

Model Basins

A large variety of model basins have been constructed around the world for the purpose of studying free surface flows on a model scale. An example is the model of a harbor shown in Figure 1 where the scale



Figure 1: Model basin with a harbor model installed in a study of the harbor wave dynamics.

model includes a wavemaker for the purpose of studying the response of the harbor to incoming waves. Other similar scale models are used to study river dynamics and a host of other civil and marine engineering projects prior to embarking on expensive construction. Clearly the horizontal length scale of such models is determined by the available space while the time scale of the observations is set by the wave velocity, $(gH)^{\frac{1}{2}}$, where H is the depth of the water. However, these scalings imply that the viscous effects in the

prototype are not well represented in the model. Moreover, the surface tension effects on the waves will be significantly different at the model and prototype scales. These and other limitations as well as the expense of such model basin studies mean that, in many contexts, numerical models have taken the place of such model basin studies.