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GLOBAL CLIMATE OBSERVING SYSTEM (GCOS)

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**8th GRUAN Implementation-Coordination Meeting (ICM-8)**
Boulder, USA
25 April – 29 April 2016

Session 7

# GRUAN Station Report for Payerne

*(Submitted by Rolf Philipona)*

**Summary and Purpose of Document**

Report from the GRUAN station Payerne for the period March 2015 to February 2016.

# GRUAN Station Report for Payerne (PAY)

Reporting for the period Mar 2015 to Feb 2016
Date: 13-Apr-2016
Primary author: Rolf Philipona
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**Overview**

The SRS-C34 radiosonde is in operation since January 2011. Measurements are taken UT00:00 and UT12:00. Data submission of the SRS-C34 GRUAN product using RsLaunchClient started 1 September 2014.

Since January 2015 Vaisala RS92-SGP are launched in parallel with SRS-C34 radiosondes every week, alternating one flight during the night and one flight during the day. Data submission are made with RsLaunchClient for the two sondes per flight. Also since January 2015 Vaisala RS41 radiosondes are launched with the SRS-C34 and the RS92 in parallel every week. During one night flight per month a Meteolabor SnowWhite / Cobald sensor is added to the GRUAN launch.

GNSS data are measured regularly since several years. All the information about our GNSS instrumentation and the data flow has been submitted to the responsible persons for the GNSS data acquisition within GRUAN.

Lidar measurements are made. Data submission is in preparation.

**Change and change management**

Using the GRUAN RsLaunchClient we submit all meta data and the Payerne GRUAN data file of the SRS-C34 radiosonde to the lead Centre since 1 September 2014.The mayor difference between the submission of a Meteolabor versus a Vaisala product is that the Meteolabor product does not only has the raw data as the Vaisala submission has. Instead, Payerne delivers for the SRS-C34 product the raw data, as well as the final calculated values and also includes the uncertainty value for each final calculated data point.

Since January 2015 we launch weekly GRUAN multi-soundings with RS92, RS41 and SRS-C34 radiosondes. We launch the multi-soundings alternatively one week during day-time and one week during night-time. Once per month the nigh-time sounding additionally flies a SnowWhite/COBALD sensor for research purposes in collaboration with ETHZ. The multi-soundings are always launched during standard operation times UTC00:00 and UTC12:00.

**Resourcing**

During 2014 we had difficulties with manpower available for GRUAN activities. Therefore we had to reduce to two multi-soundings per week. Before January 2014 we had four flights per month and now we went back to four flights starting January 2015.

**Site assessment and certification**

During the GRUAN ICM-7 meeting in Matera, Italy, in February 2015 the Payerne GRUAN site became GRUAN certified for its Vaisala RS92 launches. Meteolabor is presently testing their new SRS-C50 radiosonde and it is our goal to get the new SRS-C50 in operation at the station Payerne in October 2016. We will then work very hard to get the SRS-C50 GRUAN certified as soon as possible. This should be feasible in due time since a lot of the work has already been accomplished with regard to the RSLaunchClient and the data submission which is already done for the SRS-C34.

**GRUAN related research**

With the specific GRUAN launches every week we are presently launching always a RS92 and a RS41 together with the SRS-C34. These multisoundings will help to test the new Vaisala RS41 radiosonde. We had already made a limited number of such soundings in 2014 and are presently analysing the weekly soundings for night- and day-time of the entire year 2015. As CIMO-Testbed we have been working on controlled ascent and descent soundings and in collaboration with a group of people from Boulder USA, we recently published a paper on this matter in AMT. This was a task of the GRUAN task team radiosonde, which has now been accomplished with this publication. The publication can be downloaded at http://www.atmos-meas-tech.net/9/929/2016/.

**WG-GRUAN interface**

We appreciate the help of the WG-GRUAN with regard to our station certification. The collaboration with the GRUAN Lead Centre with regard to a GRUAN product for the Meteolabor radiosonde was very fruitful and enabled us to submit our data to the GRUAN Lead Centre.

**Items for ICM-8 plenary discussions**

We should devote most of the time of the ICMs to the original goal of GRUAN, which is the improvement of radiosonde measurements for long-term upper-air climatology, and discuss results related to upper-air climate change monitoring and research.

**Future plans**

Our Goal is to become GRUAN certified for our new Meteolabor radiosonde SRS-C50 within 2016 or early 2017. Change management will have to be made during 2016 and 2017. Meanwhile we continue flying daily SRS-C34 and deliver a GRUAN product for these flights (as we do since 1 September 2014).

# GRUAN Station Report for Payerne (PAY), 2015

**Reported time range is Nov 2014 to Feb 2016**
Created by the Lead Centre
Version from 2016-04-18

## 1 General GRUAN station information

| Info | Value |
|---|---|
| Station name | Payerne |
| Unique GRUAN ID | PAY |
| Geographical position | 46.8100 °N, 6.9500 °E, 491.0 m |
| Operated by | MSWISS \| Office fédéral de météorologie et climatologie MeteoSuisse |
| Main contact | Philipona, Rolf |
| WMO no./name | 06610 PAYERNE |
| Operators | current 12, change +0 / -0 |
| Sounding Site | 1 |
| Lidar | 1 |
| GNSS | 1 |

## 1.1 General information about GRUAN measurement systems

| System | Type | Setups | Measurements | As scheduled |
|---|---|---|---|---|
| PAY-GN-01 | GNSS | 0 | 0 | not scheduled |
| PAY-LI-01 | Lidar | 1 | 0 | not scheduled |
| PAY-RS-01 | Sounding Site | 5 | 982 | 94.24 % |

## 1.2 General comments from Lead Centre

### 1.2.1 General

Good communications between station and GRUAN LC.

It is strongly recommended that the site uses a manufacturer independent ground check for both radiosondes launched at the site.

### 1.2.2 GTS

This site regularly sends PTU measurements in the GTS (BUFR format, 3s resolution, 2 times per day).

# 2 System: GNSS Site PAYE (PAY-GN-01)

| Info | Value |
|---|---|
| System name | GNSS Site PAYE |
| Unique GRUAN ID | PAY-GN-01 |
| System type | GNSS (GN - GNSS) |
| Geographical position | 46.8121 °N, 6.9439 °E, 548.7 m |
| Operated by | MSWISS \| Office fédéral de météorologie et climatologie MeteoSuisse |
| Instrument contact | Philipona, Rolf |
| Started at | - |
| Defined setups | - |
| Possible streams | - |

## 2.1 Lead Centre comments

### 2.1.1 Dataflow

No GNSS dataflow to GRUAN LC as yet.

# 3 System: Payerne Raman WV Lidar (RALMO) (PAY-LI-01)

| Info | Value |
|---|---|
| System name | Payerne Raman WV Lidar (RALMO) |
| Unique GRUAN ID | PAY-LI-01 |
| System type | Lidar (LI - Lidar) |
| Geographical position | 46.8100 °N, 6.9500 °E, 491.0 m |
| Operated by | MSWISS \| Office fédéral de météorologie et climatologie MeteoSuisse |
| Instrument contact | Martucci, Giovanni |
| Started at | 2013-09-01 |
| Defined setups | 1 (TEST-1) |
| Possible streams | - |

## 3.1 Lead Centre comments

### 3.1.1 General

The Payerne lidar is the test system for lidars within GRUAN. A first step of collecting metadata has been started in September 2013 using the software LidarRunClient. This software is based on the RsLaunchClient and has been developed in cooperation between the GRUAN Lead Centre and the Task Team Ancillary Measurements.

# 4 System: Radiosonde Launch Site (PAY-RS-01)

| Info | Value |
|---|---|
| System name | Radiosonde Launch Site |
| Unique GRUAN ID | PAY-RS-01 |
| System type | Sounding Site (RS - Radiosonde) |
| Geographical position | 46.8100 °N, 6.9500 °E, 491.0 m |
| Operated by | MSWISS \| Office fédéral de météorologie et climatologie MeteoSuisse |
| Instrument contact | Philipona, Rolf |
| Started at | - |
| Defined setups | 5 (ROUTINE, OZONE, RESEARCH, SRS-TEST, DUAL) |
| Possible streams | COBALD, ECC, RS41, RS92, SRS-C34 |

## 4.1 Lead Centre comments

### 4.1.1 Dataflow

Dataflow to GRUAN LC running intermittently since September 2011. This dataflow includes streams of the Meteolabor SRS-C34, Vaisala RS92-SGP, and Vaisala RS41 (since August 2014). All launches are promptly recorded using the RsLaunchClient.

### 4.1.2 Data processing

A GRUAN data product for the Meteolabor SRS-C34 is available since September 2014. This data product includes an estimate of all measurement uncertainties. This is one of the first non-RS92 GRUAN data products.

## 4.2 GRUAN data products

| Product | Version | Soundings received | Available at LC | Distributed by NCDC |
|---|---|---|---|---|

### 4.2.1 Stream: COBALD

| | | | | |
|---|---|---|---|---|
| COBALD | | 10 | 10 | |

### 4.2.2 Stream: RS41

| | | | | |
|---|---|---|---|---|
| RS41 | | 54 | 54 | |

### 4.2.3 Stream: RS92

| | | | | |
|---|---|---|---|---|
| RS92 | | 53 | 53 | |
| RS92-RAW | 001 | | 52 | |
| RS92-GDP | 002 | | 50 | 36 |

### 4.2.4 Stream: SRS-C34

| | | | | |
|---|---|---|---|---|
| SRS-C34 | | 982 | 982 | |

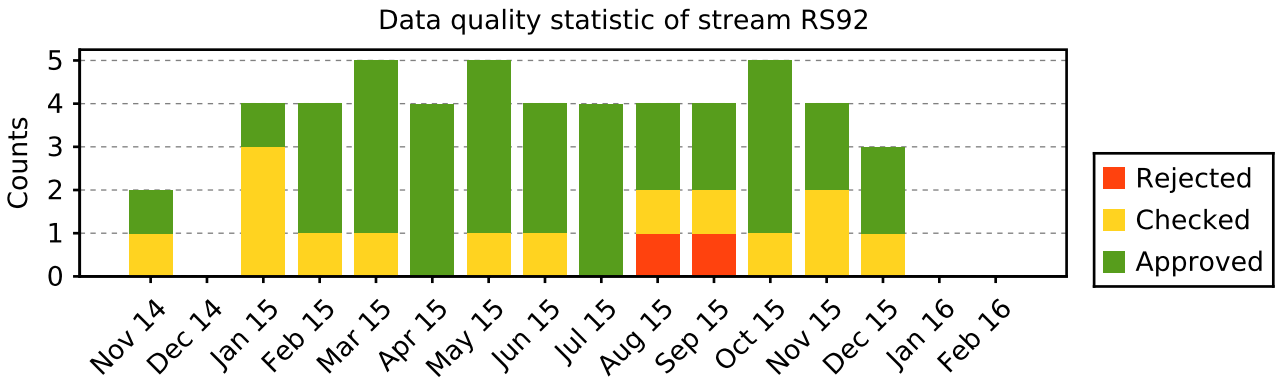
## 4.3 Data quality of current GRUAN data products

| Month | Count | GRUAN Data Quality | | | Issues | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Approved | Checked | Rejected | Meta-data | Process. | Press | Temp | RH |

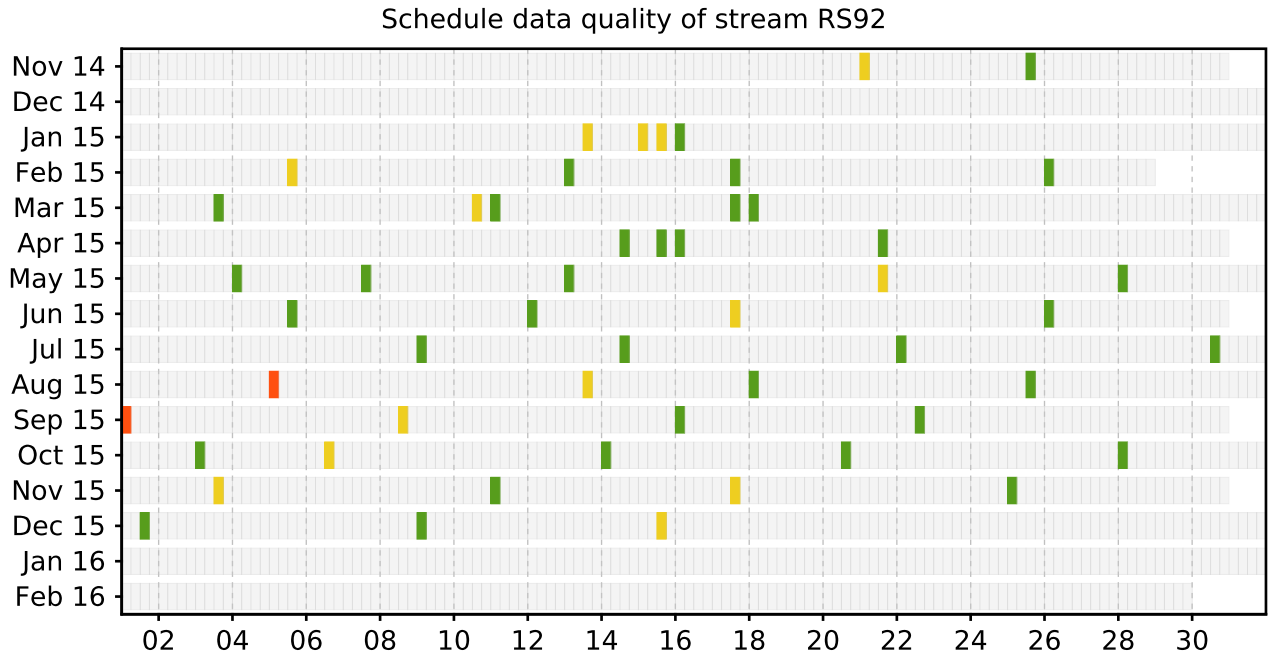
| Month | Count | GRUAN Data Quality | | | Issues | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Approved | Checked | Rejected | Meta-data | Process. | Press | Temp | RH |

### 4.3.1 Stream: RS92 (Product: RS92-GDP-002)

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Nov 14 | 2 | 1 | 1 | | | | | | 1 |
| Dec 14 | | | | | | | | | |
| Jan 15 | 4 | 1 | 3 | | | | | 2 | 2 |
| Feb 15 | 4 | 3 | 1 | | | | | 1 | 1 |
| Mar 15 | 5 | 4 | 1 | | | | | 1 | |
| Apr 15 | 4 | 4 | | | | | | | 1 |
| May 15 | 5 | 4 | 1 | | | | | 1 | |
| Jun 15 | 4 | 3 | 1 | | | | | 1 | |
| Jul 15 | 4 | 4 | | | | | | | |
| Aug 15 | 4 | 2 | 1 | 1 | | | | 1 | |
| Sep 15 | 4 | 2 | 1 | 1 | | | | 1 | |
| Oct 15 | 5 | 4 | 1 | | | | | 1 | 1 |
| Nov 15 | 4 | 2 | 2 | | | | | 2 | |
| Dec 15 | 3 | 2 | 1 | | | | | 1 | 1 |
| Jan 16 | | | | | | | | | |
| Feb 16 | | | | | | | | | |
| | **52** | **36** | **14** | **2** | | | | **12** | **7** |



| Month | Count | GRUAN Data Quality | | | Issues | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Approved | Checked | Rejected | Meta-data | Process. | Press | Temp | RH |



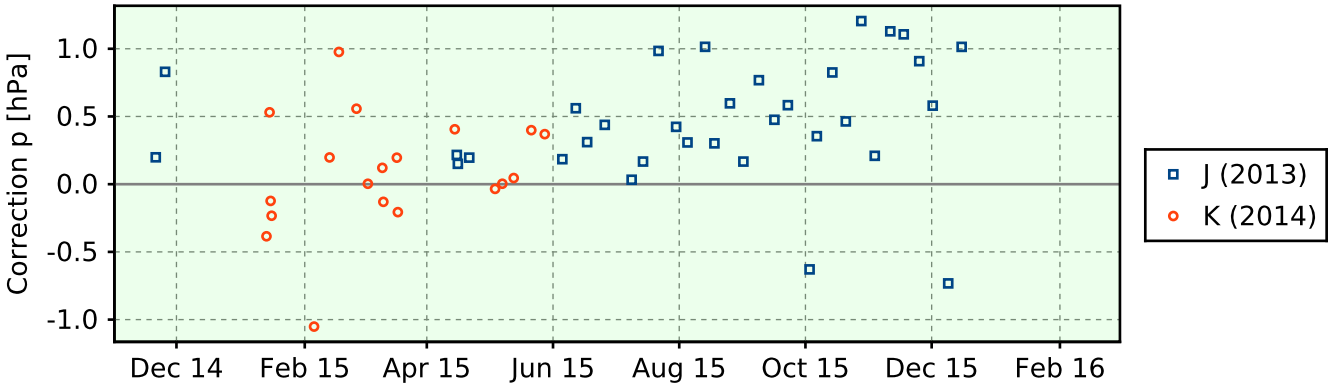

## 4.4 Instrument combinations of PAY-RS-01

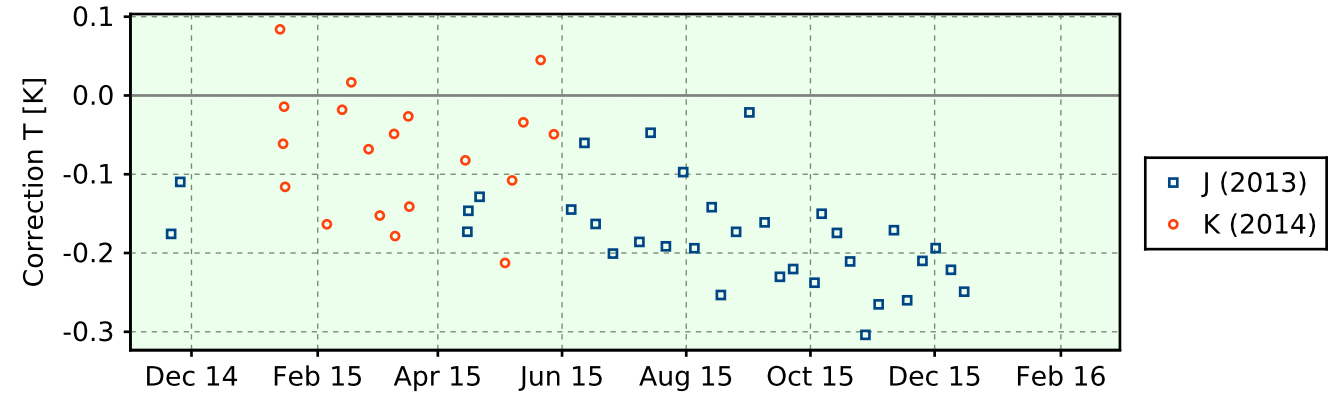
| Count | Instrument combination |
|---|---|
| 10 | COBALD, RS41, RS92, SRS-C34 |
| 43 | RS41, RS92, SRS-C34 |
| 1 | RS41, SRS-C34 |
| 928 | SRS-C34 |

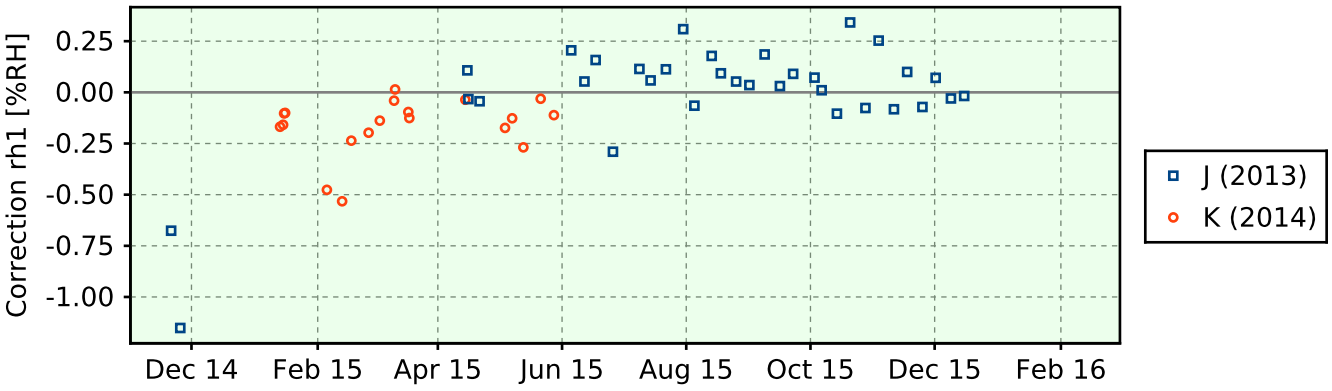
## 4.5 Instrument ground check

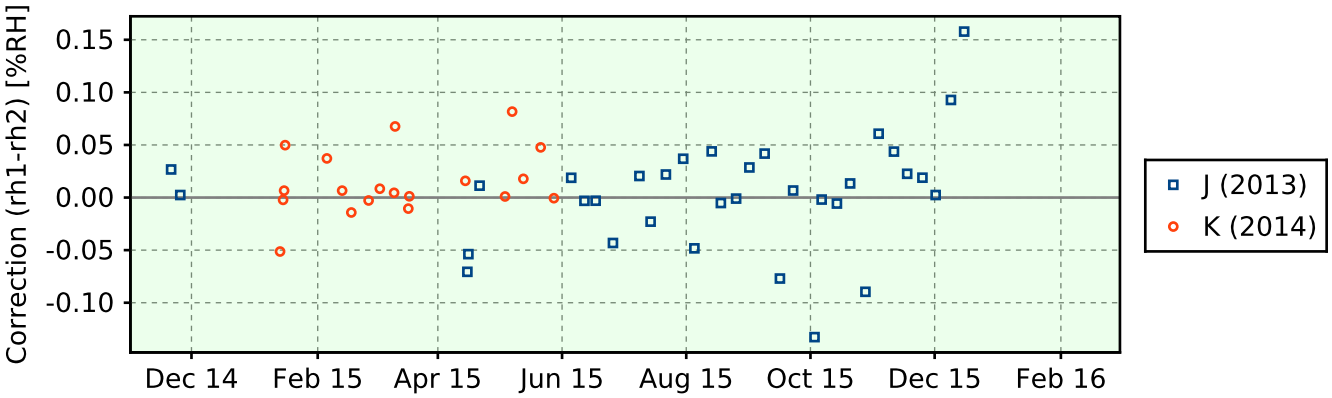
### 4.5.1 Stream: RS92

#### 4.5.1.1 GroundCheck: GC25

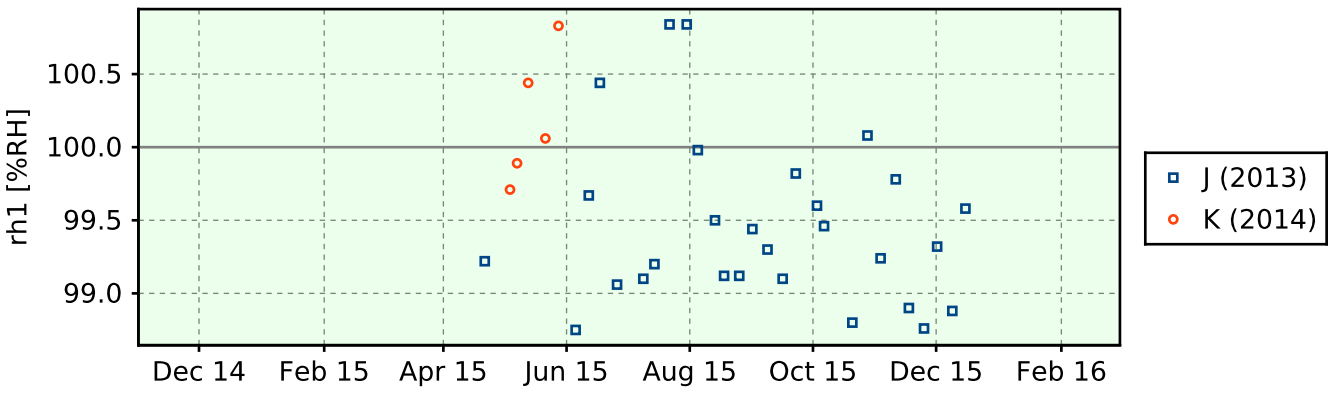


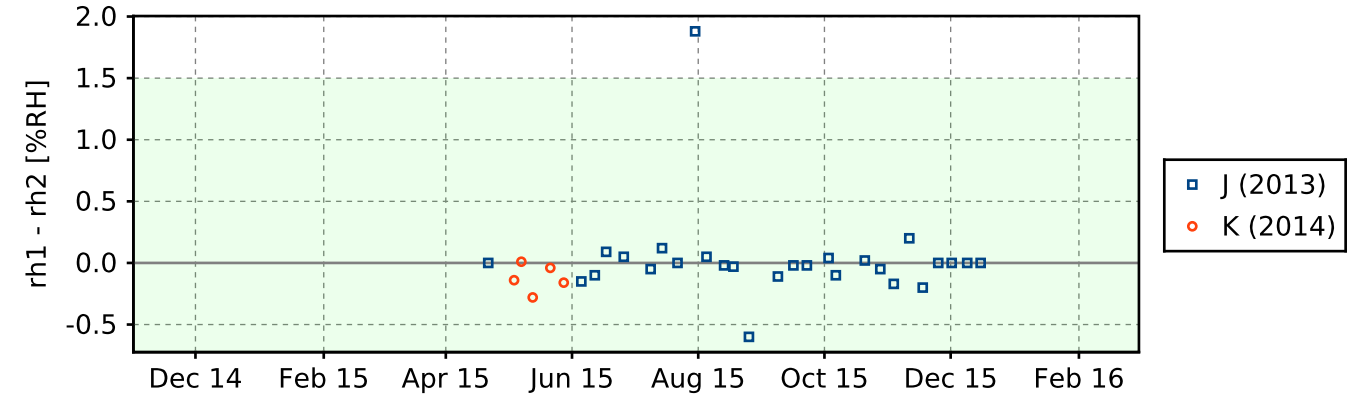


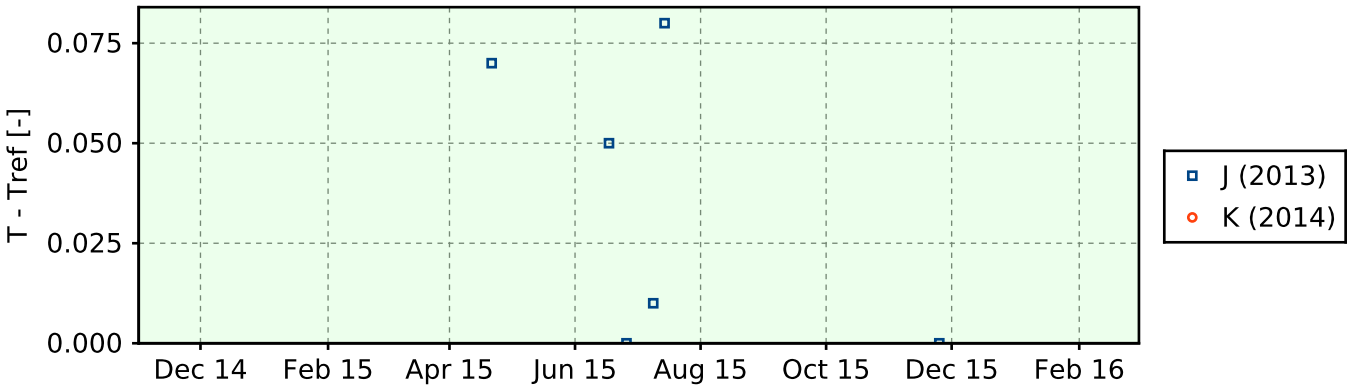




#### 4.5.1.2 GroundCheck: SHC






## 4.6 Measurement events

### 4.6.1 Stream: RS92