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Usage of CRG_EXT_BANKING and CRG_EXT_SLOPE

Introducing the usage of `crg_ext_banking` and `crg_ext_slope`. Examples are included. The file comments are optimized for the matlab publishing makro.

```
% Copyright 2005-2011 OpenCRG - VIRES Simulationstechnologie GmbH -
% Holger Helmich
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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_ext_sb.m 1 2011-06-07 11:49:00Z hhelmich $
```

Test proceedings

- load demo/real file
- extract banking/banking
- display result

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

Test1 (extract banking incl. smoothing)

```
dat = crg_read('demo7.crg');
```

```
exdata = crg_ext_banking(dat, 0.0000003);
```

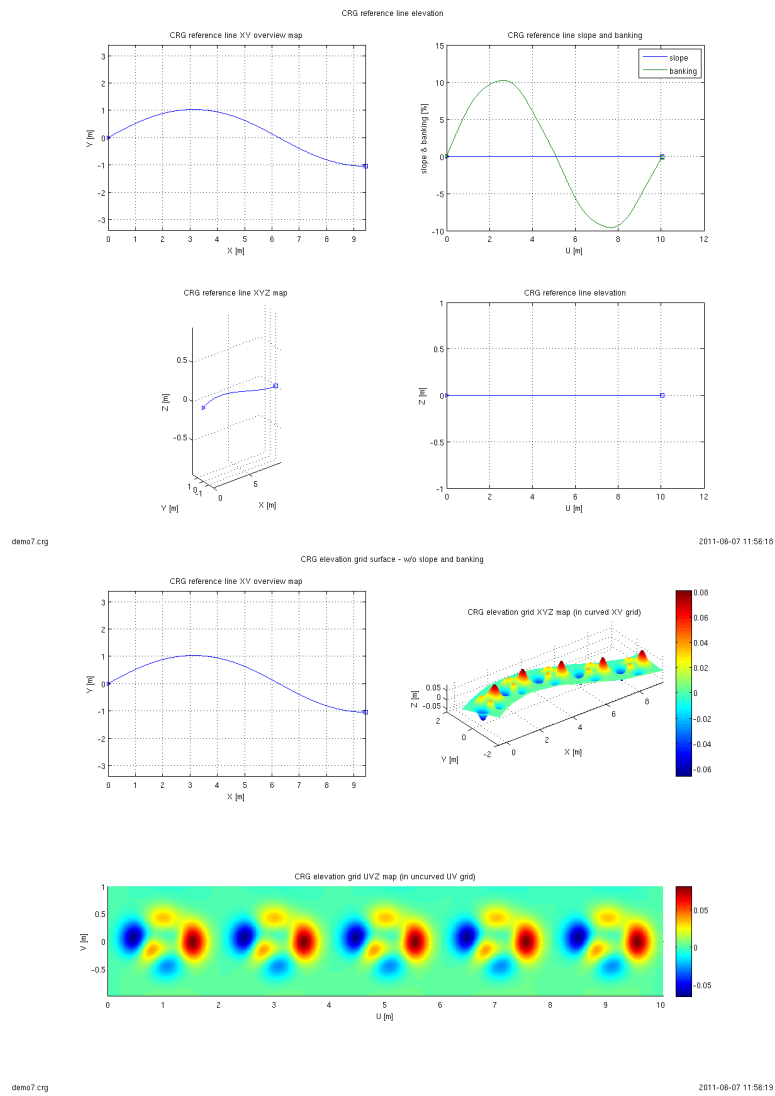
```
crg_show_refline_elevation(exdata);
```

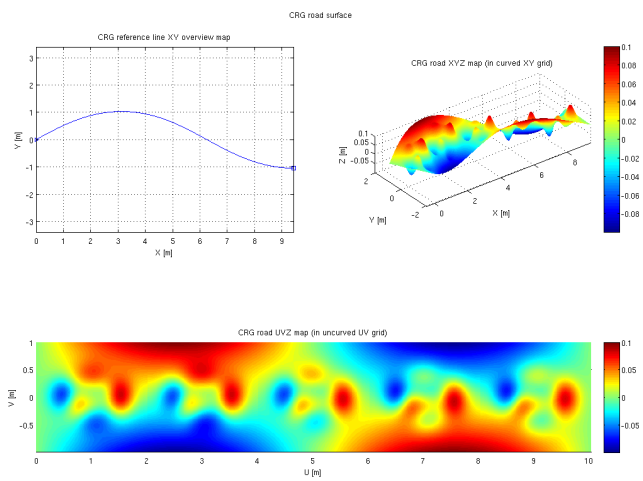
```
crg_show_elgrid_surface(exdata)
```

```
crg_show_road_surface(exdata);
```

```
ans =
```

```
    head: [1x1 struct]
    mods: [1x1 struct]
    opts: [1x1 struct]
      ct: {'CRG defined by z matrix'  '... and unevenly spaced v vector'  '... with curves
struct: {'* written by crg_write at 2011-06-07 09:51:51'  '* written by ipl_write at 20
filenm: 'demo7.crg'
      z: [1005x201 single]
      v: [1x201 single]
      b: [1x1005 single]
      u: 10.0400
      p: [1x1004 single]
      rx: [1x1005 double]
      ry: [1x1005 double]
      rc: [1x1003 double]
    dved: [1x1 struct]
      ir: [1x1005 double]
      il: [1x1005 double]
    hist: [1x1 struct]
      ok: 0
    fopt: [1x1 struct]
```





demo7.crg

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Test1.1 (extract banking w/o smoothing)

```
dat = crg_read('demo7.crg');
```

```
exdata = crg_ext_banking(dat);
```

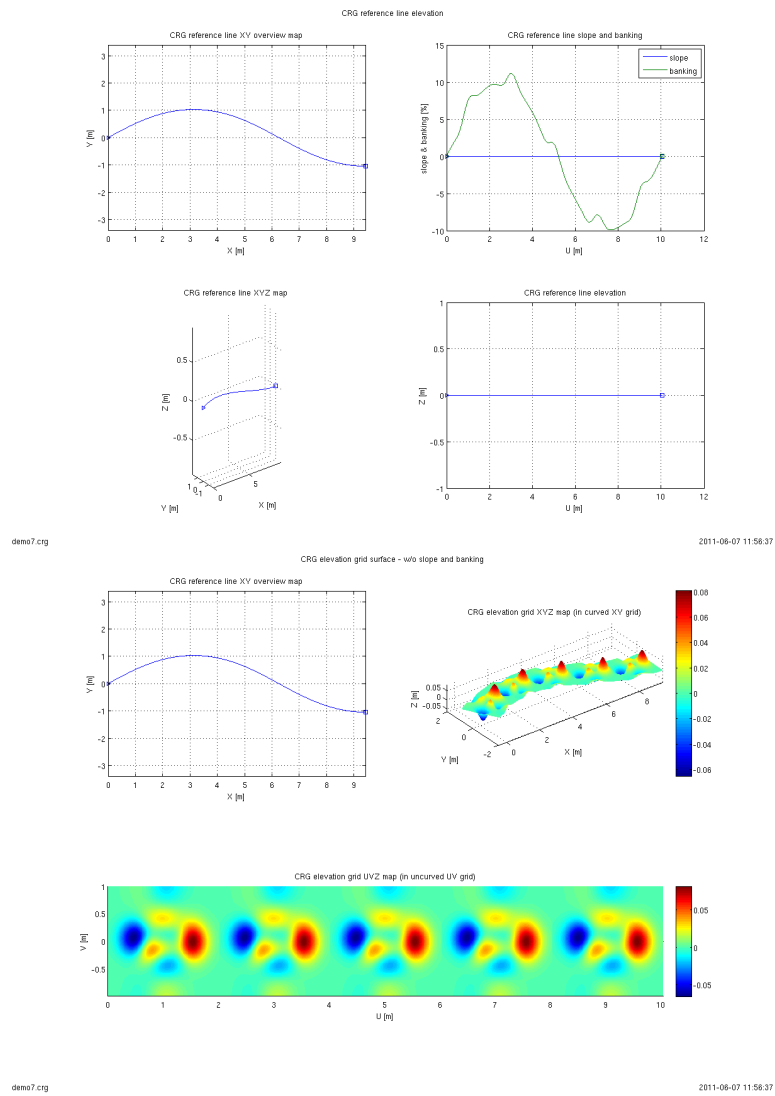
```
crg_show_refline_elevation(exdata);
```

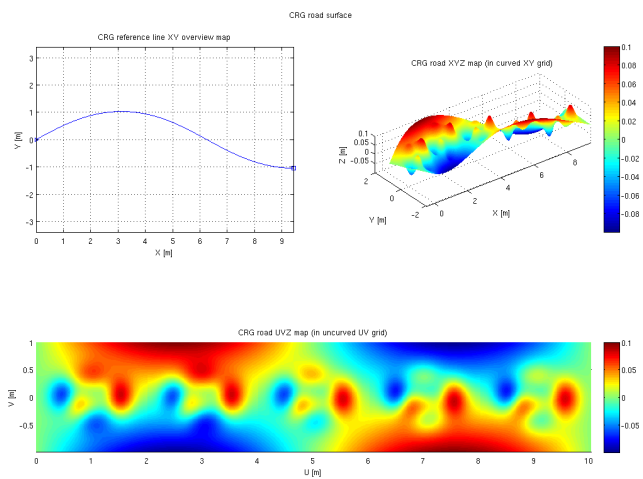
```
crg_show_elgrid_surface(exdata)
```

```
crg_show_road_surface(exdata);
```

```
ans =
```

```
    head: [1x1 struct]
    mods: [1x1 struct]
    opts: [1x1 struct]
      ct: {'CRG defined by z matrix'  '... and unevenly spaced v vector'  '... with curves'
struct: {'* written by crg_write at 2011-06-07 09:51:51'  '* written by ipl_write at 2011-06-07 09:51:51'
filenm: 'demo7.crg'
      z: [1005x201 single]
      v: [1x201 single]
      b: [1x1005 single]
      u: 10.0400
      p: [1x1004 single]
      rx: [1x1005 double]
      ry: [1x1005 double]
      rc: [1x1003 double]
    dved: [1x1 struct]
      ir: [1x1005 double]
      il: [1x1005 double]
    hist: [1x1 struct]
      ok: 0
    fopt: [1x1 struct]
```





demo7.crg

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Test2 (extract slope)

```
dat = crg_read('demo9.crg');
```

```
exdata = crg_ext_slope(dat);
```

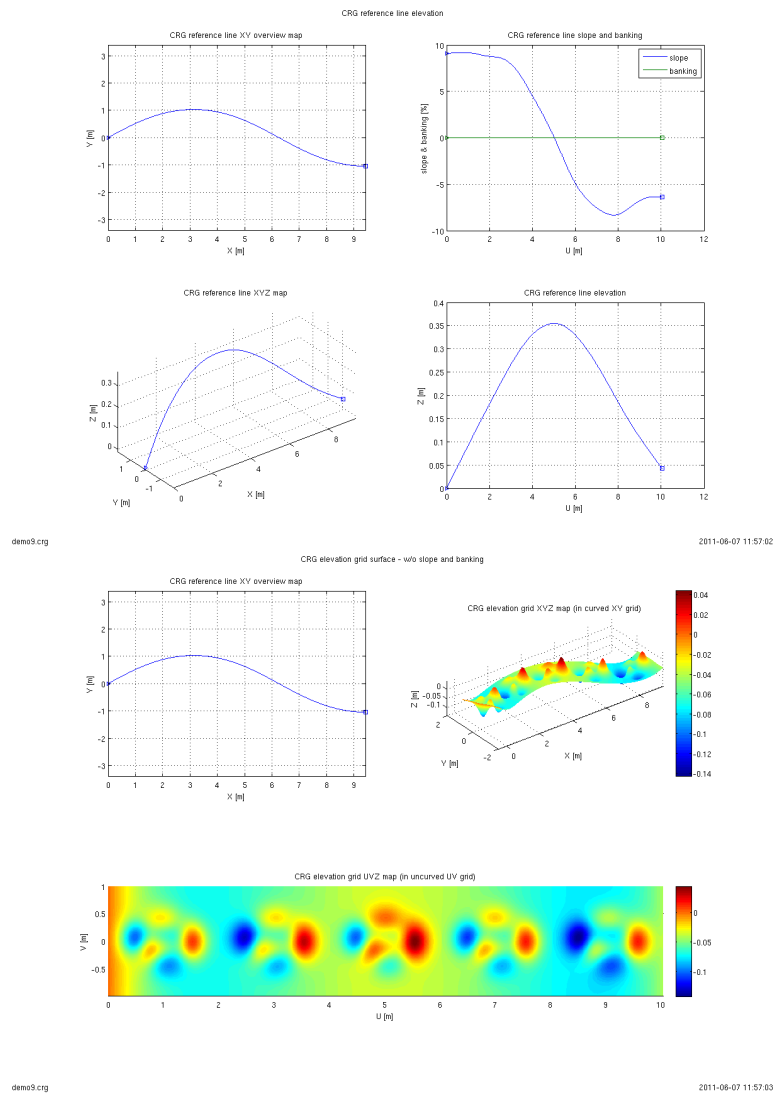
```
crg_show_refline_elevation(exdata);
```

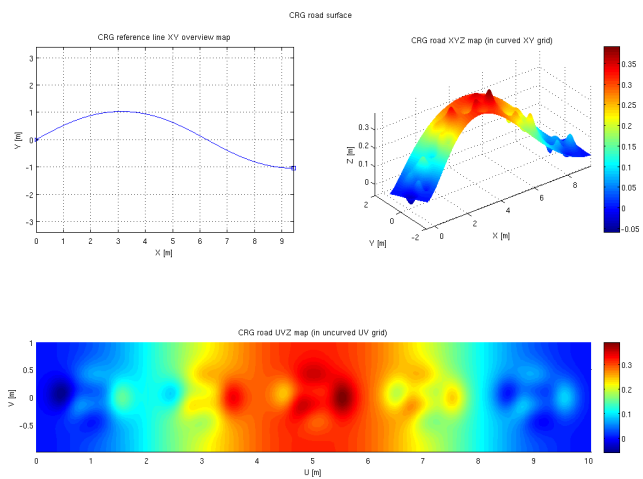
```
crg_show_elgrid_surface(exdata)
```

```
crg_show_road_surface(exdata);
```

```
ans =
```

```
    head: [1x1 struct]
    mods: [1x1 struct]
    opts: [1x1 struct]
      ct: {'CRG defined by z matrix'  '... and unevenly spaced v vector'  '... with curves'}
struct: {'* written by crg_write at 2011-06-07 09:51:51'  '* written by ipl_write at 2011-06-07 09:51:51'}
filenm: 'demo9.crg'
      z: [1005x201 single]
      v: [1x201 single]
      u: 10.0400
      p: [1x1004 single]
      s: [1x1004 single]
      rx: [1x1005 double]
      ry: [1x1005 double]
      rc: [1x1003 double]
    dved: [1x1 struct]
      rz: [1x1005 double]
      ir: [1x1005 double]
      il: [1x1005 double]
    hist: [1x1 struct]
      ok: 0
    fopt: [1x1 struct]
```





demo3.crg

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Test2.1 (extract slope/banking)

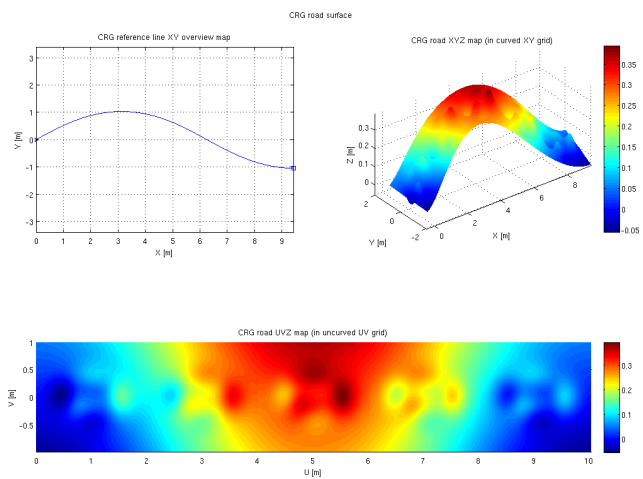
```
dat = crg_read('demo8.crg');
```

```
exdata = crg_ext_banking(dat);  
exdata = crg_ext_slope(exdata);
```

```
crg_show_refline_elevation(exdata);  
crg_show_elgrid_surface(exdata)  
crg_show_road_surface(exdata);
```

```
ans =
```

```
    head: [1x1 struct]  
    mods: [1x1 struct]  
    opts: [1x1 struct]  
      ct: {'CRG defined by z matrix'  '... and unevenly spaced v vector'  '... with curves'  
struct: {'* written by crg_write at 2011-06-07 09:51:51'  '* written by ipl_write at 2011-06-07 09:51:51'  
filenm: 'demo8.crg'  
      z: [1005x201 single]  
      v: [1x201 single]  
      b: [1x1005 single]  
      u: 10.0400  
      p: [1x1004 single]  
      s: [1x1004 single]  
      rx: [1x1005 double]  
      ry: [1x1005 double]  
      rc: [1x1003 double]  
    dved: [1x1 struct]  
      rz: [1x1005 double]  
      ir: [1x1005 double]  
      il: [1x1005 double]  
    hist: [1x1 struct]  
      ok: 0  
    fopt: [1x1 struct]
```

demo8.crg

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Test3 (real dataset extract slope/banking)

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

```
exdata = crg_ext_banking(dat, 0.00000000000003);
```

```
exdata = crg_ext_slope(exdata);
```

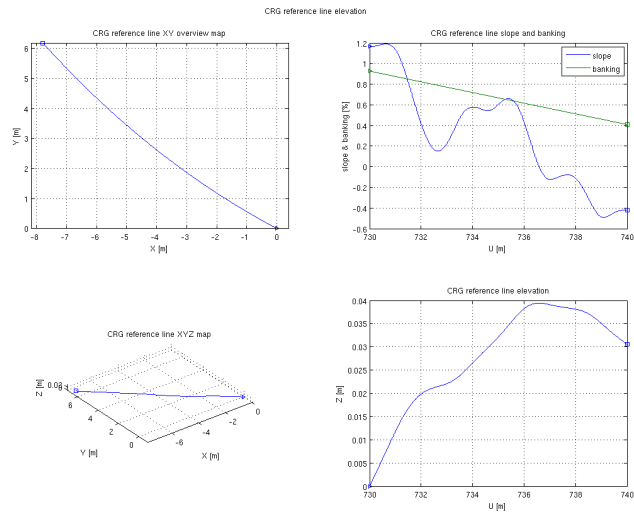
```
crg_show_refline_elevation(exdata);
```

```
crg_show_elgrid_surface(exdata)
```

```
crg_show_road_surface(exdata);
```

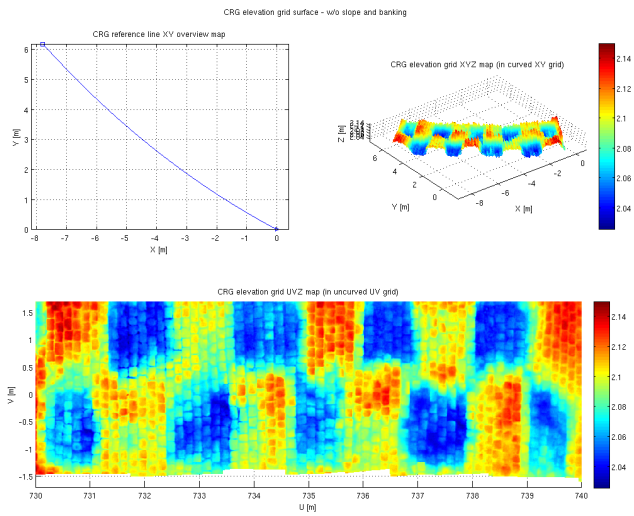
```
ans =
```

```
    head: [1x1 struct]
    mods: [1x1 struct]
    opts: [1x1 struct]
    ct: {1x37 cell}
struct: {'* written by crg_write at 2009-10-21 14:58:29' '* written by ipl_write at 2009-10-21 14:58:29'}
filenm: '../crg-bin/belgian_block.crg'
    z: [1001x341 single]
    v: 1.7000
    b: [1x1001 single]
    u: [730 740]
    p: [1x1000 single]
    s: [1x1000 single]
    rx: [1x1001 double]
    ry: [1x1001 double]
    rc: [1x999 double]
dved: [1x1 struct]
    rz: [1x1001 double]
    ir: [1x1001 double]
    il: [1x1001 double]
hist: [1x1 struct]
    ok: 0
fopt: [1x1 struct]
```



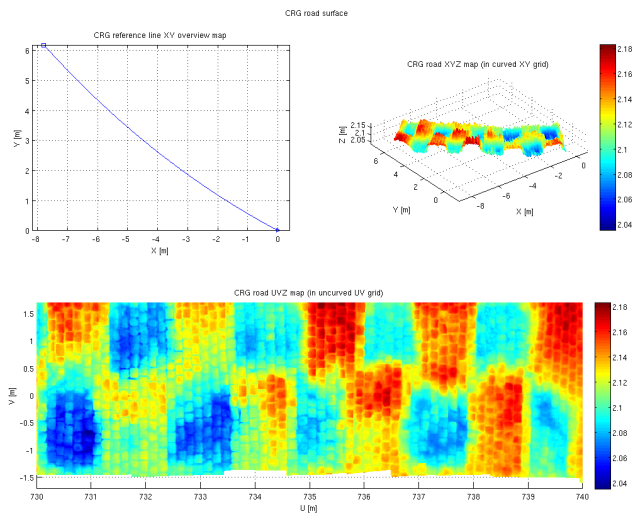
./crg-bin/belgian_block.crg

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./crg-bin/belgian_block.crg

2011-06-07 11:58:22



./crg-binbelgian_block.crg

2011-06-07 11:58:23