



# QUANTITATIVE LASER BIOSPECKLE METHOD FOR THE EVALUATION OF THE ACTIVITY OF Trypanosoma cruzi USING VDRL PLATES AND DIGITAL ANALYSIS Hilda Cristina Grassi, Lisbette C. García, María Lorena Lobo-Sulbarán, Ana Velásquez,

Francisco A. Andrades-Grassi, Humberto Cabrera, Jesús E. Andrades-Grassi, Efrén D.J. Andrades

This script was developed by the research group from Venezuela, therefore it was written in Spanish. This User's Manual is a translation to English, but the script and the version of the program are in Spanish.



## **INSTALLATION OF R WITH LINUX OPERATING SYSTEM**

- Open Ubuntu, make sure you have an internet connection,
- Go to Ubuntu Software Center and install R and Rcmdr, with Optional adons GNU R package for ODBC database access (r-cran-rodbc)
- When you open Rcmdr the following graphic interface will open



• Type in the console install.packages ("spatstat"); install.packages ("RSAGA") and install.packages ("tcltk") and Execute (Submit),

N

U

G

• Select the mirror from which the library will be downloaded, any of the mirrors can be used, **0-cloud** is recommended, click **OK** 

CRAN	nirror	🖶 📥 🔛 🗈	(奈 ●)) 12:28 👯
(0)	Fichero Editar Datos Estadísticos Gráficas Modelos Distribuciones Herramientas Ayuda	See CRAN mirror	
	Conjunto de datos: No hay conjunto de datos activo> Z Editar conjunto de datos Visualizar conjunto de datos Modelo:	Argentina (La Plata)	
	install.packages("spatstat")	Australia (Canberra) Australia (Melbourne)	<u></u>
(2)		Austria Belgium Brazil (PR)	
		Brazil (RJ) Brazil (SP 1)	
		Brazil (SP 2) Canada (BC)	
I	d	Canada (NS) Canada (ON)	
	Ventana de resultados	Canada (QC 2)	Ejecutar
	<pre>&gt; install.packages("spatstat")</pre>	China (Beijing 1) China (Beijing 2)	
		China (Beijing 3) China (Guangzhou)	
		China (Hefei) China (Xiamen) Colombia (Bogota)	
		Colombia (Cali) Denmark	
1		Ecuador France (Lyon 1)	
2		France (Lyon 2)	
<b>E</b>			
-	् व		×
	Mensajes If81_RRR0R:		
	trying to use CRAN without setting a mirror		▼
	[d]		•



## **PREPARATION OF THE IMAGE RASTERS**

The first step is to **Convert the video to jpg** with the converter of your preference.

The second step prepares the frames as **.sgrd** files that can be recognized by Rcommander.

- Open SAGA GIS, close the window Tip of the Day
- Go to Module/Import-Export GDAL/OGR
- Go to GDAL Import raster
- Select the folder where the frames are saved and select the frames that are to be imported.

: 🖻 🔲 🔳	0 8	; 🔐 🔳 🛙				
Workspace	×		GDAL: Import Raster			×
Workspace Tagery - Segmentation Timagery - Tools Timport CPS Data Timport (Export - DXF) Timport/Export - DAL/OGR GAL: Export Raster GAL: Export Raster Maps Data Source	GDAL: Import Raster		CDAL: Import Raster	Okay Cancel Load Save Defaults		×
-@     grid_tools.dll       -@     grid_visualisatio       -@     imagery_classifi       -@     imagery_classifi	Files					
Recognised Files	File path			It	e Load	Save
File System       Messages       [2016-05-23/17:58:03] Load libra						×
						Ψ.
🚺 General 🧔 Execution 🕕 E	rrors					
ready	GDAL: Im	port Raster				

Once the frames are imported,

N U

A L

R

S A

G

 Go to File/Project/Save Project As/ select the folder where the project will be saved

File Modules Window ?		
Project   New Project	i 💹 🔼 🧰	
Table Load Project	x	GDAL: Import Raster X
Shapes Save Project	A	Options
TIN Save Project As		Files "C:\Users\USUARIO\Documents\ULA\
Point Cloud  C:\prueba\prueba.spri		
Grid VOGR		
ter Exit ter to GeoTIEE		
GDAL: Import Raster		
OGR: Export Vector Data		
GR: Import Vector Data	•	
🍬 Modules 🗎 Data 🕞 Maps		
Data Source	x	
grid_tools.dll		
grid_visualisation.dll		
inacres.dli		
imagery_rga.dll		
imagery_segmentation.dll		
io_esri_e00.dll		
····· 🏹 io_gdal.dll		
io_gps.dll		
Recognised Files		Apply Restore Execute Load Save
File System		Settings Description
Messages		x
[2016-05-23/17:58:03] Load library: C:\Program Files (x86)\S	،GA-GIS\modules\tin_viewer.dllokay	*
[2016-05-23/18:00:33] Executing module: GDAL: Import Rast [2016-05-23/18:00:33] Module execution succeeded	1	*
General Secution General		
Save Project As	GDAL: Import Raster	



## **EXECUTION OF THE SCRIPT R/SAGA (abs sequential)**

This is a script that subtracts frames that are in a sequence and creates the rasters with the absolute value of the difference. For example,  $(\text{frame}_2 - \text{frame}_1)$ ;  $(\text{frame}_3 - \text{frame}_2)$ ..... The product will be a raster which is the absolute value of the difference that will also be in a sequence.

### Fort he execution of the script you must have the following installed:

Ubuntu 12.10 or higher R 3.0 or higher R commander (Recommended) or Rstudio



- Open Ubuntu,
- Open **R commander (Rcmdr**)

The following graphic interface will open

R Comm	sander 🖶 📥 🖾 🗈 🖄	豪 ●)) 11:18 🔱
	Fichero Editar Datos Estadísticos Gráficas Modelos Distribuciones Herramientas Ayuda	
	🕼 Conjunto de datos: 🔟 <no activo="" conjunto="" datos="" de="" hay=""> 🛛 Z Editar conjunto de datos 🖄 Visualizar conjunto de datos Modelo: 🗈 <no activo="" hay="" modelo=""></no></no>	
	Ventana de instrucciones	A
٧		
<b></b>		Eiecutar
	Ventana de resultados	
Â		
Ż		
P		
2		
E		
Cini du	Mensajes	
	[1] NOTA: Versión de R Commander 1.9-5: Fri Sep 20 11:18:08 2013	<u>_</u>



• Go to the menu File/Open instruction file





The script will load a series of instructions (The symbol # defines a commentary in the script)

A N

R S A G





In order to load the RSAGA and tcltk libraries

 Select the code library(RSAGA) library(tcltk) and press Execute (Submit) which is at the right of the screen of Rcmdr

R Comma	ander 🖶 🎍 🖾 📼 🖉	💭 🜒) 08:34 🔱
	Fichero Editar Datos Estadísticos Gráficas Modelos Distribuciones Herramientas Ayuda	
	Conjunto de datos: Conjunto de datos activo> Z Editar conjunto de datos 🧕 Visualizar conjunto de datos Modelo: Σ <no activo="" hay="" modelo=""></no>	
	Ventana de instrucciones	
	library(tcltk)	
	Image: state	Ejecutar
?		
- Andre	ා Mensajes	N
E		×



# Note that the products of the executed code will appear in the results window

R Comm	ander 😔 📥 🖾 📼	奈 ◀)) 08:36 投
Z	Fichero Editar Datos Estadísticos Gráficas Modelos Distribuciones Herramientas Ayuda	
	🔞 Conjunto de datos: 🔟 <no activo="" conjunto="" datos="" de="" hay=""> 🛛 Z Editar conjunto de datos 🔯 Visualizar conjunto de datos 🛛 Modelo: 🗴 <no activo="" hay="" modelo=""></no></no>	
-	Ventana de instrucciones	
	# Description: Este script calula la diferencia entre un archivo raster constante, voro	
	conjunto de archivos rasters almacenados en una lista.	
	# Autor: David Hernandez Aponte	
9	f Correo: david.vz.la@gmail.com	
	forrga de bibliotecas	
	library (south) library (teltk)	-
较	Ventana de resultados	🤹 Ejecutar
		<u>A</u>
>_	> #Carga de bibliotecas	
	> library(RSAGA)	
IR.I	> library(tcltk)	
<u>om qu</u>		
$\bigcirc$		
$\bigcirc$	(d) Mensales	Þ
		<u></u>

- Move the cursor down and you will note that there is another code to execute.
- Execute the Extensions Filter with which you will work in this script, you will define the extension of the files which will be Saga Grid (.sgrd)

R Comm	ander 🖶 📥 🖾 🐑 🔶 🗤 ) 11:28	ψ
	Fichero Editar Datos Estadísticos Gráficas Modelos Distribuciones Herramientas Ayuda	
	🕼 Conjunto de datos: 🔟 <no activo="" conjunto="" datos="" de="" hay=""> 🗹 Editar conjunto de datos 🗟 Visualizar conjunto de datos Modelo: 🗴 <no activo="" hay="" modelo=""></no></no>	
	Ventana de instrucciones	
	∉ Correo: david.vzlā@gmāli.com	
٢	#Garga de bibliotecas library (RSAGA) library (tcltk)	
	<pre>#Filtro de extensiones con las que se trabajará en este script Filters &lt;- matrix(c("Grids",".sgrd"),4, 2, byrow = TRUE)</pre>	
	<pre>#Cargar el raster constante constante &lt;_ tk chonse files(default = "" cantion = "Geleccione el raster constante" multi = ENIGE filtere = Eiltere index = 1)</pre>	•
		Þ
	Ventana de resultados	
A	> #Carga de bibliotecas	
	> library(RSAGA)	
	> library(tcltk)	
	> #Filtro de extensiones con las que se trabajará en este script	
	<pre>&gt; Filters &lt;- matrix(c("Grids",".sgrd"),4, 2, byrow = TRUE)</pre>	
<b>P</b>		
2		
1		
2		
5	4	
(and r	Mensajes	
	tclvalue, tkfocus	Ê

A N U A L

R

S A G A



#### • Execute the instruction to load the rasters





## • Load the frames or in an ordered manner Note that you can load multiple files

Seleccio	ne los rasters a restar					🖶 🌰 🖂 📼	奈 🕪) 12:08 🔱
	Fichero Editar Datos Estadísticos Gráficas Modelos	Distribuci	ones Herramientas Ayuda				
	📿 Conjunto de datos: 🔲 <no a<="" conjunto="" datos="" de="" hay="" th=""><th>ctivo&gt;</th><th>Z Editar conjunto de datos</th><th>🗟 Visualizar conjunto</th><th>de datos Model</th><th>lo: 🗵 <no activo="" hay="" modelo=""></no></th><th></th></no>	ctivo>	Z Editar conjunto de datos	🗟 Visualizar conjunto	de datos Model	lo: 🗵 <no activo="" hay="" modelo=""></no>	
	<pre>Conjunto de datos:</pre>	ctivo> cw = TRU rchivos jects/For con = "Se cdarán lo directori Caldárán lo Directori Caldárán lo Directori Caldárán lo Directori Caldárán lo Directori Caldárán lo Caldárán lo Caldárán lo Directori Caldárán lo Directori Caldárán lo Caldárán lo Directori Caldárán lo Caldárán lo Directori Caldárán lo Caldárán lo Directori Caldárán lo Caldárán lo Caldár Mombres Arch	Editar conjunto de datos     E)     de manera ordenada     estal/data/balance*, ful estal/data/balance*, ful escione los rasters a     s resultados     orio donde se almacenar     Seleccione los rasters a     io: /media/koflas/RESPALDO/c a     starmsis (Inverse Distance W     starmsis (Inver	Visualizar conjunto Visualizar conjunto I.names=TRUE, all.fii restar ", multi = TRUI án las salidas") restar foctorado/Cristina  Visualizar foctorado/Cristina  Abr Cinverse Distan Cance	e de datos Model	<pre>lo:</pre>	Fjecutar
	Mensajes [7] NOTA: Aviso en readLines(fileCon) : incomplete final line found on '/media/koflas/RH s]	SPALDO/c	loctorado/Cristina/difer	encia_secuencial.R'			



 Choose the output file where the difference rasters will be saved

R Comm	ander 🚽 🖶 🛎 🖾 🗈 🗢 📢 11:39	ψ
	Fichero Editar Datos Estadísticos Gráficas Modelos Distribuciones Herramientas Ayuda	
	😨 Conjunto de datos: 🔟 <no activo="" conjunto="" datos="" de="" hay=""> 🛛 Z Editar conjunto de datos 💿 Visualizar conjunto de datos Modelo: 🏾 Ano hay modelo activo&gt;</no>	
	Ventana de instrucciones	
	constante <- tk_choose.files(default = "", caption = "Seleccione el raster constante",multi = FALSE, filters = Filters, index = 1)	Ê
6	<pre>#Cargar los raster a restar variables &lt;- tk_choose.files(default = "", caption = "Seleccione los rasters a restar",multi = TRUE, filters = Filters, index = 1)</pre>	
	#Establece el directorio de salida donde se guardarán los resultados dir_salida<-tk_choose.dir(getwd(), "Seleccione el directorio donde se almacenarán las salidas") catud(dir, salida)	
	for (i in 1:length(variables)){	
	<pre>rstart in filesgen(virtubec)); rstart in filesgen(virtubec); rstart in filesgen(virtub</pre>	•
<b>1</b>	S S S S S S S S S S S S S S S S S S S	
	Ventana de resultados	
A	> #Carga de bibliotecas	
	> library(RSAGA)	
	> library(tcltk)	
	> #Filtro de extensiones con las que se trabajará en este script	
	> Filters <- matrix(c("Grids",".sgrd"),4, 2, byrow = TRUE)	
	> #Cargar el raster constante	
ľ	> constante <- tk_choose.files(default = "", caption = "Seleccione el raster constante",multi = FALSE, filters = Filters, index = 1)	
2	> #Cargar los raster a restar	
	> variables <- tk_choose.files(default = "", caption = "Seleccione los rasters a restar",multi = TRUE, filters = Filters, index = 1)	
		T
-	Mensajes	
	tclvalue, tkfocus	1
		•

The following window will open,

A

U

A L

R S A G • Select the folder to save the difference rasters

Usually , for the script to work out right , it is important for the output folder where the difference rasters will be saved to be in the root of the directory





• Choose the folder, the results will be expressed as .sgrd

cione et direccorio donde se atmacenaran las salidas		<u>▲</u>
Fichero Editar Datos Estadísticos Gráficas Mode	elos Distribuciones Herramientas Ayuda	
😨 Conjunto de datos: 🔲 <no conjunto="" da<="" de="" hay="" th=""><th>atos activo&gt; 🛛 🗹 Editar conjunto de datos 🔯 Visualizar conjunto de datos 🛛 Modelo: 🗵 <no activo<="" hay="" modelo="" th=""><th>&gt;  </th></no></th></no>	atos activo> 🛛 🗹 Editar conjunto de datos 🔯 Visualizar conjunto de datos 🛛 Modelo: 🗵 <no activo<="" hay="" modelo="" th=""><th>&gt;  </th></no>	>
Ventana de instrucciones		
Filters <- matrix(c("Grids",".sgrd"),4, 2,	, byrow = TRUE)	
<pre>#Cargar rasters. Note que debe seleccionar ) #variables &lt;- list.files(path="/home/davidh, #Cargar los raster a restar variables &lt;- tk_choose.files(default = "", comparisables</pre>	<pre>los archivos de manera ordenada /projects/Forestal/data/balance",full.names=TRUE,all.files=TRUE,ignore.case=TRUE,pattern="\\.sgrd: caption = "Seleccione los rasters a restar",multi = TRUE, filters = Filters, index = 1)</pre>	Ş <b>"</b> )
<pre>#Establece el directorio de salida donde se dir_salida&lt;-tk_choose.dir(getwd(), "Seleccionsetwd(dir_salida)</pre>	guardarán los resultados one el directorio donde se almacenarán las salidas")	
for (i in 1:length(variables)-1){	😣 🔿 🗊 Seleccione el directorio donde se almacenarán las sali	
<u> </u>	Directorio: /media/koflas/RESPALDO/doctorado/Cristina/salida - E	2 Fine
Ventana de resultados		Steel Ejec
> #Carga de bibliotecas		
> library(RSAGA)		
> library(tcltk)		
> #Filtro de extensiones con las que se trab	ba:	
<pre>&gt; Filters &lt;- matrix(c("Grids",".sgrd"),4,</pre>	2 Selección: (media/koflac/RESPALDO/doctorado/Cristina/ca)	
<pre>&gt; variables &lt;- tk_choose.files(default = "",</pre>	, ( Cancelar ters = Filters, index = 1)	
<pre>&gt; dir_salida&lt;-tk_choose.dir(getwd(), "Seleccentry")</pre>	cione el directorio donde se almacenarán las salidas")	
2		
Mensajes		
[7] NOTA: Aviso en readLines(fileCon) : incomplete final line found on '/media/kofla	as/RESPALDO/doctorado/Cristina/diferencia secuencial.R'	



• Select the code for the execution of the difference and press **Execute (Submit)** 

R Comm	ander 🖶 📥 🖾 💌 🤶 📢	ψ
	Fichero Editar Datos Estadísticos Gráficas Modelos Distribuciones Herramientas Ayuda	
	🕼 Conjunto de datos: 🔟 <no activo="" conjunto="" datos="" de="" hay=""> 🛛 Z Editar conjunto de datos 🔄 Visualizar conjunto de datos 🛛 Modelo: 🗴 <no activo="" hay="" modelo=""></no></no>	
	Ventana de instrucciones	1
	variables <- tk_choose.files(default = "", caption = "Seleccione los rasters a restar",multi = TRUE, filters = Filters, index = 1)	
٨	≢Establece el directorio de salida donde se guardarán los resultados dir_salida<-tk_choose.dir(getwd(), "Seleccione el directorio donde se almacenarán las salidas") setwd(dir_salida)	
	<pre>for (i in 1:length(variables)-1){     varl&lt;-variables[i]     var2&lt;-variables[i+1]     reada grid calculus(g(var1 var2) sprintf("differencia sequencia1803d bla" i) (varb))</pre>	
		-
	d di terretaria	
	Ventana de resultados	
A		
	Parameters	
	Grid system: 30; 1707x 1534y; 251783x 938169y Grids: 2 objects (curvasramsis (Inverse Distance Weighted)2, curvasramsis (Inverse Distance Weighted)3)) Grids from different Systems: No objects Result: Result Formula: a-b Name: Calculation Take Formula: no Use NoData: no	
OF D	Save grid: diferencia_secuencial002.bla ready	•
(Can da	ال المحمد الم المحمد المحمد	
	[7] NOTA: Aviso en readLines(fileCon) : incomplete final line found on '/media/koflas/RESPALDO/doctorado/Cristina/diferencia_secuencial.R'	



Open the output folder where the rasters were saved, note that the default name will be "diferencia\_abs\_secuencial" and the number of the raster. Note that a SAGA-GIS has three files **.mgrd; .sdat and .sgrd. In order to use the raster, the three files have to be in the same route, therefore, if the file is to be moved, it is better to move the folder.** 

Remember that the results will be expressed as sgrd so they must be opened in SAGA-GIS

We have noticed that in the folder of the output file, in addition to the difference rasters, there will be one frame (usually the first frame used to obtain the differences which is named diferencia\_secuencial000). This must be excluded from the next calculations because it is an interfering frame, not a difference raster.



# • Open SAGA-GIS

SAGA GI	s		8	• 📥 🖂 🗈 🤶 🕪) 11:5	53 垈
			🖻 🔳 🖬	0	
0	Workspace 🛛			Filter Clumps	×
	Modules 😫 Data 🗟 Maps			Settings ① Description	
	Module Libraries			No parameters available.	
	Contributions - A. Perego				
	Garden - 3D Shapes Viewer				
	Geostatistics - Grids				
	🕨 📚 Geostatistics - Kriging				
	Geostatistics - Points				
	Geostatistics - Regression				
	🕨 📚 Grid - Analysis				
<b></b>	🕨 📚 Grid - Calculus				
	Grid - Calculus BSL				
$\mathbf{A}$	Grid - Filter	that you can resize the Workspace. Messages and			
	Grid - Gridding	Object Properties windows by grabbing the border			
	Grid - Spline Interpolation	of the window?			
	Grid - Tools				
	Grid - Visualisation				
	Imagery - Classification				
	Imagery - Fast Region Growing Algorithm				
6	Imagery - Segmentation				
7	Finagery - 100ts	Show tips at startup Next Tip Cerrar			
2	Import GPS Data				
	Import/Export - ESPI E00				
$\mathbb{P}$	Messages				×
	General      Execution     Errors				
	[2013-09-20/11:53:51] Load library: /usr/lib/saga/libpj_georeference.sookay				- 1
	[2013-09-20/11:53:31] Load library: /usr/lib/saga/libio_table.sookay [2013.00.20/11:53:31] Load library: /usr/lib/saga/libsim_callular_automata.co.	akav			
	ready				



• Close the window **Tip of the Day** 





Import the absolute difference rasters in the same manner as the rasters were imported at the beginning, as follows:

- Go to Module/Import-Export GDAL/OGR
- Go to GDAL Import raster
- Select the folder and the rasters that are to be imported. Remember that there will be one inappropriate frame that must be excluded from the next calculation



## ADDING THE ABSOLUTE DIFFERENCE RASTERS

At this point, the absolute difference rasters are added.

• Go to Grid Calculus

	; ••• •••		
orkspace X		GDAL	Import Raster
🚊 💊 Grid - Calculus 🔹 🔺			ptions
		F	iles "C:\Users\USUARIO\Documents\L
* Fuzzify			
Fuzzy Union (OR)			
Gradient Vector from Cartesian to Polar Coordinates			
Grid Calculator			
Srid Difference			
Crid Normalisation			
Modules 🔁 Data 🛅 Maps			
ata Source X			
arid tools.dll			
arid visualisation.dll			
i barres.dl			
imagery classification.dl			
imagery roa.dl			
imagery segmentation.dl			
imagery tools.dl			
io esti e00.dl			
io odal.dll			
v io gos.d			
			Apply Restore Execute Load Save
Elio Sustem			
The system			
essages			
2016-05-23/18:00:33] Module execution succeeded			
2016-05-23/19:17:55] Executing module: GDAL: Import Raster			
2016-05-23/19:17:55] Module execution succeeded			
🕽 General 📣 Execution 🌗 Errors			



#### Select Grids sum





• Select the rasters that are to be added

SAGA	-			×
File Modules Window ?				
i 🚔 🛄 🗖 🚺		i 💹 💶 🎟		
Workspace	×		Grids Sum	×
Workspace         Seemetric Figures         Scadent Vector from Ca         Gradent Vector from Pa         Scadent Vector from Ca         Gradent Vector from Ca         Grad Difference         Grad Standardisation         Grad Standardisation	Grids           01. vidcap0065 001 [1] 03. vidcap0065 001 [2] 03. vidcap0065 001 [3] 04. vidcap0063 001 [3] 05. vidcap0063 001 [3] 05. vidcap0063 002 [1] 08. vidcap0063 002 [1] 09. vidcap0063 002 [1] 10. vidcap0063 003 [2] 11. vidcap0063 003 [3] 13. vidcap0063 005 [3] 13. vidcap0063 005 [3] 14. vidcap0063 005 [3] 15. vidcap0063 005 [3] 15. vidcap0063 005 [3] 19. vidcap0063 005 [3] 22. vidcap0063 005 [3] 23. vidcap0063 008 [3] 24. vidcap0063 008 [3] 25. vidcap0063 008 [3] 28. vidcap0063 008 [3] 29. vidcap0063 008 [3] 29. vidcap0063 009 [1] 29. vidcap0063 009 [1] 29. vidcap0063 009 [1] 29. vidcap0063 009 [1] 29. vidcap0063 009 [2] 30. vidcap0063 001 [1] 29. vidcap0063 001 [1] 29. vidcap0063 001 [1] 20. vidcap0063 001 [1] 20. vidcap0063 001 [2] 20.		Grids Sum	X Save
1 General 🔕 Execution 🌗 E	rors			
	Grids St	Jm		
😗 🖉 📋		W 🖪 🖪 😽	ES 🔺 🏴 🗊 📢 27.15	9 p.m. 5/2016



N U A L

R

S A G

- Click on **Sum**
- Go to Description on the right panel and scroll down to the Arithmetic Mean, which represents the mean intensity (I) of the sum of the absolute value of the difference rasters of a sequence of frames from a video.

File Modules Window ?					
: 🖻 💷 💽 🌒 💡		i 🜌 🔲 💷			
Workspace	×		34. Sum		×
	A		West-East	319	*
27. vidcap0063 008 [3]			South	0.5	
29. vidcap0063 009 [1]			North	239.5	
30. vidcap0063 009 [3]			South-North	239	
31. vidcap0063 010 [1]			Cell Size	1	
33. vidcap0063 010 [3]			Number of Columns	320	
34. Sum	-		Number of Rows	240	
Tree Thumbnails			Number of Cells	76800	
Modules 😜 Data 🕞 Maps			No Data Cells	0	
Data Source	x		Value Type	4 byte floating point number	
grid_calculus.dll	<b>A</b>		Value Minimum	220	
grid_calculus_bsl.dll			Value Maximum	3695	=
grid_ridding.dll			Value Range	3475	
grid_spline.dll			No Data Value	-99999	
grid_toois.ali			Arithmetic Mean	1207.5540234375001	
			Standard Deviation	605 135378339365	
imagery_classification.dll	-		Memory Size	300.00 kb	
Recognised Files				000.00 110	-
File System			Settings 🕦 Descrip	otion 🔽 Legend 🔽 History 🚦	Attributes
Messages					×
[2016-05-23/19:17:55] Module execution succeeded					*
					_
[2016-05-23/19:22:09] Executing module: Grids Sum [2016-05-23/19:22:09] Module execution succeeded					-
1 General 🧔 Execution 0 Errors			 		
ready	34. Sum				