Wildbach- und
Lawinenverbauung
Forsttechnischer Dienst

BFW
Bundesforschungszentrum für Wald

AvaFrame
THE OPEN AVALANCHE FRAMEWORK

AvaFrame 2nd Workshop

Felix Oesterle, A. Wirbel, J-T. Fischer

WLV/BFW

18.01.2024

The AvaFrame project

Phase 1: 2020-2023

Develop an **open source framework** (license EUPL) for **avalanche simulations** which replicates and simplifies ... current procedures and models at the Austrian Torrent and Avalanche control...

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(WLV: Austrian Avalanche and Torrent Service ; BFW: Austrian Research Centre for Forests)

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Phase 2: 5 years

Extend open source framework AvaFrame ... regarding **current operational and scientific topics**... . Including mid- and long term developments and maintenance...

Core Team

Project lead

- Felix Oesterle: Project/Team lead
- Jan-Thomas Fischer: Scientific lead

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- Anna Wirbel

Operational Team WLV

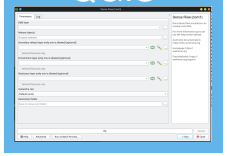
- Christian Tollinger
- Matthias Granig

+ Master studends, trainees, etc.

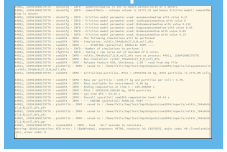
Module

AvaFrame
THE OPEN AVALANCHE FRAMEWORK

QGIS



Script



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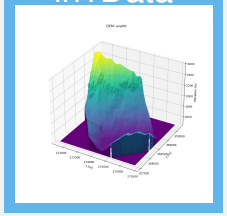
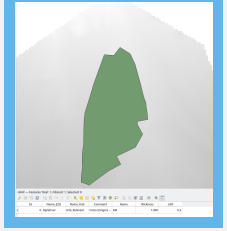
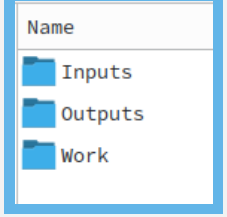


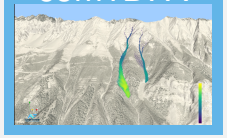
in2Trans



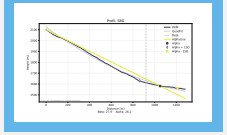
in3Utils



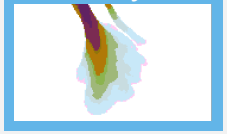
com1DFA



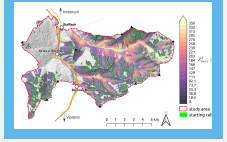
com2AB



com3Hybrid



com4FlowPy



com5SnowSli

Module

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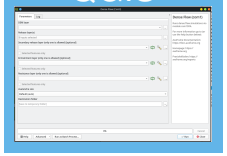
QGIS



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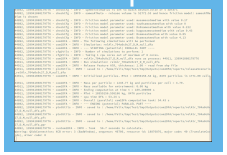

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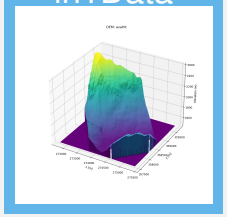
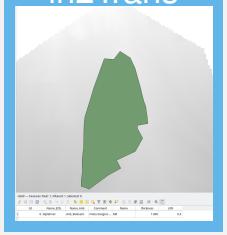
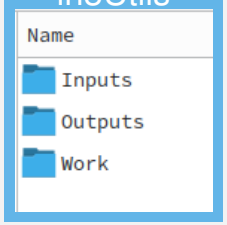


in2Trans

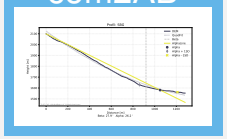


in3Utils



com1DFA

com2AB



com3Hybrid

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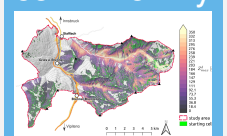
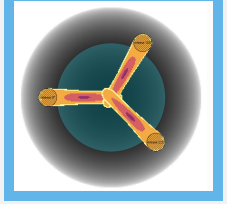


com5SnowSlid

ana1Tests



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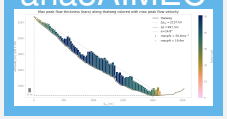
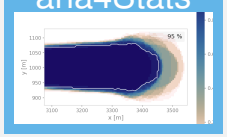
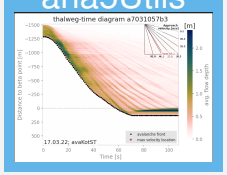


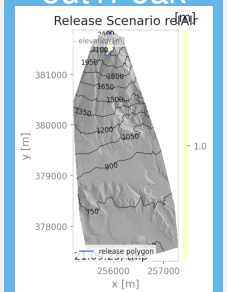
ana4Stats



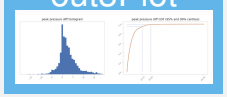
ana5Utils



out1Peak



out3Plot



log2Report

Installations

Standard / Operational / GUI

- well calibrated setup for hazard mapping or similar
- QGIS
- Latest *stable* release - minimal parameter adjustments

Installations

Standard / Operational / GUI

- well calibrated setup for hazard mapping or similar
- QGIS
- Latest *stable* release - minimal parameter adjustments

Develop

- Work on code itself / implement features
- Latest *development* code: might be unstable!

Focus today

Operational / GUI Application

- via QGis
- base for Praxisleitfaden (see link below)
- different processes

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Operational / GUI Application

- via QGis
- base for Praxisleitfaden (see link below)
- different processes

Austrian Application of AvaFrame within a standard procedure (according to Praxisleitfaden): Webinar 23.02 9:00 (German)

`https://info.bml.gv.at/themen/wald/wald-und-naturgefahren/wildbach--und-lawinenverbauung/richtliniensammlung/praxisleitfaden_lawinensimulation.html`

Resources

Documentation

`https://docs.avaframe.org`

Code / Issues

`https://github.com/avaframe/AvaFrame`

Announcements / Communication

`https://avaframe.org/`

Matrix: `https://avaframe.org/contact`

Clarification QGis Components

QGis Connector Plugin

- from QGis plugin management
- tries to install AvaFrame core
- only steers the AvaFrame core

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AvaFrame core

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AvaFrame core

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Important

Different versions possible

QGis Demo

QGis -> Admin functions

Operational Workflow - QGis

Data

- DEM
- Optional: Profile + splitpoint

Operational Workflow - QGis

Data

- DEM
- Optional: Profile + splitpoint
- Release area(s)
- Optional: entrainment / resistance

Requirements Input

Projection

Any, **BUT**: same for all! (no: *on the fly*)

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DEM

ASCII (Text), Default 5m -> will be remeshed if different

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Release

Shapefile, Attribute *thickness* and *Name*

1 Shapefile per scenario

Requirements Input

Projection

Any, **BUT**: same for all! (no: *on the fly*)

DEM

ASCII (Text), Default 5m -> will be remeshed if different

Release

Shapefile, Attribute *thickness* and *Name*

1 Shapefile per scenario

1 Shapefile Entrainment, 1 Shapefile Resistance

Operational change: friction model

samosAT -> **samosATAuto**

Release volume:

- samosAT(Large): $>=$ 60.000 m^3
- samosAT(Medium): 25.000 m^3 $<=$ Vol. $<$ 60.000 m^3
- samosAT(Small): $<=$ 25.000 m^3

Simulation names mit S/M/L

Operational change: friction model

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Simulation names mit S/M/L

Beware: Runout higher 1600msl: samosAT(Large)

Operational

Scenarios

- ONE shapefile per scenario
- can contain multiple release areas (i.e. features)
- multiple scenarios can be run in parallel
- Tip: one master shapefile -> copy to scenarios

QGis Demo

QGis -> Operational functions

Data in folder *AlrExampleInput*

Experimental functions

AvaFrame
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What is says on the tin!!!

- not calibrated
- might break at any time
- might change at any time
- contain bugs

Use with caution!

QGis Demo

QGis -> Experimental functions -> Com5SnowSlide

Data in folder *Com5ExampleInput*

Probability run

Needs some kind of variation/uncertainty information -> ci95

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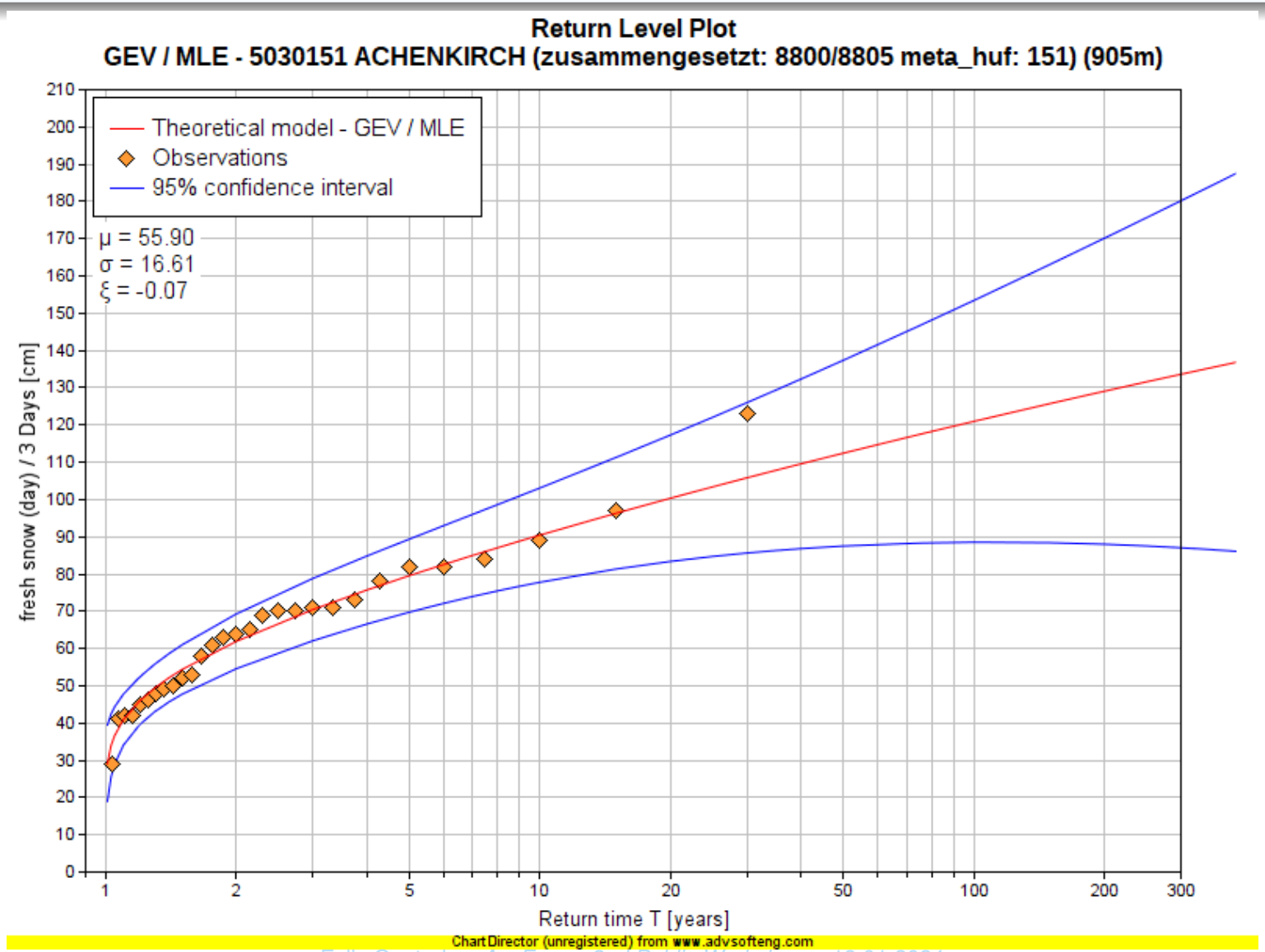

QGis Demo

QGis -> Experimental functions -> Probability run

Data in folder *ana4ProbRunExampleInput*

Questions

Questions?

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More bluntly: basically do what you want with it, but if you *bleep* up it is your own responsibility!