

Laboratory Facilities

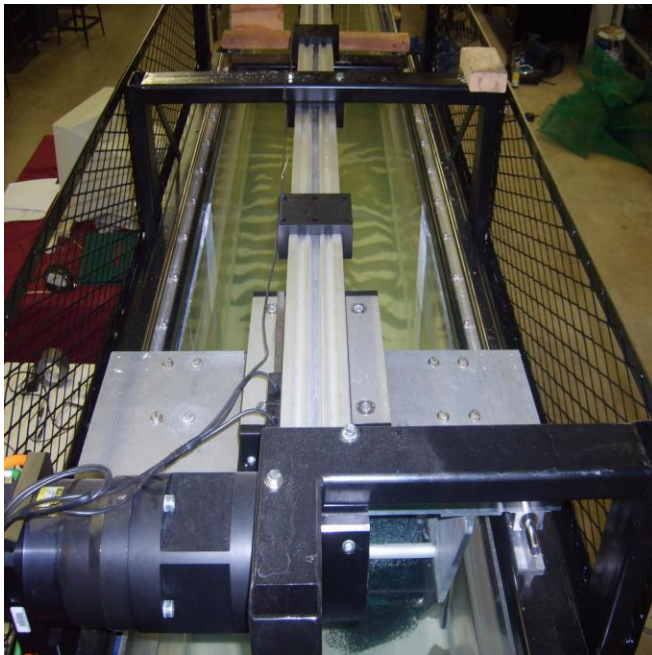
The Applied Fluid Mechanics program has three laboratories. An on campus fluid mechanics laboratory is used for both teaching and research, a boundary layer wind tunnel used for research and an off campus laboratory called Clemson

Hydraulics Laboratory (CHL) used exclusively for research. CHL is located adjacent to Lake Hartwell and the university golf course. The CHL building houses a 60 feet long, 4-foot wide, and 4-foot high flume. The flume will have a recess for conducting local scour studies around hydraulic structures. The CHL also includes two large



basins used for both flow visualization and quantitative studies of local scour, turbulent jet behavior and other fluid flow phenomena of interest to civil engineers. The laboratory is equipped with a range of flow measurement devices

including ADV systems and computer controlled and measured pitot tubes.



The on campus fluid mechanics laboratory is also used for research. It houses a flume that is 4 feet wide, 2 feet high, and 40 feet long and is used primarily by graduate students. A re-circulating flow can be set up in the flume and both fixed bed and mobile bed experiments can be performed in the flume. The laboratory space is also used for physical model studies that are built and dismantled as the need arise. The mezzanine level is used for

undergraduate teaching as well as coastal engineering studies. There is a computer actuated wave maker capable of producing solitary waves for the study of tsunamis. It is also being used to study wave driven sediment transport and other coastal flow phenomena



The off campus boundary layer wind tunnel has 60 feet of fetch and has a 10' wide by 7' tall test section. The wind tunnel is equipped with a four channel hot film anemometer for measuring wind speed as well as a multi-point pressure array for measuring pressure distributions on model buildings. Research in the wind tunnel is focused on wind loading on structures as well as modeling of wind flow and pollution dispersion in urban canopies.

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Representative Studies

The following projects are currently being conducted by the Applied Fluid Mechanics group at the Civil Engineering Department. These studies are field, laboratory, or numerical in nature.

- Merging of turbulent jets with application to diffuser design
- Coastal wave driven sediment transport
- Rain drop stability
- Stand-pipe orifice discharge coefficient variation with head
- Lake evaporation
- Evaporation pan modeling
- Impact of tsunamis on coastal regions
- Wind loading on row houses and related pollutant transport
- Local scour around flow blockages