GuidosToolbox – Installation

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This document provides installation instructions for the image analysis program GuidosToolbox (GTB). The 64bit software is available for Microsoft Windows, macOS, and Linux. Download it from the official home page: https://forest.jrc.ec.europa.eu/en/activities/lpa/gtb/.
To ensure the package integrity, compare the md5sum against the GTB md5sum list.
GTB is coded in and includes the IDL Virtual Machine and additional GIS-software (MSPA, GDAL, FWTools), which can be used to export your data as raster image overlays for visualization in Google Earth and to pre- or post-process any raster data. GTB is completely self-contained and fully functional in its own directory. It can be installed/copied to any directory on your system or any external device.

General information:

- **System requirements:** PC/Mac with a minimum of 4 GB RAM (the more the better)

- **Limitations:** maximum image dimension in pixels:
  - to be loaded in GTB: 30,000 × 30,000,
  - for Contortion analysis: 5000 × 5000,
  - for MSPA-analysis: 10,000 × 10,000 on MS-Windows; larger on Linux/macOS and dynamically calculated depending on the amount of free RAM:
    ~25,000 × 25,000 for 16GB RAM and 75,000 × 75,000 for 128GB RAM. Images larger than the maximum size for MSPA can be processed with **GWB**, more details in GTB under: *Help → GTB Documentation → MSPA Guide*

- Upon the first start, the GTB license conditions will be displayed. Please read through this document and then click on *Yes* in the GTB startup check popup window to accept these conditions, which will permit GTB to start:
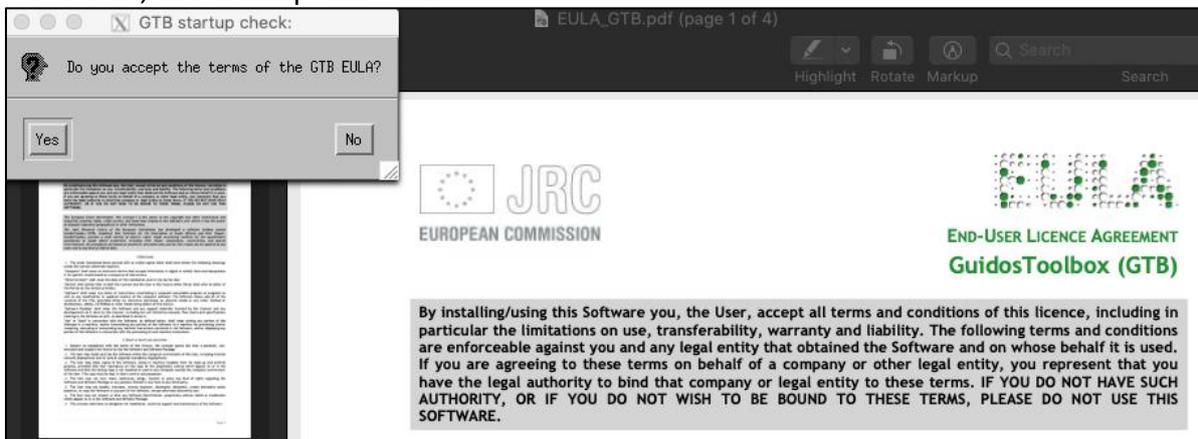
- Upon each start, GTB will inform you if program or revision updates are available. **Support will be provided for the current version only**, so please ensure to use the current version. To install a revision release, start GTB and from the menu select: *Help → GTB Online → Check for Updates* and follow the instructions.

- **GTB workshop material:** provides additional information, example applications, data sets and instructions to illustrate various processing options. To install, start GTB and from the menu select: *Help → GTB Online → GWS* and follow the instructions.

- Should you find a bug while running GTB, please chose *Help → Bug Report*. Please scroll to the end of the bug report document and insert further details. This information may be helpful to replicate and hopefully fix the error you encountered.

# A) Installation on Microsoft-Windows (8.1 - 11, 64bit only):

1) Download *GTB_windows.exe* to a local directory.

2) Install GuidosToolbox to its default location *C:\GuidosToolbox*. **The installation can be performed without administrator rights**. If writing to the C-drive is not allowed the user can choose a different directory and the installer will setup a **standalone directory** *GTB<version>*. The standalone version has the same functionality as the default installation, but it will not provide any system integration, such as desktop shortcuts, menu entries or an uninstaller. To uninstall the standalone version simply delete the directory *GTB<version>*.

3) Start GuidosToolbox with a double-click on the desktop launcher or from the start menu (*Start → Programs → GuidosToolbox → GuidosToolbox*). In case of the standalone version double-click the launcher *startGTB*.

Note:
- If you get the **error of a missing MSVCR100.dll** then download and install the Microsoft Visual C++ Redistributable for 64bit: https://aka.ms/vs/17/release/vc_redist.x64.exe
- You can copy the installed directory *GuidosToolbox* to a USB-stick (FAT or NTFS) and then start GuidosToolbox or any additional included software component with a double-click on the respective *startXX-launcher* in the *GuidosToolbox* directory.
- GTB for MS-Windows 32-bit has been discontinued. The latest, unsupported version 2.702 can be downloaded from the GTB homepage.

# B) Installation on macOS (min 10.10, Intel/Apple Silicon M CPU):

1) Download the installer *GTB_macOS.dmg* to a local directory.

2) Delete any previous folder */Applications/GuidosToolbox* and empty the Trash.

3) Important: Ensure to have the latest version of XQuartz. After this, download the latest version of gdal-complete. Carefully read the gdal-complete instructions and first install the required latest version of **Python 3.9**. Then install gdal-complete. Verify that gdal works properly: Open a Terminal and enter: `bash` Next, enter the command: `gdalinfo --version`
If gdal is not found, amend the $PATH environment variable by copy/pasting the following <u>one-line sequence</u> (the entire content marked in gray color) into the terminal, then hit the Enter key:
`echo 'export PATH=/Library/Frameworks/GDAL.framework/Programs:/Library/Frameworks/PROJ.framework/Programs:/Library/Frameworks/SQLite3.framework/Programs:/Library/Frameworks/UnixImageIO.framework/Programs:$PATH' >> ~/.bashrc`

Then quit the Terminal. Note that this fix has to be applied only once. To verify, open a new Terminal and enter: `bash` Next, enter the command: `gdalinfo --version` and you should now see the following result: `GDAL 3.2.2, released 2021/03/05` or any newer version once available.

4) To install GTB, right-click the installer *GTB_macOS.dmg* and select: *Open with →DiskImageMounter.app*. Agree with the copyright conditions in the new popup window, then drag/drop *GuidosToolbox* to the folder */Applications*, then exit and unmount the installer.

5) Open the directory */Applications/GuidosToolbox*, double-click, or right-click → *Open GuidosToolbox.app* to start the application. New security features first introduced in macOS 10.15 (Catalina) may require your permission for GTB to modify files within the GTB folder and the system, meaning you may see some or all of these windows:
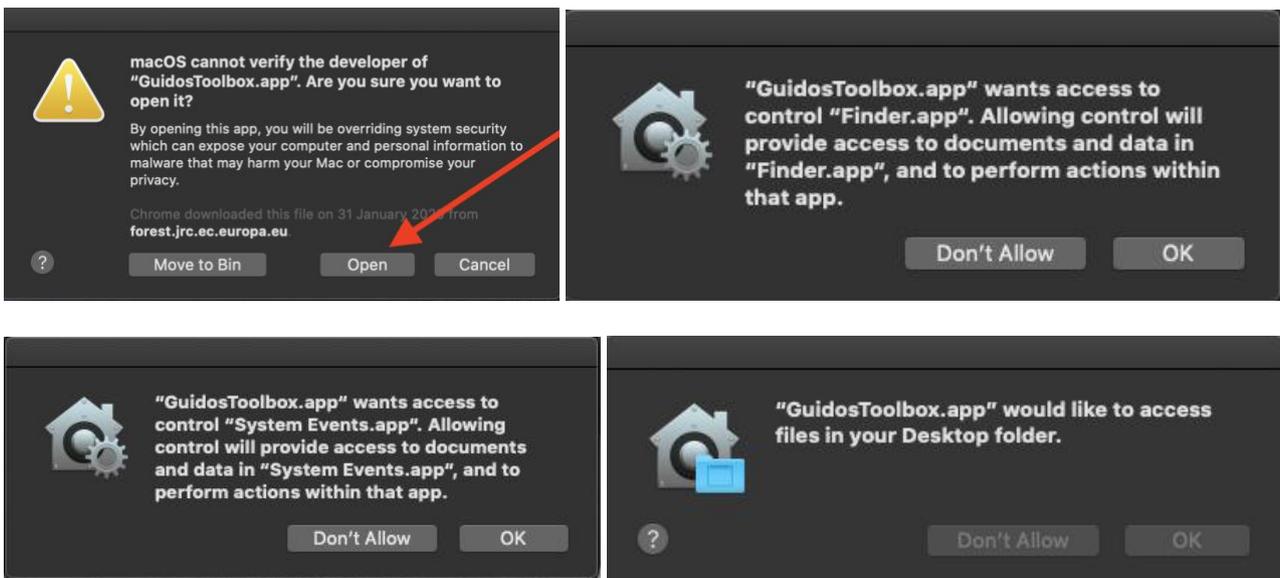

You **must** click on *OK* to grant these permissions. If you accidently clicked on *Don't Allow* then GuidosToolbox will no longer start. You can reset the permissions by opening a Terminal and enter the command: `tccutil reset AppleEvents; tccutil reset SystemPolicyAllFiles`

Important Note:

- Because I am not registered with Apple as an official 'identified developer' you will likely get a warning message that blocks the application. You can still run GTB by following the instructions on this Apple support page or even better this page, which has more details, informative images and a step-by-step guidance:
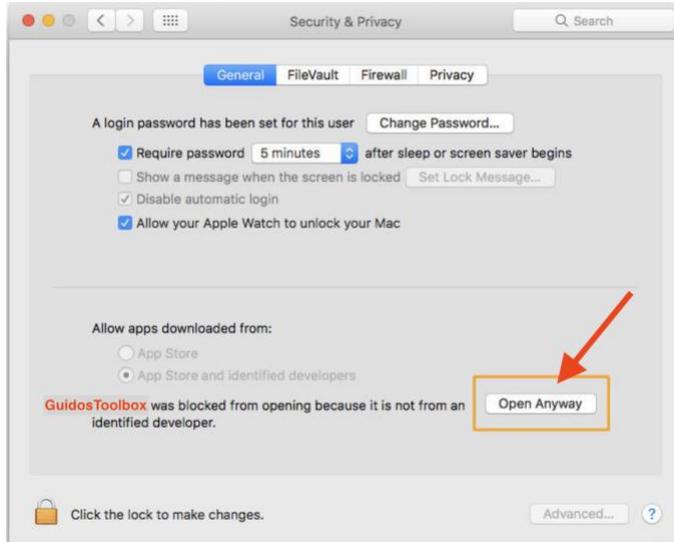
- If the default startup process fails with the following, or similar, error message:
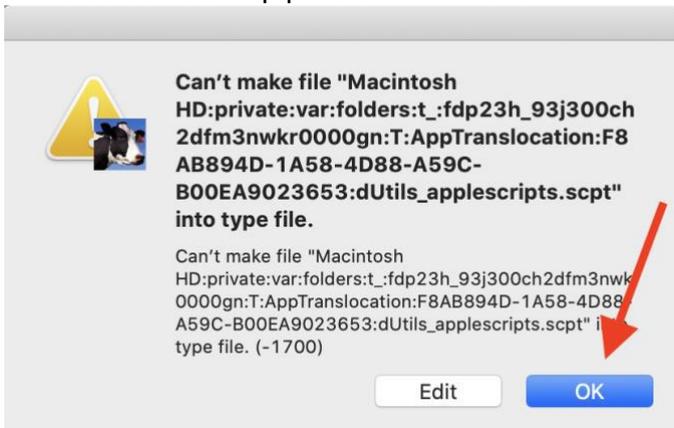
  click on OK to close this window. Next, try to start the application using **the alternative launch procedure**: Open the directory */Applications/GuidosToolbox* and double-click, or right-click → *Open* on the file: *startGTB.command*
  You may get further popup windows asking for permission to execute this command. Again, please allow the execution of this command for GTB to start up.
  The default startup process (via a double-click on *GuidosToolbox.app*) is not impacted by running the *startGTB.command* and hence, it may still fail.
  In this case, it is imperative to use the *startGTB.command* to start GTB.

- To add shortcuts to *GTB* and *GTB Data* on your desktop, please open the directory */Applications/GuidosToolbox* and double-click on *mkShortcuts*

- OpenEV is not available in the macOS-version of GTB.

C) Installation on Linux:

A) System-wide installation:

GuidosToolbox can be installed for system-wide usage and made available to all users. Go to the **GTB-Download** section and follow the instructions on an updated current operating system:

- **PCLinuxOS:** Open Synaptic and search for/install *GuidosToolbox*
- **Mageia:** Download the package *GTB-Mageia.x86_64.rpm* to a local directory. From a root-terminal enter the command:
  `urpmi <full path to the downloaded GTB-Mageia.x86_64.rpm>`
- **Fedora:** Download the package *GTB-Fedora.x86_64.rpm* to a local directory. From a root-terminal enter the command: `yum install <full path to the downloaded GTB-Fedora.x86_64.rpm>`
- **SUSE:** Download the package *GTB-Suse.x86_64.rpm* to a local directory. From a root-terminal enter the command:
  `zypper install --allow-unsigned-rpm <full path to the downloaded GTB-Suse.x86_64.rpm>`
- **Debian/*buntu:** Download the package *gtb_amd64.deb* to a local directory. From a root-terminal enter the command: `apt install <full path to the downloaded gtb_amd64.deb>`.
- **Other Linux distributions:** One of the above-mentioned rpm or deb-packages may work, if not use the standalone version outlined in the following section.

Important note:
On CentOS you first may have to install:
`wget http://packages.psychotic.ninja/7/testing/x86_64/RPMS/mupdf-1.10a-7.el7.psychotic.x86_64.rpm; yum install epel-release dnf-plugins-core <full path to the downloaded mupdf>`

B) Standalone installation (as normal user, not as root!):

1) Download the file *GTB_linux64.run* to your $HOME directory, i.e., */home/peter*

2) Open a terminal (konsole, xterm) in this directory and make the installer executable using the command: `chmod u+x GTB_linux64.run`

3) Start the installer with the command: `./GTB_linux64.run` and follow the instructions. The installer extracts the directory *GuidosToolbox* and creates two desktop launchers: *GTB*, *GTB_Data*.

4) Start GuidosToolbox in one of the following 3 ways:
- double-click *GTB* on your desktop, or
- double-click *GTB.desktop* in the directory *GuidosToolbox*, or
- open a terminal in the directory *GuidosToolbox* and enter the command: `./startGTB.sh`

Note:

- If GTB fails to start, open your software package manager (Synaptic, aptitude, Yast, Yum, etc.) and install *gdal, inxi, libgomp1* and the *proj* package and a reasonable pdf-reader application (e.g., mupdf).

- *QGIS* will be available from the GuidosToolbox menu if it is found in your system, or after it has been installed via your package manager of your Linux distribution.

- OpenEV is not available in the Linux version of GuidosToolbox.

- If you change the path/location of the *GuidosToolbox* directory (for example when running from a USB-flash drive or external USB-disk) you can start the program in the *GuidosToolbox* directory using the command `./startGTB.sh` Alternatively, you can re-create the desktop-launchers for the new location of this directory with the command `./makeLaunchers.sh` and then copy the *xx.desktop* files to your desktop and click these to start the programs.

- GTB has been successfully tested on the following current and updated 64bit Linux distributions: Arch, CentOS, Debian, Fedora, Ubuntu, Mageia, Manjaro, Mint, SUSE, PCLinuxOS, RedHat.

- On Linux servers, please use the cmd-line only version *GWB* (GuidosToolbox Workbench)

For best compatibility, please use the KDE desktop environment in PCLinuxOS.

GTB Quickstart:

Please use the default (Geo-)Tiff data format whenever possible!

GTB uses a sub-directory *data* for reading/saving images (also directly accessible from the desktop launcher) and a sample binary GeoTiff image *input.tif* is located in this directory *data*. You can specify a different default data directory via *File → Set Data Directory*. Because some users encountered problems when using network data directories, local data directories are preferred.

Do a quick test run:

1) Start GTB in the operating system specific way described above.

2) From the default data directory *GuidosToolbox/data*, load the sample image: *File → Read Image → GeoTiff*, select *input.tif*, press *Open*.

3) Perform a MSPA-analysis: *Image Analysis → Pattern → Morphological → MSPA*

4) Save the result: *File → Save Image → GeoTiff*
The MSPA-analysis of *input.tif* is saved to the default data directory *GuidosToolbox/data*.

More information on the features of GuidosToolbox, the MSPA parameters and more is available from the *Help* menu in the GuidosToolbox Manual and the **MSPA Guide**.

For other comments and suggestions please contact: Peter.Vogt@ec.europa.eu