

- prerequisite
- Install & setup
- HROFFT image Colorgramme processing



• what is colorgramme used for

 Colorgramme Lab is a « backend » software for radio meteor observers using RMOB data format to display their observations on the web site https://www.rmob.org



• prerequisite

• Run Colorgramme if our radio meteor setup is OK, that is to say :

- Prerequisite
- An antenna tuned for the reception of observation frequencies you choose.

• Example here : my antenna for 144 Mhz to observe 143.050 GRAVES radar





- Prerequisite
- An radio receiver tuned for the reception of observation frequencies you choose.

Sample here: my digital receiver set for GRAVES Radar. Analog receiver is available.

We analyze the sound coming from the receiver.





- Prerequisite
- An audio spectrum software.
- Example by default Colorgramme uses HROFFT. SpectrumLab is also used by observers.

| H R O F F T 1.0.0f SM1602221810.png meteor 16.02.2218:10 1 | Observer : Receiving Location : Receiver : Receiving antenna : | H R O F F T1.0.0fObserverSM1602221810.pngmeteorReceiving Loc16.02.2218:101Receiving ant | : ation : : enna : |
|--|--|---|-----------------------------|
| ^{kHz} 1811, 1812, | . 1813, 1814, 1815, 1816, 1817, 1818, 1819, 182 | kHz 1811, 1812, 1813, 1814, | 1815, 1816, 1817, 1818, |
| 1.1 | | | \sim |
| 1.0] | and the second | 1.0] | |
| e.e | | 0.9 | |
| 0.8 | | 0.8 | |
| 0.7- | | 0.7 | |
| 0.6 | | 0.6 | |

1819,

- Prerequisite
- A computer :

Normally we use an old or small computer dedicated only for radio meteor detection.

For example I use an **old laptop** from 2006 under Windows XP and a very small Chinese computer, cheap from Aliexpress **BMAX B1 plus** (only 100\$), with windows 10 embedded with Intel Apollo Lake Processeur N3350.

 Also is available to use Raspberry Pi 4 8G, but with Wine and is difficult to install on ARM processor.
 I tested https://twisteros.com/ distrib and that works fine !



• Before installing Colorgramme, please adjust date and time of your computer in UTC.



• It is absolutely necessary to coordinate your observations with all others observers.

- Install & setup
- Download Colorgramme from https://www.rmob.org

Run and install. The instruction is simple and easy.



- Install & setup
- Colorgramme is installed in the folder of your choice, but accept the creation of the directory.

| 🕹 Colorgramme lab v 4.0 Install Program 🦳 — | |
|--|------|
| Directory Choose an installation folder and click Next to continue. | • |
| Colorgramme lab v 4.0's files will be installed in the following directory: | |
| C:\Users\\Deskton\Colororamme.lab.v.4 | |
| Colorgramme lab v 4.0 Install Program Disk s | × |
| Avails The destination directory doesn't exist. Do you want it to b created? | e |
| Oui Non | |
| Click 'Next' to continue. | |
| < Back Next > | Exit |

- Install & setup
- For me simply on my Desktop, because it is a dedicated computer.





- Install & setup
- First run ! Fill Observer form entirely. This is very important otherwise the software does not continue, because these information is displayed on our website in live data, particularly on our Observer's Map. Use our Map tool for your location !

| erver | | | | 1 | | | | | |
|-----------------|--|---|--|-----|---|---------------|--|--|--|
| Observer Parame | neters | | | | | | | | |
| ame | NAME | First Name FIRST | NAME | | | | | | |
| ountry | - Select Your Country | ✓ Longitude | 000 00 00 C East C Wes | | | | | | |
| ity | DTY | Latitude | 00 00 00 C North C Sout | n | | | | | |
| requency | | | DMS | | | | | | |
| ipen Street Map | p Location <u>Cut/Paste from</u> our web site | nal) | Latitude (decimal) | | | | | | |
| ntenna | ANTENNA TYPE | | Elevation Azimut | | | | | | |
| re-Amplifier | PRE-AMPLIFIER TYPE | | | | | | | | |
| eceiver | RECEIVER | | | | | | | | |
| bserving Metho | od OBSERVING METHOD | | | | | | | | |
| omputer Type | Computer time 2 | | | | | | | | |
| | Leouboro Ghe s | | | | | | | | |
| | Erter on valid emoil, necessary for us for you point nase. This email is encoded by the soft to avoid spame from our Save Please Sav | e or problem and for display your - r web site ve here, before quit the | data in RMOB text Bulletin on www.imob | Con | nfirmation | × please ! | | | |
| | Entre av vide enail, necesso pi for uit for you per in case The enails encoded by the soft a vide pipers from our size Pilease Sav | e proteine who to appay your we have use have before quit the | data in RHOB feet Bulletin on www.mob | | nfirmation Fill OBSERVER form in first p OK | × please ! | | | |

Install & setup

After having completed the Observer form entirely, the menu and the operations process of the software is displayed.

| | biorgramme Ki | |
|-------------|---|--|
| xit | Live Open F | RMOB File Web Links About |
| ОЬз | HROFFT RMOB fi | HROFFT Internet FTP Transfer Processing data> |
| C N C | MAnalyz Meteor I Spectrur Meteor V | zer file First Name Pierre MSD Soft Image: Construct of the set of the |
| Fr | requency | 143.050 Mhz |
| 0 | pen Street Map I | Location Cut/Paste from Jour web site Longitude (decimal) 2.552186 Latitude (decimal) 44.695978 |
| A | ntenna | Colinear vert. 9db 144 Mhz Elevation 90 * Azimut 0 * |
| P | re-Amplifier | no |
| R | eceiver | IC PCR-1500 SSB |
| О | bserving Method | HROFFT |
| C | omputer Type | VAIO XP |
| Y | our email | terrier.pierre@gmail.com |
| | | Enter an valid email , necessary for us for you joint in case of problem and for display your data in RMOB text Bulletin on www.rmob.org This email is encoded by the soft to avoid spams from our web site |

- HROFFT image Colorgramme processing
- HROFFT audio spectrum analyzer is embedded in Colorgramme sub directory /hrofft.
- This software was developed by Mr. Kazuhiko Ohkawa Japan.

| H R O F F T SM1602221810.png 16.02.2218:10 | 1.0.0f meteor 1 | Observer Receiving Locati Receiver Receiving antenn | i on : i a : | | | | |
|--|-----------------------|---|-----------------------|-------------------|-------------------|-------------------|-------------------|
| kHz1811_ | 1812 ₁ | 1813, 1814, | 1815, 1816, | 1817 ₁ | 1818 ₁ | 1819 ₁ | 1820 ₁ |
| 1.1 | | | | | | | |
| 1.0- | | | | | | | |
| | | en de la constante de la const La constante de la constante de | | | | | |
| | | | | | | | |
| 0. 8 - | | | | | | | |
| 0.7 | | | | | | | |
| 0.6 | | | | | | | |

- HROFFT image Colorgramme processing
- In HROFFT tabsheet of Colorgramme

Left check box to choose HROFFT original counting, if you check and run live HROFFT.

If you uncheck left check box, you see at right Colorgramme Processing parameters like this screenshot



HROFFT image Colorgramme processing

Press « test file » button to load an HROFFT file

available only if you have run HROFFT before...

| Colorgramme RMOB Lab v 4.0 by P | ierre Terrier - 200 |)2 - 2023 | | | | × |
|---------------------------------|---------------------|---------------------|--------------|----------------------------|----------------------------|---|
| Exit Live Open RMOB File Web Li | a ouvin | | | | | ^ |
| Observer RMOB DATA Colorgramme | Regarder dans : | hrofft | | - + 🗈 | ➡ 🎫 📩 | |
| | Accès rapide | | | | | ^ |
| original count | Bureau | | | | | |
| | Bibliothèques | SM2301020040 | SM2301020850 | SM2301022230 | SM2301030730 | |
| | | | | 2010 a 2021-04 | and a Marca | _ |
| | Ce PC | | | e ander de la contra de la | | |
| | Hooda | SM2301031800 | SM2301041000 | SM2301041110 | SM2301041230 | |
| | | Nom du fichier : | PNG | | Ouvrir | |
| | | Types de fichiers : | | | Annule | |
| | | | | | | |
| _ | | | | | | |
| | | | | | | _ |
| 1 | | | | | | |
| | | | | | | |

HROFFT image Colorgramme processing

The file is loaded and Colorgramme processes.

The result is displayed

Vertical yellow lines indicates meteor echoes detected.

The adjustable parameters are Threshold on S/N and echo Height



HROFFT image Colorgramme processing

The threshold parameter is important on noisy images.

Here threshold detection is a 2.8 mean of noise by column.

The calculation is pixel by pixel on the complete column of the image (reason why the processing takes long)



HROFFT image Colorgramme processing

Example of bad Threshold setting.

The counting is false

Normal adjust is around 3.0



HROFFT image Colorgramme processing

Sample of bad height adjust

No meteor detection because the heigth of trail is to big.

But this image is not a good test for this parameter

| 😵 Colorgramme RMOB Lab v 4.0 by Pierre Terrier - 2002 - 2023 — | . [| × |
|---|-------------|----------------|
| Exit Live Open RMOB File Web Links About | | |
| Observer RMOB DATA Colorgramme HROFFT Internet FTP Transfer Processing data> | | |
| HROFFT 1.0.0f Observer : SM2301052350.png meteor Receiving Location : 23.01.05 23:50 7 Receiving antenna : 0 | 1 | CP File 🗖 |
| original count 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 0 | | ▲ <u>2,8</u> |
| □ 1.1 1.0 0.9 | - - - | Heigth ▲ 21 |
| 0.8 | | Test file |
| 0.7 | | Reload |
| C:\Users\smit\Desktop\Colorgramme_lab.v./\brofft\SM2301052350.ppg | | |
| | | |
| | | |

HROFFT image Colorgramme processing

3 Exit

> Use oriair

Sample of bad height adjust

5 meteor detection but no meteor visible ! Only airplane trail !

The Height parameter is to small.

An good setting for me is around 10-12

| Colorgramme RMOB Lab v 4.0 by Pierre Terrier - 2002 - 2023 — | |
|--|---------------|
| it Live Open RMOB File Web Links About | |
| Ibserver RMOB DATA Colorgramme HROFFT Internet FTP Transfer Processing data> | |
| HROFFT 1.0.0f Observer : SM2301051750.png meteor Receiving Location : 23.01.05 17:50 55 Receiving antenna : Cologramme count: 5 | CP File 🔲 |
| e HROFFT KHz 1751, 1752, 1753, 1754, 1755, 1756, 1757, 1758, 1759, 1800 ginal count - | ▲ ▼ 2,8 |
| 1.1- 1.0- | Heigth |
| | Test file |
| 0.8 | Reload |
| 0.6 | |
| C:\Users\smrt\Desktop\Colorgramme lab v 4\hrofft\SM2301051750.png | |

HROFFT image Colorgramme processing

Nice sample of many meteor trail height and long (overdense and underdense) and good detection parameters

To find your parameters, load many images, change parameters and use reload button to see detection change.



HROFFT image Colorgramme processing

To find your parameters, load many images, change parameters and use reload button to see detection change.

CP check box is for saving an copy of the HROFFT with the result of Colorgramme Processing in /hrofft subdir



Colorgramme is a Software created by Pierre Terrier since 2002.

RMOB Radio Meteor Observing Bulletin created by Christian Steyaert since 1993.

RMOB is the oldest worldwide observer network in radio meteor scatter.



See https://www.rmob.org for Live data and data archives since 1993

This documentation is writed under Linux with LibreOffice Impress