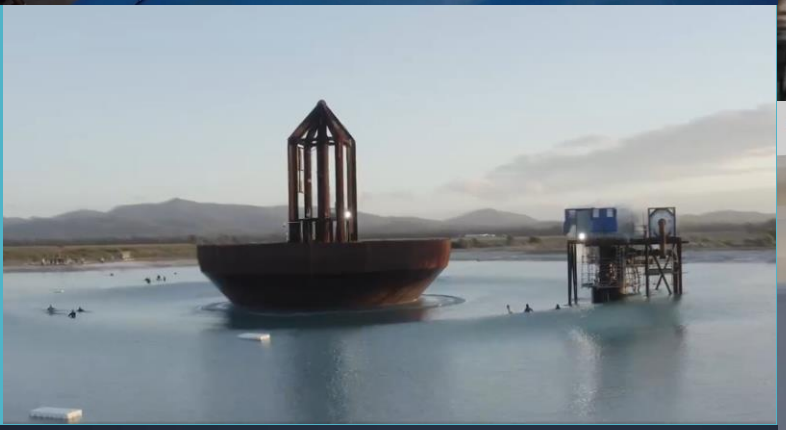
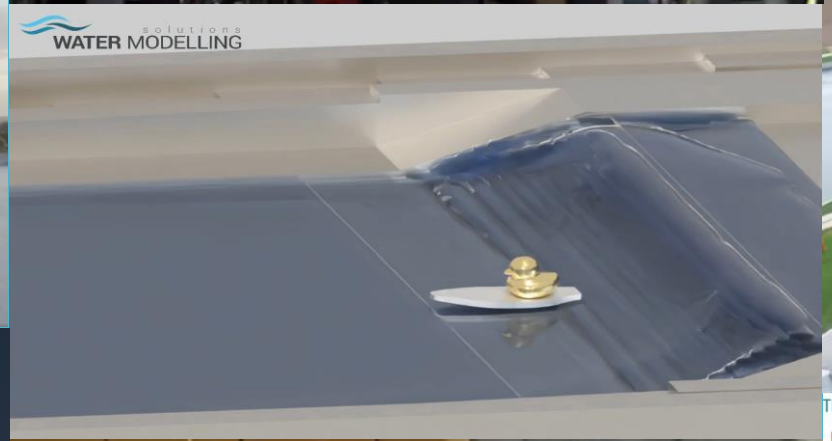
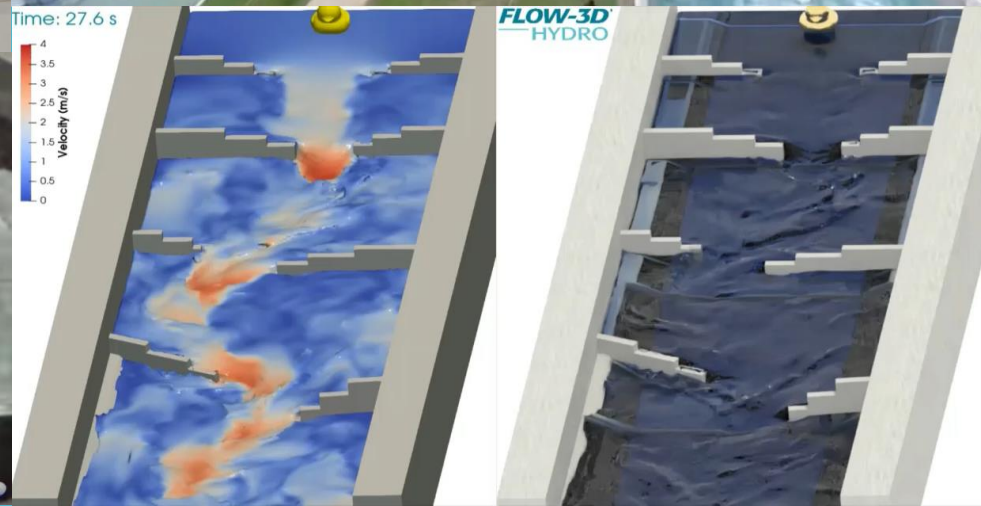

Just for Fun!
Recreational Hydraulics
Time: 27.6 s
Velocity (m/s)
FLOW-3D
HYDRO

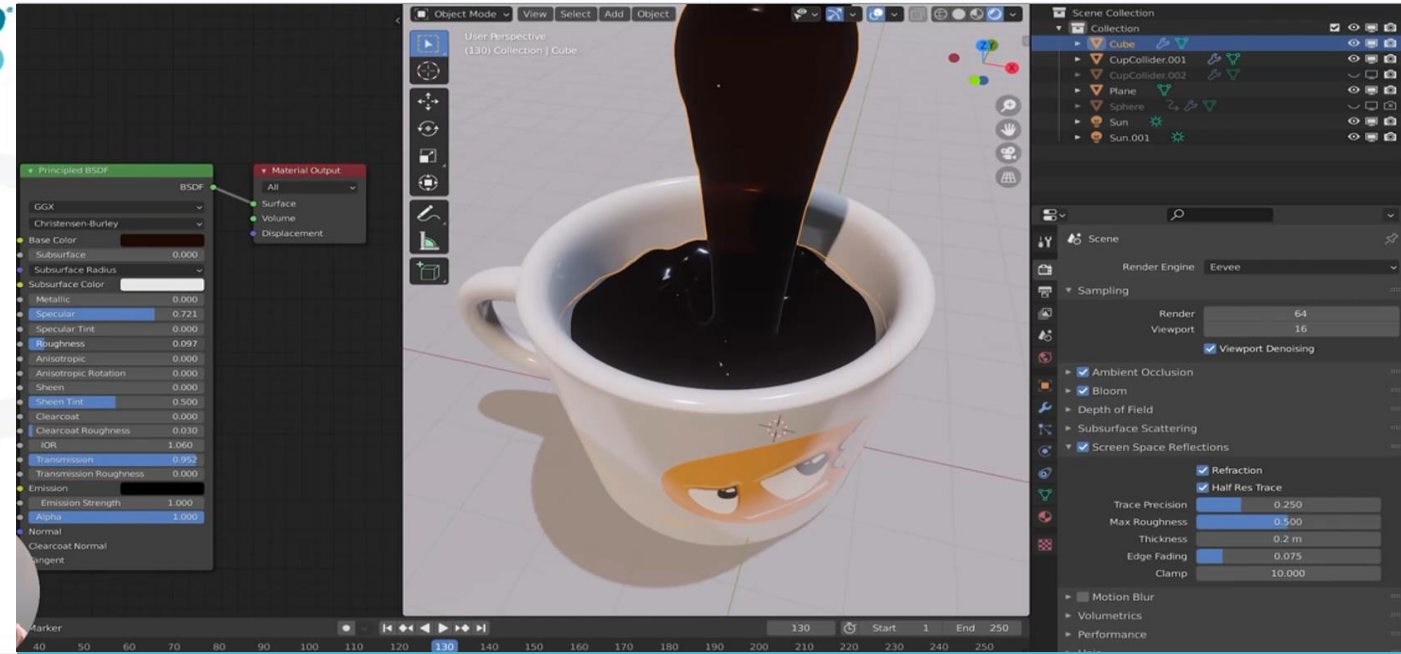


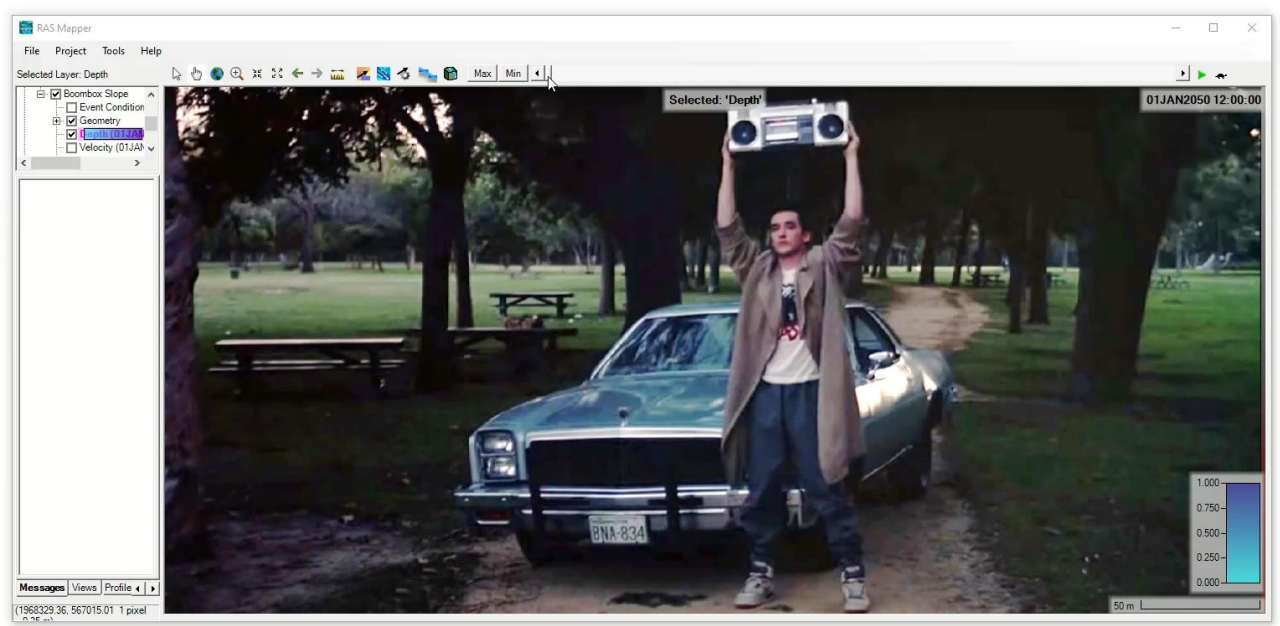

WATER MODELLING

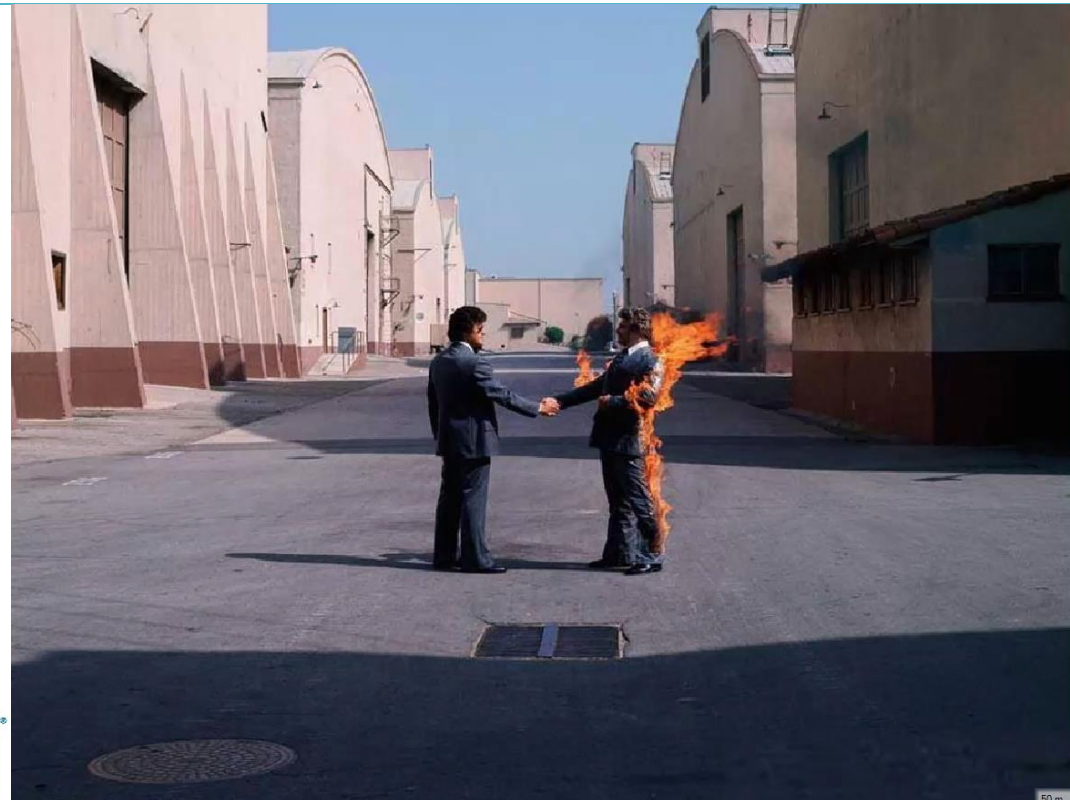

Time: 27.6 s
Velocity (m/s)
4
3.5
3
2.5
2
1.5
1
0.5
0

FLOW-3D
HYDRO

Case 1
Coanda Effect / Bernoulli's Principle







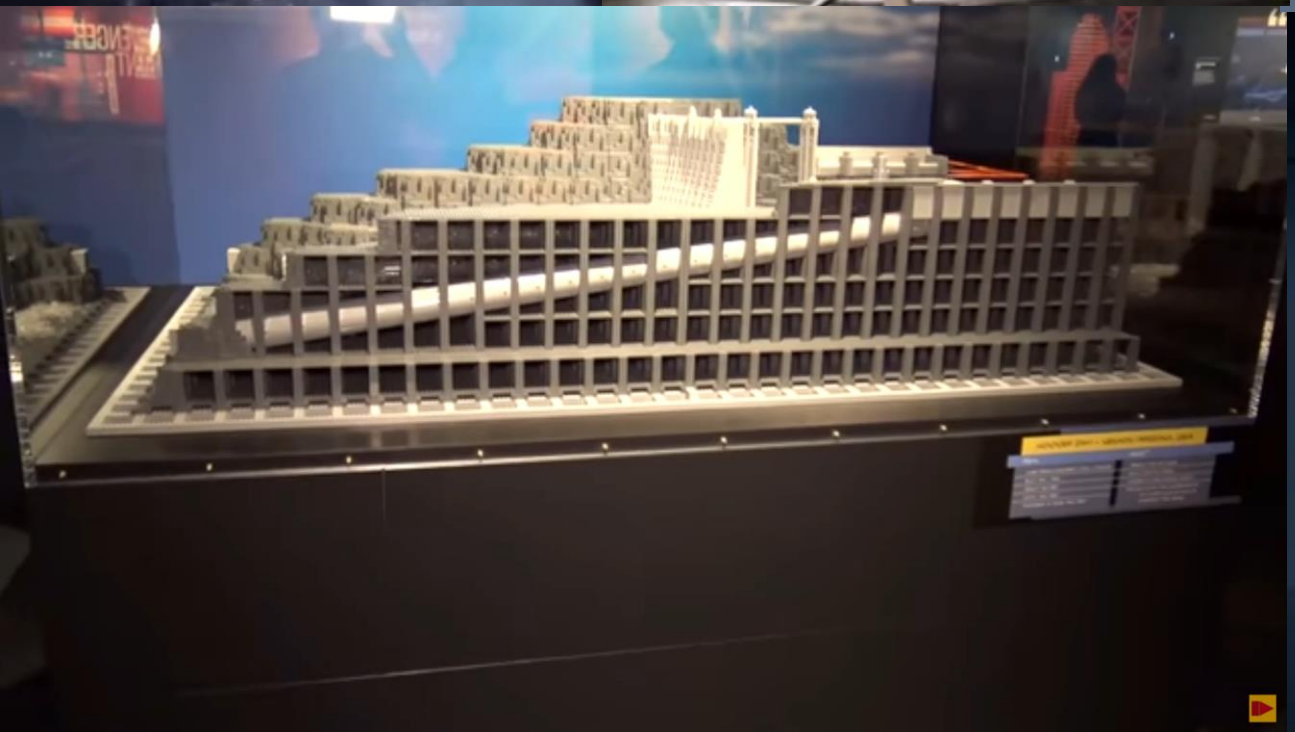
Velocity (m/s)

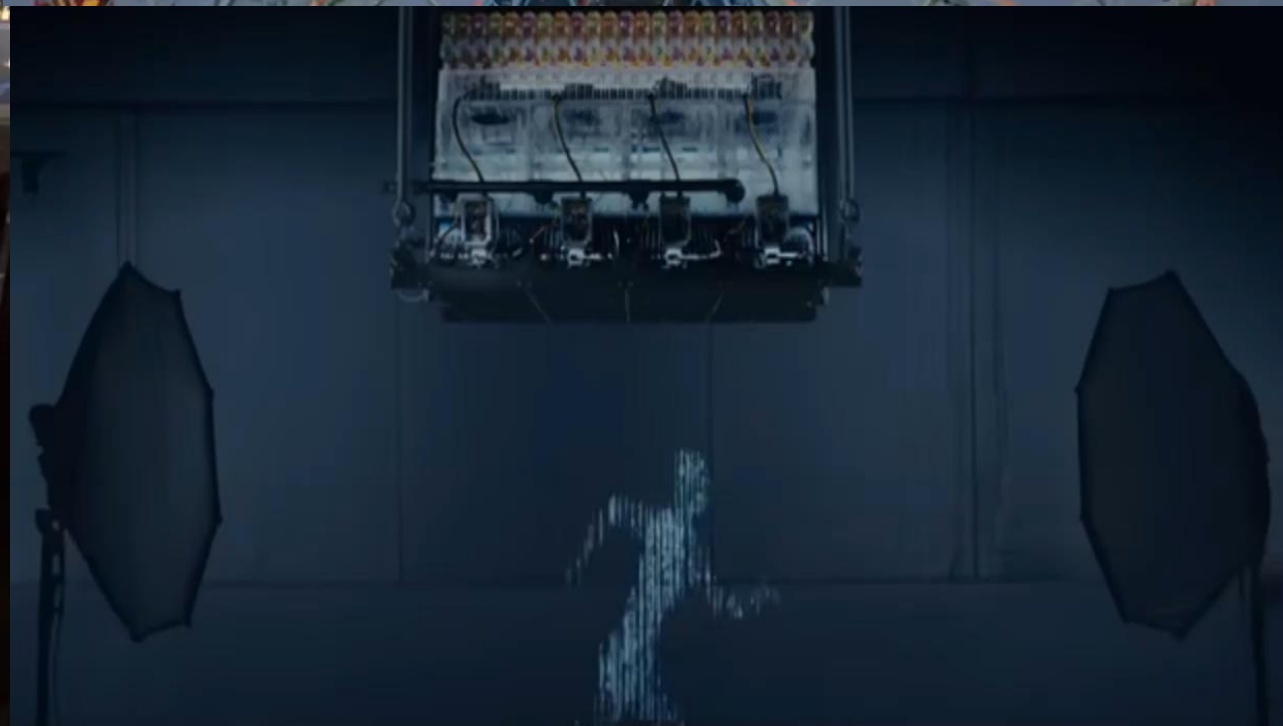
0 1 2 3 4 5 6 7 8 9 10

Time: 0.0 s

FLOW-3D HYDRO


WONDER
WHEEL





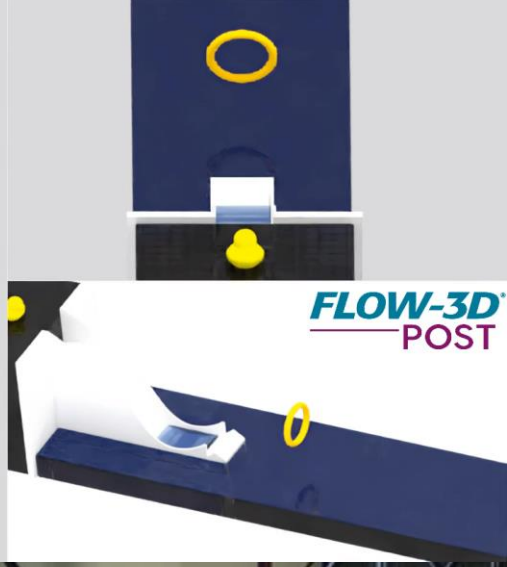

COURTESY OF DEEP DIVE DUBAI

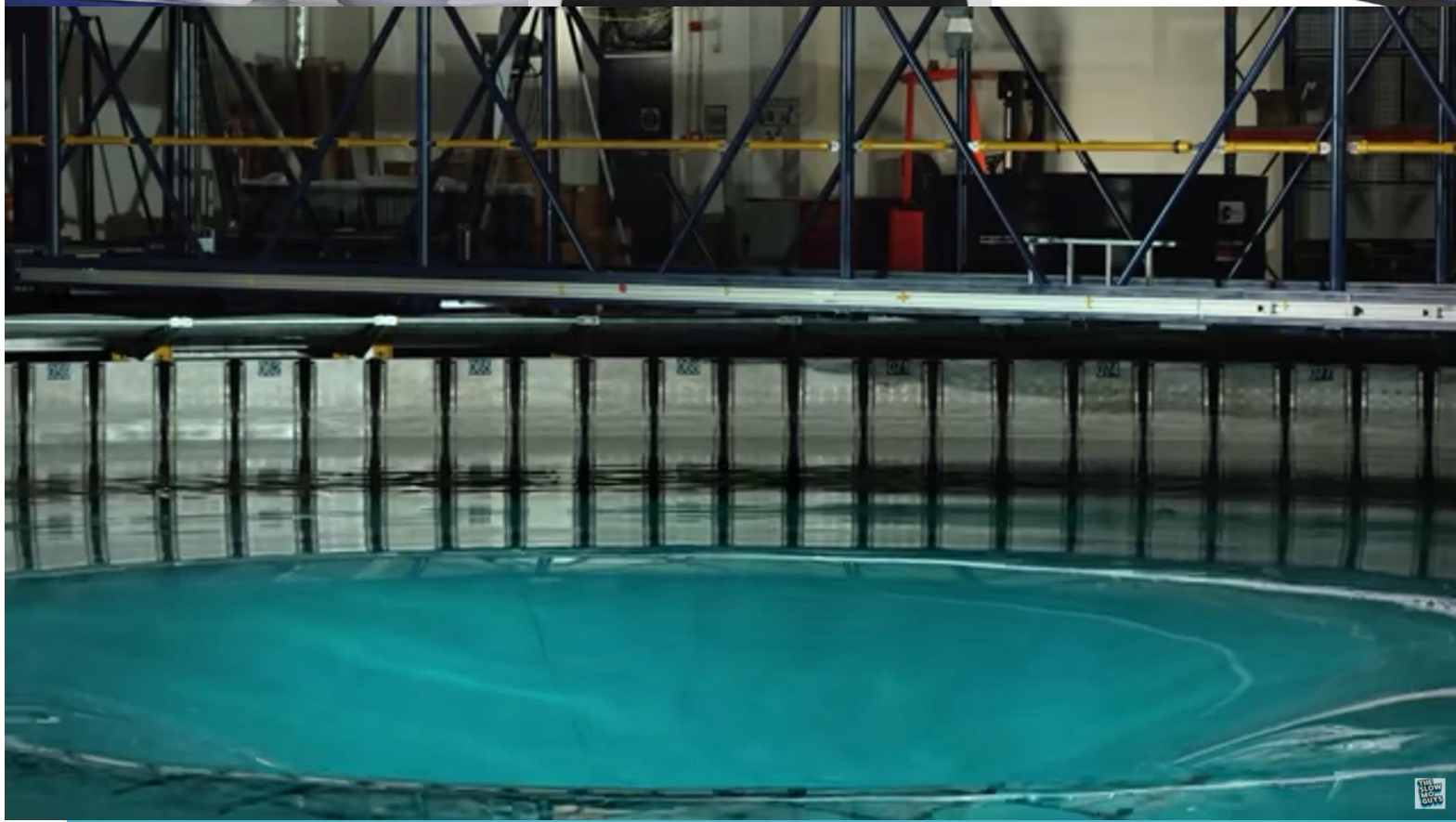

NEXT (SHIFT+N)
A Look Inside: The
House Of Dancing
6:50

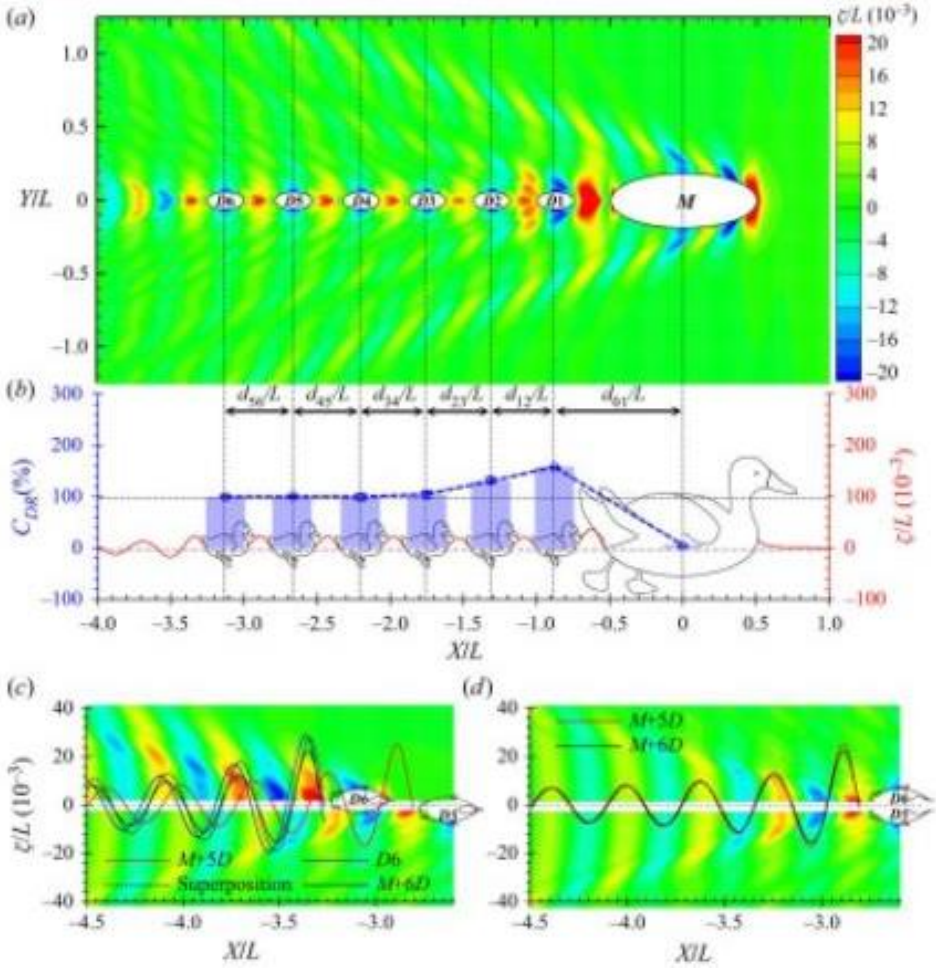
⚡The physics of why ducklings swim in a row behind their mother⚡

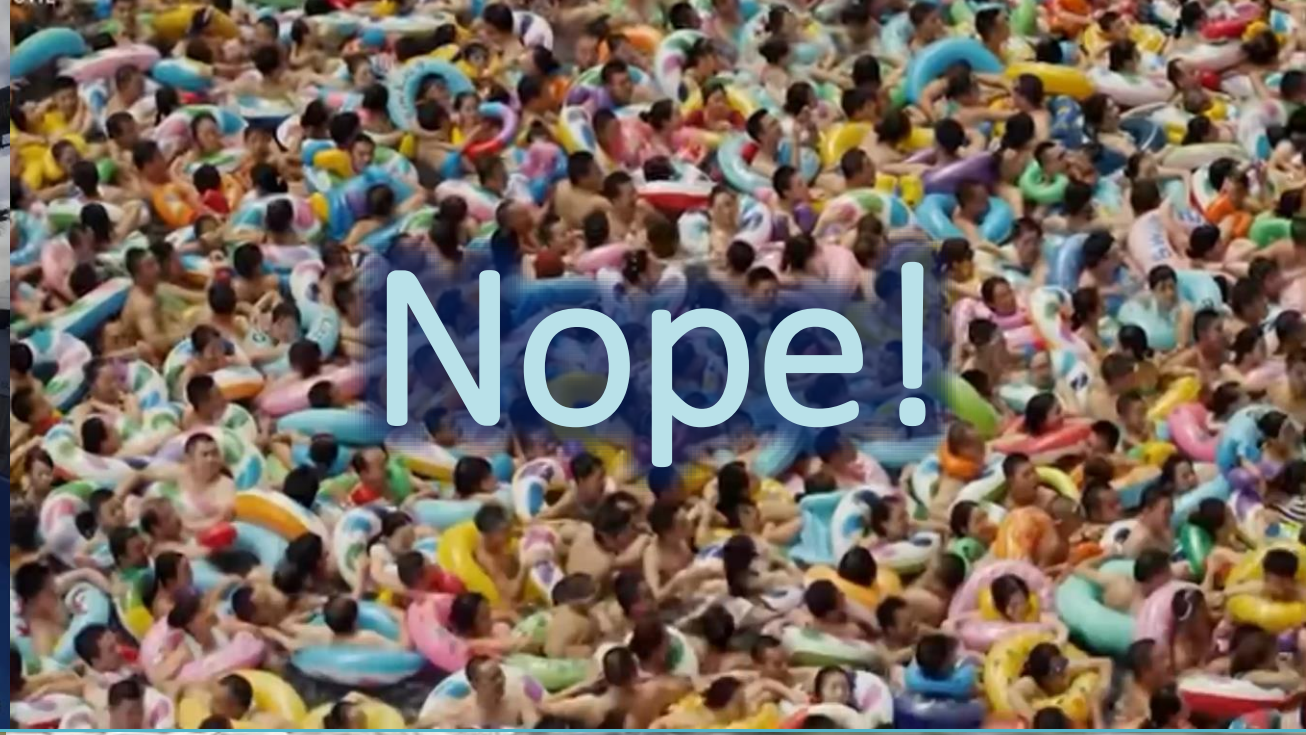
==========

...see mo








Nope!


*Crazy Basque bastards


Idaho Statesman

https://www.surfacewater.biz/fun/

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Home › Just for Fun: Recreational Hydraulics

Just for Fun: Recreational Hydraulics

To kick off our 2022 webinar series, we're changing things up a bit by highlighting applications for hydraulic modelling and design that are "just for fun". Register for the free webinar on the Australian Water School website here:

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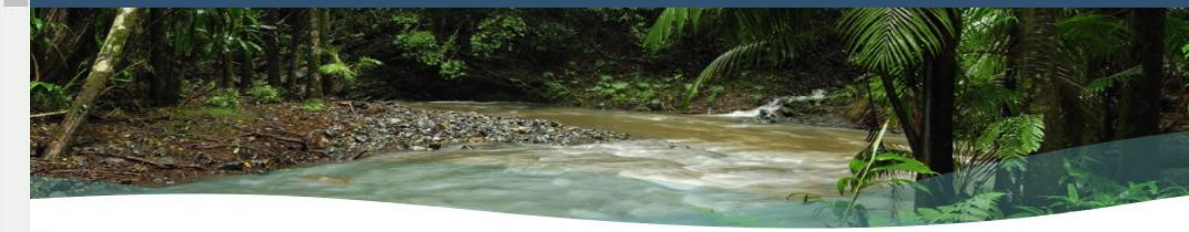

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Course Date	**Surface Water Hydrology: Quantification of Flow**
5 May	1. Meteorology and precipitation
12 May	2. Infiltration and losses
19 May	3. Flow routing
26 May	4. Stochastic hydrology
	Surface Water Hydraulics: Characterisation of Flow
9 Jun	5. Hydrostatics and open channel flow
16 Jun	6. 1D, 2D, and 3D flow
23 Jun	7. Pipe flow
30 Jun	8. Flood hazard, scour and sedimentation


21
20
19
18
17
22
vajda

Integrated Archimedian Spiral

Archimedes' Spiral

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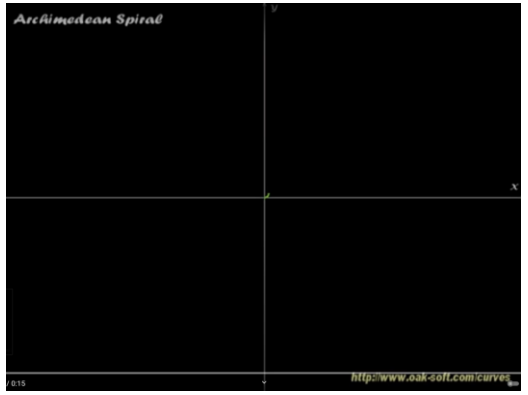

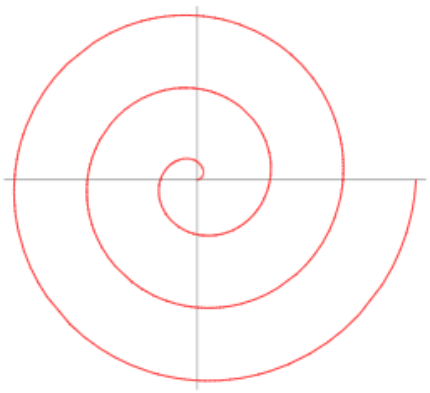

Archimedes' spiral is an Archimedean spiral with polar equation

$$r = a\,\theta. \tag{1}$$

This spiral was studied by Conon, and later by Archimedes in *On Spirals* about 225 BC. Archimedes was able to work out the lengths of various tangents to the spiral.

The curvature of Archimedes' spiral is

$$\kappa(\theta) = \frac{2+\theta^2}{a\left(1+\theta^2\right)^{3/2}}, \tag{2}$$

and the arc length is

$$s(\theta) = \tfrac{1}{2}\,a\left(\theta\sqrt{1+\theta^2} + \sinh^{-1}\theta\right) \tag{3}$$

$$= \tfrac{1}{2}\,a\left[\theta\sqrt{1+\theta^2} + \ln\left(\theta+\sqrt{1+\theta^2}\right)\right]. \tag{4}$$

This has the series expansion

$$s(\theta) = a\left\{\theta + \frac{1}{2}\sum_{k=3}^{\infty}\left[P_{n-3}(0) + \frac{n+1}{n}\,P_{n-1}(0)\right]\theta^k\right\} \tag{5}$$

$$= a\left(\theta + \tfrac{1}{6}\,\theta^3 - \tfrac{1}{40}\,\theta^5 + \tfrac{1}{112}\,\theta^7 - \tfrac{5}{1152}\,\theta^9 + \ldots\right) \tag{6}$$


Daniel Jacob