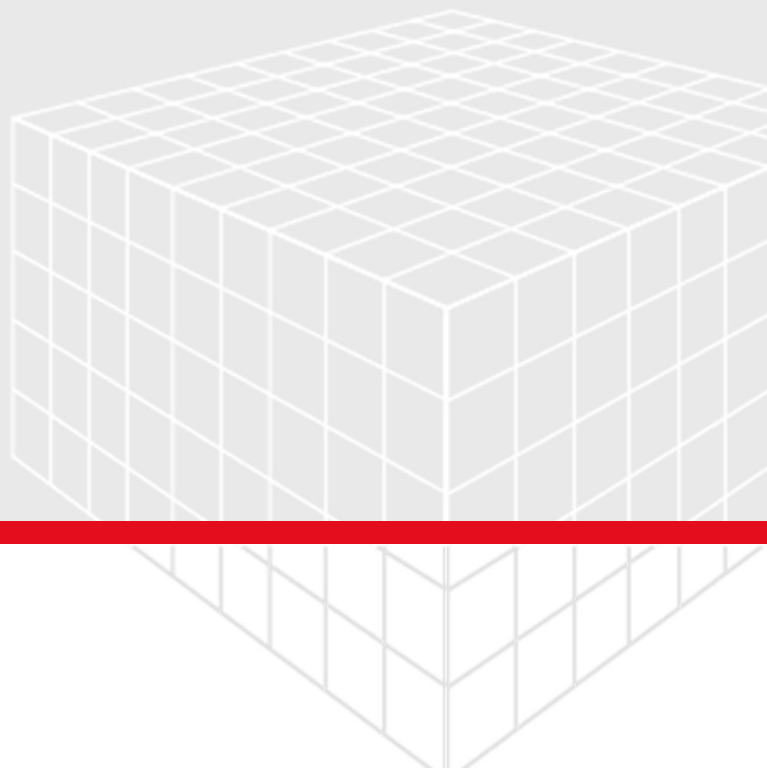


Cloud

User Guide

GeoDict Release 2026

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GEO DICT

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Cloud

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1 Cloud

Cloud computing describes a model that provides computational resources as a service on demand, for example, in the form of servers, data storage or applications.

You can lease powerful individual virtual machines or even whole cluster environments. These machines can be used for batch processing numerical simulation jobs but also interactively as virtual workstations which allow remote desktop connections. Pricing depends on the chosen hardware configuration. Cloud computing can be a good alternative to purchasing an on-premises computer system. This is especially beneficial to meet peak simulation capacity demands (e.g., when facing project deadlines) or to evaluate simulation software on a specific hardware configuration. Math2Market currently offers two cloud products the [GeoDict Cloud](#)^[4] and the [Math2Market Cloud](#)^[23]. Both are turnkey solutions to using GeoDict in the Cloud and require no additional effort.

Alternatively, you can also deploy a GeoDict installation within your own cloud environment. This requires a GeoDict cloud floating license. [Contact us](#) for more information.

Learn how to run your simulations in the cloud:

- [GeoDict Cloud](#)^[4]
Send simulations to the cloud directly from GeoDict.
- [Math2Market Cloud](#)^[23]
Use GeoDict on a cloud machine eliminating the need for hardware or installation.



Join the conversation

Visit the Community on [GeoDict Forum](#) to be inspired and get answers to top questions.

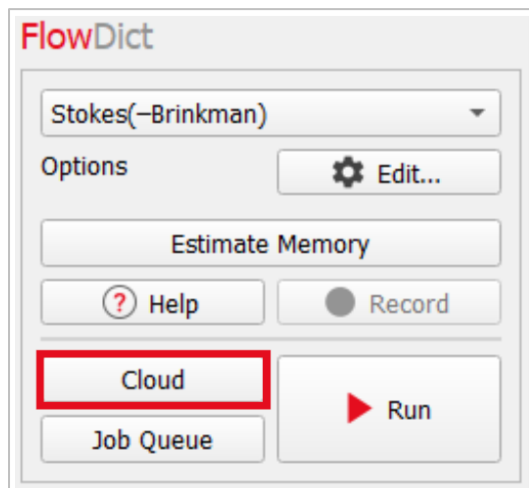
Find illustrative application examples on the [website](#).

Our tutorials and seminar videos give you a first hands-on experience. They are collected in the [Learning Center](#).

Send your [Support Request](#) to our technical Support.

1.1 GeoDict Cloud

The **GeoDict Cloud** allows you to submit your simulation jobs directly from a locally running GeoDict to the cloud. Instead of clicking **Run**, simply click the **Cloud** button.



The **GeoDict Cloud** uses [Amazon Web Services](#) (AWS) to provide cloud computing resources and uses the same system as the [Math2Market Cloud](#)^[23]. Therefore, you can use your login information (username & password) to log into the **GeoDict Cloud** within GeoDict as well as into the [Math2Market Cloud](#)^[23] in your browser.

The **GeoDict Cloud** offers an easily usable framework that allows you to create large parameter studies, run large numbers of simulations in parallel, and retrieve the results for detailed local analysis. This frees you from the constraints of limited local hardware resources.



Know how! When using [parameter variations](#)^[11], all variants are executed in parallel in the cloud. For this one machine is started for each set of variable values. In consequence, even large parameter studies will only require as much time as a single simulation or structure generation!

Cloud machines with GPUs are available as well, so that the AI capabilities of GeoDict (e.g., GeoDict-AI, FiberFind-AI) can be fully utilized.

Before you can use the **Cloud** button, an account must be created for you. For more information and registration for cloud services, please [contact us](#). Once your account has been activated, you will receive an invitation email with your login credentials. Follow the provided link for the [initial setup](#)^[5] of your **GeoDict Cloud** account. Afterwards you can access the cloud service directly from GeoDict.

Learn how to send jobs from you local GeoDict to the Cloud:

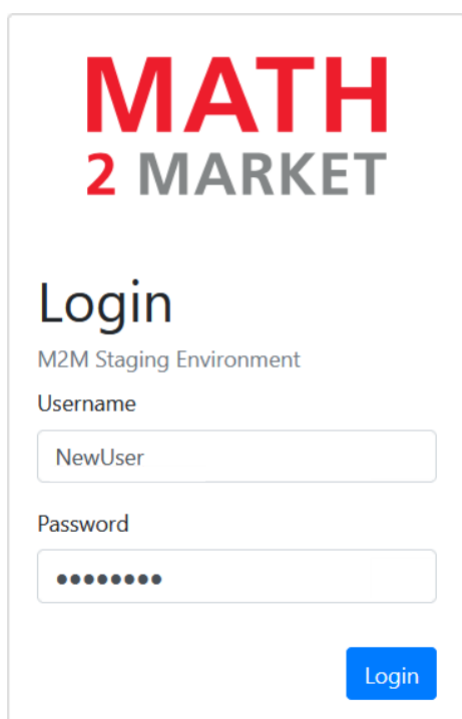
- [First Login](#)^[5]
Follow the required steps for you first login.
- [Run a Cloud Simulation](#)^[7]
Send a single simulation to the cloud.

Learn how to send jobs from you local GeoDict to the Cloud:

- [Run a Cloud Parameter Study](#)¹¹
Send an entire parameter study to the cloud.
- [Manage Cloud Projects](#)¹⁶
Discover the dialog to manage your Cloud Projects.

1.1.1 First Login

After registering for our cloud service, you will receive an email containing your login credentials and a link. Follow the link and you will be directed to the [Math2Market Cloud](#)²³ web interface. Enter your login information and click **Login**.



**MATH
2 MARKET**

Login

M2M Staging Environment

Username

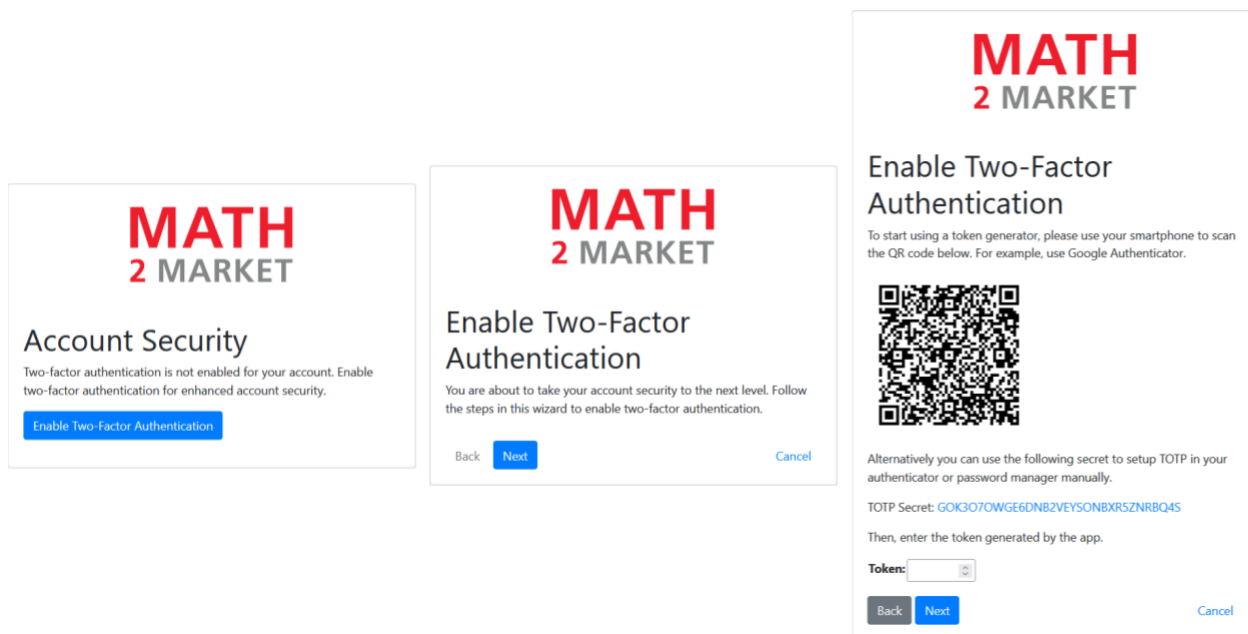
NewUser

Password

••••••••

Login

After clicking **Login**, you will be directed to the **Account Security**, where you are required to **Enable Two-Factor Authentication**. The two-factor authentication is required for every login to the **GeoDict Cloud**. Follow the steps to setup the two-factor authentication. You will need an authenticator app of your choice (e.g., Google Authenticator). After scanning the QR code or manually setting up the two-factor authentication, enter the generated token and click **Next**.



Once the two-factor authentication is set up, you are directed to the [Cloud Dashboard](#)^[24]. Before using the **GeoDict Cloud**, please [change your password](#)^[26] to a password of your choice for increased security.

Password change

Please enter your old password, for security's sake, and then enter your new password twice so we can verify you typed it in correctly.

Old password:

New password:

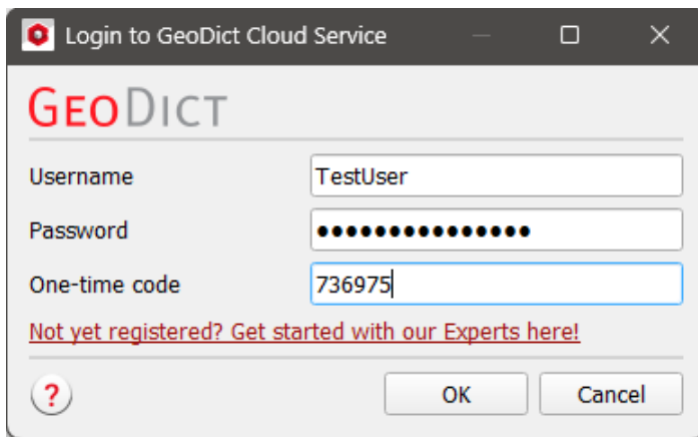
Your password can't be too similar to your other personal information.
 Your password must contain at least 8 characters.
 Your password can't be a commonly used password.
 Your password can't be entirely numeric.

New password confirmation:

Enter the same password as before, for verification.

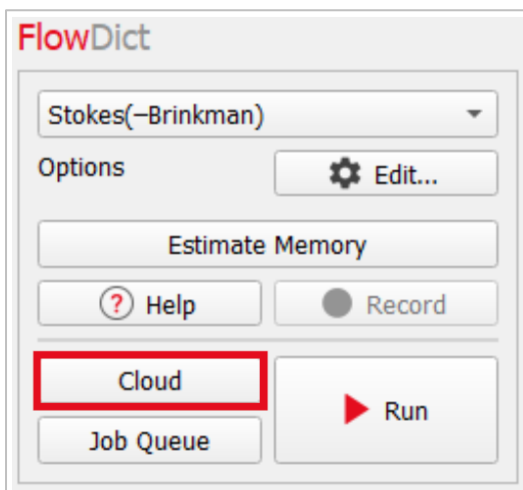
[CHANGE MY PASSWORD](#)

After changing your password, the setup process for your account is complete. Click **Logout** on the web page and return to GeoDict. You can now use your **Username**, **Password**, and the currently valid **One-time Code** from your [authenticator](#)^[5] to log in. You can open the **Login to GeoDict Cloud Service** dialog either via the menu bar **Cloud & Queue** → **Login to GeoDict Cloud** or by clicking any **Cloud** button in GeoDict.

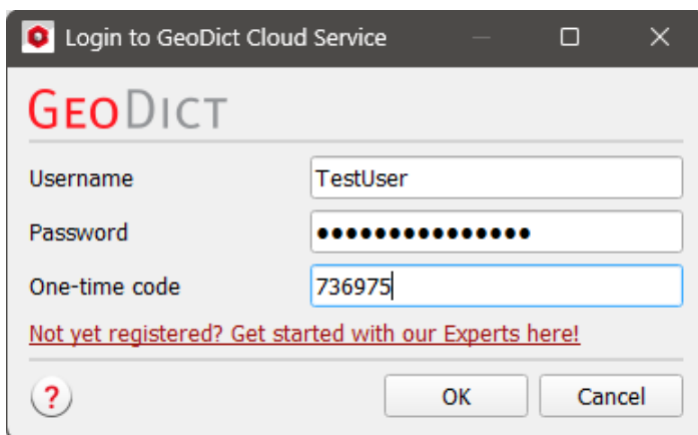


1.1.2 Run a Cloud Simulation

To start a single simulation in the cloud, enter the simulation parameters as usual in GeoDict by clicking on the **Edit** button in the module section. After setting up all parameters, click the **Cloud** button instead of the **Run** button.



If you are not logged in, the **Login to GeoDict Cloud Service** window opens. Enter your **Username**, **Password**, and your **One-time code** from the [authenticator](#). Click **OK** to continue to the **Run Command in GeoDict Cloud** dialog. If you are already logged in, the **Run Command in GeoDict Cloud** dialog opens directly.



Run Command in GeoDict Cloud Dialog

The **Run Command in GeoDict Cloud** dialog offers several settings:

✓ Project Name

The **Project Name** allows you to group multiple simulations together by giving them a shared project name. The default name is derived from the name of the currently selected project folder, e.g., *MyFirstGeoDictProject*.



Important! Results for multiple jobs where both **Project** and **Job Name** (e.g., *MyFirstGeoDictProject* and *FiberGeoCreate*) are identical should not be downloaded simultaneously since this will result in the same file names and overwriting of files. We recommend to define different **Job Names** to avoid this problem.

✓ Job Name Prefix

The **Job Name Prefix** serves to identify the specific simulation that is run. The default name depends on the chosen command, e.g., *GrainGeoCreate* for creating grains using GrainGeo.



Important! Results for multiple jobs where both **Project** and **Job Name** (e.g., *MyFirstGeoDictProject* and *FiberGeoCreate*) are identical should not be downloaded simultaneously since this will result in the same file names and overwriting of files. We recommend to define different **Job Names** to avoid this problem.

✓ Upload Current Structure

When this option is activated the structure that is currently loaded in GeoDict is uploaded to the cloud machine together with the job. This is required for commands which operate on the current voxel structure. This applies to most **Analyze** and **Predict** modules. Therefore, this option is active by default when a structure is currently loaded in GeoDict.

✓ Upload Current Project Folder

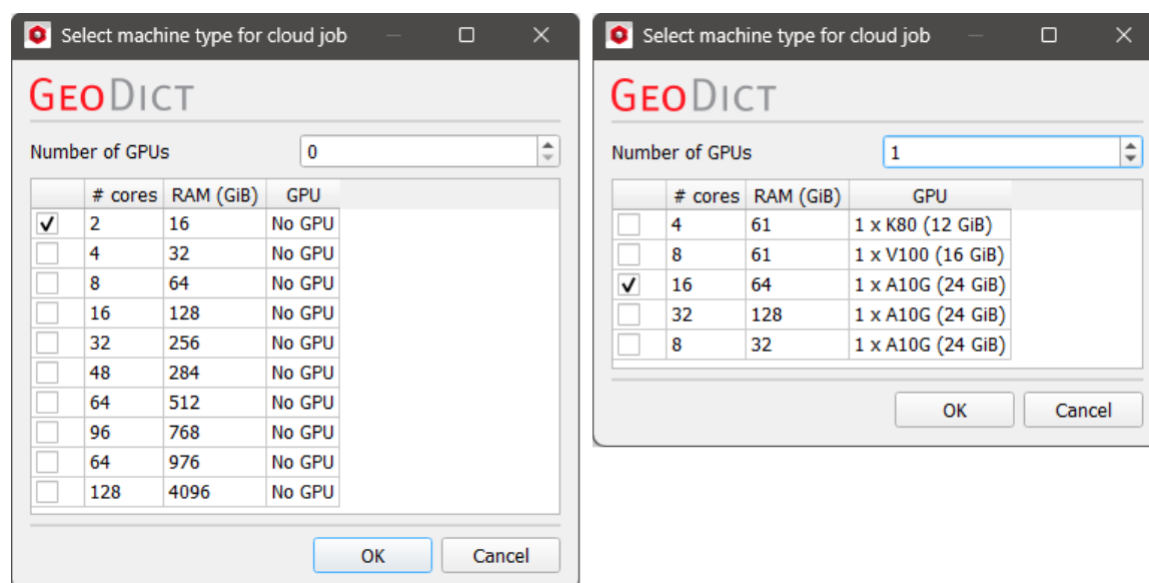
When this option is activated the entire current project folder is uploaded to the cloud machine together with the job. This can be necessary if additional files in the project folder are required to run the computation, e.g., for continuing a FlowDict simulation from a previous result. We suggest preparing a new project folder for this purpose, containing only the required data to avoid uploading unnecessary files.

✓ GeoDict Version

Select the **GeoDict Version** that you want to use. You can only select the same major version as you are running locally, e.g., GeoDict 2026. However, you can choose between different service packs, if they are available on your cloud environment. Note that this allows you to, e.g., test a new Service Pack release before installing it locally.

✓ Selected Machine

Here you can select which type of cloud machine you want to use for the simulation. You can see the **Number of (#) cores**, the **RAM**, and what type of **GPU** is available. To see cloud machines with one or more **GPUs**, enter a value in the **Number of GPUs** box. **GPUs** are necessary to effectively use AI functionalities in GeoDict (e.g., GeoDict-AI, FiberFind-AI). Click in the checkbox of the machine type that you want to use for this job and then click **Ok**.



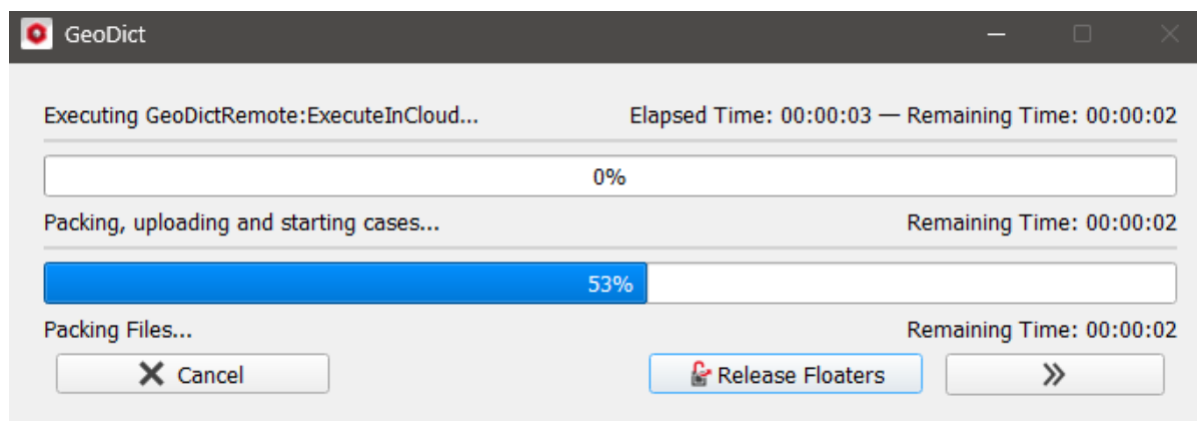


Note! Be aware that the **Number of Cores** shown includes cores available through the use of hyperthreading. That means, a machine with 32 logical cores consists of 16 physical cores. Some GeoDict functionalities cannot efficiently use hyperthreading. Their speed is limited by the ability of the processor to process large amount of data and not by the ability to do many arithmetic operations. Therefore, if you select a machine with 32 cores from the list, the runtimes may be similar for using 16x parallelization or 32x parallelization, as cores available through hyperthreading may not add a significant speedup.

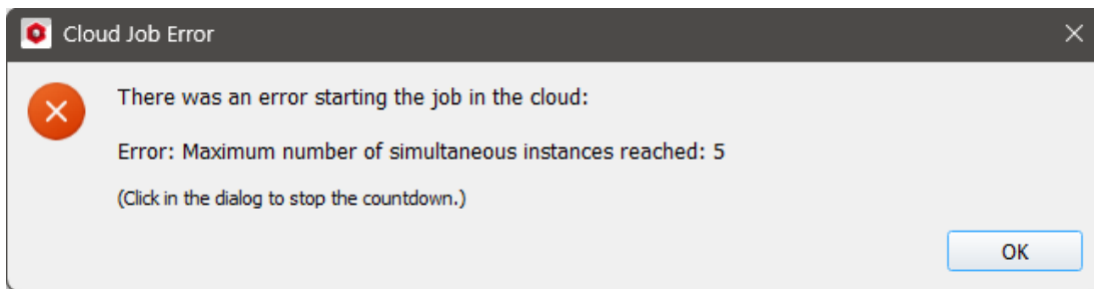
✓ Timeout

This option allows you to define a timeout for the job in hours. If the job has not completed after the given time, it is automatically terminated. The maximum value is 720 h (30 days). If you do not want any timeout, set this value to **0**. Then the simulation runs until it is completed, terminated, or crashes. Setting a timeout can be useful to avoid additional costs, e.g., for simulations that fail to converge.

After defining all settings, click **Run** to send the simulation job to the cloud. You will then see a dialog showing the progress of packing the job and sending it to the cloud. All your custom GeoDict settings (e.g., your material database) are also automatically packed and sent together with the job. This ensures that the same settings are applied for local and cloud machine simulations.



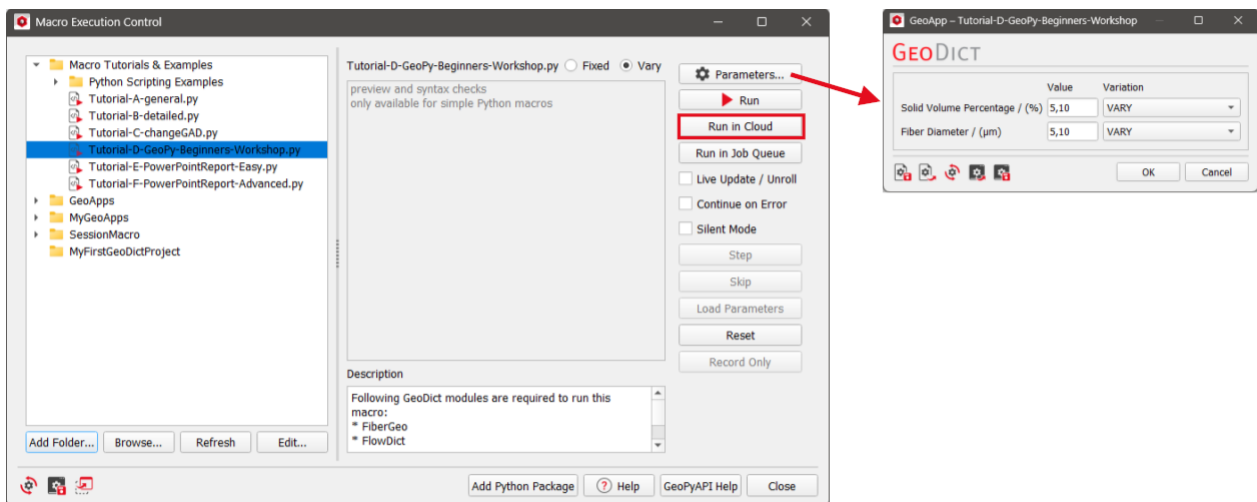
Depending on your account configuration, the number of simultaneous virtual machine instances might be limited to protect you from accidental overspending. If you submit more jobs than the limit, you will receive an error message during the upload. Although those jobs will be shown as **Ready** in the **GeoDict Cloud Projects** dialog, there is currently no functionality to start these jobs. [Delete](#) ²⁰ these jobs and wait for other jobs to finish before resubmitting the simulation.



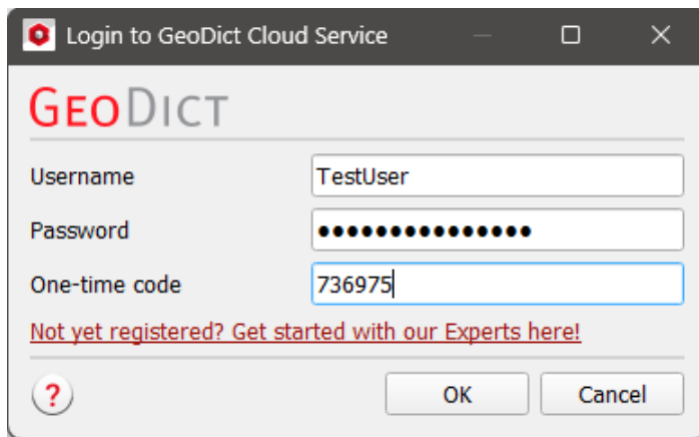
After the upload is completed, the [GeoDict Cloud Projects](#)¹⁶ dialog opens automatically. Here you can see the current status of your submitted job as well as all other jobs that you have in the **GeoDict Cloud**. Press **Refresh** (or **F5**) to update the view. You can close the dialog and continue to work with GeoDict locally. Open the dialog any time by selecting **Cloud & Queue** → **GeoDict Cloud Projects** in the [menu bar](#)¹⁶. When a simulation is completed, the virtual machine shuts down automatically and the status of the job changes to **Completed**. You can now [download](#)¹⁷ the results.

1.1.3 Run a Cloud Parameter Study

To start a parameter study in the cloud, create a GeoPython Macro containing variables. Then go to **Macro** → **Execute Macro / Script** and navigate to your macro file. Enable **Vary** and go to the **Parameters** to define the variation for each variable. Then click on **Run in Cloud**.

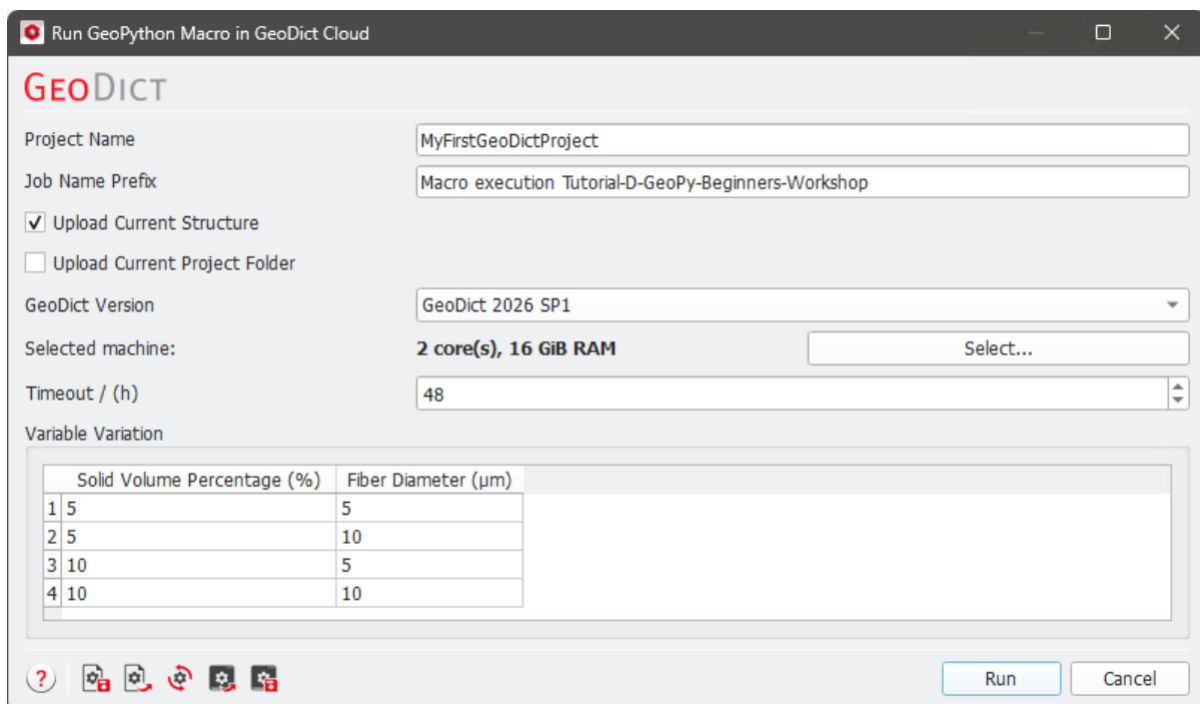


If you are not logged in, the **Login to GeoDict Cloud Service** window opens. Enter your **Username**, **Password**, and your **One-time code** from the [authenticator](#)⁵. Click **OK** to continue to the **Run GeoPython Macro in GeoDict Cloud** dialog. If you are already logged in, this dialog opens directly.



Run GeoPython Macro in GeoDict Cloud Dialog

The **Run GeoPython Macro in GeoDict Cloud** dialog offers several settings:



✓ Project Name

The **Project Name** allows you to group multiple simulations together by giving them a shared project name. The default name originates from the name of the currently selected project folder, e.g., *MyFirstGeoDictProject*.

✓ Job Name Prefix

The **Job Name Prefix** serves to identify the specific simulation that is run. The default name consists of *Macro execution* and the name of the macro. The name of the

individual jobs in the parameter study will be extended by the corresponding variation of the variables.

✓ Upload Current Structure

When this option is activated the structure that is currently loaded in GeoDict is uploaded to the cloud machine together with the job. This is required for commands which operate on the current voxel structure. This applies to most **Analyze** and **Predict** modules. Therefore, this option is active by default when a structure is currently loaded in GeoDict.

✓ Upload Current Project Folder

When this option is activated the entire current project folder is uploaded to the cloud machine together with the job. This can be necessary if additional files in the project folder are required to run the computation, e.g., for continuing a FlowDict simulation from a previous result. We suggest preparing a new project folder for this purpose, containing only the required data to avoid uploading unnecessary files.

✓ GeoDict Version

Select the **GeoDict Version** that you want to use. You can only select the same major version as you are running locally, e.g., GeoDict 2026. However, you can choose between different service packs, if they are available on your cloud environment. Note that this allows you to, e.g., test a new Service Pack release before installing it locally.

✓ Selected Machine

Here you can select which type of cloud machine you want to use for the simulation. You can see the **Number of (#) cores**, the **RAM**, and what type of **GPU** is available. To see cloud machines with one or more **GPUs**, enter a value in the **Number of GPUs** box. **GPUs** are necessary to effectively use AI functionalities in GeoDict (e.g., GeoDict-AI, FiberFind-AI). Click in the checkbox of the machine type that you want to use for this job and then click **OK**.

GeoDict

Select machine type for cloud job

Number of GPUs:

	# cores	RAM (GiB)	GPU
☒	2	16	No GPU
☐	4	32	No GPU
☐	8	64	No GPU
☐	16	128	No GPU
☐	32	256	No GPU
☐	48	284	No GPU
☐	64	512	No GPU
☐	96	768	No GPU
☐	64	976	No GPU
☐	128	4096	No GPU

OK Cancel

GeoDict

Select machine type for cloud job

Number of GPUs:

	# cores	RAM (GiB)	GPU
☐	4	61	1 x K80 (12 GiB)
☐	8	61	1 x V100 (16 GiB)
☒	16	64	1 x A10G (24 GiB)
☐	32	128	1 x A10G (24 GiB)
☐	8	32	1 x A10G (24 GiB)

OK Cancel

Note! Be aware that the **Number of Cores** shown includes cores available through the use of hyperthreading. That means, a machine with 32 logical cores consists of 16 physical cores. Some GeoDict functionalities cannot efficiently use hyperthreading. Their speed is limited by the ability of the processor to process large amount of data and not by the ability to do many arithmetic operations. Therefore, if you select a machine with 32 cores from the list, the runtimes may be similar for using 16x parallelization or 32x parallelization, as cores available through hyperthreading may not add a significant speedup.

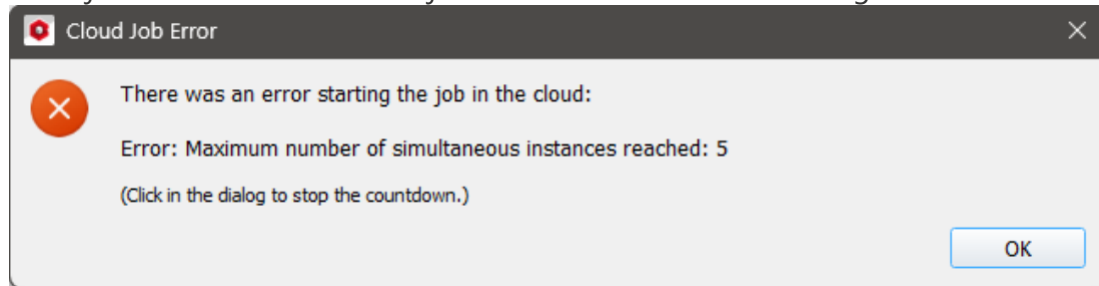
✓ Timeout

This option allows you to define a timeout for the job in hours. If the job has not completed after the given time, it is automatically terminated. The maximum value is 720 h (30 days). If you do not want any timeout, set this value to **0**. Then the simulation runs until it is completed, terminated, or crashes. Setting a timeout can be useful to avoid additional costs, e.g., for simulations that fail to converge.

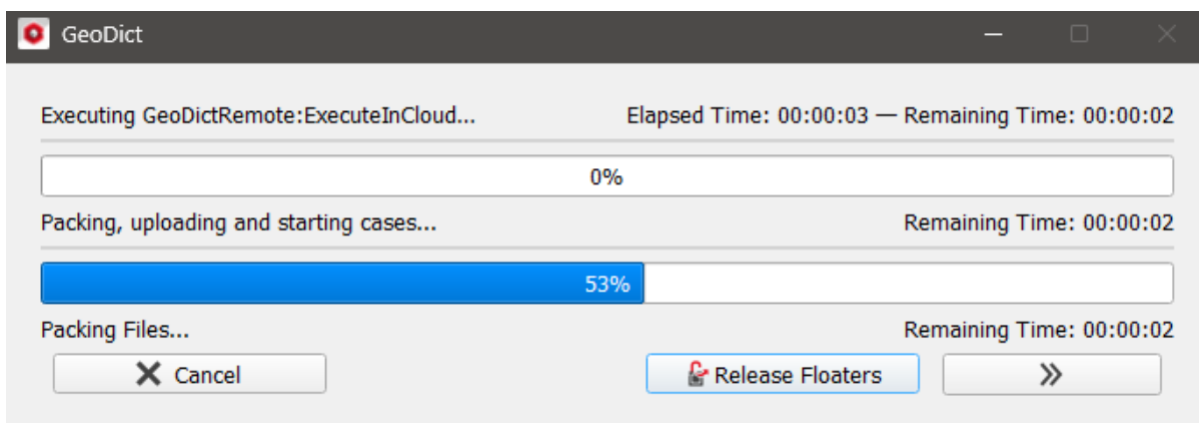
✓ Variable Variation

Here you can see all variations of the variables in your macro shown in a table. Each row corresponds to an individual job that will be executed by a single virtual machine. If your cloud setup has a limit on the number of simultaneous instances, make sure that the parameter study does not create more jobs than currently available instances. In the shown example, the number of jobs created for the parameter study is 4, while the limit of simultaneous instances is 5. If you submit more jobs than that limit, you will receive a error message during the upload. Surplus jobs will be shown as **Ready** in the **GeoDict**

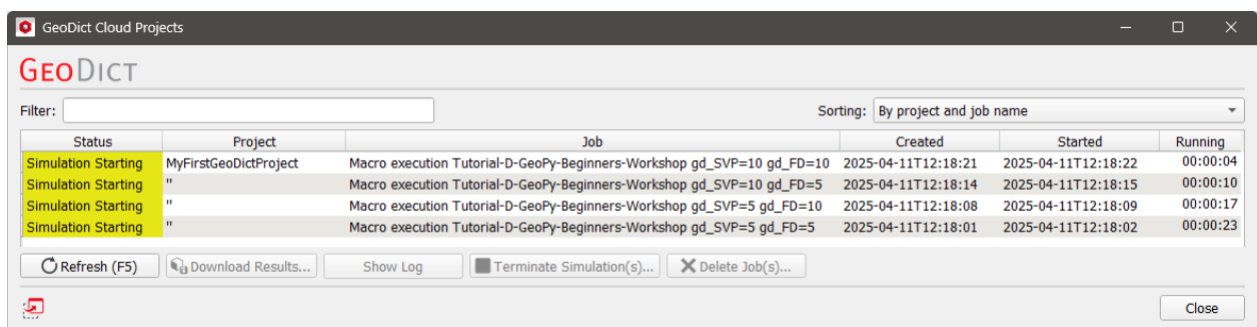
Cloud Projects dialog, but will not start once another job is completed. [Delete](#)²⁰ these jobs and wait for another jobs to finish before resubmitting the simulation.



After defining all settings, click **Run** to send the jobs of the parameter study to the cloud. You will then see a dialog showing the progress of packing the jobs and sending them to the cloud. All your custom GeoDict settings (e.g., your material database) are also automatically packed and sent together with the job. This ensures that the same settings are applied for local and cloud machine simulations. Note that all submitted jobs are executed at the same time in parallel on multiple machines.



After the upload of all jobs is completed, the [GeoDict Cloud Projects](#)¹⁶ dialog opens automatically. Here you can see the current status of your submitted jobs as well as all other jobs that you have in the **GeoDict Cloud**.



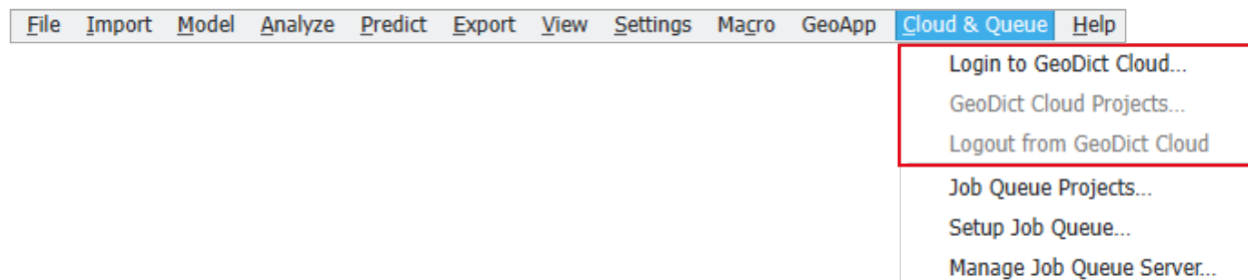
Press **Refresh** (or **F5**) to update the view. You can close the dialog and continue to work with GeoDict locally. Open the dialog any time by selecting **Cloud & Queue** → **GeoDict Cloud Projects** in the [menu bar](#)¹⁶. When a simulation of the parameter study is completed, the virtual machine shuts down automatically and the status of the job changes to **Completed**. You can now [download](#)¹⁷ the results.

1.1.4 Manage Cloud Projects

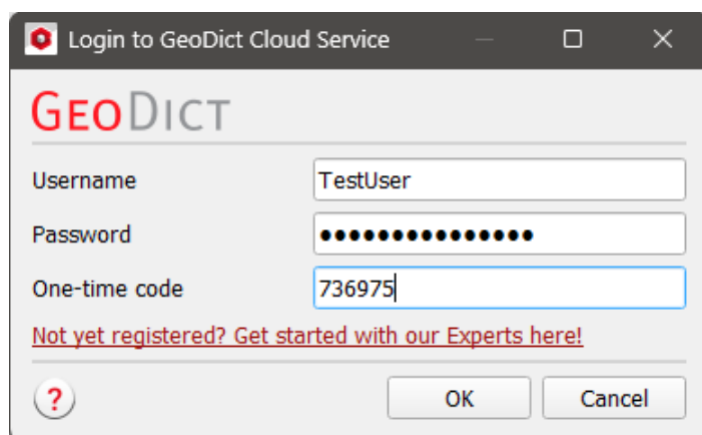
Login to the GeoDict Cloud and manage the GeoDict Cloud Projects.

GeoDict Cloud Menu

You can find all dialogs for managing the **GeoDict Cloud** under the **Cloud & Queue** entry in the menu bar.



The **Login to GeoDict Cloud** option is only active if you are not currently logged in. Click it to open the **Login to GeoDict Cloud Service** dialog, where you can enter your **Username**, **Password**, and the currently valid **One-time Code** from your [authenticator](#)¹⁵ to log in.

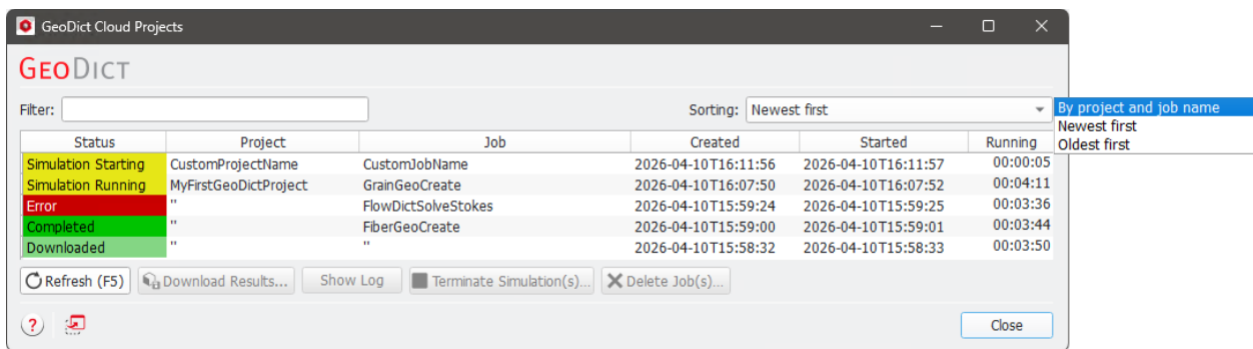


Clicking the **Logout from GeoDict Cloud** option, directly logs you out from the **GeoDict Cloud**. If you are not logged in, this option and the **GeoDict Cloud Projects** are inactive.

The **GeoDict Cloud Projects** dialog is explained [below](#)¹⁶.

GeoDict Cloud Projects

The **GeoDict Cloud Projects** option in the [Cloud & Queue](#)¹⁶ menu brings you to the corresponding dialog, where you can see all your jobs in the cloud and their associated status.



✓ Filter

You can use the **Filter** field to only show jobs with specific text associated with them. This could be the **Project** name, part of the **Project** name, the command used in the **Job** name (e.g., FiberGeo), or the date the job was created.

✓ Sorting

You can sort the jobs by their **Project** and **Job Names** or their **Created Time** in the upper right corner of this dialog

✓ Job Status

The status of a job can be:

- **Simulation Starting:** The cloud machine for this job is currently starting.
- **Simulation Running:** The simulation for this job is currently running on the cloud machine.
- **Completed:** The simulation for this job has been completed. The cloud machine has been shut down.
- **Downloaded:** The results from this job have been downloaded. You can download the results as often as you like, as long as the job has not been [deleted](#)²⁰.
- **Error:** The simulation for this job has not finished and is not running anymore. This could be due to [termination](#)¹⁹, the simulation failing, or running into the defined [timeout](#)¹⁰.

✓ Refresh (F5)

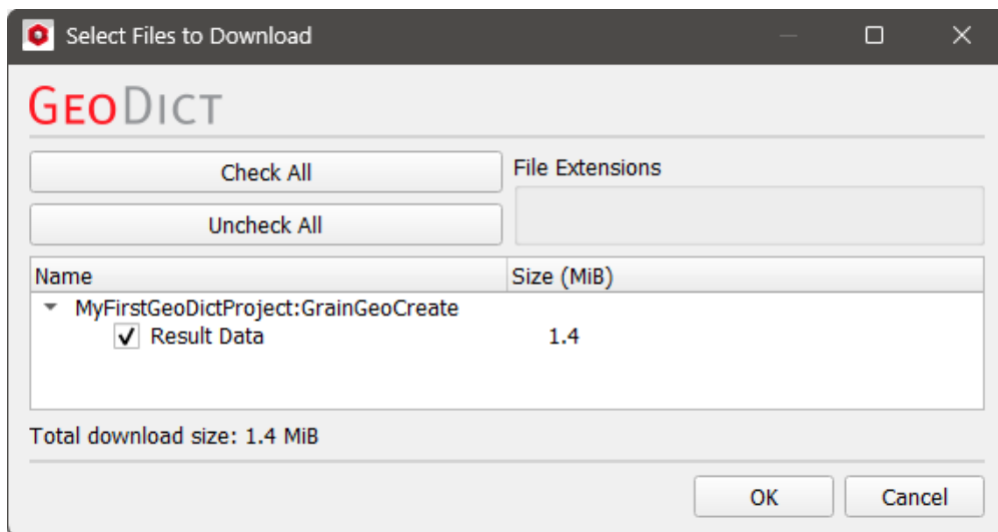
Click the **Refresh** button or press **F5** to reload the status of all jobs. The dialog does not automatically update, so click this button if you have left the dialog open for a while to check the status of your cloud jobs.

✓ Download Results

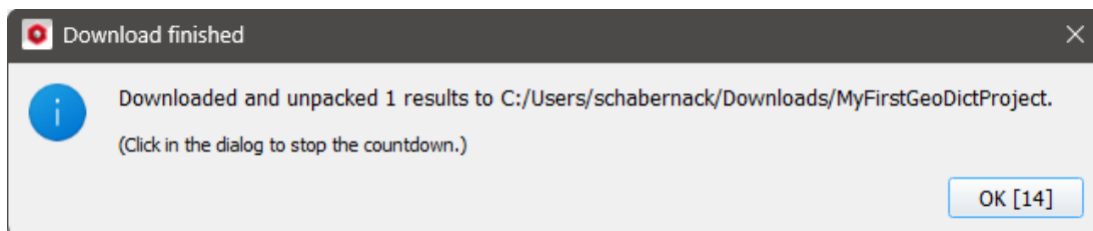


Important! Results for multiple jobs where both **Project** and **Job Name** (e.g., *MyFirstGeoDictProject* and *FiberGeoCreate*) are identical should not be downloaded simultaneously since this will result in the same file names and overwriting of files. We recommend to define different **Job Names** to avoid this problem.

When the simulation is completed successfully, the status of the job changes to **Completed** in the **GeoDict Cloud Projects** dialog. Select the job (or multiple) and click on **Download Results**. The **Select Files to Download** dialog opens. Here you can only choose to download all files in the **Result Data**. Note that for failed simulations (in the **Error** state) partial results **might** still be available for download, depending on the cause of the error.

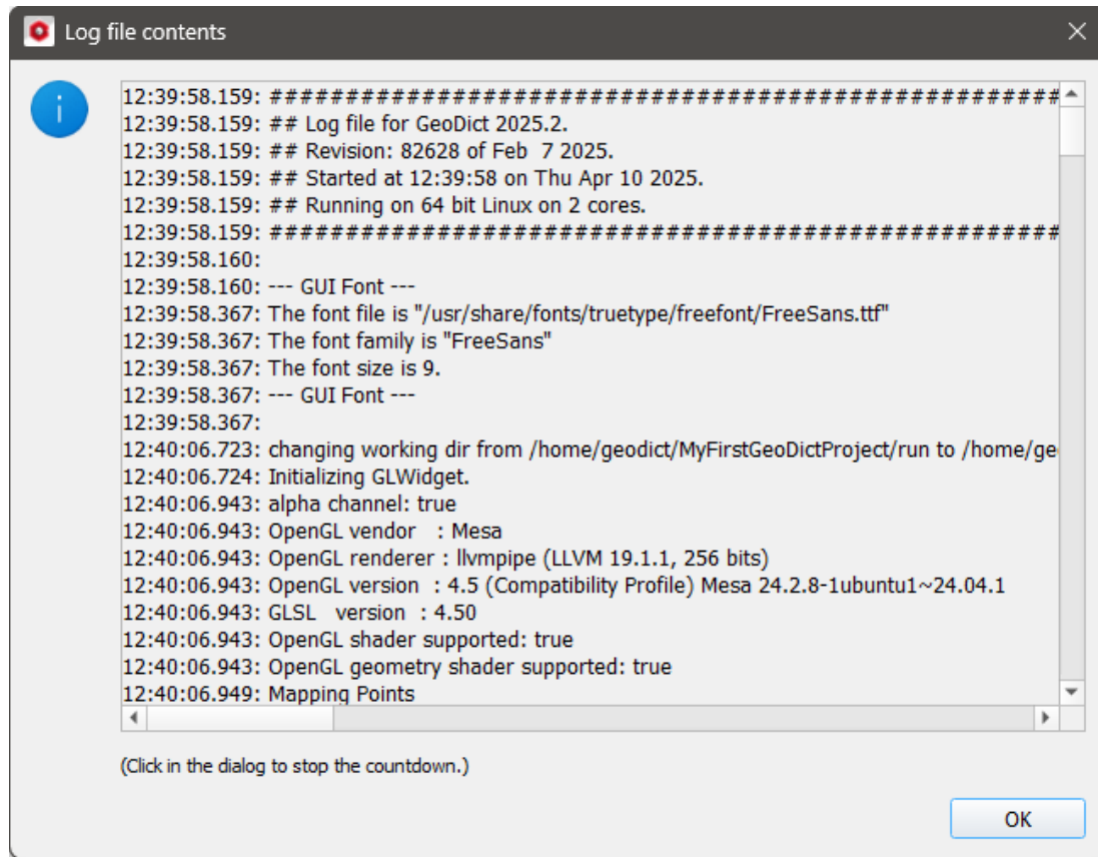


Click **OK** and select a location where the result files should be stored. The files are downloaded and unpacked automatically to the selected location. A sub-folder is created for each [Project Name](#). Within this folder, another sub-folder for each [Job Name](#) is created. Thus, the results of multiple simulations are automatically grouped into your different projects when downloading. Inside the **Job Name** folders, you can find the GeoDict results (*.gdr, result folder), the input python scripts to run the command (macro.py, runme.py), and the log file of the cloud machine (geodict.log). A message will inform you that the download and unpacking has successfully finished, and where you can find the data.



✓ Show Log

Click **Show Log** to see the current GeoDict log output for this simulation. This information can help you to observe the progress of the computation or identify potential errors. The dialog shows the last 50 lines of the log output. For running simulations, you can update the log by closing the dialog and clicking the **Show Log** button again.



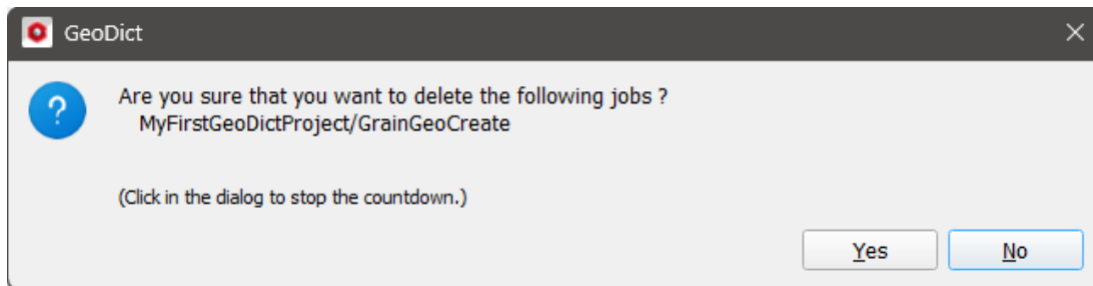
✓ Terminate Simulation(s)

Select one or more running simulations in the **GeoDict Cloud Projects** dialog and click **Terminate Simulation(s)** to cancel them. Only running simulations can be terminated. Before a simulation is terminated, a warning message is shown asking you to confirm that you want to terminate all listed simulations. Note that currently no partial results will be available for terminated simulations.



✓ Delete Job(s)

Click the **Delete Job(s)** button to delete the currently selected job(s) and all associated results. This will remove all generated files for these jobs from the [Cloud Data](#)^[21] section. Before a job is deleted, a warning message is shown asking you to confirm that you want to delete the selected jobs. After deleting, the results will not be available anymore. Thus, ensure that you have [downloaded](#)^[17] all results beforehand. Note that running jobs can not be deleted. They have to be [terminated](#)^[19] first.



View Cloud Simulations in the Cloud Web Interface

You can also view all your simulations submitted from GeoDict to the cloud in the cloud web interface. Follow the same link that you received for your [first login](#)^[5] and log in using your credentials. In the [Cloud Dashboard](#)^[24] you can see information on the currently **Running Cloud Machines**, all available **Jobs**, and the stored **Cloud Data**. The cloud web interface is the same as the [Math2Market Cloud](#)^[23].

✓ Running Cloud Machines

In the **Running Cloud Machines** panel, you can see all currently running cloud machines. The **User** is always your **username** for the **GeoDict Cloud**. In contrast to machines started manually from the web dashboard, machines started for **GeoDict Cloud** simulations are automatically terminated once the simulation is finished, has failed, or the timeout has been reached. Click [here](#)^[26] for more details on the **Running Cloud Machines** panel.

Running cloud machines [Start new machine...](#)

User	Hostname	GeoDict version	Cloud data	vCPUs	RAM [GiB]	Utilization	Launch time	Time running [dd:hh:mm]	Timeout [dd:hh:mm]	
testuserJS	zuwybwdl	GeoDict 2025 SP1	20c79ce1-573e-4396-b995-9f3446880a09.zip	2	16	CPU: ? RAM: ? Disk: ?	?	?	02:00:00	Starting Show password
testuserJS	ocqkoekc	GeoDict 2025 SP1	b6454b63-32ab-446a-a52a-139724fe2790.zip	2	16	CPU: 90.8% RAM: 2.6% Disk: ?	14:27:12 Apr 10, 2025	00:00:04	02:00:00	Terminating Show password

[Terminate](#) 0 / 2 Machines selected

✓ Jobs

In the **Jobs** panel, you can see all jobs submitted to the **GeoDict Cloud**. They can be identified by their **Project** and **Job Name**. You can see when the job was **Created** and has **Finished**. The **Finished** date is only available when a simulation is completed, failed, or the timeout has expired.

Click on the **Input Data** button to download all input data files. These contain the python scripts to run the simulation (macro.py, runme.py) and the settings from your local GeoDict that are automatically uploaded to ensure the same settings between local and cloud machine (e.g., your material database). If you chose to [upload](#)^[8] the structure or project folder, these are contained as well.

When results are available for download, the **Results** button becomes active. Click it to download all result files in a zipped archive. The name of this archive is an automatically generated sequence of numbers and letters. Therefore, make sure to rename the folder for identification, if you download results from the cloud web interface. The results contain the same files as described for directly [downloading](#)^[17] from GeoDict.

Jobs

Project name	Job name	Owner	Created	Finished	State	Download
MyFirstGeoDictProject	GrainGeoCreate	testuserJS	April 10, 2025, 2:30 p.m.		STARTING	<button>Input data</button> <button>Results</button>
NewProject	FlowDictSolveStokes	testuserJS	April 10, 2025, 2:27 p.m.	April 10, 2025, 2:31 p.m.	DONE	<button>Input data</button> <button>Results</button>
MyFirstGeoDictProject	FiberGeoCreate	testuserJS	April 10, 2025, 2:17 p.m.	April 10, 2025, 2:20 p.m.	DONE	<button>Input data</button> <button>Results</button>
MyFirstGeoDictProject	FiberGeoCreate	testuserJS	April 10, 2025, 2:17 p.m.	April 10, 2025, 2:20 p.m.	DONE	<button>Input data</button> <button>Results</button>
MyFirstGeoDictProject	FlowDictSolveStokes	testuserJS	April 10, 2025, 2:15 p.m.	April 10, 2025, 2:20 p.m.	FAILED	<button>Input data</button> <button>Results</button>

Delete 0 / 5 jobs selected

✓ Cloud Data

The **Cloud Data** panel lists all input and result ZIP files. They are named by an automatically generated sequence of numbers and letters. Therefore, you cannot identify if the ZIP file contains inputs or results and to which job these files belong. If you want to download input or result files, either do so [directly from GeoDict](#)^[17] or from the [Jobs](#)^[21] panel.

Cloud data

[Upload new ZIP file...](#)

Name	Size [GiB]	Time of upload
0a6440a6-eeff-402e-80dc-6f11c3d617e0.zip	0.0	April 10, 2025, 2:33 p.m.
776aef2b-8f1f-41b3-88fa-b0a9e2af9ad3.zip	0.0	April 10, 2025, 2:31 p.m.
20c79ce1-573e-4396-b995-9f3446880a09.zip	0.0	April 10, 2025, 2:30 p.m.
b6454b63-32ab-446a-a52a-139724fe2790.zip	0.0	April 10, 2025, 2:27 p.m.
821d1165-d71a-4ec2-8764-f17f70407d20.zip	0.0	April 10, 2025, 2:20 p.m.
feb7641c-085f-4b0f-a17e-973c17dbbc20.zip	0.0	April 10, 2025, 2:19 p.m.
18e9cd93-06b7-4017-aa73-9f974b2d8d46.zip	0.0	April 10, 2025, 2:17 p.m.
ab411b11-9dfd-4c59-9501-c3e0fc929c12.zip	0.0	April 10, 2025, 2:17 p.m.
7d4f3b5a-c456-4cea-a12b-cbd84bbd51f5.zip	0.0	April 10, 2025, 2:15 p.m.
Delete 0 / 9 files selected		

1.2 Math2Market Cloud

The **Math2Market Cloud** solution offers the full interactive experience of GeoDict without any installation or hardware requirements. Only a web browser and an internet connection are needed.

Through your web browser, you can log into your account and access your individual [Math2Market Cloud Dashboard](#)^[24]. Here you can start one or more cloud machines, where GeoDict is already installed and ready-to-use. You can connect directly to the desktop of the cloud machine and use it like a local workstation. Simply click on the GeoDict icon on the desktop to get started.

Cloud machines with GPUs are offered as well, so that the AI capabilities of GeoDict (e.g., GeoDict-AI, FiberFind-AI, ImportGeo-Vol) can also be fully utilized.

The **Math2Market Cloud** uses [Amazon Web Services](#) (AWS) to provide cloud computing resources.

For more information and access to the **Math2Market Cloud**, please [contact us](#).

Learn how to use GeoDict on a cloud machine:

- [Log into the Cloud](#)^[23]
Learn the steps to log into the cloud via your browser.
- [Cloud Dashboard](#)^[24]
Explore all functionalities of your cloud dashboard.
- [Start a new Cloud Machine](#)^[29]
Understand how to start a new machine in the cloud.
- [Access the Cloud Machine](#)^[32]
Learn how to access your cloud machine through the browser.
- [Use the Cloud Machine](#)^[34]
Understand how to start GeoDict and run simulations in the cloud.
- [Upload Results](#)^[36]
Learn how to upload results from cloud machines to your dashboard.
- [Terminate the Cloud Machine](#)^[38]
Learn how to terminate running cloud machines.

1.2.1 Log into the Cloud

Once you have registered, you will receive an email with your credentials (username and password) which you can use log in to the **Math2Market Cloud** dashboard via the link provided in the email.

MATH 2 MARKET

Login

M2M Staging Environment

Username

Password

Login

MATH 2 MARKET

Login

Please enter the token generated by your token generator.

Token

Login

If multi-factor authentication is activated for your account, a second identification through a token (e.g., generated with the Google authenticator app) will be necessary.



Important! If multi-factor authentication is required for your account, you will be asked to create a multi-factor authentication upon your [first login](#)^[5]. If it is not required, you can choose to activate the multi-factor authentication in your [dashboard](#)^[26].

After logging in, your individual [Math2Market Cloud Dashboard](#)^[24] appears. Note that the initial dashboard setup might take a few minutes when you first log in. This happens automatically and you will be redirected to the dashboard once the setup is complete.

1.2.2 Cloud Dashboard

The **Cloud Dashboard** is separated into the three tables [Running Cloud Machines](#)^[26], [Jobs](#)^[28], and [Cloud Data](#)^[28].

Running cloud machines

[Start new machine...](#)

User	Hostname	GeoDict version	Cloud data	vCPUs	RAM [GiB]	Utilization	Launch time	Time running [dd:hh:mm]	Timeout [dd:hh:mm]
------	----------	-----------------	------------	-------	-----------	-------------	-------------	-------------------------	--------------------

[Terminate](#) 0 / 0 Machines selected

Cloud data

[Upload new ZIP file...](#)

Name	Size [GiB]	Time of upload
------	------------	----------------

[Delete](#) 0 / 0 files selected

Logged in as jonas.schabernack@math2market.de / jonas.schabernack@math2market.de

Usage last 7 days: 0 instance-hours

Usage last 12 months: 1 instance-hours

Usage year-to-date: 1 instance-hours

Items in each table can be selected by clicking anywhere within their row. Selected rows are highlighted in blue. In the upper right corner of the dashboard, four [buttons](#)²⁵ for navigation and managing the cloud settings are located.

✓ Buttons

[Dashboard](#)
[Change password](#)
[MFA settings](#)
[Logout](#)

- **Dashboard:** Always brings you back to your cloud dashboard.

- **Change Password:** Directs you to a page where you can change your password.

Password change

Please enter your old password, for security's sake, and then enter your new password twice so we can verify you typed it in correctly.

Old password:

New password:

Your password can't be too similar to your other personal information.
 Your password must contain at least 8 characters.
 Your password can't be a commonly used password.
 Your password can't be entirely numeric.

New password confirmation:

Enter the same password as before, for verification.

[CHANGE MY PASSWORD](#)

- **MFA settings:** Directs you to a page to handle all multi-factor authentication settings. Here you can enable/disable the multi-factor authentication and generate **Backup Tokens** that can be used when your primary and backup phone numbers are not available to you.



Account Security

Primary method: Enter the token generated by your token generator

Backup Tokens

If you don't have any device with you, you can access your account using backup tokens. You have 0 backup tokens remaining.

[Show Codes](#)

Disable Two-Factor Authentication

However we strongly discourage you to do so, you can also disable two-factor authentication for your account.

[Disable Two-Factor Authentication](#)



Backup Tokens

Backup tokens can be used when your primary and backup phone numbers aren't available. The backup tokens below can be used for login verification. If you've used up all your backup tokens, you can generate a new set of backup tokens. Only the backup tokens shown below will be valid.

You don't have any backup codes yet.

[Generate Tokens](#) [Back to Account Security](#)

- **Logout:** Logs you out of the **Math2Market Cloud**.

✓ Running Cloud Machines Table

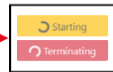
This table contains a list of your currently running cloud machines. The **Start new machine** button allows you to [start a new cloud machine](#)²⁹.

Running cloud machines

[Start new machine...](#)

User	Hostname	GeoDict version	Cloud data	vCPUs	RAM [GiB]	Utilization	Launch time	Time running [dd:hh:mm]	Timeout [dd:hh:mm]	
testuserJS	lvmxuerp	GeoDict 2025 SP1	MyFirstGeoDictProject.zip	2	16	CPU: 0.7% RAM: 4.4% Disk: ?	14:11:03 Apr 08, 2025	00:00:26	No timeout	Connect Show password

[Terminate](#) 0 / 1 Machines selected



The columns of the table give you information on:

- **User:** Your username for the login to the **Math2Market Cloud**.
- **Hostname:** Randomly generated name as identifier for this cloud machine.
- **GeoDict version:** Here you can see the GeoDict version that is installed on the cloud machine. You can select between different versions when [starting a new machine](#)^[29].
- **vCPUs:** Number of logical CPU cores of the cloud machine.



Note! Be aware that the **Number of Cores** shown includes cores available through the use of hyperthreading. That means, a machine with 32 logical cores consists of 16 physical cores. Some GeoDict functionalities cannot efficiently use hyperthreading. Their speed is limited by the ability of the processor to process large amount of data and not by the ability to do many arithmetic operations. Therefore, if you select a machine with 32 cores from the list, the runtimes may be similar for using 16x parallelization or 32x parallelization, as cores available through hyperthreading may not add a significant speedup.

- **RAM:** Size of the RAM (memory) available on the cloud machine.
- **Utilization:** Current utilization of the hardware resources. This allows you to see whether the cloud machine is idling or a simulation is currently running. Note that these metrics are updated with a small delay.
- **Launch time:** Time when the cloud machine was started.
- **Time running:** Shows how long the machine has been running.
- **Timeout:** This option is only available for jobs sent from [GeoDict to the cloud](#)^[4]. For cloud machines started from the dashboard, this option is always **No timeout**.
- **Status:** In the rightmost column, the current status of the cloud machine is located. The status can be **Starting**, **Connect**, and **Terminating**. Click on the button when **Connect** is shown to open a [connection to the cloud machine](#)^[32] in a new tab.

- **Show password:** Click on this button to show the password of the cloud machine. Enter this password when [connecting](#)^[32] to the cloud machine.

Virtual workstation password
OjftJHK5
Close

Below the list, the **Terminate** button is located. Select one or more cloud machines and click this button to [terminate](#)^[38] them.

Are you sure you want to terminate the following instances?
1. lvmxuerp, GeoDict 2025 SP1, 00:00:29, MyFirstGeol
Terminate Cancel



Important! Once a cloud machine is terminated, all data on the machine is deleted. Therefore, make sure to [upload all results](#)^[36] to the cloud data in the dashboard before terminating. Machines that are not terminated continue to run indefinitely. This can result in high costs for running the cloud machines. Make sure to terminate all machines that are no longer needed.

✓ Jobs Table

This table shows all simulations submitted to the cloud via the [GeoDict Cloud](#)^[21]. When only using the **Math2Market Cloud**, this table will remain empty.

✓ Cloud Data Table

The table contains a list of currently available data archives (*.zip) in the **Math2Market Cloud**. Click **Upload new ZIP file** to upload data (e.g., CT scans) to the dashboard. When [starting](#)^[29] a machine, you can select an uploaded dataset to make it available on the machine.

Cloud data Upload new ZIP file...

Name	Size [GiB]	Time of upload
MyFirstGeoDictProject.zip	0.0	April 8, 2025, 3 p.m.

Delete
0 / 1 files selected

Zipped data archives shown in this table of the dashboard can originate from three sources:

- Upload zipped files from your local machine to the cloud through the **Upload new ZIP file** button. **Browse** for a ZIP file in the dialog and click **Upload**. Afterwards, the uploaded data is shown in the **Cloud data** table and can be selected when starting a new machine.

Upload ZIP file: Browse... MyFirstGeoDictProject.zip Upload

- Upload the project folder of a running cloud machine. You can [upload the project folder](#)^[36] by double-clicking the **copyProjectFolderToDashboard.py** script on the desktop of a running cloud machine.
- When using the [GeoDict Cloud](#)^[4] all inputs and results are automatically uploaded to the **Cloud data** as ZIP archives. They are named by an automatically generated sequence of numbers and letters. Therefore, you cannot identify if the ZIP file contains inputs or results and to which job these files belong. If you want to download input or result files, either do so [directly from GeoDict](#)^[17] or from the [Jobs](#)^[28] panel.

Click on the ZIP archive name that is shown in blue to **download** the file to your machine. Click **Delete** delete all selected ZIP files.



Important! The **Cloud data** allows you to exchange data between local and cloud machines and can also serve as short-term storage, e.g., for storing results after working in the cloud and using these results to start a new cloud machine the following day. It should not be used as long-term storage for data.

1.2.3 Start a new Cloud Machine

Click the [Start new machine](#)^[26] button in the cloud dashboard to create a new cloud machine. This opens the dialog to start a new machine, where you are asked to make three different selections:

- In the **GeoDict version** panel, you can select the GeoDict version that should be installed on the cloud machine. Depending on your account, multiple versions or only a single version may be available. Click on a version to select it. This version is then highlighted in blue.

GeoDict version	
#	Version
	GeoDict 2024 SP5
	GeoDict 2024 SP3
	GeoDict 2025 SP1

- In the **Instance type** panel, you can select different types of cloud machines. In the list you can see the **Name**, **Number (#) of cores**, **RAM size**, and if a **GPU** is available. Click on an instance type to select it. This instance type is then highlighted in blue.

Instance type				
#	Name	# of cores	RAM size [GiB]	GPU
	p3.2xlarge	8	61	1 x V100 (16 GiB)
	g5.4xlarge	16	64	1 x A10G (24 GiB)
	g5.8xlarge	32	128	1 x A10G

- In the **Cloud data** panel, you can select a ZIP archive that you have [uploaded](#)²⁹ to your cloud data table. You can also upload a new ZIP file here via the **Upload new ZIP file** button. Choose one of the available ZIP files or **No ZIP File** by clicking on it. The selected option is then highlighted in blue. The selected ZIP file will automatically be unpacked to the

MyFirstGeoDictProject folder on the started cloud machine.

Cloud data

Upload new ZIP file...

#	Name	Size [GiB]	Time of upload
	No Zip File	-	-
	UploadData.zip	0.0	March 20, 2026, 10:35 a.m.

Note: The selected ZIP file will be unpacked to the **MyFirstGeoDictProject** folder on the started cloud machine.

- In the **Summary** panel, you can see all selections made in the other three panels. When you have completed your selection, click on **Run** to start the cloud machine. Clicking on **Back** returns you to your dashboard.

Summary

GeoDict Version

GeoDict 2026 Build2

Instance Type

g5.4xlarge

Cloud Data

UploadData

BackRun

After clicking **Run**, you automatically return to the [cloud dashboard](#)^[24].

In the [Running cloud machines](#)^[26] panel of the dashboard, the new cloud machine is shown with the status **Starting**. The time it takes to start the cloud machine can vary depending on the selected instance type, the size of the uploaded data, and the current load on AWS. Once your machine is ready, the status indicator will change to **Connect**. Click on the **Connect** button to [access the cloud machine](#)^[32].

User	Hostname	GeoDict version	Cloud data	vCPUs	RAM [GiB]	Utilization	Launch time	Time running [dd:hh:mm]	Timeout [dd:hh:mm]	
testuserJS	xvpfigsm	GeoDict 2026 Build2	UploadData.zip	16	64	CPU: ? RAM: ? Disk: ?	?	?	No timeout	Starting Show password



Important! A started cloud machine will keep running until it is [terminated](#). Therefore, make sure to terminate all cloud machines that are no longer needed to avoid additional costs.

1.2.4 Access the Cloud Machine

You can connect to any running cloud machine by pressing the corresponding **Connect** button.

User	Hostname	GeoDict version	Cloud data	vCPUs	RAM [GiB]	Utilization	Launch time	Time running [dd:hh:mm]	Timeout [dd:hh:mm]	
testuserJS	xvpfigsm	GeoDict 2026 Build2	UploadData.zip	16	64	CPU: 5.3% RAM: 1.0% Disk: ?	10:37:20 Mar 20, 2026	00:00:03	No timeout	Connect Show password

Before clicking **Connect**, click on the **Show password** button to obtain the randomly generated password for this machine. The password will be displayed in a pop-up dialog. Select and copy the password to your clipboard (Ctrl+C) and click **Close**.

Virtual workstation password

zF0iSz:n

Close

After clicking **Connect**, a new browser tab opens containing a [noVNC](#) viewer for the cloud machine.



Click on **Connect**, paste the copied password (Ctrl+V), and click **Send Credentials**.

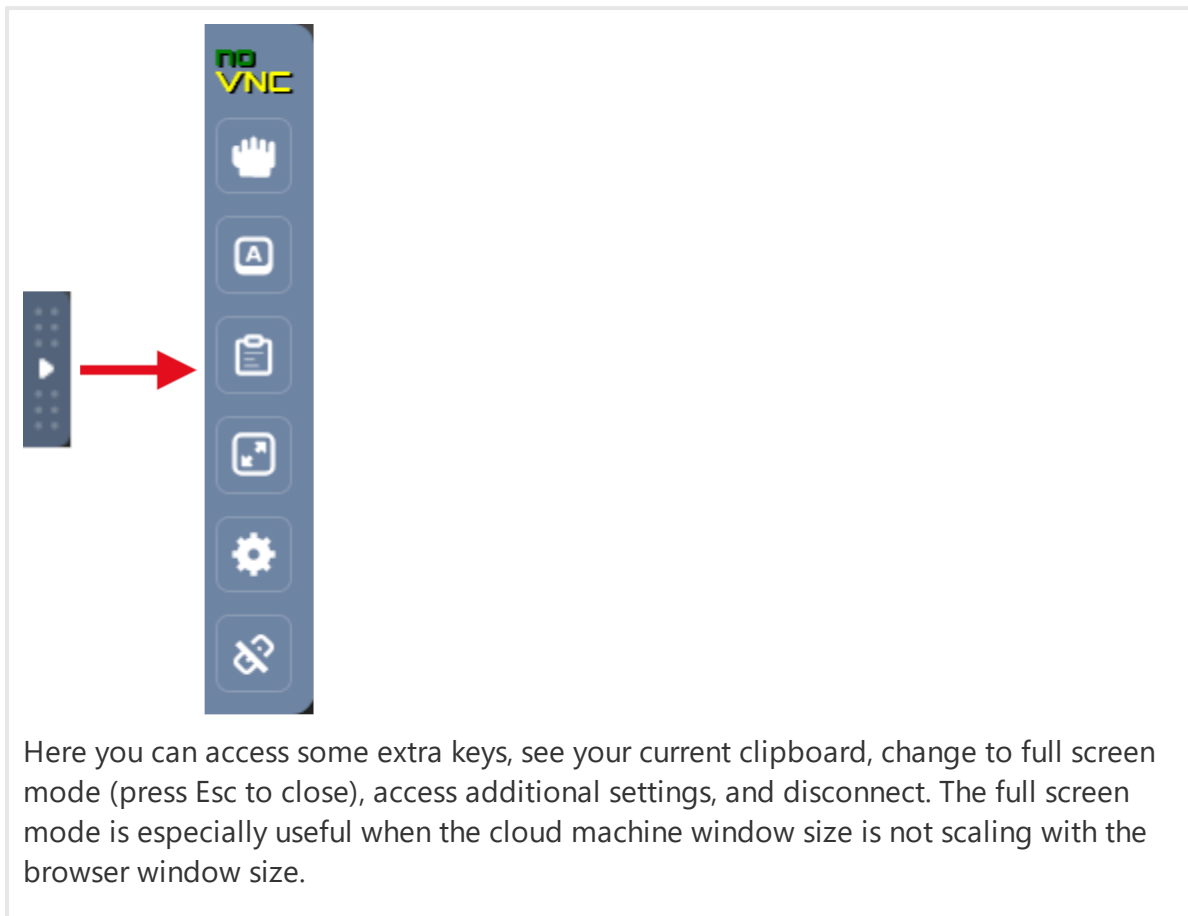
Password:

You have now access to your running Math2Market cloud machine.



✓ noVNC Viewer Settings

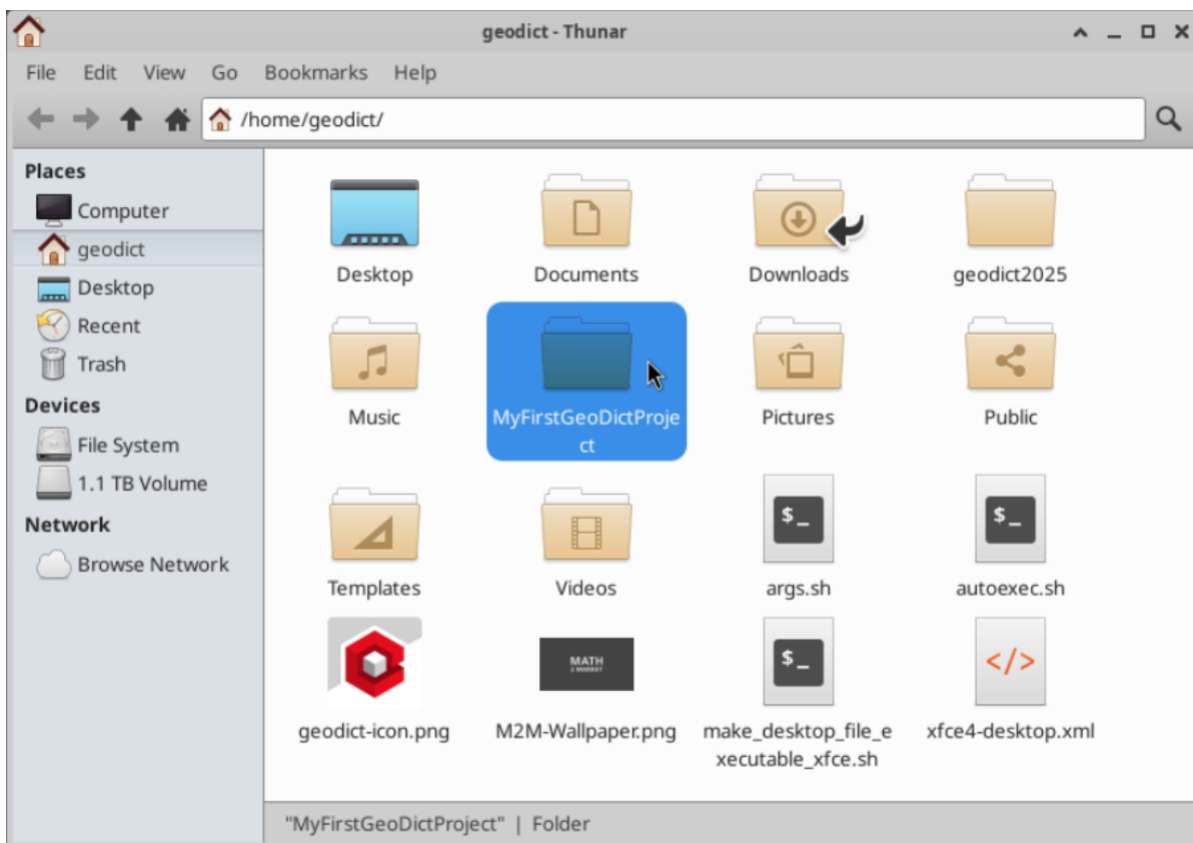
Click on the small arrow on the left edge of the viewer to access the noVNC viewer settings.



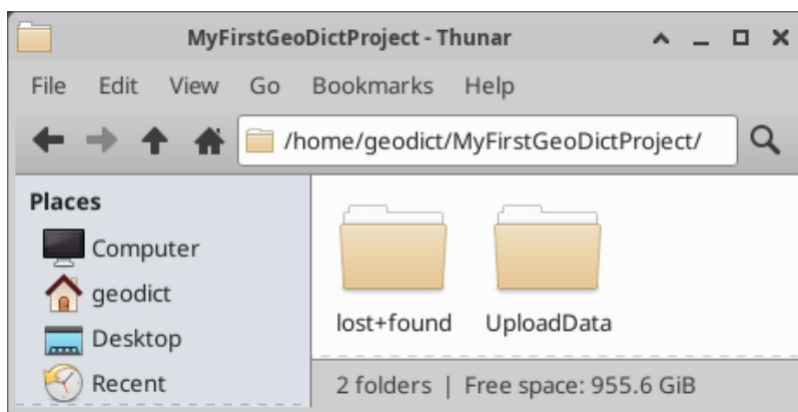
1.2.5 Use the Cloud Machine

Start GeoDict by double-clicking the GeoDict-icon  on the desktop. Which version of GeoDict is available depends on your choice during the [setup of the cloud machine](#)^[30]. Now you can use GeoDict just as you are used to on your local machine.

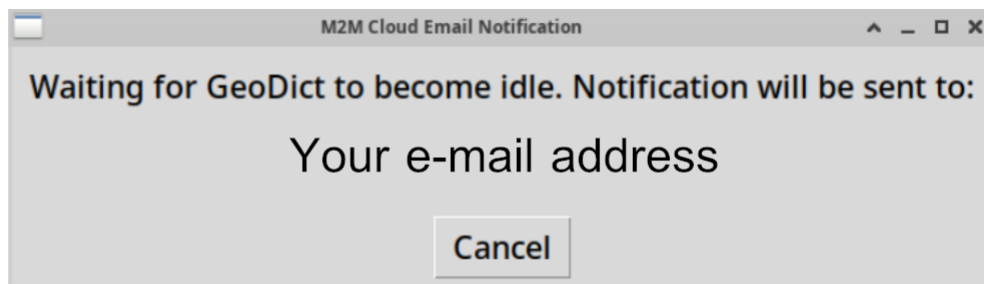
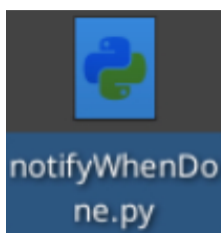
The default project folder of GeoDict on the cloud machine is `/home/geodict/MyFirstGeoDictProject`. We strongly recommend working only within this folder (or sub-folders created by you) as it is the only location with a useful amount of free space on the machine (at least 1 TiB - depending on your account). When [uploading results](#)^[36], this folder is also the default source folder.



If you have selected a ZIP archive when [starting the cloud machine](#)^[30], its contents will be available in the `/home/geodict/MyFirstGeoDictProject` directory. The `lost+found` folder is created by the operating system by default and can be ignored.



Once you have started a GeoDict simulation, you can enable an Email notification to be sent when the simulation is finished. To enable it, double-click the **notifyWhenDone.py** icon on the desktop of the cloud machine. This will open a window informing you that the script is waiting for GeoDict to become idle. An Email notification will be sent to the address connected to your **Math2Market Cloud** account once the simulation is finished. Closing this window deactivates the script. You can now close the noVNC viewer browser tab. After you received the notification Email, reconnect to the machine to [upload the results](#)^[36]. Then you can start another simulation or [terminate](#)^[38] the machine to avoid running costs.



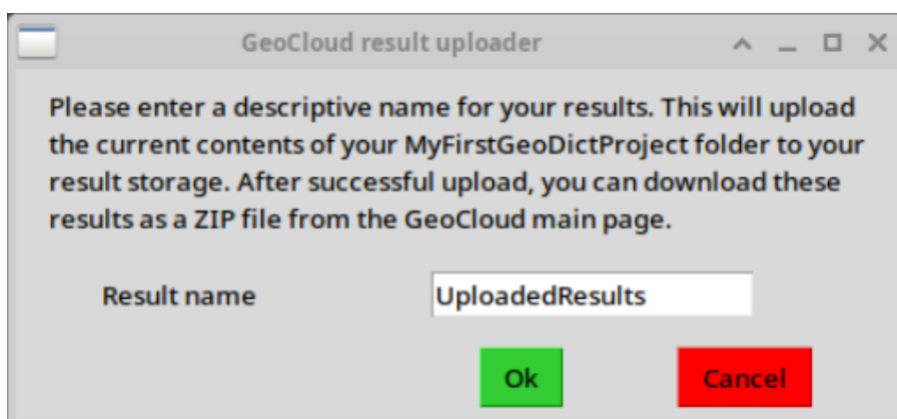
Any started cloud machine will continue to run until it is terminated. This means you can log out from the dashboard, close all tabs and even shut down your computer. Any simulation that you have started on a cloud machine will continue to run. At any later point in time (e.g., when you receive the idle notification email), you can login to the dashboard again, reconnect to the machine and continue your work (e.g., view & upload the results).



Important! A started cloud machine will keep running until it is [terminated](#)³⁸. Closing the noVNC tab in your browser does not terminate the machine. Therefore, make sure to terminate all cloud machines that you do not need anymore to avoid additional costs.

1.2.6 Upload Results

To copy GeoDict results from the cloud machine to the dashboard, double-click the **copyProjectFolderToDashboard.py** icon on the desktop. This will create a ZIP archive of all files in the `/home/geodict/MyFirstGeoDictProject` directory. Enter a **Result name** in the dialog that opens to specify a name for the ZIP file. After clicking **OK**, a progress bar shows you the uploading process.



Once the dialog and the progress bar close, you can find the results as a ZIP file in the [Cloud Data](#)²⁹ table. Here, you can download the ZIP file to your local machine by clicking on the blue file name. The data will remain available unless it is [deleted](#)²⁸. Note that you can also select the ZIP file again when starting another machine in the future to continue working with the project folder contents, e.g., consider creating a ZIP file at the end of your working day, terminating the machine, and starting a new machine using that ZIP file to continue working on this data on the next day.



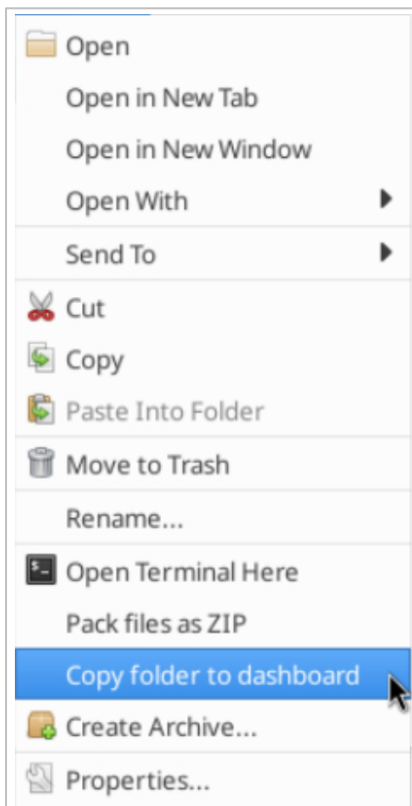
Important! The **Cloud data** allows you to exchange data between local and cloud machines and can also serve as short-term storage, e.g., storing results after working in the cloud and using these results to start a new cloud machine the next day. It should not be used as long-term storage for data.

Cloud data

[Upload new ZIP file...](#)

Name	Size [GiB]	Time of upload
UploadData.zip	0.0	March 20, 2026, 10:43 a.m.
UploadedResults.zip	0.0	March 20, 2026, 11:01 a.m.
Delete 0 / 2 files selected		

You can also upload a specific folder only by right-clicking on this folder in the file manager on the cloud machine. Then select **Copy folder to dashboard** in the menu. This will open the same upload dialog, where you can enter a **Result name**. After clicking **OK**, a progress bar shows you the uploading process.



1.2.7 Terminate the Cloud Machine

A running cloud machine does not stop, even after closing the browser tab. Therefore, to avoid additional costs, you should always terminate an unused cloud machine. Once a cloud machine is terminated, all data on the machine is deleted. Therefore, make sure to [upload all results](#)^[36] to the cloud data before terminating.

To terminate a running cloud machine, select it from the [Running cloud machines](#)^[26] table in the [dashboard](#)^[24] and click the **Terminate** button.

Running cloud machines [Start new machine...](#)

User	Hostname	GeoDict version	Cloud data	vCPUs	RAM [GiB]	Utilization	Launch time	Time running [dd:hh:mm]	Timeout [dd:hh:mm]	
testuserJS	kknbhind	GeoDict 2025 SP1	MyFirstGeoDictProject.zip	2	16	CPU: 0.3% RAM: 5.2% Disk: ?	13:12:18 Apr 09, 2025	00:02:57	No timeout	Connect Show password

[Terminate](#) 1 / 1 Machines selected

After clicking **Terminate**, you will be asked to confirm if you want to terminate all selected cloud machines in a separate dialog. Click **Terminate** again to confirm.

Are you sure you want to terminate the following instances?

1. kknbhind, GeoDict 2025 SP1, 00:02:58, MyFirstGeol

[Terminate](#) [Cancel](#)

The **Status** status of the cloud machine will then change to [Terminating](#)^[26]. Terminating a running cloud machine may take a minute or two. Once it is terminated, it will disappear from the table of [Running cloud machines](#)^[26].

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