

Complementary data of the article entitled "PyLGRIM: Modeling 3D-ERI with infinite elements in complex topography context"

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Abstract

This document presents the complementary data of the article entitled "PyLGRIM: Modeling 3D-ERI with infinite elements in complex topography context", submitted in december 2023 to Computers & Geosciences journal. Firstly, a GitHub link leads to the PylGRIM Software repository, where users can use and test our software and can reproduce the work in the theoretical part of the article. Secondly, the data of the case study is also provided: a Digital Elevation Models (DEMs) performed by drone in April 2016 as well as the Electrical Resistivity Imaging (ERI) profiles are listed and shared in a repository. Finally, we explain how to load the Paraview project from user directory in order to display the case study figures of the aforementioned article.

Keywords: availability, data

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1 Find PylGRIM on GitHub

You can download the PylGRIM software here: <https://github.com/atonnoir/PyLGRIM.git>. The file *Tuto_basic.pdf* describes how PylGRIM works. You can test it and reproduce all the figures presented in our article.

2 Load the case study Paraview project

If you are a Paraview (version 5.9.1 or later) user, you simply open the files and create slices and clips on the electrode points (where the mesh is tightest on the surface).

NB: If you want to visualize all the project with Paraview software as displayed in the DEM and ERI figures of the article, please, **Load State** with Paraview and choose the option **Search files under specified directory**. If this solution doesn't work, you can also:

- Open the file *All_Files_Paraview_2023.pvsm* with a text editor (as Notepad). This file contains all the parameters setting;
- Replace everywhere the path name directory of authors by the path name directory where you have downloaded the *Paraview_VN* data. For that purpose, you can use the **Search and Replace** option of your editor;
- **Save** the file;

- **Load State** with Paraview.

If you want to display the figures with our color scale, please:

- Load with Paraview the file named */Data/res2Dinv.json* in the **Coloring properties/Choose preset** option;
- For a better rendering, uncheck the **Light kit** option of the view menu/light inspector tool.

3 Content of Paraview_VN directory

- The DEM file name is *M1_2016-04-18_JL_mesh.ply*.
- The 3D-ERI block with Infinite Element conditions file name is *resistivity4.vtk*.
- The 3D-ERI block with Mixed Boundary conditions file name is *resistivity4_MBC.vtk*.

The *All_Files_Paraview_2023.pvsm* file contains all the needed slices and clips to display individually the ERI profiles in a vertical image with the length and depth axis. You can also create new slice and clip to display the inversion in any position.

4 Contact

If you have any question or issue, don't hesitate to contact us here cyrille.fauchard@cerema.fr or here vincent.guilbert@cerema.fr.