Short description
FieldOpt's H5-ConversionTool

v.0.1

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1 Description

FieldOpt's `H5-ConversionTool` reads AD-GPRS result files in H5 format and transfers some of the data (currently reservoir pressure and saturation) to output files in Eclipse format. The Eclipse output data can then be visualized effectively using the post-processing tool ResInsight[1].

`H5-ConversionTool` uses FieldOpt's `Hdf5SummaryReader` library to read ADGPRS's reservoir simulation output data. It then uses code from the open-source software project OPM[2] to print this data in Eclipse output format, i.e., `*.EGRID`, `*.INIT`, `*.RFT`, `*.SMSPEC`, `*.UNRST`, and `*.UNSMRY` files.

2 How to use

The program is called in the following manner:

```
./H5ConversionTool /path/to/conv-params.json
```

`/path/to/conv-params.json` is the path to a parameter file (`JSON` format) containing information about which reservoir simuator driver files to read, the path of the H5 output file, the base name to be given to the converted files, and which folder these files should be output to. Thus, this parameter file must provide the following four strings:

[1] ResInsight is an open source, cross-platform 3D visualization, curve plotting and post processing tool for Eclipse reservoir models and simulations. `http://resinsight.org/`

[2] http://opm-project.org/

../tests/example–model/5spot/conv–params–example.json

```
// Calling H5ConversionTool from build folder. This folder has the following
// folder location with respect to the example model data:

// FieldOpt-H5-ConversionTool
// |
// |---build-FieldOpt-H5-ConversionTool
// |   |
// |   \---bin/
// |       H5-ConversionTool
// |   \---.../
// |   \---.../
// |   LICENSE
// |   README.md
// |
// |---FieldOpt-H5-ConversionTool
// |   |
// |   \---doc
// |   \---input
// |   \---src
// |   \---tests
// |       \---example-model/
// |           \---5spot/
// |               \---inlcude/
// |               \---inlcude_ecl/
// |               \---output/
// |               ECL_5SPOT.DATA
// |               ECL_5SPOT.EGRID
// |               ECL_5SPOT.GRID
// |               ECL_5SPOT.INIT
// |               ECL_5SPOT.gprs
// |               conv-params-example.json
// |   \---Model
// |   CMakeLists.txt
// |   main.cpp

// example of use:
// $cd FieldOpt-H5-ConversionTool/build-FieldOpt-H5-ConversionTool/bin
// $./H5-ConversionTool ../../FieldOpt-H5-ConversionTool/tests/example-model/5spot
    /conv-params-example.json

// Modify the following file paths according to the location of your model files
// and where you have H5-ConversionTool installed.
{
    // H5-ConvertionTool needs to create an Eclipse deck using an Eclipse data
    // file. Therefore, we need have present/create an Eclipse data file that
    // corresponds to our ADGPRS model
    "ECL_DATA_FILE_PATH" : "../../FieldOpt-H5-ConversionTool/tests/example-model/5
    spot/ECL_5SPOT.DATA",

    // The root name of the Eclipse output files created from conversion process
    "BASE_NAME_ECL_OUTPUT" : "5SPOT_OUT",

    // The directory to where to save the Eclipse output files
    "OUTPUT_DIRECTORY" : "../../FieldOpt-H5-ConversionTool/tests/example-model/5
    spot/output",

    // The ADGPRS H5 file that will be treated
    "ADGPRS_H5_FILE" : "../../FieldOpt-H5-ConversionTool/tests/example-model/5spot
    /5SPOT.vars.h5"
}
```

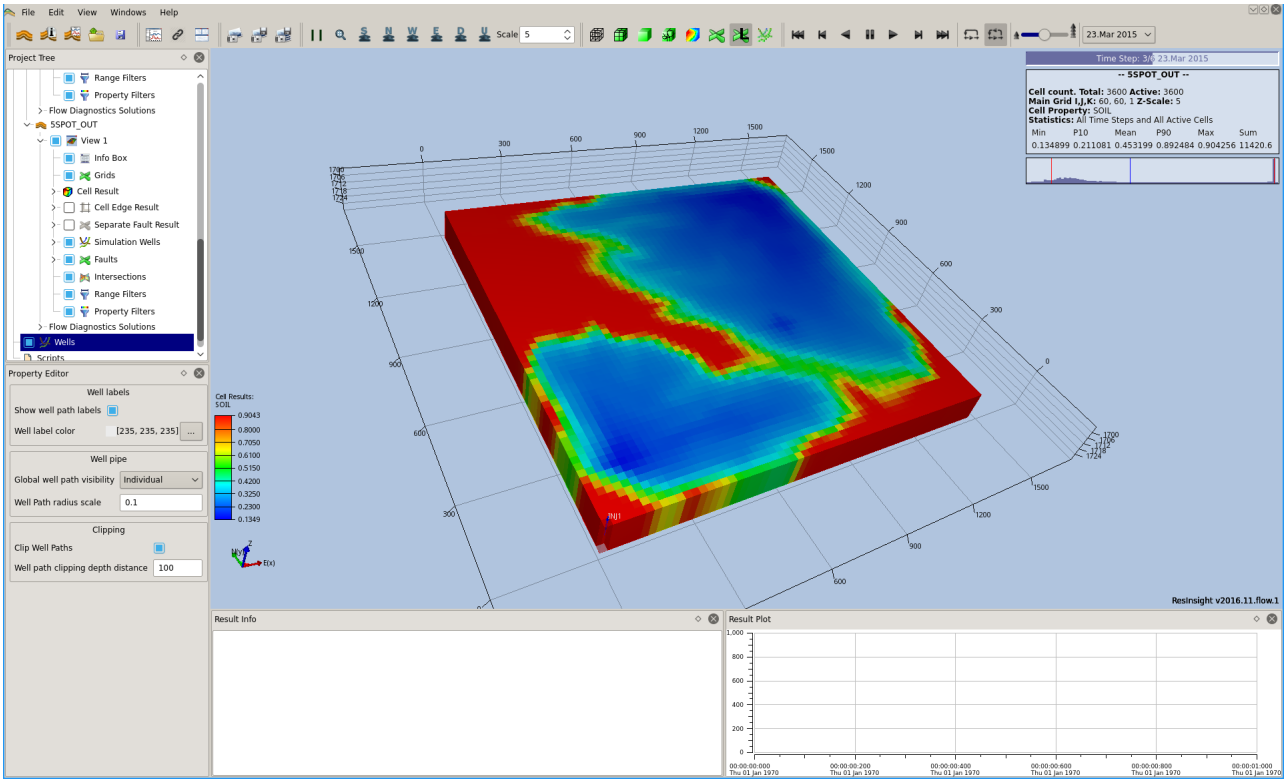
Important

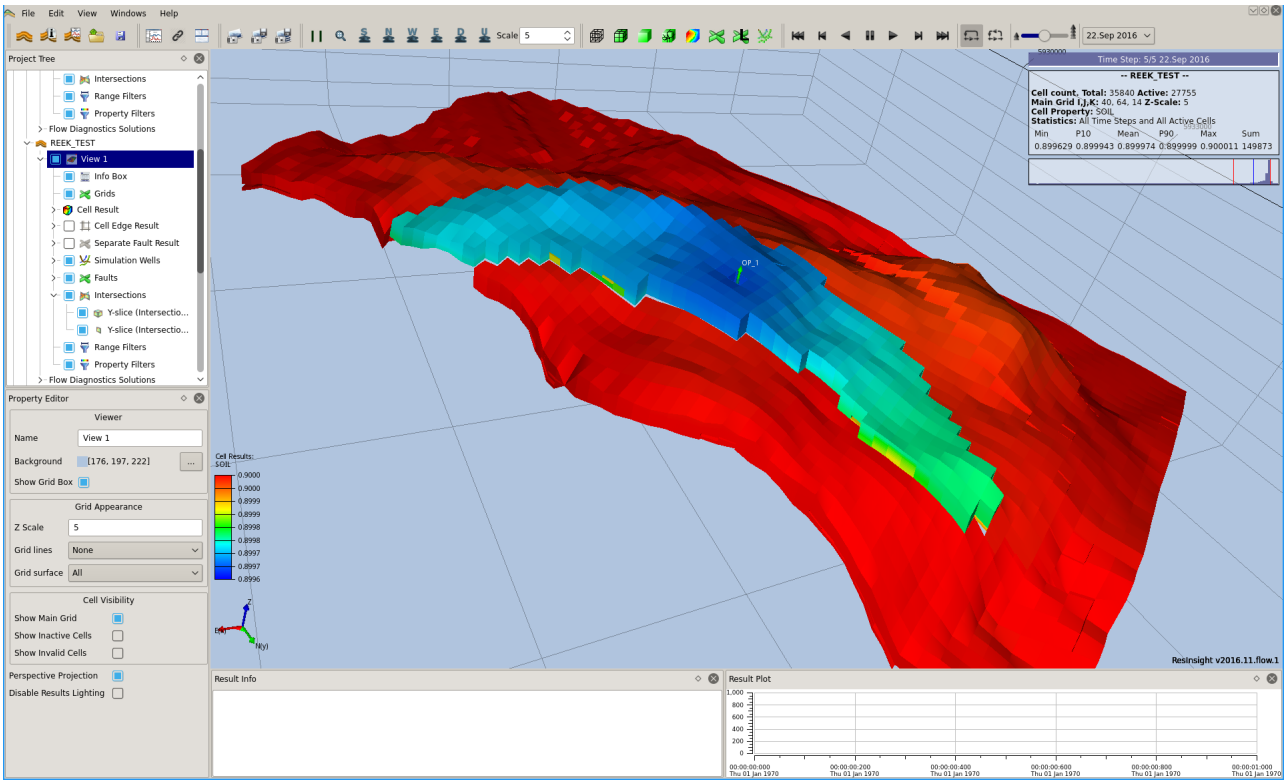
- `H5-ConvertionTool` needs to create an Eclipse deck using an Eclipse data file. Therefore, we need have present/create an Eclipse data file that corresponds to our AD-GPRS model. **Crucially: the number of TSTEP calls in the Eclipse data file need to be equal or larger than the number of TSTEP call in the AD-GPRS model.** Otherwise we get the following error:

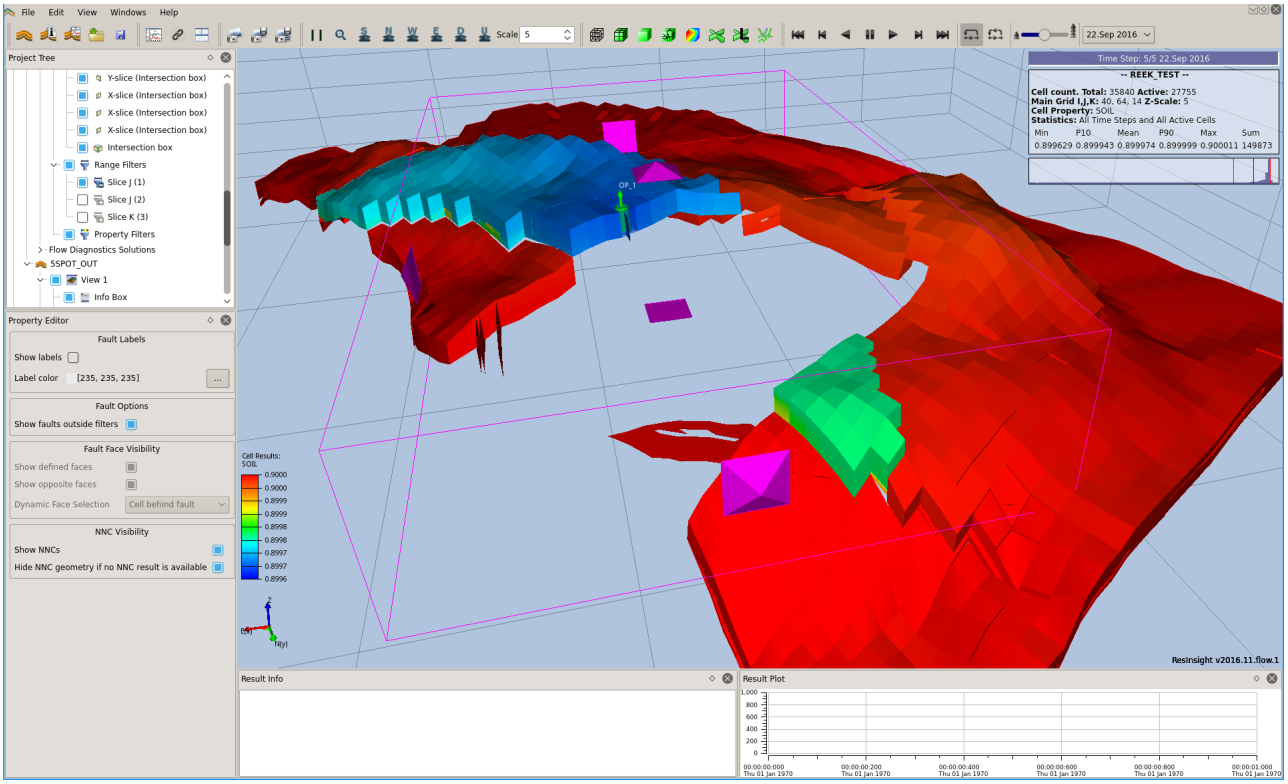
```
terminate called after throwing an instance of 'std::out_of_range'
```

3 Example results

Examples of some of the post-processing analysis that can be performed using ResInsight.




File Edit View Windows Help
Project Tree
Intersections
Range Filters
Property Filters
Flow Diagnostics Solutions
REEK_TEST
View 1
Info Box
Grids
Cell Result
Cell Edge Result
Separate Fault Result
Simulation Wells
Faults
Intersections
Y-slice (Intersectio...
Y-slice (Intersectio...
Range Filters
Property Filters
Flow Diagnostics Solutions
Property Editor
Viewer
Name
View 1
Background
[176, 197, 222]
Show Grid Box
Grid Appearance
Z Scale
5
Grid lines
None
Grid surface
All
Cell Visibility
Show Main Grid
Show Inactive Cells
Show Invalid Cells
Perspective Projection
Disable Results Lighting
Time Step: 5/5 22.Sep 2016
-- REEK_TEST --
Cell count, Total: 35840 Active: 27755
Main Grid I,J,K: 40, 64, 14 Z-Scale: 5
Cell Property: SOIL
Statistics: All Time Steps and All Active Cells
Min P10 Mean P90 Max Sum
0.899629 0.899943 0.899974 0.899999 0.900011 149873
OP_1
Cel Results:
SOIL
0.9000
0.9000
0.8999
0.8999
0.8998
0.8998
0.8997
0.8997
0.8996
Result Info
Result Plot
ResInsight v2016.11.flow.1


File Edit View Windows Help
Project Tree
Y-slice (Intersection box)
X-slice (Intersection box)
X-slice (Intersection box)
X-slice (Intersection box)
Intersection box
Range Filters
Slice J (1)
Slice J (2)
Slice K (3)
Property Filters
Flow Diagnostics Solutions
5SPOT_OUT
View 1
Info Box
Property Editor
Fault Labels
Show labels
Label color
[235, 235, 235]
Fault Options
Show faults outside filters
Fault Face Visibility
Show defined faces
Show opposite faces
Dynamic Face Selection
Cell behind fault
NNC Visibility
Show NNCs
Hide NNC geometry if no NNC result is available
Time Step: 5/5 22.Sep 2016
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Cell count, Total: 35840 Active: 27755
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ResInsight v2016.11.flow.1