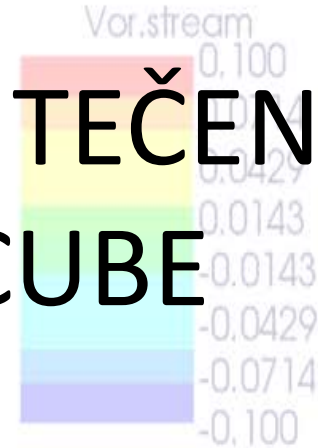




iRIC Software
Changing River Science

MODELIRANJE TEČENJA IRIC NaysCUBE

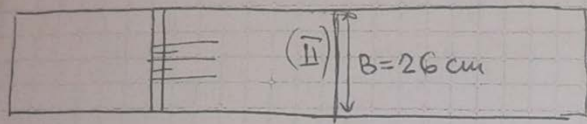


Marija Ivković i Jovana Anđelić

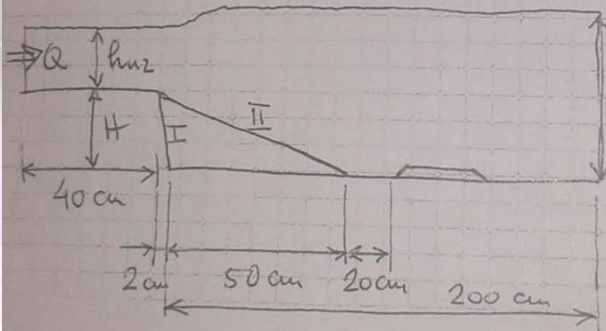
Time: 46 sec

Velocity

ZADATAK 3. PRAMOUKONNI KANAL, $n = 0,013 \text{ m}^{-1/3}$



$\Delta X = \Delta Y = 2 \text{ cm}$
15 slojeva
po dubini.



h_{mz} TAKO DA BUDE
PRI $Q = 50 \text{ l/s}$ $F_{r_{mz}} = 0,8$
A ZA $Q = 5 \text{ l/s}$ $F_{r_{mz}} = 0,2$









ZADATAK 4
GEOMETRIJA KAO U ZK. 3, $Q = 50 \text{ l/s}$ i
ZA DVE VRSNE SPUSKAVANJA DNA (I) i (II), VARIJANTI
VELICINI MREŽE: $\Delta X = \Delta Y = 2 \text{ cm}$, 1 cm , $0,5 \text{ cm}$
A PO DUBIM 15 i 30 SLOJEVA



a) ANALIZIRATI POVEĆANJE NIVOVA ZA VARIJANTE:
 $Q = 50 \text{ l/s}$, NACIBO I POSTEPENO SPUSKAVANJE
(I) (II)
I UPOREĐITI SA LITERATUROM.

b) ZA VARIJANTE $Q = 50 \text{ l/s}$ I $Q = 5 \text{ l/s}$ I OBE
VARIJANTE SA NACIBOM DNA (I) I (II) I SA
SONDOM POSTAVLJENOM KAO NA SLICI, UPOREĐITI
STROJNYM SLIKI I TURBULENCIJOM.

Zadatak

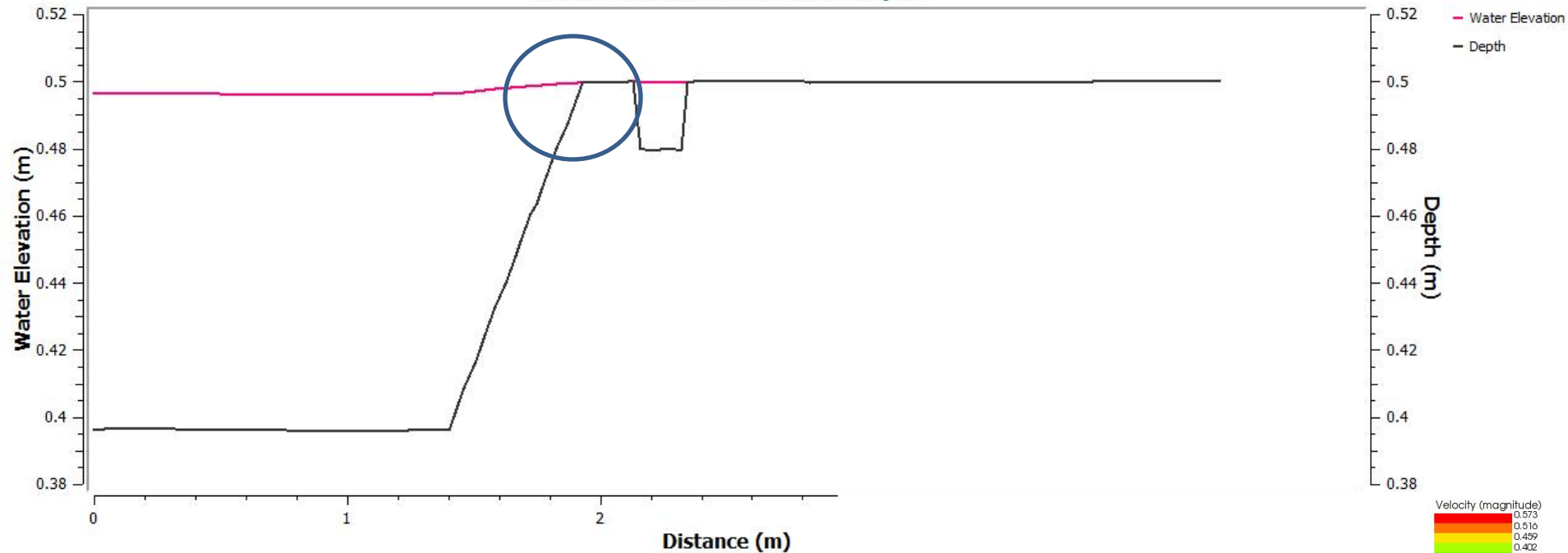
Jovana		J&M		Marija	
Varijacija : 1. broja vertikalnih nivoa (15, 30) 2. rezolucije mreže (2, 1, 0.5 cm)		Q = 50 l Broj vert.nivoa = 15 Rezolucija mreže: 2 cm		Varijacija : 1. Protoka (5, 50l/s)	
					

Analizirano i komentarisano:

1. Povećanje nivoa za različite proticaje (strm/blag pad kanala)
2. Postizanje određene vrednosti Frudov-og broja na uzvodnom delu kanala
3. Analiza strujne slike i turbulencije usled promena u kanalu

Blag nagib, sonda, $Q=50\text{ l/s}$, $\Delta x=2\text{ cm}$, $n=15$

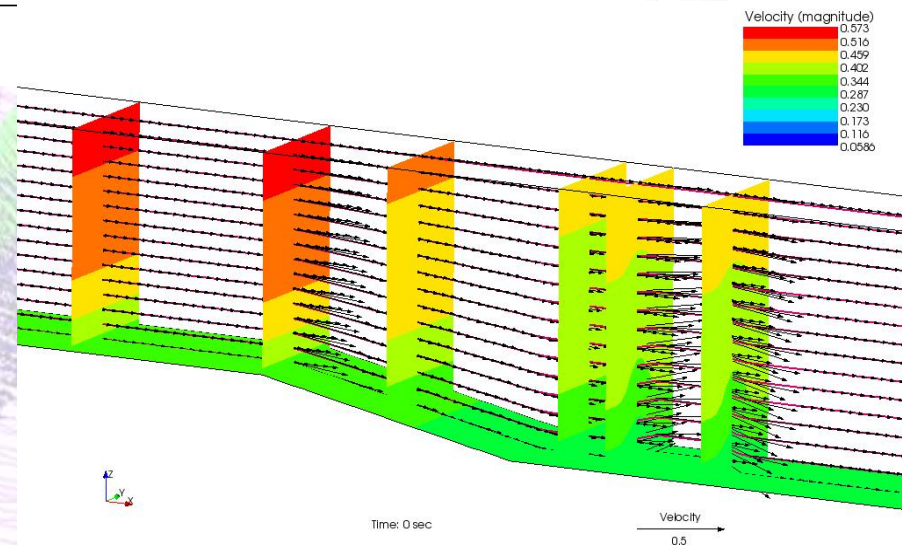
Water elevation and water depth



Bazni slučaj:

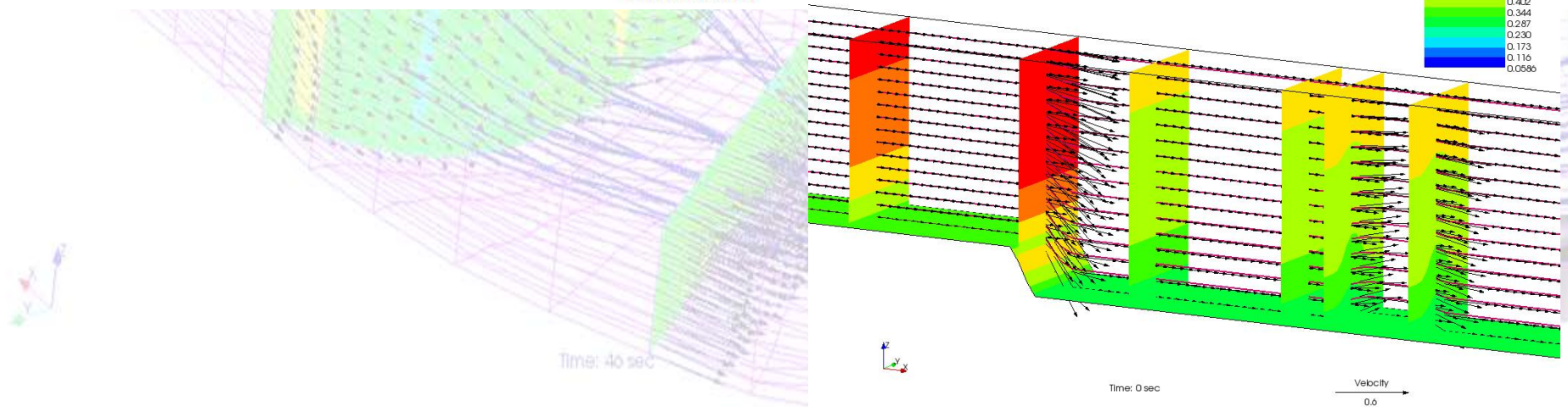
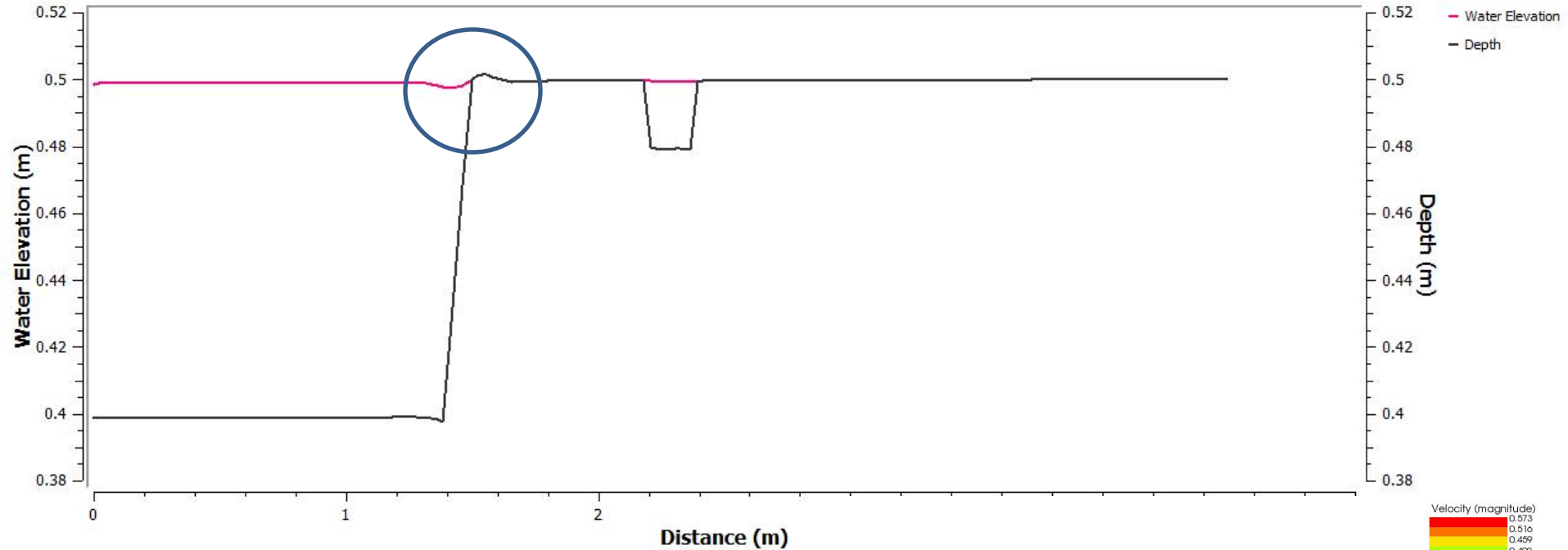
1. $t=60\text{ sec}$ (min vreme ustaljenja nivoa)
2. $\Delta t=0.01$ (postignuta stabilnost)

polazne vrednosti za analize ostalih slučajeva



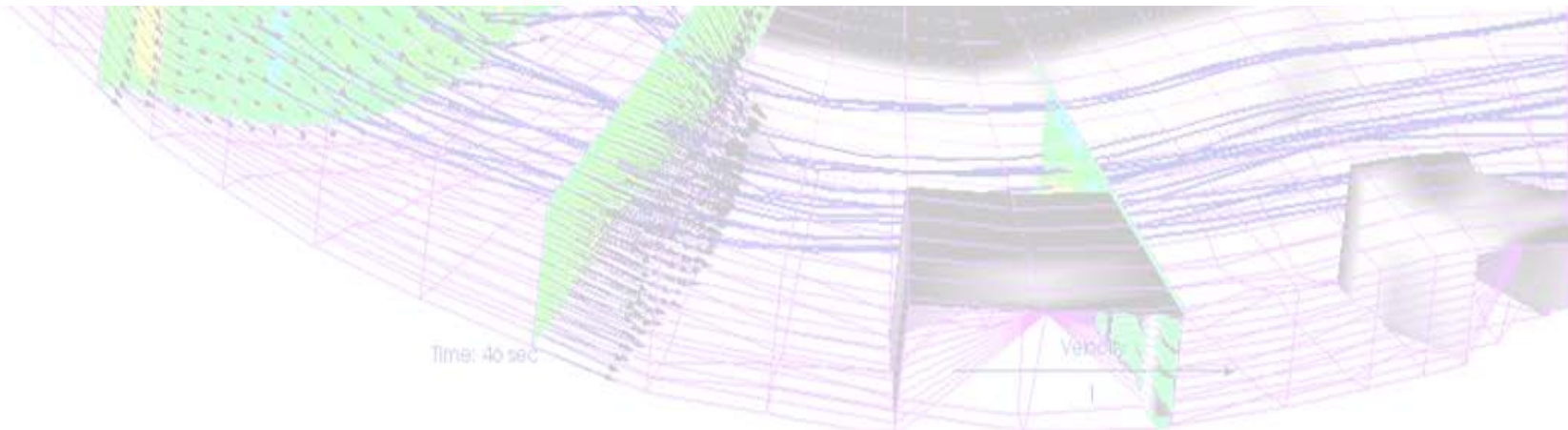
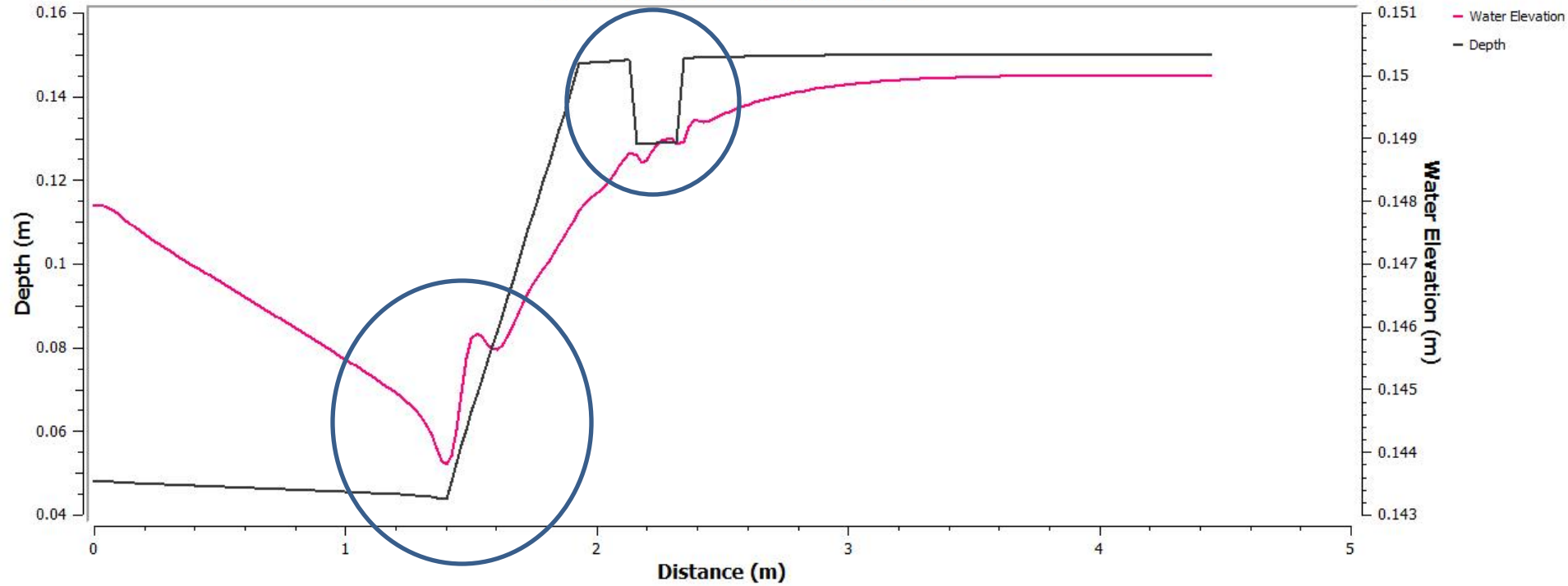
Strm nagib, sonda, $Q=50$ l/s, $\Delta x=2$ cm, $n=15$

Water elevation and water depth

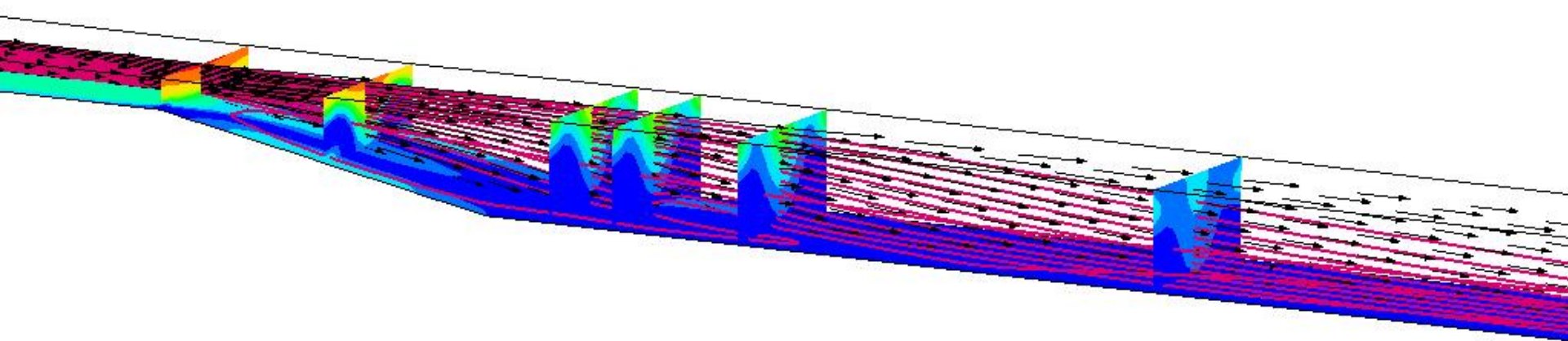
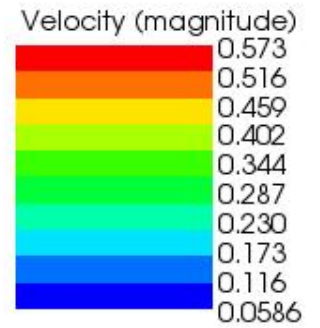


Blag nagib, sonda, $Q=5\text{ l/s}$, $\Delta x=2\text{ cm}$, $n=15$

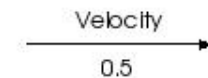
Water elevation and water depth



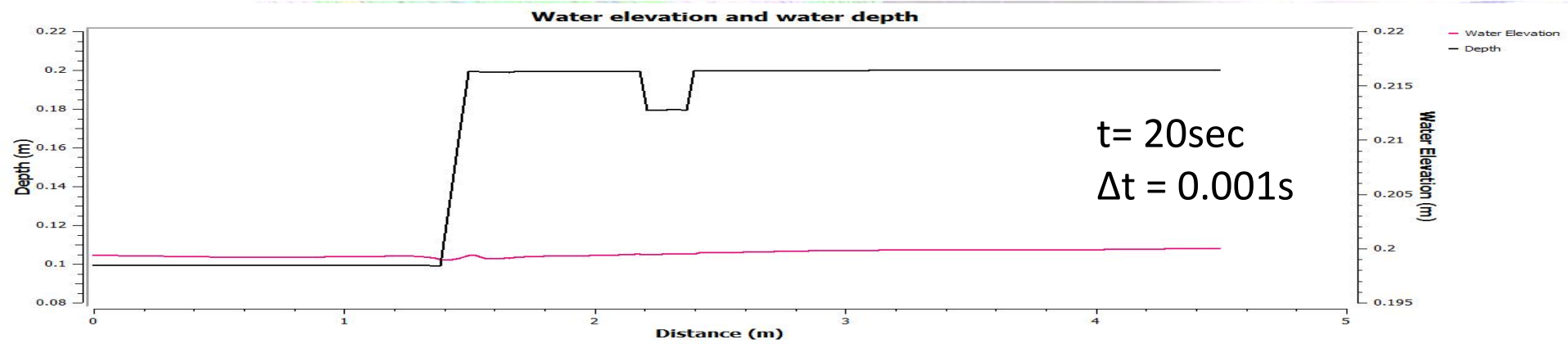
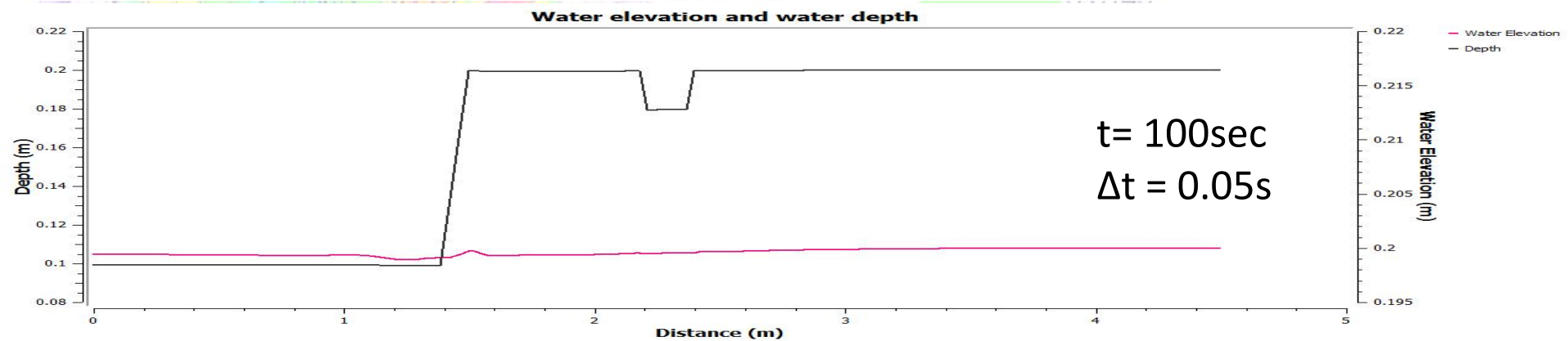
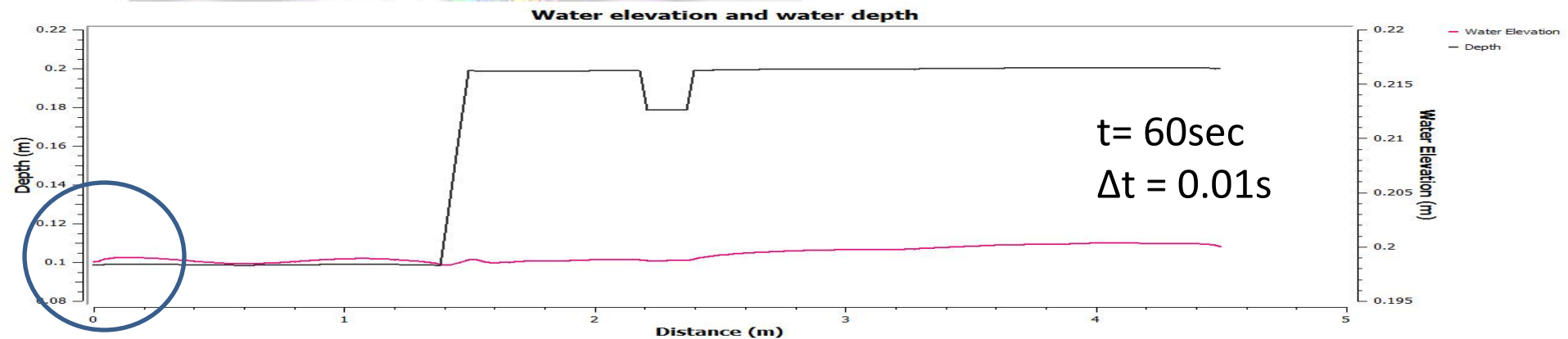
Blag nagib, sonda, $Q=5\text{ l/s}$, $\Delta x=2\text{ cm}$, $n=15$



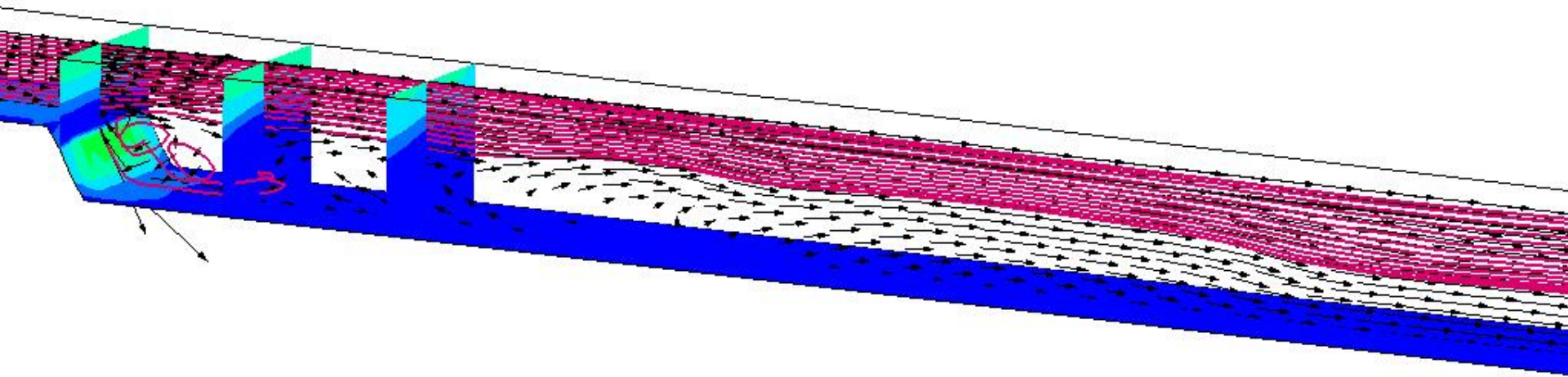
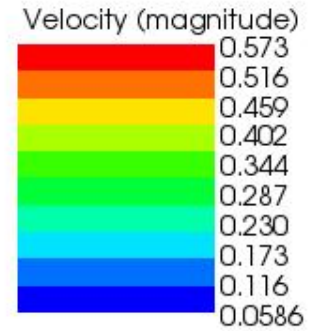
Time: 00 sec



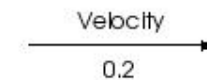
Strm nagib, sonda, $Q=5\text{ l/s}$, $\Delta x=2\text{ cm}$, $n=15$



Strm nagib, sonda, $Q=5\text{ l/s}$, $\Delta x=2\text{ cm}$, $n=15$



Time: 20 sec

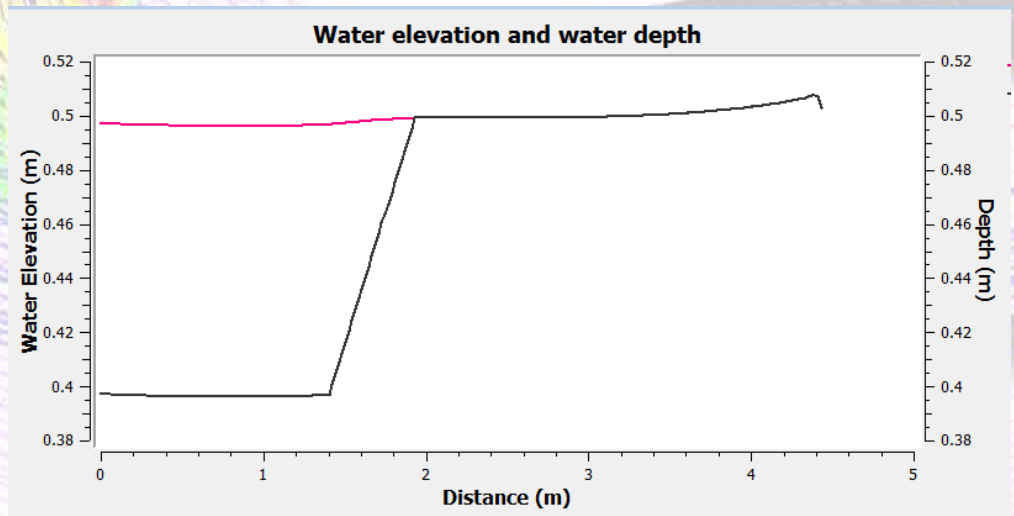
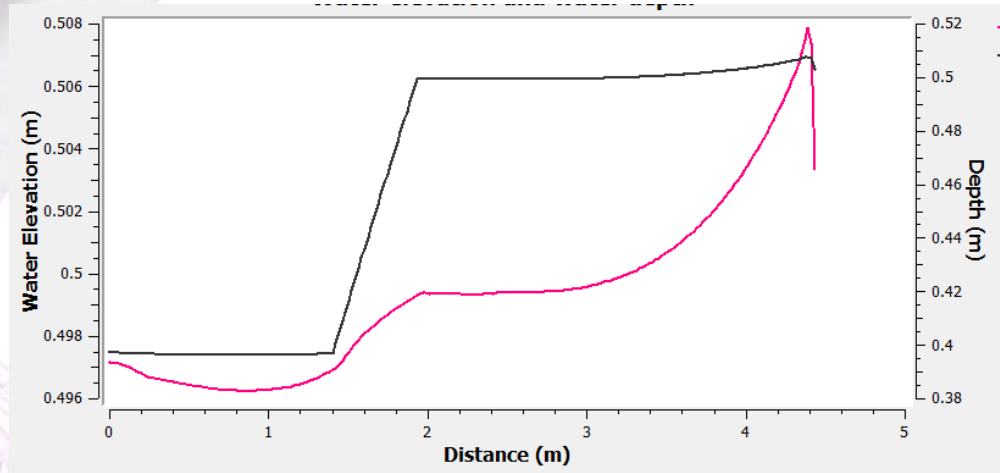
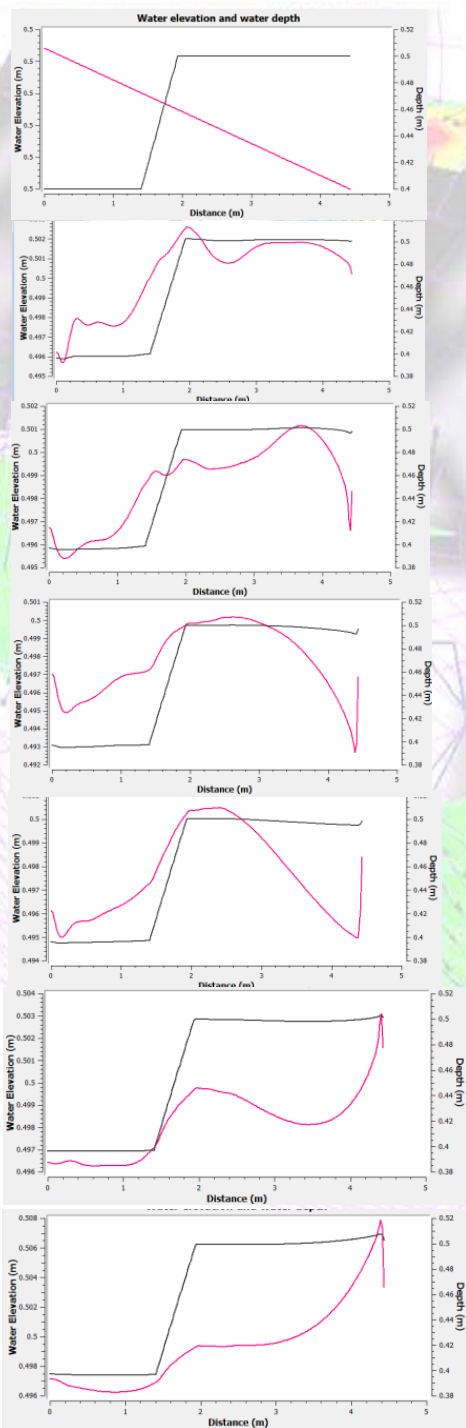


t = 60s

$\Delta x = \Delta y = 2\text{cm}$

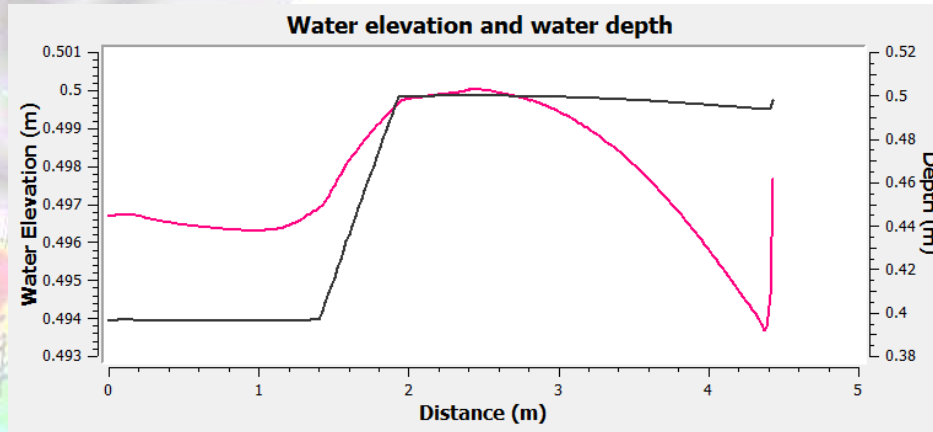
$\Delta t = 0.01\text{ s}$

$N_{\text{slojeva}} = 30$

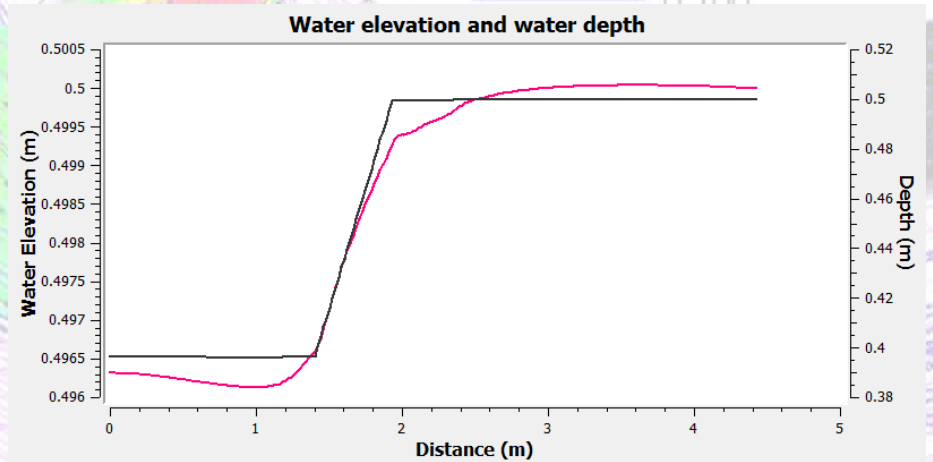


Produženje trajanja simulacije na 100s

dt = 0.01



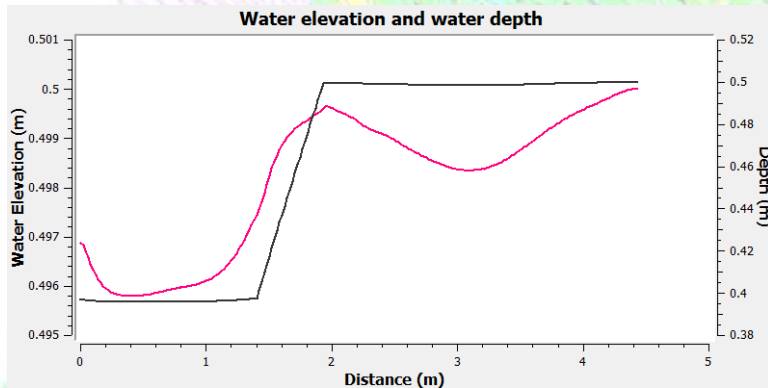
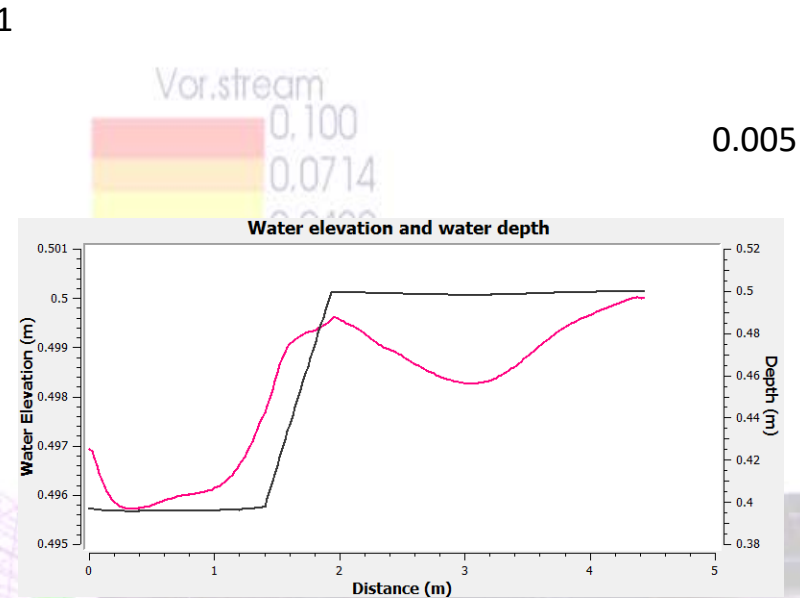
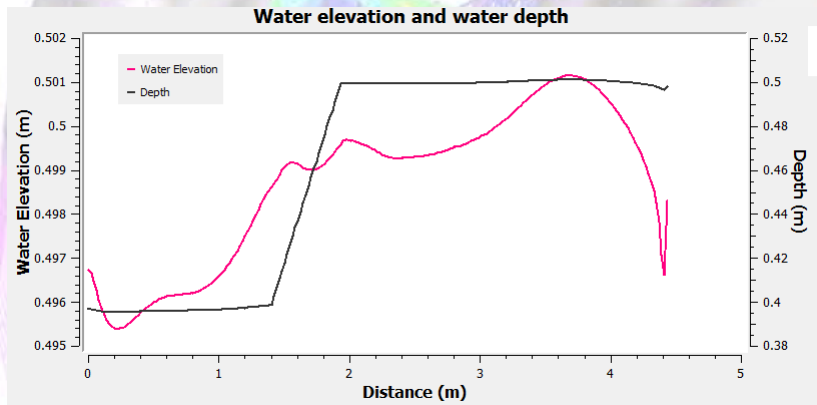
dt = 0.005



Time: 46 sec

Velocity

Poređenje slučajeva za različite vremenske korake proračuna u 20s



$$\Delta t \leq \min \left(\frac{\Delta x}{(u + \sqrt{gh})_{max}}, \frac{\Delta y}{(v + \sqrt{gh})_{max}} \right)$$

Kurant-Fridrih-Levi

Time: 46 sec

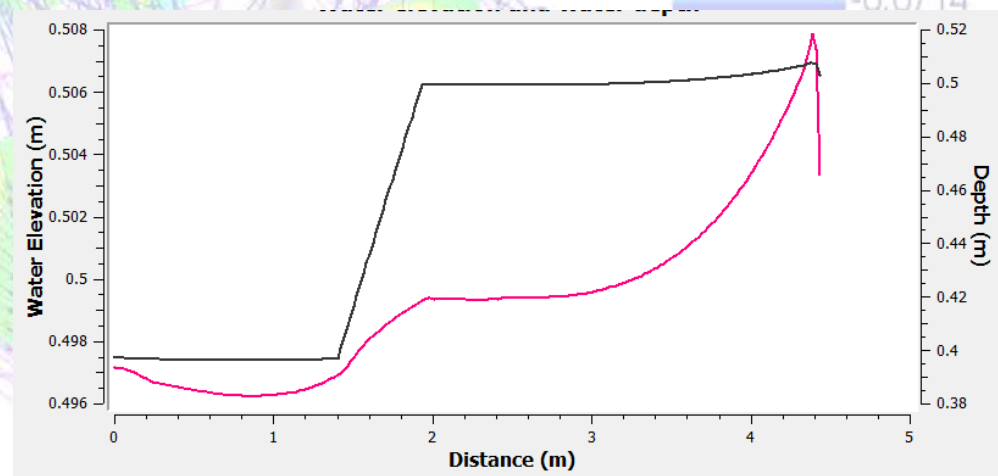
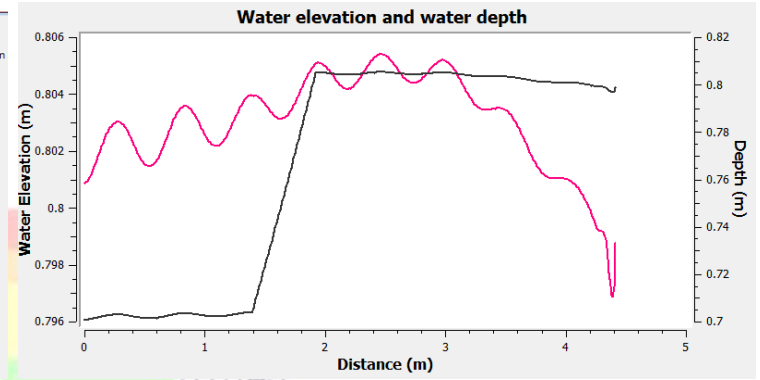
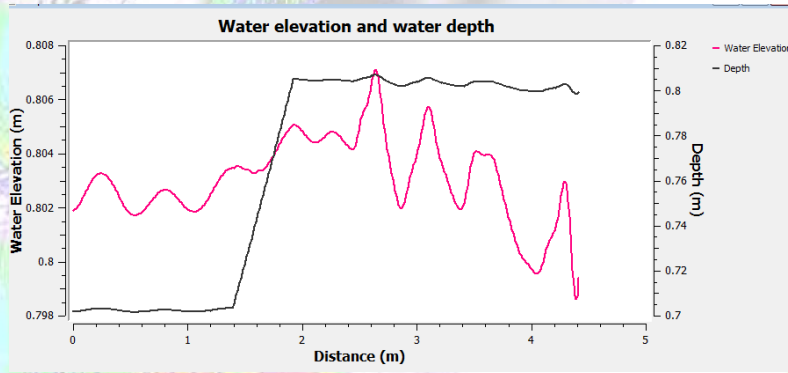
$\Delta x = \Delta y = 1\text{cm}$

$\Delta t = 0.005\text{s}$

$t = 60\text{s}$

$N_{\text{slojeva}} = 15$

$N_{\text{slojeva}} = 30$



Time: 40 sec

Velocity

$\Delta x = \Delta y = 0.5\text{cm}$

$N_{\text{slojeva}} = 15$



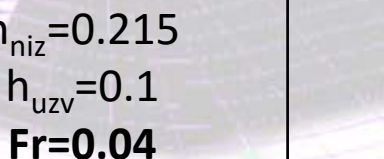
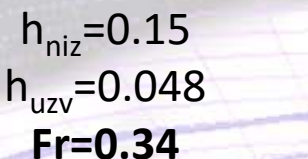
Solver Console [NaysCUBE v.3.20.1 32bit] (stopped)

```
----- start input conditions -----  
Case1.cgn,   ier =           9  
OK, you are not using PBC.  
forrtl: severe (41): insufficient virtual memoryImage  
PC          Routine          Line          Source          libifco  
remd.dll    100A8F40  Unknown      Unknown         Unknownlibifco  
remd.dll    1009171F  Unknown      Unknown         Unknownlibifco  
remd.dll    1001CFD7  Unknown      Unknown         Unknownlibifco  
remd.dll    100600F5  Unknown      Unknown         UnknownNaysCUB  
E_v3_20_1_ 001FD42C  Unknown      Unknown         UnknownNaysCUB  
E_v3_20_1_ 00546900  Unknown      Unknown         UnknownNaysCUB  
E_v3_20_1_ 004D3098  Unknown      Unknown         Unknown  
00030002   Unknown          Unknown      Unknown
```

Time: 46 sec

Velocity

Frudov broj na uzvodnom delu kanala

Proticaj (l/s):	Rezolucija mreže (cm) / broj vertikalnih nivoa:	Strm pad	Blag pad
50	2 / (15/30)		
50	1 / (15/30)		
50	0.5 / (15/30)	/	
5	2 (15)		

Po postavci zadatka potrebno:

1. Q=50 l/s $Fr_{uzv}=0.8$, $h_{uzv}=0.1675$ m
2. Q=5 l/s $Fr_{uzv}=0.2$, $h_{uzv}=0.055$ m

1. 50 l/s - nagib nema uticaja
2. 5 l/s - nagib važan



Hvala na pažnji

pitanja samo u slučaju nužde (velike)