S6 - Generation of Spectral Indexes
User Tutorial for IDL/Winter01

Francesca Zambon, Giuseppe Di Persio, Francesca Altieri

INAF – Istituto di Astrofisica e Planetologia Spaziali

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IDL Package for Spectral Slopes Retrieval – Winter01

Winter01 package is a dedicated software produced with IDL, which permits to calculate spectral slopes from MESSENGER/MDIS 8-color mosaic and it is distributed for Windows, MacOS, and Linux.

What Winter01 does:

- Calculates and shows spectral slope images from MESSENGER/MDIS 8-color mosaic with the relative histogram;

- Divides the spectral slope map in 3 thresholds of intervals, shows the spectral slopes map assigning to each interval a different colour, calculates the average spectra for each interval and shows the relative histogram overlapping the threshold interval lines.

What Winter01 requires:

MESSENGER/MDIS 8-color mosaic in binary format with the related header.

Step 1– Install IDL

Supported platforms:

Platform	Hardware	Operating System	Supported Versions
Windows	Intel/AMD 64-bit	Windows	7 SP1, 8, 10
Macintosh	Intel 64-bit	OS X	10.10, 10.11 (El Capitan)
Linux	Intel/AMD 64-bit	Linux	Kernel 2.6.32, glibc 2.12

Step 1– Install IDL

Register and download IDL from:

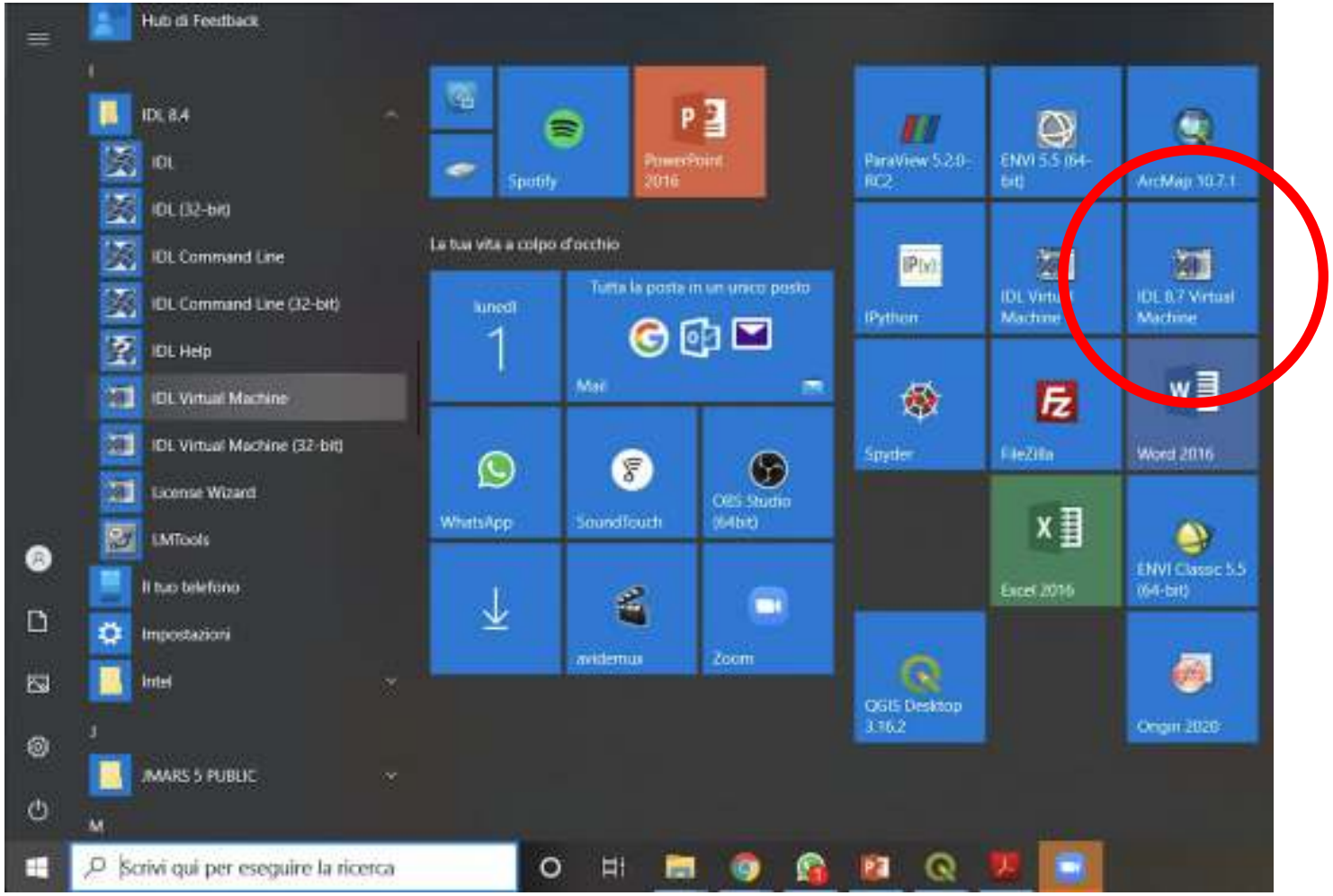
https://www.l3harrisgeospatial.com/Support/Self-Help-Tools/Help-Articles/Help-Articles-Detail/ArtMID/10220/ArticleID/17309/The-IDL-Virtual-Machine

https://www.l3harrisgeospatial.com/docs/platform_support.html

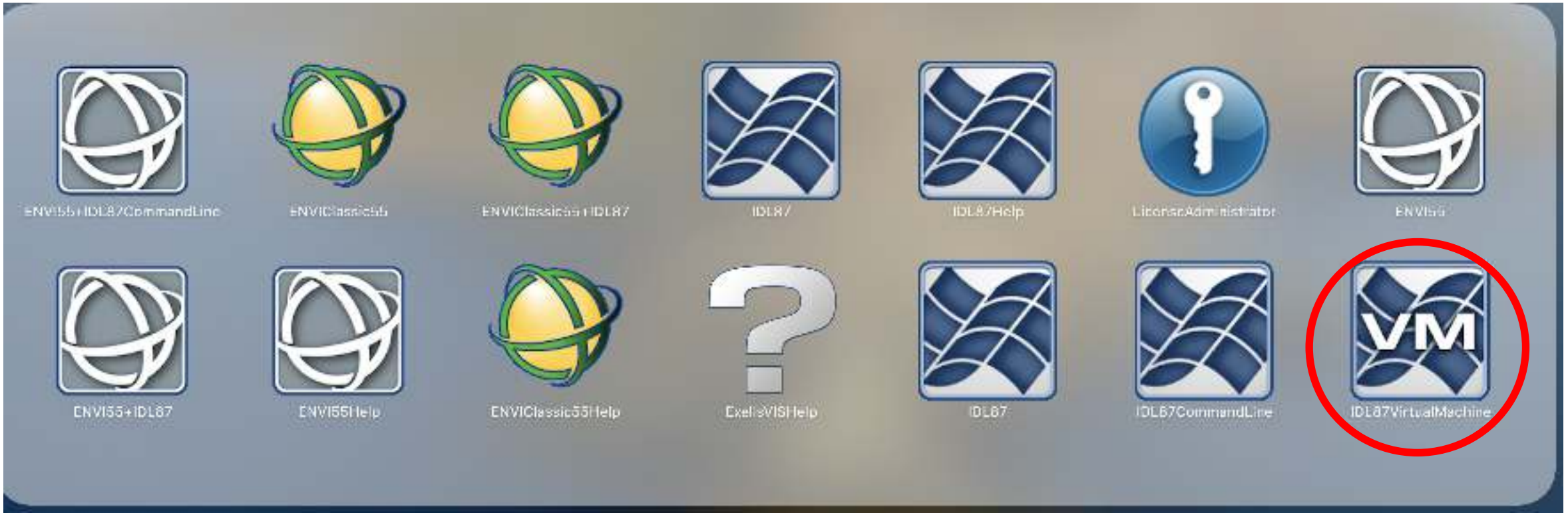
Click the installer and follow the indications.

Do not enter the licence.

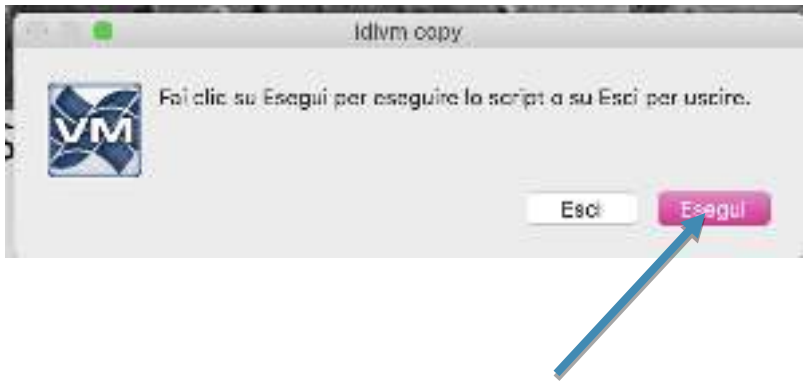
Step 2 - Run IDL Virtual Machine (Windows **users**)

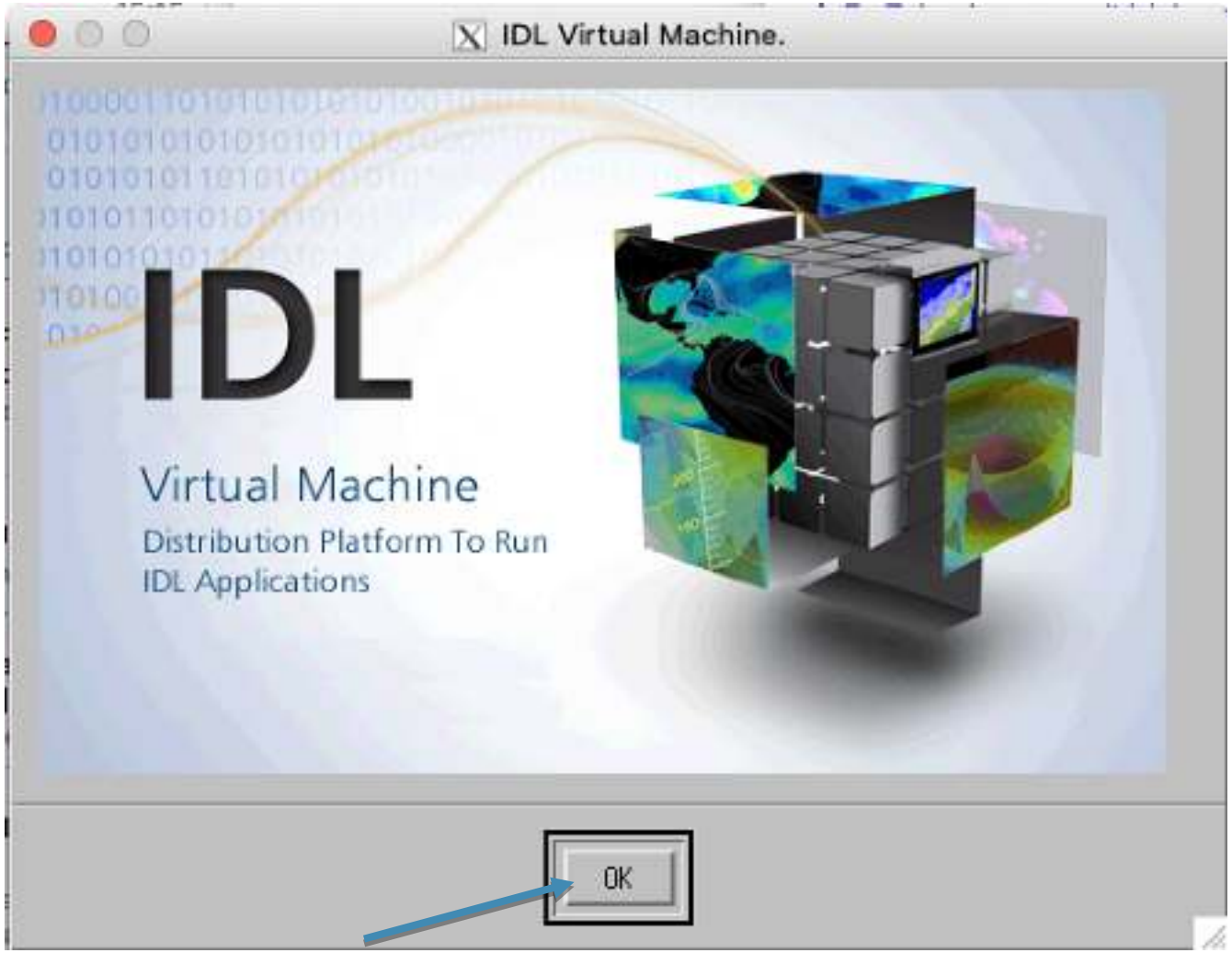


Step 2 - Run IDL Virtual Machine (MacOs users)



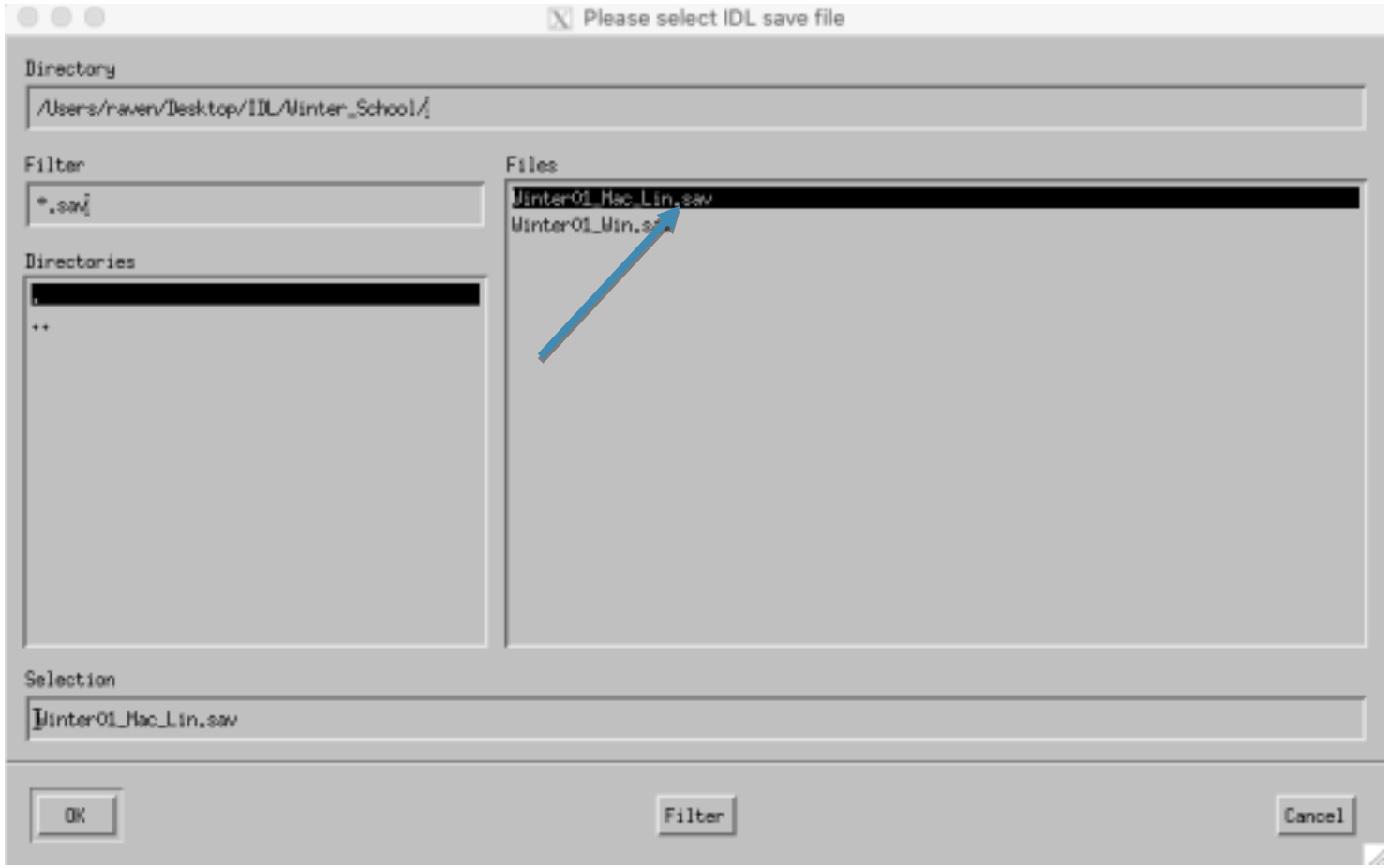
Step 2 - Run IDL Virtual Machine





Step 2 - Run IDL Virtual Machine

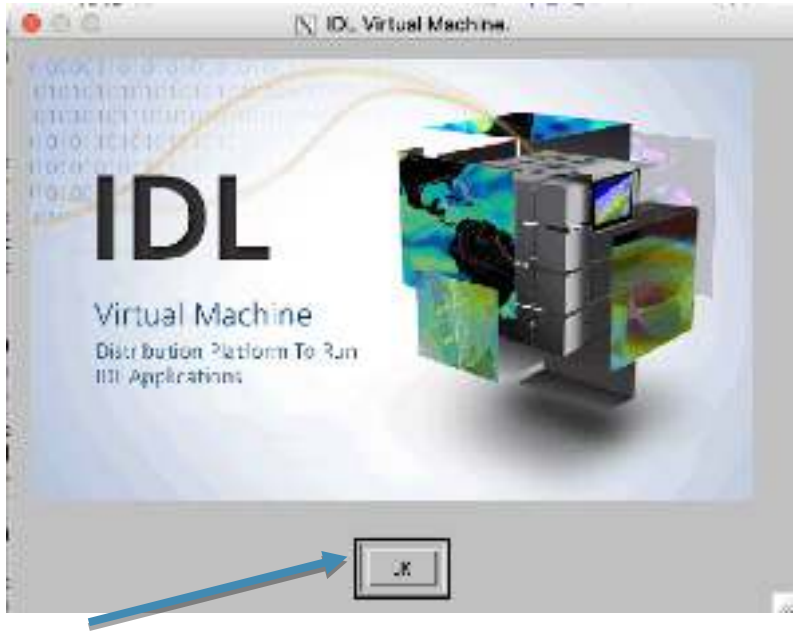
Run Winter01_Mac_Lin.sav or Winter01_Win.sav



Step 2 - Run IDL Virtual Machine (Linux users)

- Open the **Terminal**, enter the folder containing Winter01_Mac_lin.sav
- Run Winter01: Write in the command line:

idl -vm=<path><filename>



Step 3 - How to use Winter01 - Spectral Slopes retrieval

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Select the two wavelengths necessary to calculate the spectral slopes

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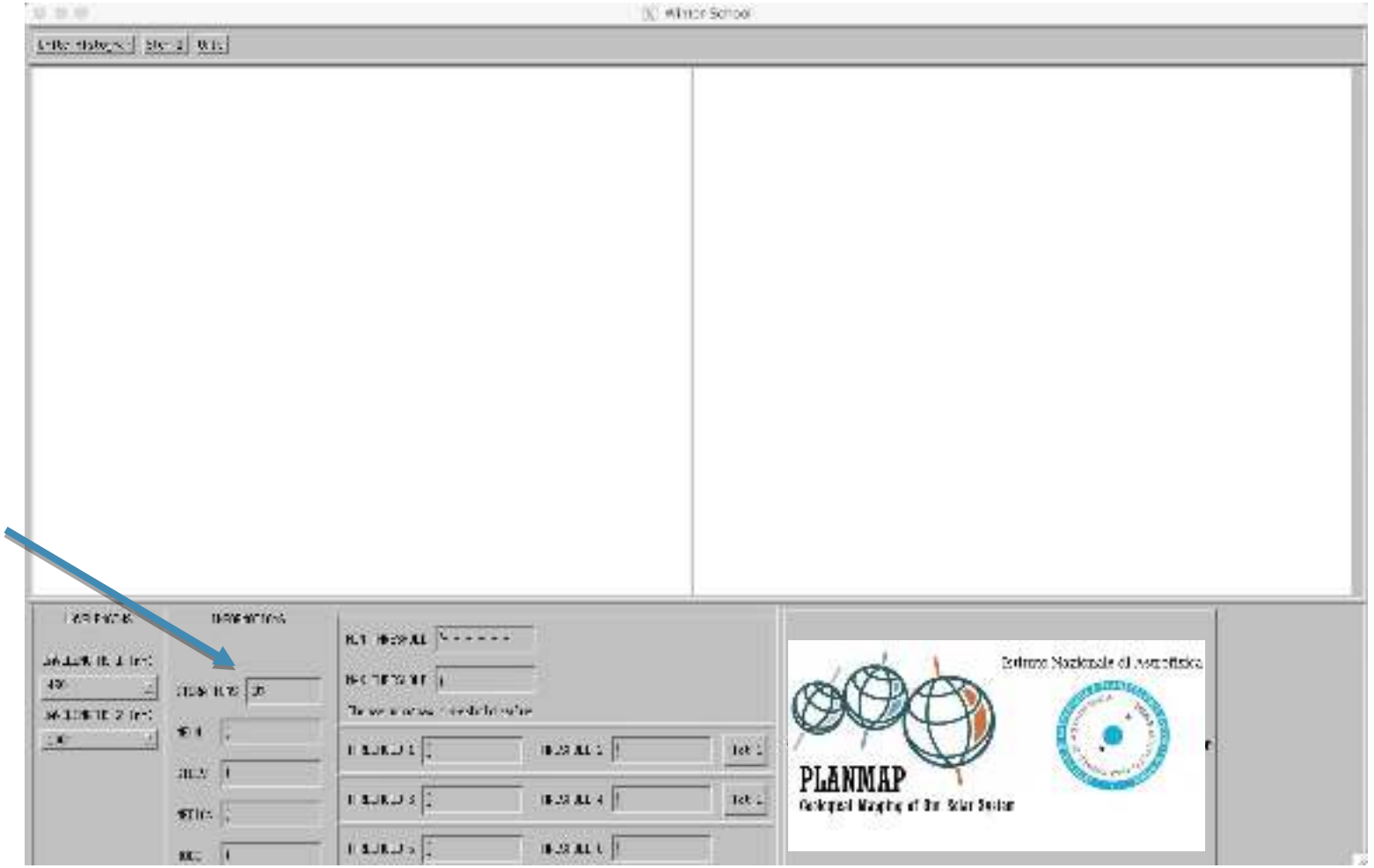
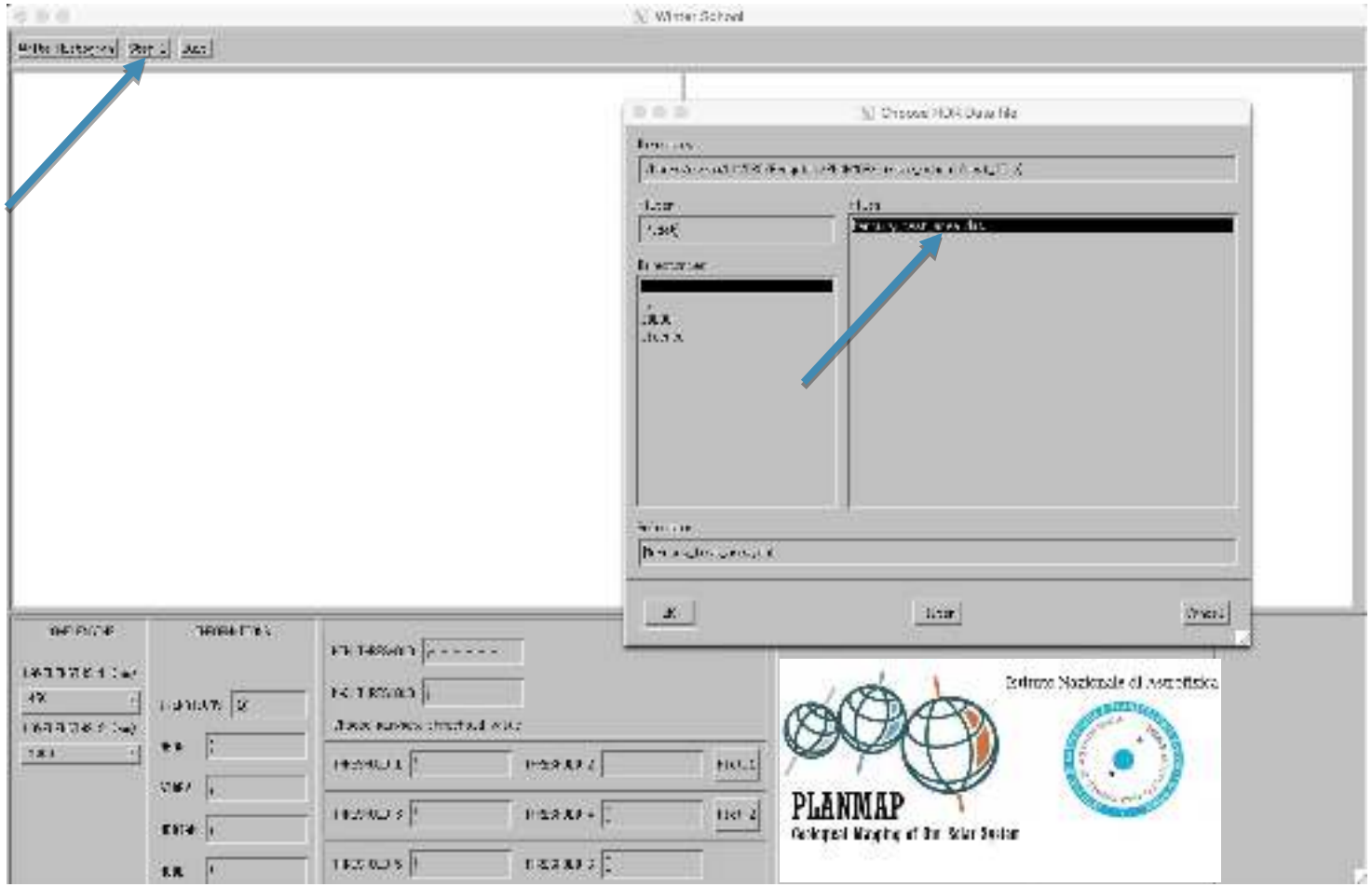
Select the iterations

Add a number of iterations > 10



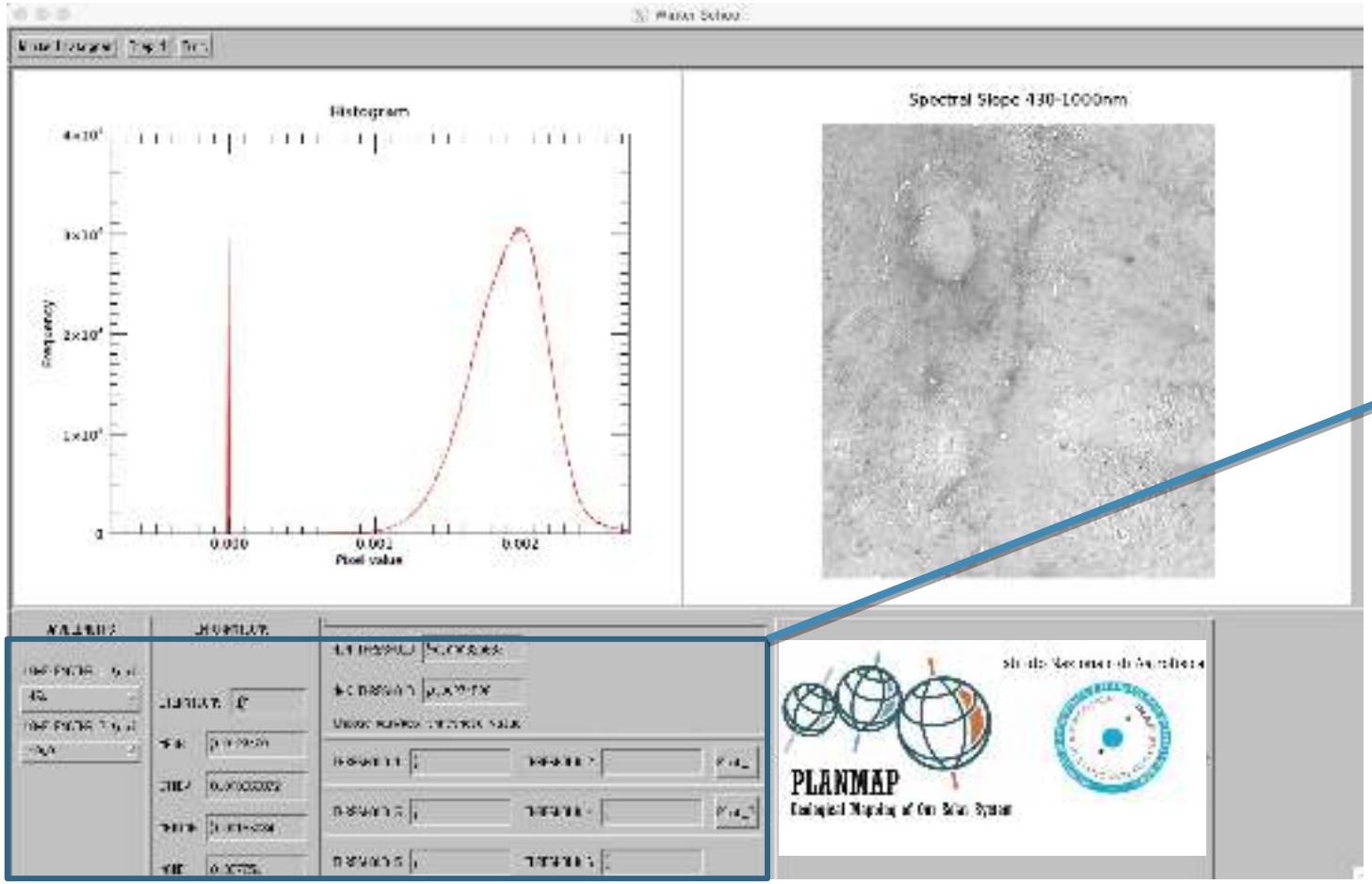
Step 3 - How to use Winter01 - Spectral Slopes retrieval

Click Step1 and select the data file



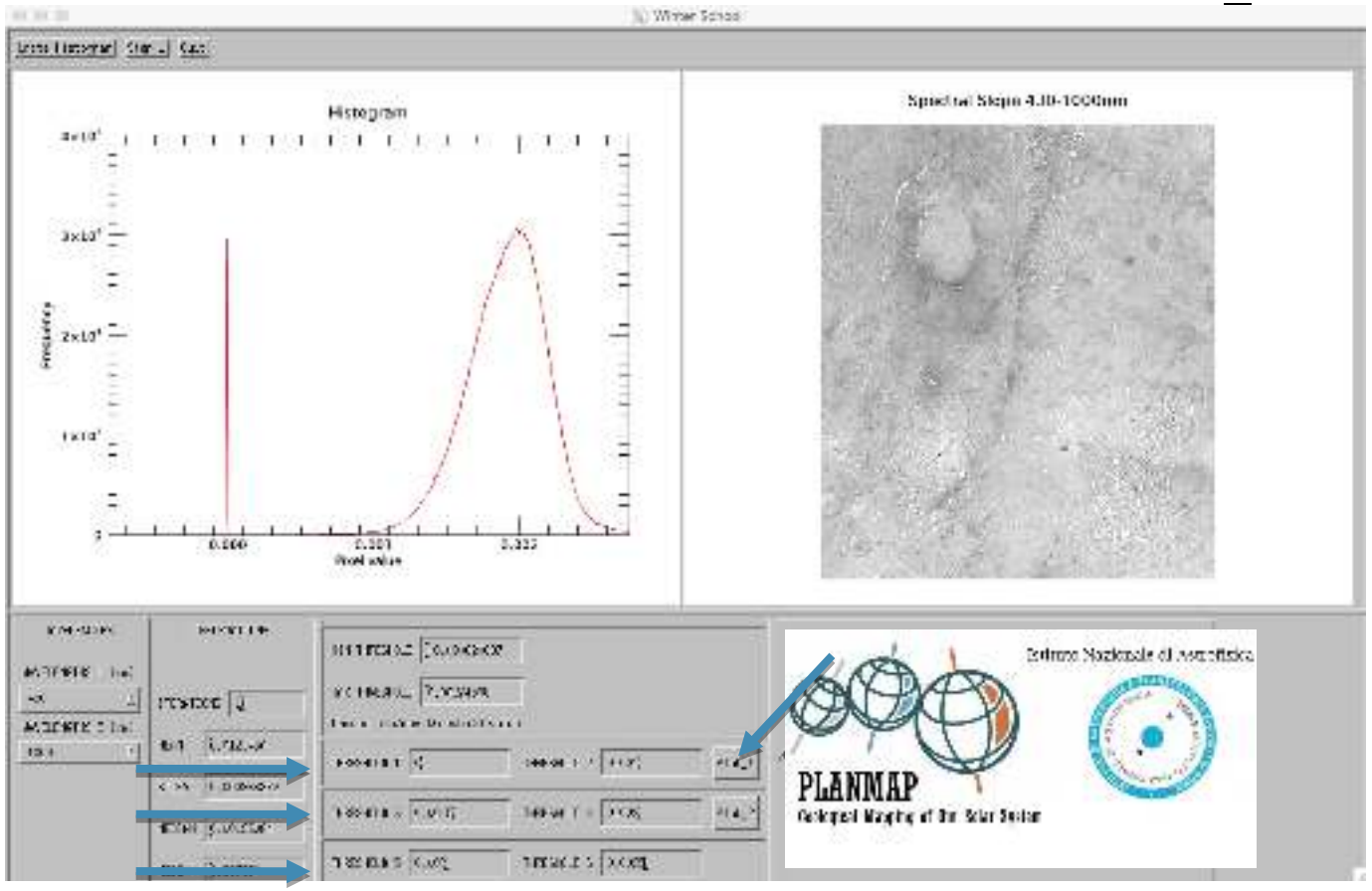
Output 1

Output 1 shows the spectral slope map automatically saved in the IDL folder, the relative histogram and some statistical parameters



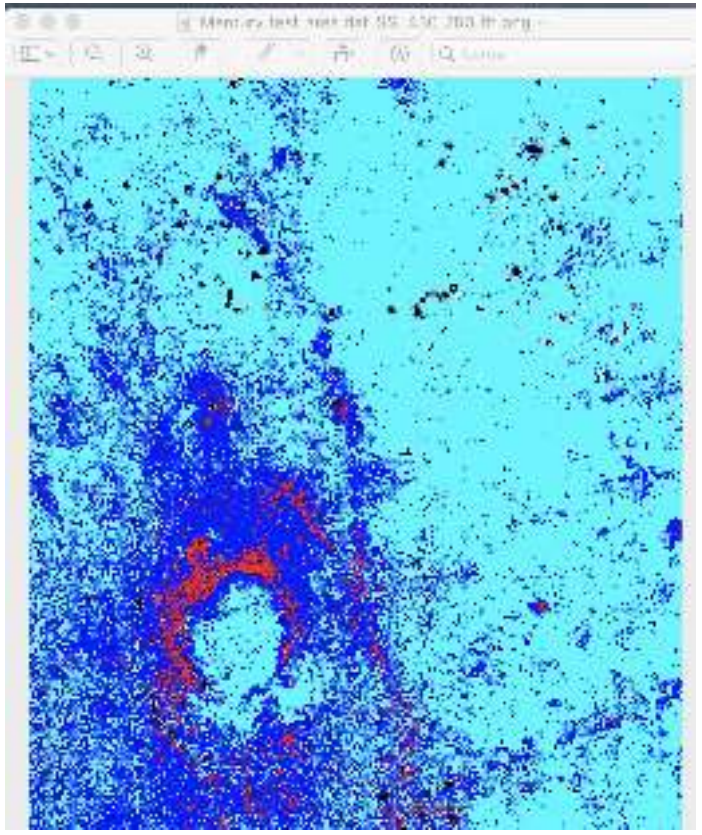
Step 4 - How to use Winter01 – Thresholds selection

Insert the threshold values and click Plot_1

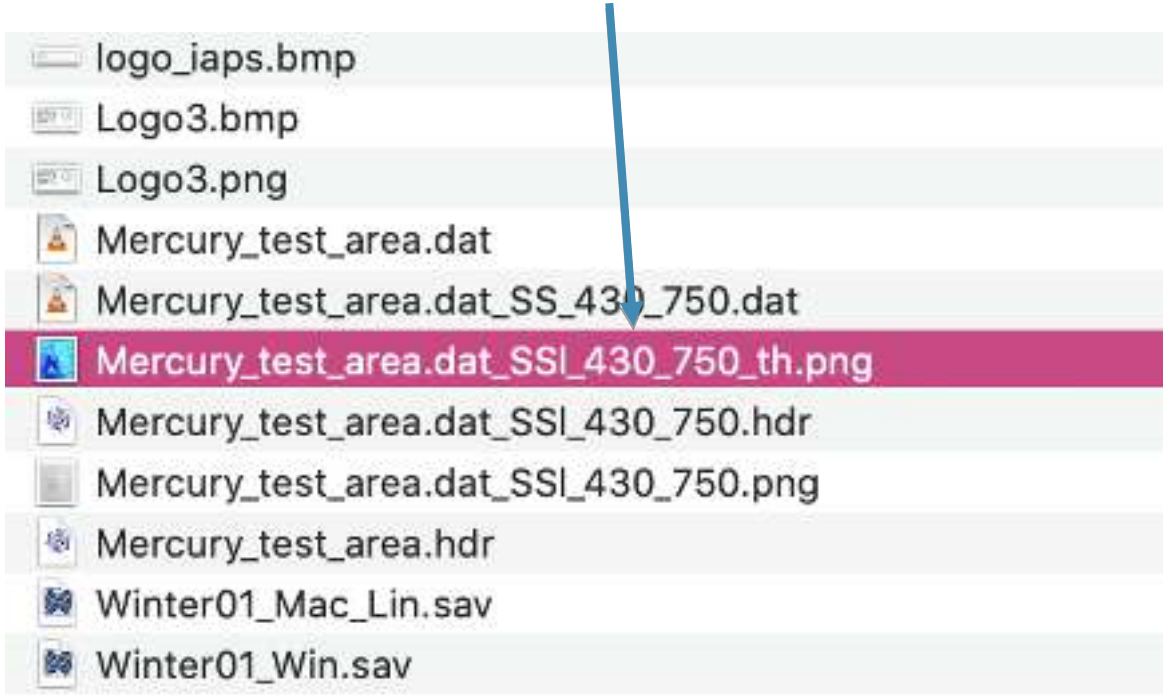


Output 2

Spectral slope image with the corresponding **thresholds** division

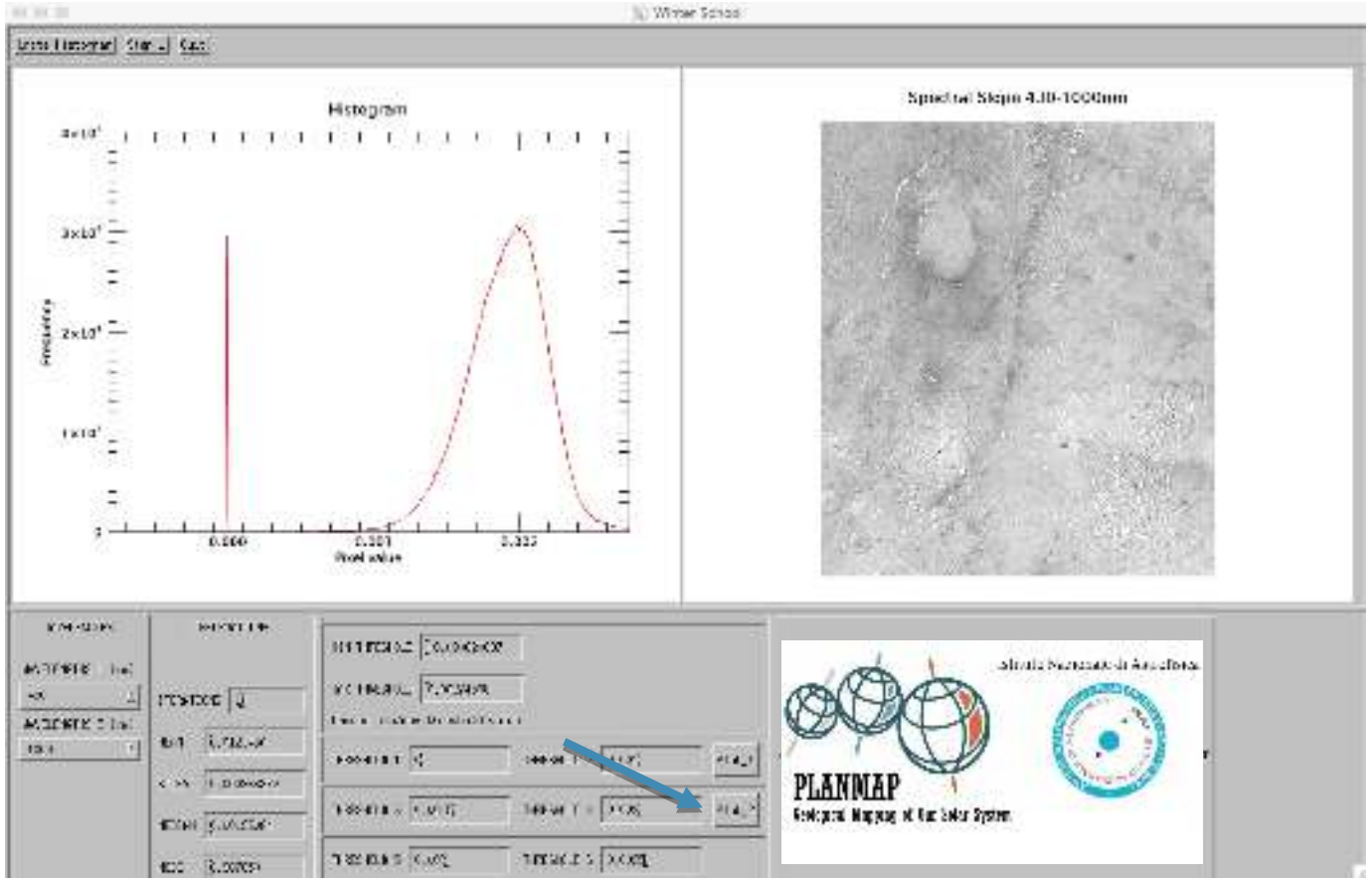


Modify the name of _th.png image to avoid the image is overwritten changing threshold intervals



Step 5 - How to use Winter01 – Histogram and Average Spectra

Click Plot 2 to display the histogram and the average spectra of the regions selected



Output 3

Histogram with the thresholds lines and the average spectra of the regions shown in Output 2.

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