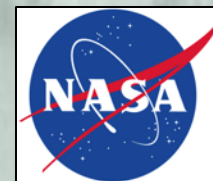


# PICKGUI: Tracing radar reflectors in MATLAB

Joseph A. MacGregor



# Motivation for a MATLAB solution

**Recognizing that is no clear winner as a comprehensive tool for tracing a large amount of radiostratigraphy and then doing something with it**

- KU Greenland radar data already available in MATLAB's .mat format
- Challenges associated with importing/exporting into various seismic software packages
- Recent development of novel methods for predicting reflector morphology
- Relatively easy GUI development
- Fear the black box
- Need for efficient workflow between reflector tracing, dating, ice-flow modeling and echo-intensity analysis

**Ultimately, we are tracing lines on images, which isn't that hard, but organizing those lines making geophysical sense of them *is* hard**

# PICKGUI pros/cons

## Pros

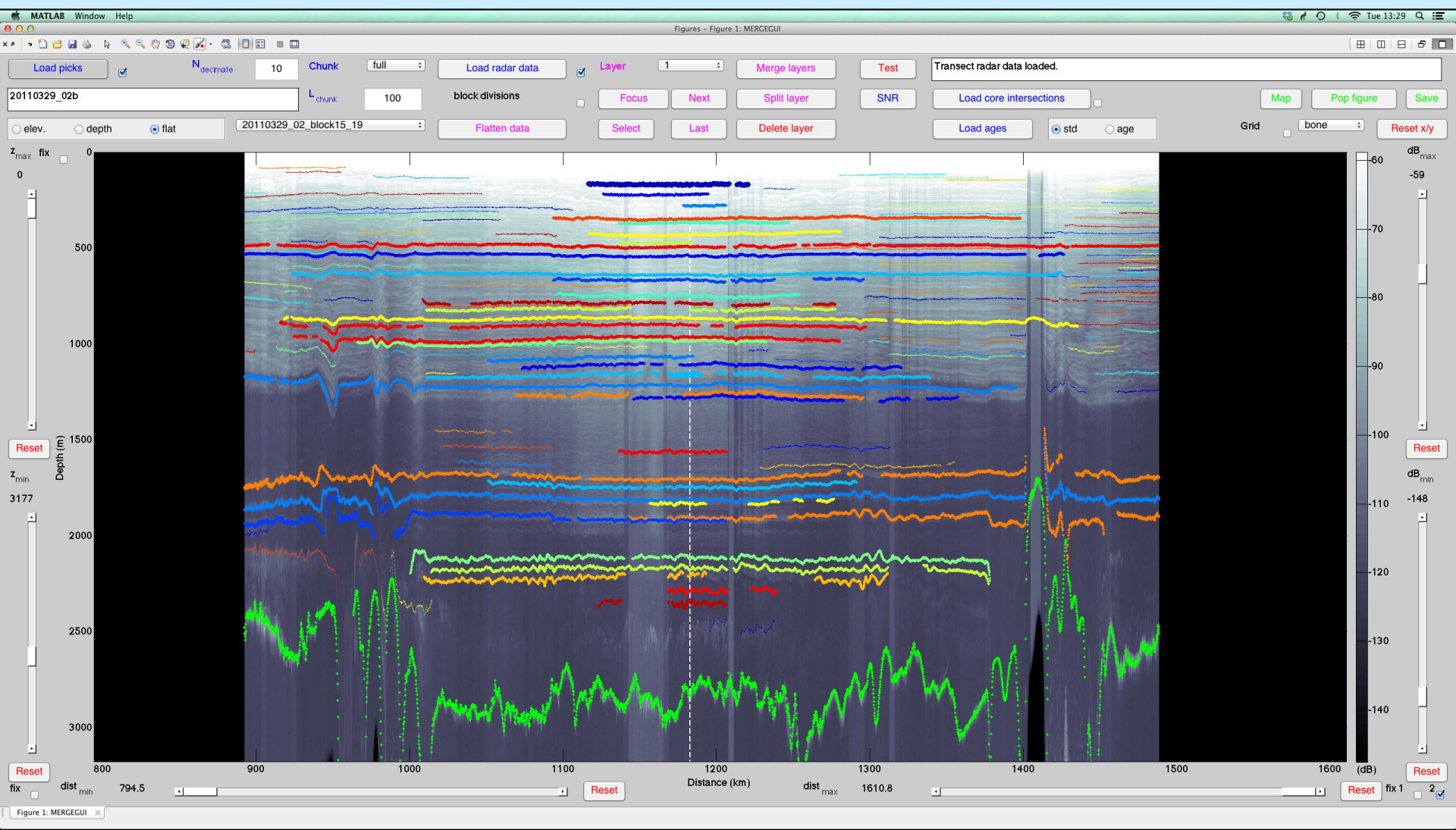
- Free as in MATLAB
- Flexible and user-extensible
- Reasonably documented and commented, but not exhaustively so
- Emphasis on QC: Anyone can pick a layer, but believing a layer is harder
- Code repository on Github makes forking/merging easy
- Traced lots of Greenland radiostratigraphy successfully, i.e., it works
- Could easily be extended to include cluttergrams

## Cons

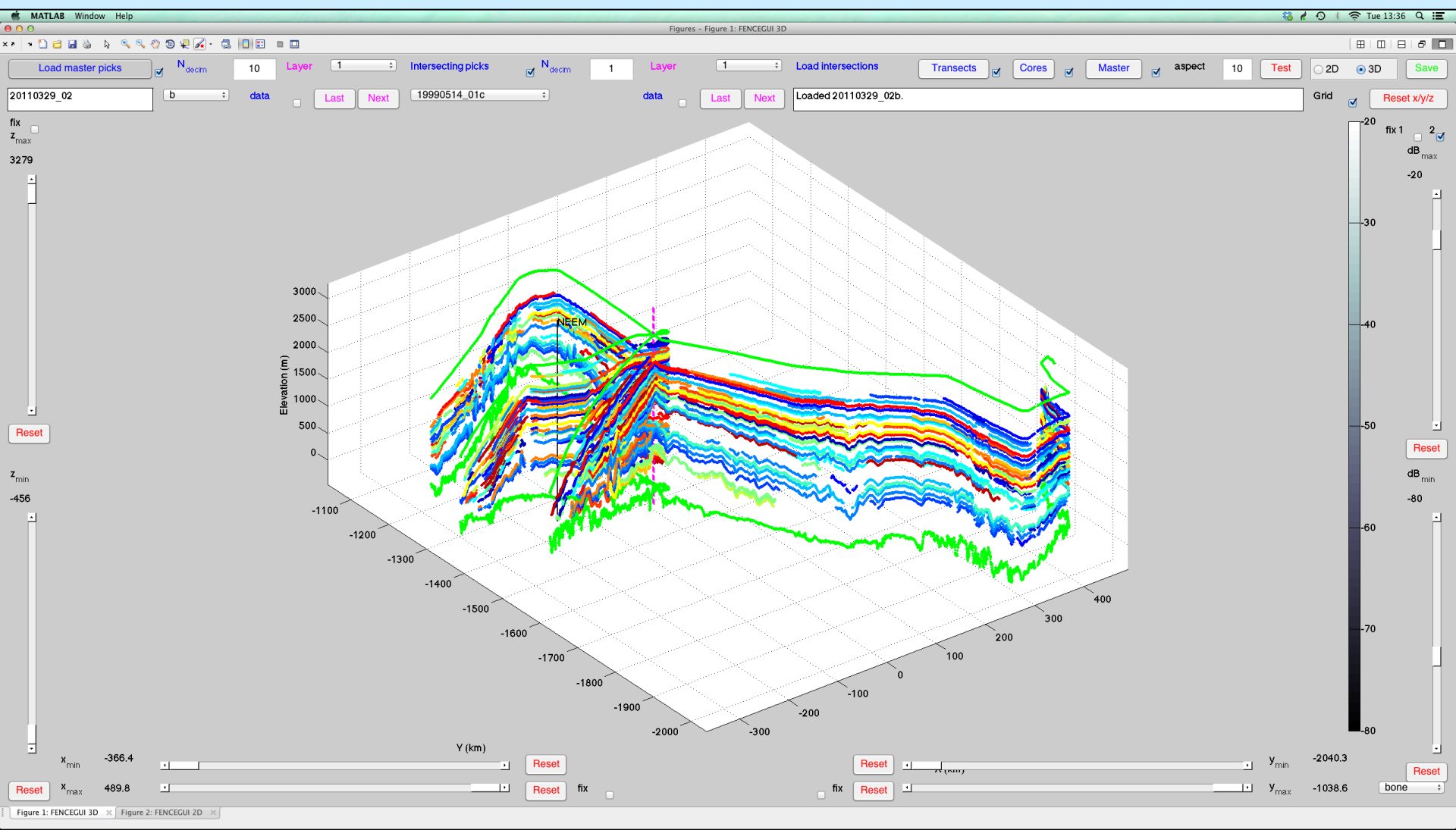
- I am currently the only developer
- Functionality satisfies current interests (terrestrial IPR data)
- Modification to work with SHARAD data requires support (\$) or a suitably motivated researcher
- Mapping, Signal Processing and Image Processing Toolboxes strongly recommended



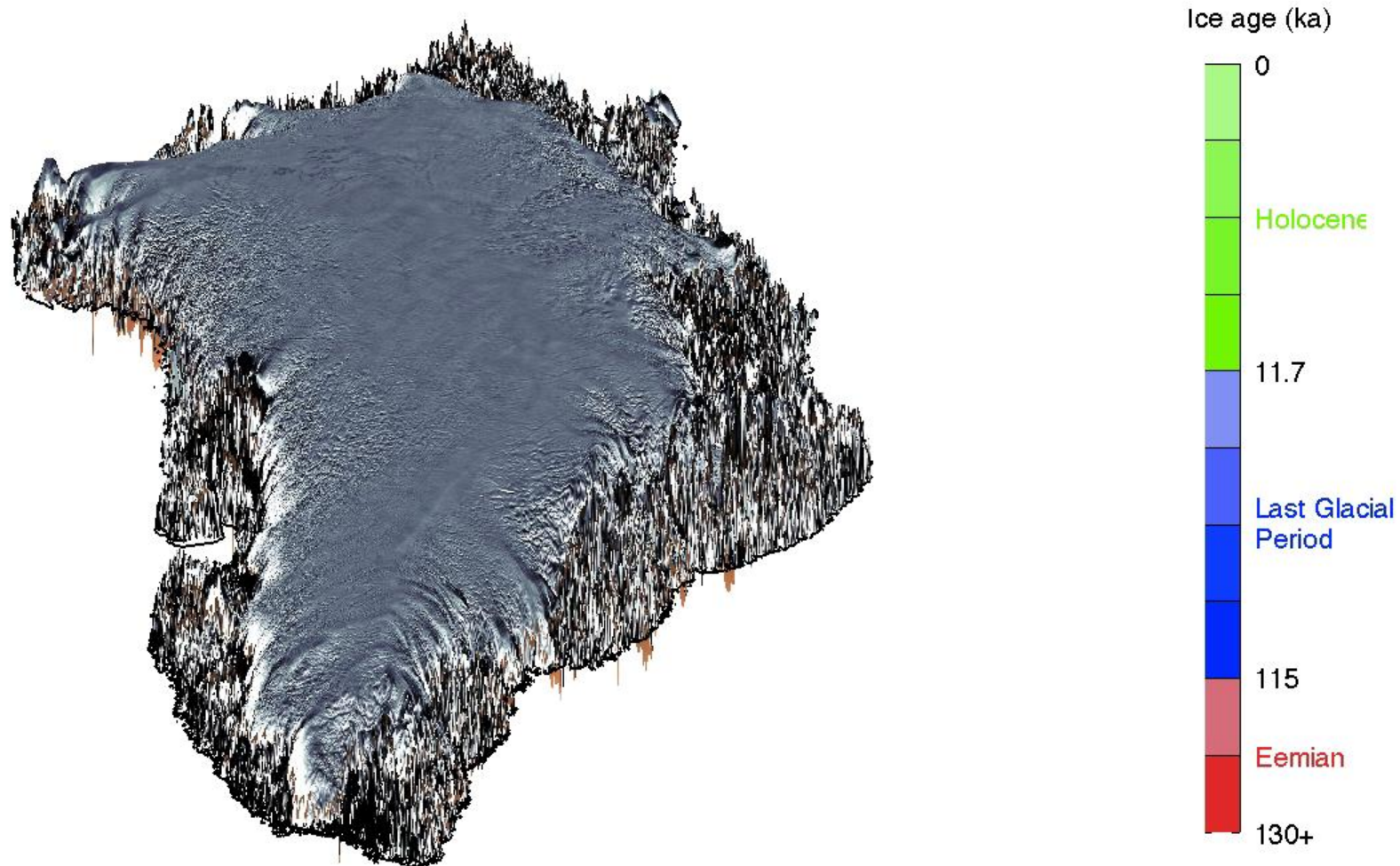
# Example QC of hundreds of kilometers of data



# Example matching of layers between transects



# Age structure of the Greenland Ice Sheet



Ice-sheet surface and bed elevation and masks from *Bamber et al.* [2013, *The Cryosphere*]

MODIS Mosaic of Greenland from J.A. Bohlander and T.A. Scambos

# Interested?

Two options:

- Contact me:  
[joemac@ig.utexas.edu](mailto:joemac@ig.utexas.edu)
- Download from Github:  
<https://github.com/joemacgregor/pickgui>

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PUBLIC joemacgregor / pickgui

MATLAB scripts/functions for tracing reflectors in ice-penetrating radar data

32 commits 1 branch 0 releases 1 contributor

branch: master pickgui

readme update

joemacgregor authored 12 days ago latest commit ccb8c7f5f9

|                |   |               |
|----------------|---|---------------|
| doc            | layer propagation in pickgui  | 16 days ago   |
| util           | long-term updates to GUIs   | 4 months ago  |
| wrapper        | start   | a year ago    |
| .gitignore     | delete test   | a year ago    |
| README.md      | readme update   | 12 days ago   |
| aresp.m        | lots o' updates   | 2 months ago  |
| aresp_obj.m    | lots o' updates   | 2 months ago  |
| core_int.m     | new functionality: depth view, mouse-click layer selection            | 25 days ago   |
| fengegui.m     | sub-function name changes, bug smashing in PICKGUI                    | 17 days ago   |
| frameslice.m   | start   | a year ago    |
| mergegui.m     | sub-function name changes, bug smashing in PICKGUI                    | 17 days ago   |
| phaseinterp.m  | new functionality: depth view, mouse-click layer selection            | 25 days ago   |
| pickgui.m      | minor pickgui bugfix  | 12 days ago   |
| pickinterp.m   | start   | a year ago    |
| pkmatch.m      | start   | a year ago    |
| radarint.m     | fengegui - bug fixes, improved master layer matching/coloring, aspect | 11 months ago |
| radblockproc.m | new functionality: depth view, mouse-click layer selection            | 25 days ago   |

README.md

## pickgui

MATLAB scripts/functions for tracing reflectors in ice-penetrating radar data.

See either misc/pickgui\_man.pdf or run "help FUNCTION\_NAME" in the MATLAB command line to learn more about each script/function.