD_DEFAULT_VARNUM, int srid=GIS_DEFAULT_SRID, float undefValue=GRD_DEFAULT_UNDEF_VALUE, int slotSize=GRD_DEFAULT_SLOTSIZE)

  Parameterized constructor.
- virtual ~Grid ()

  Destructor.
- void initialize ()

  Initialize grid memory.
- void init (T t)

  set all grid elements to t
- int getRows () const

  rows number getter
- int getCols () const

  cols number getter
- std::string getTable () const

  grid database table name getter
- std::string getDate () const

  date getter
- std::string getGradsDate () const

  date in GrADS format getter
- std::string getCtlPath () const

  grid ctl file path getter
- std::string getDatPath () const

  grid dat file path getter
- std::string getExportDatPath () const

  grid export dat file path getter
- std::string getExportCtlPath () const

  grid export ctl file path getter
- std::string getTitle () const

  grid title getter
- int getType () const

  grid type getter
- int getTimeBand () const

  grid time band
- int getTimeBandsNumber () const

  grid time bands number
- std::string getStartTime () const

  grid start time getter
- std::string getTimeIncrement () const

  grid time increment getter
- int getFileNameDateOffset () const

  grid file name date offset getter
- int getIOFormat () const

  grid I/O format getter
- float getXStart () const

grid start x coordinate getter

- float getXStep () const

  grid step in x direction getter
- float getYStart () const

  grid start y coordinate getter
- float getYStep () const

  grid step in y direction getter
- COORDINATE_DIRECTION getXDir () const

  xDir getter
- COORDINATE_DIRECTION getYDir () const

  yDir getter
- int getVarNum () const

  variables number getter
- int getSRID () const

  grid srid getter
- float getUndefValue () const

  grid undefindined value getter
- int getSlotSize () const

  grid slot size getter
- grid_t getData ()

  grid internal data pointer getter
- GridFields * getFields () const

  grid fields list getter
- int getElementsCount ()

  gets the element count as rows x cols
- int getTotalElementsCount ()

  gets the total element count as rows x cols x varNum
- void setRows (int rows)

  grid rows number setter
- void setCols (int cols)

  grid columns number setter
- void setTable (std::string table)

  grid table name setter
- void setDate (std::string date)

  date setter
- void setCtlPath (std::string filepath)

  grid ctl file path setter
- void setDatPath (std::string filepath)

  grid dat file path setter
- void setExportCtlPath (std::string filepath)

  grid export ctl file path setter
- void setExportDatPath (std::string filepath)

  grid export dat file path setter
- void setTitle (std::string title)

  grid title setter
- void setType (int type)

  grid type setter
- void setTimeBand (int band)

  grid time band setter
- void setTimeBandsNumber (int bandsNumber)

  grid time bands number setter

- void setStartTime (std::string t)

  grid start time setter
- void setTimeIncrement (std::string increment)

  grid time increment setter
- void setFileNameDateOffset (int offset)

  grid file name date offset setter
- void setIOFormat (int format)

  grid I/O format setter
- void setXStart (float xstart)

  grid start x coordinate setter
- void setXStep (float xstep)

  grid step in x direction setter
- void setYStart (float ystart)

  grid start y coordinate setter
- void setYStep (float ystep)

  grid step in y direction setter
- void setXDir (COORDINATE_DIRECTION xDir)

  xDir setter
- void setYDir (COORDINATE_DIRECTION yDir)

  yDir setter
- void setVarNum (int varnum)

  grid variables number setter
- void setSRID (int srid)

  grid srid setter
- void setUndefValue (float undefValue)

  grid undefined value setter
- void setSlotSize (int slotSize)

  grid slot size setter
- void setFields (GridFields *fields)

  grid fields list setter
- T & operator() (int i, int j, int k)

  grid element access helper
- Grid< T > & operator= (const Grid< T > &grid)

  grid assignement operator
- void raw_dump ()

  raw dump helper
- bool configure (std::string name, Config &cfg)

  configure grid from config file
- bool merge (Grid< T > &other)

  *merges other whith **this***
- bool subgrid (std::vector< std::string > fieldnames, Grid< T > &sg)

  Extracts a subgrid from this having fields contained in fieldnames
- bool readCtrl (ifstream &in)

  reads grid control file
- bool read ()

  reads grid binary file
- bool writeCtrl (ofstream &out)

  write grid ctl file
- bool write (ofstream &out)

  writes grid binary file
- bool writeTxt (ofstream &out, bool esri=false)

writes grid text file

- bool stored (PGconn *conn)

  *verify if **this** is already stored in database*
- bool store (PGconn *conn)

  stores grid in database
- bool insert (PGconn *conn)

  insert grid in database
- bool update (PGconn *conn)

  updates grid in database
- bool retrieve (PGconn *conn)

  retrieves grid from database

Protected Member Functions

- bool readTxt (ifstream &in)

  reads grid data from text file
- bool readBin (ifstream &in)

  reads grid data from binary file
- bool readBand (ifstream &in)

  reads data from a grid time band (stream must be opened in binary mode) not appliable to text streams
- void skipBand (ifstream &in)

  skip the next timeband from reading

Friends

- ostream & operator<< (ostream &stream, Point &p)

  output stream operator for Point data type
- ostream & operator<< (ostream &stream, Point *p)

  output stream operator for Point data type*
- istream & operator>> (istream &stream, Point &p)

  input stream operator for Point data type
- istream & operator>> (istream &stream, Point *p)

  input stream operator for Point data type*

8.2.1 Detailed Description

template<typename T>class fwi::grid::Grid< T >

3-dimensional grid

Definition at line 70 of file Grid.h.

8.2.2 Constructor & Destructor Documentation

8.2.2.1 template<typename T > fwi::grid::Grid< T >::Grid (int *rows*, int *cols*, std::string *table* = GRD_DEFAULT_TABLE, int *type* = GEOGRID, float *xstart* = GRD_X_START, float *ystart* = GRD_Y_START, float *xstep* = GRD_X_STEP, float *ystep* = GRD_Y_STEP, COORDINATE_DIRECTION *xdir* = INCREASING, COORDINATE_DIRECTION *ydir* = INCREASING, int *varnum* = GRD_DEFAULT_VARNUM, int *srid* = GIS_DEFAULT_SRID, float *undefValue* = GRD_DEFAULT_UNDEF_VALUE, int *slotSize* = GRD_DEFAULT_SLOTSIZE)

Parameterized constructor.

Parameters

rows	rows number
cols	columns number
table	grid table name
type	grid type
xstart	grid start x coordinate
ystart	grid y start coordinate
xstep	grid step in x direction
ystep	grid step in y direction
xdir	x coordinate changing direction
ydir	y coordinate changing direction
varnum	variables number
srid	grid srid
undefValue	undefined value
slotSize	slot size

Definition at line 996 of file Grid.h.

8.2.3 Member Function Documentation

8.2.3.1 template<typename T > bool fwi::grid::Grid< T >::configure (std::string *name*, Config & *cfg*)

configure grid from config file

Parameters

name	grid name as present in config file
cfg	configuration class from libconfig++

Returns

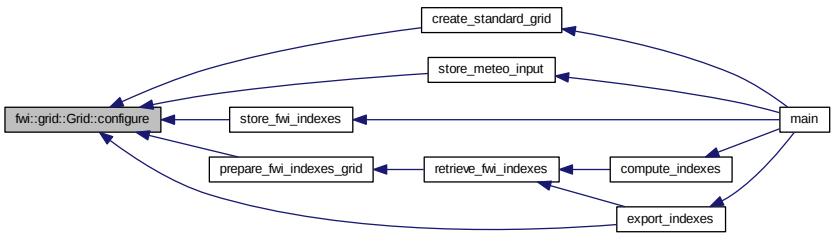
true on success else false

See also

libconfig++ documentation at http://www.hyperrealm.com/libconfig/

Definition at line 1532 of file Grid.h.

Here is the caller graph for this function:



8.2.3.2 template<typename T > int fwi::grid::Grid< T >::getCols ( ) const

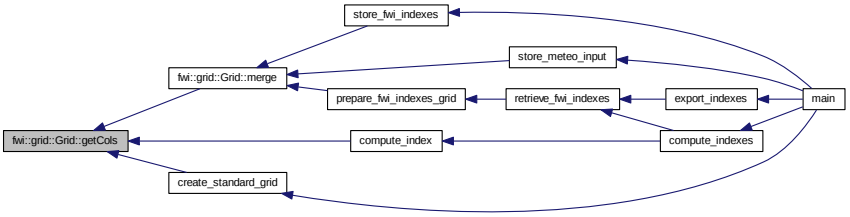
cols number getter

Returns

grid cols number

Definition at line 1051 of file Grid.h.

Here is the caller graph for this function:



8.2.3.3 template<typename T > std::string fwi::grid::Grid< T >::getCtlPath ( ) const

grid ctl file path getter

Returns

grid ctl file full path

Definition at line 1112 of file Grid.h.

8.2.3.4 template<typename T > Grid< T >::grid_t fwi::grid::Grid< T >::getData ( )

grid internal data pointer getter

Returns

internal data representation

Definition at line 1244 of file Grid.h.

8.2.3.5 template<typename T > std::string fwi::grid::Grid< T >::getDate ( ) const

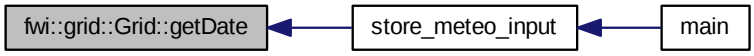
date getter

Returns

date current value

Definition at line 1063 of file Grid.h.

Here is the caller graph for this function:



8.2.3.6 template<typename T > std::string fwi::grid::Grid< T >::getDatPath ( ) const

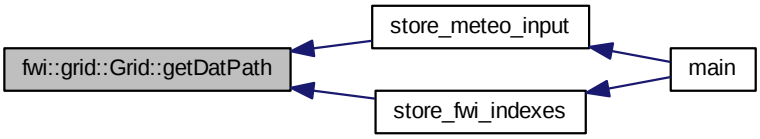
grid dat file path getter

Returns

grid datfile full path

Definition at line 1118 of file Grid.h.

Here is the caller graph for this function:



8.2.3.7 template<typename T > int fwi::grid::Grid< T >::getElementsCount ( )

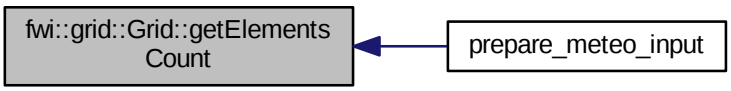
gets the element count as rows x cols

Returns

element number only x and y dimensions

Definition at line 1256 of file Grid.h.

Here is the caller graph for this function:



8.2.3.8 template<typename T > std::string fwi::grid::Grid< T >::getExportCtlPath ( ) const

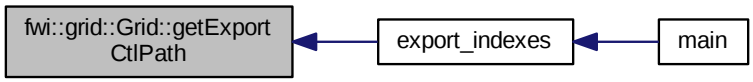
grid export ctl file path getter

Returns

grid export ctl file full path

Definition at line 1124 of file Grid.h.

Here is the caller graph for this function:



8.2.3.9 template<typename T > std::string fwi::grid::Grid< T >::getExportDatPath ( ) const

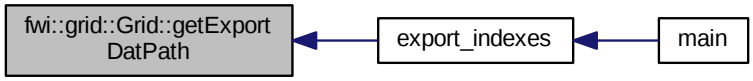
grid export dat file path getter

Returns

grid export datfile full path

Definition at line 1130 of file Grid.h.

Here is the caller graph for this function:



8.2.3.10 template<typename T > GridFields * fwi::grid::Grid< T >::getFields ( ) const

grid fields list getter

Returns

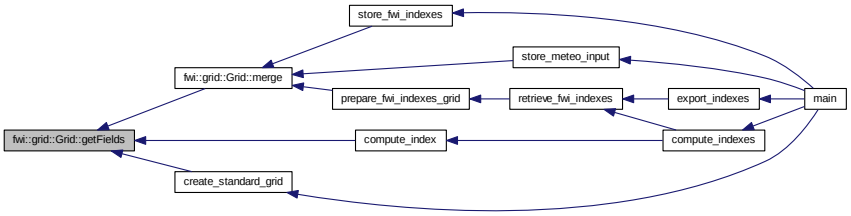
grid fields list

See also

GridFields

Definition at line 1250 of file Grid.h.

Here is the caller graph for this function:



8.2.3.11 template<typename T > int fwi::grid::Grid< T >::getFileNameDateOffset ( ) const

grid file name date offset getter

Returns

the grid file name date offset in days (+/-)

Definition at line 1172 of file Grid.h.

8.2.3.12 template<typename T > std::string fwi::grid::Grid< T >::getGradsDate ( ) const

date in GrADS format getter

Returns

date current value

Definition at line 1084 of file Grid.h.

8.2.3.13 template<typename T > int fwi::grid::Grid< T >::getIOFormat ( ) const

grid I/O format getter

Returns

grid I/O format

See also

fwi_define.h

Definition at line 1178 of file Grid.h.

8.2.3.14 template<typename T > int fwi::grid::Grid< T >::getRows ( ) const

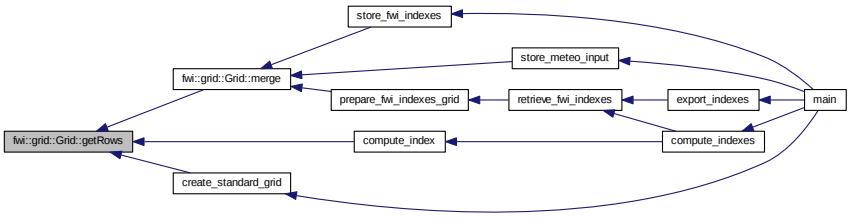
rows number getter

Returns

grid rows number

Definition at line 1045 of file Grid.h.

Here is the caller graph for this function:



8.2.3.15 template<typename T > int fwi::grid::Grid< T >::getSlotSize ( ) const

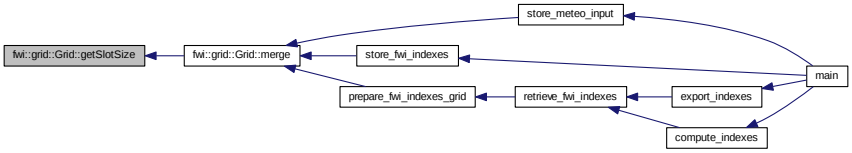
grid slot size getter

Returns

grid slot size

Definition at line 1238 of file Grid.h.

Here is the caller graph for this function:



8.2.3.16 template<typename T > int fwi::grid::Grid< T >::getSRID ( ) const

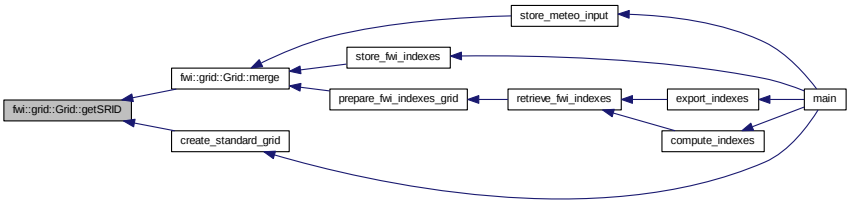
grid srid getter

Returns

grid srid

Definition at line 1226 of file Grid.h.

Here is the caller graph for this function:



8.2.3.17 template<typename T > std::string fwi::grid::Grid< T >::getStartTime ( ) const

grid start time getter

Returns

the grid start time in GrADS format

Definition at line 1160 of file Grid.h.

8.2.3.18 template<typename T > std::string fwi::grid::Grid< T >::getTable ( ) const

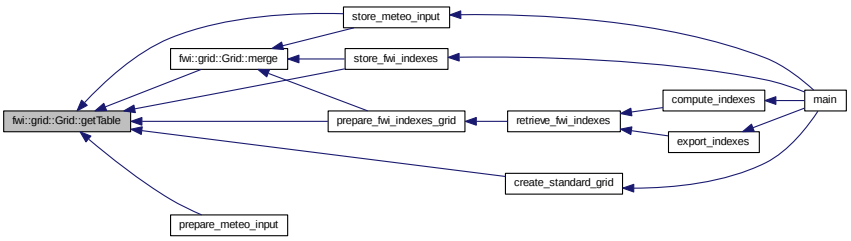
grid database table name getter

Returns

table name

Definition at line 1057 of file Grid.h.

Here is the caller graph for this function:



8.2.3.19 template<typename T > int fwi::grid::Grid< T >::getTimeBand ( ) const

grid time band

Returns

the grid time band

Definition at line 1148 of file Grid.h.

8.2.3.20 template<typename T > int fwi::grid::Grid< T >::getTimeBandsNumber ( ) const

grid time bands number

Returns

the grid time bands number

Definition at line 1154 of file Grid.h.

8.2.3.21 template<typename T > std::string fwi::grid::Grid< T >::getTimeIncrement ( ) const

grid time increment getter

Returns

the grid time increment in GrADS format

Definition at line 1166 of file Grid.h.

8.2.3.22 template<typename T > std::string fwi::grid::Grid< T >::getTitle ( ) const

grid title getter

Returns

the grid title as in grib files

Definition at line 1136 of file Grid.h.

8.2.3.23 template<typename T > int fwi::grid::Grid< T >::getTotalElementsCount ( )

gets the total element count as rows x cols x varNum

Returns

element total number

Definition at line 1262 of file Grid.h.

8.2.3.24 template<typename T > int fwi::grid::Grid< T >::getType ( ) const

grid type getter

Returns

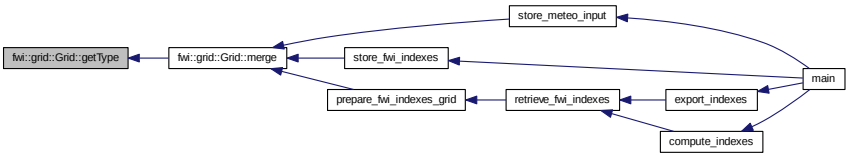
grid type

See also

fwi_define.h

Definition at line 1142 of file Grid.h.

Here is the caller graph for this function:



8.2.3.25 template<typename T > float fwi::grid::Grid< T >::getUndefValue ( ) const

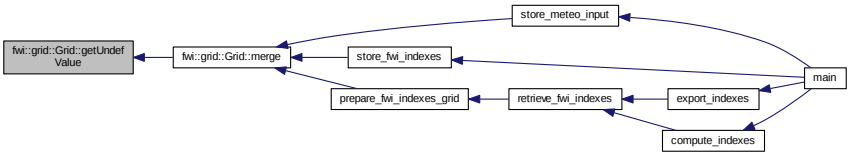
grid undefindined value getter

Returns

grid undefined value

Definition at line 1232 of file Grid.h.

Here is the caller graph for this function:



8.2.3.26 template<typename T > int fwi::grid::Grid< T >::getVarNum ( ) const

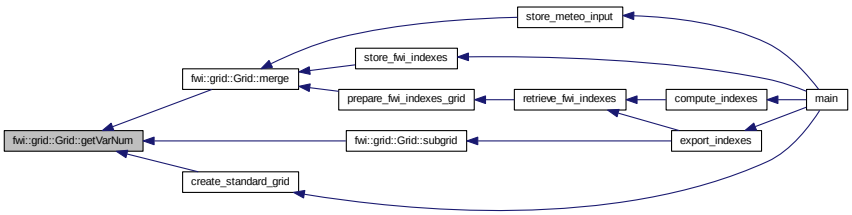
variables number getter

Returns

variables number

Definition at line 1220 of file Grid.h.

Here is the caller graph for this function:



8.2.3.27 template<typename T > COORDINATE_DIRECTION fwi::grid::Grid< T >::getXDir ( ) const

xDir getter

Returns

current value for xDir

Definition at line 1208 of file Grid.h.

8.2.3.28 template<typename T > float fwi::grid::Grid< T >::getXStart ( ) const

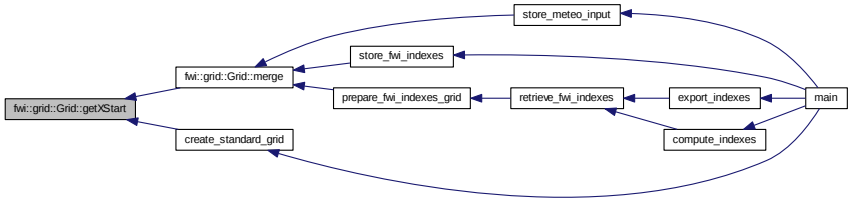
grid start x coordinate getter

Returns

grid start x coordinate

Definition at line 1184 of file Grid.h.

Here is the caller graph for this function:



8.2.3.29 template<typename T > float fwi::grid::Grid< T >::getXStep ( ) const

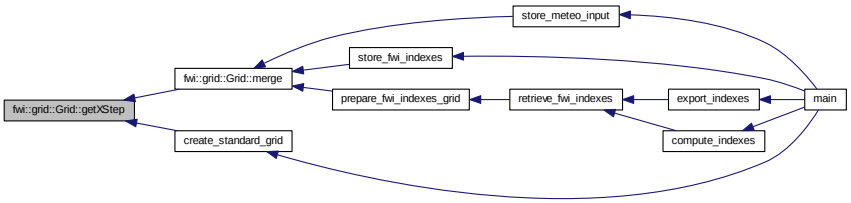
grid step in x direction getter

Returns

grid step in x direction

Definition at line 1190 of file Grid.h.

Here is the caller graph for this function:



8.2.3.30 template<typename T > COORDINATE_DIRECTION fwi::grid::Grid< T >::getYDir ( ) const

yDir getter

Returns

current value for yDir

Definition at line 1214 of file Grid.h.

8.2.3.31 template<typename T > float fwi::grid::Grid< T >::getYStart ( ) const

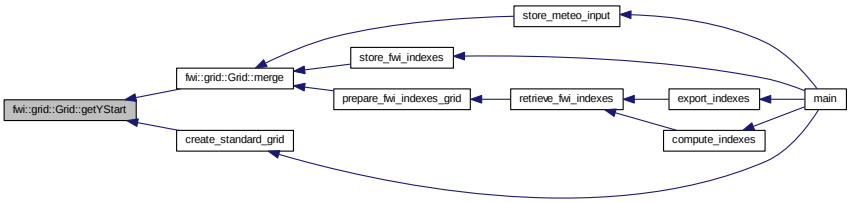
grid start y coordinate getter

Returns

grid start y coordinate

Definition at line 1196 of file Grid.h.

Here is the caller graph for this function:



8.2.3.32 template<typename T > float fwi::grid::Grid< T >::getYStep ( ) const

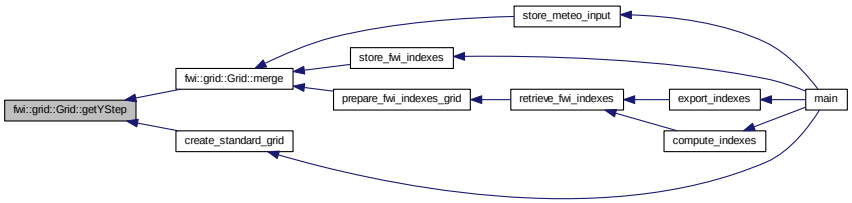
grid step in y direction getter

Returns

grid step in y direction

Definition at line 1202 of file Grid.h.

Here is the caller graph for this function:



8.2.3.33 template<typename T > bool fwi::grid::Grid< T >::insert (PGconn * *conn*)

insert grid in database

Parameters

conn	postgresql connection

Returns

true on success else false

See also

postgresql documentation at http://www.postgresql.org/

Definition at line 2213 of file Grid.h.

8.2.3.34 template<typename T > bool fwi::grid::Grid< T >::merge (Grid< T > & *other*)

merges *other* whith **this**

Parameters

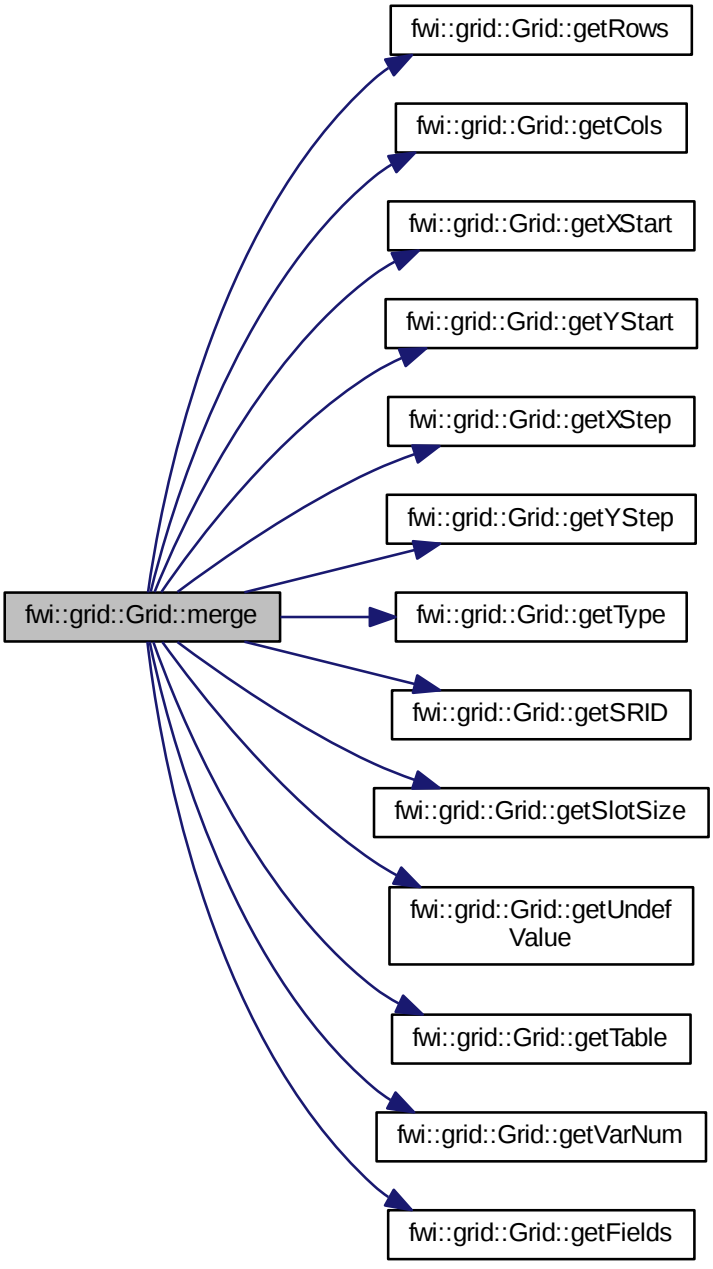
other	second grid merge can be done only if rows == other.getRows() && cols == other.getCols() and xStart == other.getXStart() && yStart == other.getYStart() and xStep == other.getXStep() && yStep == other.getYStep() and type == other.getType() && srid == other.getSRID() and slotSize == other.getSlotSize() && undefValue == other.getUndefValue() and table == other.getTable()

Returns

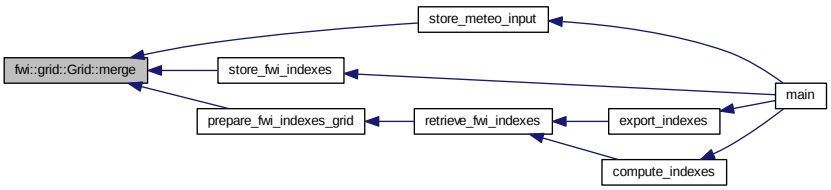
true on success else false

Definition at line 1652 of file Grid.h.

Here is the call graph for this function:



Here is the caller graph for this function:



8.2.3.35 template<typename T > T & fwi::grid::Grid< T >::operator() (int *i*, int *j*, int *k*)

grid element access helper

Parameters

i	row number
j	column number
k	plane number

Returns

grid element at row *i* column *j*

Definition at line 1447 of file Grid.h.

8.2.3.36 template<typename T > Grid< T > & fwi::grid::Grid< T >::operator= (const Grid< T > & *grid*)

grid assignement operator

Parameters

grid	grid to be assigned

Returns

this grid after assignement

Definition at line 1455 of file Grid.h.

8.2.3.37 template<typename T > bool fwi::grid::Grid< T >::read ( )

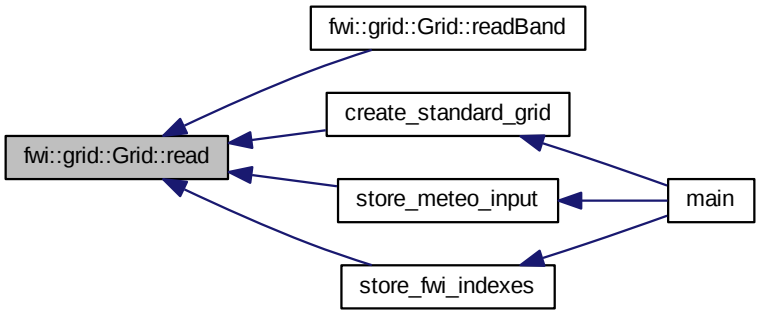
reads grid binary file

Returns

true on success else false

Definition at line 1776 of file Grid.h.

Here is the caller graph for this function:



8.2.3.38 template<typename T > bool fwi::grid::Grid< T >::readBand (ifstream & *in*) [protected]

reads data from a grid time band (stream must be opened in binary mode) not appliable to text streams

Parameters

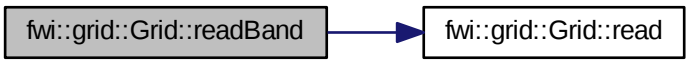
in	input stream

Returns

true on success else false

Definition at line 1919 of file Grid.h.

Here is the call graph for this function:



8.2.3.39 template<typename T > bool fwi::grid::Grid< T >::readBin (ifstream & *in*) [protected]

reads grid data from binary file

Parameters

in	input stream

Returns

true on success else false

Definition at line 1864 of file Grid.h.

8.2.3.40 template<typename T > bool fwi::grid::Grid< T >::readCtrl (ifstream & *in*)

reads grid control file

Parameters

in	input stream

Returns

true on success else false

Definition at line 1770 of file Grid.h.

8.2.3.41 template<typename T > bool fwi::grid::Grid< T >::readTxt (ifstream & *in*) [protected]

reads grid data from text file

Parameters

in	input stream

Returns

true on success else false

Definition at line 1819 of file Grid.h.

8.2.3.42 template<typename T > bool fwi::grid::Grid< T >::retrieve (PGconn * *conn*)

retrieves grid from database

Parameters

conn	postgresql connection

Returns

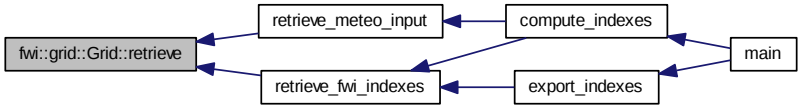
true on success else false

See also

postgresql documentation at http://www.postgresql.org/

Definition at line 2352 of file Grid.h.

Here is the caller graph for this function:



8.2.3.43 template<typename T > void fwi::grid::Grid< T >::setCols (int *cols*)

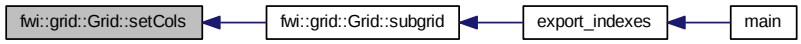
grid columns number setter

Parameters

cols	new columns number value

Definition at line 1274 of file Grid.h.

Here is the caller graph for this function:



8.2.3.44 template<typename T > void fwi::grid::Grid< T >::setCtlPath (std::string *filepath*)

grid ctl file path setter

Parameters

filepath	new ctl file path value

Definition at line 1304 of file Grid.h.

8.2.3.45 template<typename T > void fwi::grid::Grid< T >::setDate (std::string *date*)

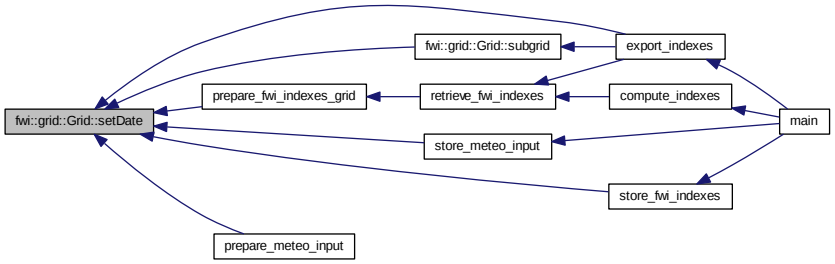
date setter

Parameters

date	date value expressed as YYYYMMDD

Definition at line 1286 of file Grid.h.

Here is the caller graph for this function:



8.2.3.46 template<typename T > void fwi::grid::Grid< T >::setDatPath (std::string *filepath*)

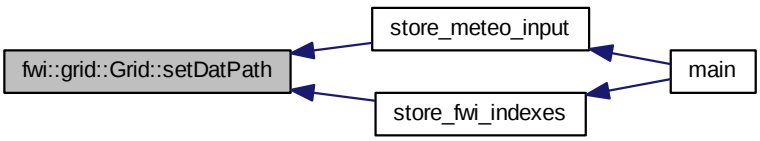
grid dat file path setter

Parameters

filepath	new dat file path value

Definition at line 1310 of file Grid.h.

Here is the caller graph for this function:



8.2.3.47 template<typename T > void fwi::grid::Grid< T >::setExportCtlPath (std::string *filepath*)

grid export ctl file path setter

Parameters

filepath	new ctl export file path value

Definition at line 1316 of file Grid.h.

8.2.3.48 template<typename T > void fwi::grid::Grid< T >::setExportDatPath (std::string *filepath*)

grid export dat file path setter

Parameters

filepath	new dat export file path value

Definition at line 1322 of file Grid.h.

8.2.3.49 template<typename T > void fwi::grid::Grid< T >::setFields (GridFields * *fields*)

grid fields list setter

Parameters

fields	new grid fields list

Definition at line 1437 of file Grid.h.

8.2.3.50 template<typename T > void fwi::grid::Grid< T >::setFileNameDateOffset (int *offset*)

grid file name date offset setter

Parameters

offset	file name date offset value

Definition at line 1364 of file Grid.h.

8.2.3.51 template<typename T > void fwi::grid::Grid< T >::setIOFormat (int *format*)

grid I/O format setter

Parameters

format	new I/O format value

Definition at line 1370 of file Grid.h.

8.2.3.52 template<typename T > void fwi::grid::Grid< T >::setRows (int *rows*)

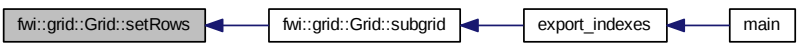
grid rows number setter

Parameters

rows	new rows number value

Definition at line 1268 of file Grid.h.

Here is the caller graph for this function:



8.2.3.53 template<typename T > void fwi::grid::Grid< T >::setSlotSize (int *slotSize*)

grid slot size setter

Parameters

slotSize	new grid slot size value

Definition at line 1431 of file Grid.h.

8.2.3.54 template<typename T > void fwi::grid::Grid< T >::setSRID (int *srid*)

grid srid setter

Parameters

srid	new srid value

Definition at line 1419 of file Grid.h.

8.2.3.55 template<typename T > void fwi::grid::Grid< T >::setStartTime (std::string *t*)

grid start time setter

Parameters

t	grid new start time value in GrADS format

See also

http://www.iges.org/grads/

Definition at line 1352 of file Grid.h.

8.2.3.56 template<typename T > void fwi::grid::Grid< T >::setTable (std::string *table*)

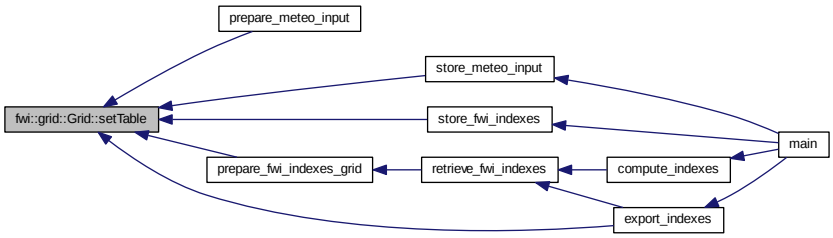
grid table name setter

Parameters

table	new table name value

Definition at line 1280 of file Grid.h.

Here is the caller graph for this function:



8.2.3.57 template<typename T > void fwi::grid::Grid< T >::setTimeBand (int *band*)

grid time band setter

Parameters

band	new time band value

Definition at line 1340 of file Grid.h.

8.2.3.58 template<typename T > void fwi::grid::Grid< T >::setTimeBandsNumber (int *bandsNumber*)

grid time bands number setter

Parameters

bandsNumber	new time bands number value

Definition at line 1346 of file Grid.h.

8.2.3.59 template<typename T > void fwi::grid::Grid< T >::setTimeIncrement (std::string *increment*)

grid time increment setter

Parameters

increment	new time increment value

Definition at line 1358 of file Grid.h.

8.2.3.60 template<typename T > void fwi::grid::Grid< T >::setTitle (std::string *title*)

grid title setter

Parameters

title	new title value

Definition at line 1328 of file Grid.h.

8.2.3.61 template<typename T > void fwi::grid::Grid< T >::setType (int *type*)

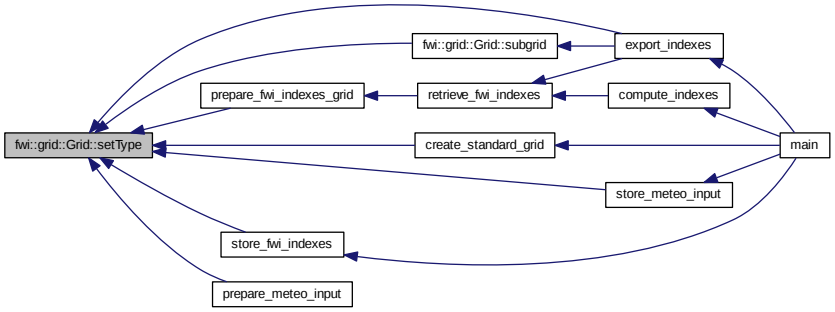
grid type setter

Parameters

type	new type value

Definition at line 1334 of file Grid.h.

Here is the caller graph for this function:



8.2.3.62 template<typename T > void fwi::grid::Grid< T >::setUndefValue (float *undefValue*)

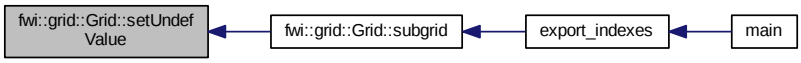
grid undefined value setter

Parameters

undefValue	new grid undefined value

Definition at line 1425 of file Grid.h.

Here is the caller graph for this function:



8.2.3.63 template<typename T > void fwi::grid::Grid< T >::setVarNum (int *varnum*)

grid variables number setter

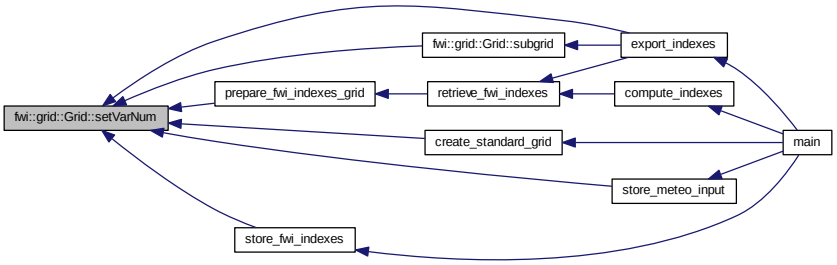
```
Implies grid resize. Elements are preserved only if the new value for
<i>varNum</i> is greater than or equal to the old one.
```

Parameters

varnum	new variables number value

Definition at line 1412 of file Grid.h.

Here is the caller graph for this function:



8.2.3.64 template<typename T > void fwi::grid::Grid< T >::setXDir (COORDINATE_DIRECTION *xDir*)

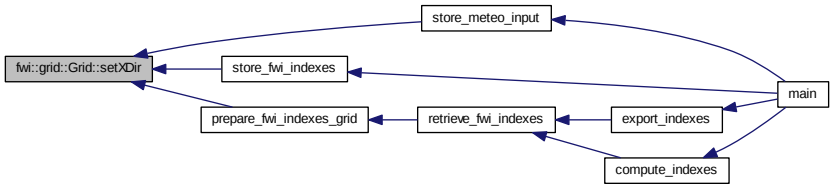
xDir setter

Parameters

xDir	new xDir value

Definition at line 1400 of file Grid.h.

Here is the caller graph for this function:



8.2.3.65 template<typename T > void fwi::grid::Grid< T >::setXStart (float *xstart*)

grid start x coordinate setter

Parameters

xstart	new xtsrat value

Definition at line 1376 of file Grid.h.

8.2.3.66 template<typename T > void fwi::grid::Grid< T >::setXStep (float *xstep*)

grid step in x direction setter

Parameters

xstep	new xstep value

Definition at line 1382 of file Grid.h.

8.2.3.67 template<typename T > void fwi::grid::Grid< T >::setYDir (COORDINATE_DIRECTION *yDir*)

yDir setter

Parameters

yDir	new yDir value

Definition at line 1406 of file Grid.h.

8.2.3.68 template<typename T > void fwi::grid::Grid< T >::setYStart (float *ystart*)

grid start y coordinate setter

Parameters

ystart	new ystart value

Definition at line 1388 of file Grid.h.

8.2.3.69 template<typename T > void fwi::grid::Grid< T >::setYStep (float *ystep*)

grid step in y direction setter

Parameters

ystep	new ystep value

Definition at line 1394 of file Grid.h.

8.2.3.70 template<typename T > void fwi::grid::Grid< T >::skipBand (ifstream & *in*) [protected]

skip the next timeband from reading

Parameters

in	input stream

Definition at line 1970 of file Grid.h.

8.2.3.71 template<typename T > bool fwi::grid::Grid< T >::store (PGconn * *conn*)

stores grid in database

Parameters

conn	postgresql connection

Returns

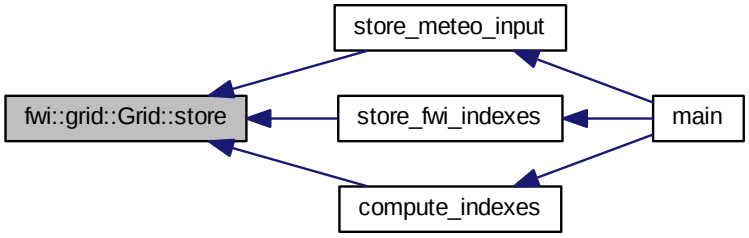
true on success else false

See also

postgresql documentation at http://www.postgresql.org/

Definition at line 2193 of file Grid.h.

Here is the caller graph for this function:



8.2.3.72 template<typename T > bool fwi::grid::Grid< T >::stored (PGconn * *conn*)

verify if **this** is already stored in database

```
The existence check is based on the element number: if there aren't
elements for <b>this</b> grid he grid is not present
```

Parameters

conn	postgresql connection

Returns

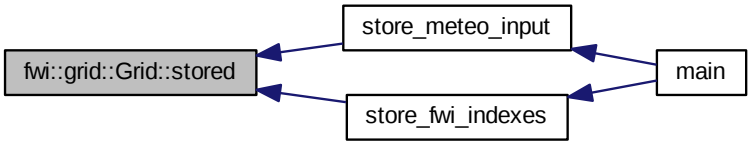
true if grid is present else false

See also

postgresql documentation at http://www.postgresql.org/

Definition at line 2160 of file Grid.h.

Here is the caller graph for this function:



8.2.3.73 template<typename T > bool fwi::grid::Grid< T >::subgrid (std::vector< std::string > *fieldnames*, Grid< T > & *sg*)

Extracts a subgrid from *this* having fields contained in *fieldnames*

Parameters

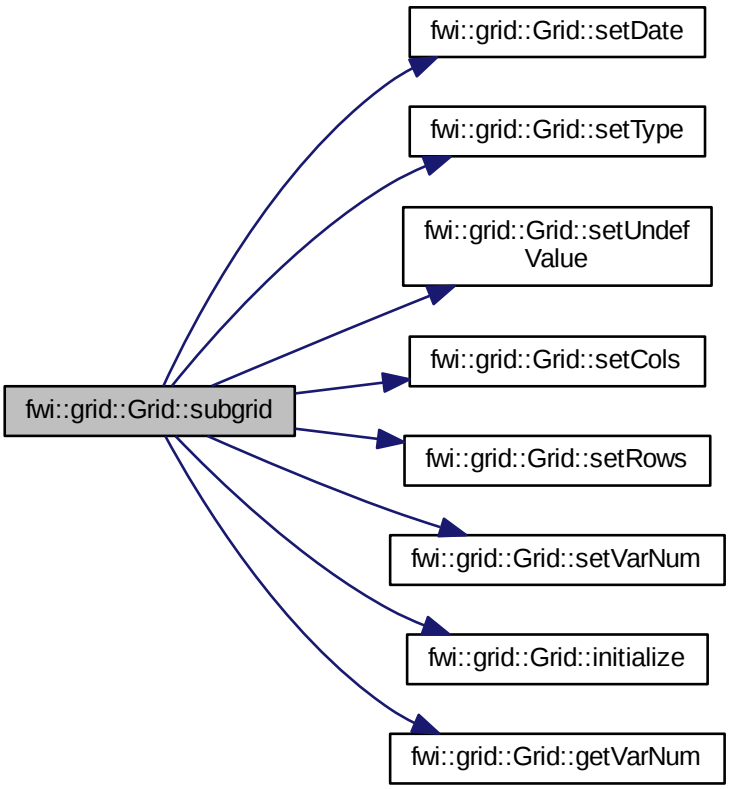
fieldnames	array containing the field names to extract from *this* grid.
sg	the computed subgrid

Returns

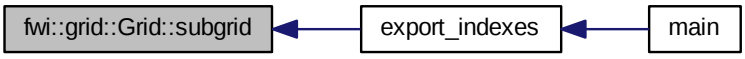
true on success else false

Definition at line 1707 of file Grid.h.

Here is the call graph for this function:



Here is the caller graph for this function:



8.2.3.74 template<typename T > bool fwi::grid::Grid< T >::update (PGconn * *conn*)

updates grid in database

Parameters

conn	postgresql connection

Returns

true on success else false

See also

postgresql documentation at http://www.postgresql.org/

Definition at line 2297 of file Grid.h.

8.2.3.75 template<typename T > bool fwi::grid::Grid< T >::write (ofstream & *out*)

writes grid binary file

Parameters

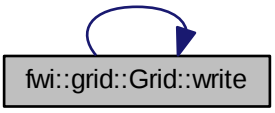
out	output stream

Returns

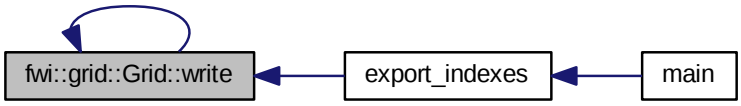
true on success else false

Definition at line 2066 of file Grid.h.

Here is the call graph for this function:



Here is the caller graph for this function:



8.2.3.76 template<typename T > bool fwi::grid::Grid< T >::writeCtrl (ofstream & *out*)

write grid ctl file

Parameters

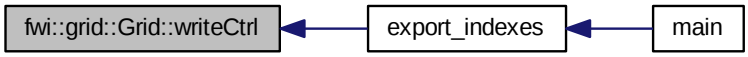
out	output stream

Returns

true on success else false

Definition at line 1980 of file Grid.h.

Here is the caller graph for this function:



8.2.3.77 template<typename T > bool fwi::grid::Grid< T >::writeTxt (ofstream & *out*, bool *esri* = `false`)

writes grid text file

Parameters

out	output stream
esri	flag for ESRI grid format

Returns

true on success else false

Definition at line 2103 of file Grid.h.

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

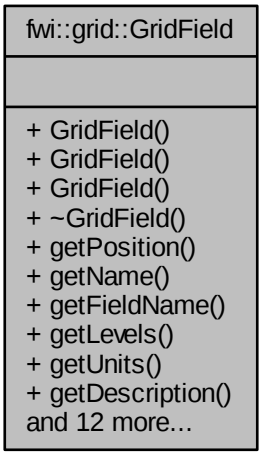
- include/Grid.h

8.3 fwi::grid::GridField Class Reference

grid field descriptor class

`#include <GridField.h>`

Collaboration diagram for fwi::grid::GridField:



Public Member Functions

- GridField ()

  Standard constructor.
- GridField (int position, string name, string field_name, levels_t levels, int units, string description, GRID_VALUE_TYPE type=FLOAT)

  Parameterized constructor.
- GridField (const GridField &field)

  Copy constructor.
- virtual ~GridField ()

  Destructor.
- int getPosition () const

  position getter
- string getName () const

  name getter
- string getFieldName () const

  field name getter
- levels_t getLevels () const

  levels getter
- int getUnits () const

  units getter
- string getDescription () const

  description getter
- GRID_VALUE_TYPE getType () const

  type getter
- void setPosition (int position)

  position setter
- void setName (string name)

  name setter

- void setLevels (levels_t levels)

  levels setter
- void setUnits (int units)

  units setter
- void setDescription (string description)

  description setter
- void setType (GRID_VALUE_TYPE type)

  type setter
- GridField & operator= (GridField &field)

  assignment operator
- GridField & operator= (GridField *field)

  assignment operator
- bool operator== (GridField &field)

  equality operator
- bool operator== (GridField *field)

  equality operator

Friends

- ostream & operator<< (ostream &stream, GridField gfd)

  output stream operator
- ostream & operator<< (ostream &stream, GridField *gfd)

  output stream operator
- istream & operator>> (istream &stream, GRID_VALUE_TYPE &t)

  input stream operator
- istream & operator>> (istream &stream, GridField &gfd)

  input stream operator

8.3.1 Detailed Description

grid field descriptor class

Definition at line 48 of file GridField.h.

8.3.2 Constructor & Destructor Documentation

8.3.2.1 fwi::grid::GridField::GridField (int *position*, string *name*, string *field_name*, levels_t *levels*, int *units*, string *description*, GRID_VALUE_TYPE *type* = FLOAT)

Parameterized constructor.

Parameters

position	position in field list
name	field name
field_name	database field name
levels	levels vector
units	GrADS units tag
description	field description
type	field type

Definition at line 31 of file GridField.cpp.

8.3.3 Member Function Documentation

8.3.3.1 string fwi::grid::GridField::getDescription ( ) const

description getter

Returns

description

Definition at line 81 of file GridField.cpp.

8.3.3.2 string fwi::grid::GridField::getFieldName ( ) const

field name getter

Returns

field name

Definition at line 66 of file GridField.cpp.

8.3.3.3 levels_t fwi::grid::GridField::getLevels ( ) const

levels getter

Returns

levels

Definition at line 71 of file GridField.cpp.

8.3.3.4 string fwi::grid::GridField::getName ( ) const

name getter

Returns

field name

Definition at line 61 of file GridField.cpp.

8.3.3.5 int fwi::grid::GridField::getPosition ( ) const

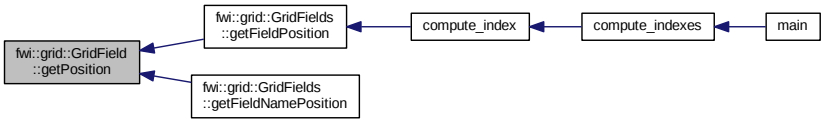
position getter

Returns

field position

Definition at line 56 of file GridField.cpp.

Here is the caller graph for this function:



8.3.3.6 GRID_VALUE_TYPE fwi::grid::GridField::getType ( ) const

type getter

Returns

field type

Definition at line 86 of file GridField.cpp.

8.3.3.7 int fwi::grid::GridField::getUnits ( ) const

units getter

Returns

units

Definition at line 76 of file GridField.cpp.

8.3.3.8 GridField & fwi::grid::GridField::operator= (GridField & *field*)

assignment operator

Parameters

field	assigned value

Returns

the changed object

Definition at line 130 of file GridField.cpp.

8.3.3.9 GridField & fwi::grid::GridField::operator= (GridField * *field*)

assignment operator

Parameters

field	object to be assigned

Returns

this after assignment

Definition at line 146 of file GridField.cpp.

8.3.3.10 bool fwi::grid::GridField::operator== (GridField & *field*)

equality operator

Parameters

field	object to test for equality

Returns

true on equality else false

Definition at line 164 of file GridField.cpp.

8.3.3.11 bool fwi::grid::GridField::operator== (GridField * *field*)

equality operator

Parameters

field	object to test for equality

Returns

true on equality else false

Definition at line 170 of file GridField.cpp.

8.3.3.12 void fwi::grid::GridField::setName (string *name*)

name setter

Parameters

name	new field name

Definition at line 96 of file GridField.cpp.

8.3.3.13 void fwi::grid::GridField::setPosition (int *position*)

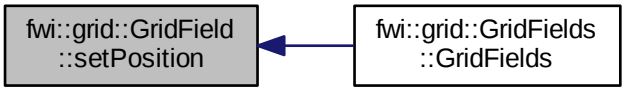
position setter

Parameters

position	new field position

Definition at line 91 of file GridField.cpp.

Here is the caller graph for this function:



8.3.3.14 void fwi::grid::GridField::setType (GRID_VALUE_TYPE *type*)

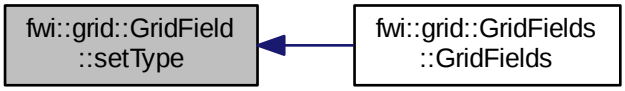
type setter

Parameters

type	new field type

Definition at line 121 of file GridField.cpp.

Here is the caller graph for this function:



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

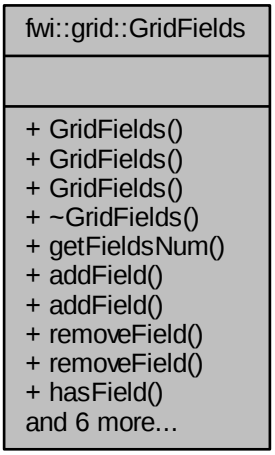
- include/GridField.h
- src/GridField.cpp

8.4 fwi::grid::GridFields Class Reference

Fields list class.

`#include <GridField.h>`

Collaboration diagram for fwi::grid::GridFields:



Public Member Functions

- GridFields ()

  Standard constructor.
- GridFields (int fieldsNum)

  Parameterized constructor.
- GridFields (int fieldsNum, GRID_VALUE_TYPE type)

  Parameterized constructor.
- virtual ~GridFields ()

  Destructor.
- int getFieldsNum () const

  fields number getter
- void addField (GridField *field)

  adds a field to fields list
- void addField (int position, string name, string field_name, levels_t levels, int units, string description, GRID_VALUE_TYPE type=FLOAT)

  adds a field to fields list by its parameters
- void removeField (GridField *field)

  removes field from fields list
- void removeField (string name)

  removes field by name
- bool hasField (GridField *field)

  checks if field is in fields list
- bool hasField (string name)

  checks if field with name is present in fields list
- GridField * getFieldByName (string &name)

  Gets a GridField given its name.
- int getFieldPosition (string &name)

Gets field position given its name name the searched field name return The GridField position of field named with name. If field's name is not found (NOT_FOUND = -1) is returned.

- GridField * getFieldByFieldName (string &fname)

  Gets a GridField given its field name.

- int getFieldNamePosition (string &fname)

  Gets field position given its field name name the searched field field name return The GridField position of field named with fname. If field's fname is not found (NOT_FOUND = -1) is returned.

8.4.1 Detailed Description

Fields list class.

Definition at line 268 of file GridField.h.

8.4.2 Constructor & Destructor Documentation

8.4.2.1 fwi::grid::GridFields::GridFields (int *fieldsNum*)

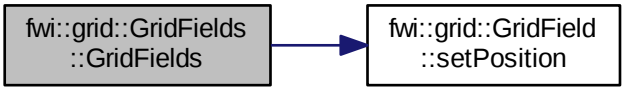
Parameterized constructor.

Parameters

fieldsNum	fields number

Definition at line 212 of file GridField.cpp.

Here is the call graph for this function:



8.4.2.2 fwi::grid::GridFields::GridFields (int *fieldsNum*, GRID_VALUE_TYPE *type*)

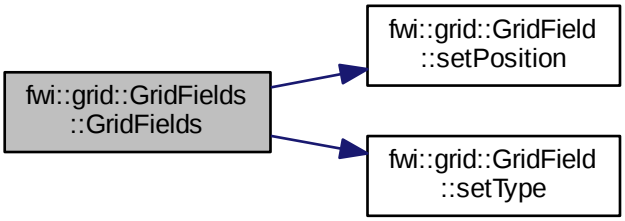
Parameterized constructor.

Parameters

fieldsNum	fields number
type	fields type

Definition at line 221 of file GridField.cpp.

Here is the call graph for this function:



8.4.3 Member Function Documentation

8.4.3.1 void fwi::grid::GridFields::addField (GridField * *field*)

adds a field to fields list

Parameters

field	new field

Definition at line 246 of file GridField.cpp.

8.4.3.2 void fwi::grid::GridFields::addField (int *position*, string *name*, string *field_name*, levels_t *levels*, int *units*, string *description*, GRID_VALUE_TYPE *type* = `FLOAT`)

adds a field to fields list by its parameters

Parameters

position	field's position
name	field's name
field_name	database field's name
levels	levels vector
units	field units
description	field description
type	field's type

Definition at line 251 of file GridField.cpp.

8.4.3.3 GridField * fwi::grid::GridFields::getFieldByFieldName (string & *fname*)

Gets a *GridField* given its field name.

Parameters

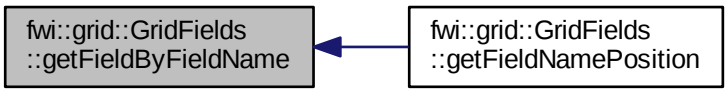
fname	the searched field name

Returns

The *GridField* which fieldname is *name* else NULL

Definition at line 348 of file GridField.cpp.

Here is the caller graph for this function:



8.4.3.4 GridField * fwi::grid::GridFields::getFieldByName (string & *name*)

Gets a *GridField* given its name.

Parameters

name	the searched field name

Returns

The *GridField* which name is *name* else NULL

Definition at line 300 of file GridField.cpp.

Here is the caller graph for this function:

8.4.3.5 int fwi::grid::GridFields::getFieldsNum ( ) const

fields number getter

Returns

fields number

Definition at line 241 of file GridField.cpp.

8.4.3.6 bool fwi::grid::GridFields::hasField (GridField * *field*)

checks if field is in fields list

Returns

true if field is present else false

Definition at line 281 of file GridField.cpp.

8.4.3.7 bool fwi::grid::GridFields::hasField (string *name*)

checks if field with name is present in fields list

Parameters

name	name to check for

Returns

true if field is present else false

Definition at line 287 of file GridField.cpp.

8.4.3.8 void fwi::grid::GridFields::removeField (GridField * *field*)

removes field from fields list

Parameters

field	field to be removed

Definition at line 258 of file GridField.cpp.

8.4.3.9 void fwi::grid::GridFields::removeField (string *name*)

removes field by name

Parameters

name	name of field to be removed

Definition at line 269 of file GridField.cpp.

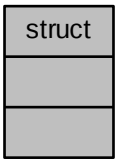
The documentation for this class was generated from the following files:

- include/GridField.h
- src/GridField.cpp

8.5 struct Struct Reference

defines floating-point values fixed-point obj.getType()generator policy

Collaboration diagram for struct:



8.5.1 Detailed Description

defines floating-point values fixed-point obj.getType()generator policy

See also

http://www.boost.org/doc/libs/1_41_0/libs/spirit/doc/html/spirit/karma/reference/nume
_number.html

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

- include/ctlgen.hpp

Chapter 9

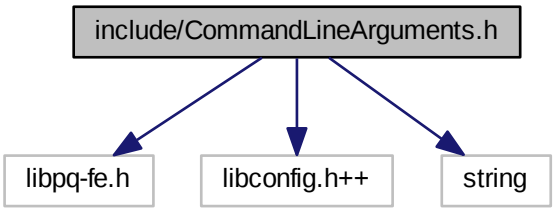
File Documentation

9.1 include/CommandLineArguments.h File Reference

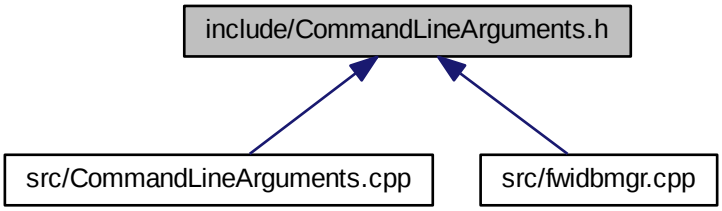
Command line arguments class.

```
#include <libpq-fe.h>
#include <libconfig.h++>
#include <string>
```

Include dependency graph for CommandLineArguments.h:



This graph shows which files directly or indirectly include this file:



Classes

- class fwi::CommandLineArguments

  Command line arguments class.

Namespaces

- namespace fwi

  main fwidbmgr namespace

9.1.1 Detailed Description

Command line arguments class.

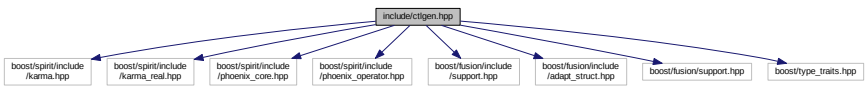
Definition in file CommandLineArguments.h.

9.2 include/ctlgen.hpp File Reference

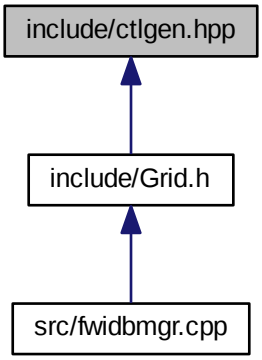
Grads control file generator using spirit.karma from boost libraries.

```
#include <boost/spirit/include/karma.hpp>
#include <boost/spirit/include/karma_real.hpp>
#include <boost/spirit/include/phoenix_core.hpp>
#include <boost/spirit/include/phoenix_operator.hpp>
#include <boost/fusion/include/support.hpp>
#include <boost/fusion/include/adapt_struct.hpp>
#include <boost/fusion/support.hpp>
#include <boost/type_traits.hpp>
```

Include dependency graph for ctlgen.hpp:



This graph shows which files directly or indirectly include this file:



Namespaces

- namespace fwi

  main fwidbmgr namespace

Typedefs

- typedef real_generator< float, fixed_policy< float > > **fwi::generators::fixed_type**

  floating-point fixed-point generator type

Variables

- fixed_type const **fwi::generators::fixedgen** = fixed_type()

  fixed-point generator instance

9.2.1 Detailed Description

Grads control file generator using spirit.karma from boost libraries. CTL file generator This generator produces the .ctl file content about the coupled .dat file like for example:

```
DSET /home/meteo/programmi/interpolazione_statistica/oi_fwi/temp/20120111t2m-
_g.dat
TITLE 2m temperature
UNDEF -9999.000
XDEF 177 LINEAR 1436301.37500000 1500.00000000000
YDEF 174 LINEAR 4916704.50000000 1500.00000000000
ZDEF 1 LINEAR 1.000000 1.000000
TDEF 24 LINEAR 13:00Z11jan2012 1HR
VARS 3
```

```
xb 0 99 T background field
xa 0 99 T analysis field
xidi 0 99 integral data influence
ENDVARS
```

See also

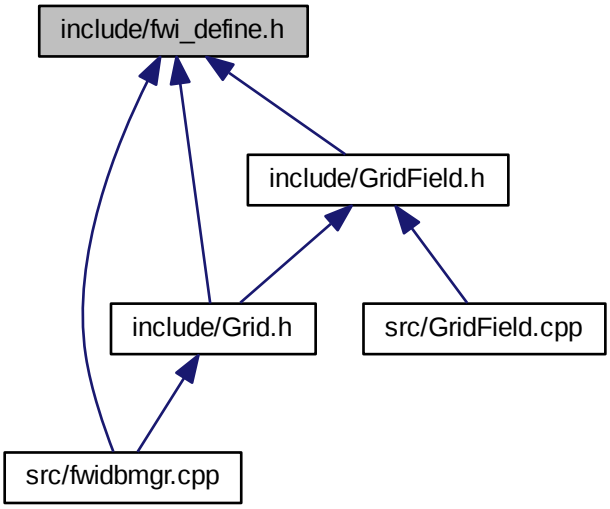
http://www.boost.org/

Definition in file ctlgen.hpp.

9.3 include/fwi_define.h File Reference

defines for program

This graph shows which files directly or indirectly include this file:



Macros

- #define GRD_DEFAULT_UNDEF_VALUE -9999.0
  default grid undefined value
- #define GRD_COLS 177
  default grid columns number
- #define GRD_ROWS 174
  default grid rows number
- #define GRD_X_START 1436301.375
  default grid start point x coordinate
- #define GRD_Y_START 4916704.500
  default grid start point y coordinate

- #define GRD_X_STEP 1500.0

  default grid step in x direction expressed in meters
- #define GRD_Y_STEP 1500.0

  default grid step in y direction expressed in meters
- #define GRD_DEFAULT_VARNUM 1

  default grid variables number
- #define TOPOGRAPHY_FIELDSNUM 6

  Topography file fields number.
- #define TEMPERATURE_FIELDSNUM 3

  Temperature dat file fields number.
- #define HUMIDITY_FIELDSNUM 6

  Humidity dat file fields number.
- #define WINDSPEED_FIELDSNUM 13

  Windspeed dat file fields number.
- #define RAIN_FIELDSNUM 3

  Rain dat file fields number.
- #define GEOGRID 0

  Georeferenced grid.
- #define METEO_INPUT 1

  Grid containing meteo data.
- #define FWI_INDEXES 2

  Grid containing FWI indexes data.
- #define NUMERIC 3

  Grid containing generic data.
- #define GRD_FORMAT_TEXT 0

  Grid data are stored as ascii text.
- #define GRD_FORMAT_BINARY 1

  Grid data are stored in binary format.
- #define METEO_PARAM_TEMPERATURE "temperature"

  Meteo parameter: temperature.
- #define METEO_PARAM_HUMIDITY "humidity"

  Meteo parameter: humidity.
- #define METEO_PARAM_WINDSPEED "windspeed"

  Meteo parameter: wind speed.
- #define METEO_PARAM_RAIN "rain"

  Meteo parameter: rain.
- #define ACTION_CREATE "create"

  Program switch to create empty database.
- #define ACTION_CREATE_STD_GRID "createstdgrid"

  Program switch to create the standard grid (177x174)
- #define ACTION_IN "in"

  Program switch to store the needed input data in database.
- #define ACTION_OUT "out"

  Program switch to store FWI indexes computation results in database.
- #define ACTION_OUT_IMG "outimg"

  Program switch to store summary images in database.
- #define ACTION_EXPORT_INDEXES "exportidx"

  Program switch to export FWI indexes as GrADS files.
- #define ACTION_COMPUTE_INDEXES "computeidx"

  Program switch to compute indexes.
- #define ACTION_COMPUTE_INDEXES_24 "computeidx24"

Program switch to compute indexes over 24 time slots.

- #define ACTION_TEST "test"

  Used only for testing.
- #define GIS_DEFAULT_SRID 3003

  Default used SRID (Gauss-Boaga - Monte Mario 1 - Roma 40)
- #define GRD_DEFAULT_TABLE "grid"

  Default grid table name.
- #define GRD_METEO_INPUT_TABLE "meteo_input"

  Default meteo input tables name.
- #define GRD_FWI_INDEXES_TABLE "fwi_indexes"

  Default FWI indexes tables name.
- #define TAG_DATE "<<date>>"

  Date tag used in fwidbmgr.conf configuration file.
- #define NOT_FOUND -1

  Not found value after serch.
- #define SUCCESS 1

  successful operation return value
- #define FAILURE 0

  unsuccessfull operation return value

9.3.1 Detailed Description

defines for program

Definition in file fwi_define.h.

9.3.2 Macro Definition Documentation

9.3.2.1 #define ACTION_COMPUTE_INDEXES "computeidx"

Program switch to compute indexes.

This is an experimental feature At the moment this action computes only these three new indexes

- angstroem
- fmi
- sharples

Definition at line 197 of file fwi_define.h.

9.3.2.2 #define ACTION_COMPUTE_INDEXES_24 "computeidx24"

Program switch to compute indexes over 24 time slots.

This is an experimental feature At the moment this action computes only these three new indexes

Definition at line 207 of file fwi_define.h.

9.3.2.3 #define FAILURE 0

unsuccessfull operation return value

FAILURE

Definition at line 265 of file fwi_define.h.

9.3.2.4 #define GRD_X_START 1436301.375

default grid start point x coordinate

Coordinates are expressed using Monte Mario 1 SRS

See also

postgis documentation at http://postgis.refractions.net/
http://www.epsg.org/

Definition at line 34 of file fwi_define.h.

9.3.2.5 #define GRD_Y_START 4916704.500

default grid start point y coordinate

Coordinates are expressed using Monte Mario 1 SRS

See also

postgis documentation at http://postgis.refractions.net/
http://www.epsg.org/

Definition at line 44 of file fwi_define.h.

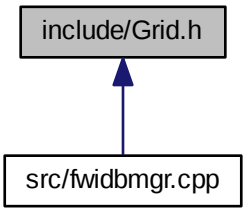
9.4 include/Grid.h File Reference

2-dimensions grid class

```
#include "fwi_define.h"
#include "GridField.h"
#include <iostream>
#include <fstream>
#include <vector>
#include <list>
#include <map>
#include "boost/multi_array.hpp"
#include "boost/date_time/posix_time/posix_time.hpp"
#include <boost/date_time/date_facet.hpp>
#include <cassert>
#include <libpq-fe.h>
#include <ctlgen.hpp>
```

Include dependency graph for Grid.h:

This graph shows which files directly or indirectly include this file:



Classes

- class fwi::grid::Grid< T >
  3-dimensional grid

Namespaces

- namespace fwi
  main fwidbmgr namespace

Typedefs

- typedef Grid< Point * > **fwi::grid::PointGrid_t**
  standard grid with 1 Point variable*
- typedef Grid< float > **fwi::grid::Float1Grid_t**
  standard grid with 1 float variable
- typedef Grid< int > **fwi::grid::Int1Grid_t**
  standard grid with 1 int variable

Variables

- log4cxx::LoggerPtr logger
  Application logger.

9.4.1 Detailed Description

2-dimensions grid class

Definition in file Grid.h.

9.4.2 Variable Documentation

9.4.2.1 log4cxx::LoggerPtr logger

Application logger.

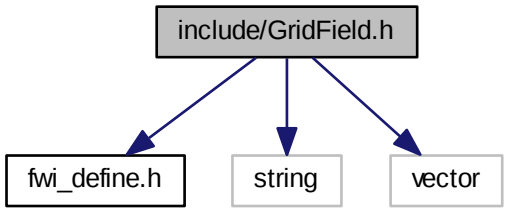
@see log4cxx documentation at http://logging.apache.org/log4cxx/

9.5 include/GridField.h File Reference

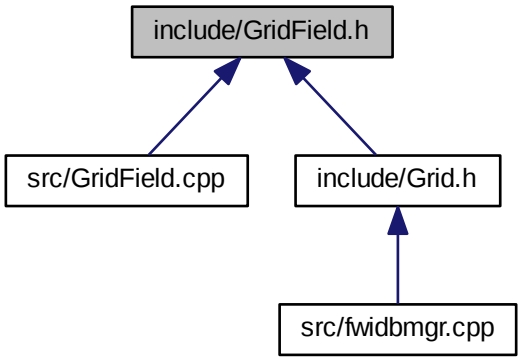
Grid field description class.

```
#include "fwi_define.h"
#include <string>
#include <vector>
```

Include dependency graph for GridField.h:



This graph shows which files directly or indirectly include this file:



Classes

- class fwi::grid::GridField
  grid field descriptor class
- class fwi::grid::GridFields
  Fields list class.

Namespaces

- namespace fwi
  main fwidbmgr namespace

Typedefs

- typedef vector< int > **fwi::grid::levels_t**

  GrADS var levels.
- typedef vector< GridField * > **fwi::grid::fields_t**

  shortcut for list<GridField>*
- typedef vector< GridField * > ::iterator **fwi::grid::fields_iterator_t**

  shortcut for list<GridField>::iterator*

Enumerations

- enum **GRID_VALUE_TYPE** { **fwi::grid::INTEGER** = 0, **fwi::grid::FLOAT** = 1, **fwi::grid::STRING** = 2, **fwi::grid::POINT** = 3 }

  value type to be stored in grid

9.5.1 Detailed Description

Grid field description class.

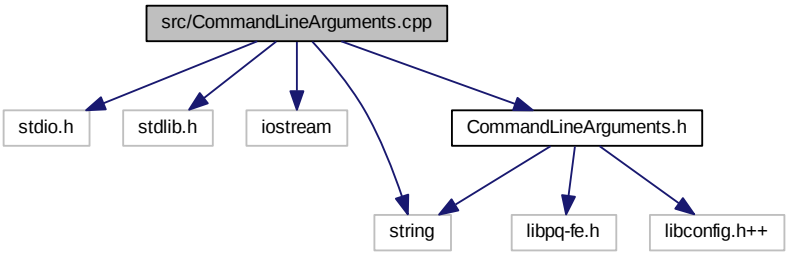
Definition in file GridField.h.

9.6 src/CommandLineArguments.cpp File Reference

command line argument class implementation

```
#include <stdio.h>
#include <stdlib.h>
#include <iostream>
#include <string>
#include "CommandLineArguments.h"
```

Include dependency graph for CommandLineArguments.cpp:



Namespaces

- namespace fwi

  main fwidbmgr namespace

9.6.1 Detailed Description

command line argument class implementation

Definition in file CommandLineArguments.cpp.

9.7 src/fwidbmgr.cpp File Reference

The main program file.

```
#include <stdio.h>
#include <stdlib.h>
#include <cstdlib>
#include <string.h>
#include <strings.h>
#include <time.h>
#include <iostream>
#include <fstream>
#include <sstream>
#include <iomanip>
#include <vector>
#include <assert.h>
#include <getopt.h>
#include <arpa/inet.h>
#include <libconfig.h++>
#include <libpq-fe.h>
#include <geos.h>
#include "boost/date_time/posix_time/posix_time.hpp"
#include <boost/date_time/date_facet.hpp>
#include "log4cxx/logger.h"
#include "log4cxx/basicconfigurator.h"
#include "log4cxx/helpers/exception.h"
#include <log4cxx/xml/domconfigurator.h>
#include <fwi_define.h>
#include <CommandLineArguments.h>
#include <Grid.h>
```

Include dependency graph for fwidbmgr.cpp:

Functions

- std::string getProgramHome ()

  Reads environment variable FWIDBMGR_HOME.
- struct tm parseDate (std::string dt)

  Parses a string for a date value.
- void usage ()

  helper function for usage display
- bool process_cmd_line (int argc, char **argv, CommandLineArguments *args)

  Process command line parameters.
- bool getSqlFiles (std::vector< std::string > &files)

gets sql files paths from configuration

- std::string loadQueryFromFile (std::string filepath)

  loads in memory a file content
- bool execute (std::string &query)

  executes query command
- bool create_database ()

  creates database structure based on configuration contents
- bool fill_database ()

  fills empty database structure with data (ex. spatial ref systems from postgis)
- bool prepare_meteo_input (std::string date)

  creates skeleton structure for meteo input grid referring to date
- bool fill_nometeo_points ()

  fills grid table with no mete point flags
- bool import_regions ()

  Imports regions polygons in database from file.
- bool import_provinces ()

  Imports provinces polygons in database from file.
- bool create_standard_grid ()

  create a standard 174 row x 177 columns grid
- bool delete_meteo_input (CommandLineArguments &args)

  deletes meteo input grid for date in args from database
- bool store_meteo_input (CommandLineArguments &args)

  stores meteo input grid for date in args reading from files
- bool retrieve_meteo_input (CommandLineArguments &args, Grid< float > *res)

  retrieves meteo input grid for date in args reading from database
- bool delete_fwi_indexes (CommandLineArguments &args)

  deletes fwi indexes grid for date in args from database
- bool store_fwi_indexes (CommandLineArguments &args)

  stores fwi indexes grid for date in args reading from files
- bool prepare_fwi_indexes_grid (CommandLineArguments &args, Grid< float > *res)

  prepares and configure fwi indexes grid
- bool retrieve_fwi_indexes (CommandLineArguments &args, Grid< float > *res)

  retrieves fwi indexes grid for date in args reading from database
- bool getFileBytea (std::string file, char **buffer, int &size)

  Reads file, returns file contents in buffer and file size in size.
- bool delete_images (CommandLineArguments &args)

  deletes fwi indexes grid for date in args from database
- bool store_images (CommandLineArguments &args)

  stores fwi images for date in args reading from disk.
- bool retrieve_images (CommandLineArguments &args)

  retrieves fwi images for date in args reading from database
- bool export_indexes (CommandLineArguments &args)

  exports fwi indexes grid for date in args from database
- bool load_computation_indexes (std::vector< std::string > &indexes)

  Loads from configuration the list of index names to be computed.
- bool compute_index (std::string &index_name, Grid< float > *indexes, Grid< float > *meteo)

  Compute a single index given its name.
- bool compute_indexes (CommandLineArguments &args)

  Computes the new three indexes angstroem, fmi and sharples as an experimental feature. Requires the previous import of the standard indexes in database.
- int main (int argc, char **argv)

  main function

9.7.1 Detailed Description

The main program file.

Definition in file fwidbmgr.cpp.

9.7.2 Function Documentation

9.7.2.1 bool compute_index (std::string & *index_name*, Grid< float > * *indexes*, Grid< float > * *meteo*)

Compute a single index given its name.

Parameters

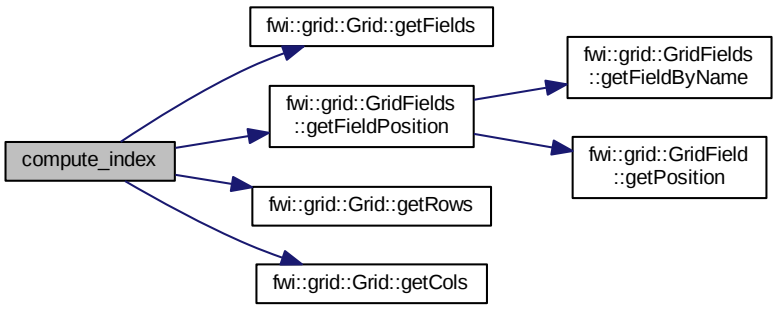
index_name	the index name
indexes	the already loaded indexes grid
meteo	the already loaded meteo input grid

Returns

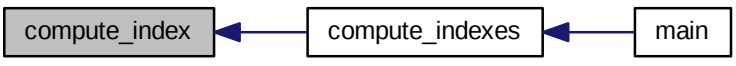
true on success else false

Definition at line 3317 of file fwidbmgr.cpp.

Here is the call graph for this function:



Here is the caller graph for this function:



9.7.2.2 bool compute_indexes (CommandLineArguments & *args*)

Computes the new three indexes angstroem, fmi and sharples as an experimental feature. Requires the previous import of the standard indexes in database.

Parameters

args	command line arguments class

Returns

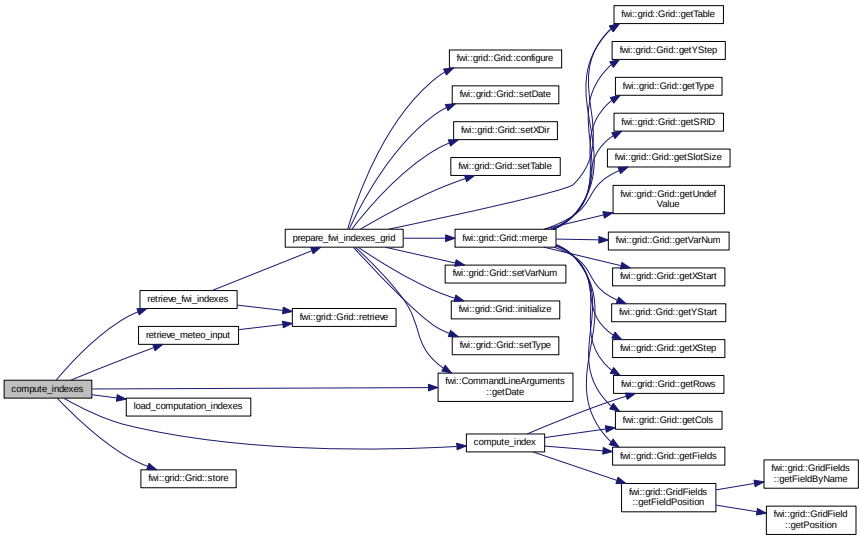
true on success else false

See also

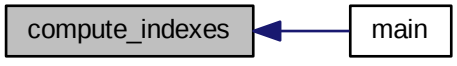
CommandLineArguments

Definition at line 3446 of file fwidbmgr.cpp.

Here is the call graph for this function:



Here is the caller graph for this function:



9.7.2.3 bool create_database ( )

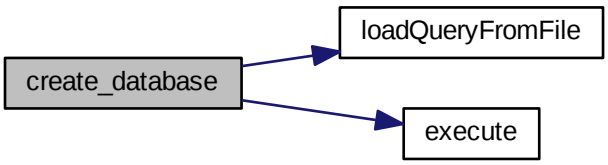
creates database structure based on configuration contents

Returns

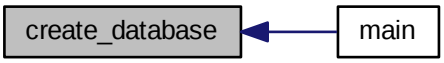
true on success else false

Definition at line 590 of file fwidbmgr.cpp.

Here is the call graph for this function:



Here is the caller graph for this function:



9.7.2.4 bool create_standard_grid ( )

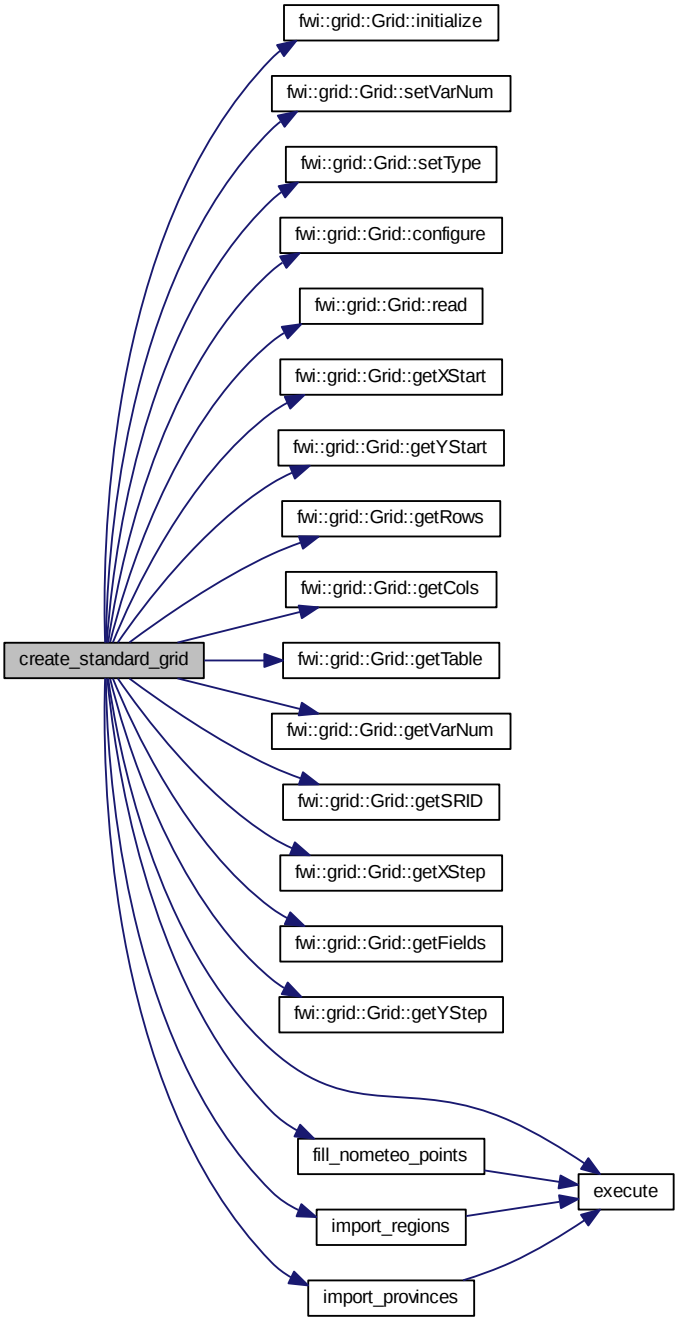
create a standard 174 row x 177 columns grid

Returns

true on success else false

Definition at line 1083 of file fwidbmgr.cpp.

Here is the call graph for this function:



Here is the caller graph for this function:

9.7.2.5 bool delete_fwi_indexes (CommandLineArguments & *args*)

deletes fwi indexes grid for date in *args* from database

Parameters

args	command line arguments class

Returns

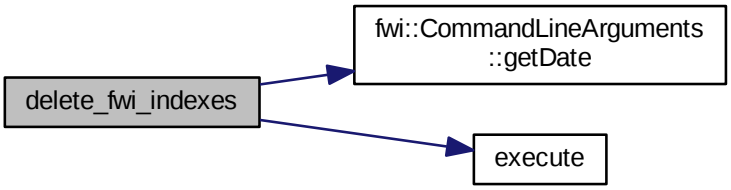
true on success else false

See also

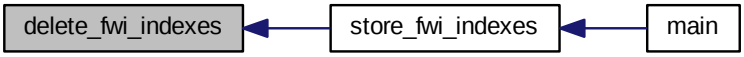
CommandLineArguments

Definition at line 1644 of file fwidbmgr.cpp.

Here is the call graph for this function:



Here is the caller graph for this function:



9.7.2.6 bool delete_images (CommandLineArguments & *args*)

deletes fwi indexes grid for date in *args* from database

Parameters

args	command line arguments class

Returns

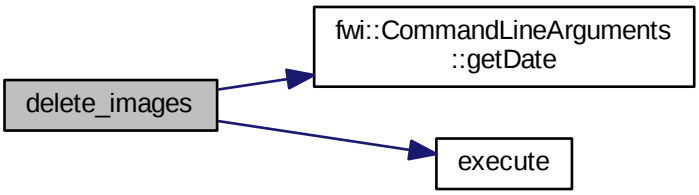
true on success else false

See also

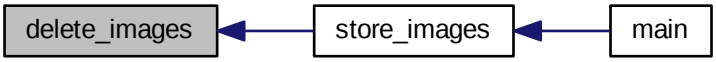
CommandLineArguments

Definition at line 2539 of file fwidbmgr.cpp.

Here is the call graph for this function:



Here is the caller graph for this function:



9.7.2.7 bool delete_meteo_input (CommandLineArguments & *args*)

deletes meteo input grid for date in *args* from database

Parameters

args	command line arguments class

Returns

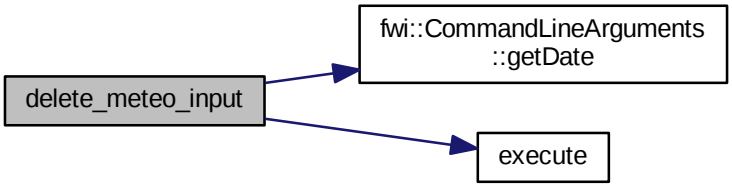
true on success else false

See also

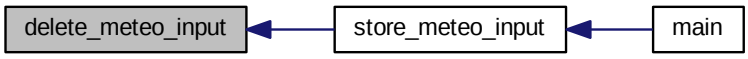
CommandLineArguments

Definition at line 1248 of file fwidbmgr.cpp.

Here is the call graph for this function:



Here is the caller graph for this function:



9.7.2.8 bool execute (std::string & *query*)

executes query command

Parameters

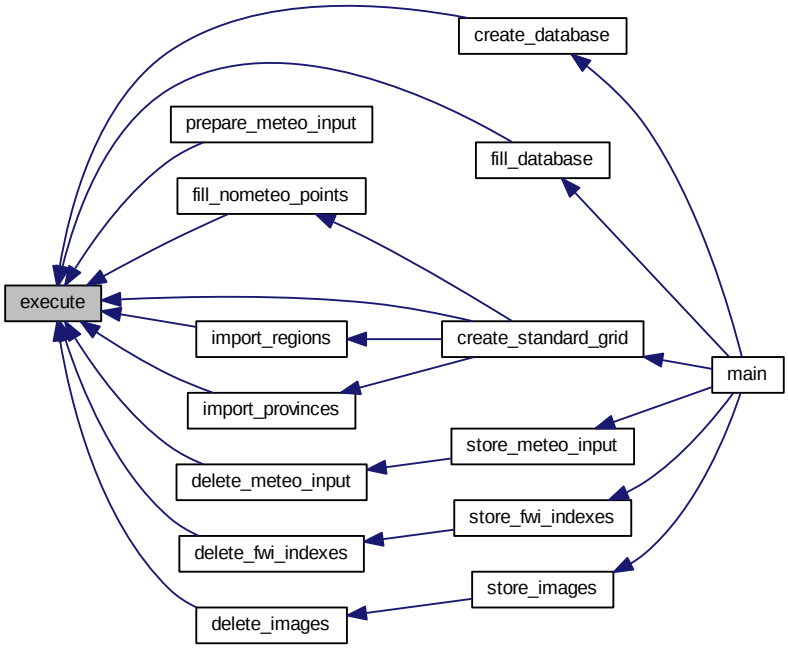
query	sql commands to be executed

Returns

true on success else false

Definition at line 562 of file fwidbmgr.cpp.

Here is the caller graph for this function:



9.7.2.9 bool export_indexes (CommandLineArguments & *args*)

exports fwi indexes grid for date in *args* from database

Parameters

args	command line arguments class

Returns

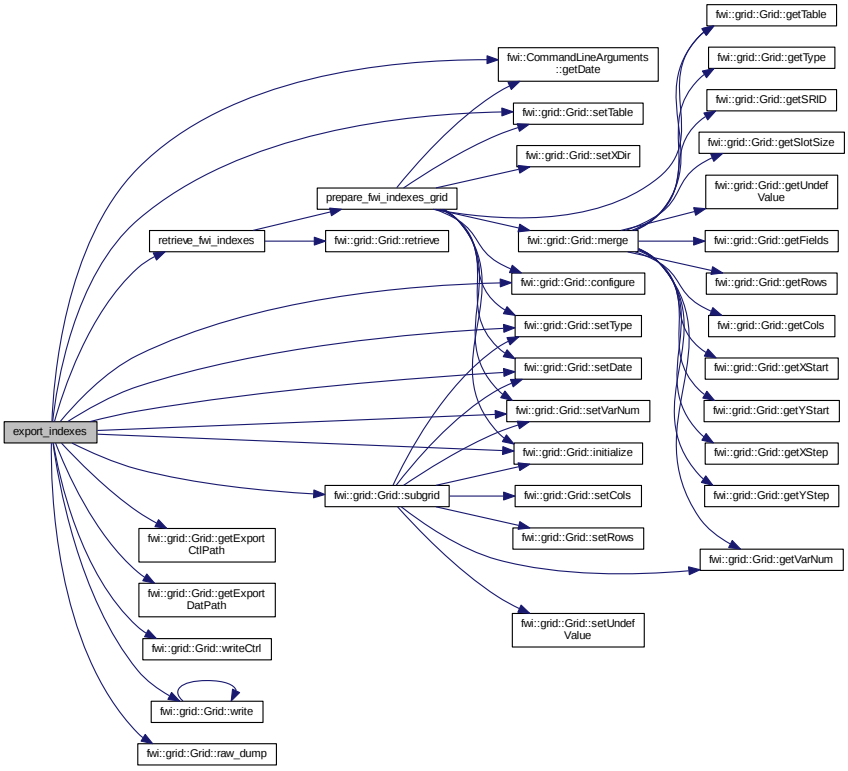
true on success else false

See also

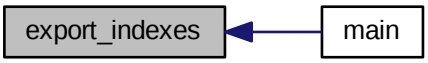
CommandLineArguments

Definition at line 2775 of file fwidbmgr.cpp.

Here is the call graph for this function:



Here is the caller graph for this function:



9.7.2.10 bool fill_database ( )

fills empty database structure with data (ex. spatial ref systems from postgis)

Returns

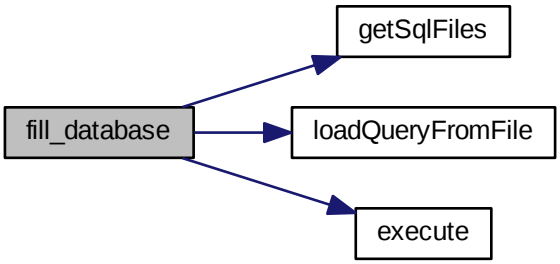
true on success else false

See also

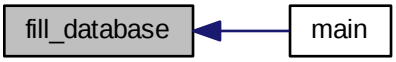
libconfig++ documentation at http://www.hyperrealm.com/libconfig/

Definition at line 645 of file fwidbmgr.cpp.

Here is the call graph for this function:



Here is the caller graph for this function:



9.7.2.11 bool fill_nometeo_points ( )

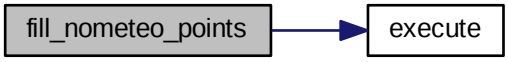
fills grid table with no mete point flags

See also

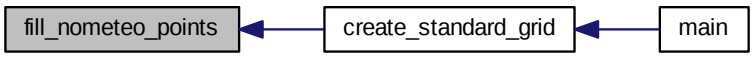
Grid

Definition at line 724 of file fwidbmgr.cpp.

Here is the call graph for this function:



Here is the caller graph for this function:



9.7.2.12 bool getFileBytea (std::string *file*, char ** *buffer*, int & *size*)

Reads file, returns file contents in buffer and file size in size.

Parameters

file	file absolute path
buffer	file contents buffer
size	file size

Returns

true on success else false

Definition at line 2510 of file fwidbmgr.cpp.

Here is the caller graph for this function:

9.7.2.13 string getProgramHome ( )

Reads environment variable FWIDBMGR_HOME.

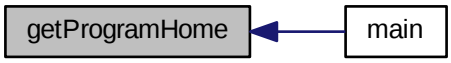
This environment variable has to be defined in order to run fwidbmgr

Returns

the path pointed by FWIDBMGR_HOME or a standard path

Definition at line 261 of file fwidbmgr.cpp.

Here is the caller graph for this function:



9.7.2.14 bool getSqlFiles (std::vector< std::string > & *files*)

gets sql files paths from configuration

Parameters

files	string vector containing files paths

Returns

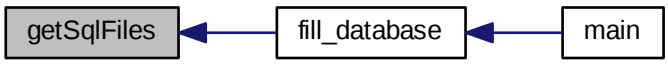
true on success else false

See also

libconfig++ documentation at http://www.hyperrealm.com/libconfig/

Definition at line 499 of file fwidbmgr.cpp.

Here is the caller graph for this function:



9.7.2.15 bool import_provinces ( )

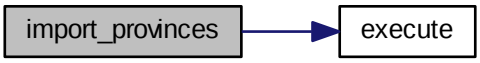
Imports provinces polygons in database from file.

Returns

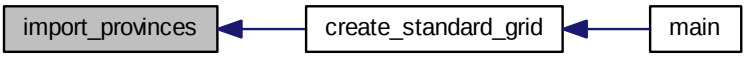
true on success else false

Definition at line 927 of file fwidbmgr.cpp.

Here is the call graph for this function:



Here is the caller graph for this function:



9.7.2.16 bool import_regions ( )

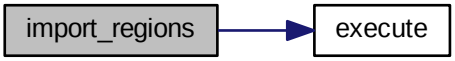
Imports regions polygons in database from file.

Returns

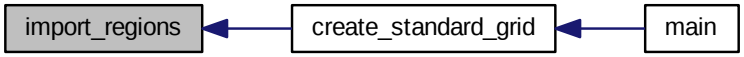
true on success else false

Definition at line 803 of file fwidbmgr.cpp.

Here is the call graph for this function:



Here is the caller graph for this function:



9.7.2.17 bool load_computation_indexes (std::vector< std::string > & *indexes*)

Loads from configuration the list of index names to be computed.

Parameters

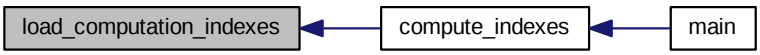
indexes	the list of index names

Returns

true on success else false

Definition at line 3276 of file fwidbmgr.cpp.

Here is the caller graph for this function:



9.7.2.18 string loadQueryFromFile (std::string *filepath*)

loads in memory a file content

Parameters

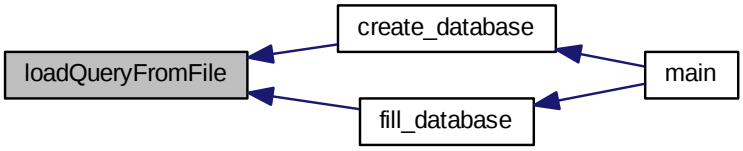
filepath	complete file path

Returns

the file content

Definition at line 545 of file fwidbmgr.cpp.

Here is the caller graph for this function:



9.7.2.19 int main (int *argc*, char ** *argv*)

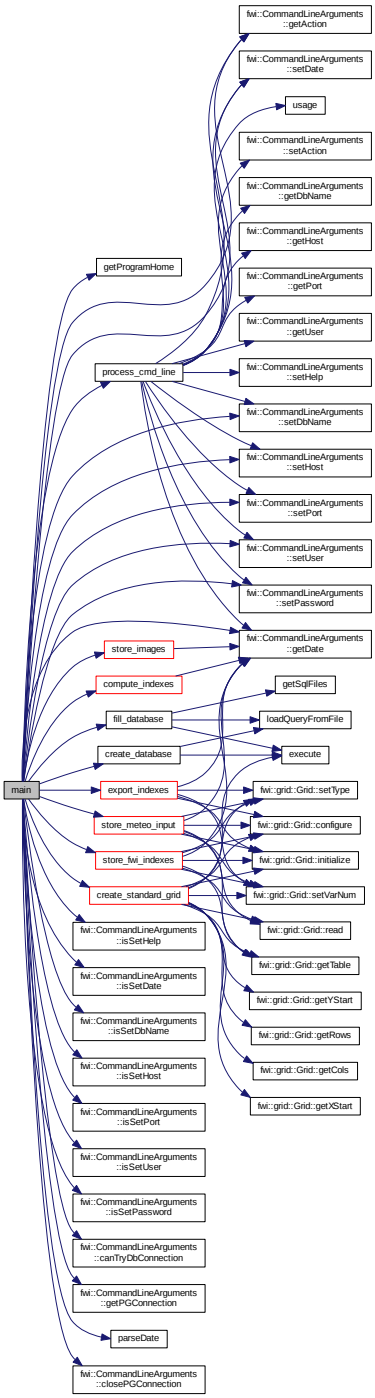
main function

See also

usage()

Definition at line 4112 of file fwidbmgr.cpp.

Here is the call graph for this function:



9.7.2.20 struct tm parseDate (std::string *dt*) [read]

Parses a string for a date value.

Parameters

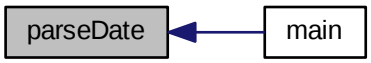
dt	string to be parsed

Returns

struct tm filled with parsed values

Definition at line 274 of file fwidbmgr.cpp.

Here is the caller graph for this function:



9.7.2.21 bool prepare_fwi_indexes_grid (CommandLineArguments & *args*, Grid< float > * *res*)

prepares and configure fwi indexes grid

Parameters

args	command line arguments class
res	resulting grid

Returns

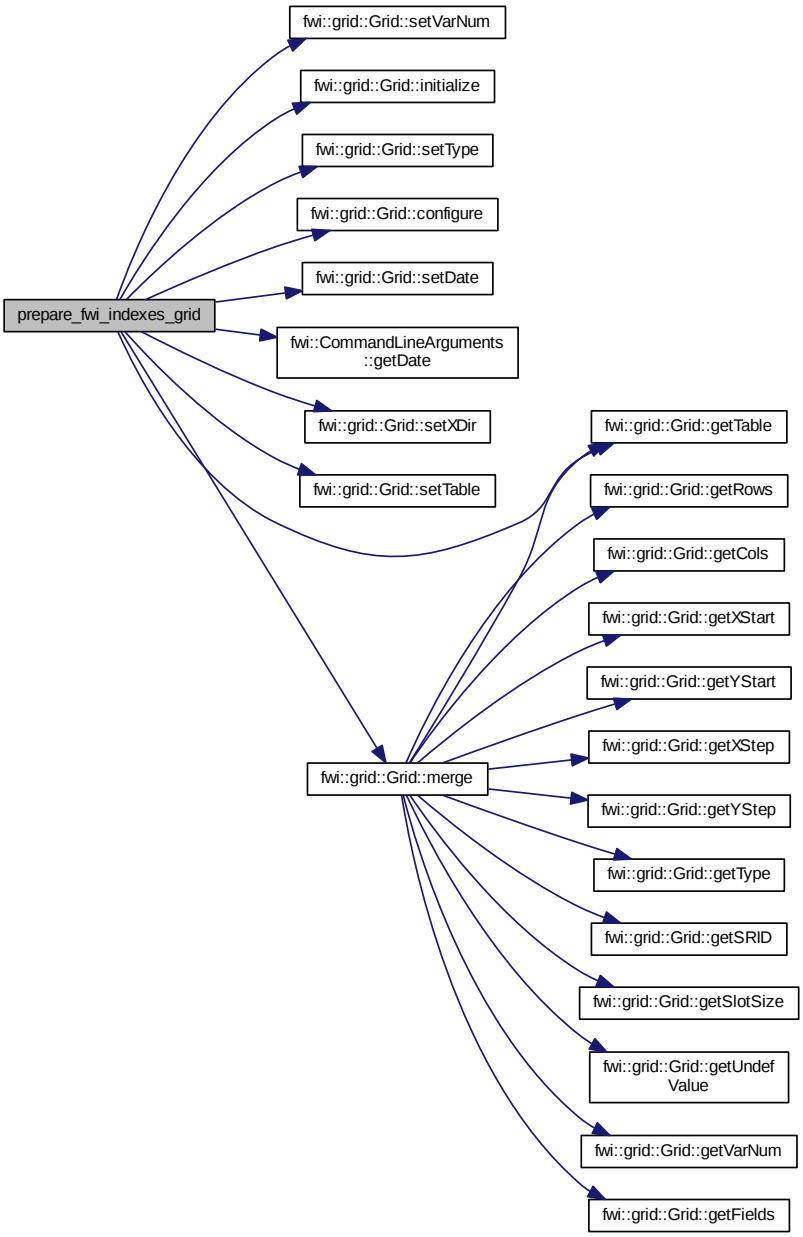
true on success else false

See also

CommandLineArguments
Grid

Definition at line 1970 of file fwidbmgr.cpp.

Here is the call graph for this function:



Here is the caller graph for this function:

9.7.2.22 bool prepare_meteo_input (std::string *date*)

creates skeleton structure for meteo input grid referring to date

Parameters

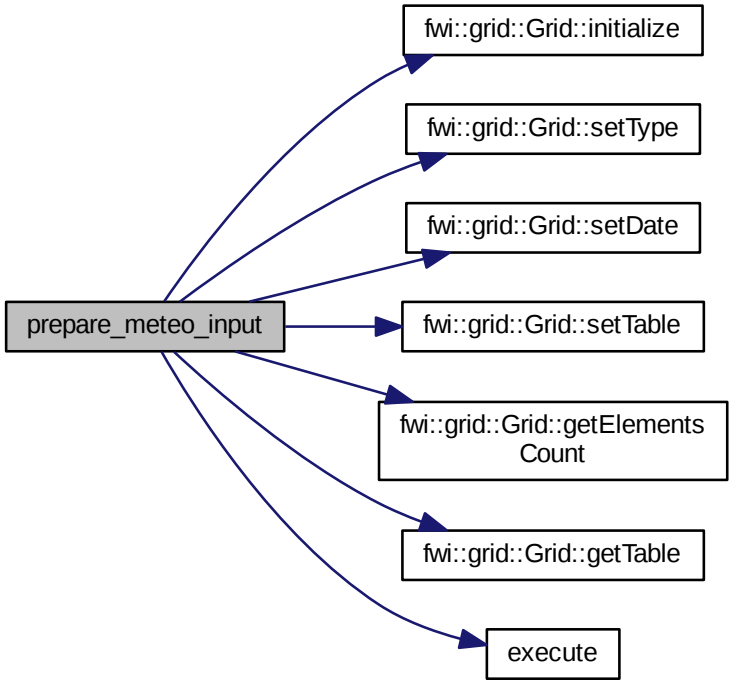
date	referring date as YYYYMMDD

Returns

true on success else false

Definition at line 691 of file fwidbmgr.cpp.

Here is the call graph for this function:



9.7.2.23 bool process_cmd_line (int *argc*, char ** *argv*, CommandLineArguments * *args*)

Process command line parameters.

Parameters

argc	Number of command line parameters
argv	array of string parameters
args	command line arguments

Returns

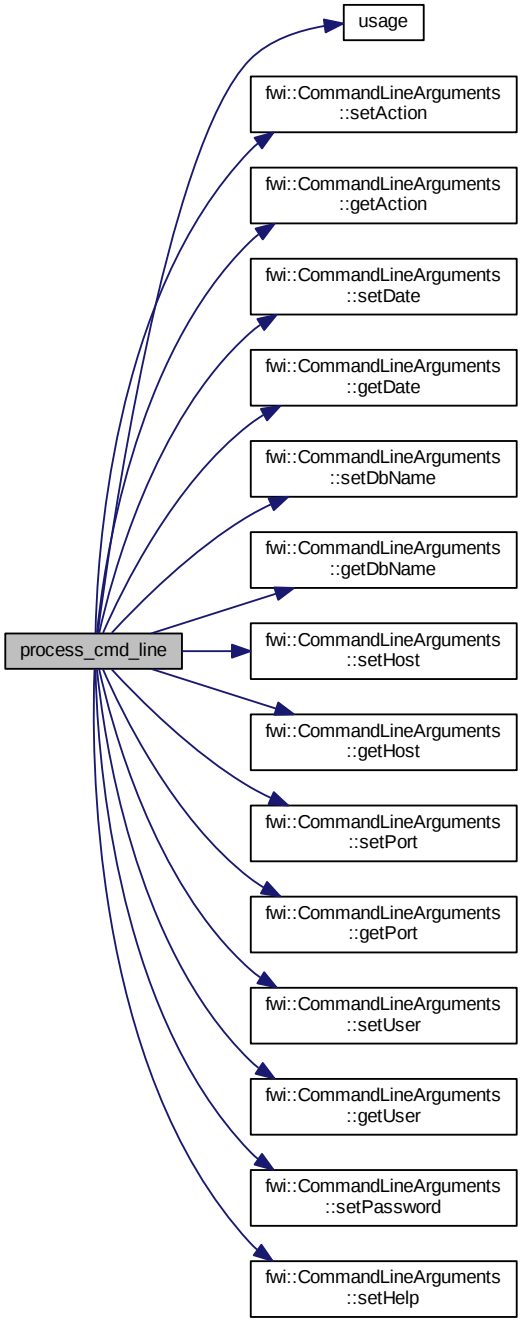
true on success else false

See also

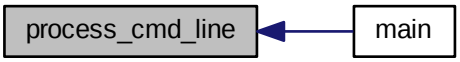
CommandLineArguments

Definition at line 390 of file fwidbmgr.cpp.

Here is the call graph for this function:



Here is the caller graph for this function:



9.7.2.24 bool retrieve_fwi_indexes (CommandLineArguments & *args*, Grid< float > * *res*)

retrieves fwi indexes grid for date in *args* reading from database

Parameters

args	command line arguments class
res	resulting grid

Returns

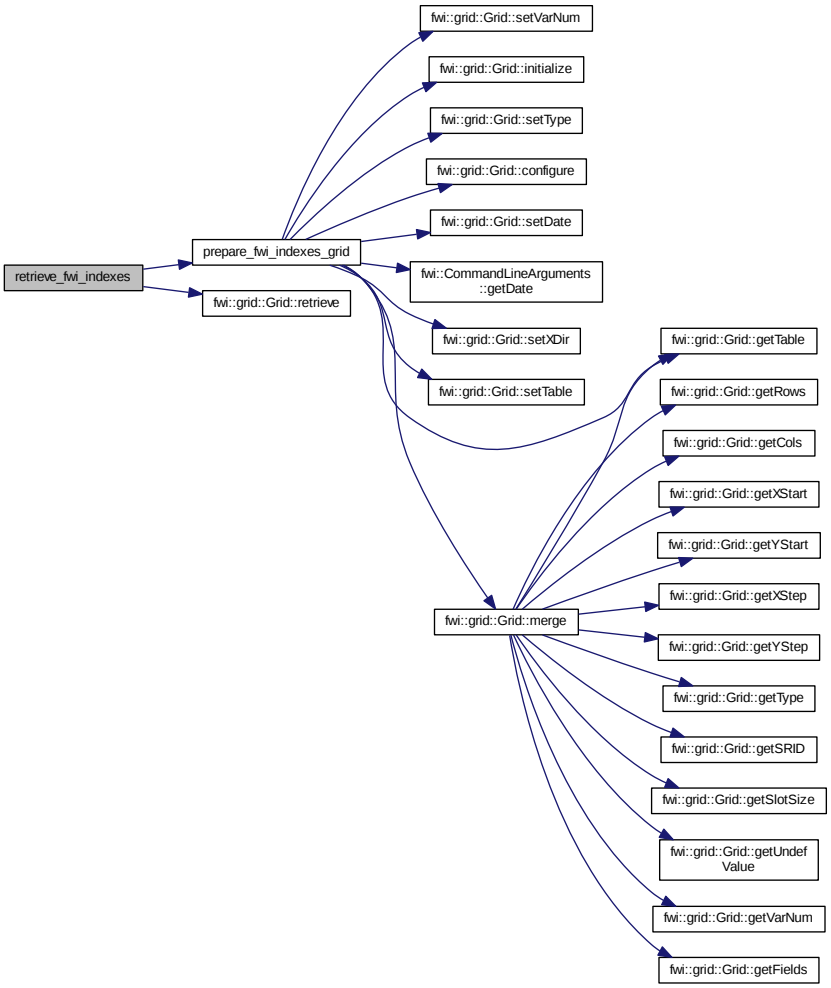
true on success else false

See also

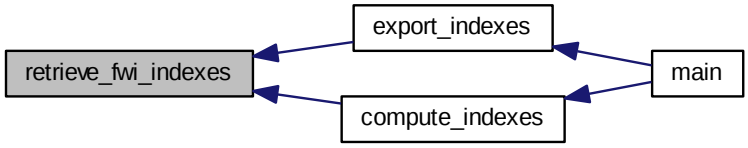
CommandLineArguments
Grid

Definition at line 2255 of file fwidbmgr.cpp.

Here is the call graph for this function:



Here is the caller graph for this function:



9.7.2.25 bool retrieve_images (CommandLineArguments & *args*)

retrieves fwi images for date in *args* reading from database

Parameters

args	command line arguments class

Returns

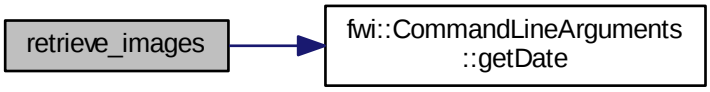
true on success else false

See also

CommandLineArguments

Definition at line 2682 of file fwidbmgr.cpp.

Here is the call graph for this function:



9.7.2.26 bool retrieve_meteo_input (CommandLineArguments & *args*, Grid< float > * *res*)

retrieves meteo input grid for date in *args* reading from database

Parameters

args	command line arguments class
res	resulting grid

Returns

true on success else false

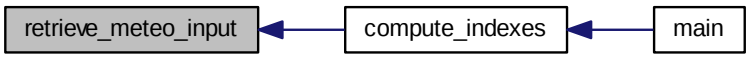
See also

CommandLineArguments

Definition at line 1541 of file fwidbmgr.cpp.

Here is the call graph for this function:

Here is the caller graph for this function:



9.7.2.27 bool store_fwi_indexes (CommandLineArguments & *args*)

stores fwi indexes grid for date in *args* reading from files

Parameters

args	command line arguments class

Returns

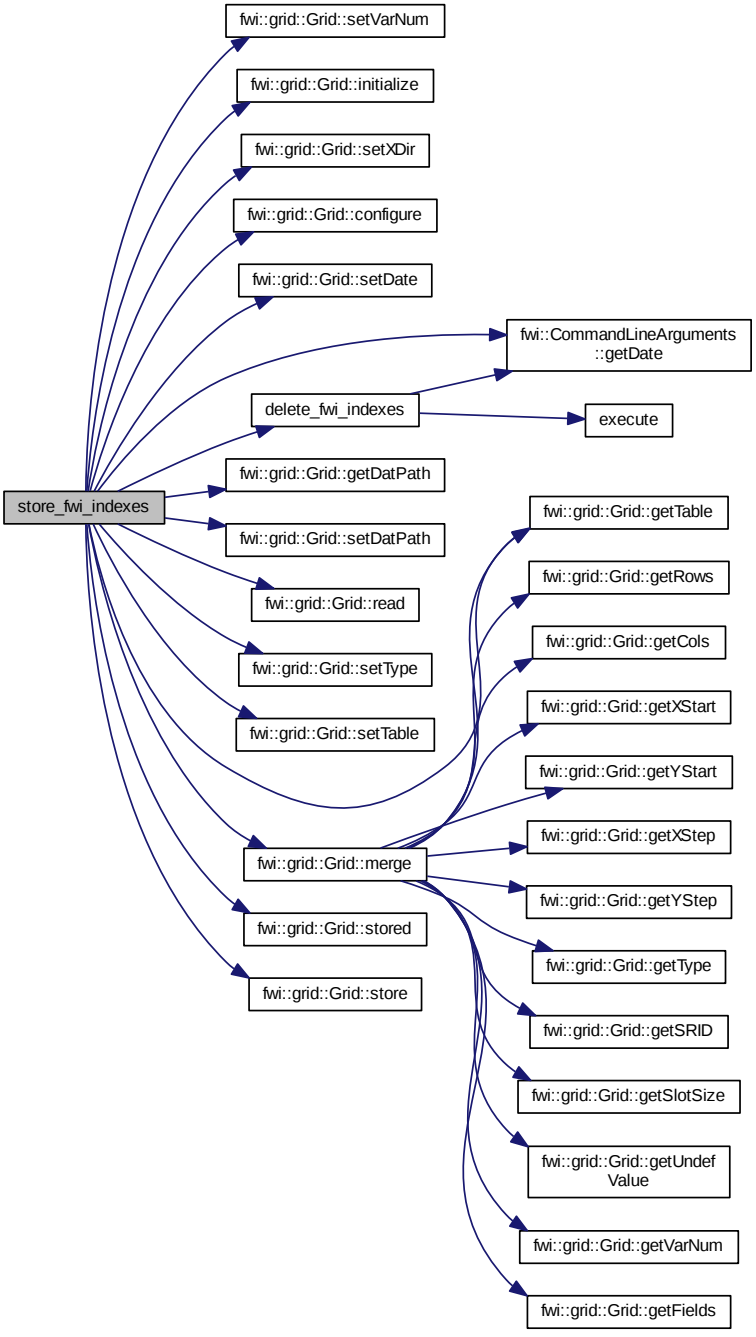
true on success else false

See also

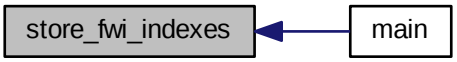
CommandLineArguments

Definition at line 1664 of file fwidbmgr.cpp.

Here is the call graph for this function:



Here is the caller graph for this function:



9.7.2.28 bool store_images (CommandLineArguments & *args*)

stores fwi images for date in *args* reading from disk.

Parameters

args	command line arguments class

Returns

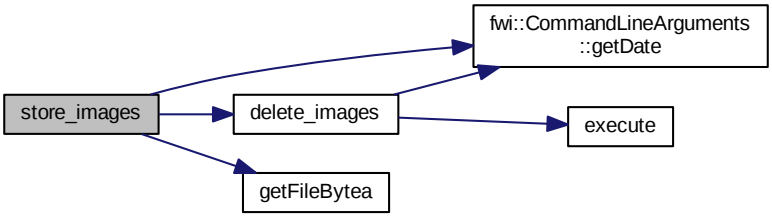
true on success else false

See also

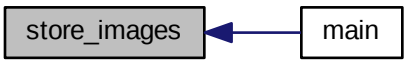
CommandLineArguments

Definition at line 2559 of file fwidbmgr.cpp.

Here is the call graph for this function:



Here is the caller graph for this function:



9.7.2.29 bool store_meteo_input (CommandLineArguments & *args*)

stores meteo input grid for date in *args* reading from files

Parameters

args	command line arguments class

Returns

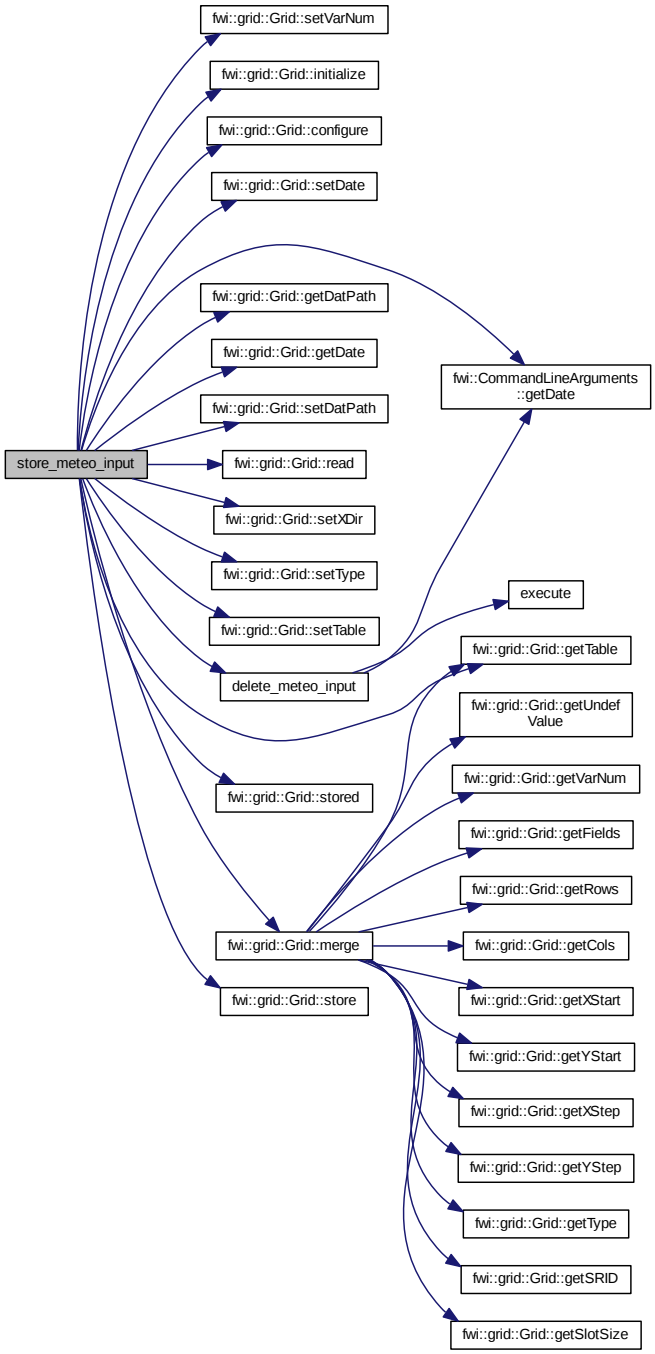
true on success else false

See also

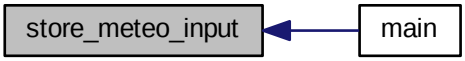
CommandLineArguments

Definition at line 1268 of file fwidbmgr.cpp.

Here is the call graph for this function:



Here is the caller graph for this function:



9.7.2.30 void usage ( )

helper function for usage display

Displays the following text:

fwidbmgr usage

fwidbmgr -a action [-d date] [-c config] [-D database] [-H host] [-P port] [-U user] [-p password] [-h]

where action must be one of:

create	creates an empty database structure
createstdgrid	creates the standard 177x174 point grid
in	saves in db input data for date given by option date
out	saves in db output data of fwi indexes computation
outimg	saves in db output images
exportidx	exports indexes grid to GrADS files
computeidx	computes new indexes angstroem, fmi and sharples [experimental]
computeidx24	computes new indexes over 24 time slots [experimental]

where date must be a valid date in ISO 8601 format ex. (2012-03-22)

where config is the absolute path to the configuration file

where database is the database name to be used

where host is the database host name or IP address

where port is the postgresql port

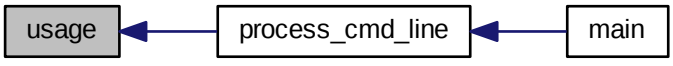
where user is the database user that has the proper rights

where password is the user password

h –> prints this text

Definition at line 358 of file fwidbmgr.cpp.

Here is the caller graph for this function:



9.8 src/Grid.cpp File Reference

Grid.

Namespaces

- namespace fwi
  main fwidbmgr namespace
- namespace grid
  Contains all grid related classes.

9.8.1 Detailed Description

Grid.

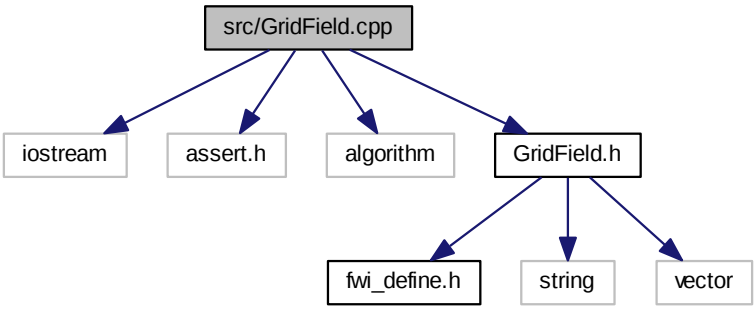
Definition in file Grid.cpp.

9.9 src/GridField.cpp File Reference

Grid field class implementation.

```
#include <iostream>
#include <assert.h>
#include <algorithm>
#include "GridField.h"
```

Include dependency graph for GridField.cpp:



Namespaces

- namespace fwi
  main fwidbmgr namespace

9.9.1 Detailed Description

Grid field class implementation.

Definition in file GridField.cpp.

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