

Applications of Fluid Mechanics in Mechanical and Aeronautical Engineering

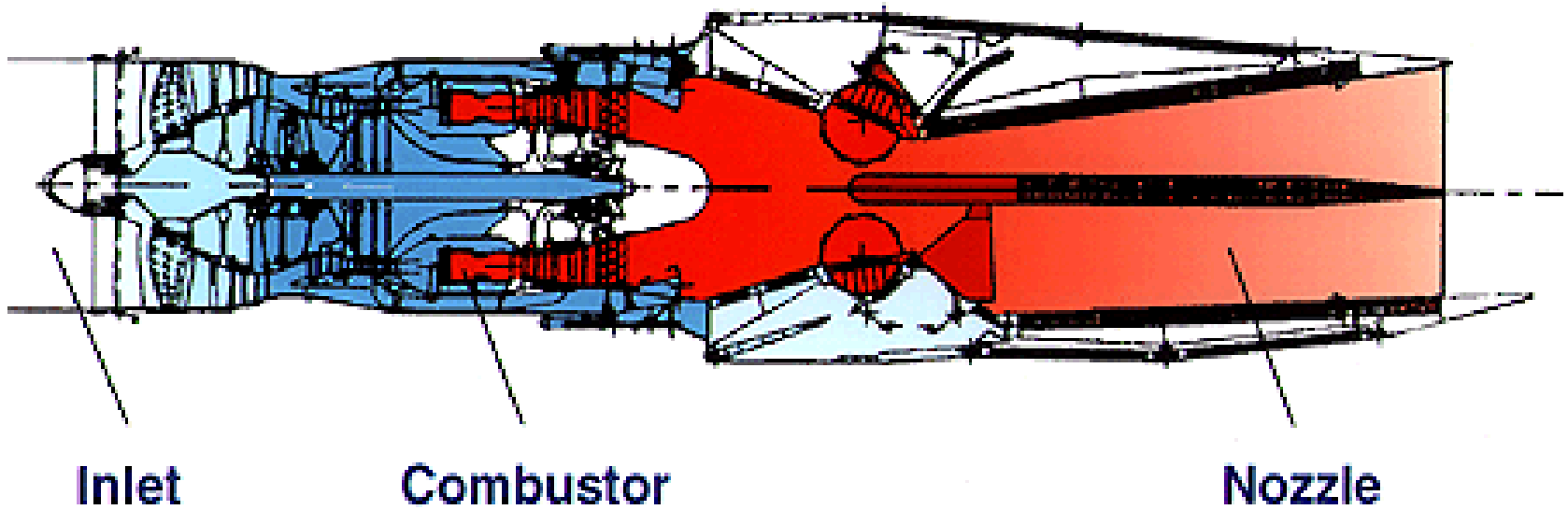
Goodarz Ahmadi

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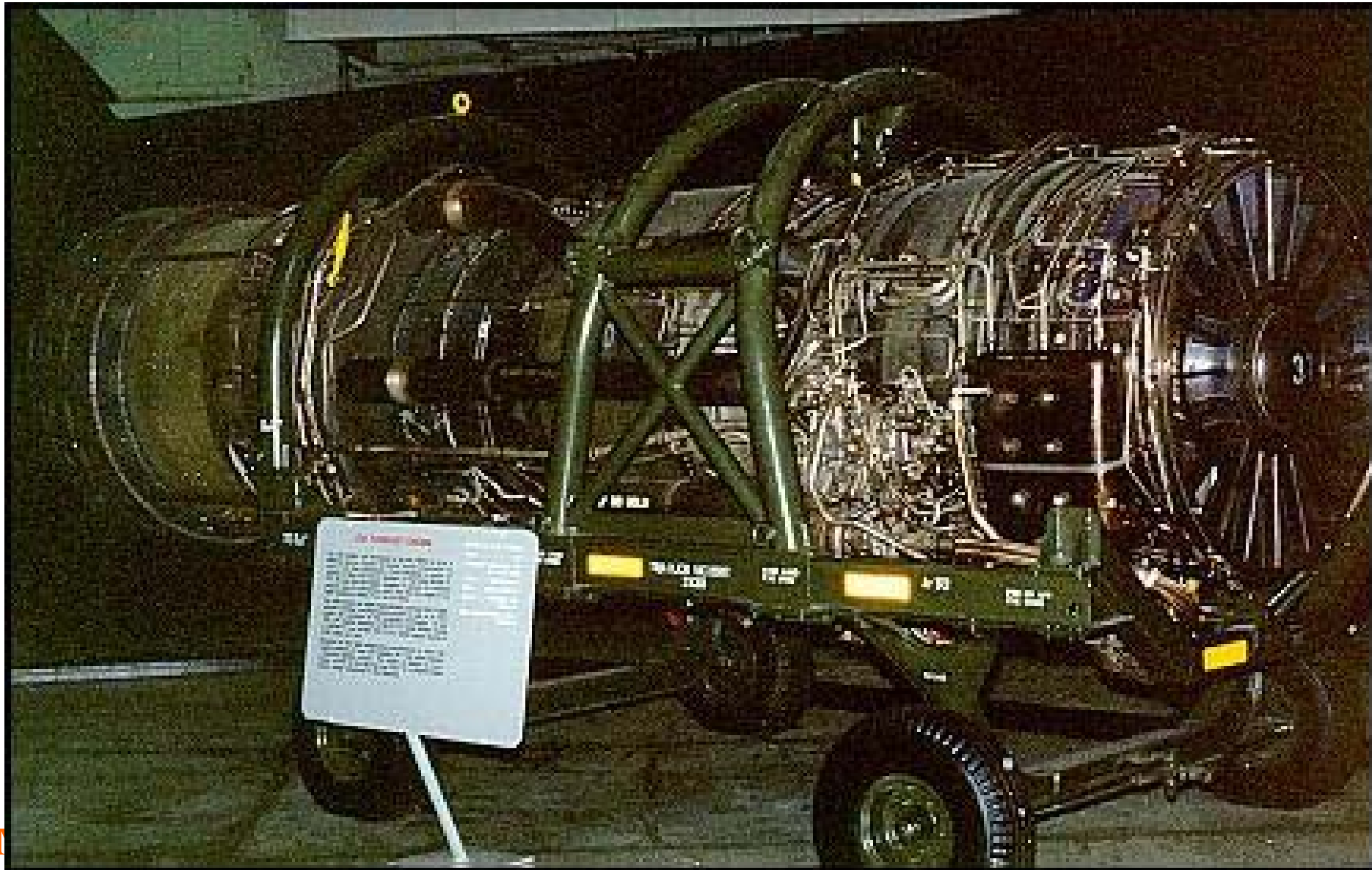
Clarkson University

Potsdam, NY 13699-5727

Gas Turbine Engines



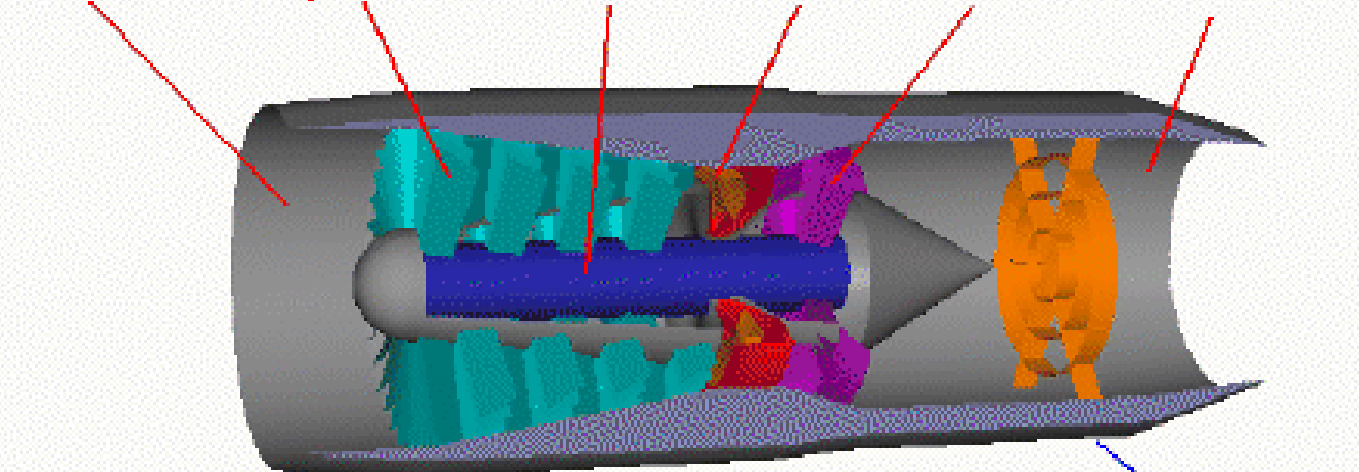
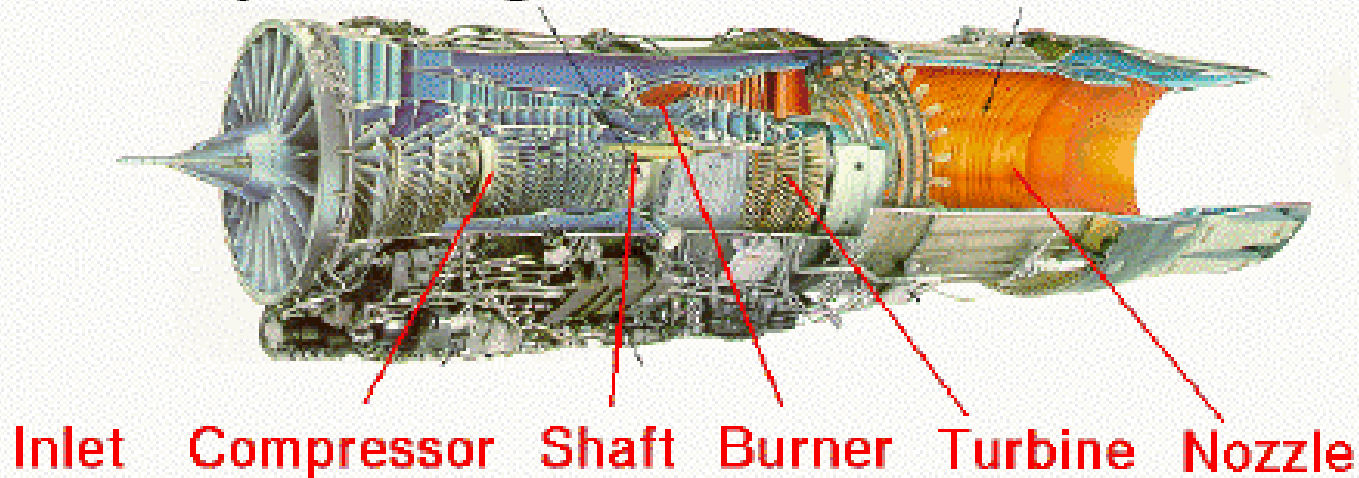
Gas Turbine Engines



Gas Turbine Engines

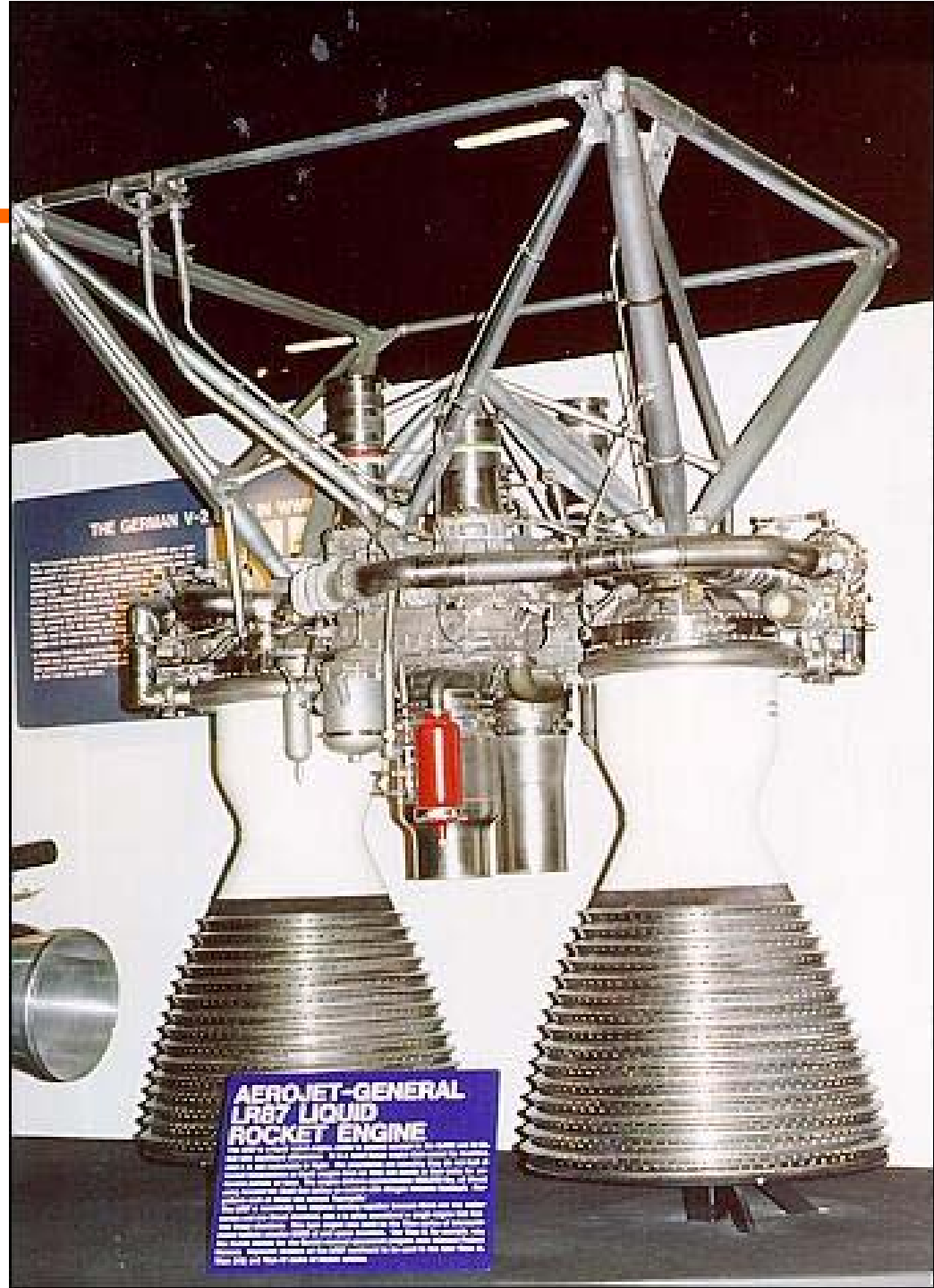
Pratt & Whitney F100 Engine

Photo



Simplified Computer Drawing

Rocket Engines



**AEROJET-GENERAL
LR87 LIQUID
ROCKET ENGINE**

THE LR87 LIQUID ROCKET ENGINE WAS DEVELOPED BY AEROJET-GENERAL CORPORATION FOR THE U.S. AIR FORCE. IT IS A TWO-STAGE ENGINE WITH TWO MAIN COMBUSTION CHAMBERS AND TWO LARGE NOZZLES. THE ENGINE IS USED IN A VARIETY OF LAUNCH VEHICLES, INCLUDING THE ATLAS AND CANTLE ROCKETS. THE LR87 ENGINE IS A COMPLEX MECHANICAL SYSTEM WITH OVER 100,000 PARTS. IT IS A MAJOR COMPONENT OF THE U.S. AIR FORCE'S STRATEGIC MISSILE FORCE.

Turbomachinery

Clarkson
University

Pumps
Compressors
Wind Turbines



Wind Turbines



Aircraft (Stealth, B2)



Aircraft (CFD)



Dam - Spillway, Hydraulic Jump



Submarines and Ships

Clarkson
University



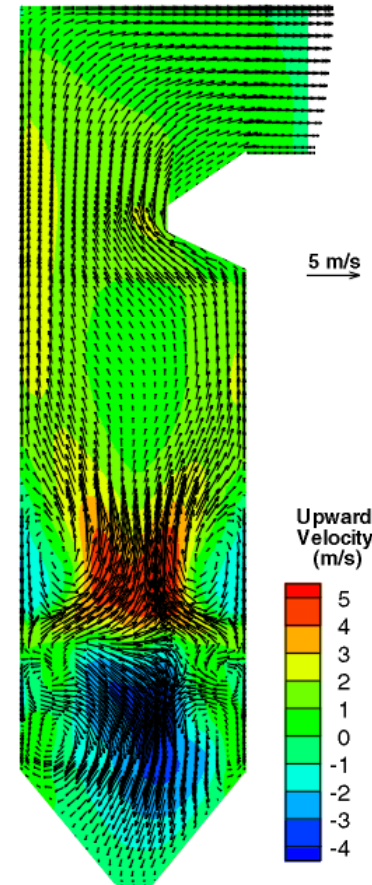
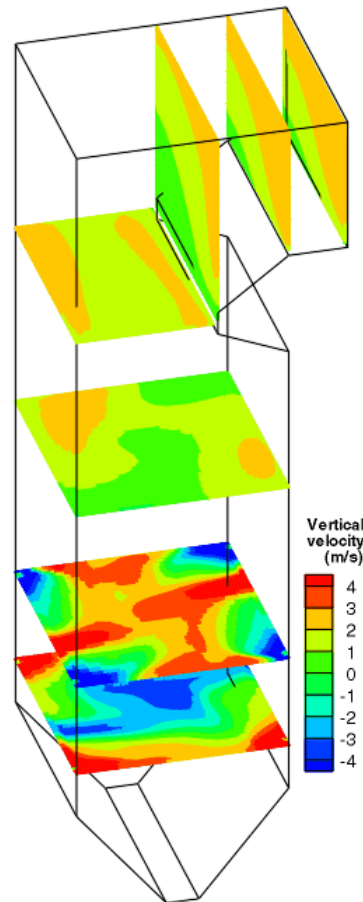
**USS-George
Washington**

Submarines and Ships



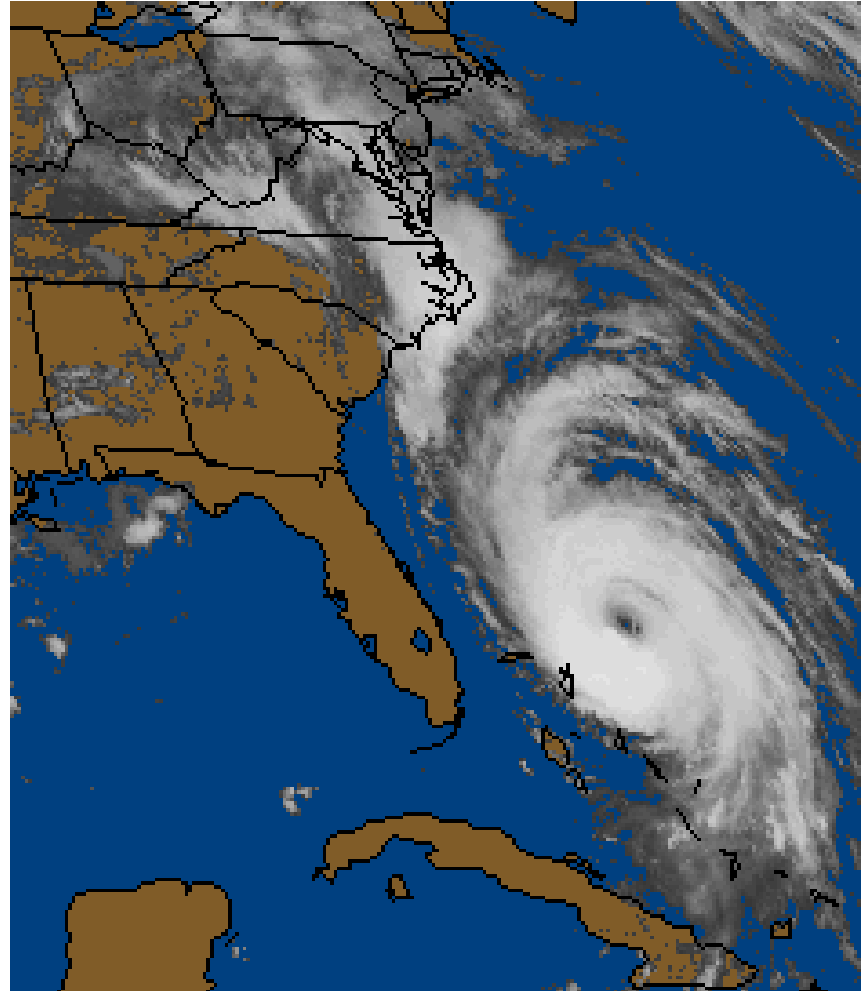
USS-Salt Lake

Industrial Boilers



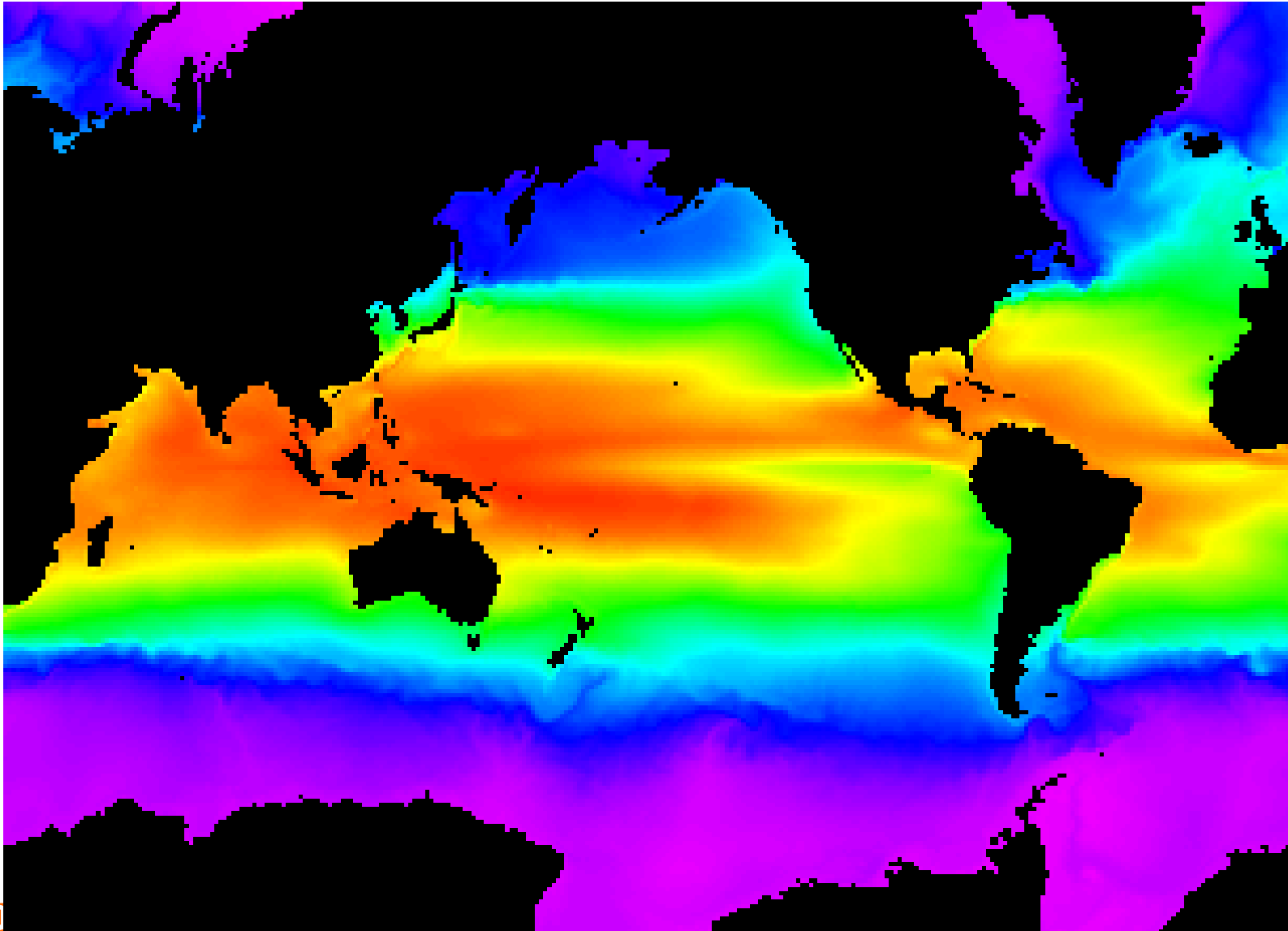
Meteorology (Hurricanes)

Hurricane Andrew

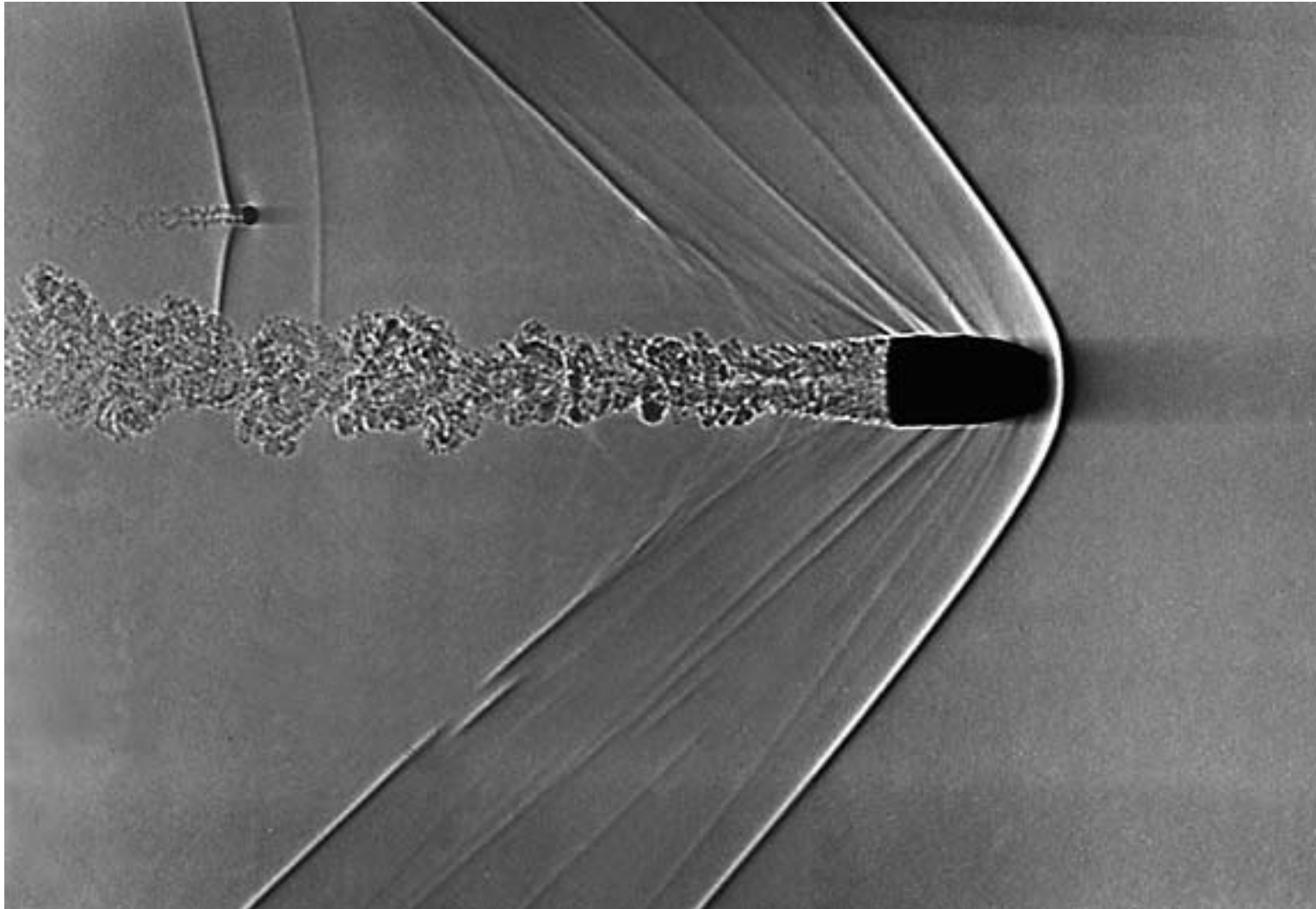


Oceanography

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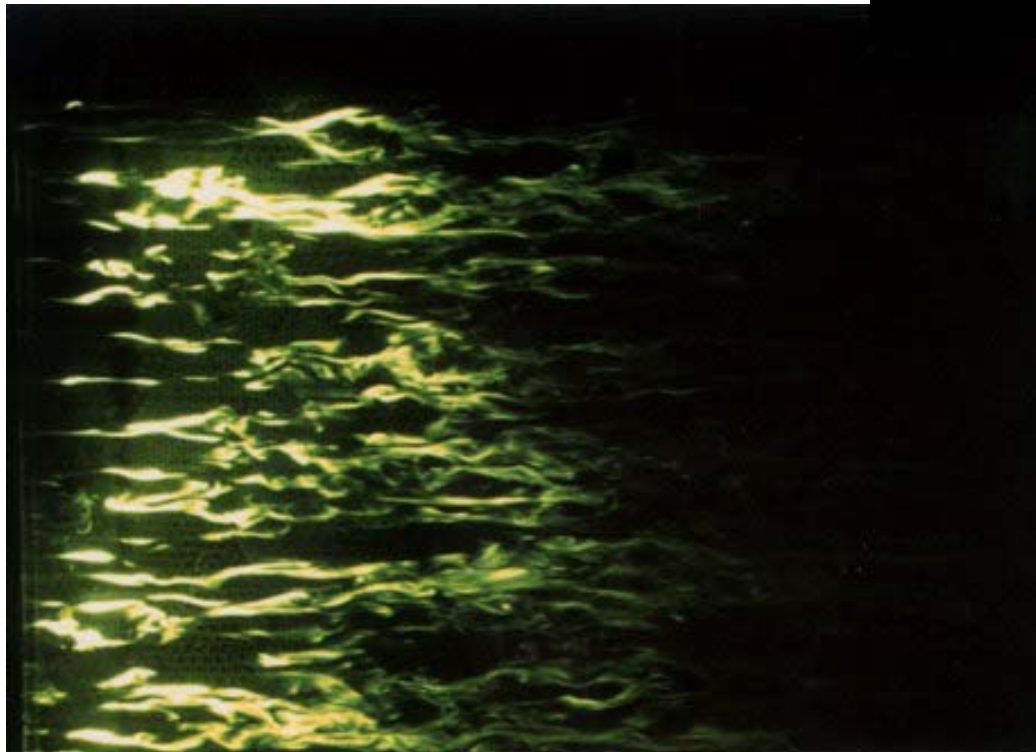
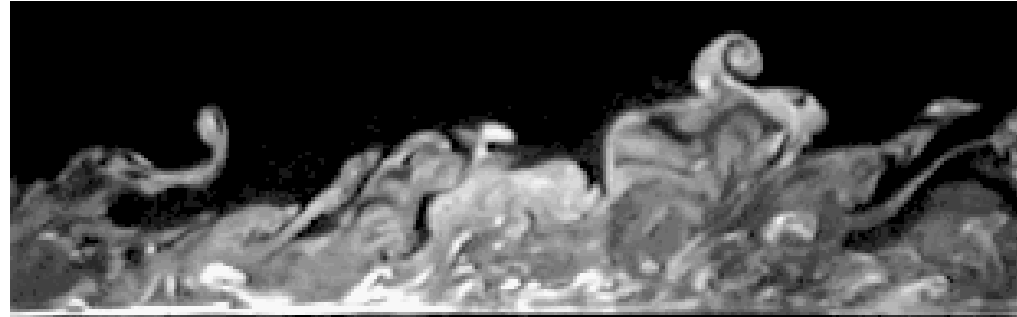
Supersonic Flows



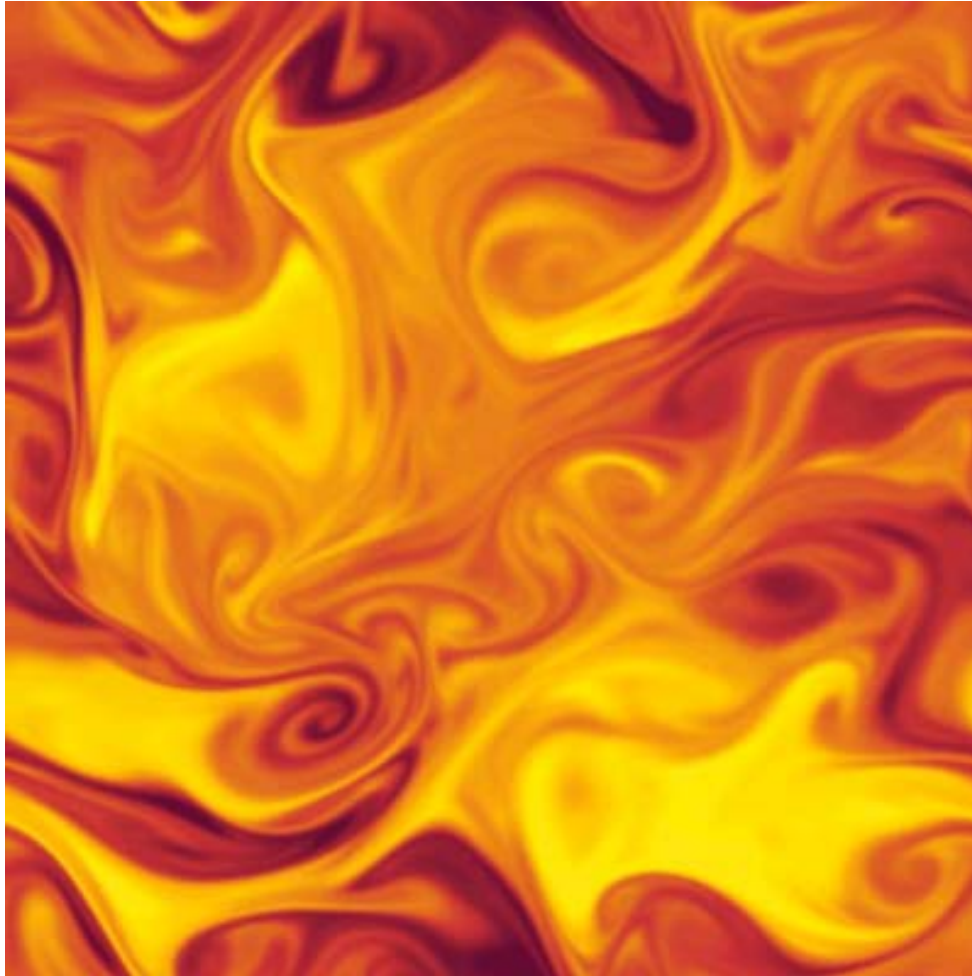
Trailing Vortices



Turbulent Boundary Layer



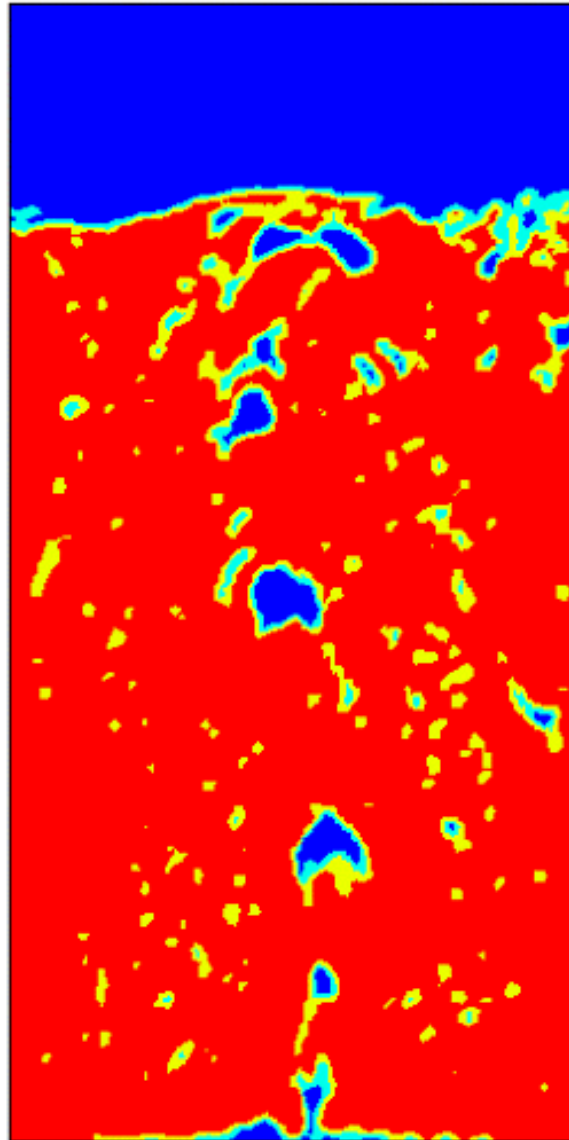
Isotropic Turbulence



Turbulent Multiphase Flows

Bubble Column Reactors

Experimental Setup



Thank You!