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Usage of CRG_LIMITER

Introducing the usage of crg_limiter. Examples are included. The file comments are optimized for the matlab publishing makro.

NOTE One u-increment is used to adjust both crg-files into the right direction. Hence make sure you have a overlap by one (see examples).

```
%   Copyright 2005-2011 OpenCRG - VIRES Simulationstechnologie GmbH -
%   Holger Helmich
%
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%
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%
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%   See the License for the specific language governing permissions and
%   limitations under the License.
%
%   More Information on OpenCRG open file formats and tools can be found at
%
%       http://www.opencrg.org
%
%   $Id: crg_test_limiter.m 1 2011-06-08 10:50:00Z hhelmich $
```

Test proceedings

Test 1-4

- load demo crg-file
- set limitations
- display result

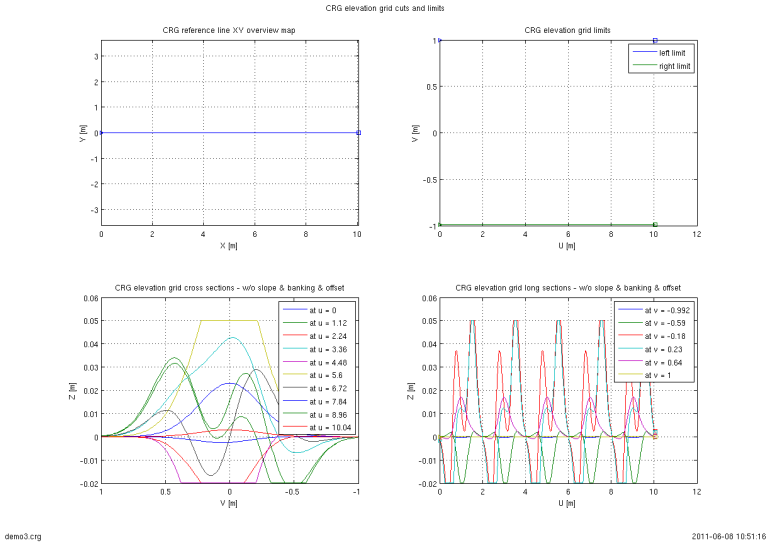
Test 5-6

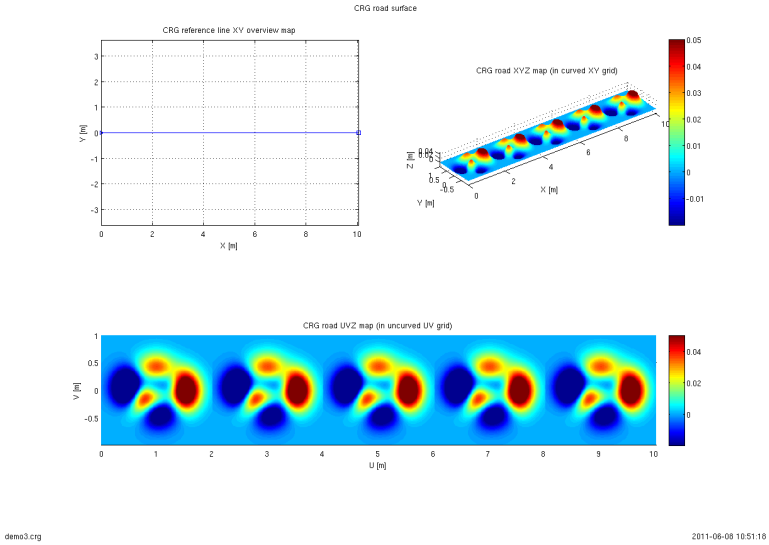
- load real dataset
- set limitations
- display only subset (if necessary)

```
% DEFAULT SETTINGS
% clear enviroment
clear all;
close all;
```

Test1 (min/max limitations)

```
dat = crg_read('demo3.crg');

data = crg_limiter(dat, [-0.02, 0.05] );

crg_show(data);
```





CRG information

```
CRG simulation trial size:
ensemble          =          3.1k
scale             =          .23

CRG header data:
reference zone start x   =          1
reference zone end x     =       31.14
reference zone increment =       1.13
zone section y rank      =       1.99
zone section y left      =          3
reference zone start y   =          1
reference zone end y     =       31.14
reference zone start z   =          1
reference zone start z   =          1
reference zone end z     =          1
reference zone start y   =          1
reference zone start z   =          1
reference zone end z     =          1
reference zone start z   =          1
reference zone start zone =          1
reference zone end zone  =          1
reference zone start zone =          1
reference zone start x   =          1
reference zone end x     =          1
reference zone start x   =          1
reference zone end x     =          1
reference zone end x     =          1

CRG master data:
trial run name           =          1
redpoint x trailer       =          1
redpoint x trailer       =          1
redpoint y               =          1
redpoint y trailer       =          1
redpoint z               =          1
redpoint z               =          1
redpoint z               =          1
redpoint zone            =          1

CRG master data:
binder node x            =          1
binder node y            =          1
binder trial x           =          1
binder trial y           =          1
binder avoid name        =          1
binder avoid name        =          1
binder avoid name        =          1
relique instrumentation  =          1
relique search tir       =          9.5
relique search zone      =          1.2
check mov                =       34.1k
check mov                =       1.113
check tip                =       1.113

CRG derived data:
trajectory name          =          1
trajectory name          =       31.14
trajectory name          =          1
```

CRG comment data:

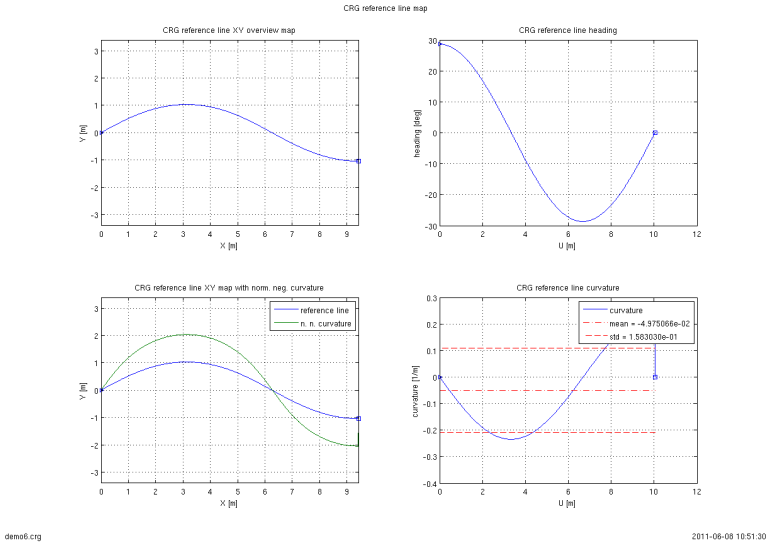
```
CRG defined by z matrix
... and unevenly spaced v vector
```

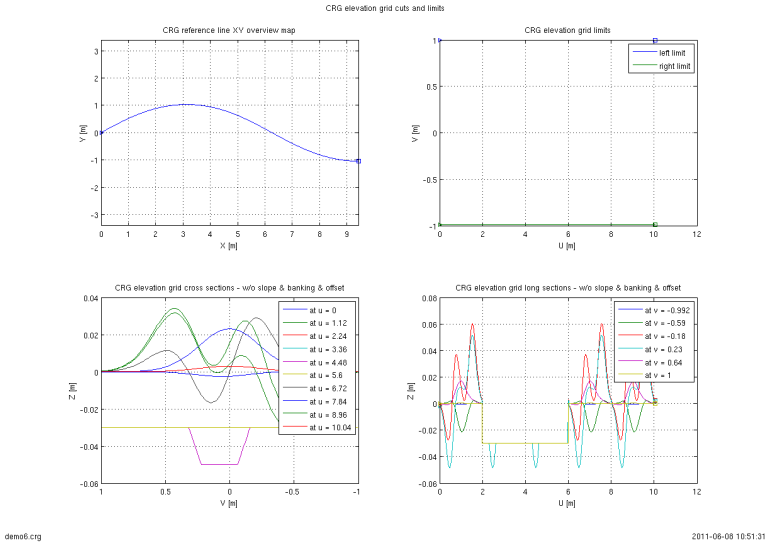
demo3.crg

2011-06-08 10:51:25

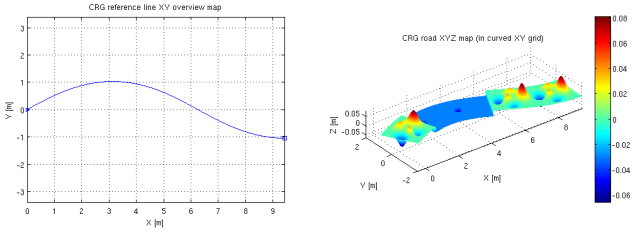
Test2 (incl. u start/stop)

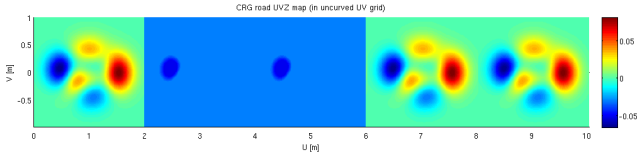
```
dat = crg_read('demo6.crg');

data = crg_limiter(dat, [-0.05, -0.03], [200 600]);

crg_show(data);
```





CRG road surface





CRG information

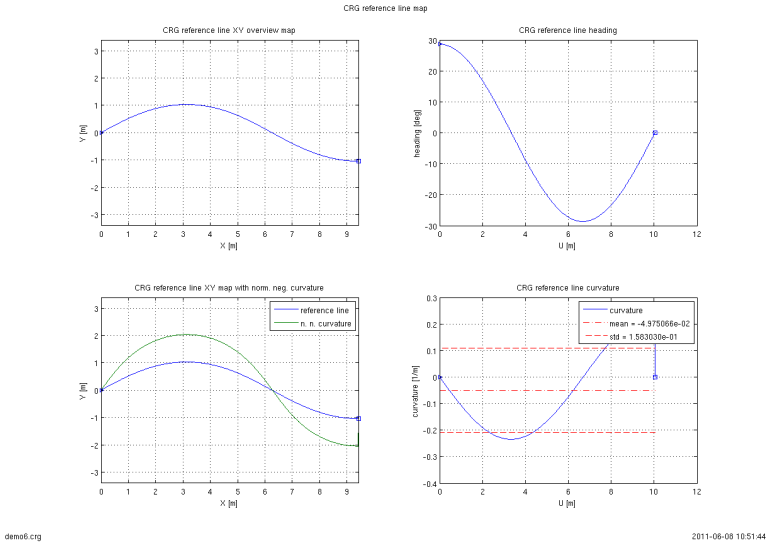
```
CRG simulation trial runs:
  numRuns                 =                  11.0
  vxAdd                   =                   2.0

CRG header data:
  reference zone start u  =                     0
  reference zone end u    =                  31.4
  reference zone increment=                   2.0
  zone centrum u roads    =                  1.884
  zone radius u (all)     =                     3
  reference zone start v  =                     0
  reference zone end v    =    0.41421356237310
  reference zone direc u  =                     1
  reference zone start x  =                     0
  reference zone end x    =    3.14159265358979
  reference zone direc x  =                     1
  reference zone start z  =                     0
  reference zone end z    =                     1
  reference zone direc z  =                     1
  reference zone start_phi=    1.07595933163...
  reference zone end phi  =    0.78539816339744
  reference zone direc phi=                     1
  reference zone start y  =                     0
  reference zone end y    =                     1
  reference zone start_ds =                     0
  reference zone end ds   =                     1

CRG roadlink data:
  total num roads         =                     4
  reference u trailing    =                     1
  reference u direc       =                     1
  reference v             =                     0
  reference v direc       =                     1
  reference z             =                     0
  reference r             =                     1
  reference t             =                     0
  reference phi           =                     0

CRG datum data:
  border roads u          =                     4
  border roads v          =                     4
  border direc u          =                     1
  border direc v          =                     1
  border invalid names    =                     1
  border valid names      =                     1
  relzone lanesection     =                     1
  relzone border tol      =                 0.05
  relzone search close    =                    2.0
  check min               =                  50.0
  check max               =                 1.e+3
  check tol               =                 1.e-12

CRG derived data:
  trajectory roads        =                     1
  trajectory names        =                  31.4
  trajectory name         =                     1
```

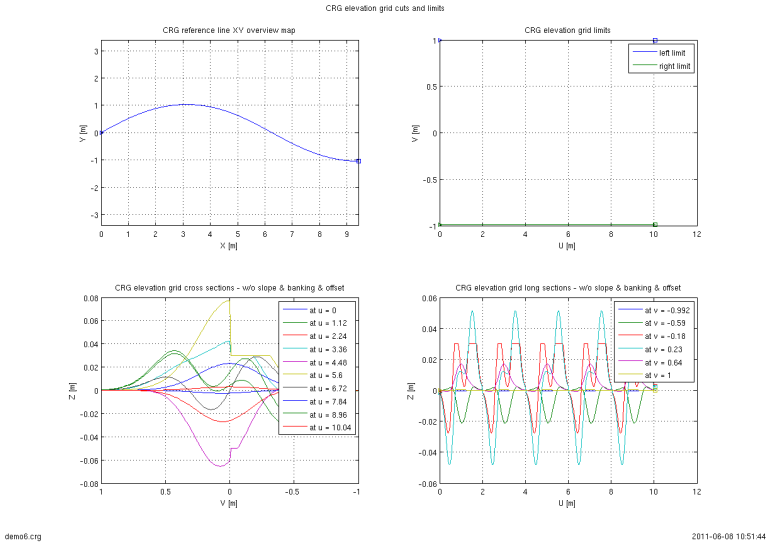
CRG comment data:

```
CRG defined by z matrix
... and unevenly spaced v vector
... with curved reference line
```

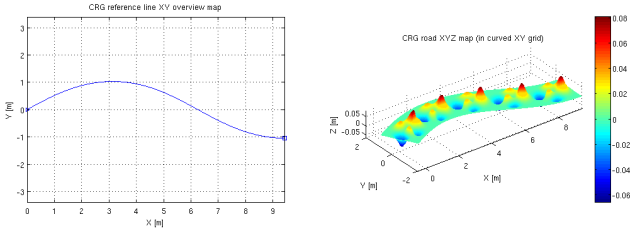
Test3 (incl. v start/stop)

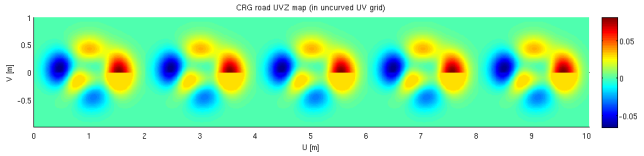
```
dat = crg_read('demo6.crg');

data = crg_limiter(dat, [-0.05 0.03], [], [50 100]);

crg_show(data);
```





CRG road surface





CRG information

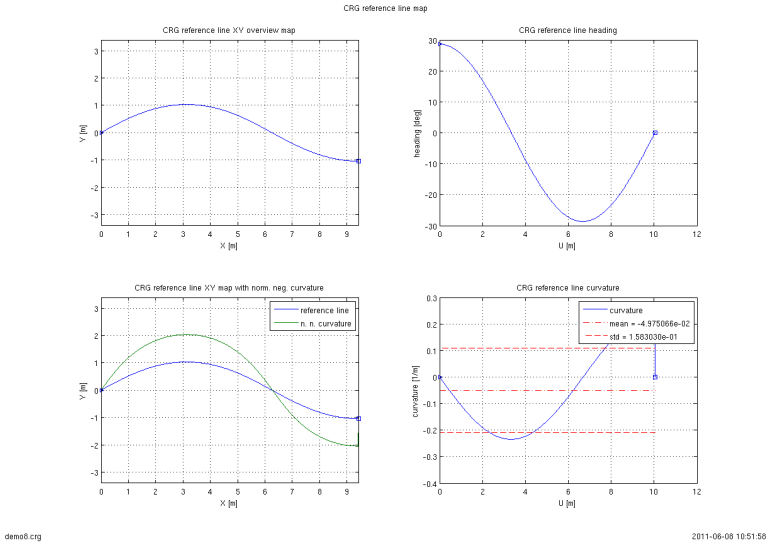
```
CRG elevation grid data:
nmbPts                 =                 11.1%
scale                  =                   1.3

CRG header data:
reference line start u =                     1
reference line end u   =                  31.14
reference line incrmnts=                   1.3
incr section v range   =                 1.496
incr section v (all)   =                     3
reference line start v =                     1
reference line end v   =    0.41414439411.2
reference line direc u =                     1
reference line start u =                     1
reference line end u   =    3.1.0.1563e+05
reference line direc v =                     1
reference line start v =                     1
reference line end v   =                     1
reference line direc z =                     1
reference line start_pts =    1.4959999999e1
reference line end pts =    0.2141e1.1e1+04 2.1
reference line direc pts =                   1
reference line start u =                     1
reference line end u   =                     1
reference line start_u =                     1
reference line end u   =                     1

CRG roadlevel data:
total num nodes        =                   4
reference u trailine   =                   1
reference u direc      =                   1
reference v            =                   1
reference v direc      =                   1
reference z            =                   1
reference r            =                   1
reference t            =                   1
reference pts          =                   1

CRG obstacle data:
bicubic nodes u        =                   4
boundary nodes v       =                   4
bicubic direc u         =                  1
boundary direc v        =                  1
bicubic double nodes   =                   1
bicubic double nodes   =                   1
railine simplemodel    =                   1
railine length tot     =                 3.75
railine smooth close   =                   2.4
length min             =                 50.15
length max             =                 1.113
length tol             =                 1.113

CRG derived data:
triangles nodes        =                   1
triangles nodes        =                  31.14
triangles nodes        =                   1
```

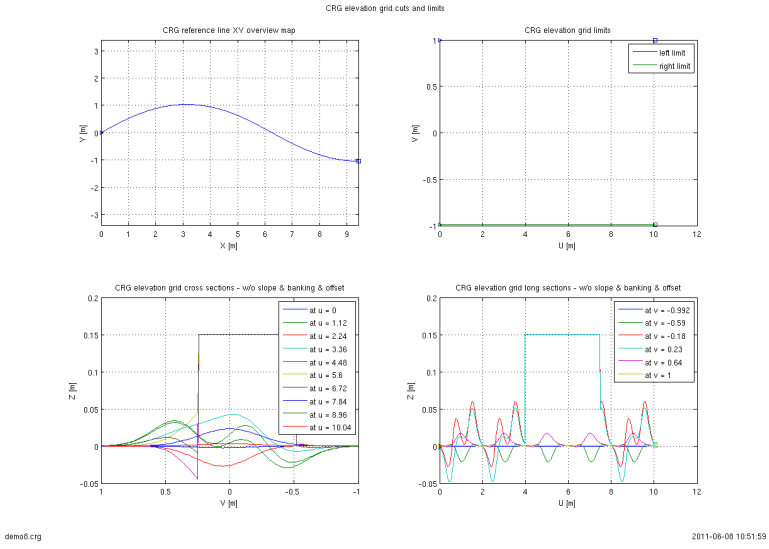
CRG comment data:

```
CRG defined by z matrix
... and unevenly spaced v vector
... with curved reference line
```

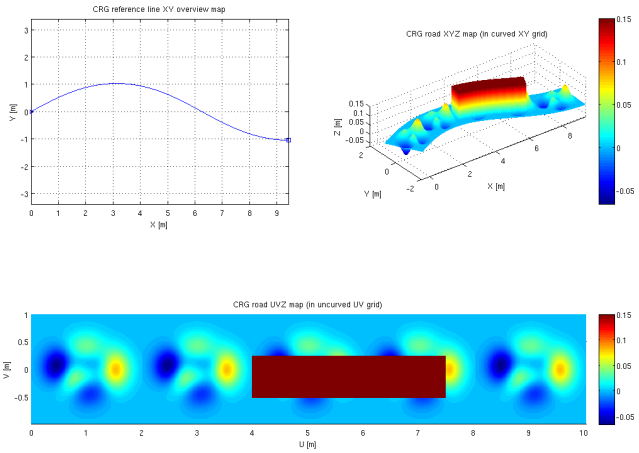
Test4 (incl. u/v start/stop)

```
dat = crg_read('demo8.crg');

data = crg_limiter(dat, 0.15, [400 750], [50 125]);

crg_show(data);
```





CRG road surface



demo8.crg 2011-06-08 10:51:59

CRG information

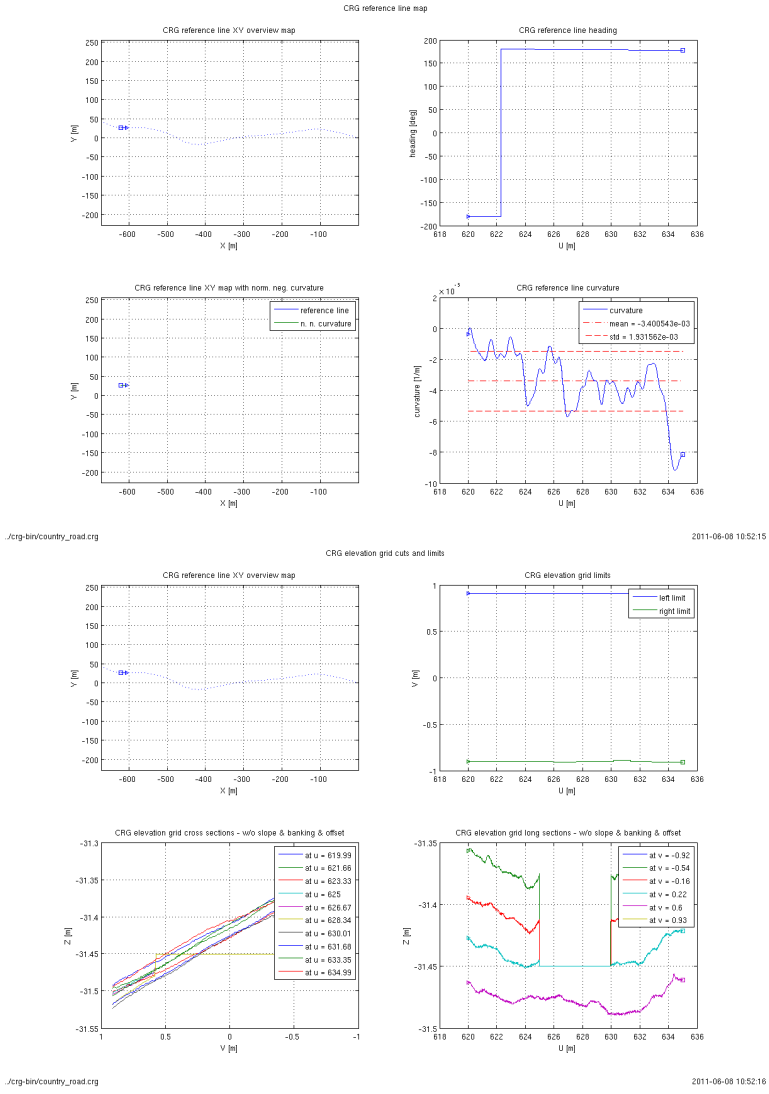
CRG comment data:

CRG defined by z matrix
... and unevenly spaced v vector
... with curved reference line
... with variable slope and constant cross slope

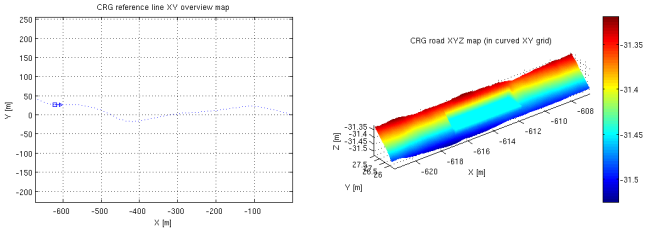
demo8.crg 2011-06-08 10:52:06

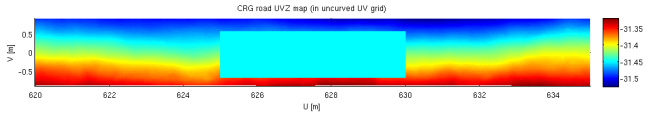
Test5 (real dataset incl. u/v start/stop)

```
dat = crg_read('../crg-bin/country_road.crg');

data = crg_limiter(dat, -31.45, [62500 63000], [25 150]);

crg_show(data, [62000 63500]);
```



CRG road surface





CRG information

```
CRG alternative grid size:
length                -              69115
width                 -                180

CRG header data:
reference_line_start_u  -                0
reference_line_start_v  -                0
reference_line_distance -              691
reference_line_distance -             1.15
long_section_u_start    -             1.01
long_section_v_init     -             1.03
long_section_u_increment -             1.15
reference_line_start_y  -  1.1153161597
reference_line_end_y    -  673.1653731141
reference_line_offset_y -                1
reference_line_start_y  -  1.1153173591
reference_line_offset   -  49.8383199469
reference_line_end_y    -                1
reference_line_start_r  -                1
reference_line_end_r    -                1
reference_line_offset_r -                1
reference_line_start_phi -  1.2318541031
reference_line_end_phi  -  1.4145551483
reference_line_offset_phi -              1
reference_line_start_t  -                1
reference_line_end_t    -                1
reference_line_start_z  -                1
reference_line_end_z    -                1
reference_line_start_kac -            2.445511
reference_line_end_kac  -  0.4375753731
reference_line_start_kas -            91.917119
reference_line_end_kas  -  49.4170272445
reference_line_start_crv -              313
reference_line_end_crv  -              317

CRG modifier data:
grid_use_mode           -                0
refpoint_modification   -                1
refpoint_u_offset       -                1
refpoint_v              -                1
refpoint_v_offset       -                1
refpoint_u              -                1
refpoint_z              -                1
refpoint_t              -                1
reference_phi           -                1

CRG option data:
border_mode_u           -                1
border_mode_v           -                1
border_offset_u         -                1
border_offset_v         -                1
border_smooth_ahead     -                1
border_smooth_back      -                1
refline_continuation    -                1
refline_search_inc      -              1.1
refline_search_turns    -              1.9
their_dir               -             left
their_inc               -             1.11
their_int               -             1.111

CRG derived data:
curving_check           -                1
curving_mode            -              441
curving_step            -                1
```

CRG comment data:

```
Measurement by TÜV SÜD Automotive GmbH
German country road L514 Assamstadt->Windischbuch (close to Boxberg)

CRG from 0 m to 690 m lat res 10 mm long res 10 mm
Starting Point: Lat( 49.427204 ), Lon(  9.663012 )
 http://maps.google.com/maps?q=49.427204,9.663012
Recorded: 01-Dez-2006

Free CRG from TÜV SÜD Automotive GmbH, Germany

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See the License for the specific language governing permissions and
limitations under the License.
```
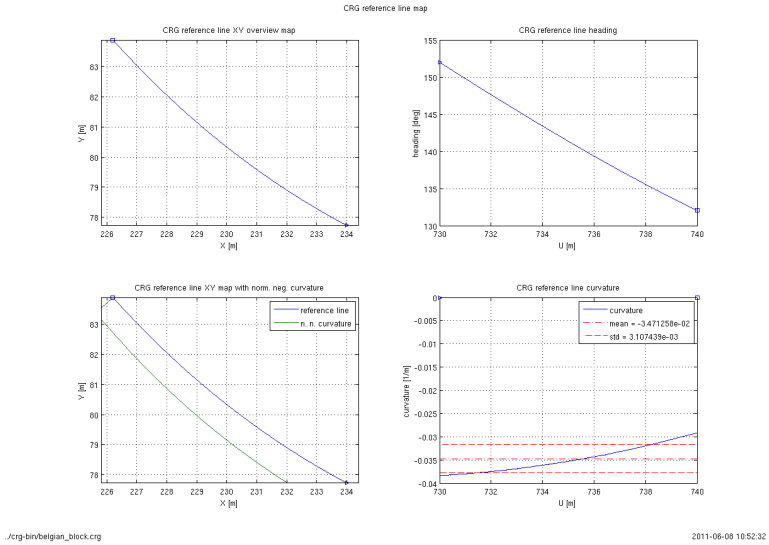
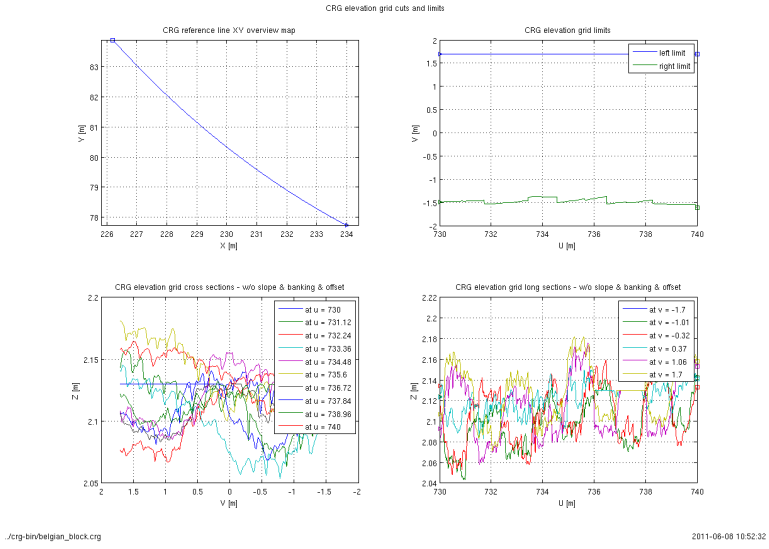
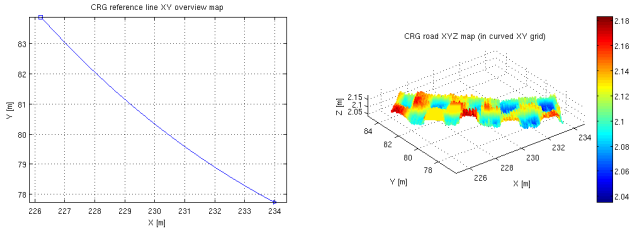

Test6 (real dataset incl. u/v start/stop)

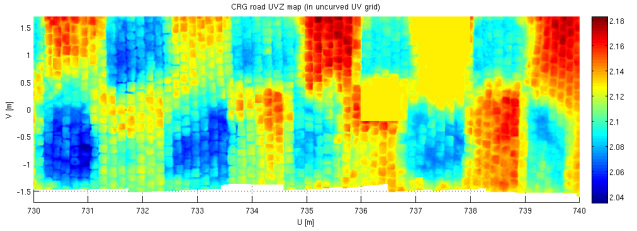
```
dat = crg_read('../crg-bin/belgian_block.crg');

data = crg_limiter(dat, [-10 2.13], [600 800], 150);

crg_show(data);
```





CRG road surface





../crg-bin/belgian_block.crg 2011-06-08 10:52:33

CRG information

```
CRG elevation grid size:
length                -                1115
width                 -                 991

CRG header data:
reference_line_start_u                -   731
reference_line_increment              -   731
reference_line_direction              -     1
long_section_u_start                  -     1
long_section_u_increment              -     1
reference_line_start_v                -   -115.4857419349
reference_line_end_u                  -   114.4898661289
reference_line_offset_v               -     0
reference_line_start_y                -   33.7161171488
reference_line_end_y                  -   89.8979170161
reference_line_start_x                -     0
reference_line_start_z                -     0
reference_line_end_z                  -     0
reference_line_offset_x               -     0
reference_line_start_phi              -   2.4117274112
reference_line_end_phi                -   2.5155415344
reference_line_offset_phi             -     0
reference_line_start_z                -     0
reference_line_end_z                  -     0
reference_line_start_u                -     0
reference_line_start_v                -     0
reference_line_start_len              -   0.1914161431
reference_line_end_len                -   0.1917705115
reference_line_start_len              -   42.7327411431
reference_line_end_len                -   42.7327411432
reference_line_start_crv              -   111
reference_line_end_crv                -   111

CRG modifier data:
grid_use_mod                          -     0
refpoint_x_offset                     -     0
refpoint_z_offset                     -     0
refpoint_u                            -     0
refpoint_v_offset                     -     0
refpoint_x                            -     0
refpoint_z                            -     0
refpoint_y                            -     0
reference_phi                         -     0

CRG option data:
border_mode_u                         -     1
border_mode_v                         -     1
border_offset_u                       -     0
border_offset_v                       -     0
border_smooth_mod                     -     0
border_smooth_mod2                    -     0
refline_continuation                  -     0
refline_search_tol                    -   1.0
refline_search_turns                  -   1.0
incr_del                              -   1e-4
check_tol                             -   1.0
check_val                             -   1.111

CRG derived data:
curving_mode                          -   731
curving_mod2                          -   731
incr_use                              -     0
```

CRG comment data:

Einfahrbahn Untertürkheim "heide.crg"
Planabschnitt 13: Heidestrecke (Belgisch Pflaster)
.
Messung:
========
Photogrammetrische Vermessung Einfahrbahn Stuttgart-Untertürkheim,
1997-2000.
.
Andreas Eichhorn, Wolfgang Möhlenbrink,
Universität Stuttgart,
Institut für Anwendungen der Geoddäsie im Bauwesen.
.
Helaut Schittenhelm,
DaimlerChrysler, Forschung Fahrzeugsystemdynamik (FT1/FD).
.
Bereitstellung im CRG-Format:
=============================
Jochen Rauh,
DaimlerChrysler, Forschung Fahrzeugsystemdynamik (REI/AR), 2005.
.
Literatur:
==========
Schittenhelm, H., Ammon, D.:
Auf dem Weg zu lebensdauer- und komfortrelevanten 3-dimensionalen
Fahrstrecken in der Fahrwerkssimulation. Tagungsband VDI Reifen,
Fahrwerk, Fahrbahn. Hannover, Oktober 2001, S. 447-464.
VDI, Düsseldorf, 2001.
.
Eichhorn, A., Möhlenbrink, W., Schittenhelm, H.:
Project 'Bumpy Road' - the durabilitysimulation on virtual car
models, Procdeedings of 5.th Int. Conference on Optical
3D-Measurement Techniques, Wien, Oktober 2001.
.
Rauh, J.:
Road Profiles for Simulation - VSA Data Analysis.
Internal Presentation, DaimlerChrysler, Stuttgart, 2005.
* modified by crg_cut_iuiv at 2009-10-21 14:58:29

../crg-bin/belgian_block.crg 2011-06-08 10:52:44