

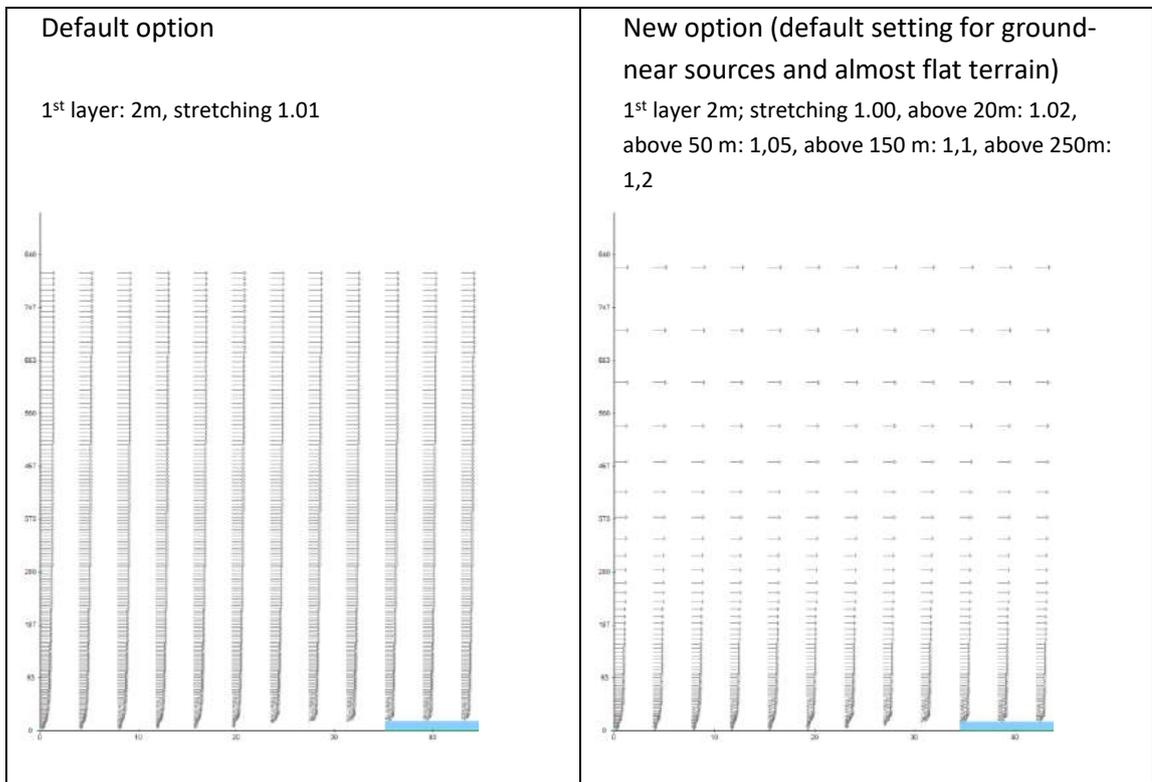
Release notes - GRAL version 20.01Beta3 and GUI version 20.01Beta3

Changes to the previous version 19.01

GRAL 20.01Beta3

- Bugfix: in rare cases a particle could leave the domain boundary (rounding error) and cause an array bound overflow
- Performance improvement for the dispersion module (about 30% faster compared to the previous .Net Core version 19.01 and about 40 % faster compared to the .Net Framework version 19.01)
- Upgrade to .NetCore 3.0
- Support for timeseries of exit temperature and exit velocities for point sources and portal sources in the transient GRAL mode; the previous solution for portal sources (extension to the meteopgt.all file) is no longer supported
- Optional setting of a directory for the GRAL flow field files
- Optional new compression mode for (in most cases) smaller *.gff files
- Optional new *.con (*.grz) result file formats: the new format 2 is a little bit more compressed but much more error-proof for damaged result files. The format 3 might give smaller files for small domain areas and is more error-proof for damaged result files.
- Decay rates can be defined individually for each source group
- The default factor for defining the prognostic flow field subdomains can be overruled
- Optional height depending stretching factors for the vertical flow field grid. This option enables faster flow field calculations (especially when using terrain) and/or higher accuracy.

Example: section view of wind vectors:



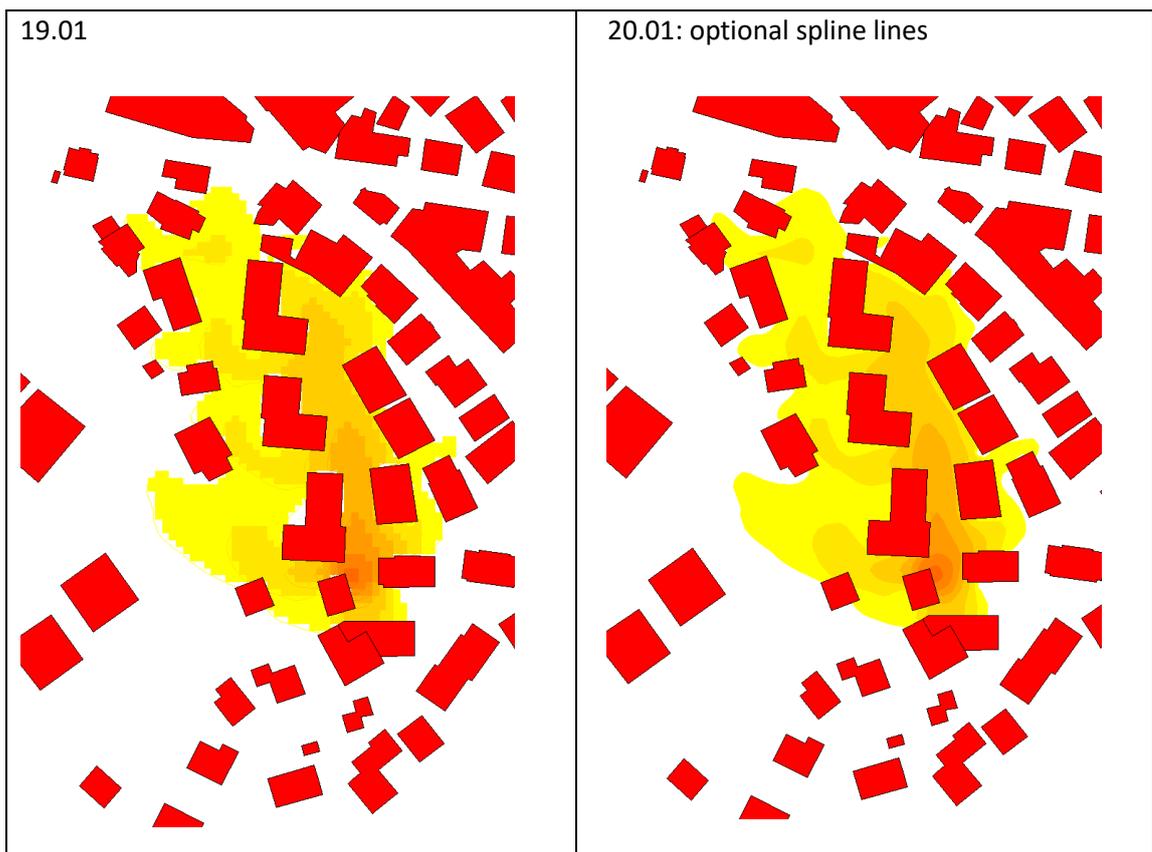
Release notes - GRAL version 20.01Beta3 and GUI version 20.01Beta3

It is recommended to use small stretching factors up to the highest elevation with buildings and sources at complex terrain. The flow field grid starts at the lowest elevation within the GRAL domain area.

The new options for the *.gff compression mode and the height depending stretching factors are not compatible with former GRAL versions. Using these new *.gff files in former versions of GRAL will cause unexpected behaviour.

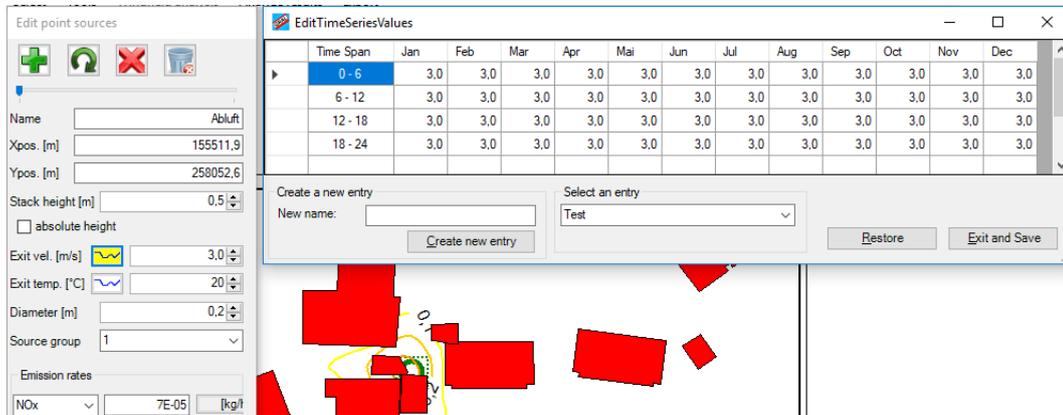
GUI 20.01Beta3

- The GUI 20.01 is built for the .NetFramework 4.6.1
- Optimized buildings rasterization algorithm (improved accuracy)
- Optional new contour line drawing (incl. splines): the Bourke line algorithm is still the reference, the new option "Spline lines" should be used carefully. A couple of settings can be used to produce smooth contour lines

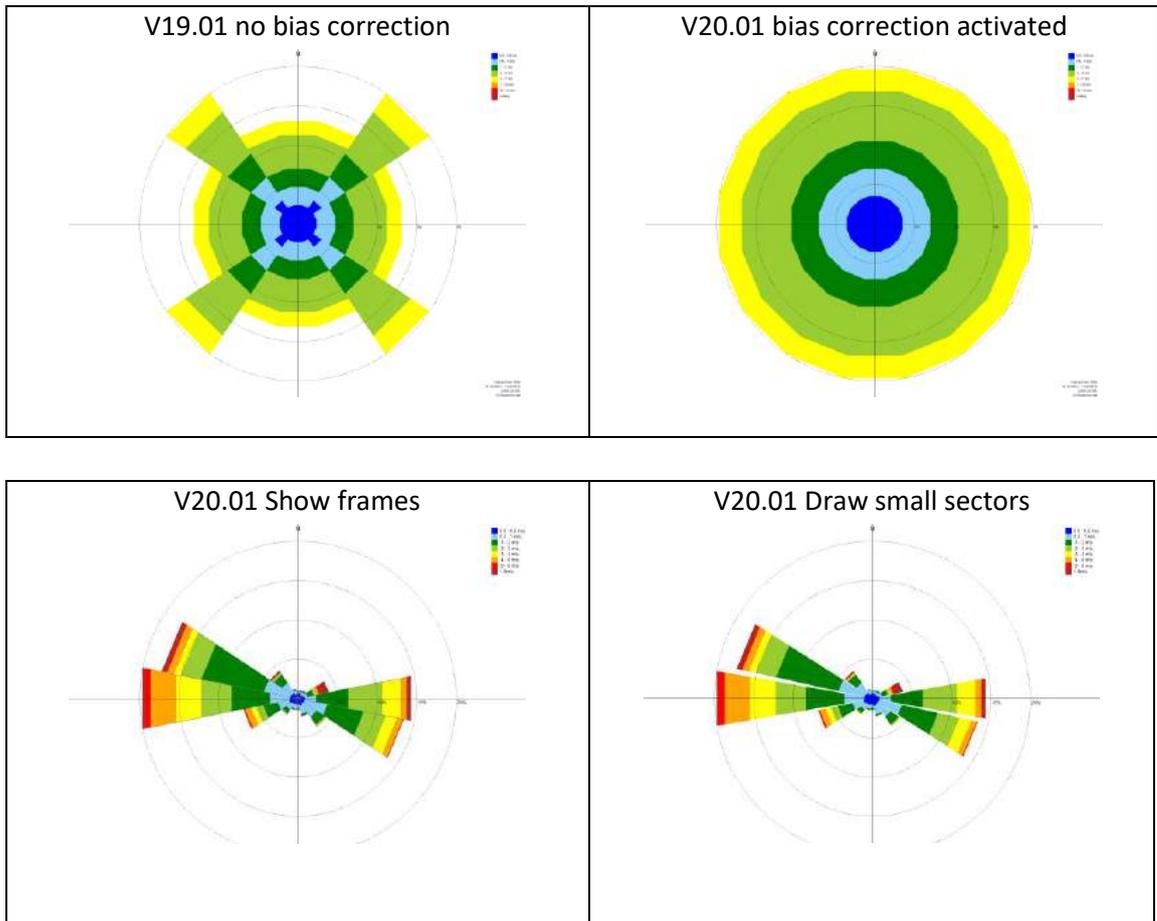


Release notes - GRAL version 20.01Beta3 and GUI version 20.01Beta3

- Support for time series of exit temperature and exit velocities for point sources and portal sources in the transient GRAL mode. The dialog allows a basic setting (6 hour bins) to produce a time series file in the computation folder. The file can be edited manually to enter an hourly variation when needed.

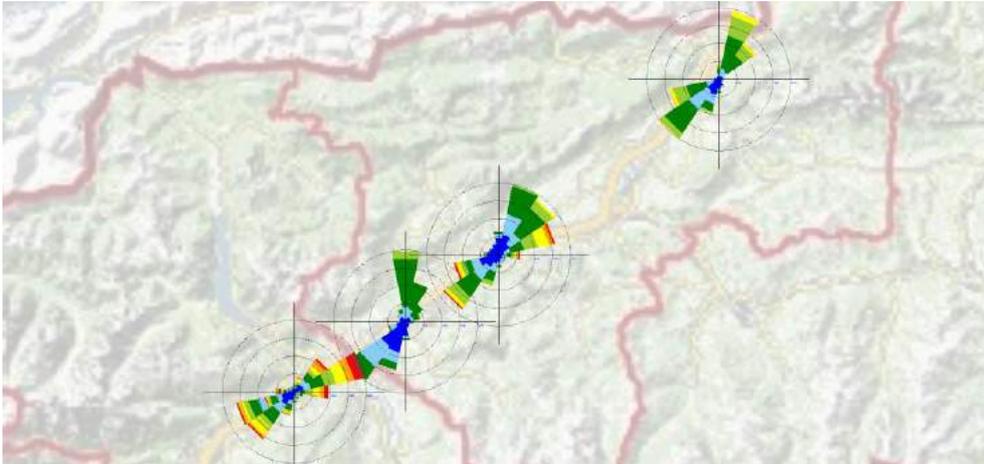


- Now options and improvements for wind roses
Bias correction for classified meteorological data (e.g. direction bins 10°)



Release notes - GRAL version 20.01Beta3 and GUI version 20.01Beta3

- Show wind roses in the GUI – domain window



Extension to the *.met file (compatible to the GUI 19.01 and older) – needed for the visualization in the domain window

It is needed to add the coordinates and possible to add further information using “//” without any separator characters in the meteorological file “*.met” header, e.g.

```
//X=80079
//Y=233949
//Z=10
01.01.2013,00:00, 2.1,218,6
01.01.2013,01:00, 3.2,204,4
```

- New concentration value visualization, text is scalable and geo-referenced



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- Creation of animated GIF's: convert and load a single *.con file, set the visualization options and start the GIF recorder
- Match algorithm: optional deactivation of the stronger rating for stability classes 1 and 7 and optional usage of a 3x3 mean value for the evaluated wind vectors
- Shape line export for contour lines (the topmost map is exported, the new spline mode needs to be activated)
- Douglas Peucker filter for the shape import of area sources and buildings activated
- New dialog to set and reload view frames
- Improved multiple display support
- Copy & paste for objects; copied objects can be rotated in 10 degree steps using the keys "R" and "L" while the object is floating
- Delete and add edge points for buildings, area sources and line sources using the context menu (right mouse button)
- When selecting objects, a selection dialog appears if several objects overlay each other
- Information's of selected objects are shown in tooltips instead of windows
- Long taking evaluations got a progress bar showing the real progress and a cancel button
- Some time-consuming functions are started in own treads to reduce the impact to the UI thread
- Vertical profiles: the forms with the vertical graph is refreshed at each new point instead of creating new forms; this makes it easier to check multiple points
- Support for the new GRAL options (timeseries for source parameters in the transient GRAL mode and variable stretching factors for the flow field calculation, new file formats)
- Support for source group dependent decay rates
- Object manager: toggle the visibility of a layer using the space key and start the layout manager for a selected layer using the return key
- Item forms: the close button and an OK button have been activated