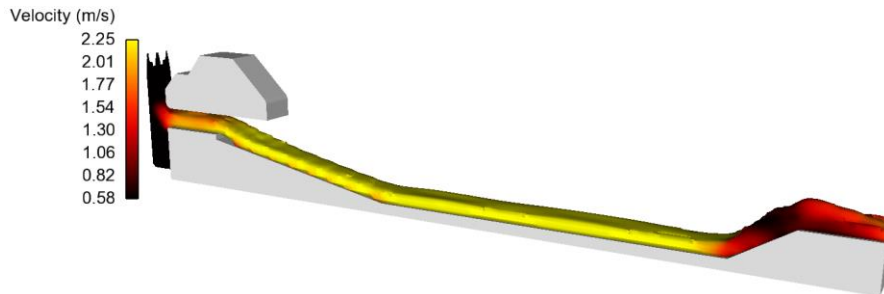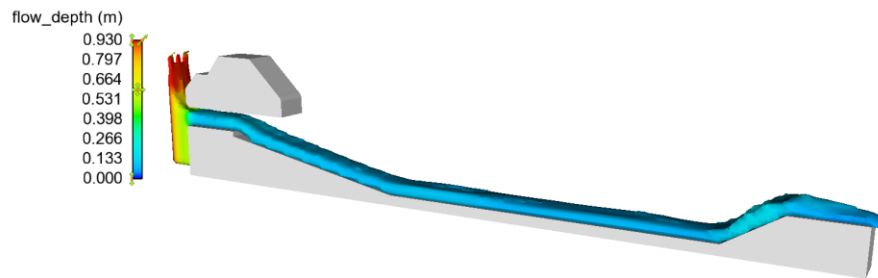# Supplementary data

Numerical Investigation of Hydraulic Performance in Makhool Spillway Dam

The simulation was run for all the indicated points.
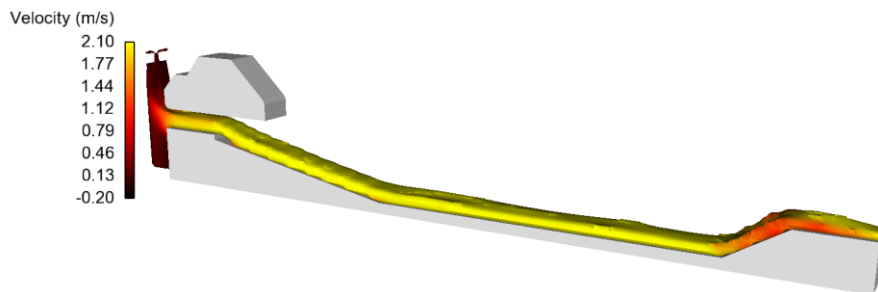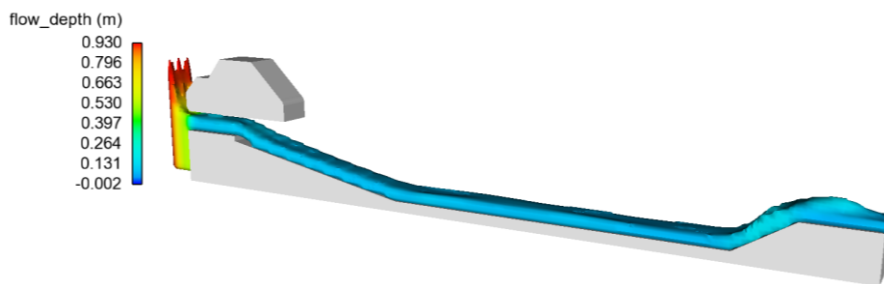
G_0 is 0.16- Q is 0.057- V_{num} -RNG=2.01

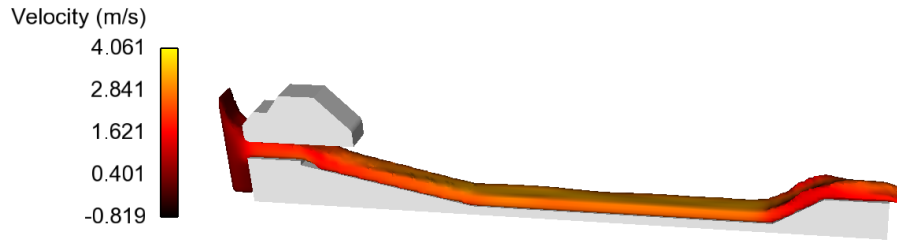G_0 is 0.16- Q is 0.057- Y_{num} -RNG=0.137

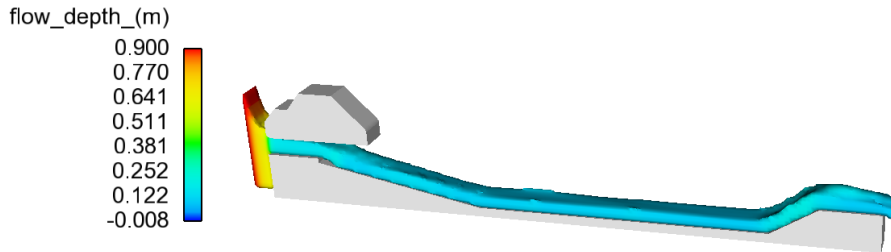G_0 is 0.16- Q is 0.057- V_{num} -k-e=2.01
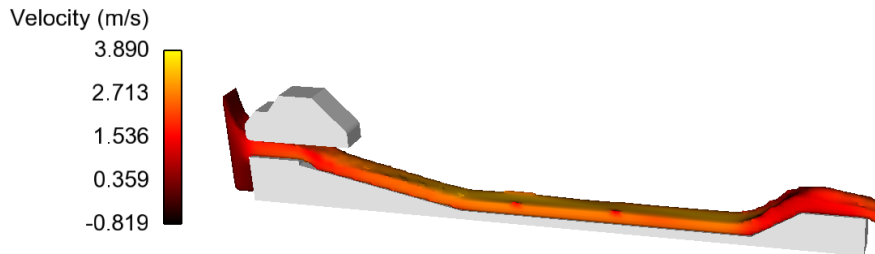

G_0 is 0.16- Q is 0.057- Y_{num} -k-e=0.131
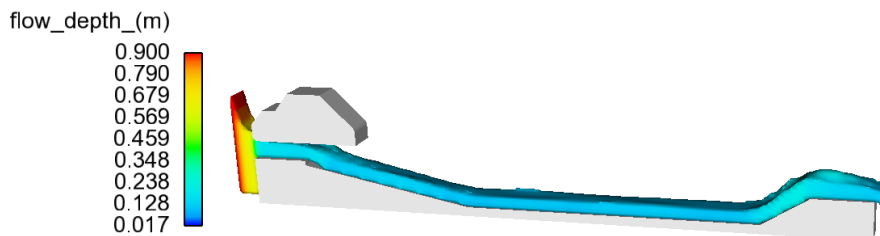
G_0 is 0.16- Q is 0.07866- V_{num} -RNG=2.8429

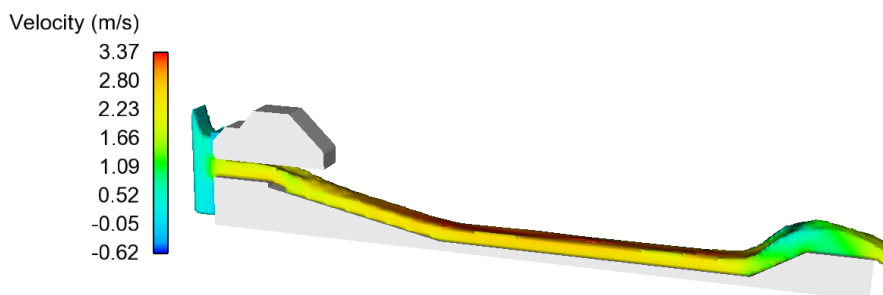G_0 is 0.16- Q is 0.07866- - Y_{num} -RNG=0.122

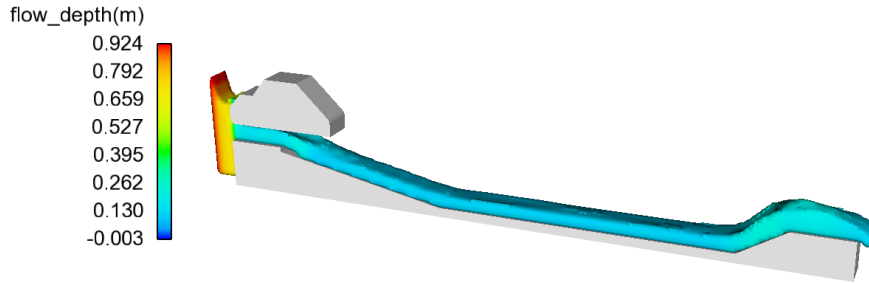G_0 is 0.16- Q is 0.07866- V_{num} -k-e=2.71

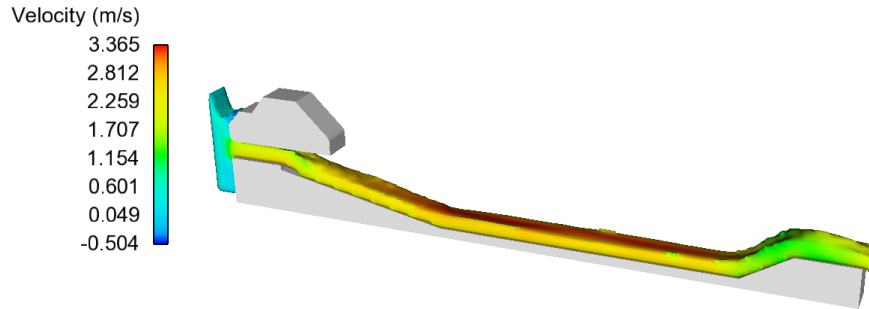G_0 is 0.16- Q is 0.07866- Y_{num} -k-e=0.128

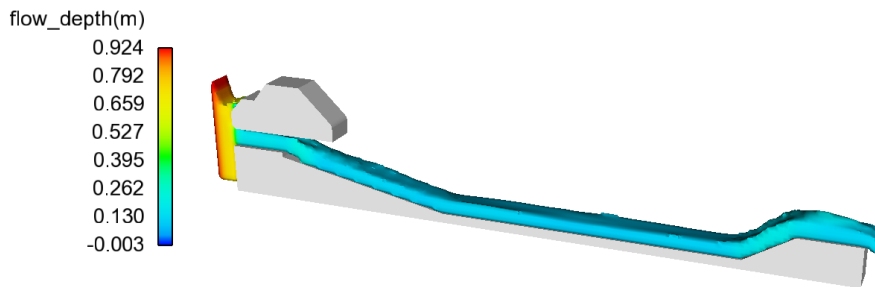G_0 is 0.16- Q is 0.083- V_{num} -RNG=2.8107

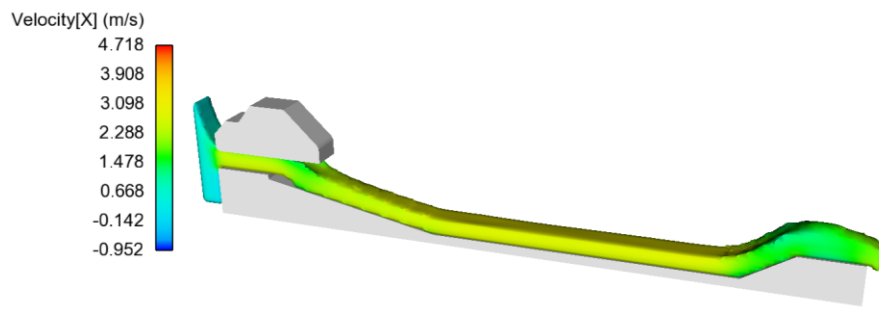G_0 is 0.16- Q is 0.0836- Y_{num} -RNG=0.13

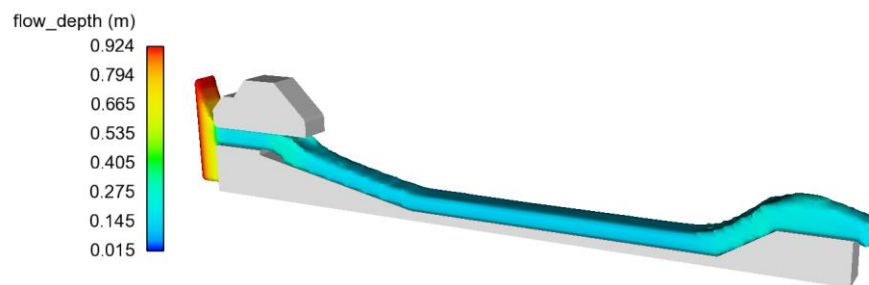G_0 is 0.16- Q is 0.083- V_{num} -K-e=2.8142

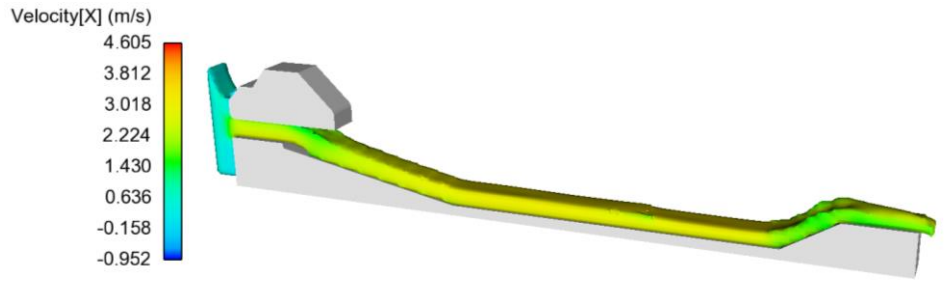G_0 is 0.16- Q is 0.083- Y_{num} -K-e=0.130

G_0 is 0.16- Q is 0.1- V_{num} -RNG=3.01
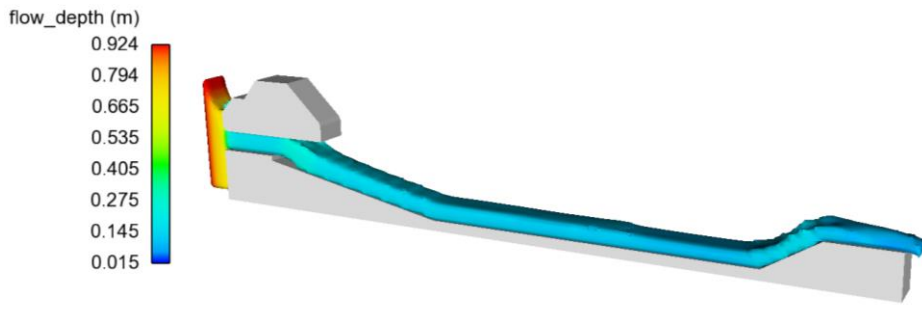

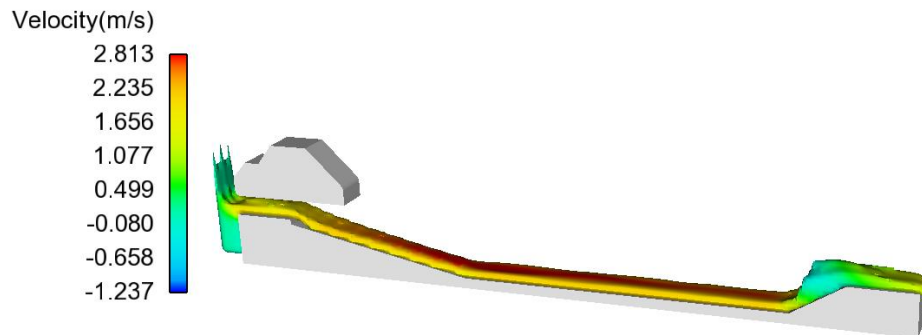G_0 is 0.16- Q is 0.1- Y_{num} -RNG=0.145

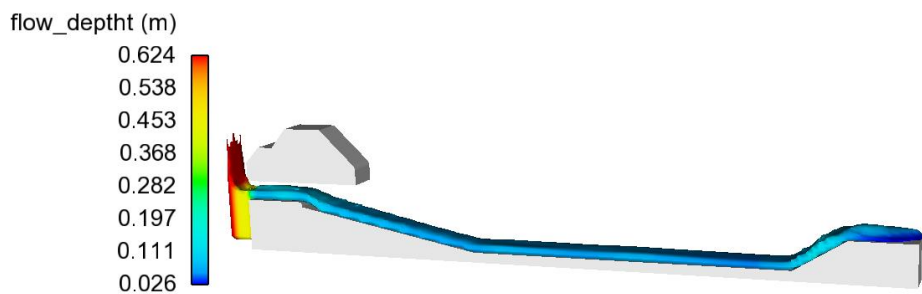G_0 is0. 16- Q is 0.1- V_{num} -K-e=3.019

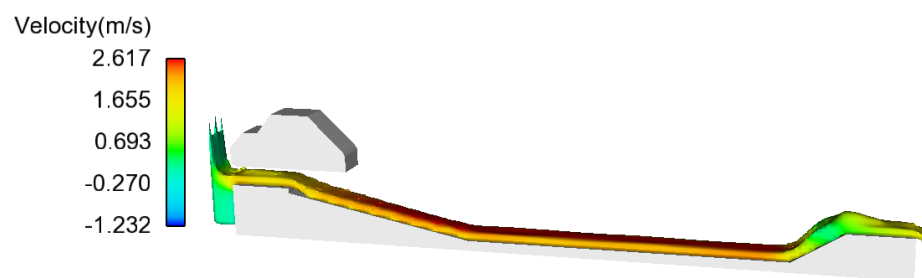G_0 is 0.16- Q is 0.1- V_{num} -K-e=0.145

G_0 is 0.155- Q is 0.0405- V_{num} -RNG=1.6563
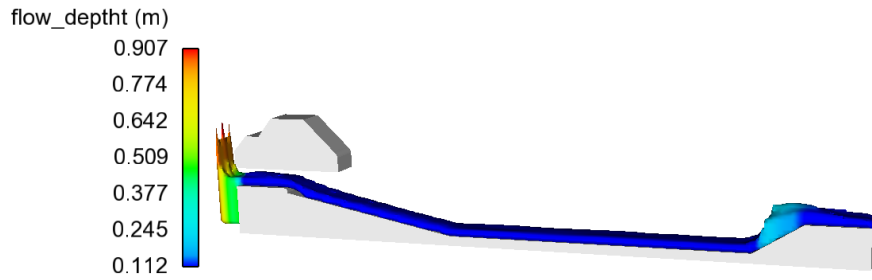

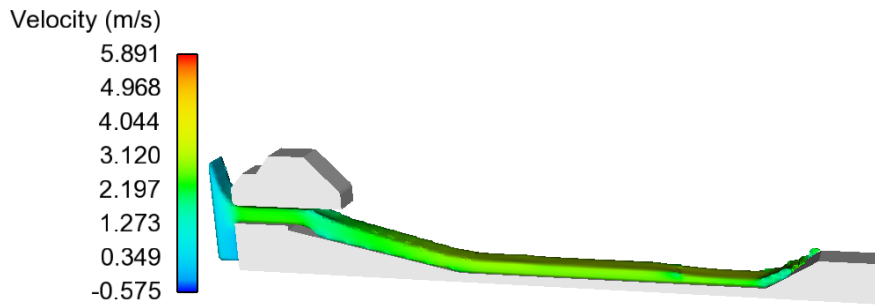G_0 is 0.155- Q is 0.0405- Y_{num} -RNG=0.111
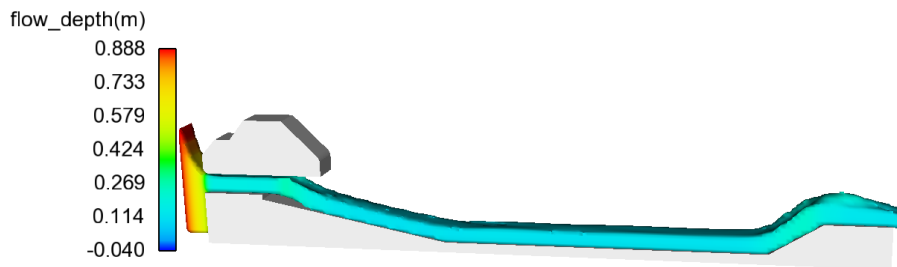

G_0 is 0.155- Q is 0.0405- V_{num} -K-e =1.66
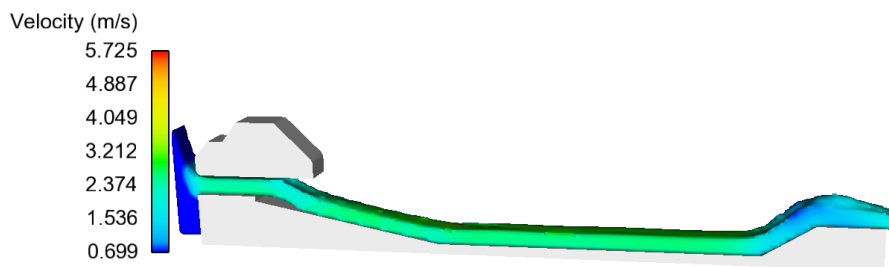
G_0 is 0.155- Q is 0.0405- Y_{num} -K-e =0.114

flow_deptht (m)

0.907
0.774
0.642
0.509
0.377
0.245
0.112

G_0 is 0.15- Q is 0.083- V_{num} -RNG =3.12

Velocity (m/s)

5.891
4.968
4.044
3.120
2.197
1.273
0.349
-0.575

G_0 is 0.15- Q is 0.083- Y_{num} -RNG =0.115

flow_depth(m)

0.888
0.733
0.579
0.424
0.269
0.114
-0.040

G_0 is 0.15- Q is 0.083- V_{num} -K-e =3.21

Velocity (m/s)

5.725
4.887
4.049
3.212
2.374
1.536
0.699

G_0 is 0.15- Q is 0.083- Y_{num} -K-e =0.112

flow_depth(m)

0.876
0.723
0.571
0.418
0.265
0.112
-0.040

G_0 is 0.15- Q is 0.07866- V_{num} -RNG =3.1

G_0 is 0.15- Q is 0.07866- Y_{num} -RNG =0.106

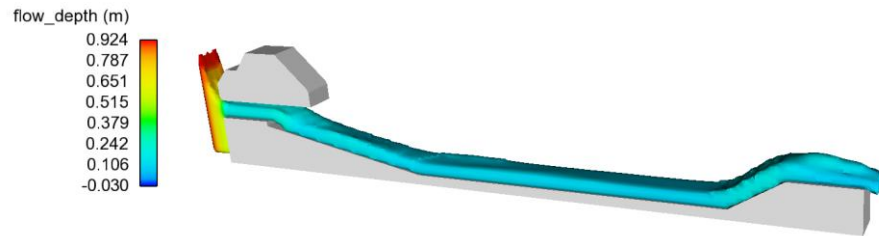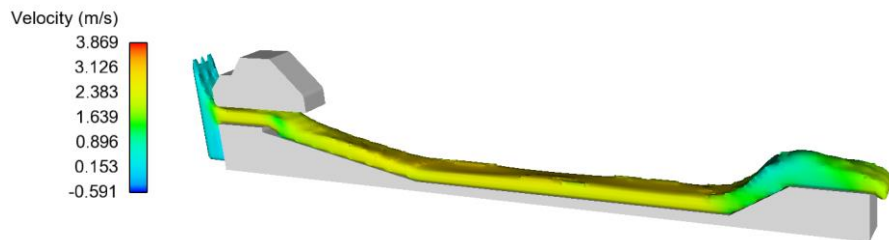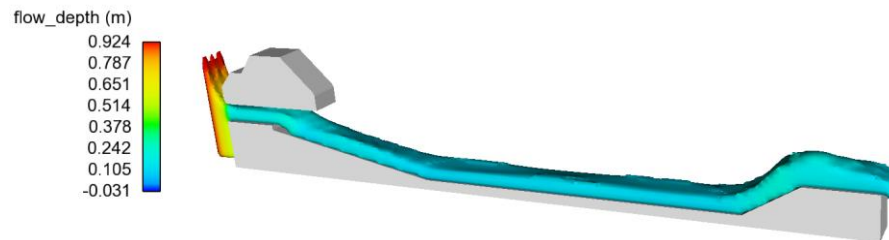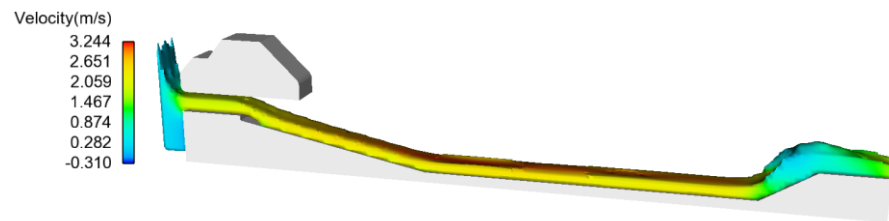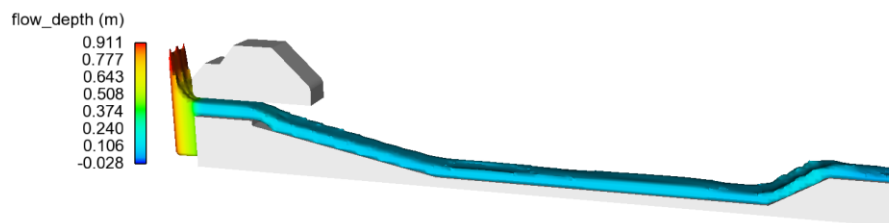G_0 is 0.15- Q is 0.07866- V_{num} -K-e =3.125

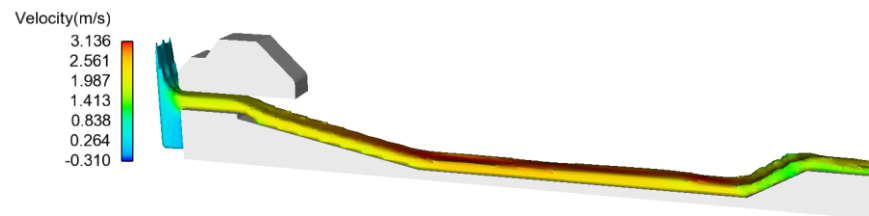G_0 is 0.15- Q is 0.057- Y_{num} -K-e =0.105

G_0 is 0.15- Q is 0.057- V_{num} -RNG =2.56

G_0 is 0.15- Q is 0.057- Y_{num} -RNG =0.106

G_0 is 0.15- Q is 0.057- V_{num} -K-e =2.567

G_0 is 0.15- Q is 0.057- Y_{num} -K-e =0.106