TUTORIAL
Getting the RsLaunchClient operational

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1 Title

Welcome to the GRUAN video tutorial with the title: “Getting the RsLaunchClient operational”. This tutorial is offered by the GRUAN Lead Centre.

2 Overview

This tutorial is designed to help you use the RsLaunchClient tool at your site to submit data to GRUAN.

But before we go into the details, I would like to give you a brief overview of the individual sections of this tutorial. The tutorial is divided into the following short parts:

- Firstly, I would like to briefly discuss the motivation and goal for the RsLaunchClient,
- Then the necessary preparations will be briefly discussed,
- Then I will briefly explain how you can download and install the necessary software,
- Next, we will briefly look at the general configuration of the tool,
- And then comes the crucial moment, we test whether the programme starts correctly,
- Then it's time to work on the content, whereby we first import a template prepared by the Lead Centre into the tool,
- And then you can prepare and upload a first measurement for GRUAN – this is a somewhat more extensive process with a number of individual steps,
- And finally we will go into what to do in case of problems or questions.

One more note before we really get started. In this tutorial we assume that everything works as described. If any of the steps do not work for you, please contact the Lead Centre.

But now let's finally get started.

3 Section: Motivation and goal

Now I would like to briefly explain the motivation and goal of the RsLaunchClient.

4 Motivation

Why is such a special programme necessary for submitting data in GRUAN?

Is it not enough to upload the data files?

5 Examples of balloon sounding configurations in GRUAN

Very different balloon-borne measurements are carried out in GRUAN. It starts with simple routine soundings with exactly one radiosonde as a payload. However, in many places in GRUAN the focus is also on combined measurements or comparison measurements in various constellations, or on carrying out measurements using very specialised research instruments, such as CFH, FPH, Skydew, Cobald, ECC ozone sondes, and many more.

The measurements of the last WMO radiosonde comparison campaign, where up to 10 radiosondes were flown on one balloon, can also serve as an extreme example.

6 Motivation

And all of these sounding setups should be properly documented in any configuration!

Because, GRUAN has an important rule that all measurements should be documented as best as possible. This means that all relevant information and metadata should be transferred to GRUAN together with the raw measurement data.

That means, GRUAN relies on radiosonde measurement data along with all associated information that comes with it.

This information includes, among other things:

- The exact setup of the rig with balloon, parachute, unwinder, rig and all sondes,
- The complete setup with all ground systems involved,
- And, of course, all information about the ground checks carried out.

7 Goal

The aim is to make sure that beside the measurement data all the information associated with the soundings is recorded and stored in GRUAN, even when there are complex setups with multiple instruments.

This is crucial to ensure easy access to the data of various instruments in combined instrument flights as for example comparison measurements between several radiosondes.

It is precisely these parallel measurements of several instruments that are an important and valuable treasure in GRUAN.

8 Section: Preparations

Before you can submit data to GRUAN for the first time, a number of preparations are necessary.

9 Definition of general meta-data of new GRUAN site

When a new site is added to the network, it is necessary to collect or define a whole range of general metadata.

For this reason, the GRUAN Lead Centre sends a starter package to the new site, which contains, among other things, the GRUAN Technical Note 3 entitled “Essential Meta-data of New GRUAN Stations”.

It can also be downloaded using the link provided or QR code.

The site is asked to provide a whole range of metadata. And whenever the site has sent something and things are still missing or unclear, the Lead Centre will contact the site again. This can take several rounds step by step. It is therefore important that the new site responds within a reasonable period of time, preferably within a week.

10 What information needs to be defined and collected?

What information is requested and what needs to be defined?

A very important first act is the definition of a short official GRUAN site name and an official GRUAN site code – which consists of three letters.

Then general information about all measuring systems that may be relevant for GRUAN is collected.

Furthermore, a whole range of information is required regarding the activities and possibilities of balloon soundings. These include the following:

- Types of used balloons, gas, parachutes, unwinders, and so on.
- Sounding systems and radiosonde models in use
- Ground check tools
- Typical launch setups and schedules
- And much more

It is important to know that all this information is required to make the appropriate preparations in the GRUAN Meta Database. Without this step, the RsLaunchClient will not work for the new GRUAN site.

11 Use of GRUAN Data Portal

The GRUAN data portal currently serves as the central point for all data flows in GRUAN. The Lead Centre will therefore send an e-mail to the site containing the relevant information about this portal as well as the site-specific access data to this portal.

You can then test it yourself with an Internet browser. Simply use the following link.

It is best to also test the SFTP access with a tool of your choice, e.g. FileZilla. The RsLaunchClient will then use this SFTP access later.

If everything works, then you have fulfilled an important prerequisite for being able to transfer and receive data to GRUAN.

12 Section: Download and install

Once all the preparations have been completed, we can turn our attention to getting and installing the necessary software.

13 Java

The RsLaunchClient requires Java, or to be more precise, the tool requires an installed “Java Runtime Environment” version 17 or newer.

If Java is not yet installed on your computer, you should do so.

It is important to know that there are various providers or projects that offer Java for download. I have had good experiences with the “Adoptium” project. It offers different Java versions for a whole range of operating systems. And all Java versions are regularly provided with security updates over a long period of time. And another relevant fact is that the Java offered here is free and open source, and does not incur any licence costs.

You will now find various links here, first to the main page of Adoptium, and then to pre-selected download pages for Java 17 and Java 21. The RsLaunchClient runs well with both versions.

Please use the documentation there if you have any questions about installing Java.

14 RsLaunchClient (RLC)

And now we come to the RsLaunchClient itself. As you now have access to the GRUAN data portal, you can download the latest version of RsLaunchClient from there. Please go to the directory "/software/GruanRsLaunchClient" and download the latest ZIP file and the PDF file of the documentation.

Please unzip the ZIP file into a directory of your choice. You can use the normal "File Explorer" under Windows, for example.

15 Unpack ZIP file of RLC

So go to your download directory, where the ZIP file is located, and then you will find the "Extract" entry in the context menu – or similar.

A dialogue opens where you can enter the base directory. It is important to know that a subdirectory with the name "GruanRsLaunchClient" is automatically created when this file is unpacked.

16 Directory of RsLaunchClient

If you then go to that directory, you should see something like this. It is the internal directory structure of the RsLaunchClient.

In the following, we will need the "config" subdirectory for the general configuration. Several scripts for starting the RsLaunchClient can also be found here. More details on this later.

17 Section: General configuration

Before the RsLaunchClient is started for the first time, the general configuration for your station should be adjusted, only then this tool can function correctly for you.

18 Configuration of RLC

The following two configuration files should be attached to an email sent to the site by the Lead Centre. These are now required – at least if you use option a) below.

There are two options for the general configuration of your RsLaunchClient:

a) you simply copy these two files into the subdirectory "config", or
b) you edit the existing files with a simple text editor

19 Subdirectory „config“

Here is a look at the "config" subdirectory of the RsLaunchClient.

As I said, you can simply copy the two configuration files here, that would be option a). It is important to know that this will overwrite the two existing original files.

Or you can try to deal with the configuration yourself. However, it would be very helpful to read the relevant chapters in the documentation. That would be option b).

20 Option b) Edit file VFS_GruanDpSite.properties

If you have selected option b), here is a brief description of what you need to adjust in the first file. This is the configuration of the access to the data portal. This means that at least the user name and password must be entered here.

21 Option b) Edit file RsLaunchClient_gruan.properties

If you have selected option b), here is a brief description of what you should adjust in the second file. This is the configuration of the client itself. For example, you can enter some defaults here, such as the abbreviations of the site, the measurement system of the radiosounding, and the setup – referred to here as Measuring – which is to be used first.

22 Section: First test

Once the general configuration has been completed, a first test of the RsLaunchClient can be carried out.

23 Start RLC

To do this, go to the main directory of the RsLaunchClient. Double-click on the script file "win-start-rlc.bat" to start the programme.

24 Main window

If everything has been installed and configured correctly, this main window of the programme will open.

And you can also check whether access to the data portal has probably worked. If you check the date in the "GRUAN Metadata from" entry, it should be relatively new. This is a good first indication of functioning access.

25 Check upload rights at GRUAN Data Portal

However, we should now definitely test whether your RsLaunchClient can communicate correctly with the GRUAN data portal, has undisturbed access and has the appropriate write permissions to upload data.

a) Please click on the "Maintenance" button, which is located in the navigation on the left-hand side of the main window.
b) The corresponding submenu will now appear. Please click on the "Check upload rights" button.
c) The programme now attempts to contact the data portal and upload a small amount of data there as a test. After a short while, a dialogue with the result is displayed. In this example, I have the required authorisation to upload data for the sounding system in Lindenberg.

26 Section: Import first template

Once the RsLaunchClient has been successfully launched, we can now turn our attention to the content. The first step is to import a template so that we have a good starting point for our own initial experiences with the RsLaunchClient.

27 First template

A GMD file should be attached to an e-mail sent to the site by the Lead Centre. This is the first template and is now required. This GMD file should therefore be available somewhere on your computer, e.g. in the “Download” directory.

In order to correctly describe measurements for GRUAN, a so-called template is always required as a basis, in which a very specific ascent configuration is stored. For example, which balloon, how much and which gas, which parachute, which sonde models, which ground systems, which ground check tools, and so on.

Of course, anyone can create their own templates, but the Lead Centre always provides an initial template to help you get there faster.

If you have difficulties creating correct templates in the future, please contact the Lead Centre. They can and will be happy to help.

28 Step 1 – Activate administration mode

To be able to import a template, the RsLaunchClient must be switched to “administration mode”. Only then will this and other special functions be available.

a) Please click on the “Maintenance” button, which is located in the navigation on the left-hand side of the main window.
b) The corresponding submenu will now appear. Please click on the “Change AdminMode” button.
c) Please answer the question of the appearing dialogue with “Yes”.

The “Administration mode” is now activated and the necessary functions are available.

29 Step 2 – Import GMD file as template

Now we can import the GMD file as a template.

a) Please navigate “back” to the main menu
b) and then go to the “List management” submenu
c) The desired function “Import GMD files” is available here. Click on it.
d) A file selection dialogue opens. Please navigate to the directory where you have saved the GMD file. Then select it. And now you can import it with “Open”.
e) ATTENTION: Click on “TEMPLATE” in the dialogue that now appears. This is so that the RsLaunchClient knows that this file is to be used as a template.

30 Step 3 – Open (edit) imported template

a) You will now find the template in the main window in the “Templates” frame in the “Choose” selection list. Please select the template.
b) The “Edit” button is now available. Please open the template as a test by clicking on “Edit”.

31 [save event list]

a) A new tab opens in the main window, where the template could now be edited. But we don't want to do that now. But we can see that the template is now correctly available.
b) So that this is also permanently the case, we should now save the “event list”. To do this, please click on “Save event list” in the navigation bar. This will automatically close all open tabs, including our currently open template.

32 Section: Create & upload a measurement

The time has finally come: we can now prepare a first measurement for GRUAN together and finally upload it.

But before we go into detail here, a request first. Please make sure that the measurement data files of a radiosonde ascent are available on your computer. We will need them right away.

33 Steps to create & upload a new measurement event

However, as was to be expected, this section of the tutorial is somewhat more extensive. It is therefore divided into the following steps:

- Use of the imported template,
- Create a new measurement event,
- Add the measurement data file,
- Fill in necessary meta-data,
- Validate all,
- And finally upload all together.

It is important to know that I am basing this tutorial on a template of an operational RS41 ascent of the GRUAN site Lindenberg. However, I think that this can be easily transferred to other sites and constellations.

34 Use template to create new measurement

Now we start by selecting the template to be used. This is done in exactly the same way as before.

a) If the template is selected, the “New Measurement” function is also available. We need this now. Please click on it.
b) A dialogue opens to define the basic data for the measurement. It is important to know that this basic data cannot be changed afterwards. The template used defines the first two entries: “System” and “Setup”. In my case, of course, this refers to Lindenberg.

This is followed by the “Schedule Date” entry. The start date of the template is used here by default. However, this can be customised in the configuration. It is important that you now enter the date of the measurement and the scheduled time correctly here. All times are in UTC.

The last entry is the number of the balloon for the date and time entered. As usually only exactly one balloon is launched, the default value “1” only needs to be adjusted very rarely.

If everything is OK, you can click on “Create”.

35 Add measurement data file

Before the actual assistant appears, a special dialogue for selecting and adding the measurement data files opens. Depending on which sondes and ground systems are defined in the template, a list of files that should be added is displayed here.

It is important to know that this step can be skipped at this point. It is still possible to add files later. However, it is a great advantage if at least the important files are added here. Especially those that contain relevant metadata. This is because the RsLaunchClient can automatically extract such metadata and thus fill in a lot of information automatically.

a) In this example, I selected the line with the MWX file and then clicked on “Add Files” and the opening “LOCAL.Home”.
b) In the file selection dialogue that then opened, I went to the directory where the MWX file was stored. I selected it and clicked “Accept File(s)”.

Now it may take a while, depending on the file, because the file is being analysed and read in.

36 Automatic extraction of meta-data

If the file was successfully read in and metadata could be extracted, a special window opens.

All extracted metadata that could be assigned to the event, the sonde, the ground system or the ground check are shown.

By clicking on “OK”, these are all accepted and can then be found in the corresponding fields.

37 Step 1 – Observation

The assistant now appears, where you are guided through all the relevant details in six steps.

The first step – or the first page – of the assistant presents the general information of the measurement, the most important of which is already pre-filled. This is because we have already entered this information when creating the new measurement or it has already been defined in the template.

In this example, there is one more mandatory detail that has not yet been entered: the operator – or person responsible for this measurement. This can be recognised by the problem message formatted in red at the bottom.

Your task is now to select the appropriate operator. During this process, the message also disappears because the problem has been resolved and the “Next” navigation button can be used.

Now click on “Next” and proceed to the next step of the assistant.

38 Step 2 – Instrumentation

This second page shows the list of equipment that was involved in this measurement and is relevant for GRUAN. The list is divided into two sections: “Ground Equipment” and “Launch Equipment”.

If you select an element, more detailed information will appear at the bottom of the page. I have selected the RS41 radiosonde here. And it is good to see that specific metadata is already available, such as the serial number and the radio frequency used. This specific information comes from the attached measurement data file.

However, there are also some details, e.g. “Reuse”, which were defined in the template used and can now be found here.

And then, of course, there is still the option of changing and adding things here. For example, I can enter a specific comment here.

So let me remind you again: The specific information here either comes from the attached file, the template used, or was entered here yourself.

Now we go to the next page with “Next”.

39 Step 3 – Instrument checks

The list of ground checks performed can be found here. If you select one, the associated details are also displayed here. In this example, I have selected the manufacturer-specific ground check that was carried out with the RI41-B tool.

Now we can switch to the next page with “Next”.

40 Step 4 – Launch conditions

Here you will find a number of details on the weather conditions at the start time. Of course, these also come from the attached file.

As we have nothing to add here either, we can go to the next page by clicking “Next”.

41 Step 5 – Attach files

In the fifth step, we now have the option of assigning files to this measurement. These could be further measurement data files, but also photos of the rig or other special files. Which files are listed here always depends very specifically on the ground systems and radiosondes used.

If a setup with several radiosondes and several ground systems was used, then several measurement data files will also be requested here.

It is also important to know that some files are defined as mandatory and some as optional. The mandatory files must of course normally be attached. The others do not.

In this example, we now have no further files to attach and can go to the next – and last – page with “Next”.

42 Step 6 – Upload → 3 parts

On this last page, we now want to upload the metadata together with the measurement data to GRUAN. This process is divided into three individual steps: Validate, Prepare, and Upload.

And it is only possible to carry out the next step if the previous one has been completed correctly. What needs to be done next is again shown as a red message in the lower area.

Let's now start with the first step and click on “Validate”.

43 Step 6 – Upload → 1) Validate

In most cases, the programme will find errors or at least warn you of minor problems or abnormalities.

All errors and warnings are then displayed in the list. As before, you can see the details of an error or warning if you select it. A possible solution is also suggested for resolution. Errors must be resolved. For warnings, you are free to go back to the corresponding page and change something, or to skip the warning.

In this example, I have ignored and skipped the warnings that appear.

44 Step 6 – Upload → 2) Prepare

If there are now no more errors or warnings, the list displays a range of information about the validation. And the validation result “Valid launch event” is displayed.

The next step is now available: “Prepare”. You can now click on it, and a GRUAN Meta-data – or short GMD – file will be created.

45 Step 6 – Upload → 3) Upload

Normally, the preparation result “Correctly prepared” and the final generated GMD file are now displayed. You do not necessarily have to understand the content of this file, but it contains all the metadata collected and information about the attached files.

As a final step, the “Upload” button is now available. Clicking on it starts the creation of a package containing all metadata and all attached files. It is a ZIP file. If this package has been created correctly, it will be uploaded to the GRUAN data portal.

46 Uploading process …

a) This packing and uploading process may well take a while. Of course, this mainly depends on the size and quantity of the files.
b) After a while, lines will turn green and the message “Correctly uploaded” will appear. This means that this measurement has been submitted to GRUAN and you can complete the assistant with “Finish”.

47 Finalise uploaded measuring event

To ensure that your RsLaunchClient also remembers the final status, the current session must be saved.

You can do this yourself immediately by clicking on “Save event list” in the “List management” submenu in the navigation. Or you can exit the RsLaunchClient by clicking on “Exit program” – and answering the following question with “Yes”.

Now we have done it. A first measurement has been correctly uploaded to GRUAN. And we have now achieved the aim of this tutorial.

48 Section: Questions and issues

Of course, questions or issues can always arise during this process and later on.

49 Documentation of RsLaunchClient

Many answers to questions regarding the RsLaunchClient can be found in the detailed documentation. We therefore ask you to familiarise yourself with this documentation and read it. This tutorial can only give a first small insight into the functionality.

You can download the documentation directly via this link.

50 Contact the GRUAN Lead Centre

You can of course contact the Lead Centre at any time:

- If you have any specific questions,
- If you have any issues or errors,
- If you need help to create a proper template,
- If you want to inform about changed equipment on your site.

51 The End

And with that I would like to end this GRUAN video tutorial. I hope it helps you to take the necessary steps to get the RsLaunchClient fully functional at your site. We are looking forward to the measurements from your site. Goodbye and see you at next ICM!