Discussion: 3 D Hg Jet Simulation

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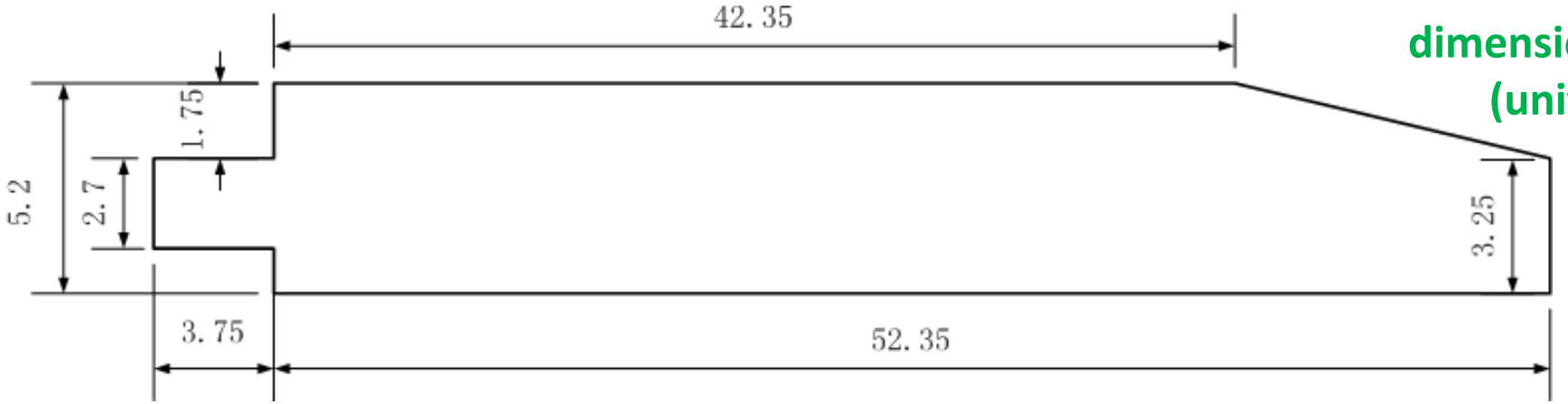
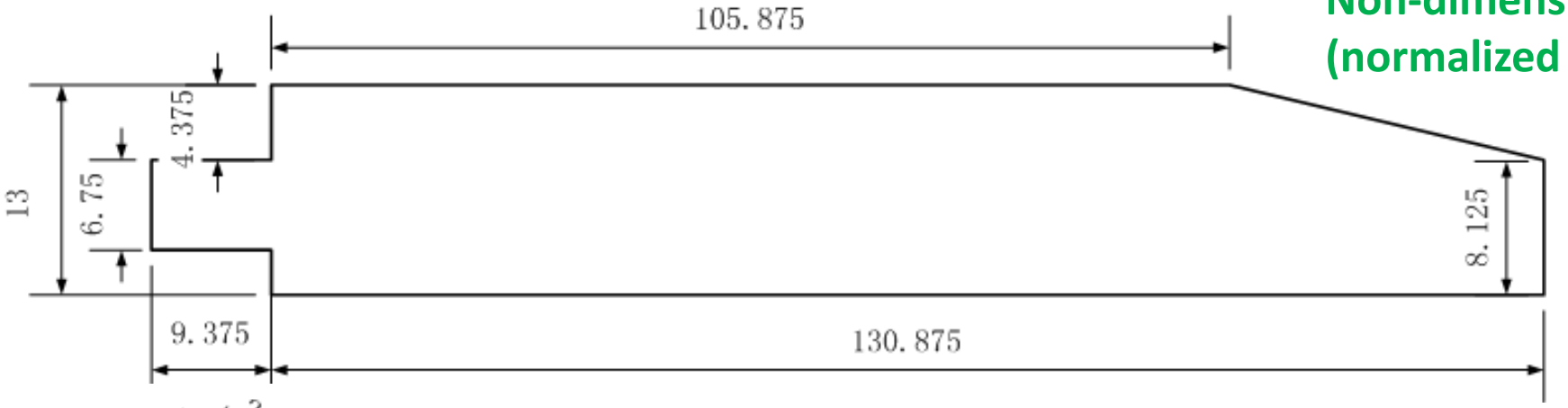
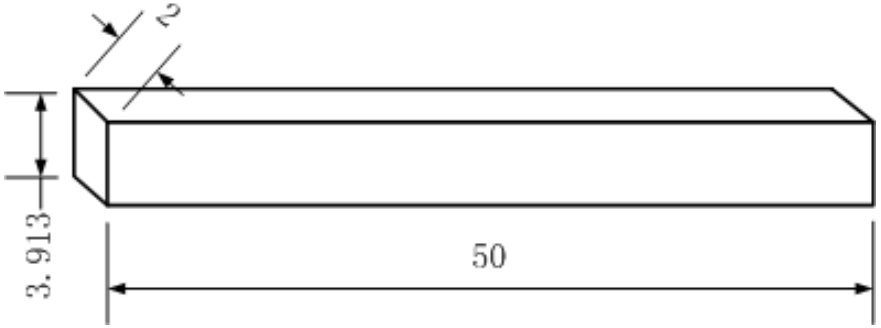
Simplification Of The 3D Hg Jet



dimensional model
(unit: inch)

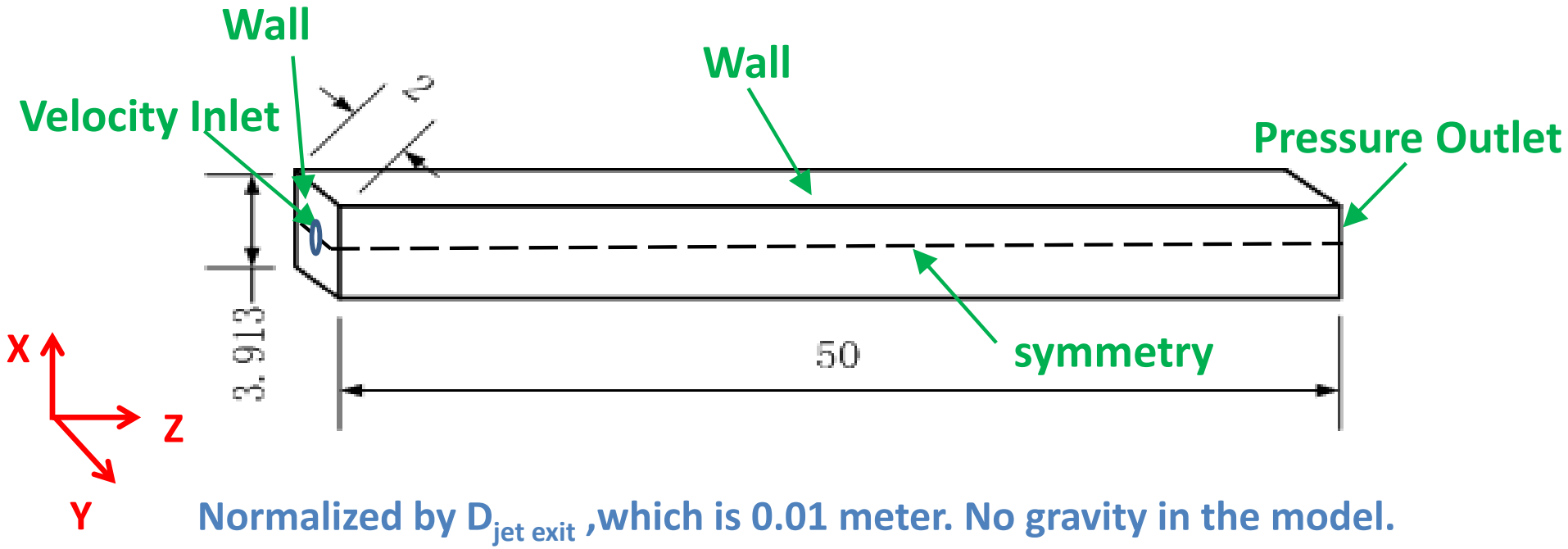


Non-dimensional model
(normalized by $D_{jet\ exit}$)

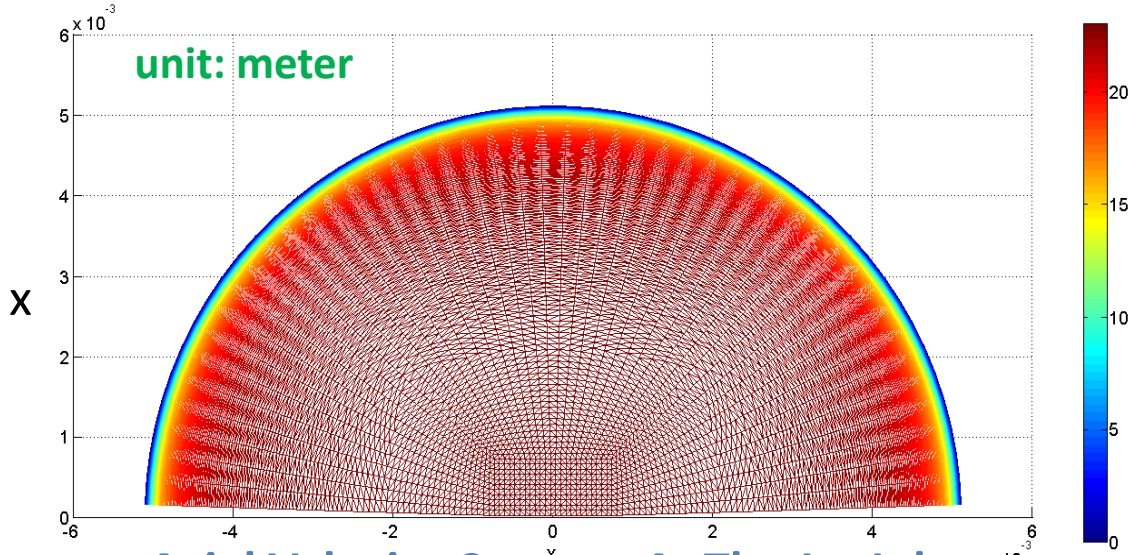


Simplified model
(normalized by $D_{jet\ exit}$)

Boundary Conditions



Normalized by $D_{jet\ exit}$,which is 0.01 meter. No gravity in the model.



Axial Velocity Contour At The Jet Inlet

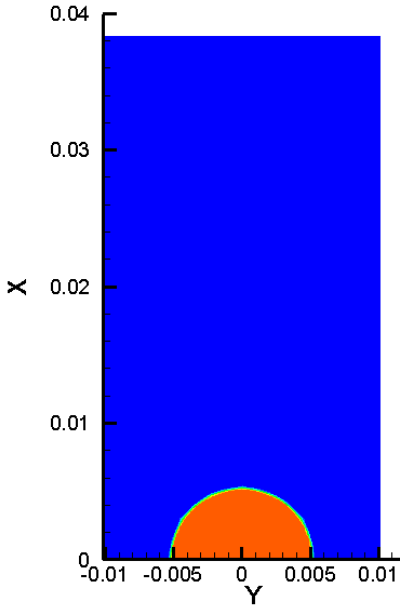
pipe simulation

u = **U** + sqrt(2**k**/3),

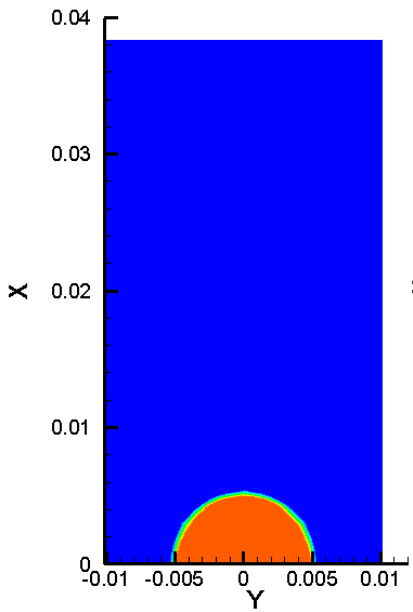
where **k** = ½((u')^2+(v')^2+(w')^2)

Results of α_{Hg} at t = 0 ms

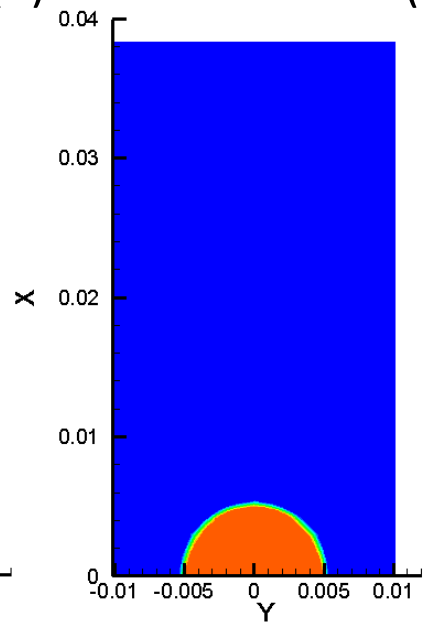
(1) z = 0 cm



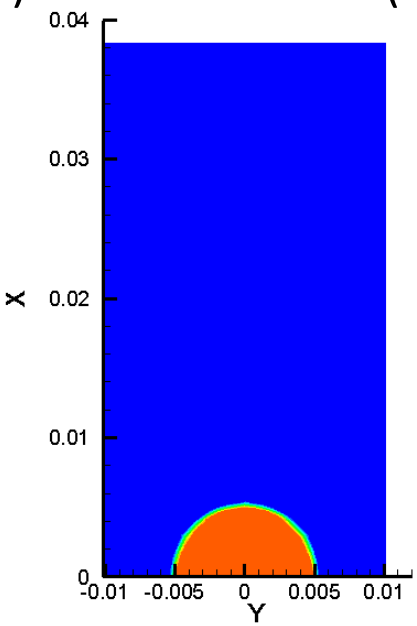
(2) z = 1 cm



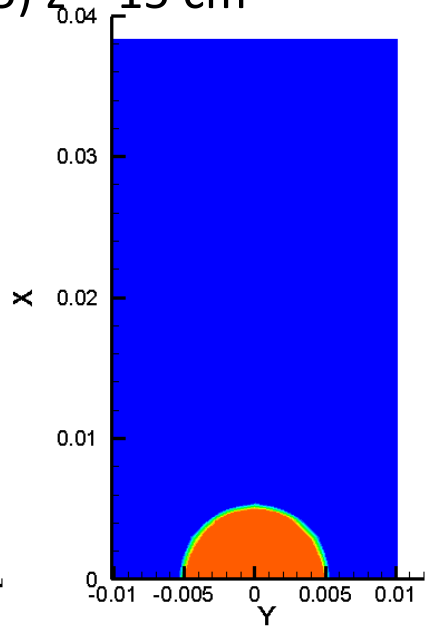
(3) z = 5 cm



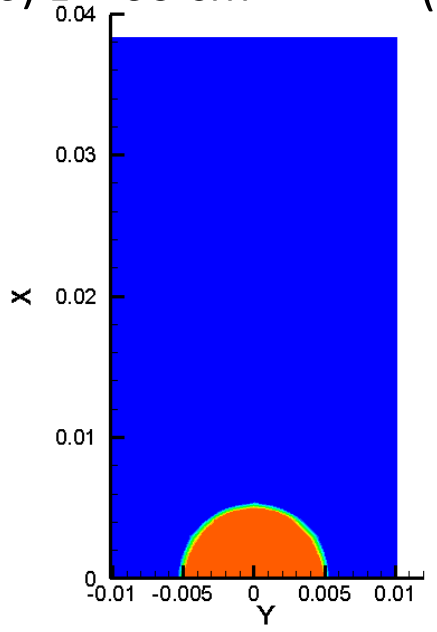
(4) z = 10 cm



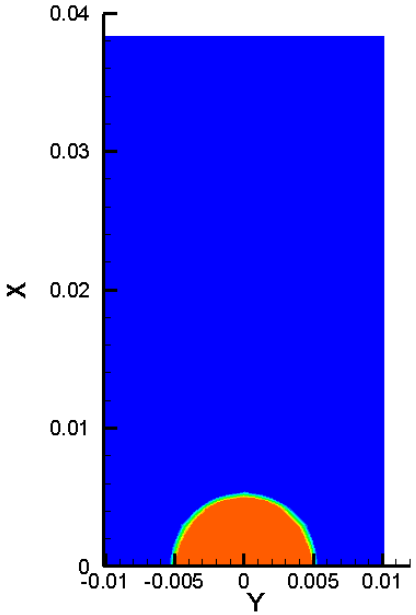
(5) z = 15 cm



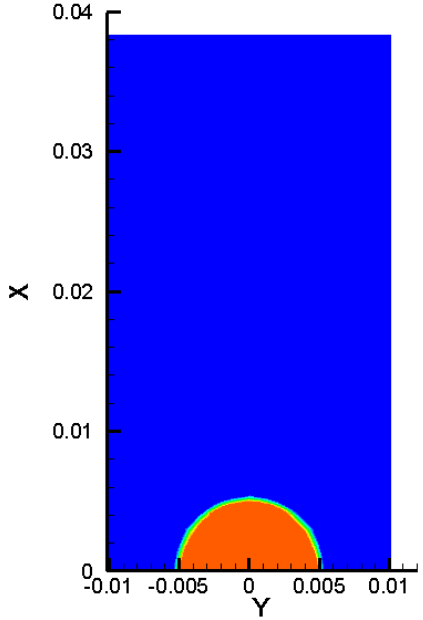
(6) z = 60 cm

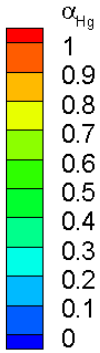


(7) z = 30 cm



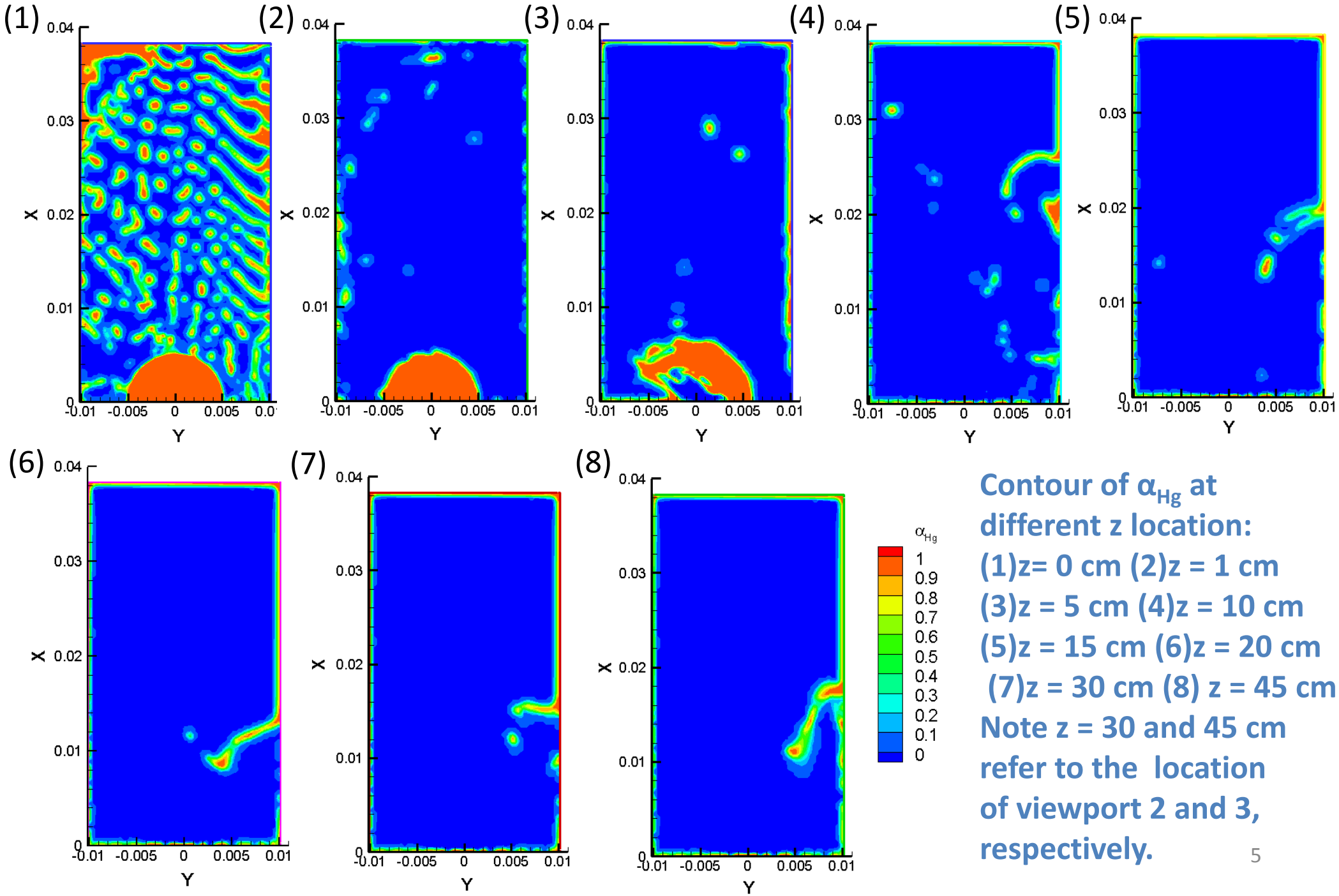
(8) z = 45 cm





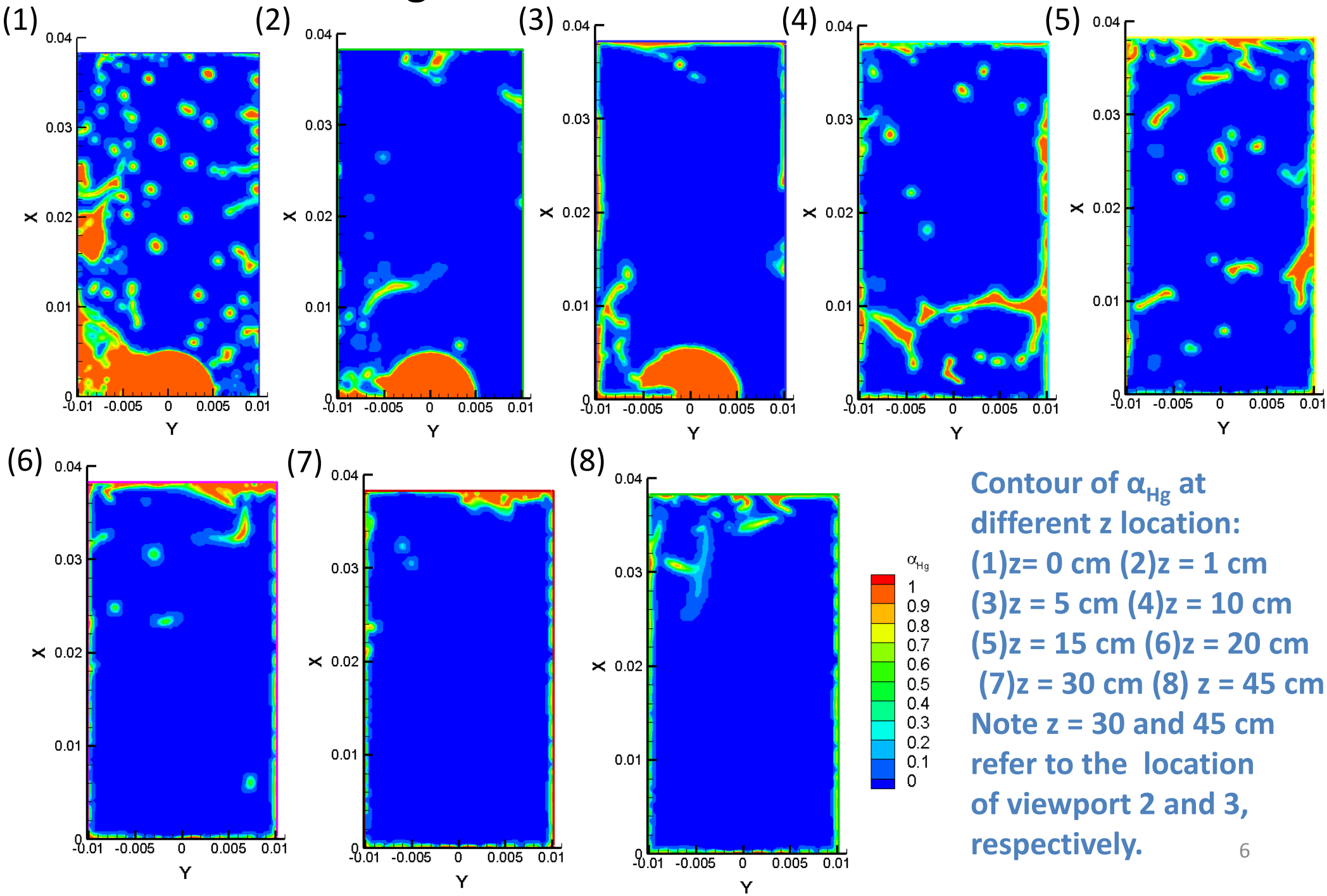
Contour of α_{Hg} at different z location:
(1)z= 0 cm (2)z = 1 cm
(3)z = 5 cm (4)z = 10 cm
(5)z = 15 cm (6)z = 20 cm
(7)z = 30 cm (8) z = 45 cm.
Note z = 30 and 45 cm refer to the location of viewport 2 and 3, respectively.

Results of α_{Hg} at t = 4.8 ms (1/5 time through)



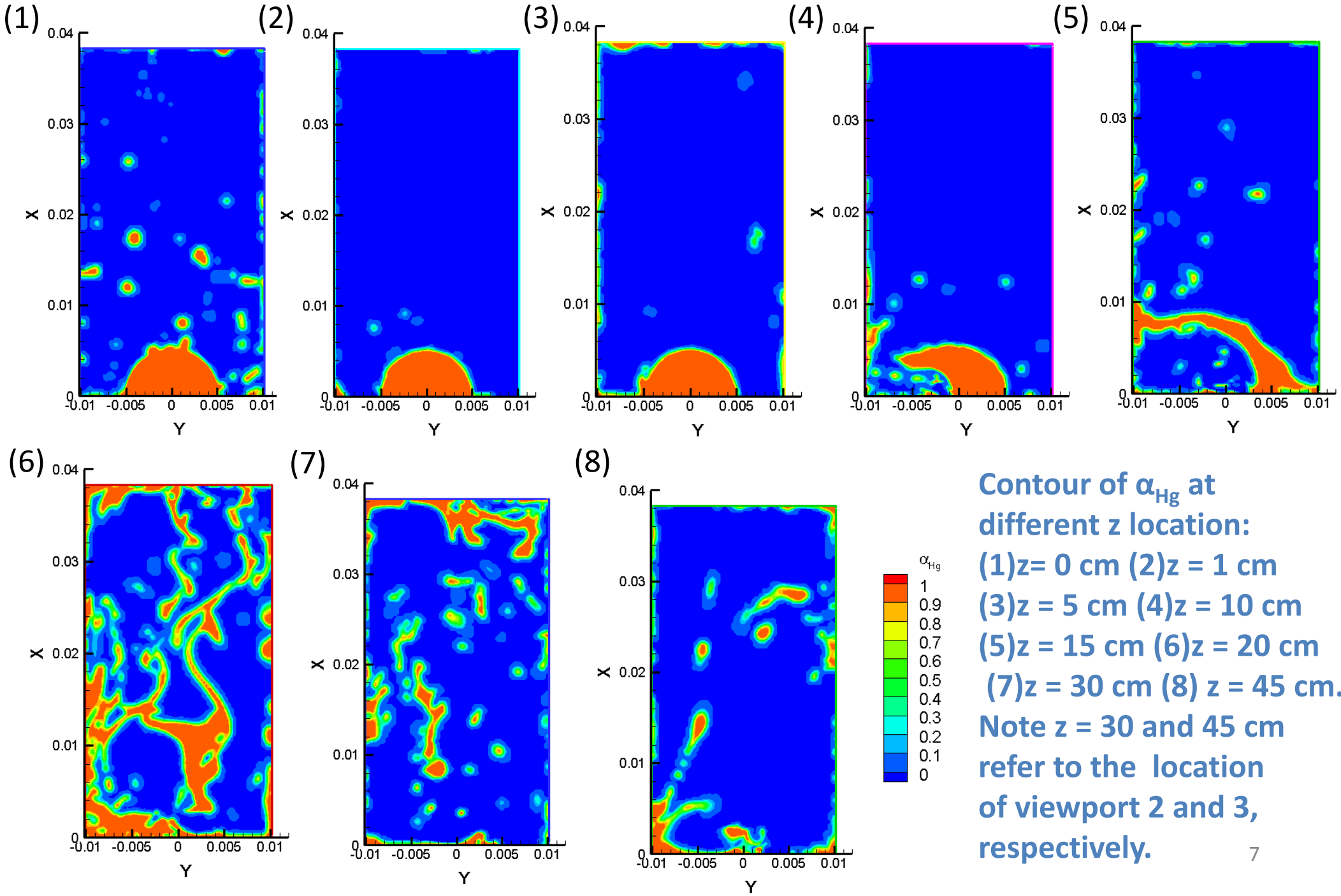
Contour of α_{Hg} at different z location:
(1)z= 0 cm (2)z = 1 cm
(3)z = 5 cm (4)z = 10 cm
(5)z = 15 cm (6)z = 20 cm
(7)z = 30 cm (8) z = 45 cm.
Note z = 30 and 45 cm refer to the location of viewport 2 and 3, respectively.

Results of α_{Hg} at t = 9.6 ms (2/5 time through)



Contour of α_{Hg} at different z location:
(1)z= 0 cm (2)z = 1 cm
(3)z = 5 cm (4)z = 10 cm
(5)z = 15 cm (6)z = 20 cm
(7)z = 30 cm (8) z = 45 cm.
Note z = 30 and 45 cm refer to the location of viewport 2 and 3, respectively.

Results of α_{Hg} at t = 25 ms (one time through)



Contour of α_{Hg} at different z location:
(1)z= 0 cm (2)z = 1 cm
(3)z = 5 cm (4)z = 10 cm
(5)z = 15 cm (6)z = 20 cm
(7)z = 30 cm (8) z = 45 cm.
Note z = 30 and 45 cm refer to the location of viewport 2 and 3, respectively.