WELCOME TO PROFLOW INTRODUCTION GUIDE

Table of Contents

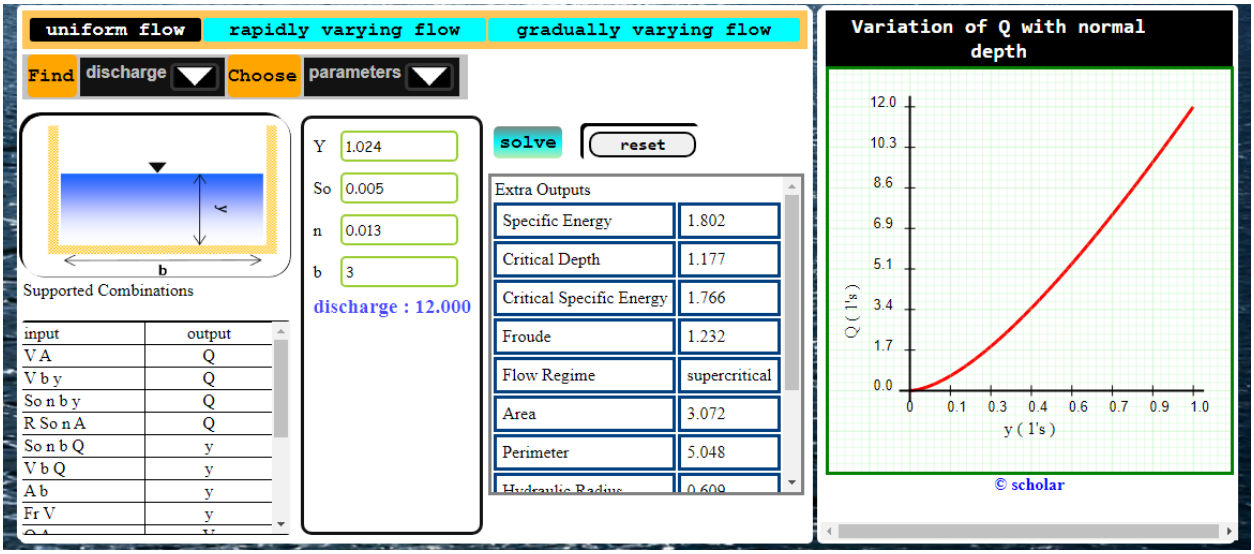
ALERT: Chapter 1 and 2 are compulsory to read.

Never Attempt to open, rename, edit, or delete the LIBRARY folder, within the application's package.

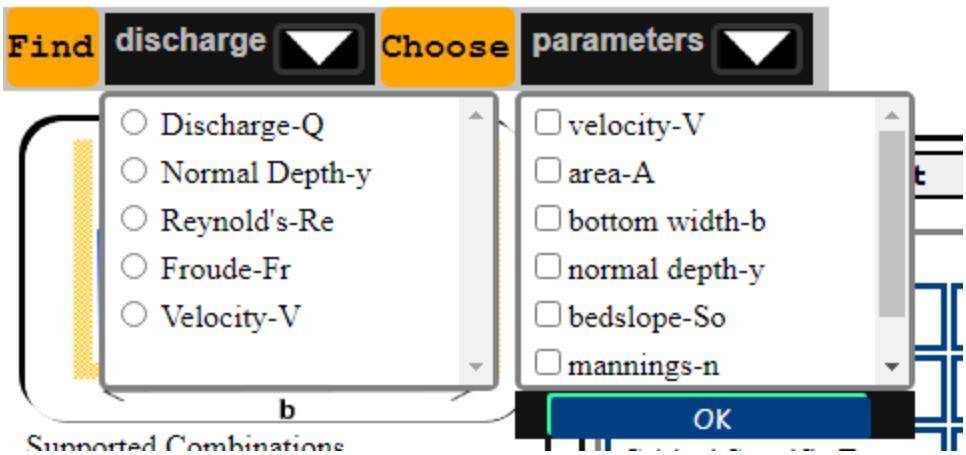
CHAPTER 1

PROFLOW CAPABILITIES

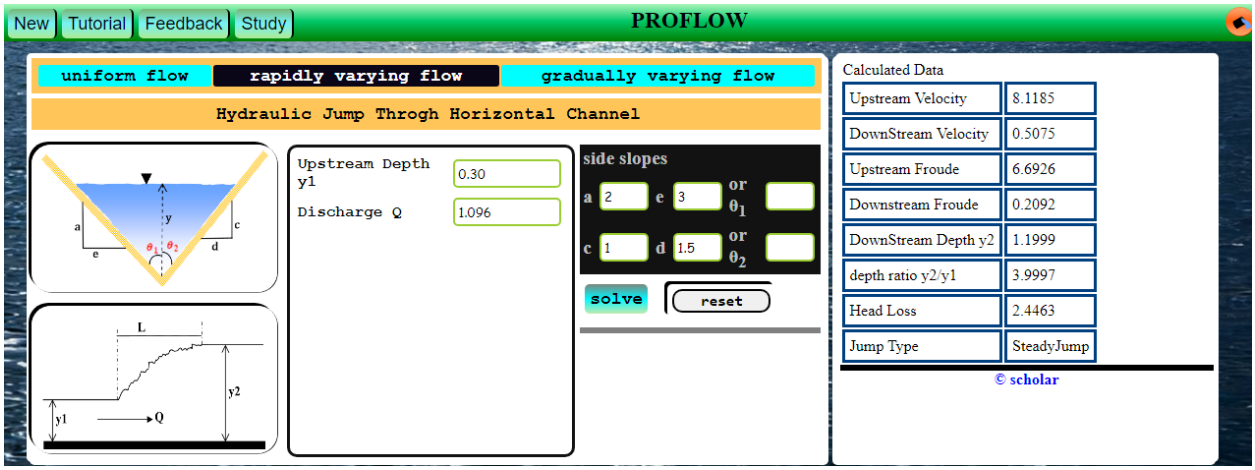
1. Find discharge and depth in rectangular, trapezoidal and triangular sections.
2. Automatically generate a plot of discharge against normal depth
3. Calculate flow properties and classify the flow regime.



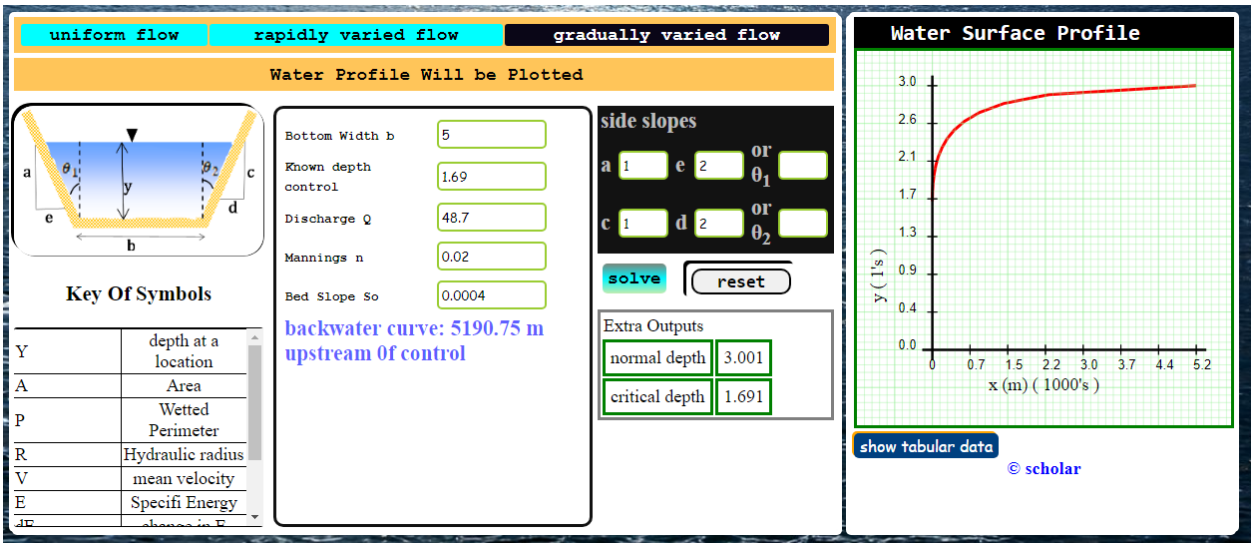
4. Allow user to choose parameters they have at hand and what to find, based on the supported combination.



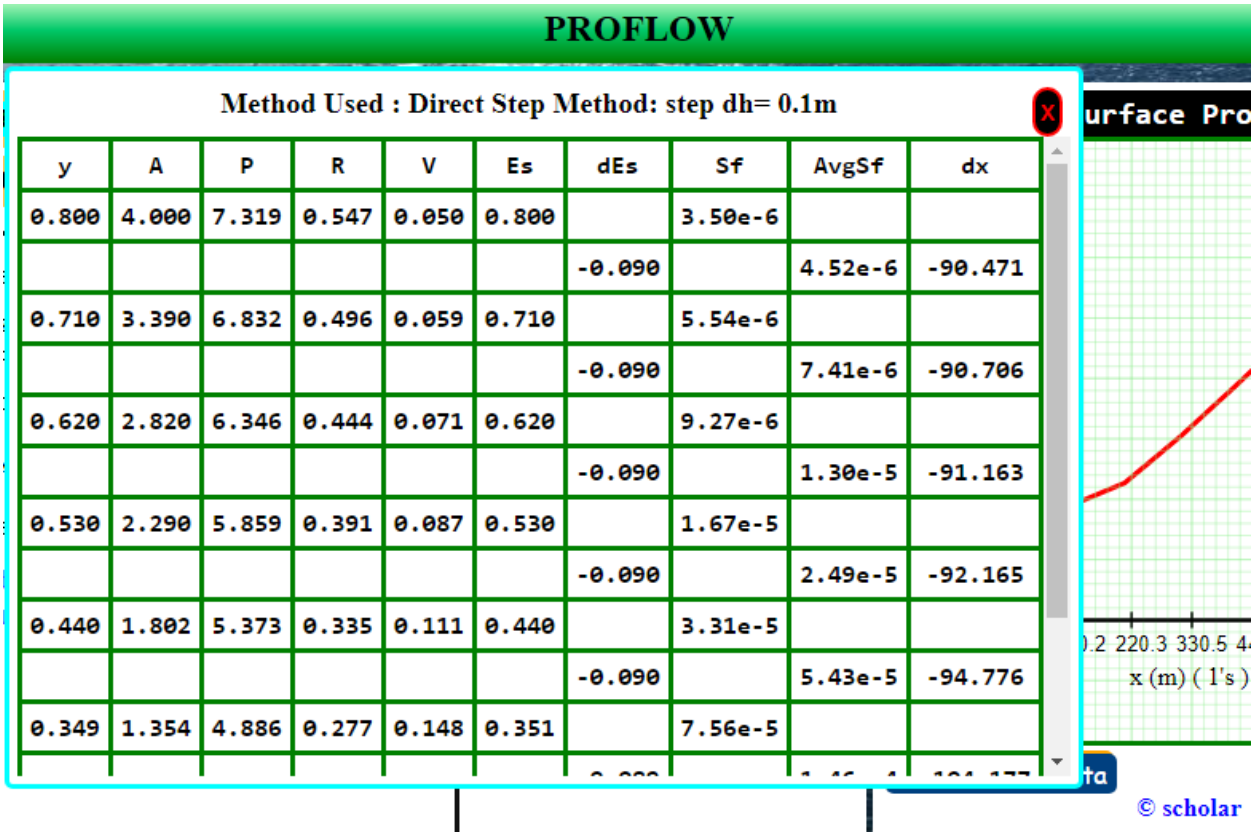
5. Analyze a hydraulic jump through a given channel, find the associated parameters and classify the jump, when given upstream conditions.



6. Draw the water surface profile, and classify the slopes, and calculate back water curve to where the water depth becomes normal.



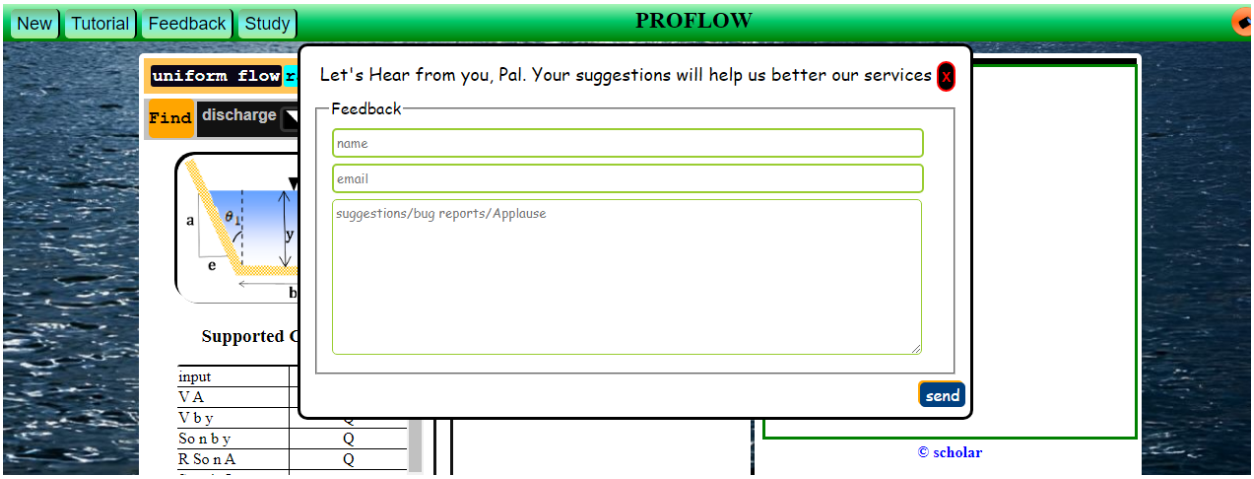
7. Display tabular data on calculation of water surface profile.



y	A	P	R	V	Es	dEs	Sf	AvgSf	dx
0.800	4.000	7.319	0.547	0.050	0.800		3.50e-6		
						-0.090		4.52e-6	-90.471
0.710	3.390	6.832	0.496	0.059	0.710		5.54e-6		
						-0.090		7.41e-6	-90.706
0.620	2.820	6.346	0.444	0.071	0.620		9.27e-6		
						-0.090		1.30e-5	-91.163
0.530	2.290	5.859	0.391	0.087	0.530		1.67e-5		
						-0.090		2.49e-5	-92.165
0.440	1.802	5.373	0.335	0.111	0.440		3.31e-5		
						-0.090		5.43e-5	-94.776
0.349	1.354	4.886	0.277	0.148	0.351		7.56e-5		

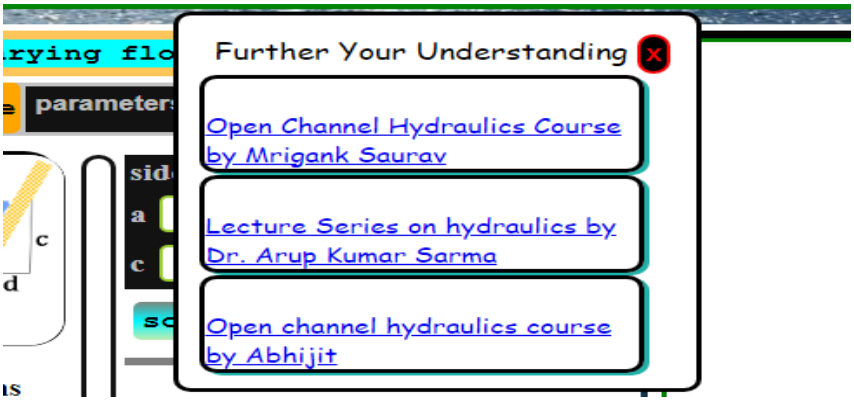
8. **User Support**

   Don't get stack, send us feedback and we will be back to you in real time. Note that it's for this task that you need an **internet connection**



9. Study Tools.

Are you a student, or tutor and want to better your skills, we have you covered; we have some free courses for you.



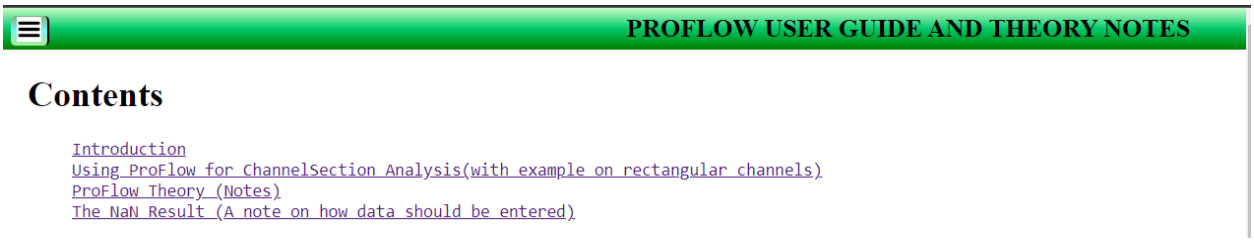
CHAPTER 2

How to Open the Application

- This app should be opened by a web browser preferably Firefox, Chrome or Microsoft Edge, Safari. **Don't** attempt to open this application with Internet Explorer.
- Right click on the file named **app**, then click open with, then choose one the above mentioned web browsers .
- Wait for the web browser to open the application, Note that you don't need an internet connection.

.

- Then click on the button labeled **TUTORIAL ON USE** or The button labeled **Tutorial** in the header.
- This will open up a tutorial embedded within the application; the tutorial contains information on how to use the program, and other contents as shown below.



Warning: Do not attempt to use the application without going through the tutorial especially the **Introduction chapter and Using PROFLOW chapter.**

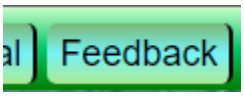
The in-built tutorial is short and can take less than 10 minutes to go through.

CHAPTER 3

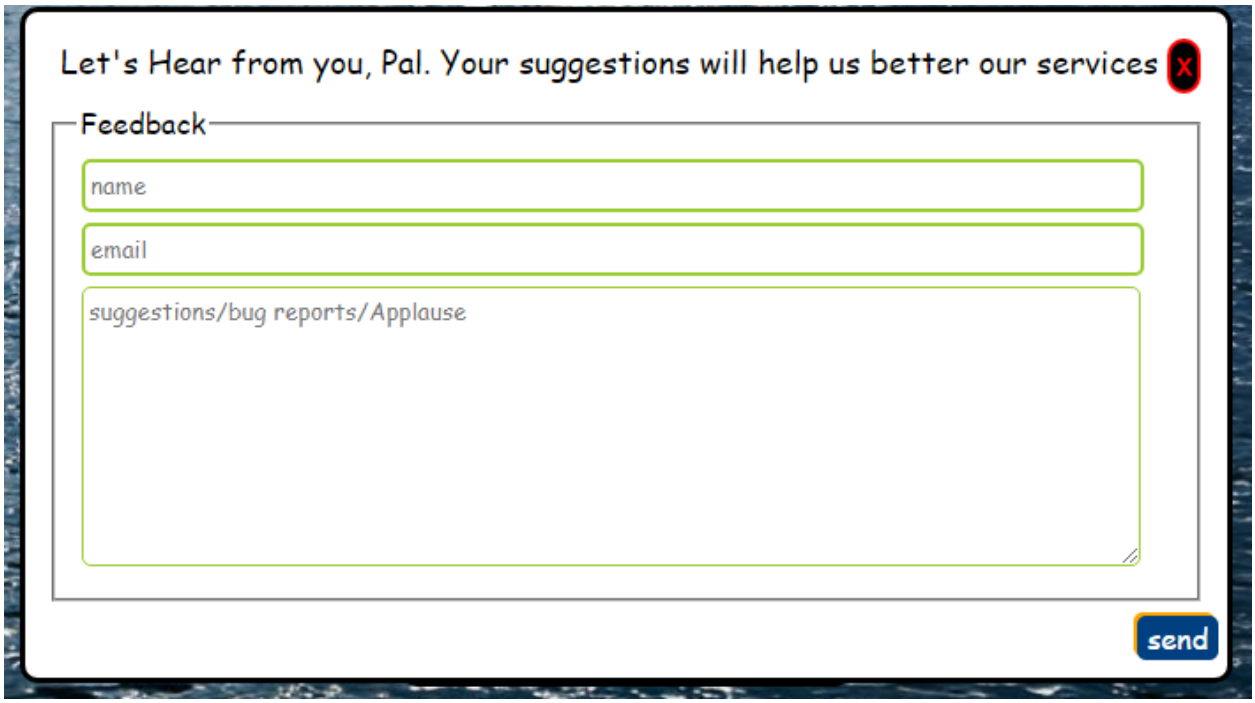
Sending us Feedback

NB: This is the one of the two operations that requires an internet connection.

- Click on the button labeled **Feedback.**



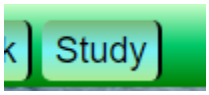
- A window as below will show up



- Enter your feedback, and then click send or the red x cross if you change your mind.
- The developer will receive your feedback and respond shortly.

Viewing Study material

- Click on the button labeled **study**. From the pop up select one of the links, this operation also requires an internet connection.



CHAPTER 4

TEST VALUES

- **These test values have been adopted from the book "FLOW IN OPEN CHANNELS, THIRD EDITION" by K Subramanya and correspond to hand calculations and the solution manual of the above mentioned book.**
- Before using the application, test with these values to see if the app you received isn't broken.

Rectangular Channel

1. Finding discharge Q.

Normal depth y(m)	Bottom width b(m)	Manning n $(m^{1/3}s)$	Bed slope So	Output(m^3/s)
1.024	3	0.013	0.005	**12.00**

2. Finding Normal depth y

Discharge Q(m^3/s)	Bottom width b(m)	Manning n $(m^{1/3}s)$	Bed slope So	Normal depth y(m)
24	6	0.012	0.005	**0.878**

3. Rapidly varied flow. (Hydraulic jump)

Note that for discharge per unit width; specify 1m for the bottom width.

Upstream Depth y_1(m)	Bottom width b(m)	Discharge Q (m^3/s)
0.28	3.0	7.8

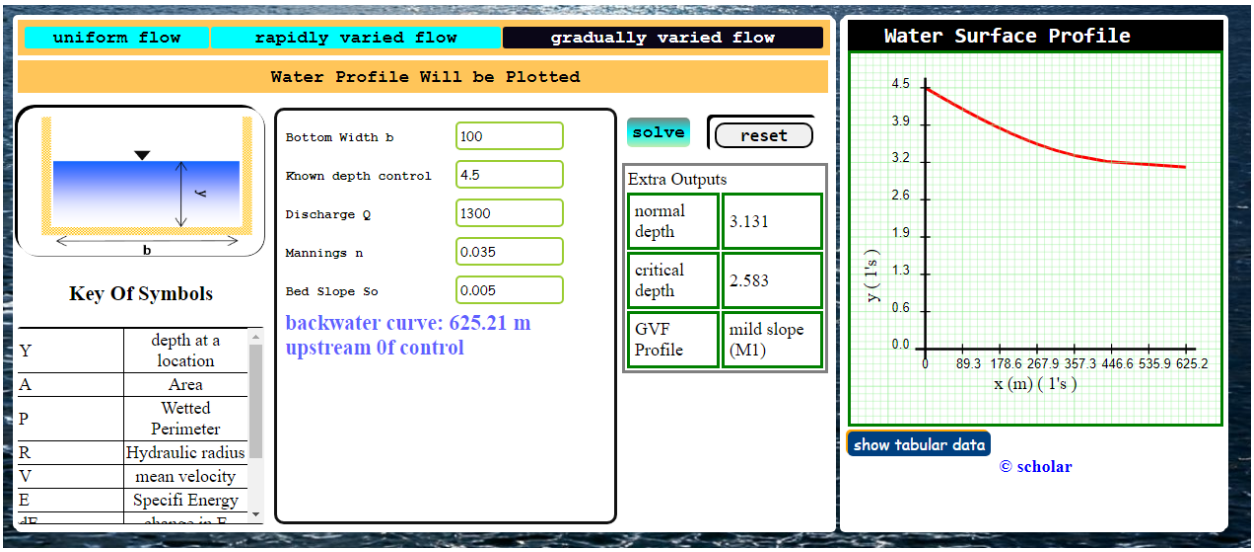
OUTPUTS

Calculated Data	
Upstream Velocity	9.2857
DownStream Velocity	1.2482
Upstream Froude	5.6028
Downstream Froude	0.2761
DownStream Depth y2	2.0830
depth ratio y2/y1	7.4393
Head Loss	2.5123
Jump Type	SteadyJump

4. Gradually varied flow.

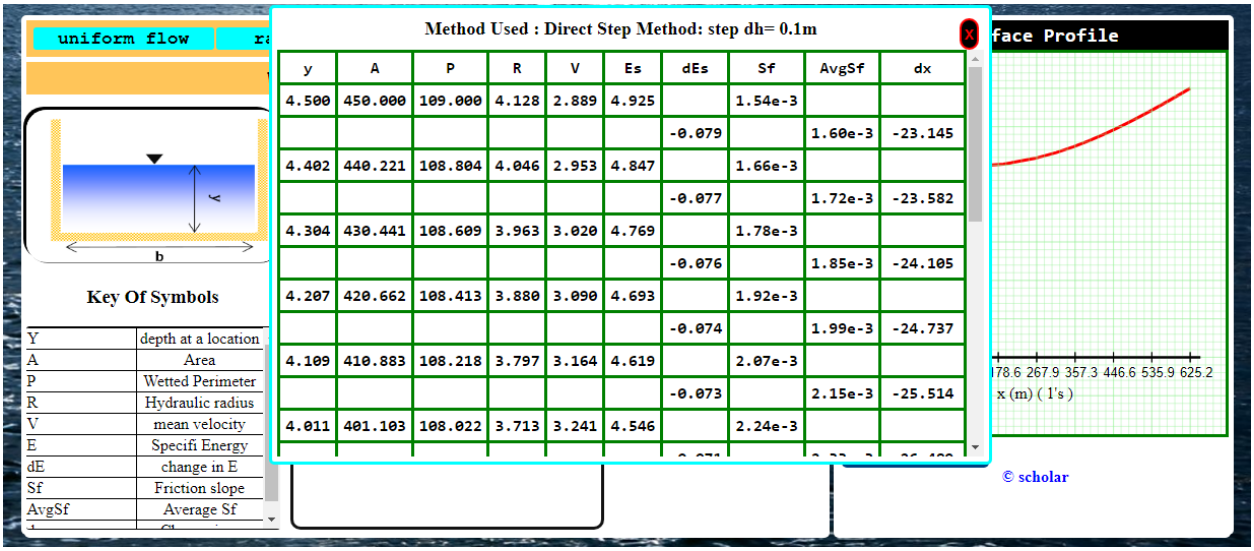
Bottom width b(m)	Discharge Q (m^3/s)	Known control depth (m)	Manning n $(m^{1/3}s)$	Bed slope So
100	1300	4.5	0.035	0.005

A water surface profile curve will be plotted as below.



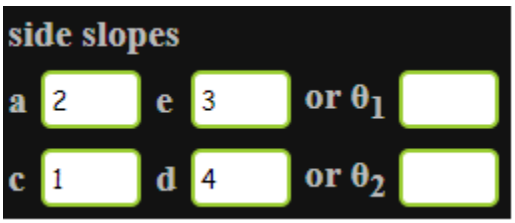
To view generated tabular data, click the **show tabular data** button.

A table as below will appear.



Triangular sections

1. Finding discharge Q.

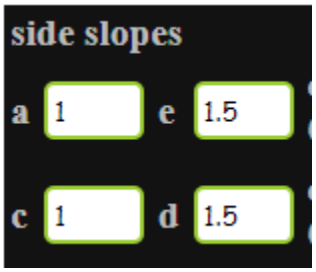


Normal depth y(m)	Manning n $(m^{1/3}s)$	Bed slope So	Output(m^3/s)
4	0.02	0.001	**105.079**

2. Finding Normal depth y

Discharge Q(m^3/s)	Manning n $(m^{1/3}s)$	Bed slope So	Normal depth y(m)
24	0.012	0.0015	**1.760**

3. Rapidly varied flow.(hydraulic jump)

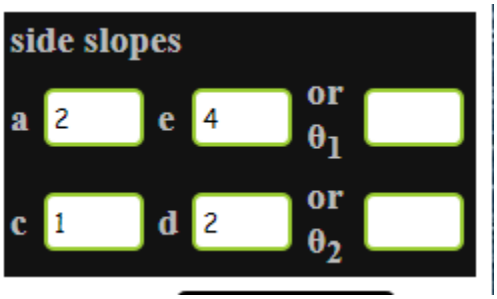


Upstream Depth y_1(m)	Discharge Q (m^3/s)
0.30	1.096

Output

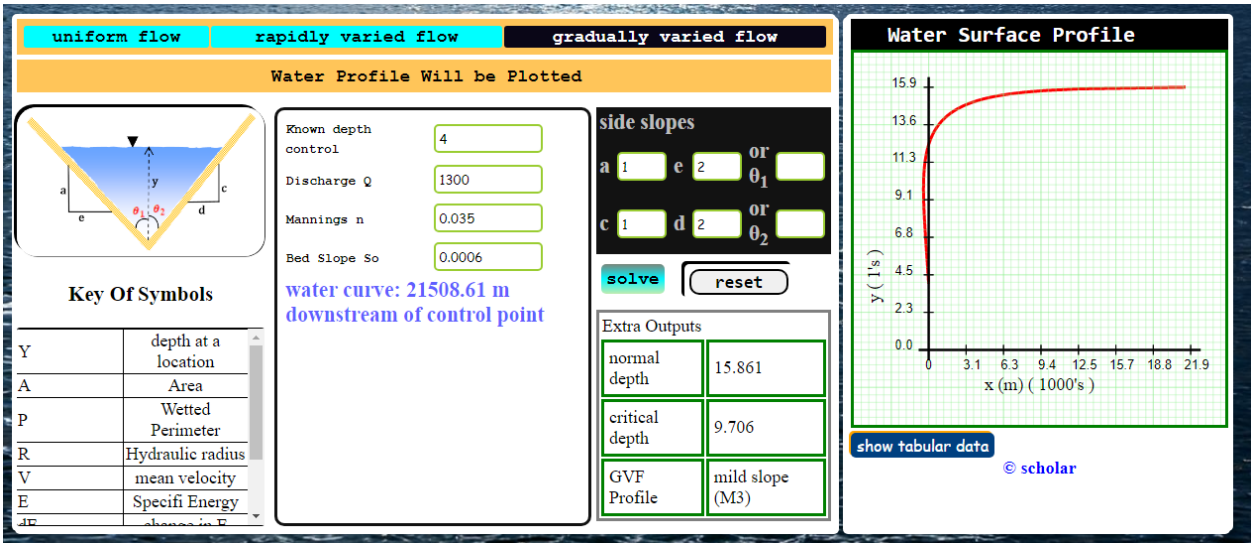
Calculated Data	
Upstream Velocity	8.1185
DownStream Velocity	0.5075
Upstream Froude	6.6926
Downstream Froude	0.2092
DownStream Depth y2	1.1999
depth ratio y2/y1	3.9997
Head Loss	2.4463
Jump Type	SteadyJump

4. Gradually Varied Flow



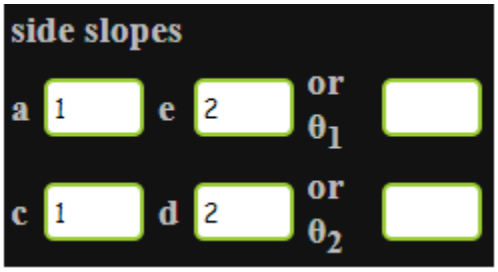
Discharge Q (m^3/s)	Known control depth (m)	Manning n $(m^{1/3}s)$	Bed slope So
1300	4	0.035	0.0006

A water surface profile curve will be plotted as below.



Trapezoidal section

1. Finding discharge Q.

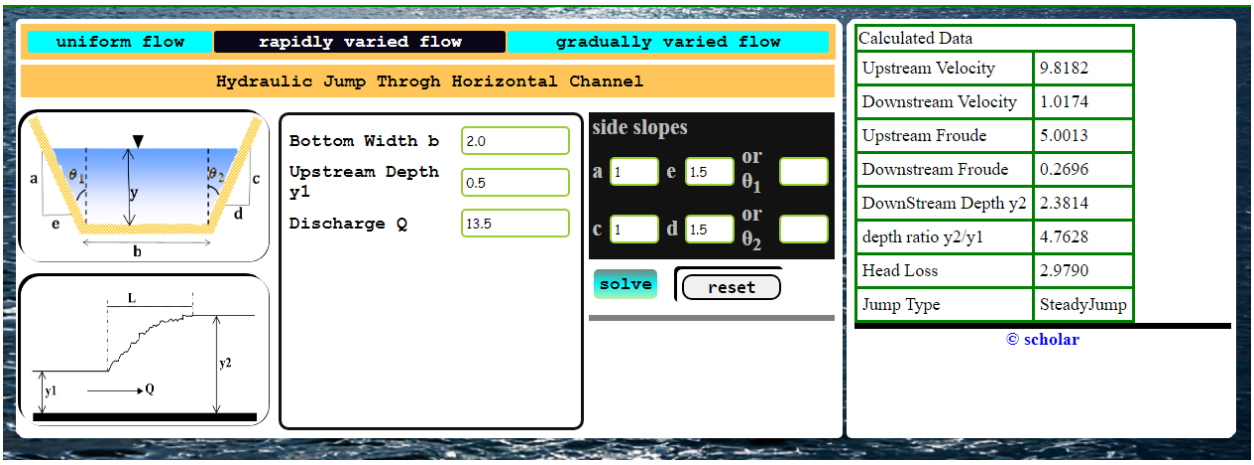


Normal depth y(m)	Bottom width b(m)	Manning n $(m^{1/3}s)$	Bed slope So	Output(m^3/s)
7	9	0.015	0.001	**854.502**

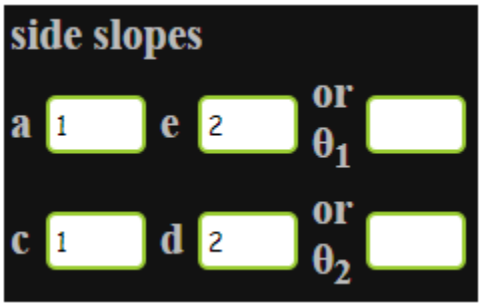
2. For normal depth y

Discharge Q(m^3/s)	Bottom width b(m)	Manning n $(m^{1/3}s)$	Bed slope So	Normal depth y(m)
118.53	10	0.016	0.0006	**2.999**

3. For Rapidly Varied flow

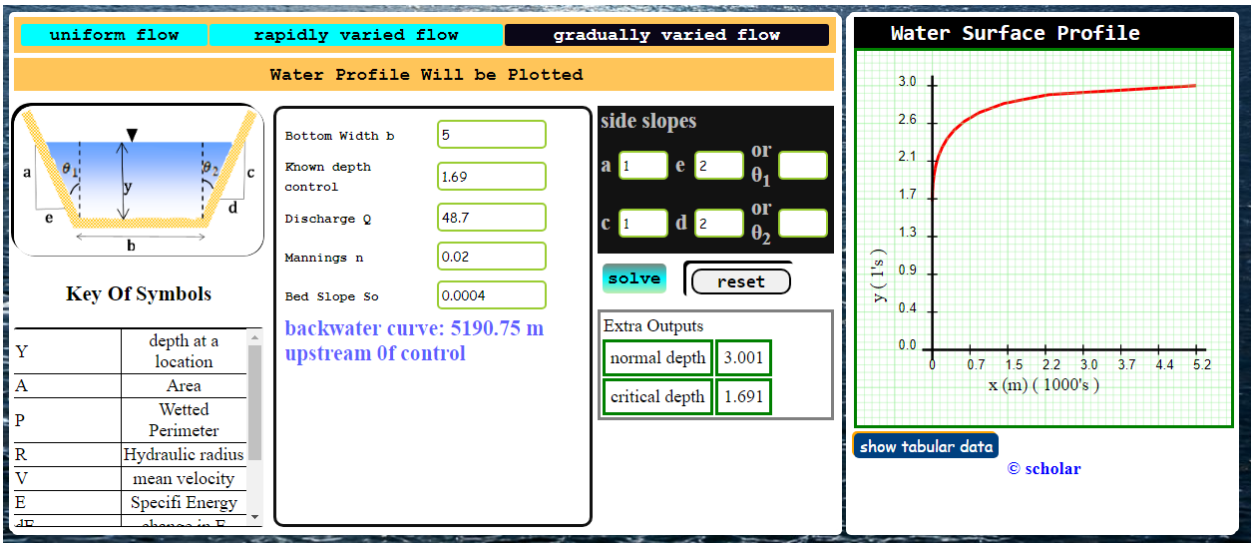


4. Gradually varied flow.



Bottom width b(m)	Discharge Q (m^3/s)	Known control depth (m)	Manning n $(m^{1/3}s)$	Bed slope So
5	48.70	1.69	0.02	0.0004

A water surface profile curve will be plotted as below.



To view generated tabular data, click the **show tabular data** button.

A table as below will appear.

y	A	P	R	V	Es	dEs	Sf	AvgSf	dx
0.800	4.000	7.319	0.547	0.050	0.800		3.50e-6		
						-0.090		4.52e-6	-90.471
0.710	3.390	6.832	0.496	0.059	0.710		5.54e-6		
						-0.090		7.41e-6	-90.706
0.620	2.820	6.346	0.444	0.071	0.620		9.27e-6		
						-0.090		1.30e-5	-91.163
0.530	2.290	5.859	0.391	0.087	0.530		1.67e-5		
						-0.090		2.49e-5	-92.165
0.440	1.802	5.373	0.335	0.111	0.440		3.31e-5		
						-0.090		5.43e-5	-94.776
0.349	1.354	4.886	0.277	0.148	0.351		7.56e-5		

Check for meaning of words used from the **key table**, that's on the below the channel shape picture.

THE END