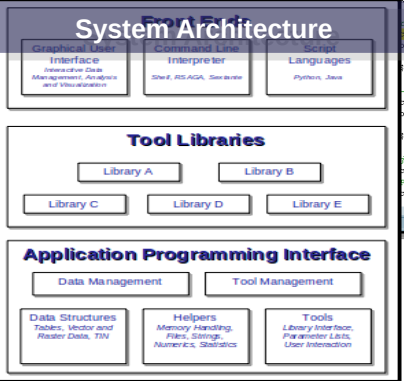


# SAGA

## System for Automated Geoscientific Analyses

# Version 7.3.0 LTR



```

R Script
# connect the map to SAGA grid format:
write.asc(grid=meuse.grid("meuse"), meuse_dist.asc", na.value=-1)
rmeuse.asc.to.sgrd(in.grid="meuse_dist.asc", out.sgrd="meuse_dist.sgr
writeOGR(meuse[["sinc", "log(sinc)"], "meuse.shp", "meuse", "ESRI Shape

```

Johan Van de Wauw

Dr. Olaf Conrad  
University of Hamburg

# SAGA | System for Automated Geoscientific Analyses

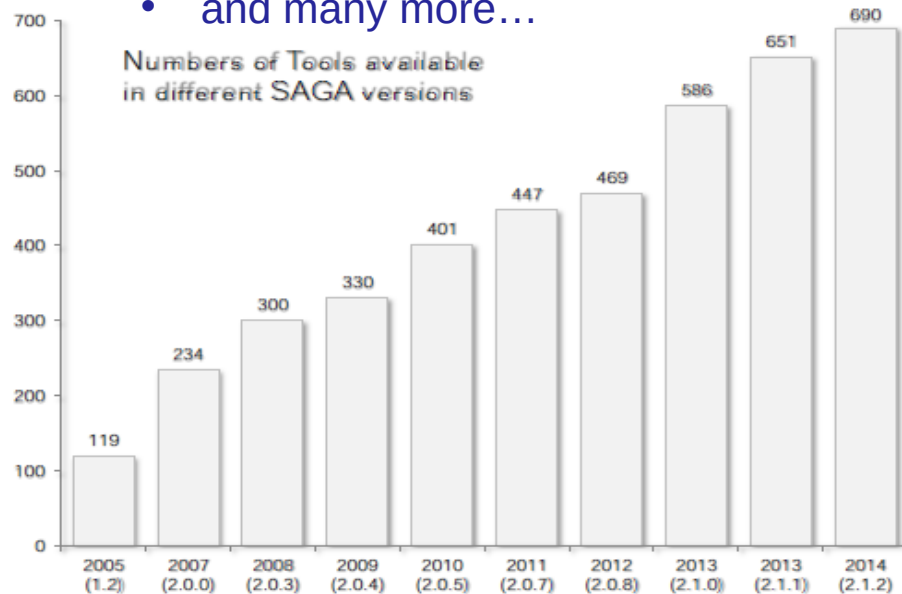
The screenshot displays the SAGA GIS interface with several key components:

- Overview Panel:** Shows a 3D terrain model and a 2D map view of the same area.
- Options Panel:** Configures tool parameters such as Name, Description, Style, Unit, Z Factor, and Display options.
- Command Line:** Shows the execution of a SAGA command: `saga_cmd -ELEVATION (ctr) [-SLOPE (ctr) [-CURV (ctr) [-CURV (ctr) [-METHOD (ctr)]]]] ELEVATION (ctr)`.
- Python Script:** A script for creating a SAGA grid, including comments and function calls like `saga_api.CG_CreateGrid()`.
- R Script:** An R script for geostatistical kriging, using `library("geostatistica_ksiging")` and `kriging()` to process spatial data.
- System Architecture Diagram:** A flowchart showing the interaction between the Graphical User Interface, Command Line Interpreter, and Script Languages, leading to Tool Libraries (A-E) and the Application Programming Interface (Data Management and Tool Management).

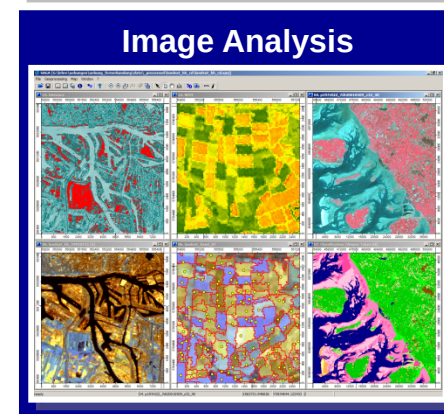
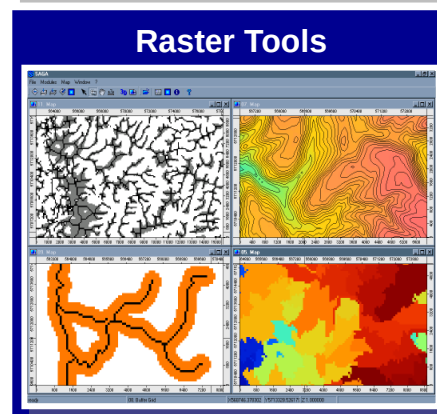
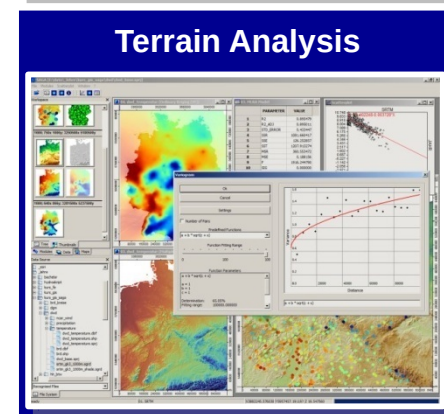
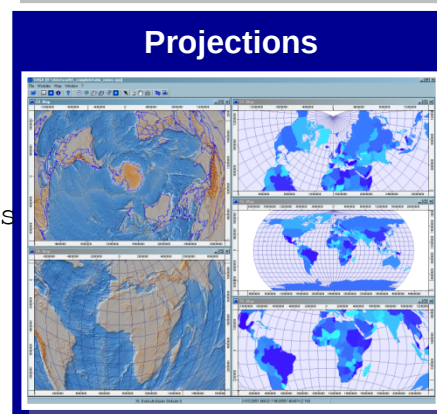
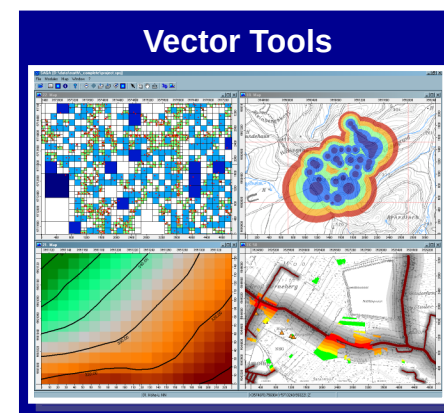
- SAGA is a Geographic Information System (GIS) software with strong capabilities for geodata processing and analysis.
- SAGA is programmed in the object oriented C++ language and supports the implementation of new functions with a very efficient Application Programming Interface (API).
- Tools are provided by framework independent Tool Libraries and can be accessed most simply via SAGA's Graphical User Interface (GUI) or various scripting environments..

# The SAGA Toolset

- SAGA offers a comprehensive and growing set of free tools.
  - Data Import & Export
  - Cartographic Projections
  - Numerous Raster & Vector Data Tools
  - Image Processing
  - Terrain Analysis
  - Spatial & Geostatistics
  - Point clouds
  - and many more...



7.3.0  
749 tools



SAGA

File Geoprocessing Map Window ?

Manager

Tools Data Maps

Tool Libraries

- Climate
- Garden
- Grid
- Grid Collection
- Imagery
- Import/Export
- Projection
- Reports
- Shapes
- Simulation
- Spatial and Geostatistics
- TIN
- Table
- Terrain Analysis
  - Channels
  - Compound Analyses
  - Hydrology
  - Lighting, Visibility
    - Analytical Hillshading**
    - Geomorphons
    - Potential Annual Insolation
    - Potential Incoming Solar Radiation
    - Sky View Factor
    - Topographic Correction
    - Topographic Openness
    - Visibility (points)
    - Visibility (single point) [interactive]
  - Morphometry
  - Preprocessing
  - Profiles
  - Slope Stability
  - Tool Chains
  - Visualization

Properties: Analytical Hillshading

Settings Description

**Tool**

**Name** Analytical Hillshading  
**Author** O.Conrad, V.Wichmann (c) 2003-2013  
**Version** 1.0  
**Library** ta\_lighting  
**ID** 0  
**Specification** grid  
**Menu** Terrain Analysis > Lighting

**Description**

This tool performs an analytical hillshade computation for an elevation grid. The 'Standard' method simply calculates the angle at which light coming from the position of the light source would hit the surface. This method can produce angles greater than 90 degree. With the second method all values are kept within the range of 0-90 degree. It can be enhanced with shadowing effects, where shadowed cells will be marked with a value of exactly 90 degree. 'Shadows Only' creates a mask for the shadowed areas and sets all other cells to no-data. 'Combined Shading' takes the values of the standard method and multiplies these with the normalized slope. 'Ambient Occlusion' is based on the concepts of Tarini et al. (2006), but only the northern half-space is considered here.

**References**

- **Tarini, M. / Cignoni, P. / Montani, C. (2006):** Ambient Occlusion and Edge Cueing to Enhance Real Time Molecular Visualization. IEEE Transactions on Visualization and Computer Graphics, Vol. 12, No. 5, pp. 1237-1244.

**Parameters**

Name	Type	Identifier	Description	Constraints
Input				

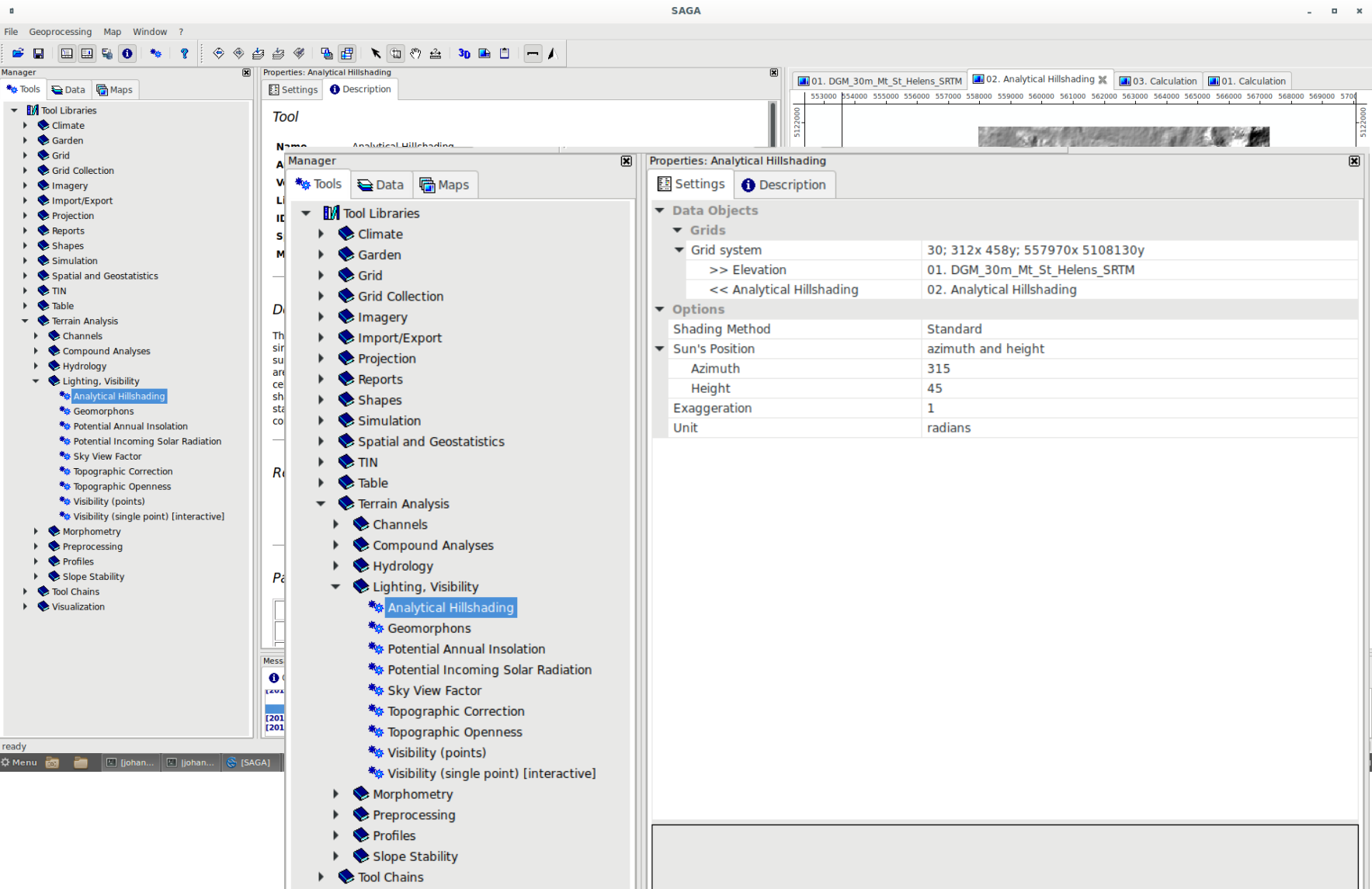
01. DGM\_30m\_Mt\_St\_Helens\_SRTM 02. Analytical Hillshading % 03. Calculation 01. Calculation

Messages

General Execution Errors

[2019-08-28/10:58:39] Executing tool: Vectorising Grid Classes  
 [2019-08-28/10:58:40] Tool execution succeeded

ready X 553570.945279 Y 5115789.0347... Z



The screenshot displays the SAGA GIS software interface. The main window shows the 'Analytical Hillshading' tool settings. The 'Data Objects' section is expanded, showing a 'Grids' list with two entries: '01. DGM\_30m\_Mt\_St\_Helens\_SRTM' (Elevation) and '02. Analytical Hillshading' (Analytical Hillshading). The 'Options' section is empty.

Overlaid on the interface is a terminal window showing the command execution and its output:

```
johan@x1:~$ saga_cmd ta_lighting 0
```

---

```
#####  ##  #####  ##
###    ##  ##    ###
###   #  ##  ##  #####  #  ##
   ##  #####  ##    #  #####
#####  #  ##  #####  #  ##
```

---

```
SAGA Version: 7.4.0
```

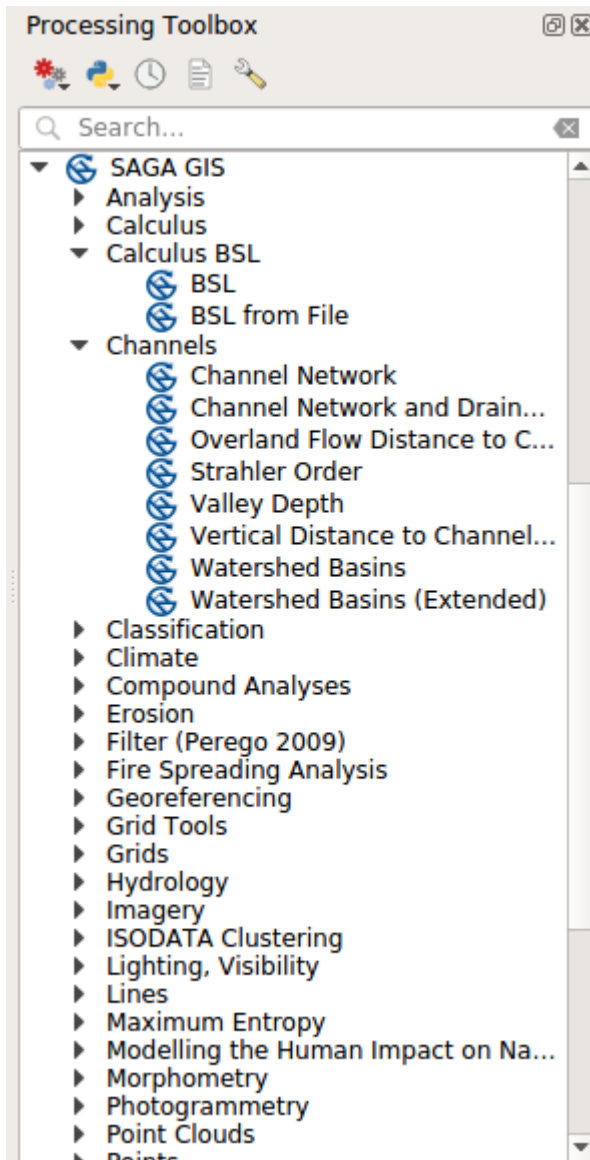
---

```
library path: /usr/local/lib/saga/
library name: libta_lighting
library      : ta_lighting
tool         : Analytical Hillshading
identifier   : 0
author       : O.Conrad, V.Wichmann (c) 2003-2013
processors   : 4 [4]
```

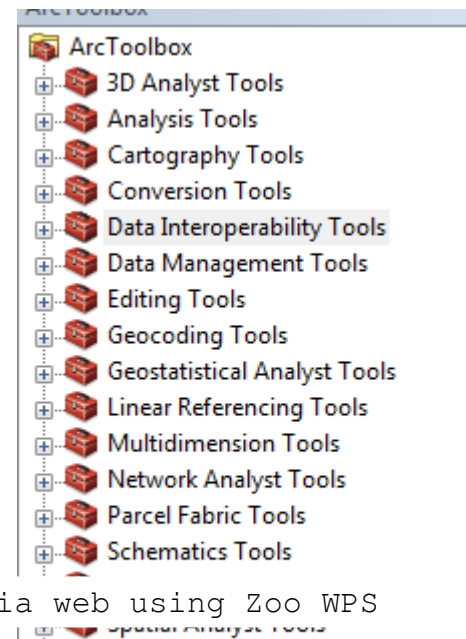
---

```
Usage: saga_cmd ta_lighting 0 [-ELEVATION <str>]
[-SHADE <str>] [-METHOD <str>] [-POSITION <str>]
[-AZIMUTH <double>] [-DECLINATION <double>] [-DATE
<date>] [-TIME <double>] [-EXAGGERATION <double>]
```

Use from QGIS

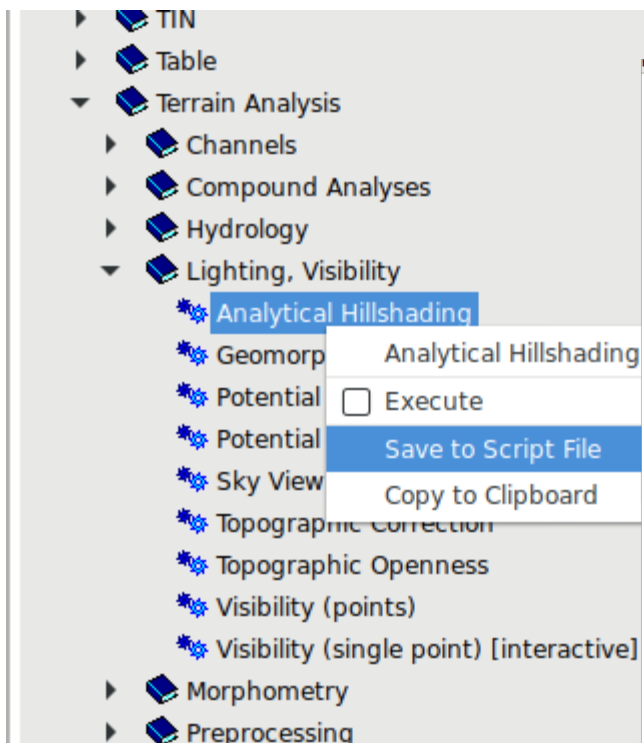


Use from ArcGIS



Access via web using Zoo WPS





```
properties: Analytical Hillshading
analytical_hillshading.py
~/saga
Save
*Untitled Document 1
analytical_hillshading.py

#!/usr/bin/env python
import saga_api, sys, os

#####
def Run_SAGA_Tool(File):
    #
    # Provide your input dataset(s), here -as example- load a dataset from file.
    # Using SAGA's central data manager instance for such jobs is an easy way to go...
    Data = saga_api.SG_Get_Data_Manager().Add(File)
    if Data == None or Data.is_Valid() == False:
        print('Failed to load dataset [' + File + ']')
        return False

    #
    # Create a new instance of tool 'Analytical Hillshading'
    Tool = saga_api.SG_Get_Tool_Library_Manager().Create_Tool('ta_lighting', '0')
    if Tool == None:
        print('Failed to create tool: Analytical Hillshading')
        return False

    Parm = Tool.Get_Parameters()
    Parm.Reset_Grid_System()
    Parm('ELEVATION').Set_Value('Grid input')
    Parm('METHOD').Set_Value('Standard')
    Parm('POSITION').Set_Value('azimuth and height')
    Parm('AZIMUTH').Set_Value(315.000000)
    Parm('DECLINATION').Set_Value(45.000000)
    Parm('EXAGGERATION').Set_Value(1.000000)
    Parm('UNIT').Set_Value('radians')

    print('Executing tool: ' + Tool.Get_Name().c_str())
    if Tool.Execute() == False:
        print('failed')
        return False
    print('okay')

    #
    # Save results to file:
    Path = os.path.split(File)[0] + os.sep
    Parm = Tool.Get_Parameters()
    Parm('SHADE').asDataObject().Save(Path + Parm('SHADE').asDataObject().Get_Name() +
```



# Key Features

The screenshot displays the SAGA GIS interface with several key components:

- Overview Panel:** Shows a 3D terrain visualization with elevation contours and a corresponding 2D map view.
- Options Panel:** A configuration window for a tool, showing fields for Name, Description, Style, Unit, Z-Factor, and various display options.
- Command Line:** A terminal window showing the execution of a SAGA command: `libray path: C:\saga-2.1.0\bin32\module\tva_morphometry.dll`.
- Python Script:** A code editor showing a Python script for creating a grid and calculating slope and aspect.
- R Script:** A code editor showing an R script for reading a SAGA grid and performing statistical analysis.
- System Architecture Diagram:** A flowchart showing the interaction between the Graphical User Interface, Command Line Interpreter, and Script Languages.
- Tool Libraries Diagram:** A diagram showing five distinct tool libraries (A through E).
- Application Programming Interface Diagram:** A diagram showing the integration of Data Management and Tool Management components.

- Object oriented system design
- Modular structure with framework independent tool development
- API with strong support for geodata handling
- GUI for intuitive data management, analysis and visualization
- More than 700 free tools
- Runs on Linux as well as on Windows operating systems
- Portable software runs without installation even from USB sticks
- Free and Open Source Software
- 15+ years of continuous development

# Tool Programming

```

CHillshade::CHillshade(void)
{
    Parameters.Add_Grid(
        NULL, "ELEVATION", "Elevation", PARAMETER_INPUT);

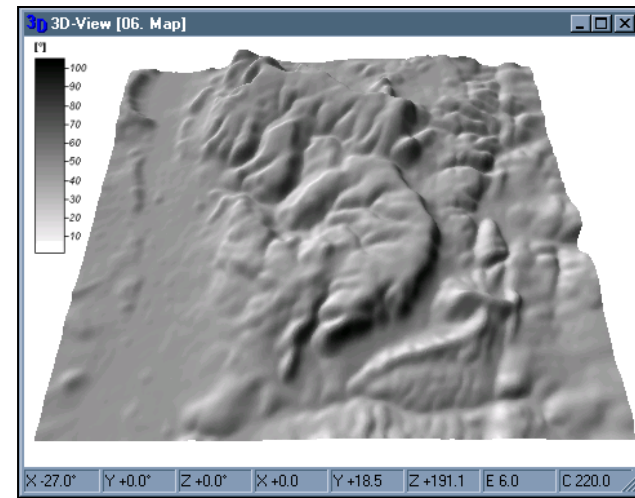
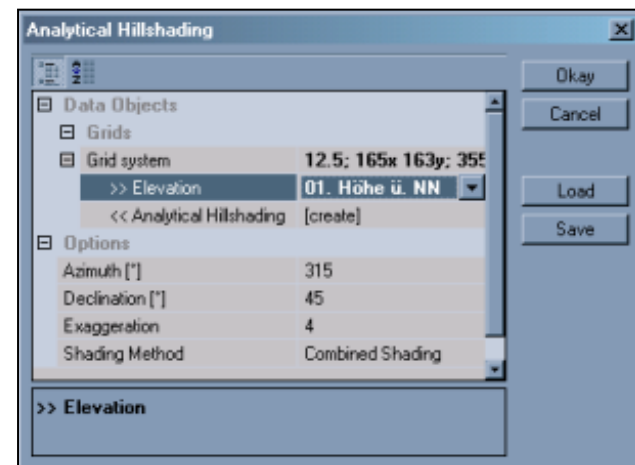
    Parameters.Add_Grid(
        NULL, "SHADE"      , "Shade"      , PARAMETER_OUTPUT);
    ...
}

```

```

bool CHillshade::On_Execute(void)
{
    CSG_Grid *pDEM      = Parameters("ELEVATION")->asGrid();
    CSG_Grid *pShade    = Parameters("SHADE")    ->asGrid();
    ...
    for(y=0; y<Get_NY(); y++)
    {
        for(x=0; x<Get_NX(); x++)
        {
            if( pDEM->Get_Gradient(x, y, s, a) == false )
            {
                pShade->Set_NoData(x, y);
            }
            else
            {
                d      = acos(sin(s) * sin(Dec) + cos(s) * cos(Dec) * cos(a - Azi));
                pShade->Set_Value(x, y, d);
            }
        }
    }
}

```



# Front Ends | Graphical User Interface

Manager

Map View

Histogram

Print Layout

The screenshot shows the SAGA GIS interface with several panels and callouts:

- Manager:** A tree view on the left showing a project structure with layers like '01. Höhe ü. NN', '02. Schummeigung', '03. Hangneigung', etc.
- Properties:** A panel on the right showing settings for the selected layer '01. Höhe ü. NN', including options for legend, display, and colors.
- Map View:** The central area displaying a topographic map of a region with elevation contours and a color-coded overlay.
- Histogram:** A chart below the map showing the distribution of values for the selected layer, with a color gradient from green to yellow.
- Print Layout:** A panel on the right showing a preview of a map layout with a scale of 1:1,401,450.719101.
- Attributes:** A table below the histogram showing a list of data points with columns for ID, AREA, PERIMETER, and LINDABODEN.
- Scatterplot:** A plot at the bottom right showing the relationship between 'Wölbung (horizontal)' on the x-axis and 'Konvergenz-Index' on the y-axis, with a regression line and equation  $Y = 0.138445 + 1480.347015 * X; r^2 = 36.55\%$ .
- Notifications:** A panel at the bottom showing execution logs and messages, including 'Tool execution succeeded' and 'Executing tool multiple'.

Properties

Notifications

Attributes

Scatterplot

# Front Ends | Graphical User Interface

- Three Manager Controls
  - Modules, Data, Maps
- Properties depend on the object type selected in the manager control.
  - A settings and a description tab are common to all items.
  - In case of a tool, the settings show the tool's execution parameters. The description gives further information about the tool.
  - In case of a data set, the settings allow to change data set name, memory handling, symbology and other data type specific options. Besides a description a legend and a data set history is added.

The image displays the SAGA GUI interface, showing the Manager and Object Properties panels for a B-spline Interpolation tool.

**Manager:** The Manager panel is divided into three sections: Tools, Data, and Maps. The Tools section is selected, showing a list of modules including B-spline Interpolation, which is highlighted.

**Object Properties:** The Object Properties panel is divided into three tabs: Settings, Description, and Attributes.

**Settings:** The Settings tab shows the tool's execution parameters:

- Points [Options]: Attribute [not set]
- Options:
  - Target Grid: user defined
  - Method: with B-spline refinement
  - Threshold Error: 0.0001
  - Maximum Level: 11
  - Update View:

**Description:** The Description tab provides information about the tool:

**Description**  
 Copyrights (c) 2006 by Claf Conrad  
 Menu: Grid > Gridging > Spline Interpolation

**Description**  
 Multilevel B-spline algorithm for spatial interpolation of scattered data as proposed by Lee, Wolberg and Shin (1997). The algorithm makes use of a coarse-to-fine hierarchy of control lattices to generate a sequence of bicubic B-spline functions, whose sum approaches the desired interpolation function. Large performance gains are realized by using B-spline refinement to reduce the sum of these functions into one equivalent B-spline function.

**Attributes:** The Attributes tab shows a table of data attributes:

ID	Name	Value
1		
2	AREA	153026.060000
3	PERIMETER	4610.418000
4	LINDABODEN_d	28
5	LINDABODEN_C	40
6	BOTYP	14
7	ASUBS	Lu
8	BSUBS	SH
9	CSUBS	SH
10	DSUBS	SH
11	AHOR	Ah
12	BHOR	Bv
13	CHOR	IBv
14	DHOR	ITv
15	ATIEFE	6.000000
16	BTIEFE	27.000000
17	CTIEFE	120.000000

**Maps:** The Maps section shows a list of maps, including 01. Forstl. Standortkartierung, which is highlighted.

**Settings (Map):** The Settings tab for the map shows display options:

- Chart: 107 parameters
- Fill Style: Opaque
- Outline:
- Outline Color: Black
- Outline Size: 0
- Show Points:
- Display: Visibility:
  - Always Show:
  - Scale Dependent: 0; 1000
- Display: Color Classification:
  - Type: Lookup Table
  - Attribute: BOTYP
  - Unique Symbol:
    - Color: Red

**Legend:** The Legend tab shows a color scale for the map's data, with a legend for the B-spline Interpolation tool:

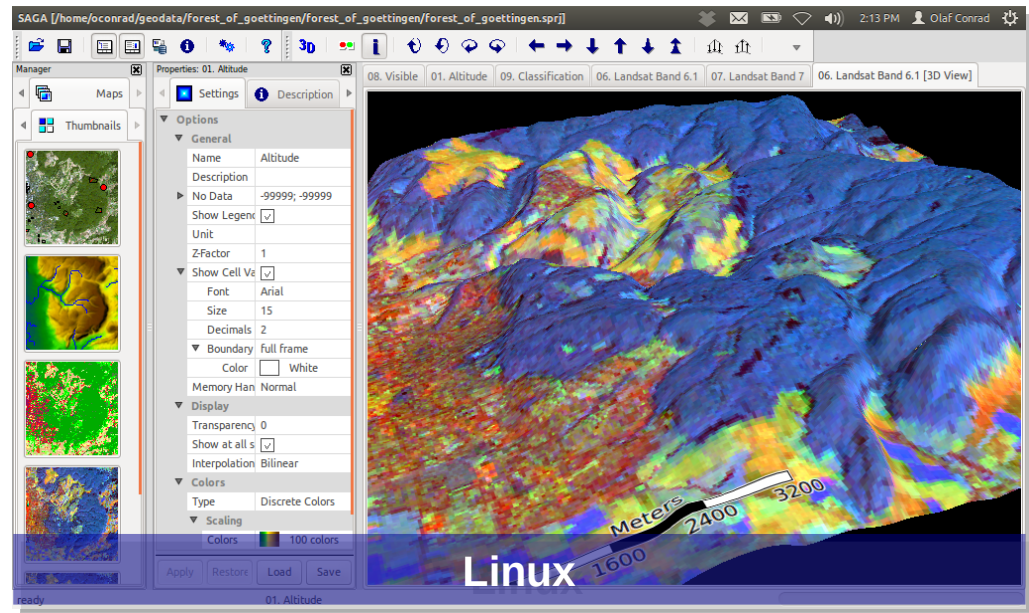
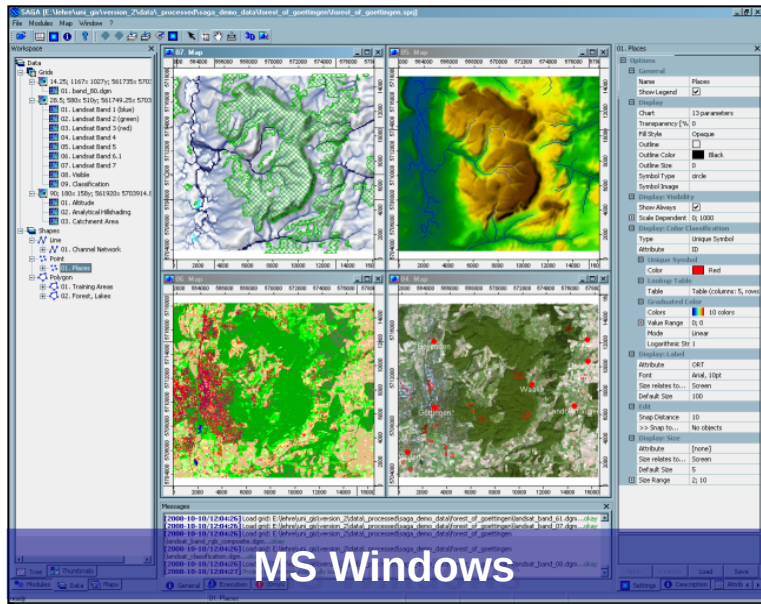
**Legend**

Isophyssen (10m)

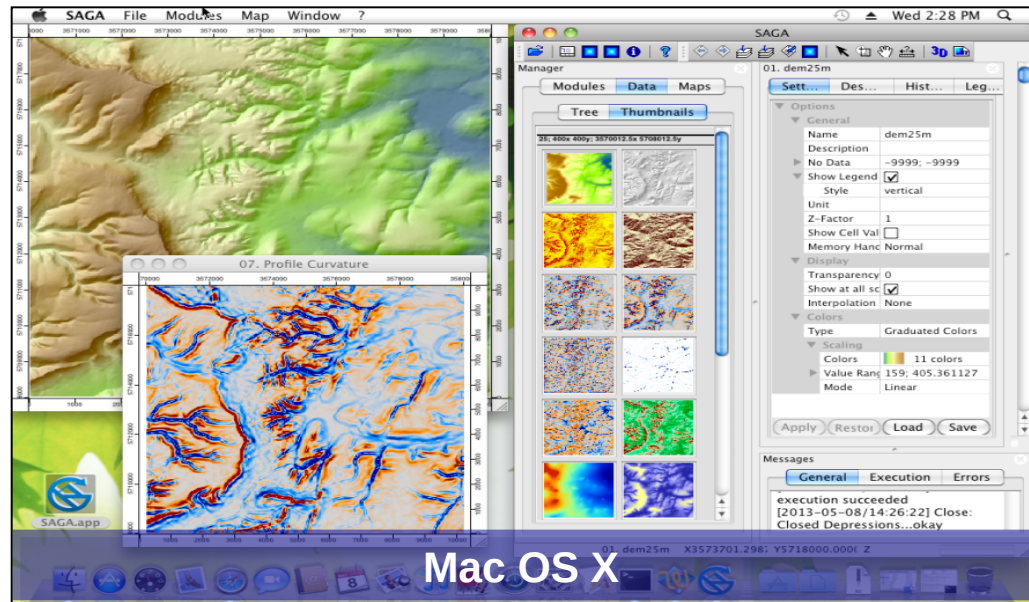
Forstl. Standortkartierung  
 BOTYP

- Gley
- Auenbraunerde, tiefr.
- Braunerde, lehmig-schluffig, tiefr.
- Braunerde, sandig-schluffig, tiefr.
- Braunerde, sandig-schluffig, mittel-tiefr.
- Braunerde, sandig-schluffig, mittel.
- Braunerde, sandig-lehmig, tiefr.

# Supported Platforms



- MS Windows
- Linux
- FreeBSD
- Mac OS X
  - Maintainer: Wanted !



# Automate your analysis - toolchain

The screenshot shows the SAGA GIS interface with the 'Properties: 01. Calculation' dialog box open. The 'Options' section is expanded, showing settings for 'Polygons [Vectorising Grid Classes]' and 'Grid'. A context menu is visible over the 'Options' section, with 'Save as Tool Chain' highlighted. Below the dialog, the 'Tool' information panel is visible, showing details for the 'demo' toolchain.

**Tool Information:**

- Name:** demo
- Author:** unknown
- Version:** 1.0
- Library:** toolchains
- ID:** demo
- File:** /home/johan/Desktop/demo.xml

**Description:** created from history

**Data Objects:**

- Grids:**
  - Grid system: <not set>
  - >> Elevation: <not set>
- Shapes:**
  - << Polygons: <create>

```
johan@x1:~/saga/tools$ saga_cmd foss4g demo
```

```
#####  ##  #####  ##
###    ###  ##    ###
###   #  ##  ##  #####  #  ##
      ### #####  ##    #  #####
##### #  ##  ##### #  ##
```

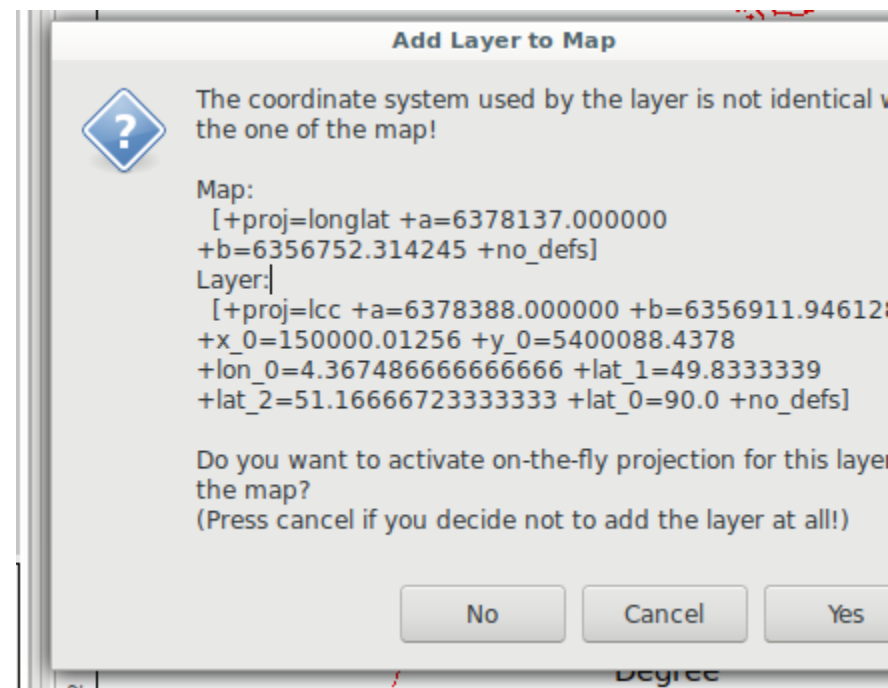
```
SAGA Version: 7.3.0
```

```
library path: ./
library name: demo
library      : foss4g
tool         : demo
identifier   : demo
author       : unknown
processors   : 4 [4]
```

```
Usage: saga_cmd toolchains demo [-tool_03__ELEVATION <str>]
      [-tool_01__POLYGONS <str>]
      -tool_03__ELEVATION:<str>   Elevation
                                   Grid (input)
      -tool_01__POLYGONS:<str>   Polygons
```

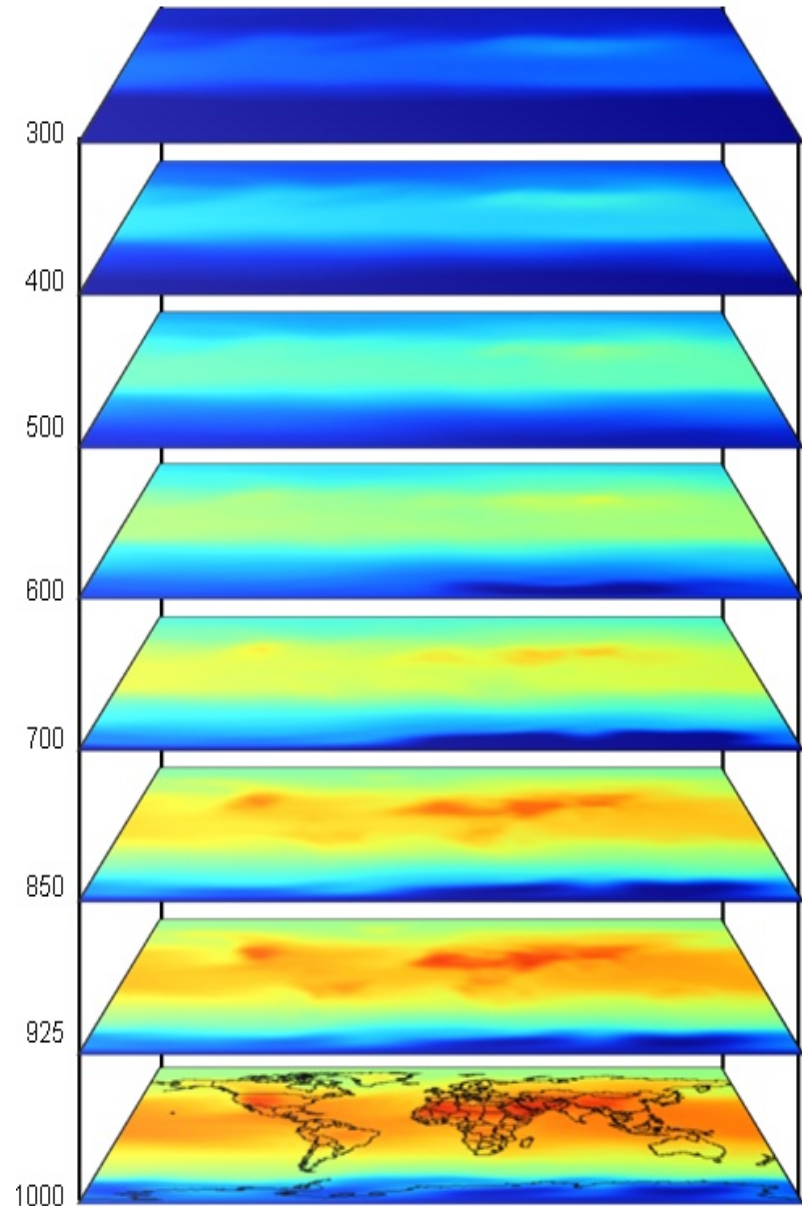
# New Features in SAGA

- Optional compressed grid format sg-grd-z (also gdal 2.3)
- Projection support
  - Live reprojection in gui
  - Proj 6 support
- Grid collections
  - RGB and Hyperspectral images
  - Geological layers
  - 3D interpolation
- Modules
  - Classification
  - Geomorphology
  - Geostatistics (registration)
- Unicode
  - Russian translation
- Save to gpkg and geojson directly
  - `saga_cmd shapes_points 21 -POINTS:test.gpkg`



# New Features in SAGA

- Optional compressed grid format sg-grd-z (also gdal 2.3)
- Projection support
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# New Features in SAGA

- Optional compressed grid format sg-grd-z (also gdal 2.3)
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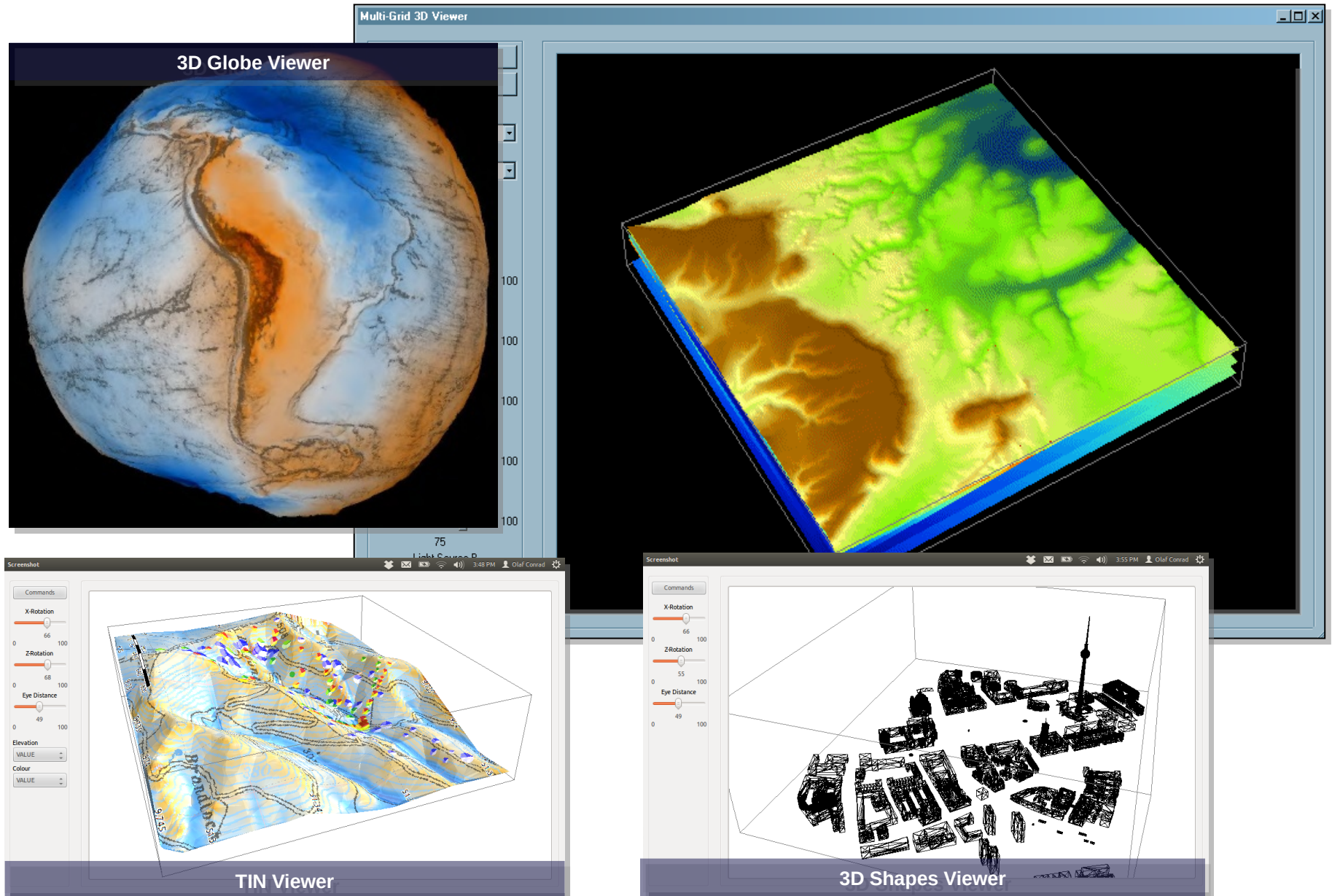
# Data Base Integration

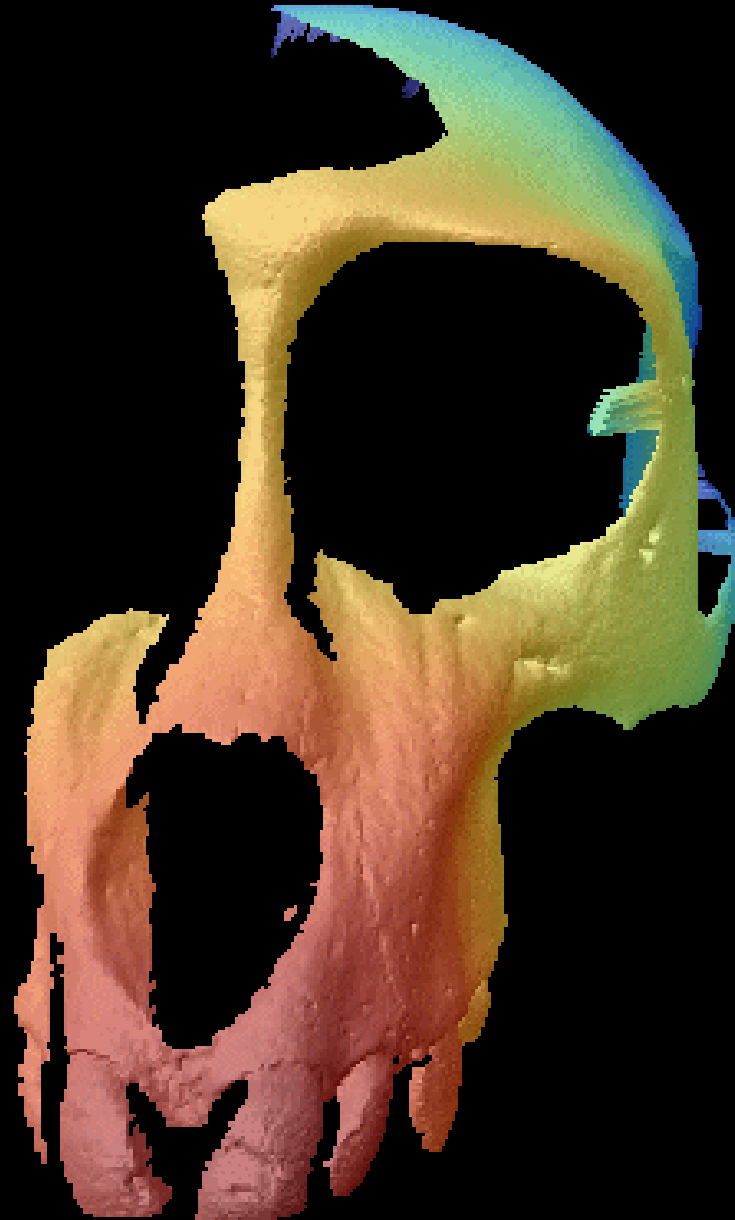
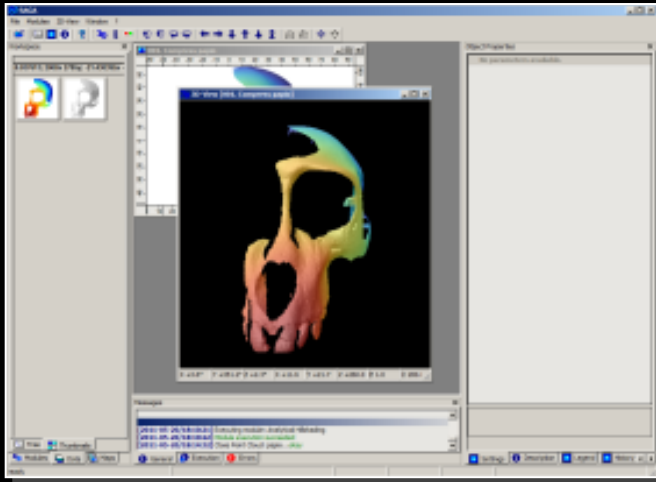
- Database access via Open Data Base Connection (ODBC) interface.
  - SQL – Structured Query Language
  - Problem: binary data types (e.g. BLOBs)
- PostgreSQL + PostGIS
  - Direct linking

The screenshot illustrates the process of connecting to a PostgreSQL database in SAGA GIS. The 'Data Source' dialog shows the selection of 'GHCN <Postgres>' as the data source. The 'Table from Query' dialog is used to execute a SQL query that filters data based on WMO ID and modification year. The resulting data is visualized on a world map.

**SQL Query:**  
`a.wmo_id=b.wmo_id AND a.wmo_mod=b.wmo_mod AND a`

# New Tools | 3D Viewer





Many thanks  
for your attention

[www.saga-gis.org](http://www.saga-gis.org)

# SAGA | Resources

Discussion Forums: **User Forum**

Topic	Topic Starter	Replies
<a href="#">area calculation</a>	<a href="#">is-baillv</a>	4
<a href="#">RSAGA on Hardy 64</a>	<a href="#">montanabay</a>	3
<a href="#">geometrical properties of polygons</a>	<a href="#">hydrocrist</a>	1
<a href="#">Sampling a table dataseting data from tables.</a>	<a href="#">derndt</a>	2
<a href="#">compiling on Hardy 64</a>	<a href="#">montanabay</a>	3
<a href="#">Ubuntu Hardy 64bit</a>	<a href="#">montanabay</a>	0
<a href="#">Straightening a linestring of points</a>	<a href="#">lthaelein</a>	0
<a href="#">shade grid with...</a>	<a href="#">huberthilbert</a>	2
<a href="#">TIN tools</a>	<a href="#">nideux</a>	1
<a href="#">surf4saga</a>	<a href="#">huberthilbert</a>	2
<a href="#">saga 2.0.3 and fedora 9</a>	<a href="#">lnoquoj</a>	0
<a href="#">gridding</a>	<a href="#">josephury</a>	2

**User Forum**

## Explore the world of SAGA GIS

<http://www.saga-gis.org>

Basic information

Comprehensive list of references

<http://sourceforge.net/projects/saga-gis>

SourceForge > host for OSS projects

Download software, documents, data

SAGA Wiki

Bug, Feature Tracker

User Forum

User Guide and Manual

# SAGA | Other Information Sources

## Marine Data Literacy

marinedataliteracy.org

The [Marine Data Literacy Project](#) is an attempt to bring together detailed, profusely illustrated instructions for many specific marine data management and analysis procedures, including basic GIS, ocean station data, satellite imagery, and operational data streams. The exercises are grouped according to an informal typology, but users are advised to simply browse through and see what's available. In general, the entire collection is constructed as a sequence of activities to build a "national marine data resource" for a selected area. Since 2010 this location is the area offshore the Ivory Coast. The exercises are currently used by the UNESCO/IOC/IOCE marine data training program, the Japan Foundation/POGO young scientists training program at Bermuda/BIOS, and the Ghent University-Erasmus Mundus masters degree program. SAGA is extensively used in all "marine GIS" lessons and in lessons dealing with grids, rasters and images. Contributing authors are always welcome, and an HTML exercise template is provided for their use. Intensive use of illustrations, and an absolute adherence to the step-by-step approach for all exercises are the only requisites.

<p><b>Saga</b></p>	<p>This is the general-purpose, "workhorse" program we recommend to all data management students, even if they also use other commercial or public domain GIS solutions. One shortcoming is the minimal documentation.</p>	<p>General information:</p> <ul style="list-style-type: none"> <li>• <a href="#">Saga Homepage</a></li> <li>• <a href="#">Saga Forum on Sourceforge</a></li> </ul> <p>Saga installation files.</p> <ul style="list-style-type: none"> <li>• <a href="#">Saga Files on Sourceforge</a></li> <li>• The ZIP version (not the unexplained EXE setup version) should be copied to a convenient location and unzipped to C:\</li> <li>• Run by clicking on <b>saga_gui.exe</b></li> </ul>	<ul style="list-style-type: none"> <li>• Windows 32 or 64. Create a shortcut to the executable <b>saga_gui.exe</b> to run the program</li> <li>• <a href="#">Saga's Tutorials Collection</a></li> <li>• <a href="#">Australia-Indonesia Training in Saga for Resource Management with Imagery</a></li> <li>• <a href="#">Rohan Fisher's Saga Tutorials</a> (in English and Indonesian)</li> <li>• <a href="#">1.3 Running 32-Bit Saga on a Mac with WINE</a> - Provided by a student</li> <li>• <a href="#">Saga Wiki on Sourceforge</a> for Linux information</li> <li>• "Mac users might like to hear that efforts are going on to make SAGA work on MacOS more smoothly. You find a thread regarding the MacOS port in the SAGA User Forum at <a href="http://sourceforge.net/p/saga-gis/discussion/790705/thread/b11de126/">http://sourceforge.net/p/saga-gis/discussion/790705/thread/b11de126/</a> Have a look at <a href="http://www.wxwidgets.org">http://www.wxwidgets.org</a> for background information about the wxWidgets project."</li> <li>• <a href="#">DOMINOC925</a> - An amazingly good set of illustrated tutorials for Saga and other geospatial software; possibly hundreds of exercises, but not indexed -- use search function to find Saga examples</li> </ul>
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# SAGA | More Sources of Information

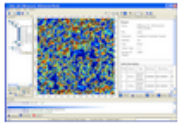
dominoc925.blogspot.com

dominoc925

About Geospatial Applications, Intergraph GeoMedia, FME, Visual Studio, gvSIG, Google Maps, SAGA GIS, Android, QGIS

Monday, February 20, 2012

## Simple method to count trees using Saga GIS



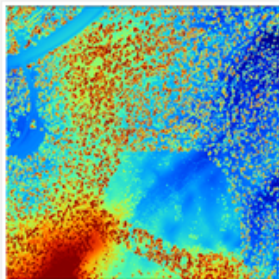
It is possible to make a rough estimation of the number of trees in an area from LIDAR derived digital surface (DSM) and digital terrain models (DTM). One method is to use some of the grid analysis modules algorithm in SAGA GIS, such as Gaussian Filter, and Watershed Segmentation. Then simply count the number of segmented table records with height greater than a value.

The example here counts the trees using the following general steps:

1. Load the DSM and DTM datasets
2. Calculate the canopy heights
3. Smooth the canopy heights
4. Segment the canopy heights
5. Count the number of segments with canopy heights above a certain value

### Load the source datasets

1. Start SAGA GIS.
2. Load and display the digital surface model (DSM) grid file, e.g. C:\data\dsmsc.



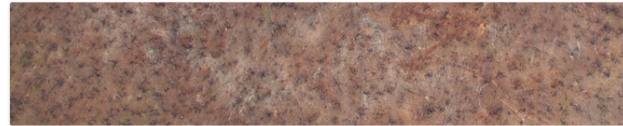
3. Load and display the digital terrain model (DTM) grid file, e.g. C:\data\dtm.asc.

rohanfisher.wordpress.com/  
open-source-geo-spatial

rohanfisher

ICT4D - Appropriate tech for decentralisation

HOME BLOG INDONESIA ICT4D MAPPING PHOTOS



## Open Source Geo-spatial

Capacity building using Open Source Geo-spatial Software

Saga GIS



SAGA GIS is raster focused spatial analysis software with modules that allow for sophisticated work with satellite imagery and geomorphometric modeling using digital elevation data. I have produced a range of training material whilst (1) delivering capacity building in West Timor and South East Sulawesi for this project [Satellite image display and analysis with a focus on Nusa Tenggara Timur](#) and (2) as part of my work producing burnt area data for [BAFI](#).

[DOWNLOAD LATEST VERSION SAGA GIS HERE.](#)

Training Screen Shot Videos:

[Terrain Analysis with SAGA GIS](#)

- Some terrain analysis (morphometric) functions with SAGA GIS using SRTM data for [east Sulawesi](#).

[Fire mapping](#)

- [Identify](#)
- [Identify](#)

[Image classif](#)

MY LINKS

[Monitoring impacts and risks of Mangrove mining in West Timor](#)  
[SMS for Health Information in Eastern Indonesia](#)

FIRE

[Darwin Center for Bushfire Research](#)  
[North Australia Fire Information](#)

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[Indonesia](#)  
[Mapping](#)

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www.cdu.edu.au/itl/AII-RS/

Satellite image display and analysis with a focus on Nusa Tenggara Timur.

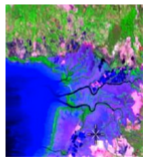
Penampilan dan analisa citra satelit dengan focus terhadap Nusa Tenggara Timur

Workshop

Tutorial

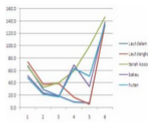
Links - contacts

The use of satellite data for mapping and monitoring is an important tool assisting effective and timely natural resource management. Furthermore the application of local knowledge in the interpretation of satellite data is often key to understanding the mapped landscape, observed changes and for deriving useful management outcomes. Currently, most satellite based assessments of natural resources in Eastern Indonesia are conducted by non-locals. However, with evolving technologies and changing research methods, new opportunities are arising for the wider use of satellite technology. This tutorial has been created as part of ongoing collaborative engagement between [Charles Darwin University](#) (Darwin, Australia) and [Nusa Cendana University](#) (Kupang, Indonesia) and has been funded by the [Australia Indonesia Institute](#).



Pemetaan dan monitoring dengan data citra satelit adalah alat-alat yang penting untuk pengelolaan sumber daya alam yang efektif dan tepat waktu. Selanjutnya pemanfaatan kebijakan lokal dalam penafsiran pemetaan data satelit, seringkali menjadi kunci untuk mendalam pengertian tentang darat, perubahan-perubahan yang dilihat dan mendapat kegiatan pengelolaan yang tepat.

Tutorial ini adalah sebagian dari kolaborasi lebih luas, antara [Charles Darwin University](#) (Darwin, Australia) dan [Universitas Nusa Cendana](#) (Kupang, Indonesia) yang memperkenalkan ketrampilan dasar dalam pemetaan dan analisis data citra satelit. Dana dari [Australia Indonesia Institute](#).



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