

Roughness Database README Non-MATLAB v1
26/10/2020

Thank you for sharing your results on the roughness database

Our hope is that access to surface profiles, surface statistics and flow measurements will aid in the development of predictive correlations for drag over rough surfaces. Please follow the directions listed below for adding results and naming folders/files to create a consistent format for the database.

Step 0: Request access to the database and download the useful files.

If not already done, please go to <http://www.roughnessdatabase.org> and request access to the database.

Once access to the database has been granted you are able to download the useful files found on the database front page as shown in Figure 1.

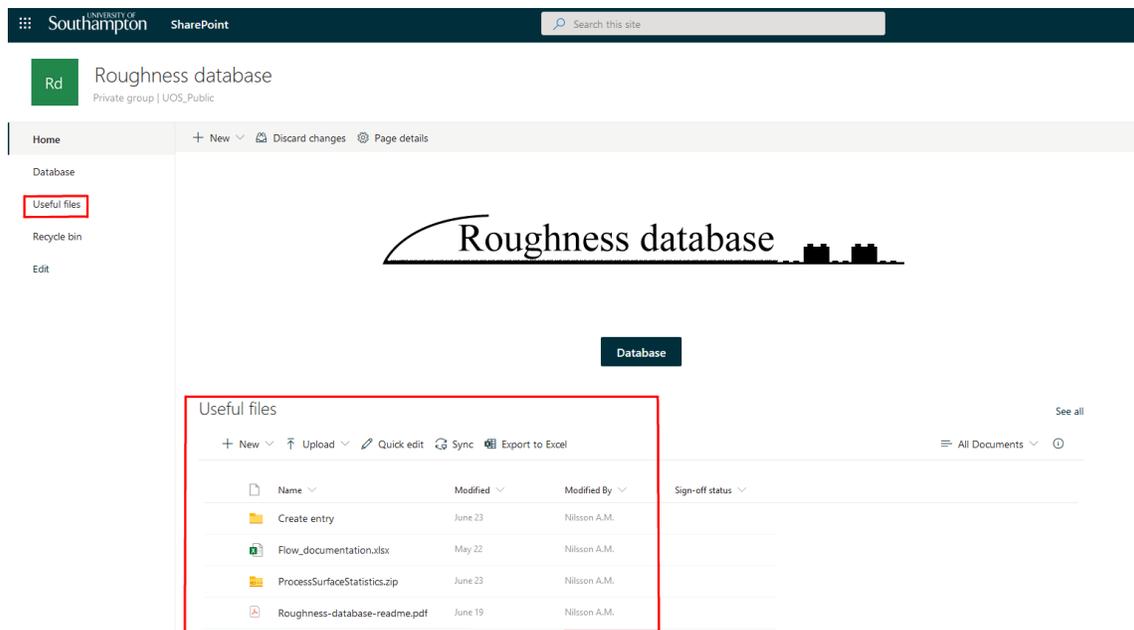


Figure 1- Useful files

The *Useful files* include:

- ProcessSurfaceStatistics.zip **(Not applicable for non-MATLAB users)**
- A “Non-MATLAB user folder” containing
 - Roughness.database-readme-non-MATLAB.pdf (A copy of this PDF)
 - Questionnaire.csv (See step 1)
- A “Create entry” folder (See step 2)
- Flow_documentation.xlsx (See step 5)
- Roughness-database-readme.pdf (A copy of the general README PDF)

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Step 1: Go to the “Useful files/Non-MATLAB users” folder and download Questionnaire.csv.

Download and open *Questionnaire.csv* in Excel or a text editor and edit the file to suit the surface you are going to upload to the database.

Please use the following convention (an example is shown in Figure 2):

- 1) Roughness type: **Hom** (homogeneous) or **Het** (heterogeneous) roughness
- 2) Arrangement: **Reg** (regular) or **Irreg** (irregular) arrangement (random or realistic surfaces would come under Irregular – even if the tiles have a regular arrangement)
- 3) Flow type: **TBL** (turbulent boundary layers) or **Pipe** or **Channel**
- 4) Data source: **Exp** (experiments) or **Sim** (simulations)
- 5) **Descriptor** (one- or two-word descriptor for the surface)
- 6) **Author** last name (This should be name of the author who is depositing the dataset)
- 7) **Year** (This should be year of paper that was published or year when the dataset is deposited)

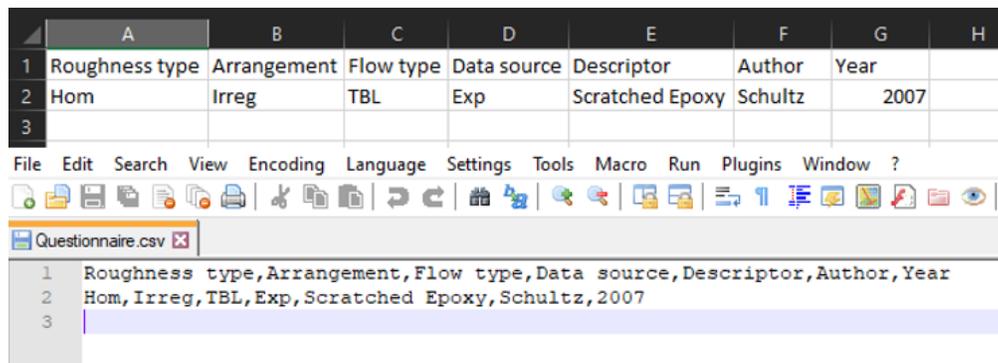


Figure 2 - Editing the .csv file. Top: Microsoft Excel. Bottom: Notepad++ (text editor)

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Step 2: Go to the database and create a database entry for each new rough surface that you may have. If your study considered multiple surfaces, then please create a new entry for each surface. This will allow end users to gain information for each surface easily and make the repository searchable and accessible easily.

A new entry is created by navigating to the *Useful files/Create entry* folder from the database front page.

Drag drop *Questionnaire.csv* into the *Create entry* folder as shown in figure 3 and 4. Alternatively, you can click the "Upload → Files" button and navigate to the .csv file you want to upload.

Note that you can create several entries at the same time by dropping several files. For each entry, please create a copy of the Questionnaire.csv file and edit it to suit the surface. The filename is not important if the order and format in the .csv file is maintained.

An automatic Sharepoint script running in the background will now create and tag your database entry. When the script finishes running, the .csv files dropped into the *Create entry* folder are automatically deleted and an email is sent to you saying the entries have been created.

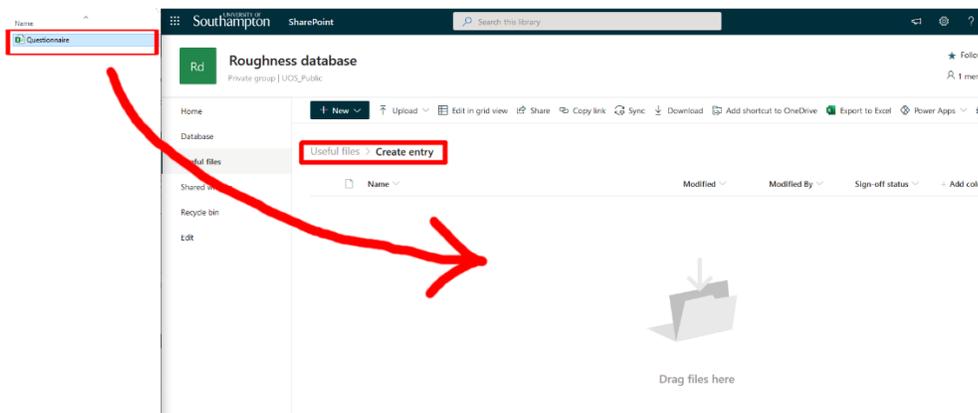


Figure 3 - Drag-drop Questionnaire.csv into *Create entry*

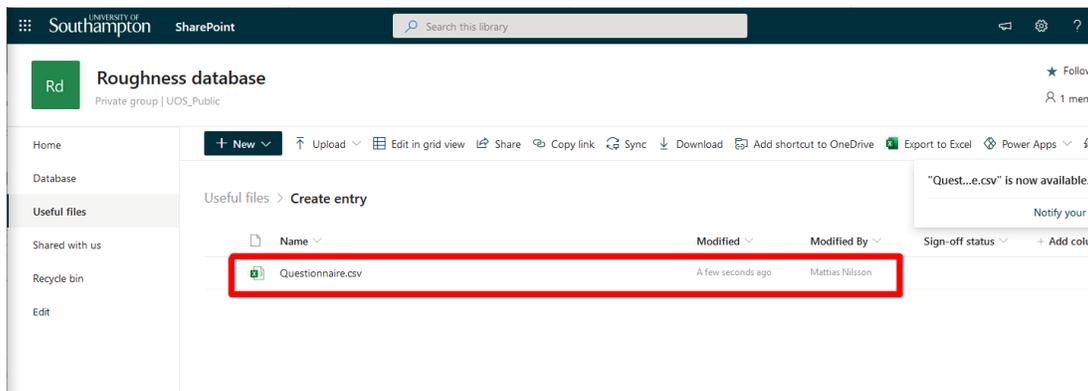


Figure 4 – Questionnaire.csv dropped into *Create entry*

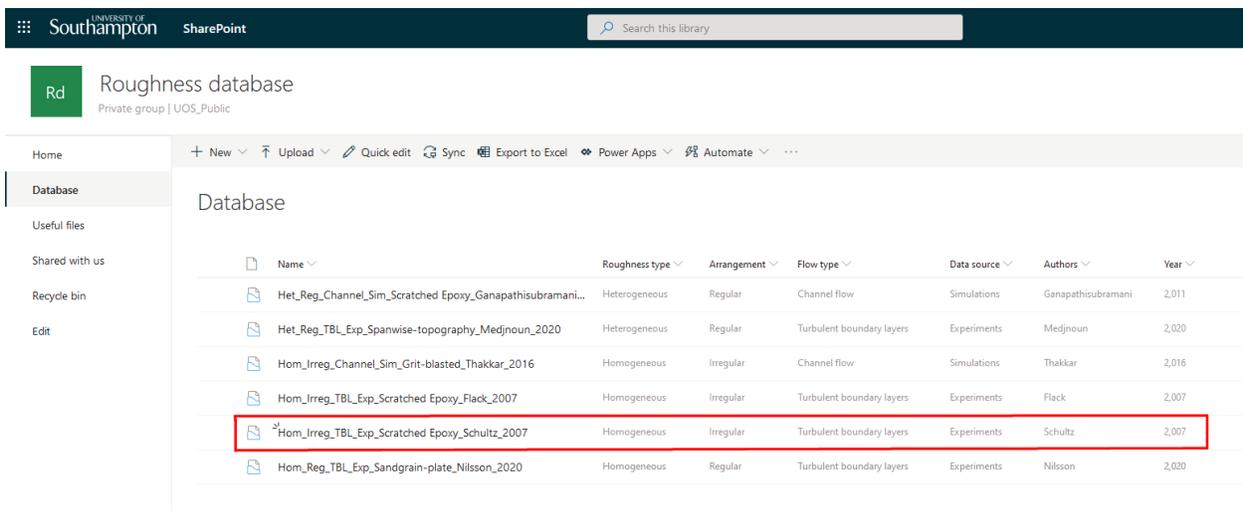
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Navigate to the *Database* where you will find your newly created entry following the general convention:

Roughness-type_Arrangement_Flow-type_Data-type_Descriptor_Author_Year

Following the example in figure 5,

Example: Hom_Irreg_TBL_Exp_Scratched Epoxy-Schultz_2007



The screenshot shows a SharePoint interface for a library named 'Roughness database'. The library contains a table with the following columns: Name, Roughness type, Arrangement, Flow type, Data source, Authors, and Year. The entry 'Hom_Irreg_TBL_Exp_Scratched Epoxy-Schultz_2007' is highlighted with a red box.

Name	Roughness type	Arrangement	Flow type	Data source	Authors	Year
Het_Reg_Channel_Sim_Scratched Epoxy_Ganapathisubramani...	Heterogeneous	Regular	Channel flow	Simulations	Ganapathisubramani	2,011
Het_Reg_TBL_Exp_Spanwise-topography_Medjnoun_2020	Heterogeneous	Regular	Turbulent boundary layers	Experiments	Medjnoun	2,020
Hom_Irreg_Channel_Sim_Grit-blasted_Thakkar_2016	Homogeneous	Irregular	Channel flow	Simulations	Thakkar	2,016
Hom_Irreg_TBL_Exp_Scratched Epoxy_Flack_2007	Homogeneous	Irregular	Turbulent boundary layers	Experiments	Flack	2,007
Hom_Irreg_TBL_Exp_Scratched Epoxy_Schultz_2007	Homogeneous	Irregular	Turbulent boundary layers	Experiments	Schultz	2,007
Hom_Reg_TBL_Exp_Sandgrain-plate_Nilsson_2020	Homogeneous	Regular	Turbulent boundary layers	Experiments	Nilsson	2,020

Figure 5 - Database entry created by automatic background script

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Navigating into the entry we find three entry folders: Flow Documentation, Papers and Surfaces – see figure 6. These are currently empty but will be populated with your contribution in the next step.

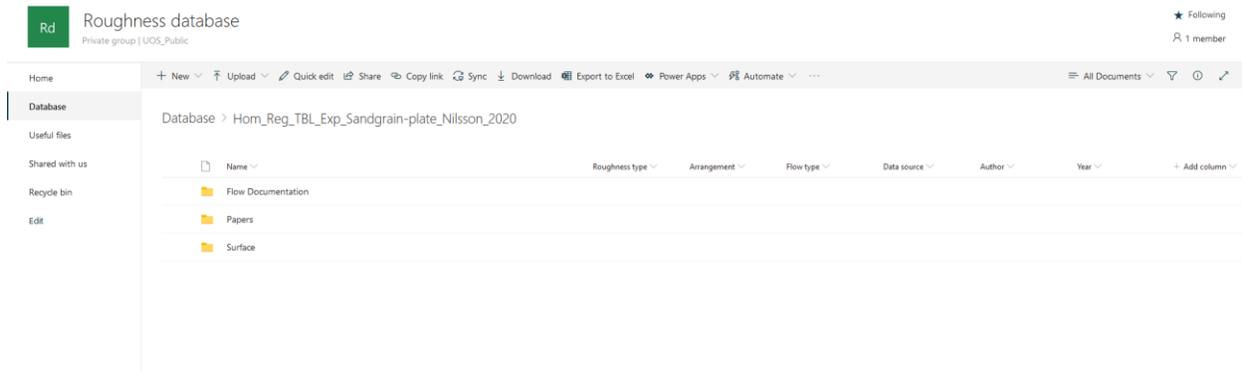


Figure 6 - Database entry populated by *ProcessSurfaceStatistics.m* output

Step 3: Upload surface scans or surface statistics

Upload or drag and any surface scans or surface statistics into the database entry “Surfaces” folder.

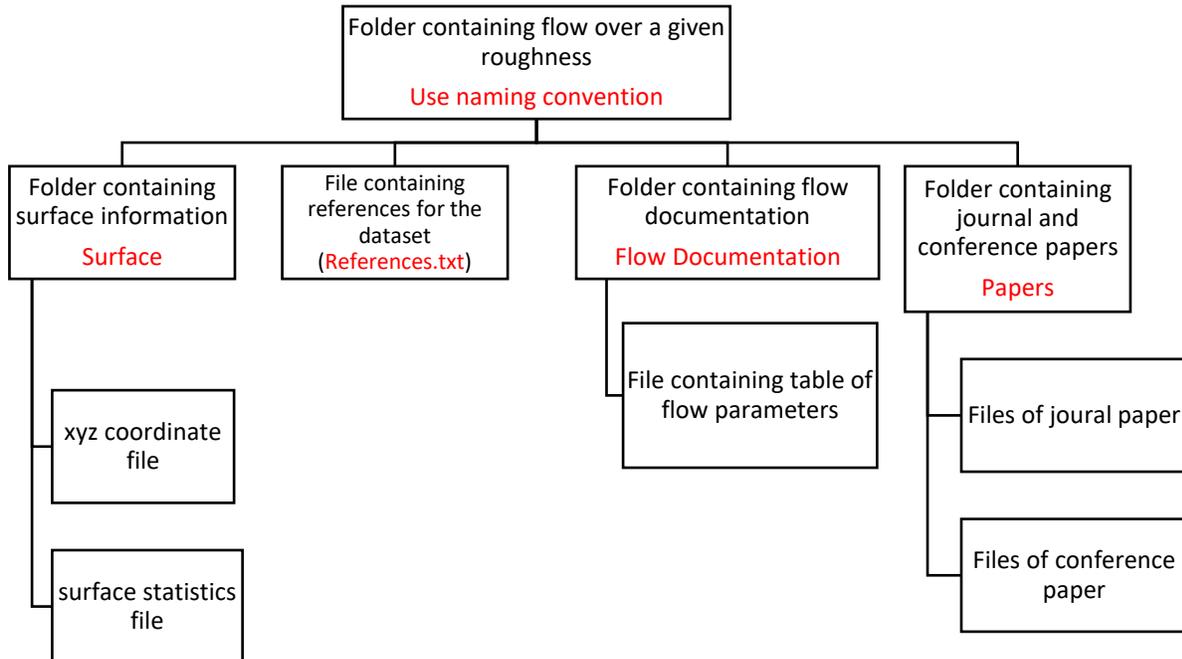
Step 4: Create a References.txt file that has the references (All publications) that you want an end-user to cite if they use this dataset. It would be ideal to have the full reference including DOI.

Upload or drag and drop this text file into the database entry. Also upload any relevant journal papers (subject to copyright permissions), conference papers, theses or reports related to the roughness you may want to share into the *Papers* folder.

Step 5: Create a file with flow documentation and upload to the *Flow Documentation* folder

Upload a table of basic flow parameters. The table should contain as a minimum the information in the Excel template, *Flow_documentation.xlsx*, provided in the *Useful files* folder on the database homepage. Additional flow parameters can be included as needed based on your specific case.

Summary of Organization of Database Folders and Files



Contact

Do you have questions, improvement suggestions or need help to prepare or upload your contribution?

Please do not hesitate to contact M.Nilsson@soton.ac.uk including [Roughness database] in the subject.