

Low Cost Real-Time Cloud Mapping For Evaluation Of Laser Acquisition Conditions.

H. Viot

&C. Courde, J. Scariot, N. Maurice

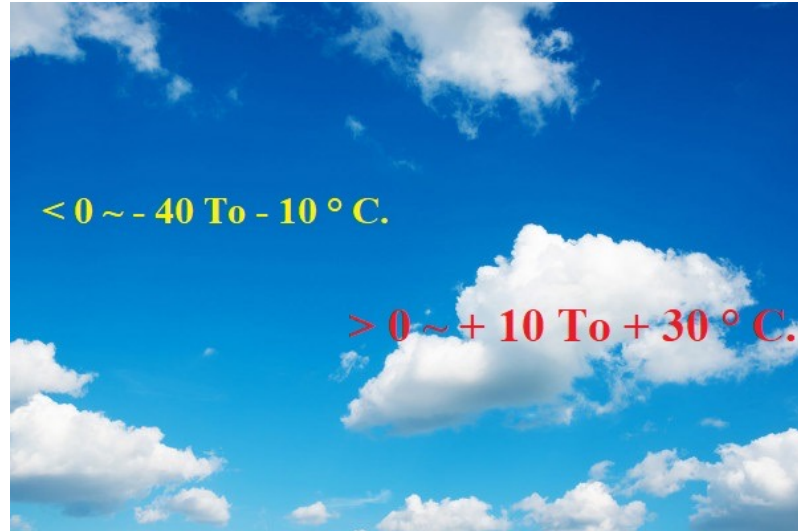
CNRS - GéoAzur - OCA - UCA

ILRS Virtual Technical Workshop, October 17th 2023

"New Technology and Operations"



Genesis Of The Project.



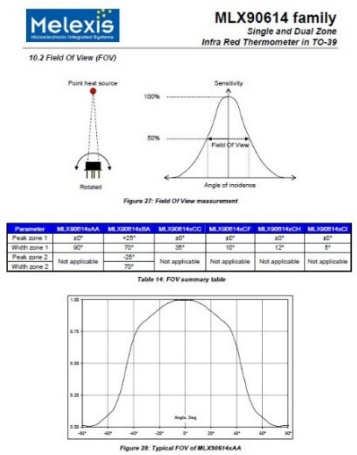
**Thermal
radiation
effect
of the earth**



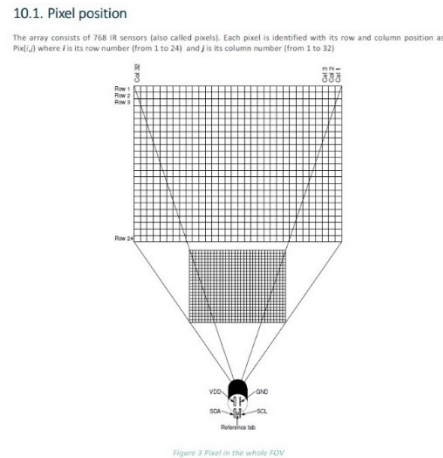
Caméra AllSky Alcore System

Caméra AllSky Thermique ReuniWatt

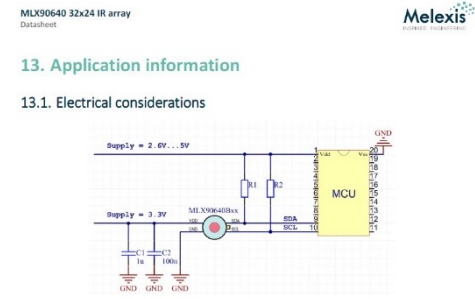
Preliminary Tests On MELEXIS sensors.



MLX Monopixel



MLX Array

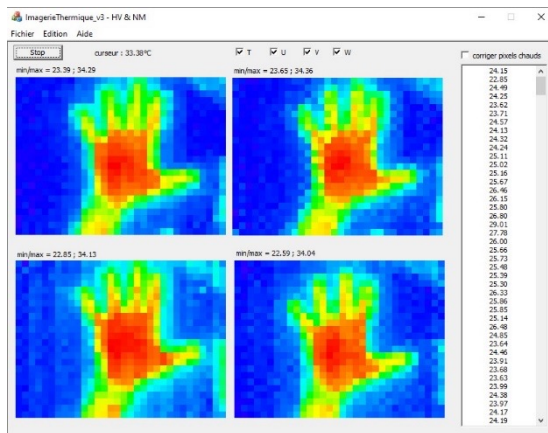


MLX SMBUS Connection

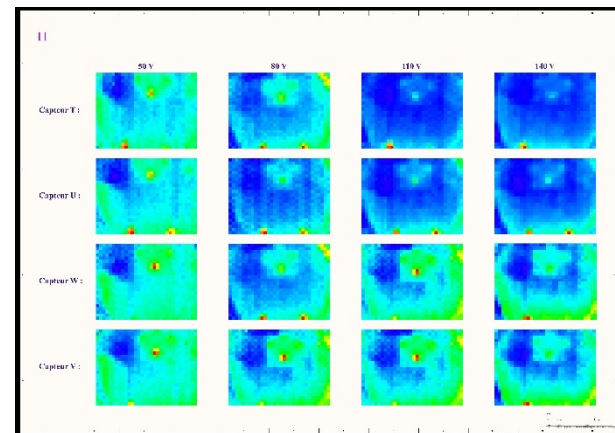
As the MLX90640 is fully I2C compatible it allows to have a system in which the MCU may be supplied with VDD=2.6V..5V while the sensor itself is supplied from separate supply VDD1=3.3V (or even left with no supply i.e. VDD=0V), with the I2C connection running at supply voltage of the MCU.



Monopixel Mount



4 MLX I.R. Acquisitions



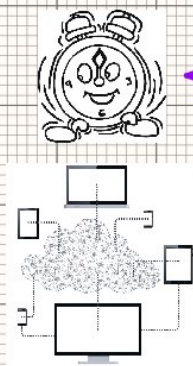
Uniformity Evaluation

Complete Description Of The Project.

Projet ACNEDO : Principe Partage De Données V 1.0 01/11/2019

Data Base :

H. Cur.
H. Réveil.



PC Tour De Garde



PYRAMIDE
avec
ses momies

(Arduino)



Datas

U.S.B.

Socket.

Info. Météo. <=

Info Heure Et Réveil. =>

Réveil Intelligent Méo. :

Données de base :

- > Etat Opérationnel Méo , Heure , Données / Etat Météo.
- > Infos. Pyramide. / Evolution Prévisions Méo.
- > Planning Intelligent (Lune / LRO / Sat. / Obs. Sélectionnées.)
- > Param. Observateur : .

Consignes :

- > Heure / Heure De Réveil.

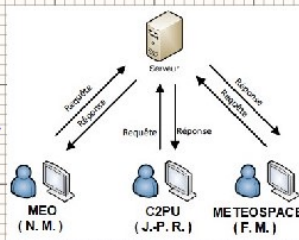
FTP :



Fichier *.bmp (Période 30 s.)

Sockets :

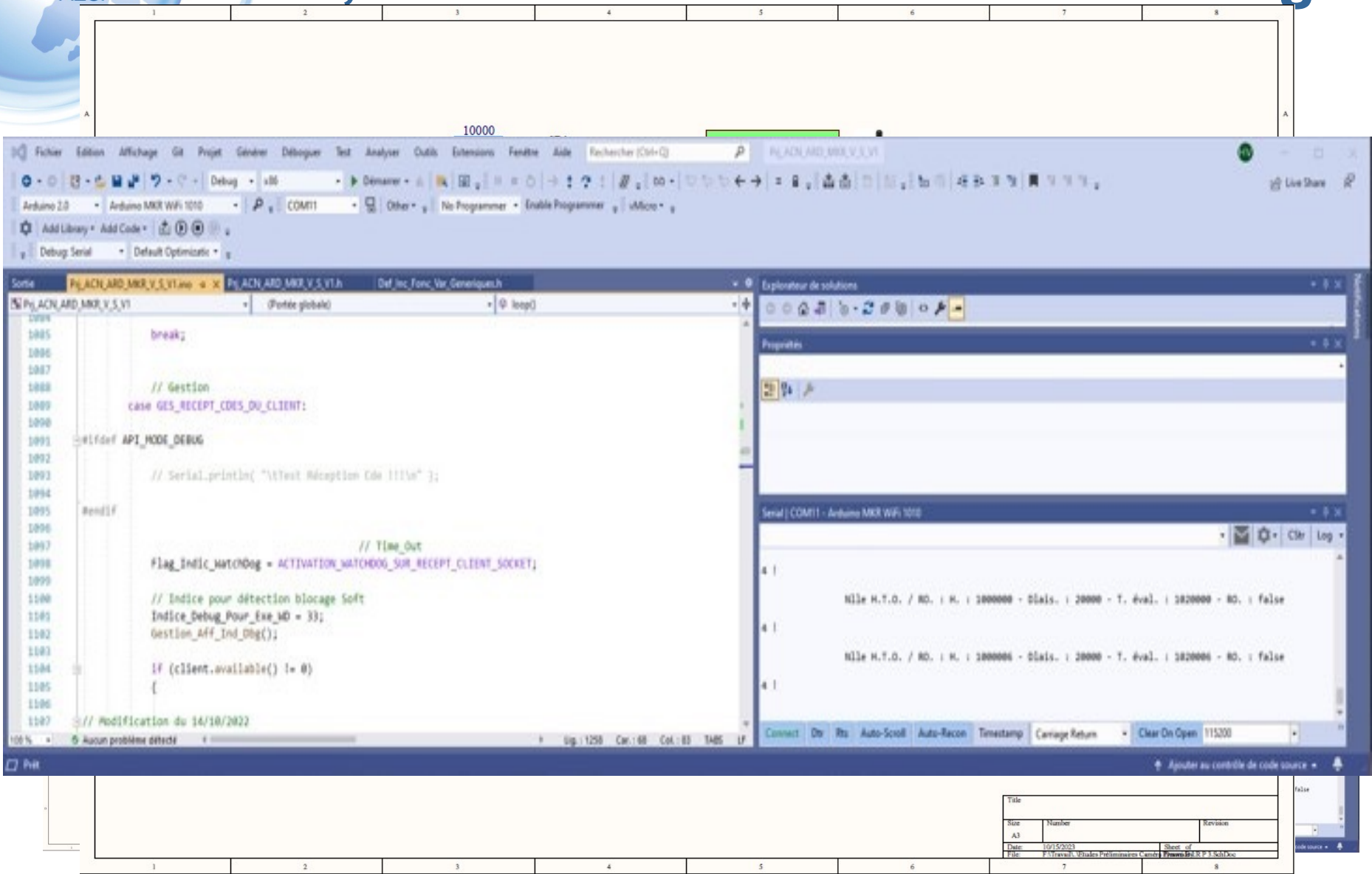
% Couv. Nuag.
Etat Ciel Az, Elèv. ?



Mail Observateurs

Date	Number	Revision
01/11/2019		
01/11/2019		
01/11/2019		

Electronic, Software and Mechanical Design.



The screenshot displays the Arduino IDE environment. The main window shows a C++ code file named `Py_ACN_ARC_MKR_V_5_V1.h` with the following code:

```
1005 break;
1006
1007
1008 // Gestion
1009 case GES_RECEPT_CODE_CLIENT:
1010
1011 #ifdef API_MODE_DEBUG
1012     // Serial.println( "Test Reception Code !!!\n" );
1013
1014 #endif
1015
1016
1017 // Time_Out
1018 flag_indic_watchDog = ACTIVATION_WATCHDOG_SUR_RECEPT_CLIENT_SOCKET;
1019
1020 // Indice pour detection blocage Soft
1021 indice_Debug_Pour_Exe_M0 = 33;
1022 Gestion_Aff_Ind_Dbg();
1023
1024 if (client.available() != 0)
1025 {
1026
1027 // Modification du 14/10/2022
```

The serial monitor window on the right shows the following output:

```
4 |
4 |
4 |
4 |
4 |
4 |
4 |
```

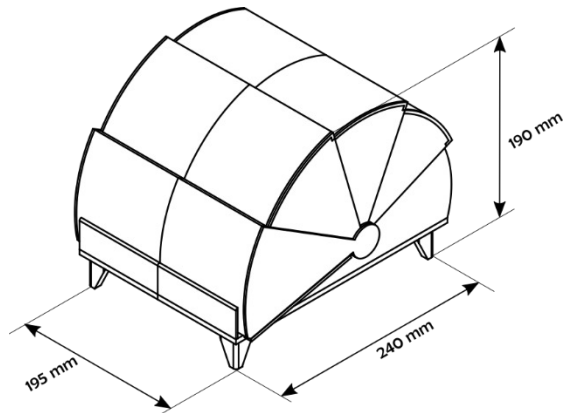
The serial monitor settings are: COM11 - Arduino MKR WiFi 1010, 115200 baud, 8N1. The status bar at the bottom indicates 'Aucun problème détecté' and 'log: 1258 Car: 48 Col: 83 TABS LF'.

Title			
Size	Number	Revision	
A3			
Date:	10/15/2023	Sheet of	
File:	F:\Travail - Etudes Préliminaires Conception\Projet MLX P.3.SchDoc		

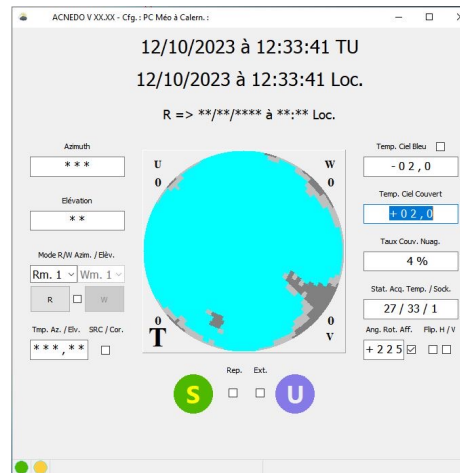
MLX Datas Processing

ARDUINO IDE

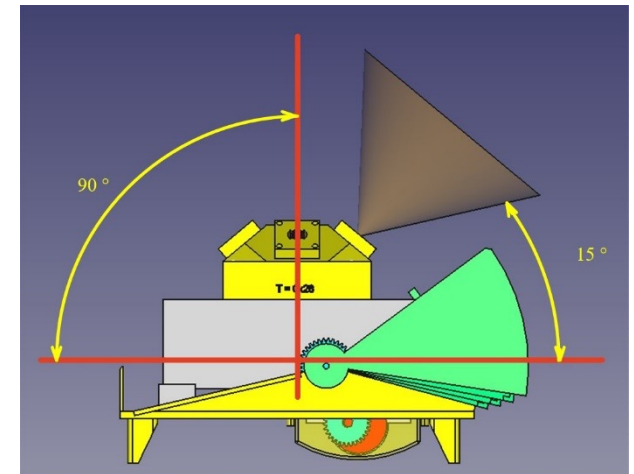
Installation And Use Information.



Measurement

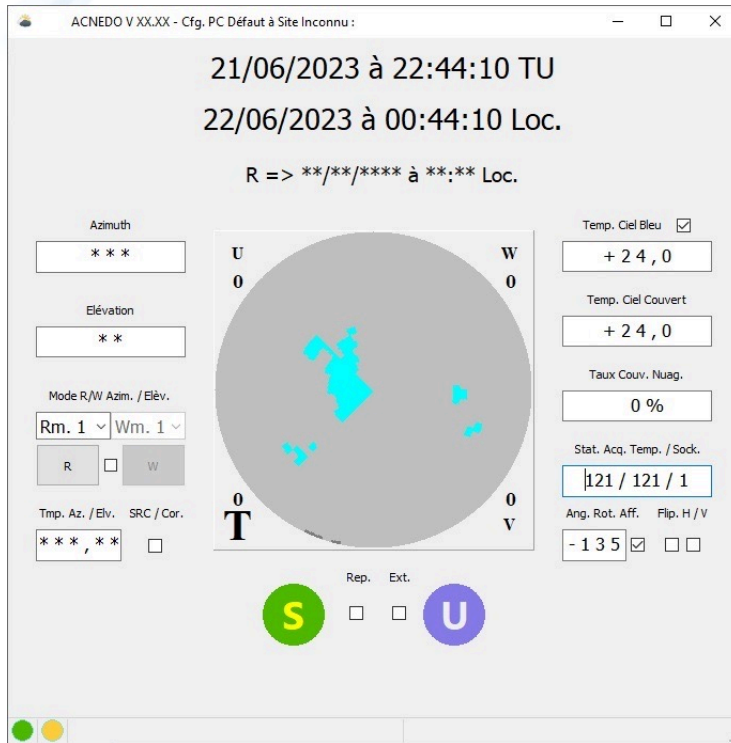


View of Sun
And
Wifi Antenna



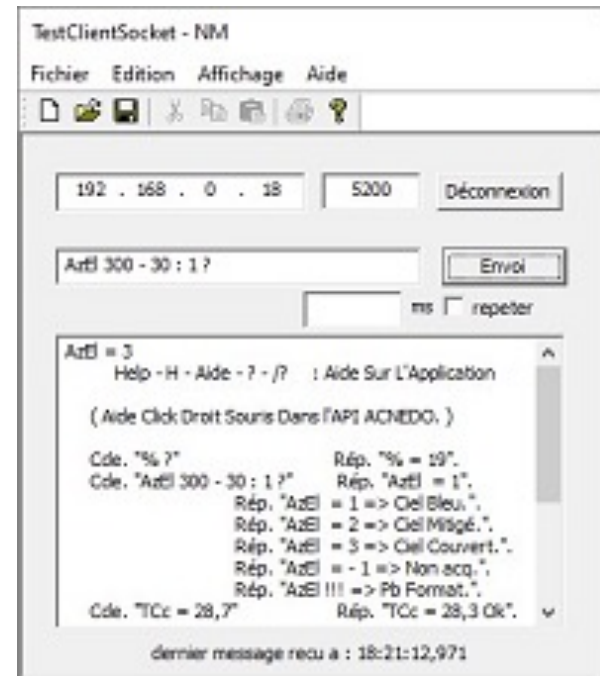
Field Of View

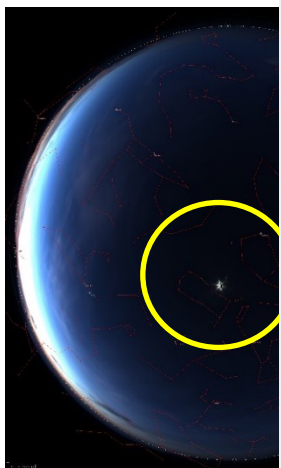
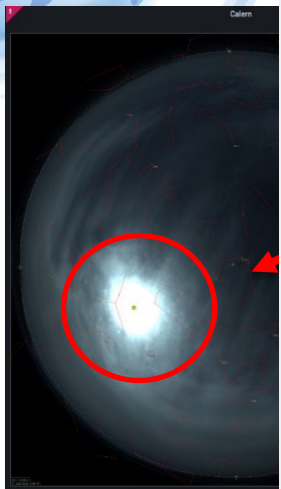
H.M.I. And Remote Communications.



H.M.I. API SKY MAP

Socket Remote Communications





ACNEDO V XX.XX - Cfg. : PC Méo à Calern. :

04/10/2023 à 14:44:31 TU
04/10/2023 à 14:44:31 Loc.

R => **/**/**** à **:**:** Loc.

Azimuth

Élévation
**

Mode R/W Azim. / Elèv.
Rm. 1 Wm. 1
R W

Tmp. Az. / Elv. SRC / Cor.
***, **

Temp. Ciel Bleu
+ 20,0

Temp. Ciel Couvert
+ 24,0

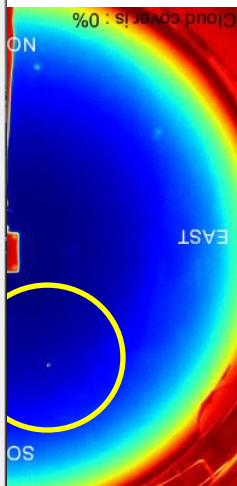
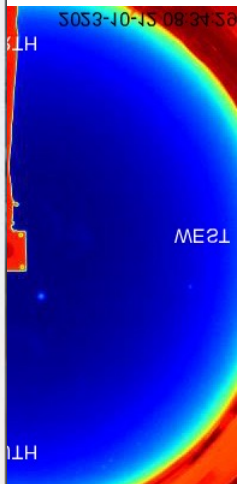
Taux Couv. Nuag.
0 %

Stat. Acq. Temp. / Sock.
7 / 7 / 1

Ang. Rot. Aff. Flip. H / V
+ 225

Rep. Ext.

S **U**

A circular diagram with concentric circles and radial lines. The radial lines are labeled with 'U' at the top, 'W' at the right, '0' at the bottom, and 'V' at the left. The concentric circles are labeled with '60°' and '30°'. A red circle highlights a point on the diagram.

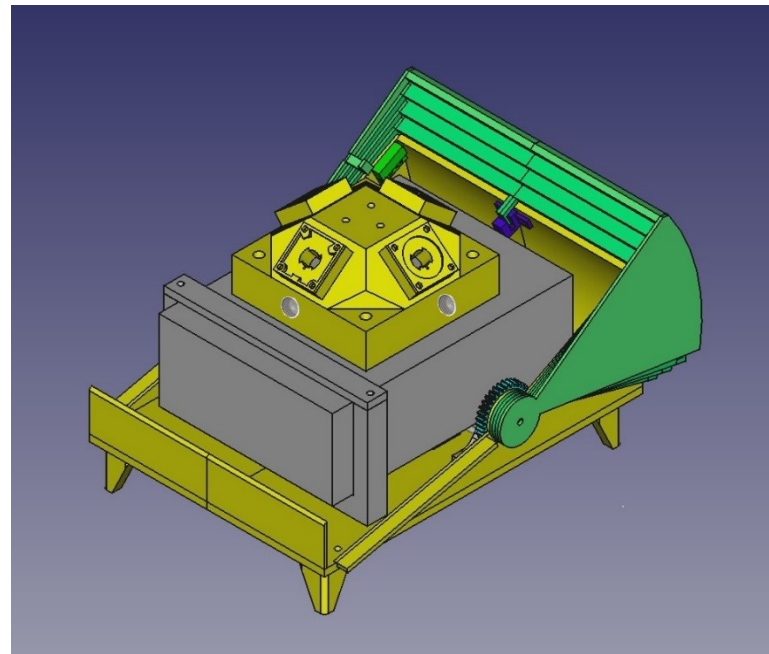
Prospects and Evolution of the Project.



Helicopter Noise



Plane Noise



Direction And Distance Localisation.

Before presenting

the animated conclusions

Let me Thanks !!!

M. J. Scariot
M. N. Maurice

ILRS Virtual Technical Workshop, October 17th 2023

"New Technology and Operations"

Finally, it works !!!

Mardi 10/10/2023 - 13:10:26 - 47426

M.L.D. : 60227.54695

Mode auto

Garage

Fermer Cimier

Arret hydrau

Raz Erreur

13H03 : demande poursuite A15
chargement OK
Nombre de points : 3572
Heure Depart : 47211
Heure Fin : 48990
Pas de zone d'ombre
Annuller/Précédent/Prochain

13H03 : sortie du mode poursuite

13H05 : demande poursuite étoile HP 455
chargement OK
Nombre de points : 1172
Heure Depart : 47160
Heure Fin : 47944
Pas de zone d'ombre
Annuller/Précédent/Prochain

13H05 : sortie du mode poursuite

13H04 : demande poursuite (mode-1)
chargement OK
Nombre de points : 2671
Heure Depart : 47105,5
Heure Fin : 48973

Amarrer Table

soft lance le 10/10 à 12:52

Tout est en ordre

Activer sons

33.6 / 23.9
Débit max : 54.0

24.7 / 1.267.1
dist soleil : 54.0

Température (°C) : 23.7
Pression (mbar) : 983.7
Humidité (%) : 65.0

Securite

vent (km/h) : 1.53
Pile : bon

Telescope : Poursuite A15 en cours

24.7481 267.1528 267.1

Temps poursuite restant : 25 mn 56 s

Arret Axes

COUVERTURE 17

Coverture hémisphère

g - galileo214
g - galileo221
g - galileo212
g - galileo205
i - inmarsatb
90 g - galileo216
g - galileo220

Corréctions de points

1.8 0.0

0.0 : 0.0

RAZ A.L.

Envoi

File (ancien) : 2
Débit : 2500
Lancer script

Marquer Con Supp Con Charger graph
segment Tout effacer Sauver graph

Objets sélectionnés

Objet (UT14 UTC = 0.00035)

Objet proche

HP Magnitude Distance Spectre

A.D. (J2000)
D.L.C.

Planets

Lune

Planètes

Manip Plan/Lune

Connexion PC Connexion Dev

Non connecté

demande statut

Objet	Date	Debut	Asc	Colin	Hau	Fin	Asc
galileo214	10/10/23	07:45	302	1005	80	12:06	114
galileo221	10/10/23	10:10	315	1205	42	13:58	241
galileo212	10/10/23	10:13	280	1418	78	14:38	150
galileo205	10/10/23	11:05	105	1314	35	14:53	41
inmarsatb	10/10/23	11:50	122	1211	43	00:30	120
galileo216	10/10/23	12:31	147	1455	59	17:31	51
galileo220	10/10/23	12:53	315	1335	22	14:20	287

Objet	Date	Debut	Asc	Colin	Hau	Fin	Asc
galileo228	10/10/23	13:10	281	1543	83	15:34	180
cygnus2	10/10/23	13:56	321	1358	28	14:00	240
galileo211	10/10/23	13:50	177	1345	01	20:16	75
hydra	10/10/23	14:53	200	1457	06	15:02	33
inmarsatb	10/10/23	14:53	0	1455	59	14:59	214
inmarsatb	10/10/23	15:47	285	1515	72	15:42	58
galileo225	10/10/23	15:55	104	1355	30	16:02	13
galileo226	10/10/23	15:57	305	1314	78	23:21	117
galileo227	10/10/23	16:04	307	1340	59	21:06	211
canope	10/10/23	16:25	110	1635	25	16:28	2
betelgeuse	10/10/23	16:25	110	1626	23	16:30	21
procyon	10/10/23	16:31	124	1524	42	16:30	4

Envoyer une profil par défaut TPF format date = "U,MM,AAAA,HH,MM" File (in)

du

Generer Profil