

# Broad Band Instruments Journal

Laboratory of Atmospheric Physics

## Broadband Journal

### About

This is a journal mainly for the instruments CM-21 and CHP-1 of LAP.

Other incidents on the roof may be reported here.

Other journals and log exist, but are not included here.

### Table of Contents

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1996

1996-02-08 00:00 [ThanasisN]

Systematic cut-off of measurements due to gain error.

Occurs until the night of 1996-02-29.

Bias on daily radiation.

2015

2015-12-30 [ThanasisN]

Μάλλον βραχυκύκλωμα μιας κόλλησης της φωτοδιόδου του tracker.

Ανταλλάξαμε την πολικότητα των καλωδίων του αζιμούθιου κινητήρα ώστε να διορθώσουμε την ανάποδη φορά του κινητήρα.

2016

### 2016-01-08 [ThanasisN]

Φαίνεται ότι το πρόβλημα ήταν μία ή παραπάνω κολλήσεις στη πλακέτα του tracker.

Τώρα όλα φαίνονται εντάξει ακολουθεί το ήλιο κανονικά.

Μάλλον δεν μπορώ να τρέξω το faketime σε πραγματικές συνθήκες.

Ίσως γράψω ένα script που να αλλάζει την ώρα του υπολογιστή. Για να κάνω δοκιμή του κύκλου του tracking σε σύντομο χρόνο.

### 2016-01-29 [ThanasisN]

Εγκαταστάθηκε το πυρηλιόμετρο CHP-1.

Ευθυγραμμίστηκε ο tracker του CHP-1.

Παίρνουμε μετρήσεις direct.

### 2016-01-30 [ThanasisN]

Σήμερα είναι η πρώτη μέρα του το πυρηλιόμετρο θα κάνει μία πλήρη καταγραφή μόνο του.

Στα χθεσινά αποτελέσματα είχε Async cases κάτι που μάλλον φαίνεται και στις μετρήσεις του πυρηλιόμερου.

### 2016-03-07 [ThanasisN]

Σήμερα άλλαξα τη βάση του tracker με την παλιά βάση του brewer.

Επίσης ψέκασα το CHP-1 και τον tracker με αντισκοριακό για να αποτρέψω τις αράχνες.

### 2016-03-28 [ThanasisN]

Άλλαξα τη silica gel, μάλλον έπρεπε να το είχα αλλάξει από την αρχή.

Παρακολούθησα τον tracker ως το απόγευμα, φαίνεται να ήταν γενικά καλός.

### 2016-04-01 [ThanasisN]

Το κανάλι 8 τελικά δεν ήταν το κανάλι του CHP-1 και το 3 ήταν απενεργοποιημένο.

Οπότε σήμερα παίρνω τις πρώτες μου μετρήσεις από το CHP-1.

### 2016-04-11 [ThanasisN]

Το καλώδιο έφυγε την παρασκευή το βράδυ γιατί δεν το είχα βιδώσει καλά.

Τα δεδομένα ξεκινάν ξανά από σήμερα το πρωί.

Ξεκίνησε η μέτρηση της θερμοκρασία του οργάνου με το πολύμετρο.

### 2016-04-13 [ThanasisN]

Αποσύνδεση για δοκιμές.

Performed:

- Tracker leveling
- Instrument sighting

### 2016-04-14 [ThanasisN]

Σήμερα οι μετρήσεις είναι άχρηστες.

Ο traker είχε κολλήσει και δεν ξεκίνησε καθόλου όλη μέρα.

### 2016-04-15 [ThanasisN]

Ο tracker είχε κολλήσει από χθες, και οι πρωινές μετρήσεις είναι άχρηστες.

Είχε ένα μήνυμα ότι το COM port είναι σε ήδη χρήση??

Περίπου στις

7:30 UTC

άλλαξα τον τρόπο καταγραφής της ώρας του protek506.

Από το επόμενο λεπτό το έκανα στο προηγούμενο. Θα αλλάξω με το χέρι την αρχή και το τέλος των προηγούμενων αρχείων θερμοκρασίας.

Η μετατόπιση σήμερα, κατά ένα λεπτό, δεν νομίζω να χρειάζεται διόρθωση.

### 2016-04-20 [ThanasisN]

No mains power!

### 2016-05-16 [ThanasisN]

Tracker leveling today!

Last 3-4 there was a declination from good sighting.

### 2016-05-25 [ThanasisN]

**Αλλαγή τρακερ** από το καινούριο μοντέλο στο παλιό μοντέλο.

Για την ώρα θεωρούμε ότι δεν έχει sighting ούτε καθετοποίηση.

Πρέπει να επιβεβαιώσω ότι ακολουθεί τον ήλιο.

Είναι ξανά σε φωτογραφικό τρίποδο (δυσκολότερη η καθετοποίηση).

### 2016-05-27 [ThanasisN]

Ο τράκερ αποσυνδέθηκε για να αλλάξει θέση/βάση.

Αναμένεται να μπει ξανά σε λειτουργία στις 2016-05-31.

### 2016-05-31 [ThanasisN]

Έγινε η μόνιμη εγκατάσταση στο παλιό μοντέλο του τρακερ (tracker2).

Περίπου από τις 14:30 LT μετράει κανονικά

Μένει να γίνει επαλήθευση της σωστής διόπτρευσης τις επόμενες μια δυο μέρες.

#### 2016-06-03 [ThanasisN]

Διόρθωση της τοποθεσίας με gps.

Οι αλλαγές θα δουλέψουν από αύριο.

#### 2016-06-07 [ThanasisN]

Πετάμε τα σημερινά δεδομένα.

Κάποια στιγμή το μεσημέρι κουνήθηκε το όργανο σε σχέση με τον άξονα.

Μάλλον είναι εντάξει μετά τις

15:15

#### 2016-06-09 [ThanasisN]

Μάλλον το πρόβλημα με τα λάσκα είναι η φθορά του ιμάντα.

Πριν τις

11:50 LT

το αποσυνδέσαμε για λίγη ώρα και το γυρνούσαμε το χέρι

#### 2016-06-15 [ThanasisN]

Αλλαγή ιμάντα αζιμούθιου στον tracker και τέντωμα του κινητήρα.

Κάποια βελτίωση στα λάσκα του αζιμούθιου.

Μετακίνηση του γραναζιού του αζιμούθιου πιο κοντά στο επίπεδο του κινητήρα.

The tracker was leveled

Any off time was logged appropriately.

#### 2016-06-16 [ThanasisN]

Σταμάτησε για λίγο το data aquisition.

Γίνανε εργασίες στη βάση των πυρανομέτρων και πιθανόν πλέον δεν είναι οριζόντια.

#### 2016-07-04 09:40 [ThanasisN]

Εργασίες στα λούκια της σκεπής από

09:40 LC

#### 2016-07-05 [ThanasisN]

Εργασίες επικάλυψης της σκεπής.

#### 2016-07-07 [ThanasisN]

Τεχνικές εργασίες στη ταράτσα?

#### 2016-07-19 [ThanasisN]

Ο tracker ξαναμπήκε, αλλά στήθηκε πάνω στην πλατφόρμα των brewer.

Δεν μπορεί να γίνει καλή οριζοντίωση ούτε και να διατηρηθεί.

Η επιφάνεια της πλατφόρμας είναι από λαμαρίνα η οποία παίζει αρκετά όταν πατάει κάποιος πάνω και οι δονήσεις φτάνουν στον tracker.

#### 2016-07-21 [ThanasisN]

Όταν φύγαμε σήμερα άφησα τον tracker να δουλεύει, αλλά μάλλον, οι εργάτες που βάζανε την πίσσα τα κούνησαν όλα με την σκάλα που βάλανε πάνω στην βάση του tracker και του brewer.

Ίσως να την βάλανε το πρωί της επόμενης, δηλαδή 2016-07-22 και όχι σήμερα το απόγευμα.

#### 2016-07-22 [ThanasisN]

Δεδομένης της σκάλας, και των επικείμενων εργασιών, κατέβασα το όργανο CHP-1 και τον tracker.

#### 2016-08-31 [ThanasisN]

After last leveling of the tracker, the CHP-1 sighting seem to be continuously very accurate!!

#### 2016-09-23 [ThanasisN]

Tests conducted near CM-21 instrument.

Shadowing of the instrument is possible.

2016-09-23 13:38 ; 2016-09-23 13:45 ;

UTC?

#### 2016-10-31 [ThanasisN]

Done:

- leveling of CHP-1 tracker
- silica gel replace for CHP-1

## 2017

### 2017-01-10 [ThanasisN]

Snowfall, instruments probably covered by the snow.

### 2017-12-25 [ThanasisN]

Async and step data shows that tracker is not working.

The signal from CHP-1 is zero!!

Will exclude direct data from analysis.

### 2017-12-26 [ThanasisN]

Tracker start working by itself probably!

### 2017-01-11 [ThanasisN]

Snowfall, instruments probably covered by the snow.

### 2017-01-12 [ThanasisN]

@cm21

Today is sunny.

Instruments domes had some ice on top (there are photos), early in the day.

**Domes cleaned after** 07:52 UTC

### 2017-01-19 [ThanasisN]

About 16:40 tests for better night park position

radmon pc crashed

**At** 17:00 UTC

Changed the park position for night to

stepz = 4250 ,

stepa = 5365

Now it looks directly to the white wall of the building almost vertical

### 2017-02-22 [ThanasisN]

Ένα πουλί κάθισε στο όργανο και το κούνησε.

Τα παιδιά το γύρισαν ξανά.

Μετά έκανα reset από απόσταση.

### 2017-03-03 12:39 [ThanasisN]

Replace silica gel at

12:39 - 12:45 ?

### 2017-05-04 09:30 [ThanasisN]

Tracker found not in sync with the sun at

6:30 UTC

Reset was done and the problem was fixed.

### 2017-07-12 09:34 [ThanasisN]

**Cleaning of Instruments domes.** 02:02 - 02:03

The day is shining.

### 2017-08-09 [ThanasisN]

CHP-1 has some strange step up in data not according to global or photos.

Also CHP-1 standard deviation seems to be affected.

### 2017-08-15 [ThanasisN]

Data from CHP-1 show no sun in contrast with global.

Tracker was stack.

Logs from previous day stop at 20:30 not at 20:50 as for all other days

**Seems like a reboot or disconnection at** 09:13 - 9:15

### 2017-08-16 [ThanasisN]

**Tracker found to be on park location.**

Seems like software was freeze.

Radmon-pc was rebooted -> tracker working properly.

Sighting seems correct.

**All BB instruments have bad data!!!!**

Seems like a step of values before and after reboot!!!

Maybe normal clouds or something was actually wrong

### 2017-08-17 09:45 [ThanasisN]

Bad data recording for broadband continues.

**Try reboot at** 09:45 local time.

Major step on data observed!

Direct and global seems correct now!

### 2017-08-22 [ThanasisN]

Global and direct have some suspicious behavior that can not be confirmed by photos.

### 2017-09-07 [ThanasisN]

We did a leveling of the tracker.

Renew the silica gel on CHP-1.

### 2017-09-13 09:10 [ThanasisN]

Today tracker found on park position.

Computer could not run sun\_tracker\_main from schedule.

It seems, it was stacked and scheduler could not stop it, so it could not run it again.

Reboot was done.

Problem was solved.

**2017-10-02 09:30 [ThanasisN]**

The step on the tracker was corrected

from 0.103 to 0.6 \* 12 / 70 at 2017-10-02 07:30 UTC

$0.6 * 12 / 70 = 0.10285714285714284$

Cloudy sky prevents sighting for now

**2017-10-09 11:17 [ThanasisN]**

With the previous correction, seems that tracker now performs better.

**2017-10-30 09:23 [ThanasisN]**

#### Description

Noise on all broadband

CHP-1 tracker was stack due to radmon

#### Actions

Reboot was done.

After reboot all broadband show too much signal noise.

Reboot was done.

Measurements seems correct now.

**2017-12-05 [ThanasisN]**

Tracker seems to have been displaced

There is no written account

Two resets was done

**2017-12-13 [ThanasisN]**

Global and direct irradiance seems suspicious

**2017-12-15 [ThanasisN]**

Tracker did not start today.

Reboot was needed to start.

After first reboot erratic data on all broadband.

Second reboot done.

After second reboot data seems normal.

**2017-12-18 10:04 [ThanasisN]**

CHP-1 tracker was stack due to radmon

Reboot was done

After reboot all measurements seems correct.

It is possible to have been stacked **more than one day**

## 2018

### 2018-01-18 [ThanasisN]

Early morning no main power

Late morning no main power and instruments shutdown.

Possible problem with all broadband data!!

### 2018-03-20 [ThanasisN]

Visible signal step after cleaning! On CHP-1.

### 2018-03-23 11:36 [ThanasisN]

From previous days until now, rain with a lot of dust is occurring.

Instruments domes are regular covered with thick dust.

Dome Cleaning

11:36 - 11:39 LT

09:36 - 09:39 UTC

### 2018-04-12 08:35 [ThanasisN]

Domes cleaned at

06:35 - 06:38 UTC

### 2018-04-17 08:34 [ThanasisN]

Domes cleaned at

06:34 - 06:39 UTC

There was excessive mud from rain yesterday.

### 2018-05-16 10:35 [ThanasisN]

Leveling of CHP-1

7:35 - 7:51 UTC

### 2018-05-18 [ThanasisN]

While sighting, I did an accidental reset to zero offset.

As a result for brief time was not in sync.

This happened close to disconnection.

### 2018-12-07 [ThanasisN]

Radmon was down

Radmon had a disk corruption and was down for few days.

The system probably is in good order now.

For CHP-1 was performed

- Leveling
- Silica gel replacement
- Sighting

Was completed at

10:56 LT

08:56 UTC



## 2019

### 2019-04-11 09:27 [ThanasisN]

Instrument Cleaning

09:27 - 09:29 local time

06:27 - 06:29 UTC

### 2019-05-06 [ThanasisN]

Dimitris Karag. reported tracker misalignment!

Mostly corrected after reset!

### 2019-05-10 09:22 [ThanasisN]

Spider webs on the instrument window cleaned! at

~09:22 LT

~06:22 UTC

Don't know how long affected measurements.

### 2019-05-13 [ThanasisN]

Daylight time was enabled on broadband computer!!!

Time was changed to correct format

2019-05-13 11:20 -> 10:21 !! UTC

Probably the time of measurement is wrong.

Will be evident on Clear Sky identification data.

### 2019-05-18 09:10 [ThanasisN]

Only CHP-1 and CM-21 cleaned domes at

09:10 LT

06:10 UTC

### 2019-05-30 10:13 [ThanasisN]

Domes cleaned at

10:13 - 10:15 LT

07:13 - 07:15 UTC

### 2019-06-12 10:54 [ThanasisN]

Testing azimuth measurements with zero elevation

Test starts at 7:54 UTC

It is logged on normal logs.

Take care to exclude data from normal processing!

Return to normal operation at 9:14 UTC

### 2019-06-17 09:35 [ThanasisN]

Clean domes at

06:35 - 06:36 UTC

### 2019-06-27 08:33 [ThanasisN]

Clean CHP-1 and CM-21 only at 05:33 UTC

### 2019-07-04 [ThanasisN]

After painting of the platforms, last ~two days the CHP-1 instrument, was covered with a plastic bag for protection.

- Leveling
- Silica gel renew
- Sighting

### 2019-07-12 10:26 [ThanasisN]

All domes cleaned

10:26 - 10:29 LT

07:26 - 07:29 UTC

### 2019-07-26 08:59 [ThanasisN]

Cleaning all domes

08:59 - 09:03 LT

05:59 - 06:03 UTC

### 2019-12-16 11:00 [ThanasisN]

Power out for some minutes at 11:44-11:58

Ends approx 30 minutes later

Possibly bad data until 13:40 after a reboot

## 2020

### 2020-01-03 [ThanasisN]

There was a ransom-ware discovered on 2019-12-25

Sighting is Good after 2020-03-01 10:41 LT or 8:41 UTC

### 2020-04-29 09:05 [ThanasisN]

Clean domes at

09:05 - 09:07 local time

06:05 - 06:07 UTC

### 2020-04-30 12:12 [ThanasisN]

New silica gel to

- CHP-1
- CM-21 Horizontal

- UVB diffuse metal cylinder.

12:12 - 13:25 LT

09:12 - 09:25 UTC

### 2020-05-07 10:31 [ThanasisN]

Dome clean at

10:31 - 10:33 LT

07:31 - 07:33 UTC

### 2020-06-10 10:59 [ThanasisN]

Domes cleaned

10:59 - 11:02 LT

07:59 - 08:02 UTC

## 2022

### 2022-02-17 00:00 [ThanasisN]

Broadband instruments were installed? after they have been removed from the instruments tables.

Work on instruments table was performed.

New instrument table was installed for CCD spectrometers.

CHP-1 was between brewers and the new CCD table, may be affected.

There are photos.

### 2022-02-21 00:00 [ThanasisN]

The CHP-1 was moved!

It was west of the brewers and moved east of the brewers.

The inclined CM-21 was leveled, for comparison to the horizontal one, before calibration of the horizontal.

There are photos

### 2022-02-21 13:50 [ThanasisN]

**We consider that after** 11:50 UTC

the inclined CM-21 to have been set to horizontal position.

This is reflected on the measurements.

There are photos.

### 2022-05-23 [ThanasisN]

**Installation of the horizontal CM-21** 07:55 - 08:17 UTC

There are photos.

### 2022-06-03 [ThanasisN]

The horizontal Global CM-21 was

- installed
- leveled
- start measuring **without sun shield**

Photos exist.

### 2022-06-16 00:00 [BA]

Τελικά έβαλα το σπασμένο shield (το κόλλησα πρόχειρα) σήμερα στις 7.00 UTC.

### 2022-06-27 11:40 [ThanasisN]

The inclined CM-21 is returned to the inclined position from the horizontal.

**Last data in horizontal position is at** 08:40 UTC

## 2023

### 2023-02-20 08:29 [ThanasisN]

#### 1. Mean value of irradiance during the time period

Make the filter relative to CS reference instead of fixed envelope.

Clear\_sky\_id\_Reno-Hansen\_apply\_v14.R -> Clear\_sky\_id\_Reno-Hansen\_apply\_v14.1.R  
Recommended by Bais and original author.

### 2023-03-28 15:48 [ThanasisN]

We removed some Global radiation data output constrains.

Now we allowed:

- Any value of GHI during night (it was NA during night)
- Negative values during day (it was set to zero)

Will update all sirena data for years 2006-2022, previous exported by us.

### 2023-03-28 17:31 [ThanasisN]

Sirena TOT files updated for 2006-2022.

With the new output scheme.

### 2023-04-03 09:14 [ThanasisN]

Radmon found frozen with different system errors.

No tracking with CHP-1 at start of the day. Day is cloudy.

Reboot seems to fixed the problem.

### 2023-04-04 12:59 [ThanasisN]

The tracker didn't start at the morning due to an error of the com port.

Tracker program was restarted manual.

### 2023-04-19 09:19 [ThanasisN]

The tracker didn't start normally today.

I restart it manual at 09:10 LT

### 2023-05-18 09:15 [ThanasisN]

Cleaned broadband and brewers instruments at

06:07 - 06:10 UTC

A lot of dust from previous rain.

### 2023-05-25 08:52 [ThanasisN]

Clean spider web from inside of CHP-1 sun shader at

05:52 UTC

### 2023-06-26 11:26 [ThanasisN]

CHP-1 was cleaned from spider webs, in frond off the instrument window at

08:26 - 08:30 UTC

Also, instrument enclosure was sprayed with penetrating oil to deter insects.

### 2023-09-11 06:10 UTC [ThanasisN]

CHP-1 was cleaned!

Window was very dirty, and that created a jump in the measurements!!

### 2023-10-25 09:22 [ThanasisN]

Tracker is not tracking from yesterday.

Reset it today. Tried to find zero, but failed and continue trying forever.

Stop it reconnected, and now can not communicate with the control unit

### 2023-10-26 11:20 [ThanasisN]

We replaced 2 failed capacitors.

Re install the board.

But still there is no communication with the tracker

### 2023-10-30 13:54 [ThanasisN]

CHP-1 tracker still not working.

Possible a faulty transistor.

Will replace tomorrow.

### 2023-10-31 09:59 [ThanasisN]

Transistor was replaced,

We can communicate with the controller.

Although, the Azimuth channel is not working.

### 2023-11-02 11:13 [ThanasisN]

Tracker is still down.

Send for service.

### 2023-11-06 12:30 [ThanasisN]

Tracker was installed, measurement have started!

Leveling, sighting, window cleaning and replacing of silica gel was done.

The tracker had a burned out microcontroller.

### 2023-11-07 11:00 [ThanasisN]

The CHP-1 was removed to fix a problem with the silica gel compartment.

The instrument was taken to a metal workshop where the threads of the body and the silica gel compartment were altered.

It was installed, with new silica gel.

The tracker was checked and was level.

## 2024

### 2024-01-25 13:05 EET [ThanasisN]

Cleaning of broadband and brewers windows at :

13:02 - 13:03 LT

11:02 - 11:03 UTC

### 2024-01-26 [ThanasisN]

Today morning the radmon was found stacked on on startup screen with a message that prevent it to run normally.

After the message was cleared, it start operation.

Probably was frozen from yesterday.

### 2024-02-02 16:28 EET

Today morning the main roof door was found broken.

Later in the noon we see through the camera people walking among the instruments.

2025

2025

2025-01-19 09:13 EET [ThanasisN]

Most of the processes are done in Duckdb now.

There are some secondary scripts to migrate.

2025-01-28 09:45 EET [ThanasisN]

Cleaning of broadband and brewers windows at:

09:41 - 09:43 LT

07:41 - 07:43 UTC

2025-02-05 10:12 EET [ThanasisN]

Broadband, brewers, and Phaethon windows cleaning at

10:09 - 10:11 LT

08:09 - 08:11 UTC

2025-03-21 10:14 EET [ThanasisN]

Instruments windows cleaning at

10:08 - 10:10 LT

08:08 - 08:10 UTC

A lot of brown dust

2025-04-07 11:13 EEST [ThanasisN]

Broadband and spectral instruments windows cleaning at

11:05 - 11:07 LT

11:05 - 11:07 UTC

2025-04-24 11:32 EEST [ThanasisN]

Broadband and spectral instruments windows cleaning at

11:28 - 11:30 LT

08:28 - 08:30 UTC

2025-04-29 08:58 EEST [ThanasisN]

Tracker was not tracking at start of the day.

Probably due to interference with the antivirus.

Fixed after reboot.

2025-05-07 09:46 EEST [ThanasisN]

Clean broadband and spectral instruments at

09:38 - 09:40 LT

06:38 - 06:40 LT

2025-05-28 11:06 EEST [ThanasisN]

Instruments windows cleaning at

10:45 - 10:48 LT

07:45 - 07:48 UTC

2025-06-20 09:34 EEST [ThanasisN]

Instruments windows cleaning at

09:06 - 09:08 LT

06:06 - 06:08 UTC

2025-07-09 11:35 EEST [ThanasisN]

Instruments windows cleaned at

11:25 - 11:28 LT

08:25 - 08:28 UTC

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## Journal instructions

### Format for entries

Filenames should be numerical sorted

- ./YYYY/YYYY-MM-DD\_0000.md
- ./YYYY/YYYY-MM-DD.md

### File template

```
---
tags: [ key_1 key_2 ]
---
```

```
## 2022-02-21 00:00 [USERNAME]
```

Text for this entry.  
Use simple text, it will be parsed as  
markdown.

Tags and other meta data go to yaml header.  
Use "UTC" or "LT" to denote  
Universal Coordinated Time or local political time.

## Build a journal document entries files

There is a Makefile to automate the process.

- "make" for default
- "make all" the defaults (pdf and html)
- "make pdf" nice!
- "make html" why not?
- "make odt" are you kidding?

Document options are defined by:

- Makefile
- .index.yaml
- .pre\_process.sh
- .columns.lua

At least you need pandoc installed.

## List of tags

```
5 #async
37 #chp1
1 #cleaning
4 #cm21
2 #coddling
2 #data_corruption_certain
1 #data_format_change
25 #data_loss
1 #down_time
3 #error
4 #katastroph
2 #leveling
1 #mounting
2 #panic
4 #problem
2 #pysolar
1 #radmon_reboot
4 #silica
2 #sun_vector
5 #suspicious_data
1 #sync
1 #temp
6 #tracker
20 #tracker2
```

## New List of tags

```
1 CSid
1 INCcm21
1 brewers
6 broadband
1 ccd
30 chp1
24 cleaning
1 cleanning
1 clear_sky
10 cm21
1 data_corruption_certain
12 data_loss
```

2 down\_time  
1 duckdb  
5 error  
2 inclined  
4 leveling  
14 problem  
6 radmon  
1 roof  
3 sighting  
3 silica  
6 suspicious\_data  
1 test  
9 tracker  
1 works