Elmer/Ice, a software for Ice Sheet Modelling: tools for development, implementation and visualisation

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CONTEXT

Elmer/Ice is an open source software for glaciers and ice sheet flow modelling. It is based on the finite element model Elmer mainly developed by CSC-IT Center for Sciences Ltd. in Finland.

Collaborative developments and specific applications of the code are concomitant. This requires the use of efficient tools to track any change of the model.

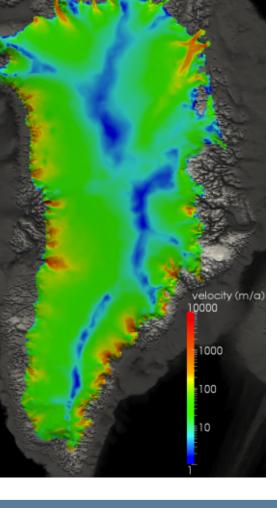


Figure 1: Surface velocity of Greenland computed with Elmer/Ice. *Gillet-Chaulet et al., 2012*

EVOLUTION OF THE SOFTWARE ELMER/ICE

GLACIOLOGICAL GLACIOLOGICAL PROBLEMS

Velocity field

GIT

Official repository Git Hub : elmerfem https://github.com/ElmerCSC/elmerfem Several branches

Local repository RENATER : elmerice Private project for local development before pushing in elmerice branch

VERSIONING



Languages : C++, Fortran90

Tools: CMake

Machines: Local machines & cluster, mesocenter, HPC Center (CINES)

Platform : Bull, Intel

Operating System :

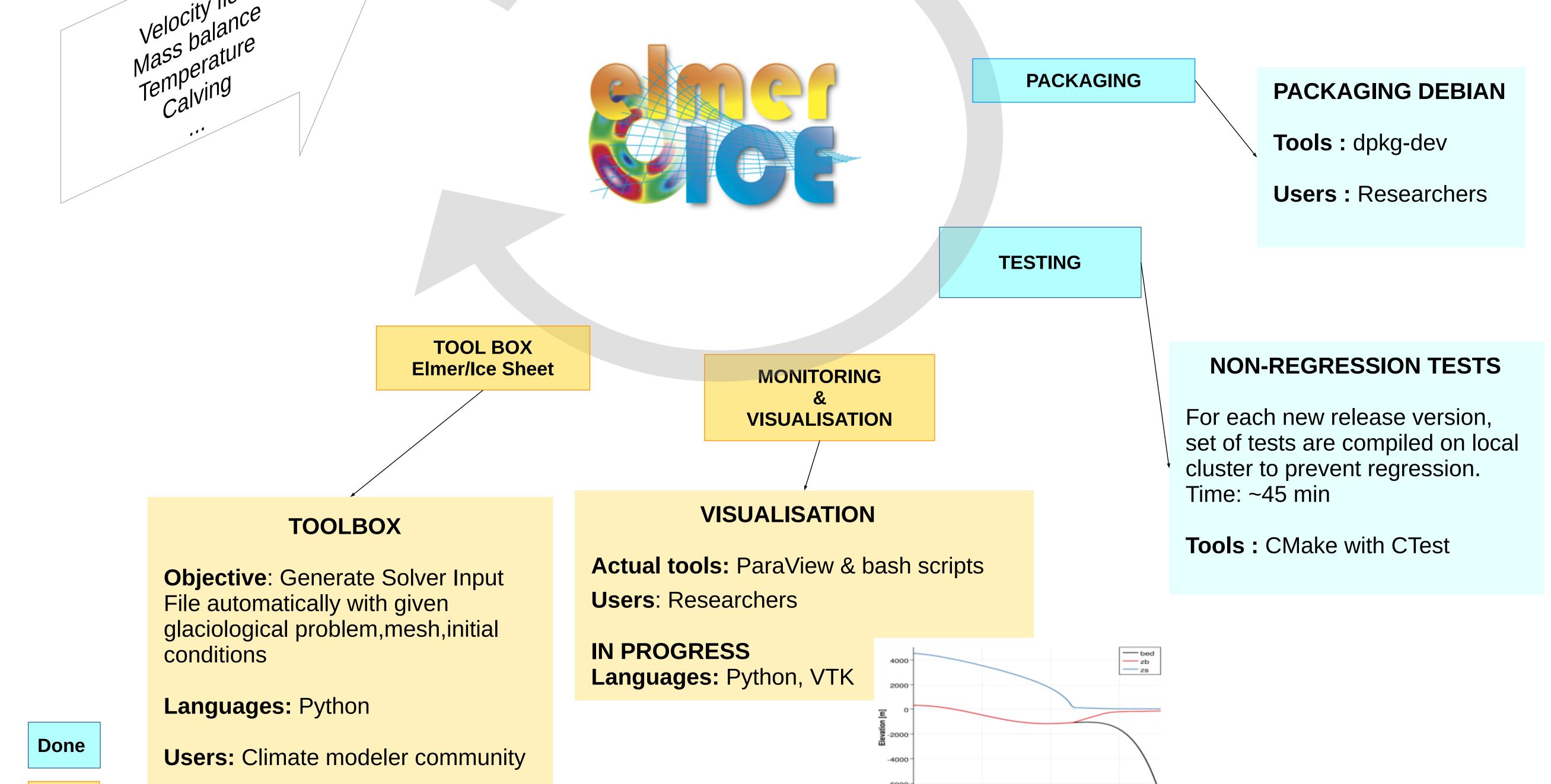


COMPILATION

1e+06 Length [m]

500000

1.5e+06



To Do

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de Glaciologie et Géophysique de l'Environnement



OBJECTIVES

Outlines for futures developments are :

MONITORING

Analyse the outputs of the simuations in real time and give some informations on technical elements (time step, ...) Languages: Python, ParaView & VTK



Contribute to the coupled ice-sheet/ocean models, a toolbox is being developed to automatically generate input files and meshes for standard problems. Languages: Python

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