

# **MLP 1m Online Terrain Profiles**

## **Manual for PC Client Software**

This manual refers to the MLP-1m\_Client.exe version 1.1.0.1

2017-05-01

# 1 Introduction, Purpose of Software

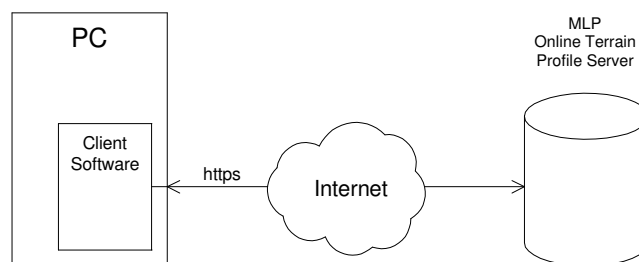
This free client PC software is intended to conveniently submit requests for high accuracy Online Surface Profiles from a server, where open-gov Lidar data are stored with 1 m lateral resolution. A unique data set with unprecedented accuracy, aggregated from various national data sets.

The software receives the profile data and processes it to formats required by the user and optionally displays the profiles in a plot.

It is not a planning tool.

While offering as much convenience as possible, we tried to keep the software simple, intuitive and lean, so that it can even be used in highly secured IT environments.

A unique feature is the width of a surface profile: instead of just a single line, the surface profiles take into account a user specified width of a few ten meters, across which all objects are captured, providing a lateral safety margin and taking into account the first Fresnel zone. By this method, the highest objects within profile width finally define the surface profile and if the line of sight is obstructed or not.



## 2 Download and Installation

The MLP\_Client does not require any installation.

The software has been tested under Windows 2000, Windows XP and Windows 7/8/10.

It is sufficient to simply copy "MLP-1m\_Client.exe" and "MLP-1m\_Client.cfg" to the same directory on the hard disk in any directory. The software can even run on an USB-Stick, CD-ROM or floppy disk.

It can simply be started with a double click on the \*.exe file.

If you want to create a shortcut:

- Click the \*.exe file with the right mouse button
- In the popup menu click on "Create Shortcut"
- Drag the shortcut to your desktop

The software does not change any system settings and does not modify the registry.

No administrator rights nor PC software maintenance is required.

The MLP-1m Client can be downloaded directly from the server:

- either the latest version [http://mlp-1m.eoproc.com/mlp-1m/MLP-1m\\_Client.zip](http://mlp-1m.eoproc.com/mlp-1m/MLP-1m_Client.zip)
- or in special cases a specific version: [http://mlp-1m.eoproc.com/mlp-1m/MLP-1m\\_Client\\_nnnn.zip](http://mlp-1m.eoproc.com/mlp-1m/MLP-1m_Client_nnnn.zip)  
(where nnnn is a specific version number)

As the zip file contains the file MLP-1m\_Client.exe, likely your browser will give a warning, that the download may be dangerous. As MLP is trustworthy, override the warning and accept the download.

Unzip and copy the .exe together with the .cfg to your preferred directory.

## 3 Main Window

**Microwave Link Planning Client for 1m Lidar Data 1.1.0.1**

Import Batch Config Plot

Location A		Location B	
Start Latitude	51.010000	End Latitude	51.060000
Start Longitude	7.010000	End Longitude	7.020000
Name	Name1	Name	Name2
Type of tower	Typ1	Type of tower	Typ2
Antenna height above ground [m]	25.0	Antenna height above ground [m]	21.0
Terrain height [m]	DTM	Terrain height [m]	DTM

Profile Identifier: MLP\_2017-05-01\_14-18-48 | Demo-for-Testserver

User String: Demo

Frequency [GHz]: 20.00 | Profile Width Calculated [m]: 28 | Profile Length Calculated [km]: 5.6

Quit | Get Profile

Datenlizenz Deutschland - Namensnennung - Version 2.0 (www.eovdata.de/dl-de/bv-2-0)  
Land NRW (2017). © GDI-Th  
Contains public sector information licensed under the Open Government Licence v3.0  
http://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/  
© Environment Agency copyright and/or database right 2015. All rights reserved.

### 3.1 Menu

- **Import:**  
For Import of files from 3<sup>rd</sup> party software (see chapter 9).
- **Batch:**  
Switches to the batch processing page (see chapter 8).
- **Config:**  
Switches to the Configuration page (see chapter 5).
- **Plot:**  
Opens an additional window with graphical display of the profile (see chapter 4).

### 3.2 Coordinate Input

Coordinates can be entered in 3 different ways:

- Decimal degrees with 6 decimals (e.g. 51.123456)  
Decimal separator is dot (on copy/paste operations also a comma is accepted).
- Degrees, minutes and seconds with 2 decimals (e.g. 51 13 24.33), separated by space.  
Decimal separator is dot (on copy/paste operations also a comma and the characters °, ' and " are accepted).
- Gauß-Krüger coordinates with 1 decimal (e.g. 5507978.3)  
Decimal separator is dot (on copy/paste operations also a comma is accepted).

In case of illegal inputs the input fields turn red.

In case of an illegal mixture of degrees and Gauß-Krüger coordinates the input fields turn yellow.

### 3.3 Attribute Fields

For each location up to 5 attributes can be specified in the configuration file (for details see chapter 7 Configuration File).

Most attribute fields are treated as comments, their content only ends up in the output files without any calculation.

Attribute fields with special functions:

- Name:  
This value can be used for the Profile Identifier (see 3.4 Profile Identifier).
- Antenna height above ground [m]:  
This value is added to the terrain height and then used for the calculation of Line of Sight and Fresnel Zone.
- Terrain height [m]:  
If these fields are filled with an altitude this value is used for terrain height.  
If the fields are left blank they automatically show "Intermap". In this case the terrain height is taken from the MLP terrain data on the server.  
If one of the two fields is left blank both terrain heights are taken from the Server.

### 3.4 Profile Identifier

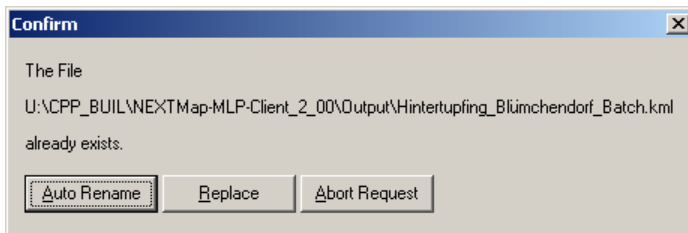
The Profile Identifier is used to make profiles unique and for file name generation.

The default Profile Identifier has the format "MLP\_YYYY-MM-DD\_hh-mm-ss\_Description". Date and time are filled automatically, the term "Description" can be entered by the user (no special characters or spaces allowed).

Alternatively the Profile Identifier can be changed to the format "Name1\_Name2\_Description" on the Configuration Page (see chapter 5).

In that case the information is taken from the "Location A Name" and "Location B Name" fields.

With the type "Name1\_Name2\_Description" it can happen that a file with the same file name already exists. In that case a message box pops up:



- Auto Rename: A 3 digit number will be appended to the file name (e.g. \_001)
- Replace: The already existing files (\*.kml, \*.txt, \*.gsi, \*.bmp) will be overwritten.
- Abort Request: Stops the request

### 3.5 User String

The User String only ends up as a comment in the output files. No restriction on allowed characters.

### 3.6 Frequency

This value is used for the calculation of the Fresnel Zone and for the calculation of the profile width.

### 3.7 Profile Width Calculated

The profile width can be set up on the configuration page and is calculated from the width of the Fresnel Zone including a safety buffer (see chapter [5 Configuration Page](#)).

This field here shows the maximum width, resulting from the safety buffer calculation.

### 3.8 Profile Length Calculated

Shows the length of the profile even before the request.

### 3.9 Status Bar

- Left field:

During data input format descriptions for the actual field are shown.  
While requesting a profile status messages of the server are shown.

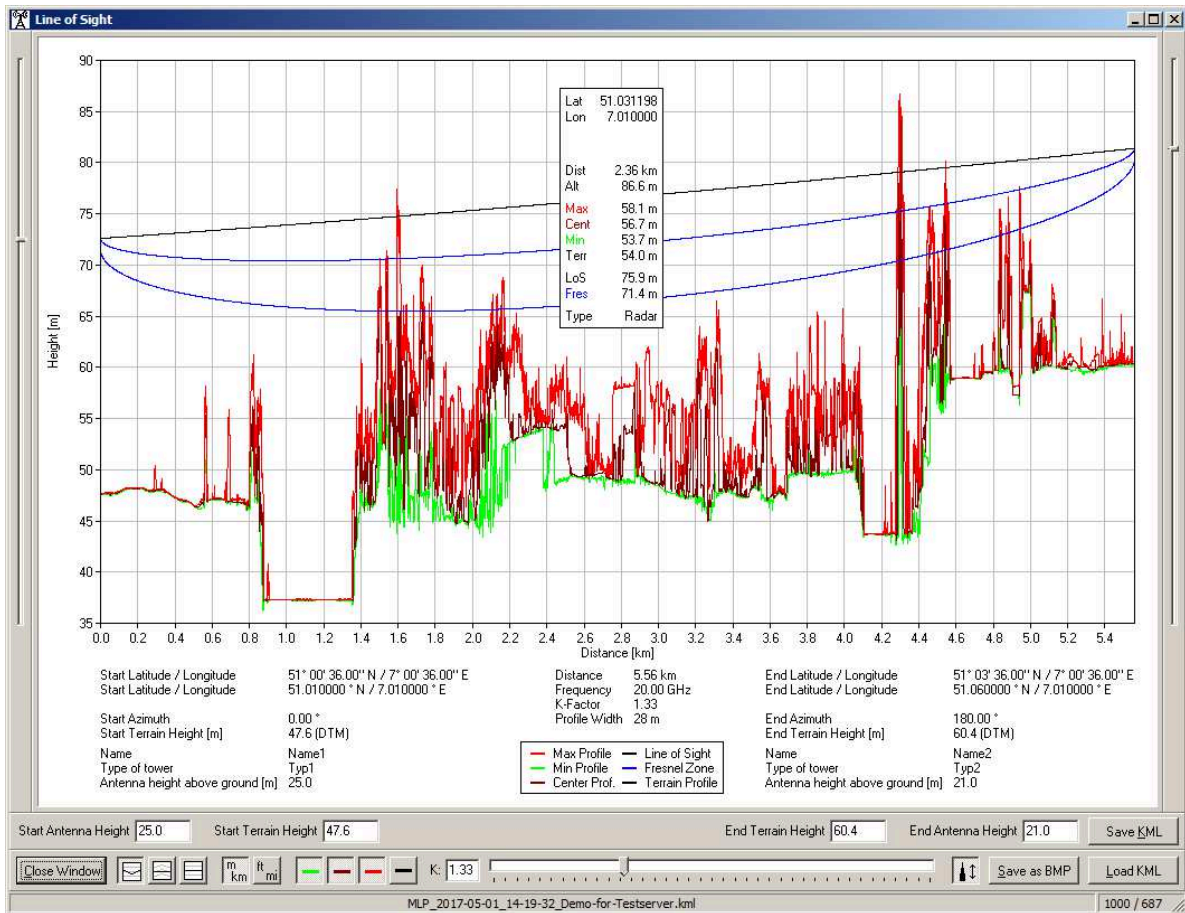
- Middle field:

During the request of a profile a progress bar is shown.

- Right field:

During the request of a profile status messages are shown.

## 4 Plot Window



### 4.1 Toolbars and Buttons

- Close Window Button:  
Closes the Plot Window and returns to the main page.

- Radio Buttons for display options:



*Earth flat* - displays the earth as flat and calculates the earth curvature into the Line of Sight line.



*Line of Sight flat* - displays the Line of Sight line straight and calculates the earth curvature into the profiles.



*Line of Sight and Earth flat* - displays the Line of Sight line straight and displays the earth as flat (max profile in gray color).



Displays all distances and elevations in metric units (m, km).



Displays all distances and elevations in statute units (ft, miles).



Shows the Minimum profile.



Shows the Center profile.



Shows the Maximum profile.



Shows the Terrain profile.



Shows a toolbar for editing antenna- and terrain heights and shows sliders for editing antenna heights on both sides of the window.

- **K-Factor:**  
With the slider the K-Factor can be changed between 0.2 and 4. Alternatively a new value can be directly entered into the edit field.  
Each change leads to a new calculation of Line of Sight and Fresnel Zone.  
Changing the K-Factor here does not automatically update the \*.kml file.
- **Load KML Button:**  
Loads an already existing \*.kml file.
- **Save as BMP Button:**  
Saves the Plot Window (with the actual size) as \*.bmp file in the "File Directory" specified on the Configuration Page (see chapter 5).
- **Edit fields for antenna heights and terrain heights:**  
Antenna heights and terrain heights can be edited here. Changes are immediately calculated and displayed.  
Antenna heights can also be modified with the two sliders on the sides of the window.
- **Save KML Button:**  
Updates the KML file with modified values for antenna heights, terrain heights and K-Factor.  
The name of the KML file gets extended by "\_modified", the original file remains untouched.

## 4.2 Line Colors

- red Maximum profile - highest values of all profiles inside the profile width
- green Minimum profile - lowest values of all profiles inside the profile width
- brown Center profile - values of the center profile independent of profile width
- black Line of Sight
- blue First Fresnel Zone
- black Terrain Profile
- gray Terrain (Maximum profile) in the "Line of Sight and Earth flat" view

## 4.3 Legend

- **Start and end coordinates:**  
Coordinates are displayed in latitude/longitude (deg, min, sec and decimal degrees) and Gauß-Krüger X (northing) and Y (easting).
- **Azimuth:**  
Shows the direction in which the antenna has to point.  
The calculation takes care of the Great Circle.
- **Terrain Height:**  
There are 2 possible outputs:
  - If altitudes were entered on the main page or modified here (see 3.3 Attribute Fields):  
Entered altitude + altitude from the server in brackets, e.g. "117.5 (118.2 Intermap)"
  - If the terrain height fields on the main page were left blank (automatically filled with "Intermap"):  
Altitude from the server, e.g. "118.2 (Intermap)"

## 4.4 Tooltip

If the mouse cursor is located over the diagram a tooltip shows the actual position and altitude of the mouse cursor.

Lat	50.163086
Lon	8.394186
X	5558723
Y	3456787
Dist	5.91 km
Alt	205.8 m
Max	465.4 m
Cent	460.1 m
Min	454.1 m
LoS	501.7 m
Fres	498.1 m

## 4.5 Status Bar

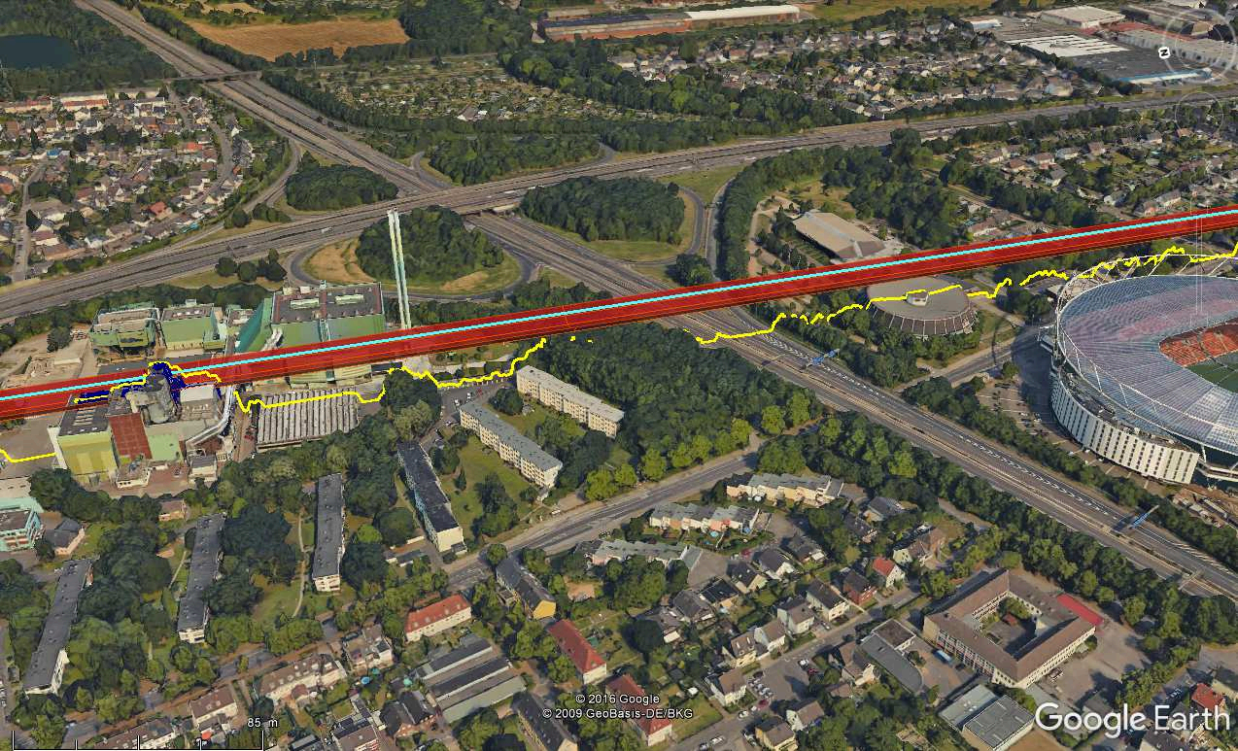
- Main field: Filename (\*.kml) of the actual displayed/loaded profile
- Small field on the right side:  
Actual width and height of the diagram in pixels (the resolution of the \*.bmp file if saved).  
A default size can be set on the Configuration Page (see chapter 5).




## 4.6 Google Earth

A mouse click on the profile with held down Ctrl (Strg) key opens Google Earth (if installed on this PC) and shows the profile with a marker "Observed Position" at the position of the mouse click.

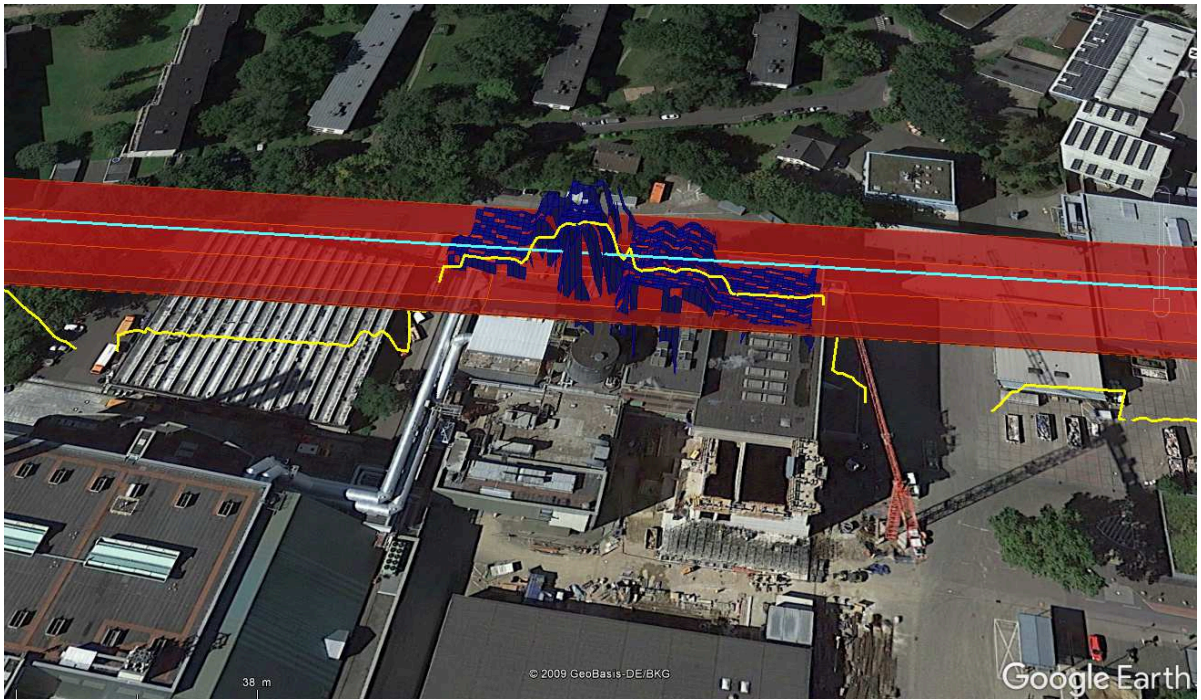


### 4.7 Google Earth Sample Pictures

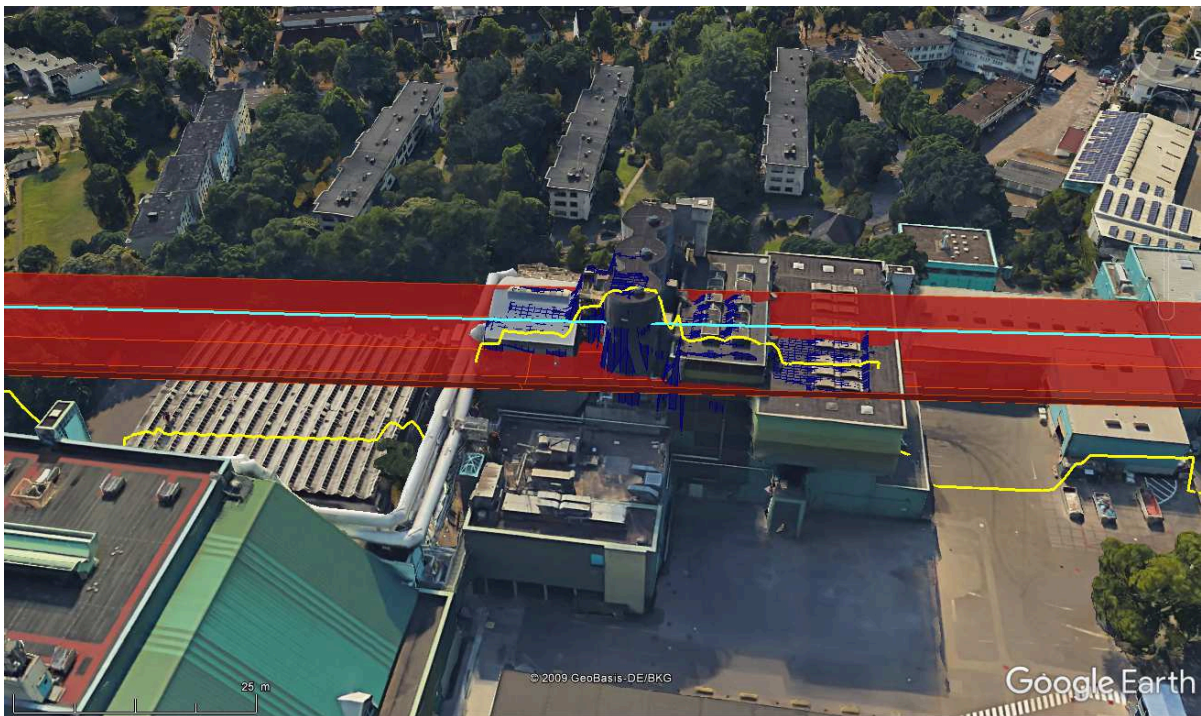


-  Line of sight
-  First Fresnel Zone
-  Maximum profile (highest elevation across the check zone)





Obstacles intersecting the check zone are displayed as facettes, in order to give an impression of size and location and how the yellow max profile is composed.



In case Google Earth provides 3D models, they intersect the check zone as well and provide additional detail information.

## 5 Configuration Page

The screenshot shows the configuration window for the Microwave Link Planning Client. The window title is "Microwave Link Planning Client for 1m Lidar Data 1.1.0.1". The menu bar includes "Import", "Batch", "Config", and "Plot".

The configuration options are as follows:

- Projection:** A dropdown menu set to "none".
- Positive Longitude:** Radio buttons for "West" and "East", with "East" selected.
- Positive Latitude:** Radio buttons for "North" and "South", with "North" selected.
- Plot Window:** Width is 1000, Height is 800, and "Auto open" is checked.
- Units:** Radio buttons for "Metric (m, km)" and "Statute (ft, mi)", with "Metric (m, km)" selected.
- Profile Width [m]:** A label for the profile width.
- Fresnelzone horizontal:** 2.0 + 5.0 m
- Fresnelzone vertical:** 1.5 + 1.0 m
- K-Factor:** 1.33
- Account:** An empty text field.
- Password:** A text field with masked characters (\*\*\*\*\*).
- File Directory:** C:\MLP-Profiles\
- Profile Identifier:** Standard (MLP\_YYYY-MM-DD\_hh-mm-ss)
- Export Formats:** Checkboxes for "TXT-1-0" and "BMP-1-0", both checked. A "Decimal Separator" dropdown is set to ".".
- Proxy:** A section with "Use Proxy" unchecked, and fields for "Proxy", "Port" (8080), "User", and "Password".

Buttons for "Cancel" and "Save Configuration" are located at the bottom. The status bar at the bottom left shows "OK".

### 5.1 Projection

Select the projection which is applied, if planimetric coordinates are entered on the main page.

### 5.2 Positive Longitude / Latitude

Specifies which hemisphere is meant with positive values in the coordinates.

### 5.3 Plot Window

Width and Height specify the default size of the Plot Window and the resolution of the \*.bmp file.

If "Auto open" is checked, the Plot Window automatically opens after a profile is received from the server (not in batch mode).



## 5.4 Check Zone and Profile Width

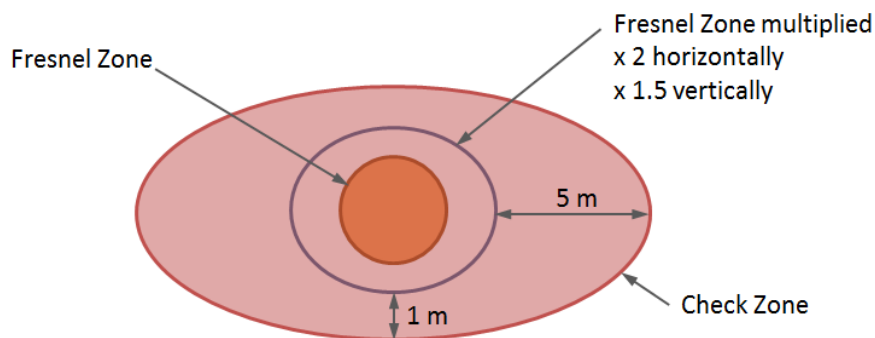
To take care of uncertainty of the coordinates of start and end location and to provide a safety margin a MLP profile is processed for the Fresnel Zone plus a buffer, rather than just a single line. While the first Fresnel Zone is strictly defined by frequency and geometry, the user can define a **check zone** around the Fresnel Zone, which is processed for obstacles.

The check zone is defined by the user by four parameters:

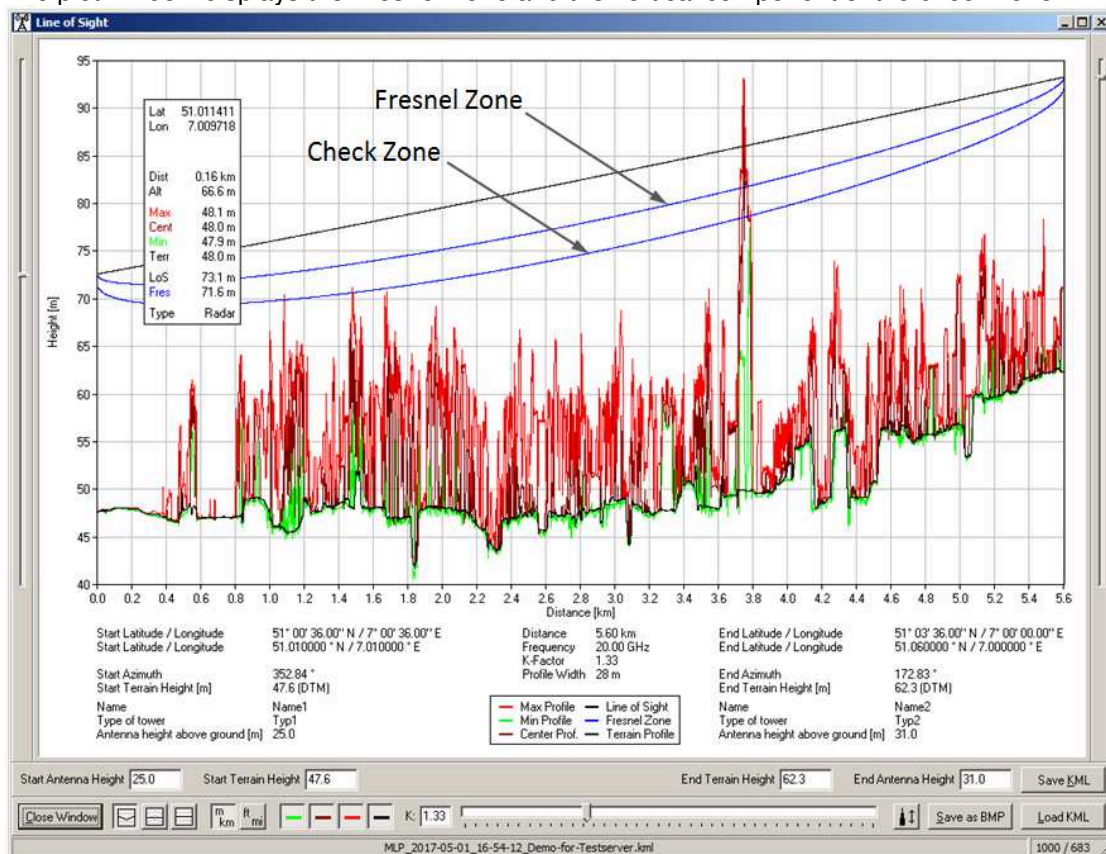
- a **factor**, by which the Fresnel Zone is multiplied (factor 2 in the example below)
- and a **constant** width, which is added on both sides

Profile Width [m]    Fresnelzone horizontal x  +  m    vertical x  +  m

Illustration of Fresnel Zone and check zone from the example settings above:



The plot window displays the Fresnel Zone and the vertical component of the check zone.



The resulting Profile Width is displayed on the main page.

Profile Width Calculated [m] 40

If just a static Profile Width is wanted (no dependency on the Fresnel Zone) a factor of 0.0 can be used.

In order not to overload the Google Earth visualization, not all features of a profile are enabled per default. By expanding the components of a profile, additional features like e.g. the Fresnel Zone or the center line profile ("0") can be enabled or disabled manually.



## 5.5 K-Factor

The influence of the atmosphere to Line of Sight and the Fresnel Zone can be adjusted with the K-Factor. Values between 0.25 and 4 are accepted, the default value is 1.33.

## 5.6 Units

Metric (m, km) or statute (ft, miles) units used for display and output. This only applies for the plot window, \*.bmp file and \*.txt file. The values in the \*.kml files and \*.gsi files are always metric.

## 5.7 Account and Password

Enter the values you received from your MLP service provider. The password is only shown as \*\*\*\* and saved encrypted in the configuration file.

## 5.8 File Directory

Shows the directory where all output files (\*.kml, \*.gsi, \*.txt, \*.ptpdatt and \*.bmp) are saved on the PC. That directory is also used for importing \*.ptpdatt files.

The directory can be changed with the  button.

If the File Directory does not exist in the moment a profile is requested a dialog box automatically opens to prompt for a directory for the output files.

## 5.9 Profile Identifier

The generation of the profile identifier can be changed between "Standard" and "Name1\_Name2".

If "Name1\_Name2" is chosen the content of the fields "Location A - Name" and "Location B - Name" is taken for the Profile Identifier.

With "Name1\_Name2" it can happen, that files with the same name already exist. In that case a message box pops up.

For more details see 3.4 Profile Identifier

Location A		Location B	
Start Latitude	49.700000	End Latitude	49.800000
Start Longitude	10.600000	End Longitude	10.700000
Name	Hintertupling	Name	Blümchendorf
Type of tower	1B	Type of tower	2B
above ground [m]	45	Antenna height above ground [m]	37
Terrain height [m]	420.0	Terrain height [m]	500.0

Profile Identifier: Hintertupling\_Blümchendorf Test

## 5.10 Export Formats

- GSI-1-0: Customer specified text file with the extension \*.gsi
- TXT-1-0: General purpose text file with the extension \*.txt  
The values in the file are separated by tab stops.  
The file can be opened with Microsoft Excel.  
As decimal separator can be selected "," or "."
- BMP-1-0: Bitmap of the Plot Window with the extension \*.bmp  
The resolution of the bitmap is specified in "Plot Window" (see 5.3).
- PTP-1-0: LINKPlanner PTP Path file with the extension \*.ptpdatt  
To export a \*.ptpdatt file such a file must have been imported before (see chapter 9 Import).
- RMP-1-0: RadioMobile RMpath file with the name \*\_RMpath.txt
- Atoll-1-0: Atoll file with the name \*\_Atoll.txt

Export Formats

- GSI-1-0
- TXT-1-0
- BMP-1-0
- PTP-1-0
- RMP-1-0
- Atoll-1-0

Decimal Separator: .

## 5.11 Proxy

If necessary a (https) proxy server can be used to request profiles from the server.

Ask your local IT department for details.

## 5.12 Buttons

- Save Configuration Button:  
Saves the configuration to the file "MLP\_Client.cfg" and returns to the Main Page.
- Cancel Button:  
Discards all changes and returns to the Main Page.

## 6 Monitoring and Free Profiles for Testing

At registration very user will receive a his private secret URL for monitoring his MLP consumption.

This URL will provide an easy to use and quick overview with each consumed profile, similar to the following:

```
PROFILES BY MONTH
* 2016-02 Profiles to go to date : 94 Profiles used within month: 2 total 0 unique 0 duplicate 2 test
* 2016-01 Profiles to go at end of month: 94 Profiles used within month: 27 total 5 unique 1 duplicate 21 test
* 2014-04 Profiles to go at end of month: 9 Profiles used within month: 3 total 2 unique 1 duplicate 0 test

PROFILES CONSUMED SO FAR
* 2016-02-15 11:33:13 Profiles to go: 94 Profile type: test User: demouser@demo-ag.com Profile ID: MLP_2016-02-15-11-33-11_Demo-for-Testserver.kml
* 2016-02-15 10:27:49 Profiles to go: 94 Profile type: test User: demouser@demo-ag.com Profile ID: MLP_2016-02-15-10-27-47_Demo-for-Testserver.kml
* 2016-01-21 10:25:24 Profiles to go: 94 Profile type: test User: demouser@demo-ag.com Profile ID: MLP_2016-01-21-10-25-23_Demo-for-Testserver.kml
* 2016-01-21 10:23:43 Profiles to go: 94 Profile type: test User: demouser@demo-ag.com Profile ID: MLP_2016-01-21-10-23-42_Demo-for-Testserver.kml
* 2016-01-19 10:39:02 Profiles to go: 94 Profile type: test User: demouser@demo-ag.com Profile ID: MLP_2016-01-19-10-39-00_Demo-for-Testserver.kml
* 2016-01-18 16:53:14 Profiles to go: 94 Profile type: test User: demouser@demo-ag.com Profile ID: MLP_2016-01-18-16-53-12_Demo-for-Testserver.kml
* 2016-01-18 13:01:34 Profiles to go: 94 Profile type: test User: demouser@demo-ag.com Profile ID: MLP_2016-01-18-13-01-34_Demo-for-Testserver.kml
* 2016-01-15 17:15:01 Profiles to go: 94 Profile type: test User: demouser@demo-ag.com Profile ID: MLP_2016-01-15-17-14-59_Demo-for-Testserver.kml
* 2016-01-14 13:28:51 Profiles to go: 94 Profile type: unique User: demouser@demo-ag.com Profile ID: MLP_2016-01-14-13-28-55_Demo-for-Testserver.kml
* 2016-01-14 13:24:41 Profiles to go: 95 Profile type: unique User: demouser@demo-ag.com Profile ID: MLP_2016-01-14-13-24-45_Demo-for-Testserver.kml
* 2016-01-14 13:24:16 Profiles to go: 96 Profile type: test User: demouser@demo-ag.com Profile ID: MLP_2016-01-14-13-24-20_Demo-for-Testserver.kml
* 2016-01-14 13:23:26 Profiles to go: 96 Profile type: unique User: demouser@demo-ag.com Profile ID: MLP_2016-01-14-13-23-29_Demo-for-Testserver.kml
* 2016-01-14 13:22:16 Profiles to go: 97 Profile type: test User: demouser@demo-ag.com Profile ID: MLP_2016-01-14-13-22-17_Demo-for-Testserver.kml
* 2016-01-14 13:21:25 Profiles to go: 97 Profile type: unique User: demouser@demo-ag.com Profile ID: MLP_2016-01-14-13-21-29_Demo-for-Testserver.kml
* 2016-01-14 13:20:57 Profiles to go: 98 Profile type: duplicate User: demouser@demo-ag.com Profile ID: MLP_2016-01-14-13-21-01_Demo-for-Testserver.kml
* 2016-01-14 13:19:28 Profiles to go: 98 Profile type: test User: demouser@demo-ag.com Profile ID: MLP_2016-01-14-13-19-32_Demo-for-Testserver.kml
* 2016-01-14 13:16:40 Profiles to go: 98 Profile type: test User: demouser@demo-ag.com Profile ID: MLP_2016-01-14-13-16-44_Demo-for-Testserver.kml
* 2016-01-14 13:15:54 Profiles to go: 98 Profile type: test User: demouser@demo-ag.com Profile ID: MLP_2016-01-14-13-15-58_Demo-for-Testserver.kml
* 2016-01-14 13:14:57 Profiles to go: 98 Profile type: test User: demouser@demo-ag.com Profile ID: MLP_2016-01-14-13-15-01_Demo-for-Testserver.kml
* 2016-01-14 13:14:19 Profiles to go: 98 Profile type: unique User: demouser@demo-ag.com Profile ID: MLP_2016-01-14-13-14-18_Demo-for-Testserver.kml
* 2016-01-14 13:13:19 Profiles to go: 99 Profile type: test User: demouser@demo-ag.com Profile ID: MLP_2016-01-14-13-13-18_Demo-for-Testserver.kml
* 2016-01-14 13:11:12 Profiles to go: 99 Profile type: test User: demouser@demo-ag.com Profile ID: MLP_2016-01-14-13-11-16_Demo-for-Testserver.kml
* 2016-01-14 13:10:08 Profiles to go: 99 Profile type: test User: demouser@demo-ag.com Profile ID: MLP_2016-01-14-13-10-11_Demo-for-Testserver.kml
* 2016-01-14 13:07:55 Profiles to go: 99 Profile type: test User: demouser@demo-ag.com Profile ID: MLP_2016-01-14-13-07-59_Demo-for-Testserver.kml
* 2016-01-14 13:04:38 Profiles to go: 99 Profile type: test User: demouser@demo-ag.com Profile ID: MLP_2016-01-14-13-04-41_Demo-for-Testserver.kml
* 2016-01-14 13:01:25 Profiles to go: 99 Profile type: test User: demouser@demo-ag.com Profile ID: MLP_2016-01-14-13-01-29_Demo-for-Testserver.kml
* 2016-01-14 12:41:37 Profiles to go: 99 Profile type: test User: demouser@demo-ag.com Profile ID: MLP_2016-01-14-12-57-50_Demo-for-Testserver.kml
* 2014-04-11 09:58:55 Profiles to go: 9 Profile type: duplicate User: demouser@demo-ag.com Profile ID: MLP_2014-04-11-09-58-39_Demo-for-Testserver.kml
* 2014-04-11 09:57:27 Profiles to go: 9 Profile type: unique User: demouser@demo-ag.com Profile ID: MLP_2014-04-11-09-57-11_Demo-for-Testserver.kml
* 2014-04-10 15:37:08 Profiles to go: 9 Profile type: unique User: demouser@demo-ag.com Profile ID: MLP_2014-04-10-15-36-49_Demo-for-Testserver.kml
```

Each profile is considered either unique, duplicate or test.

- unique: Profile, reducing your quota by one.
- duplicate: Profile you have already cut in the past, so it does not count.  
Note: Only start and end coordinates define a unique profile. Antenna heights, profile width etc. don't count. You may play as much as you like. I will not reduce your quota.
- test: For testing you may cut any profiles precisely in east-west or north-south direction. In this case (start and end coordinate are identical in lat or long) the profile is considered a "test" profile and it is not accounted to your quota.

## 7 Configuration File

The configuration of the program is stored in the file "MLP-1m\_Client.cfg" that needs to be in the same directory as "MLP-1m\_Client.exe".

If the configuration file does not exist, the MLP Client refuses to start.

If the configuration file is write protected (e.g. located on a CD) a warning message pops up and changes can not be saved. But the software is still able to run.

Most values in the configuration file store user inputs of the Main Page, Configuration Page and the Plot Window. They should be changed with the GUI and not by editing the configuration file.

Some settings can only be changed by editing the configuration file. This chapter only describes this type of settings.

### 7.1 [MLP-Client]

ConfigVersion=2_00	Do not change
TimeoutSeconds=120	Timeout for server requests. In case of problems with timeouts due to a slow Internet connection increasing this value can help. The default value is 120.

## 7.2 [Profile]

PostingMeter=5	Do not change
StartAttributeType1=...	Format of the edit fields for Start- and End attributes. Allowed values are "String", "Integer" and "Float". If left blank the attribute field is not visible on the GUI.  "String": All characters allowed "Integer": Integer number without decimals (e.g. "123") "Float": Number with one decimal (e.g. "123.4"), decimal separator is "."
StartAttributeName1=...	Name of the attribute.
StartAttributeValue1=...	Value of the attribute, taken from the edit fields in the GUI.
ExportFormat1=GSI-1-0	Export formats. Blank fields do not show up on the configuration page.

## 7.3 [MLP-Web-Service]

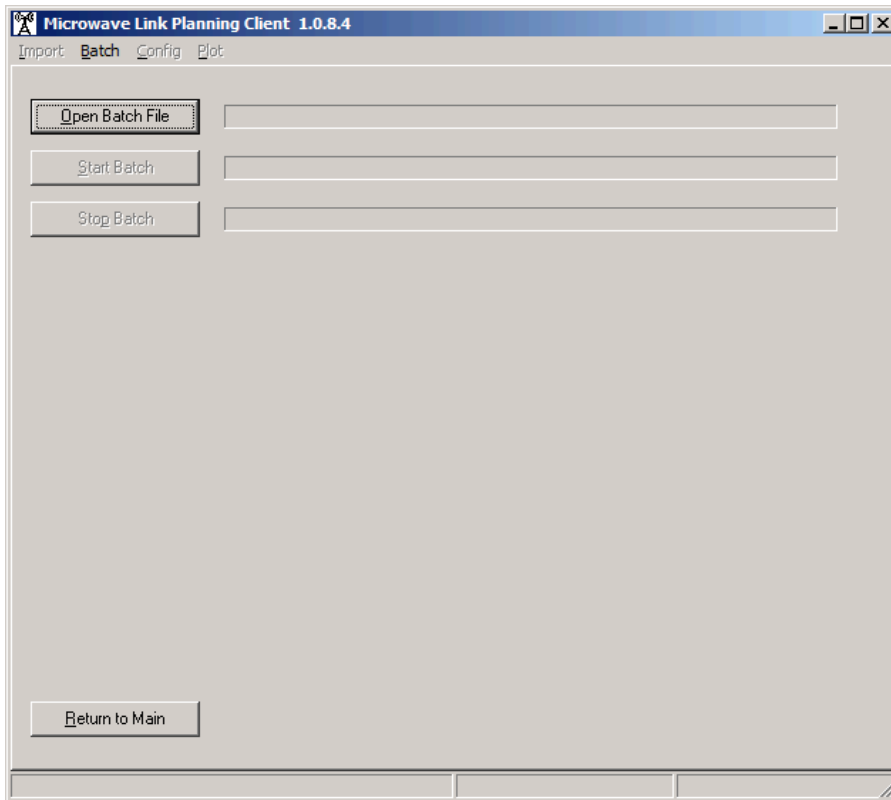
Host=https://mlp...	http address of the MLP server.
ProfileType=MLP-1-0	Do not change.

## 7.4 [Limits]

WidthLimitMeter=100	Maximum width of a profile. Default is 100, should not be changed.
LengthLimitMeter=100000	Maximum length of a profile. Default is 100000 (100 km), should not be changed.
MinimumExportHeightMeter=-9999	Altitudes in profiles lower than this value get changed to this value. To avoid negative values change this setting to 0. Default value is -9999.  This setting only applies to the *.gsi file. All other export files store the real altitudes.
NoDataLimitMeter=-100	Minimum altitude for data treated as real.  In areas with no valid data available (e.g. over the sea) the server returns altitudes of -999 m or -10000 m. To avoid having this values in the profiles a lower limit for no valid data can be set here.  Altitudes below this threshold are set to 0 m. Recommended setting is -100 m.  This only applies to the export files (*.txt, *.gsi, *.bmp). In the *.kml file the values from the server are stored.



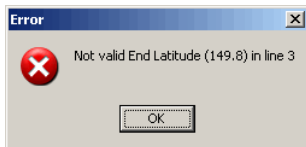
## 8 Batch Processing



On the "Batch" page a batch file with multiple profile requests can be selected and started.

After loading the batch file is checked for formal errors.

In case of errors the position of the first error is shown in a message box:



### 8.1 File Format

- Recommended file extension for the batch file is "\*.txt"
- 1 line per request
- Lines starting with // are treated as comment and ignored
- Empty lines are ignored
- All values are separated by semicolons (;)
- Spaces before and after semicolons are ignored

### 8.2 Arguments

Sequence of Arguments:

StartLat ; StartLong ; EndLat ; EndLong ;  
StartAttributeValue1 ; StartAttributeValue2 ; StartAttributeValue3 ; StartAttributeValue4 ; StartAttributeValue5 ;  
EndAttributeValue1 ; EndAttributeValue2 ; EndAttributeValue3 ; EndAttributeValue4 ; EndAttributeValue5 ;  
ProfileIdentifier (right part) ; UserString ; Frequency ; ProfileWidth (static part) ; K-Factor

#### Format:

- All StartAttributeValues and EndAttributeValues have to match the format specified in the configuration file (MLP\_Client.cfg).
- Coordinates are accepted in the form "dd.ddddddd", "dd mm ss.ss" and in "mmmmmmm.m" (Gauss-Krüger).
- Terrain height:  
If the arguments for terrain height (normally StartAttributeValue4 and EndAttributeValue4) are filled with an altitude this value is used for terrain height.  
If the arguments are left blank or filled with "Intermap" the Terrain height is taken from the MLP Server.
- ProfileWidth:  
Only the static part of the profile width can be specified in the batch file.  
The factor for the dynamic part (depending on the width of the Fresnel Zone) is taken from the Configuration page (see chapter 5.4 Check Zone and Profile Width).

As decimal separator "." and "," is accepted.

### 8.3 Sample Batch File

For a sample batch file see file "Batch File Description.txt".

Lines in the batch file should look like this (here in the document spread over 2 lines):

```
// StartLat; StartLong; EndLat; EndLong; StartAtt1-5; EndAtt1-5;  
   ProfileIdentifier; UserString; Frequency; ProfileWidth; K-Factor  
  
49 48 36.0; 10 42 00.0; 49 54 00.00; 10 42 00.0; Hintertupfing; 1A; 38; 222; ;  
   Blümchendorf; 2A;37; 222.2; ; Batch; KT_Test; 15.00; 20; 1.0  
  
49.7; 10.6; 49.8; 10.7; Hintertupfing; 1B; 45; Intermap; ; Blümchendorf; 2B;  
   37; ; ; Batch2; KT_Test2; 20.50; 10; 1.33
```

## 9 Import

The MLP\_Client can import and export LINKPlanner PTP Path files.

After importing a file coordinates, location names, antenna heights and terrain heights can be modified. Additionally a profile width can be specified.

The original file name ends up in the right half of the profile identifier field and can also be modified.

After the request of the profile all altitudes in the \*.ptpdat file get replaced with the Maximum profile and the file is exported. As file name is the original file name (or the name of the identifier field, if modified) used, extended by "\_Intermap".

The values of the fields Type of tower, User String, Frequency and k-Factor do not get exported.

## 10 Troubleshooting

- Config File MLP\_Client.cfg NOT FOUND:

To run the software the configuration file "MLP\_Client.cfg" needs to be present in the same directory as "MLP\_Client.exe".

- Proxy Server and msxml4.dll:

To be able to use a proxy server "msxml4.dll" needs to be installed on your PC. You can download "msxml.msi" (2.3 MB) from Microsoft at:

<http://www.microsoft.com/downloads/details.aspx?familyid=7F6C0CB4-7A5E-4790-A7CF-9E139E6819C0&displaylang=en>

To install "msxml.msi" start it with a double click.

- Msxml4.dll is not registered:

"msxml4.dll" and "msxml4r.dll" are available in the Windows/System32 directory but an error message shows "Msxml4.dll is not registered":

To register "msxml4.dll" open a DOS box (Start/Programs/Accessories/Command Prompt) and enter *Regsvr32 msxml4.dll*

To register "msxml4.dll" administrator rights are necessary.

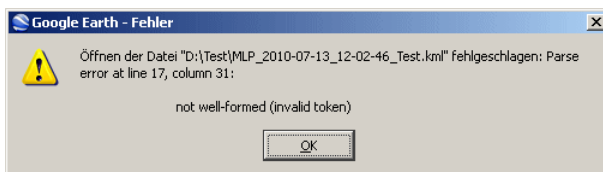
- Timeout while requesting a profile:

With a slow Internet connection the request of a profile can run into a timeout.

The timeout length can be modified in the Configuration file. See chapter 7.1 [MLP-Client].

- Google Earth can not open a \*.kml file:

Google Earth refuses to open a \*.kml file with an error message like this:



Google Earth can get problems with two or more consecutive "-" characters inside of xml comments.

To avoid that situation it is recommended not to use strings like "--", "->" or "<-" in text fields (Name, Type of Tower, Profile Identifier, User String).

A "damaged" \*.kml file can be opened with a text editor like Notepad and repaired by simply deleting or modifying the critical character sequence. The error message of Google Earth points to the line with the critical content.

## 11 Table of Content:

1	Introduction, Purpose of Software.....	2
2	Download and Installation.....	2
3	Main Window.....	3
3.1	Menu.....	3
3.2	Coordinate Input.....	3
3.3	Attribute Fields.....	4
3.4	Profile Identifier.....	4
3.5	User String.....	4
3.6	Frequency.....	4
3.7	Profile Width Calculated.....	5
3.8	Profile Length Calculated.....	5
3.9	Status Bar.....	5
4	Plot Window.....	6
4.1	Toolbars and Buttons.....	6
4.2	Line Colors.....	7
4.3	Legend.....	7
4.4	Tooltip.....	7
4.5	Status Bar.....	8
4.6	Google Earth.....	8
4.7	Google Earth Sample Pictures.....	9
5	Configuration Page.....	11
5.1	Projection.....	11
5.2	Positive Longitude / Latitude.....	11
5.3	Plot Window.....	11
5.4	Check Zone and Profile Width.....	12
5.5	K-Factor.....	13
5.6	Units.....	13
5.7	Account and Password.....	13
5.8	File Directory.....	14
5.9	Profile Identifier.....	14
5.10	Export Formats.....	14
5.11	Proxy.....	14
5.12	Buttons.....	14
6	Monitoring and Free Profiles for Testing.....	15
7	Configuration File.....	15
7.1	[MLP-Client].....	15
7.2	[Profile].....	16
7.3	[MLP-Web-Service].....	16
7.4	[Limits].....	16
8	Batch Processing.....	17
8.1	File Format.....	17
8.2	Arguments.....	17
8.3	Sample Batch File.....	18
9	Import.....	18
10	Troubleshooting.....	19
11	Table of Content:.....	20