

News in Elmer/Ice



CSC – Suomalainen tutkimuksen, koulutuksen, kulttuurin ja julkishallinnon ICT-osaamiskeskus

User functions for temperature

- Documented under

<http://elmerfem.org/elmerice/wiki/doku.php?id=userfunctions:iceproperties>

- `IceConductivity`

$$\kappa_{ice} = 9.828 \cdot \exp\left(-5.7^{-3} \cdot T\right) \left[Wm^{-1}K^{-1}\right]$$

- `IceCapacity`

$$c = 146.3 + \left(7.253 \cdot T\right) \left[Jkg^{-1}K^{-1}\right]$$

- `GetIcePressureMeltingPoint`

$$T_{pmp} = 273.15 - C_{cc} \cdot \max(p, 0) \left[K\right]$$

User functions for temperature

```
$secondsperyear = 365.25 * 24.0 * 3600.0

Constants
  Clausius Clapeyron = Real 9.8e-08
End

Material 1
  Name = "ice"

  ! Heat transfer stuff (converted to MPa-m-a system)
  Temp Heat Capacity = Variable Temp
    Real Procedure "ElmerIceUSF" "IceCapacity"
  Heat Capacity Scaling Factor = Real $(secondsperyear)^(2.0)

  Temp Heat Conductivity = Variable Temp
    Real Procedure "ElmerIceUSF" "IceConductivity"
  Heat Conductivity Scaling Factor = Real $(secondsperyear)*1.0E-06

  Temp Upper Limit = Variable HydroPressure
    Real Procedure "ElmerIceUSF" "IcePressureMeltingPoint"
  Pressure Scaling Factor = Real 1.0E06 ! from MPa to Pa
End
```

- All function by default in SI units
- All temperatures assumed to be in Kelvin
- Scaling factors for conductivity and capacity
- Scaling factor for pressure input to pressure melting point (in order to bring it to Pascal)

User functions for temperature

- New tests under:

[\[ELMER_TRUNK\]/elmerice/Tests/TemperatureIceTestFct](#)

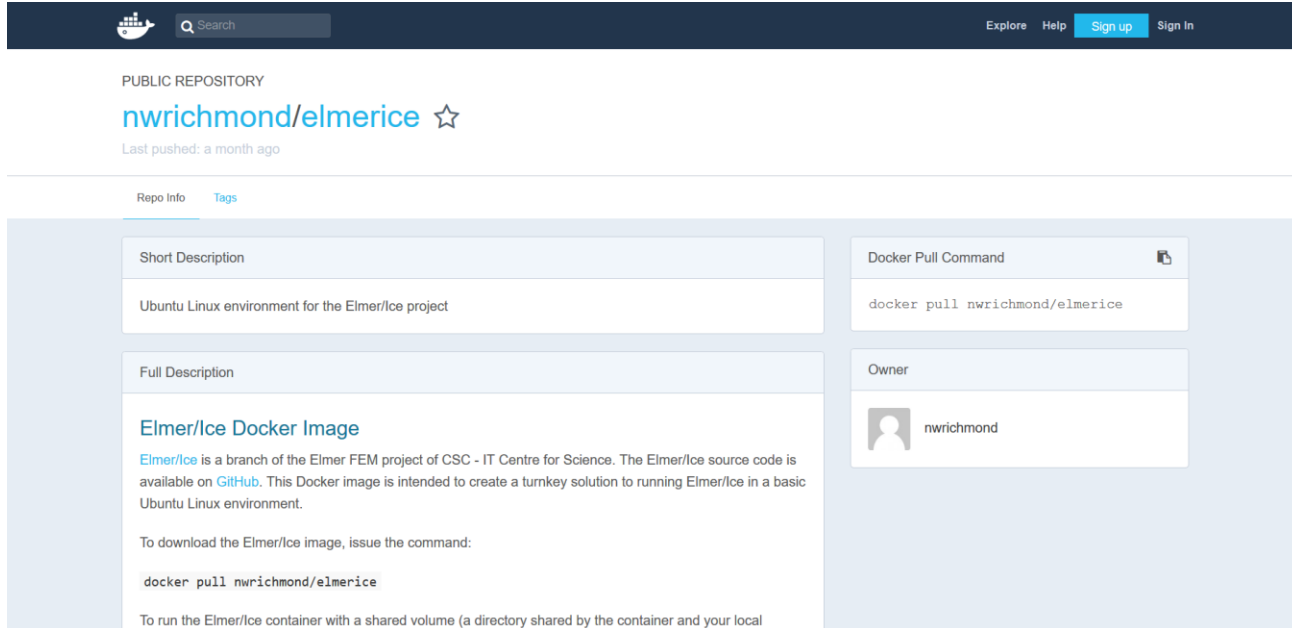
- Solves downward (constant shear rate) advected surface temperature with a given heatflux for a 1000m column of ice

- Same test with MATC functions

[\[ELMER_TRUNK\]/elmerice/Tests/TemperatureIceTest](#)

- Runs 2x longer as previous

Docker file (Nicolas Richmond, Maine; Juhani Kataja, CSC)



The screenshot shows the Docker Hub interface for the repository `nwrichmond/elmerice`. The page includes a search bar, navigation links (Explore, Help, Sign up, Sign In), and repository details. The repository is a public repository last pushed a month ago. The main content area is divided into two columns. The left column contains a 'Short Description' (Ubuntu Linux environment for the Elmer/Ice project) and a 'Full Description' (Elmer/Ice Docker Image). The right column contains a 'Docker Pull Command' (docker pull nwrichmond/elmerice) and the 'Owner' (nwrichmond).

PUBLIC REPOSITORY

`nwrichmond/elmerice` ☆

Last pushed: a month ago

Repo info Tags

Short Description

Ubuntu Linux environment for the Elmer/Ice project

Full Description

Elmer/Ice Docker Image

Elmer/Ice is a branch of the Elmer FEM project of CSC - IT Centre for Science. The Elmer/Ice source code is available on [GitHub](#). This Docker image is intended to create a turnkey solution to running Elmer/Ice in a basic Ubuntu Linux environment.

To download the Elmer/Ice image, issue the command:


```
docker pull nwrichmond/elmerice
```

To run the Elmer/Ice container with a shared volume (a directory shared by the container and your local

Docker Pull Command

```
docker pull nwrichmond/elmerice
```

Owner

 nwrichmond



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