



Supplement of

Impacts of changing hydrology on permanent gully growth: experimental results

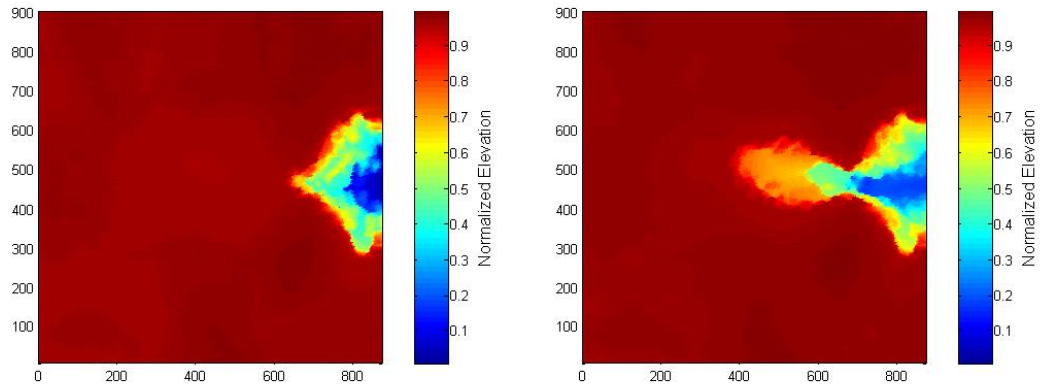
Stephanie S. Day et al.

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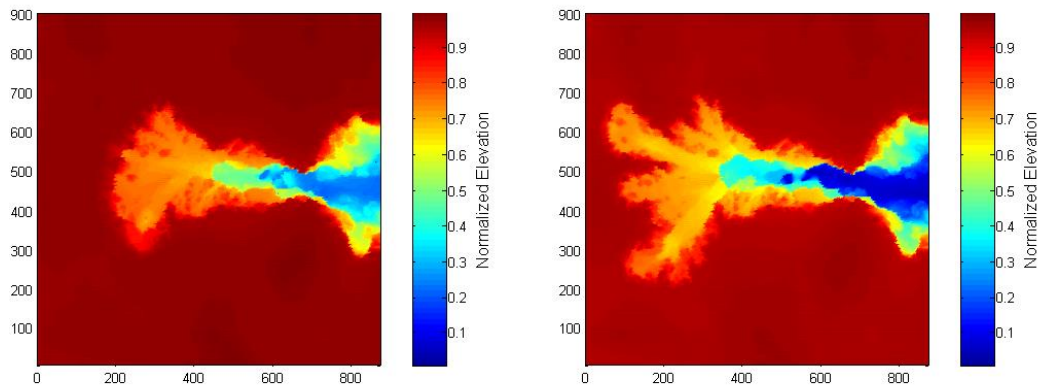
Supplementary Materials

Run 1:



Scan 2: 15 min & 0.00409 m³ removed

Scan 3: 30 min & 0.00657 m³ removed



Scan 4: 45 min & 0.00981 m³ removed

Scan 5: 60 min & 0.01192 m³ removed

$D_{50} = 12 \mu\text{m}$

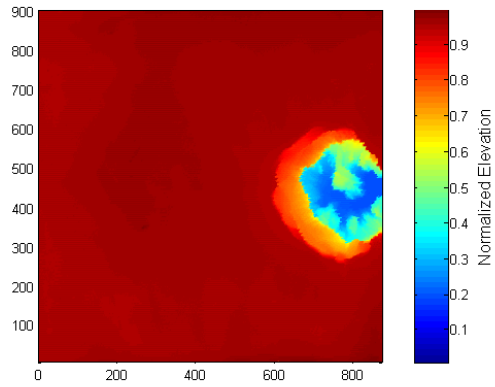
Total Volume = 190 L

Total Run Time = 60 minutes

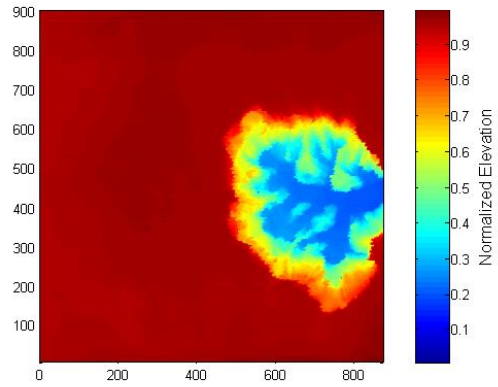
Flow Rate = 52.58 ml/sec

Total Volume Removed: 0.01192 m³

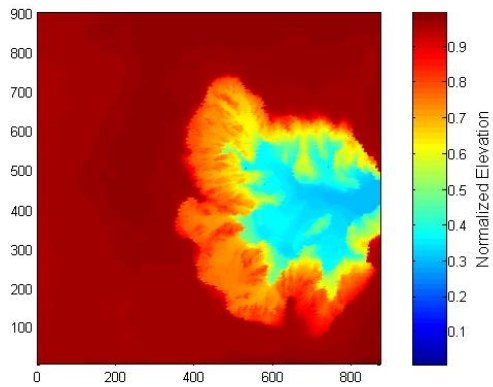
Run 2:



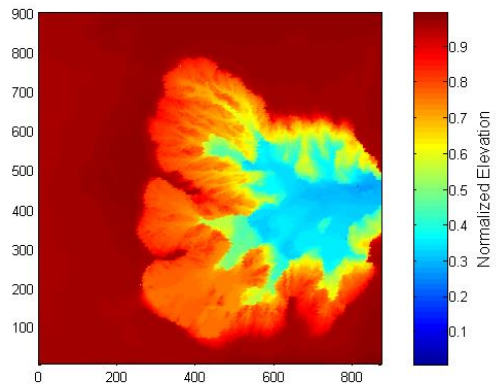
Scan 2: 8 min & 0.00585 m³ removed



Scan 3: 16 min & 0.01473 m³ removed



Scan 4: 24 min & 0.01992 m³ removed



Scan 5: 32 min & 0.02451 m³ removed

$D_{50} = 12 \mu\text{m}$

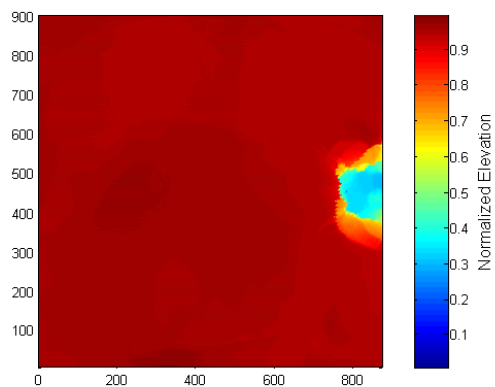
Total Volume = 190 L

Total Run Time = 32 minutes

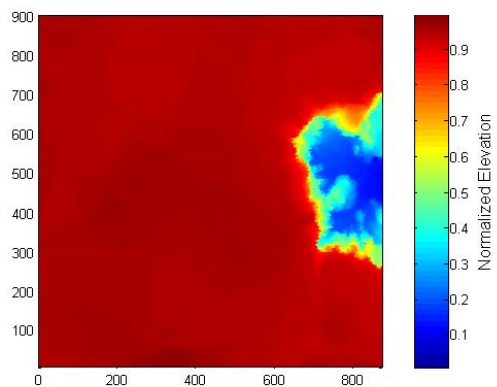
Flow Rate = 98.58 ml/sec

Total Volume Removed: 0.02451 m³

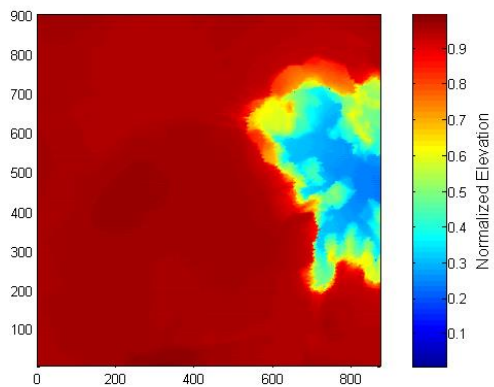
Run 3:



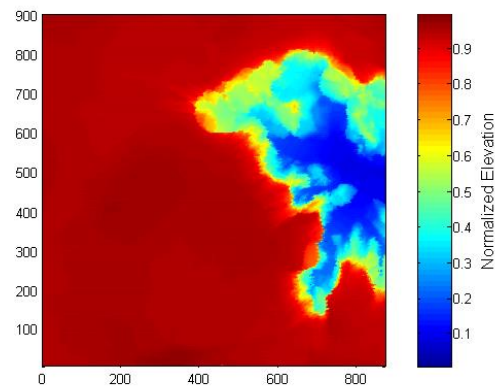
Scan 2: 4 min & 0.00259 m³ removed



Scan 3: 8 min & 0.00778 m³ removed



Scan 4: 12 min & 0.0133 m³ removed



Scan 5: 16 min & 0.01794 m³ removed

$D_{50} = 12 \mu\text{m}$

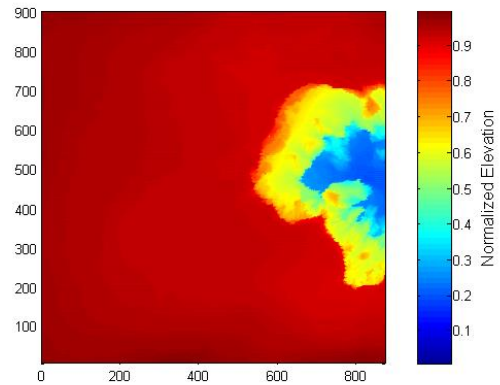
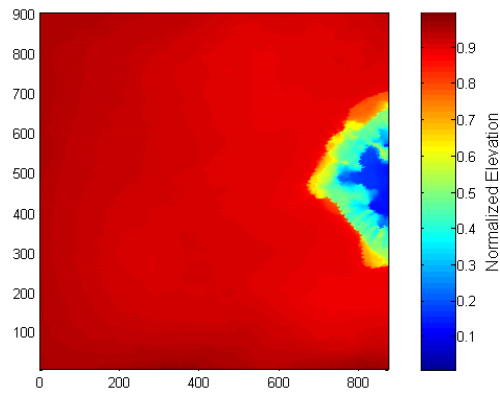
Total Volume = 190 L

Total Run Time = 16 minutes

Flow Rate = 197.16 ml/sec

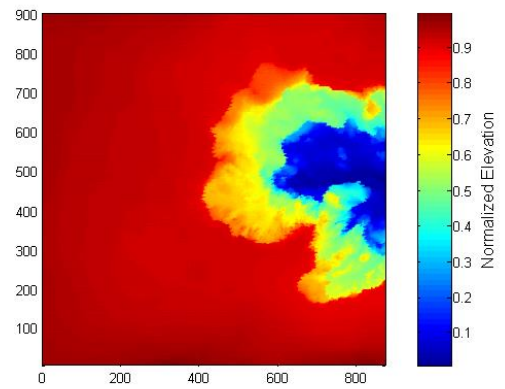
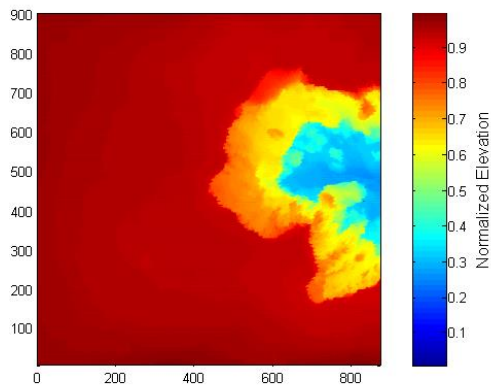
Total Volume Removed: 0.01794 m³

Run 4:



Scan 2: 6 min & 0.00404 m³ removed

Scan 3: 12 min & 0.00908 m³ removed



Scan 4: 18 min & 0.01256 m³ removed

Scan 5: 21.25 min & 0.01378 m³ removed

$D_{50} = 12 \mu\text{m}$

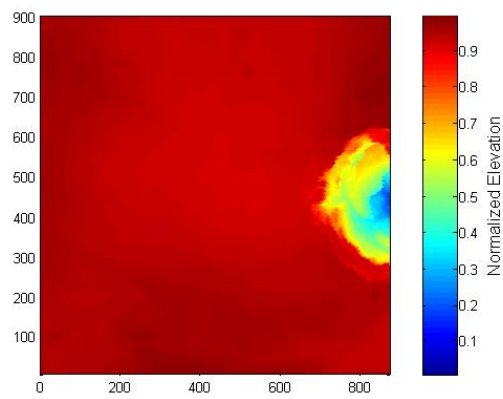
Total Volume = 190 L

Total Run Time = 21.25 minutes

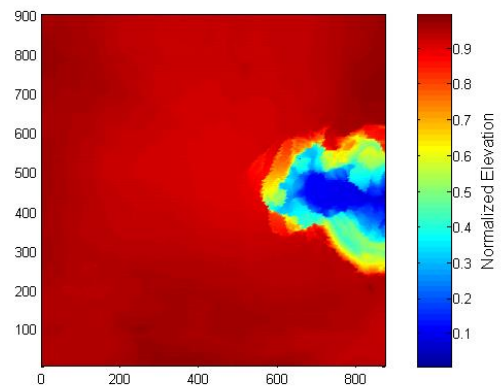
Flow Rate = 148.45 ml/sec

Total Volume Removed: 0.01378 m³

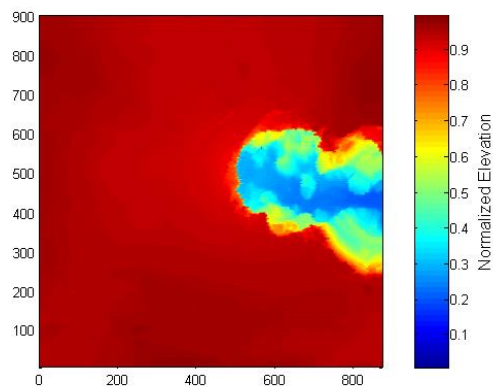
Run 5:



Scan 2: 4 min & 0.00330 m³ removed



Scan 3: 8 min & 0.00735 m³ removed



Scan 4: 11 min & 0.01038 m³ removed

$D_{50} = 12 \mu\text{m}$

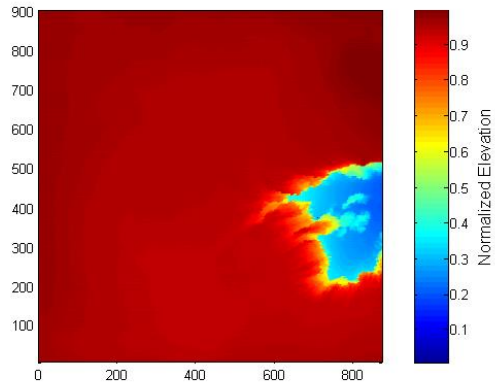
Total Volume = 190 L

Total Run Time = 11 minutes

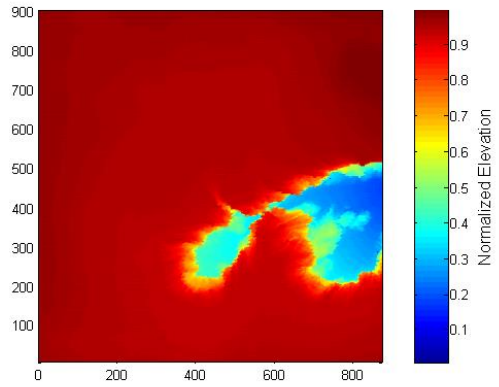
Flow Rate = 286.77 ml/sec

Total Volume Removed: 0.01038 m³

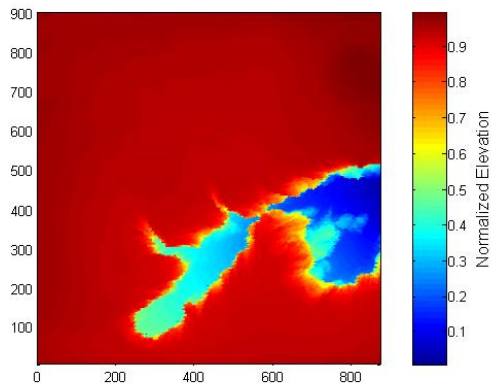
Run 6:



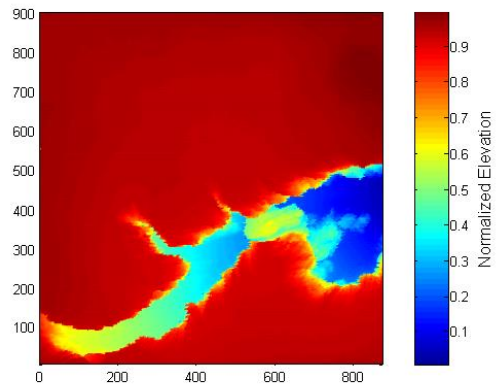
Scan 2: 30 min & 0.00638 m³ removed



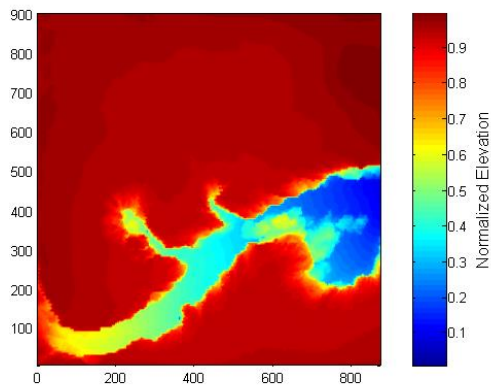
Scan 3: 60 min & 0.00901 m³ removed



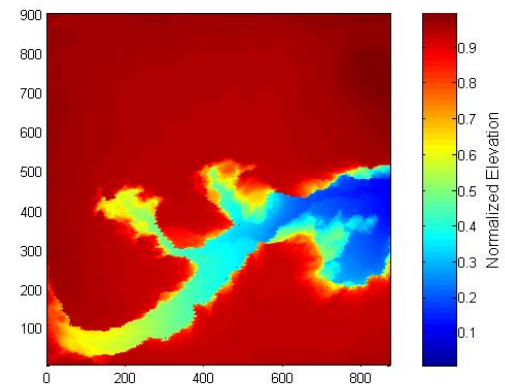
Scan 4: 90 min & 0.01056 m³ removed



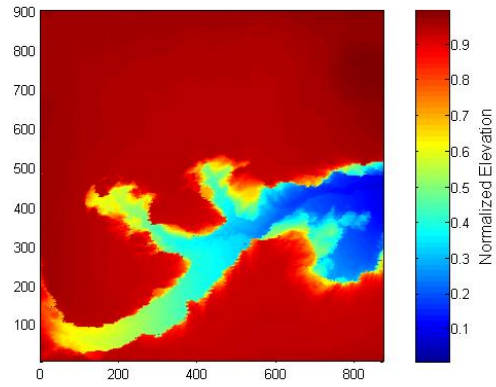
Scan 5: 120 min & 0.01185 m³ removed



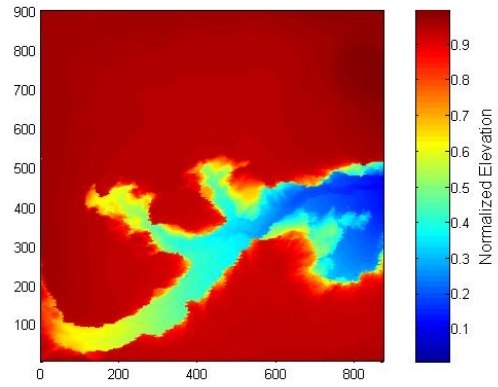
Scan 6: 150 min & 0.01255 m³ removed



Scan 7: 360 min & 0.01390 m³ removed



Scan 8: 738 min & 0.01490 m³ removed



Scan 9: 872 min & 0.01490 m³ removed

$D_{50} = 12 \mu\text{m}$

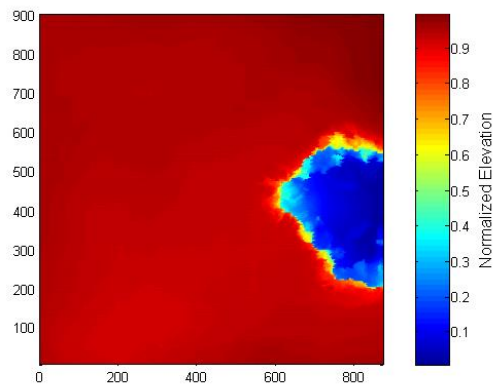
Total Volume = 190 L

Total Run Time = 872 minutes

Flow Rate = 3.62 ml/sec

Total Volume Removed: 0.01490 m³

Run 7:



Scan 2: 10.13 min & 0.00891 m³ removed

D₅₀ = 12 μm

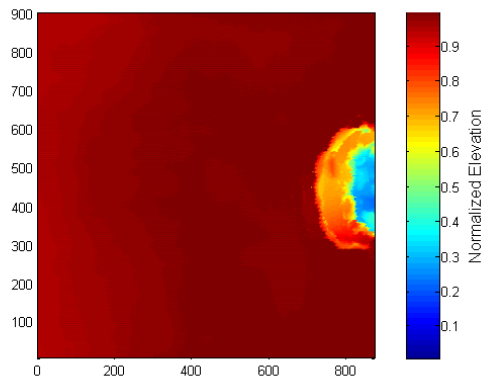
Total Volume = 190 L

Total Run Time = 10.13 minutes

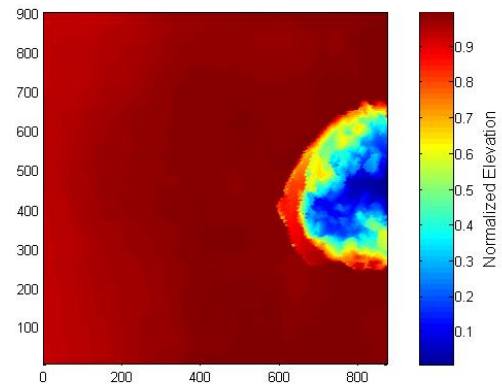
Flow Rate = 311.40 ml/sec

Total Volume Removed: 0.00891 m³

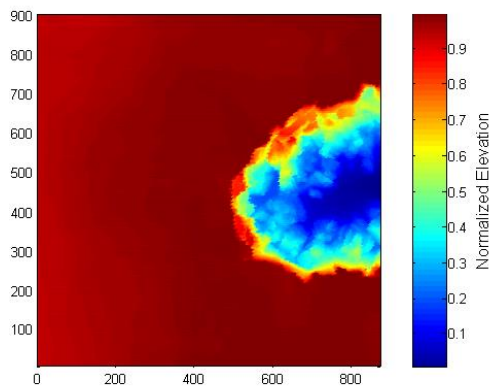
Run 8:



Scan 2: 6 min & 0.00310 m³ removed



Scan 3: 12 min & 0.00738 m³ removed



Scan 4: 21.5 min & 0.01391 m³ removed

$D_{50} = 12 \mu\text{m}$

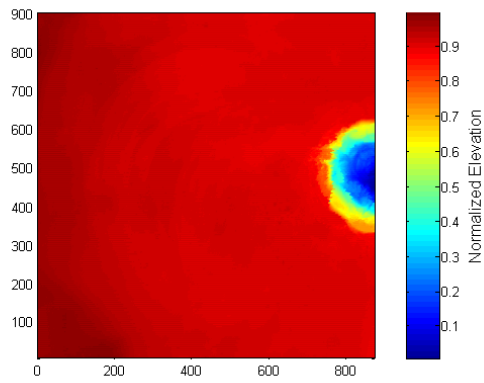
Total Volume = 190 L

Total Run Time = 21.5 minutes

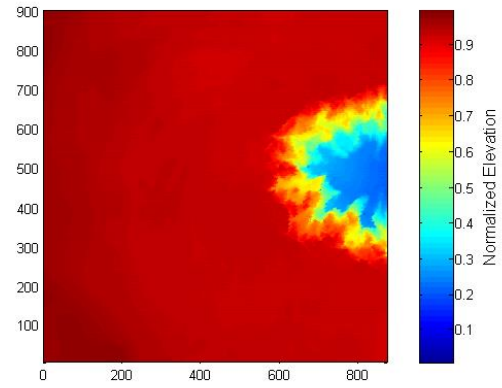
Flow Rate = 146.72 ml/sec

Total Volume Removed: 0.01391 m³

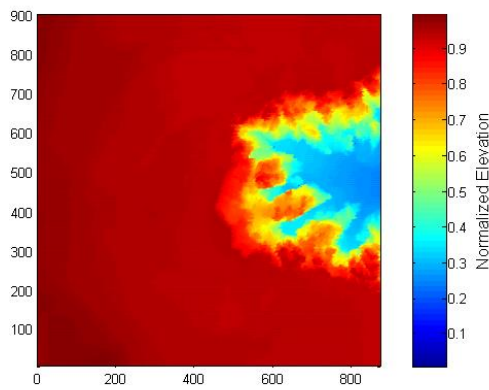
Run 9:



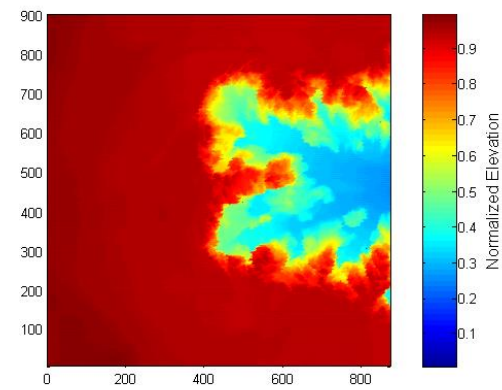
Scan 2: 3 min & 0.00203 m³ removed



Scan 3: 6 min & 0.00720 m³ removed



Scan 4: 9 min & 0.01139 m³ removed



Scan 5: 15.5 min & 0.01865 m³ removed

$D_{50} = 12 \mu\text{m}$

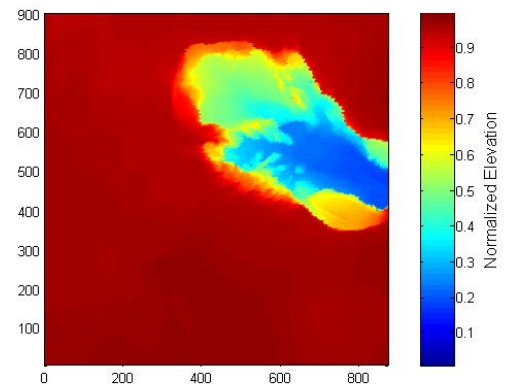
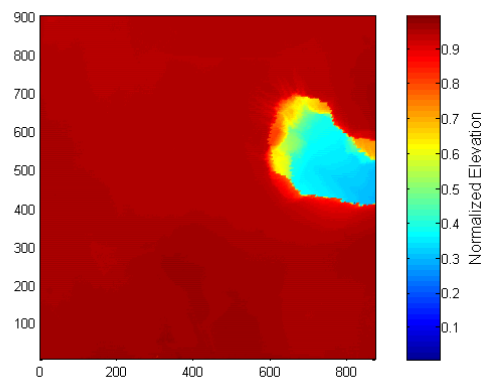
Total Volume = 190 L

Total Run Time = 15.5 minutes

Flow Rate = 203.52 ml/sec

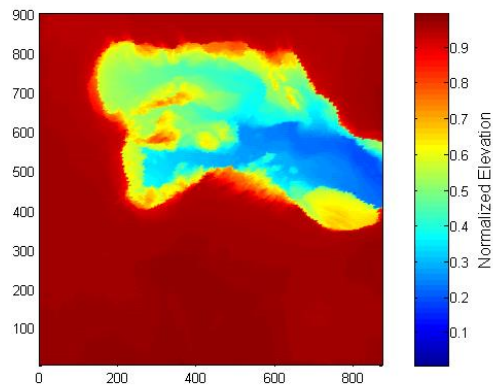
Total Volume Removed: 0.01865 m³

Run 10:

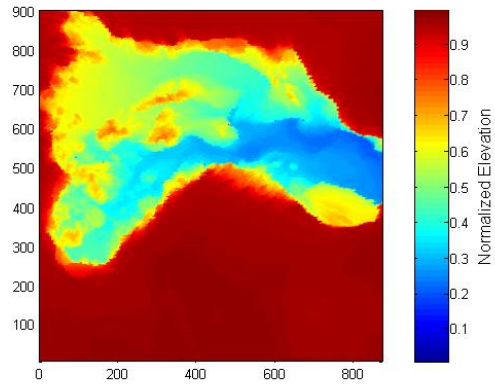


Scan 2: 15 min & 0.00688 m³ removed

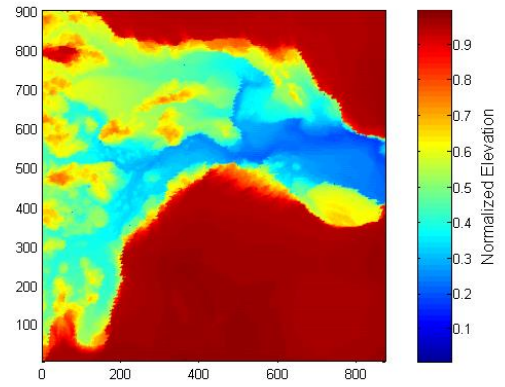
Scan 3: 30 min & 0.01542 m³ removed



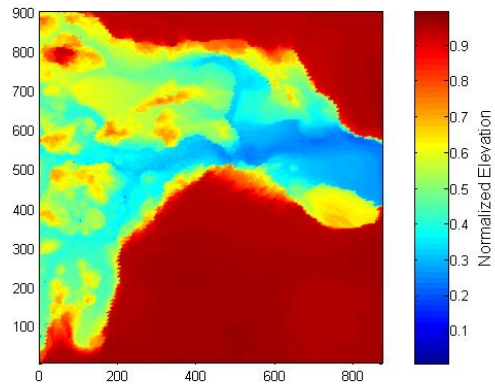
Scan 4: 44 min & 0.02316 m³ removed



Scan 5: 59 min & 0.03200 m³ removed



Scan 6: 74 min & 0.03795 m³ removed



Scan 7: 91.5 min & 0.03905 m³ removed

$D_{50} = 12 \mu\text{m}$

Total Volume = 380 L

Total Run Time = 91.5 minutes

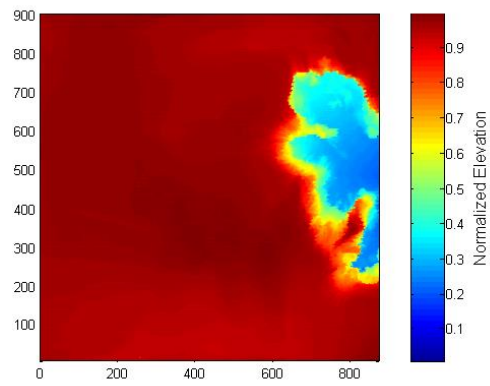
1st 190L Flow Rate = 71.69 ml/sec

2nd 190L Flow Rate = 66.41 ml/sec

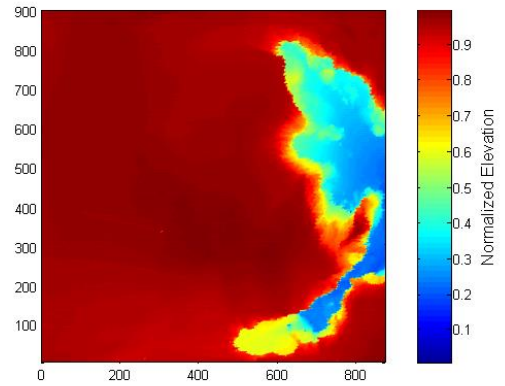
1st Half Total Volume Removed = 0.02316 m³

Total Volume Removed: 0.03905 m³

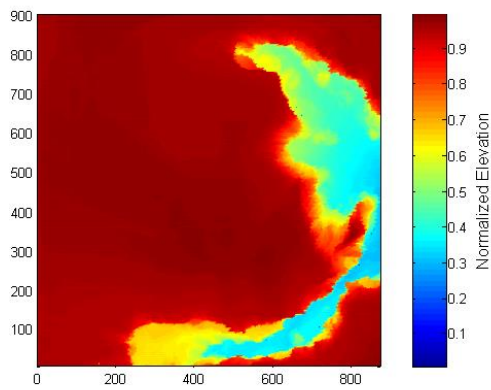
Run 11:



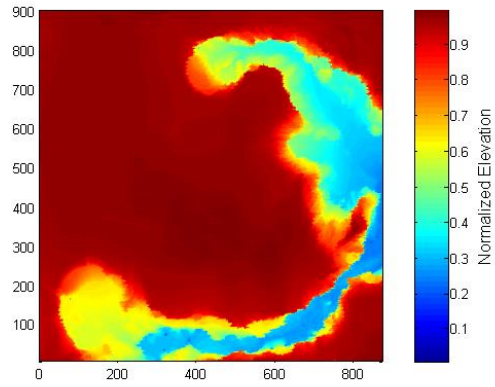
Scan 2: 15 min & 0.01031m³ removed



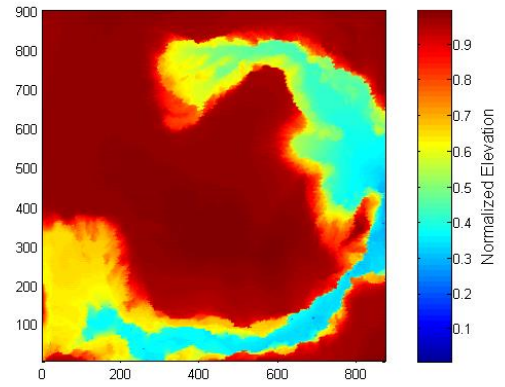
Scan 3: 30 min & 0.01390 m³ removed



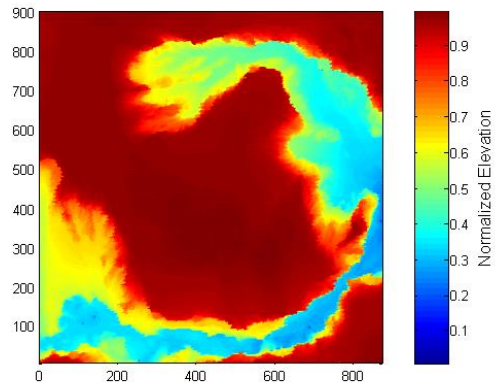
Scan 4: 43 min & 0.01712 m³ removed



Scan 5: 51 min & 0.02218 m³ removed



Scan 6: 59 min & 0.02739 m³ removed



Scan 7: 65 min & 0.03016 m³ removed

$D_{50} = 12 \mu\text{m}$

Total Volume = 380 L

Total Run Time = 65 minutes

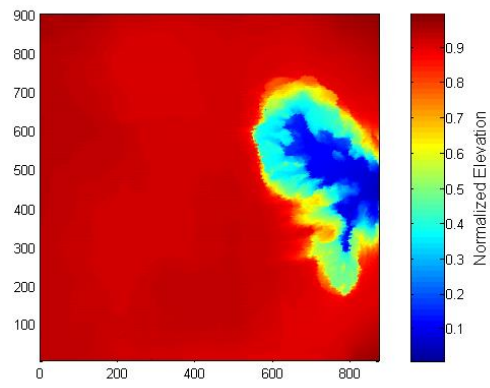
1st 190L Flow Rate = 73.36 ml/sec

2nd 190L Flow Rate = 143.39 ml/sec

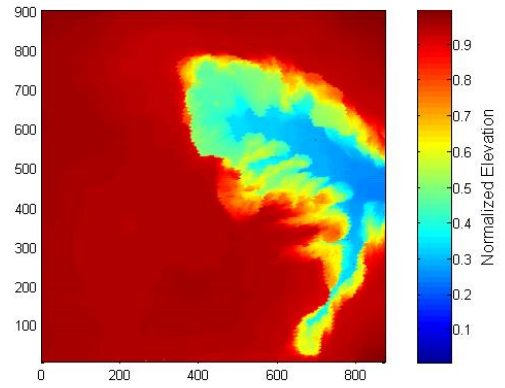
1st Half Total Volume Removed = 0.01712 m³

Total Volume Removed: 0.03016 m³

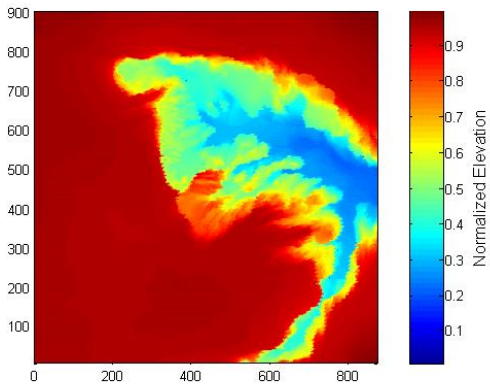
Run 12:



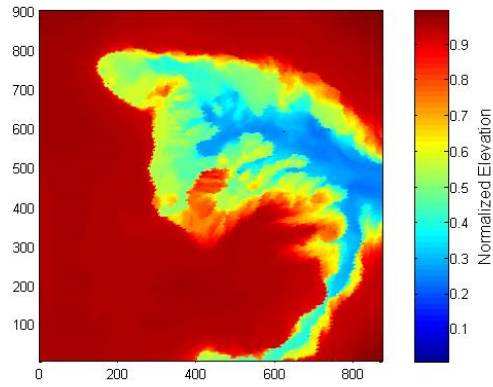
Scan 2: 15 min & 0.01096 m³ removed



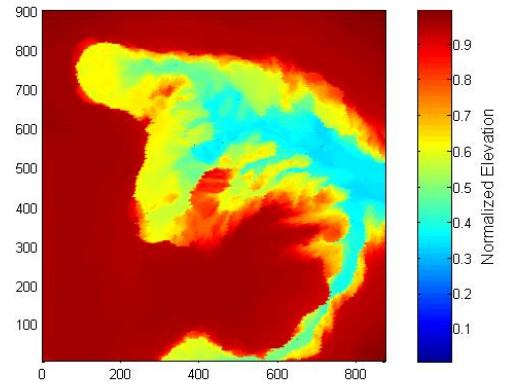
Scan 3: 30 min & 0.01917 m³ removed



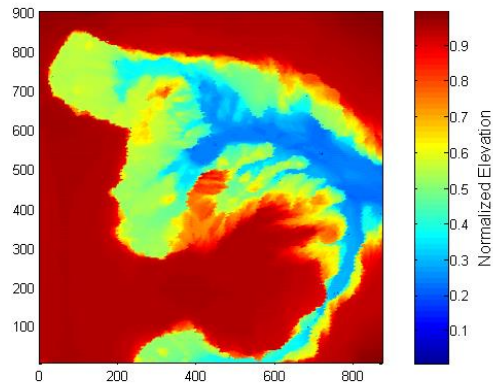
Scan 4: 41 min & 0.02338 m³ removed



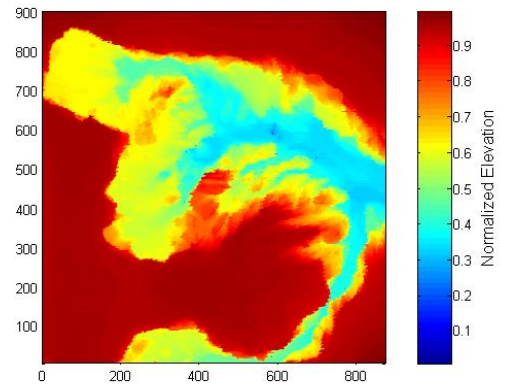
Scan 5: 45 min & 0.02665 m³ removed



Scan 6: 49 min & 0.03012 m³ removed



Scan 7: 53 min & 0.03385 m³ removed



Scan 8: 54.5 min & 0.03553 m³ removed

$D_{50} = 12 \mu\text{m}$

Total Volume = 380 L

Total Run Time = 54.5 minutes

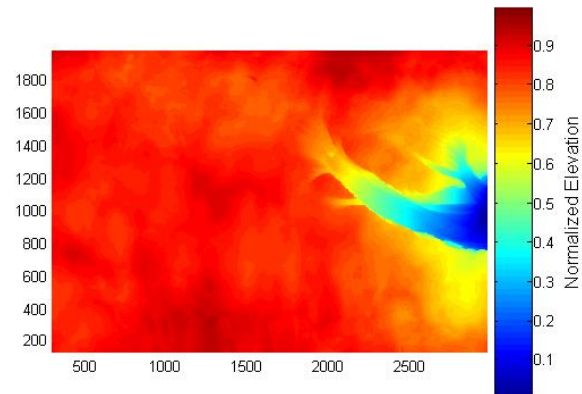
1st 190L Flow Rate = 76.94 ml/sec

2nd 190L Flow Rate = 233.67 ml/sec

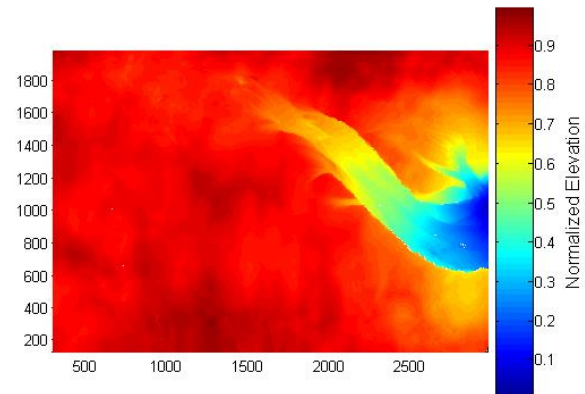
1st Half Total Volume Removed = 0.02338 m³

Total Volume Removed: 0.03553 m³

Run 13:



Scan 2: 6.5 min & 0.01002 m³ removed



Scan 3: 25.25 min & 0.01776 m³ removed

$D_{50} = 96 \mu\text{m}$

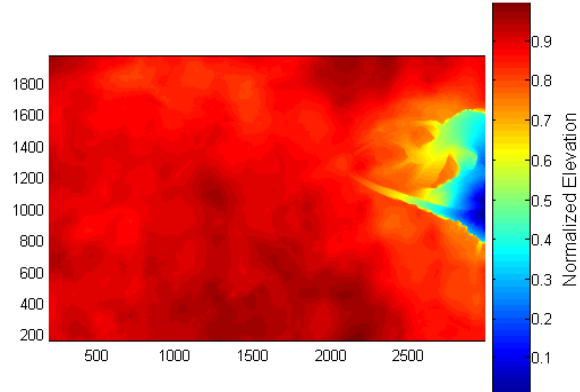
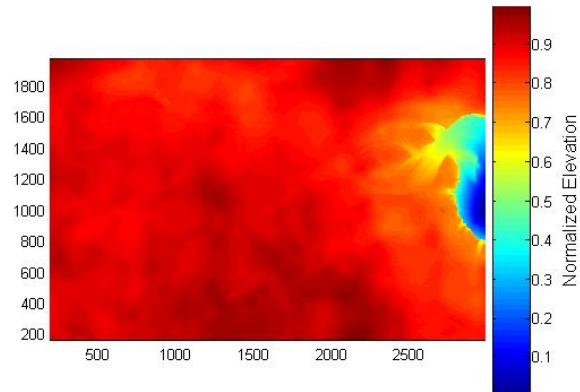
Total Volume = 190 L

Total Run Time = 25.25 minutes

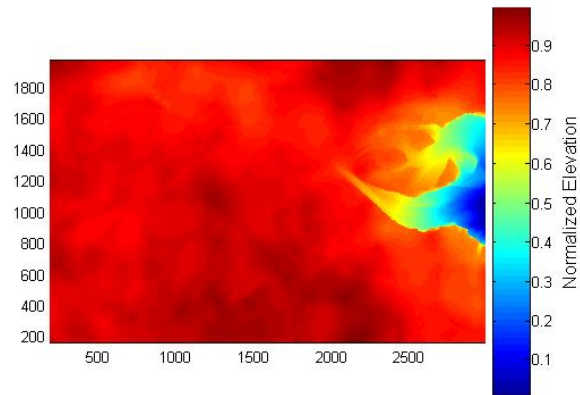
Flow Rate = 124.93 ml/sec

Total Volume Removed: 0.01776 m³

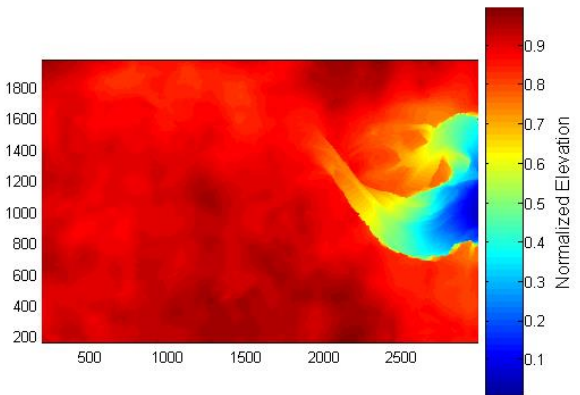
Run 14:



Scan 2: 10 min & 0.00506 m³ removed



Scan 3: 20 min & 0.00877 m³ removed



Scan 4: 30 min & 0.01067 m³ removed

Scan 5: 56.5 min & 0.01865 m³ removed

$D_{50} = 96 \mu\text{m}$

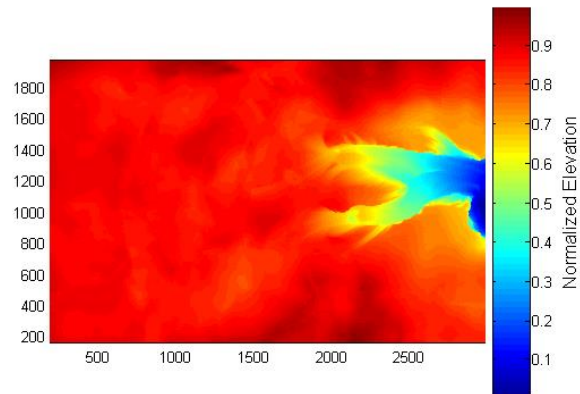
Total Volume = 190 L

Total Run Time = 56.5 minutes

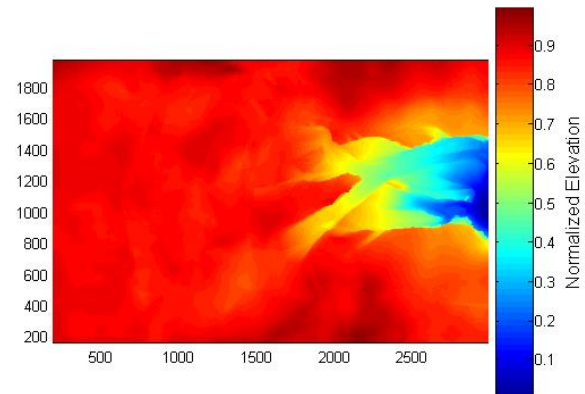
Flow Rate = 55.83 ml/sec

Total Volume Removed: 0.01865 m^3

Run 15:



Scan 2: 6 min & 0.01496 m³ removed



Scan 3: 13.5 min & 0.02380 m³ removed

$D_{50} = 96 \mu\text{m}$

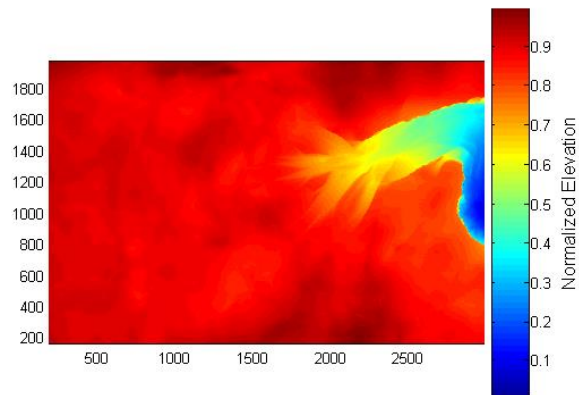
Total Volume = 190 L

Total Run Time = 13.5 minutes

Flow Rate = 233.67 ml/sec

Total Volume Removed: 0.02380 m³

Run 16:



Scan 2: 12 min & 0.01659 m³ removed

$D_{50} = 96 \mu\text{m}$

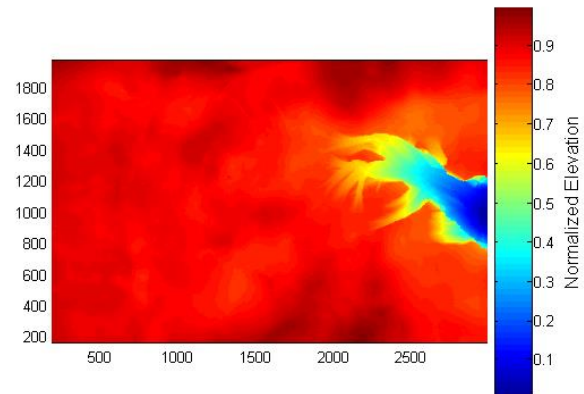
Total Volume = 190 L

Total Run Time = 12 minutes

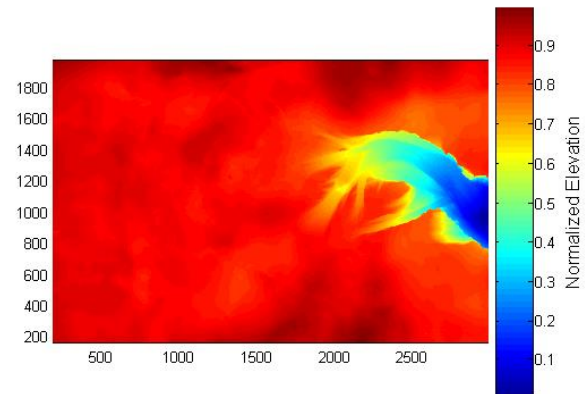
Flow Rate = 262.88 ml/sec

Total Volume Removed: 0.01659 m³

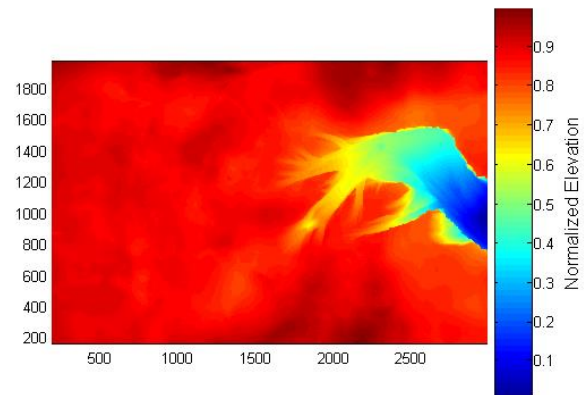
Run 17:



Scan 2: 7 min & 0.01459 m³ removed



Scan 3: 14min & 0.02007 m³ removed



Scan 4: 20.25 min & 0.02357 m³ removed

$$D_{50} = 96 \mu\text{m}$$

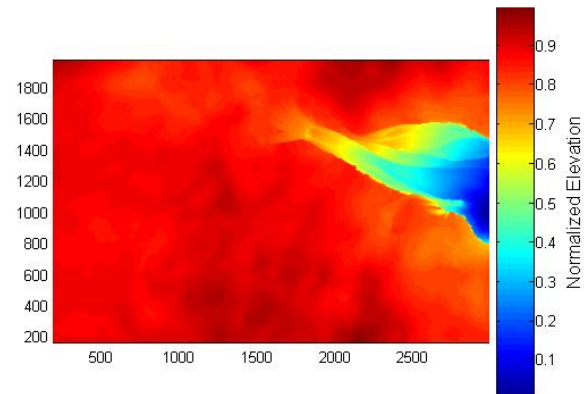
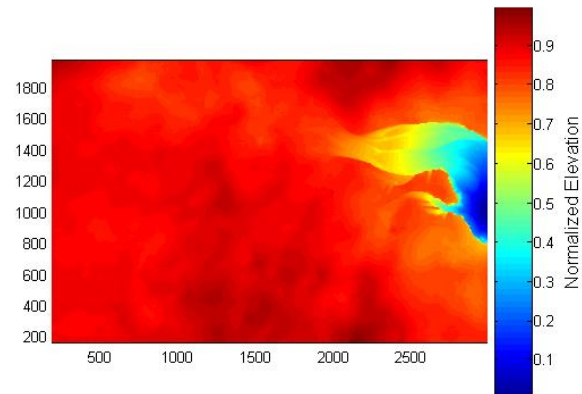
$$\text{Total Volume} = 190 \text{ L}$$

$$\text{Total Run Time} = 20.25 \text{ minutes}$$

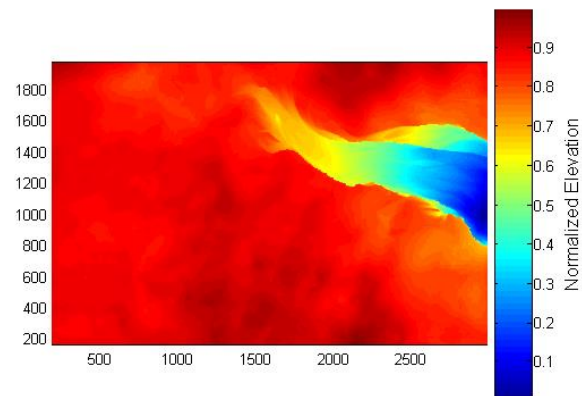
$$\text{Flow Rate} = 155.78 \text{ ml/sec}$$

$$\text{Total Volume Removed} = 0.02357 \text{ m}^3$$

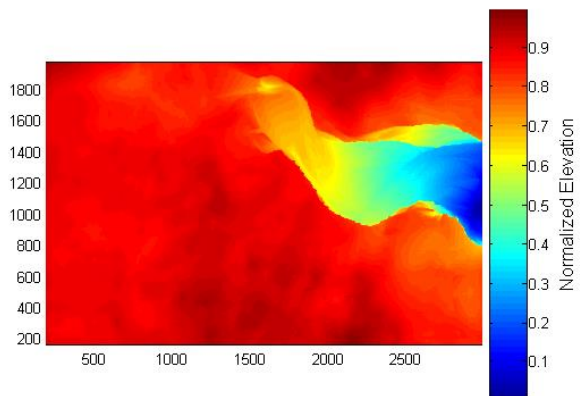
Run 18:



Scan 2: 15 min & 0.01221 m³ removed



Scan 3: 39 min & 0.01999 m³ removed



Scan 4: 45 min & 0.02508 m³ removed

Scan 5: 56 min & 0.03117 m³ remove

$$D_{50} = 96 \mu\text{m}$$

$$\text{Total Volume} = 380 \text{ L}$$

$$\text{Total Run Time} = 56 \text{ minutes}$$

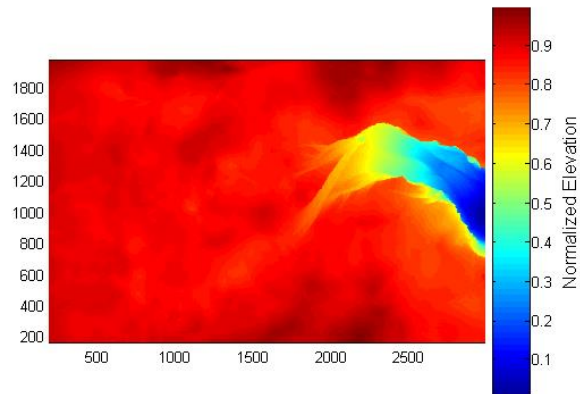
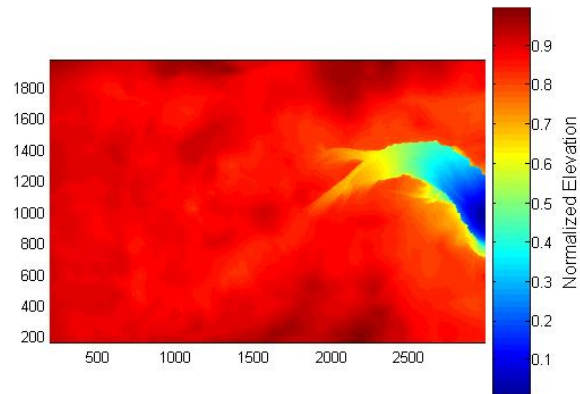
$$1^{\text{st}} \text{ 190L Flow Rate} = 80.88 \text{ ml/sec}$$

$$2^{\text{nd}} \text{ 190L Flow Rate} = 185.56 \text{ ml/sec}$$

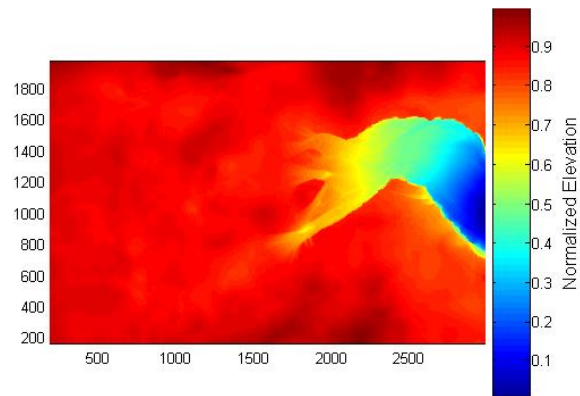
$$1^{\text{st}} \text{ Half Total Volume Removed} = 0.01999 \text{ m}^3$$

$$\text{Total Volume Removed: } 0.03117 \text{ m}^3$$

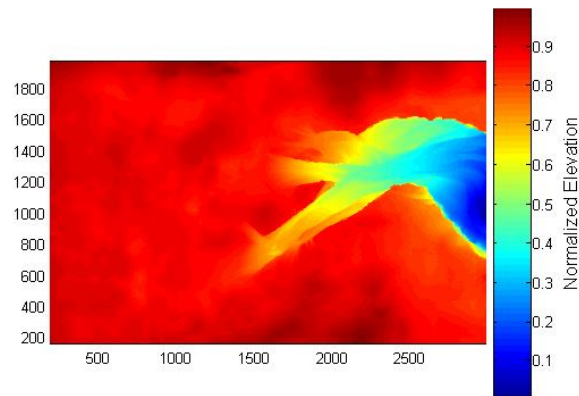
Run 19:



Scan 2: 26 min & 0.01109 m³ removed



Scan 3: 57 min & 0.01566 m³ removed



Scan 4: 64 min & 0.02415 m³ removed

Scan 5: 71.5 min & 0.03059 m³ removed

$$D_{50} = 96 \mu\text{m}$$

$$\text{Total Volume} = 380 \text{ L}$$

$$\text{Total Run Time} = 71.5 \text{ minutes}$$

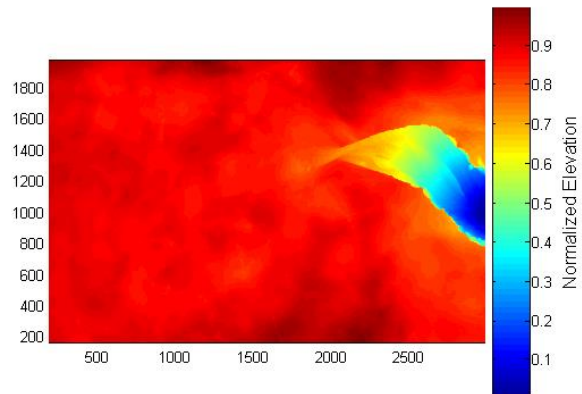
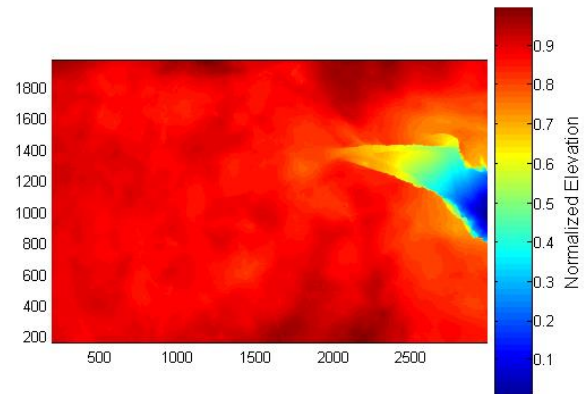
$$1^{\text{st}} \text{ 190L Flow Rate} = 55.34 \text{ ml/sec}$$

$$2^{\text{nd}} \text{ 190L Flow Rate} = 217.55 \text{ ml/sec}$$

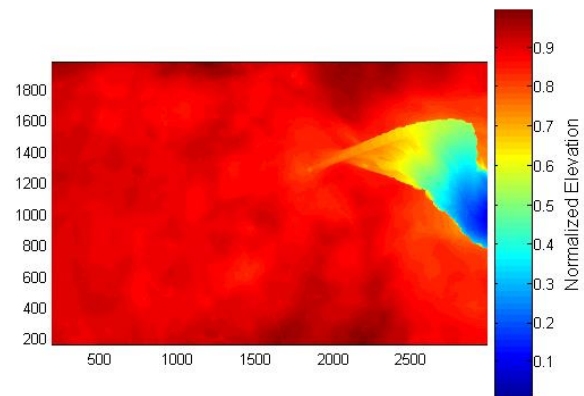
$$1^{\text{st}} \text{ Half Total Volume Removed} = 0.01566 \text{ m}^3$$

$$\text{Total Volume Removed: } 0.03059 \text{ m}^3$$

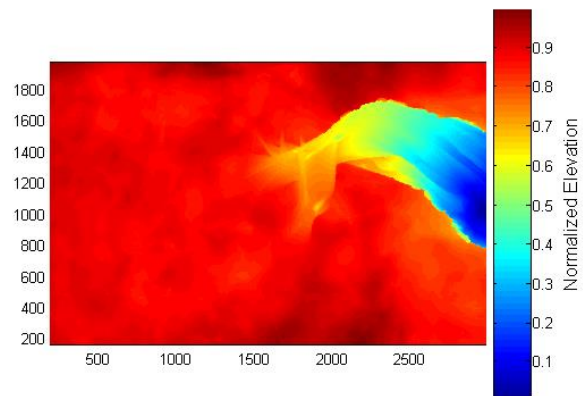
Run 20



Scan 2: 25 min & 0.00925 m³ removed



Scan 3: 50 min & 0.01368 m³ removed



Scan 4: 75 min & 0.01587 m³ removed

Scan 5: 89 min & 0.02803 m³ remove

$$D_{50} = 96 \mu\text{m}$$

$$\text{Total Volume} = 380 \text{ L}$$

$$\text{Total Run Time} = 42.06 \text{ minutes}$$

$$1^{\text{st}} \text{ 190L Flow Rate} = 55.34 \text{ ml/sec}$$

$$2^{\text{nd}} \text{ 190L Flow Rate} = 225.32 \text{ ml/sec}$$

$$1^{\text{st}} \text{ Half Total Volume Removed} = 0.01587 \text{ m}^3$$

$$\text{Total Volume Removed: } 0.02803 \text{ m}^3$$