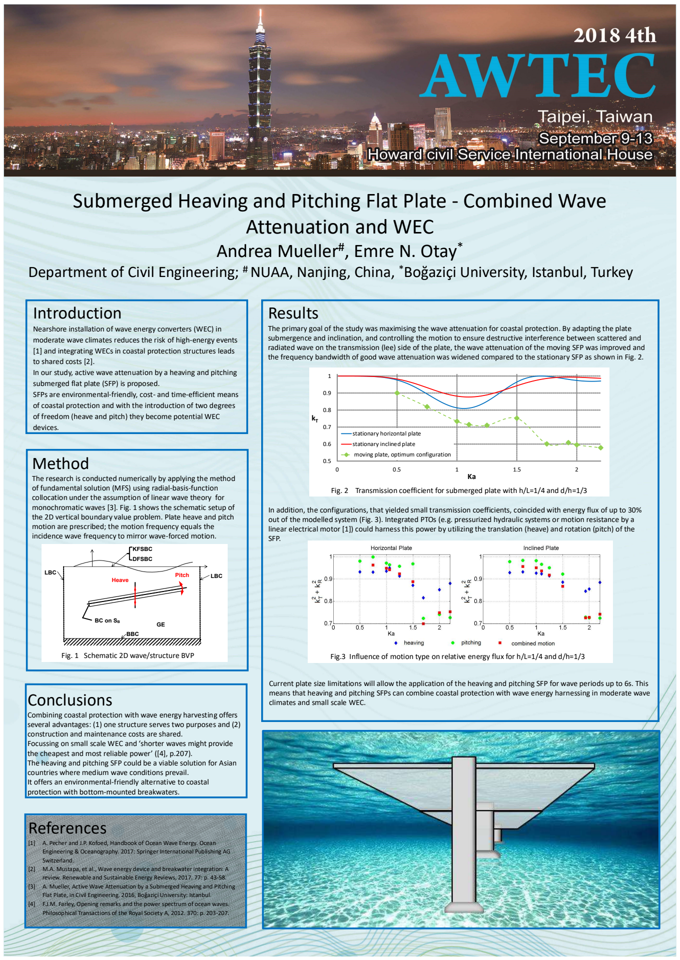
Research at BU – Civil Engineering

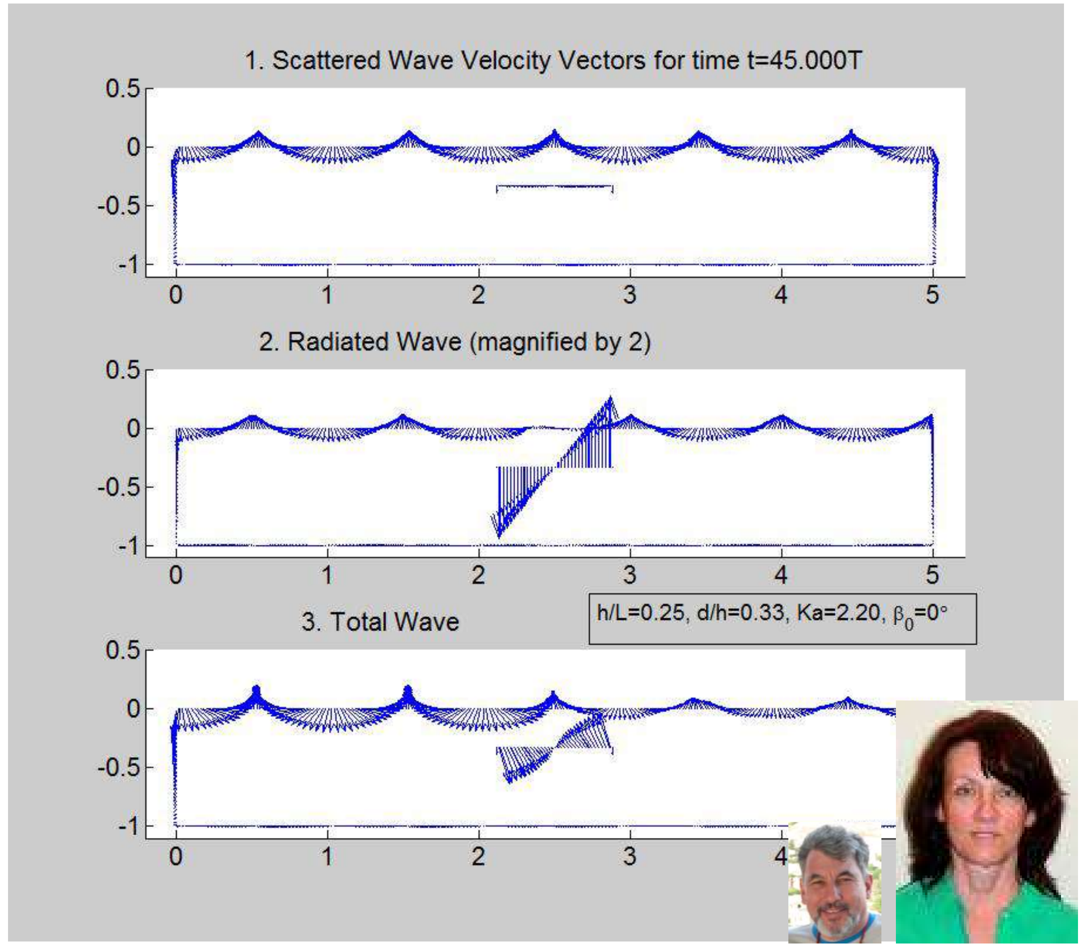
Research in Coastal and Ocean Engineering

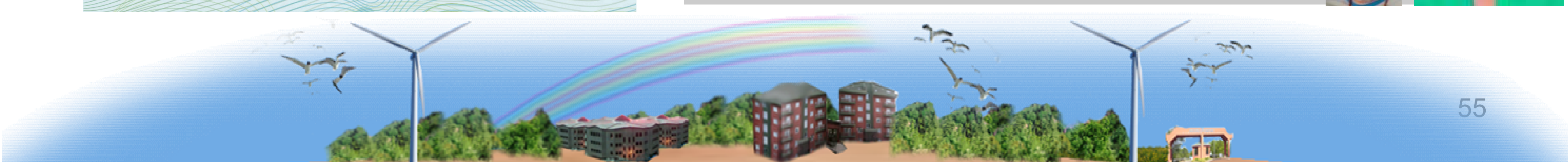
Wind Energy

World's first university campus, running entirely on wind energy

Wave Energy: Smart Breakwater (PhD Thesis)

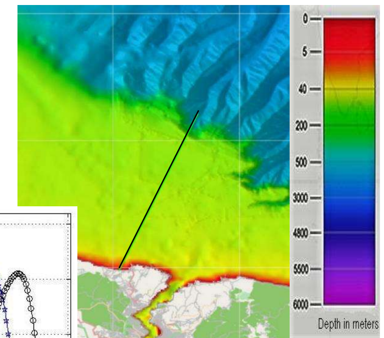


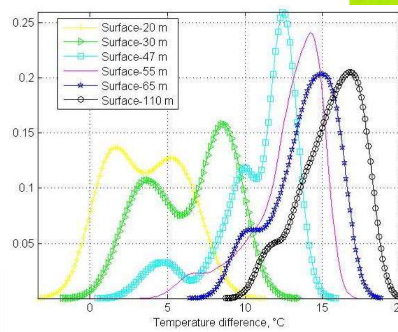


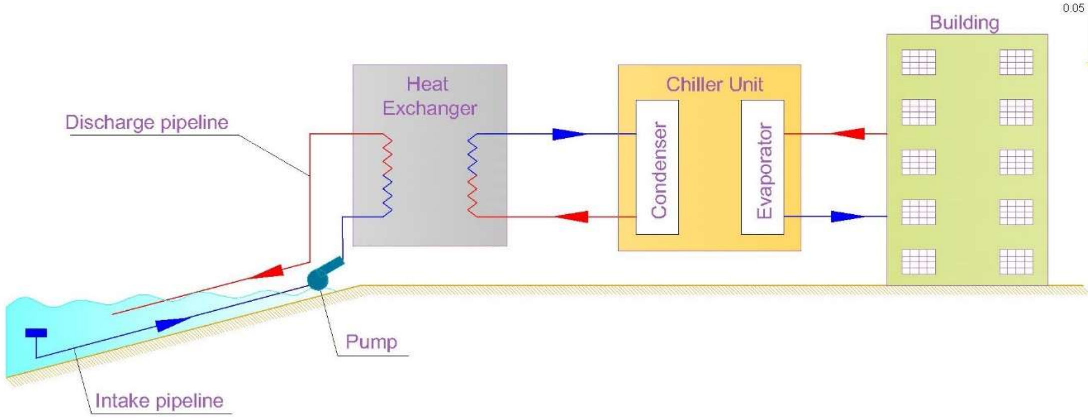


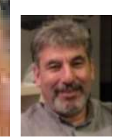
Green Infrastructures: Ocean Thermal Energy-Seawater Airconditioning (MS Thesis)

- Sea water intake and discharge
- Cold Intermediate Layer in BS
- Heat exchanger / chiller systems for air conditioning of campus buildings

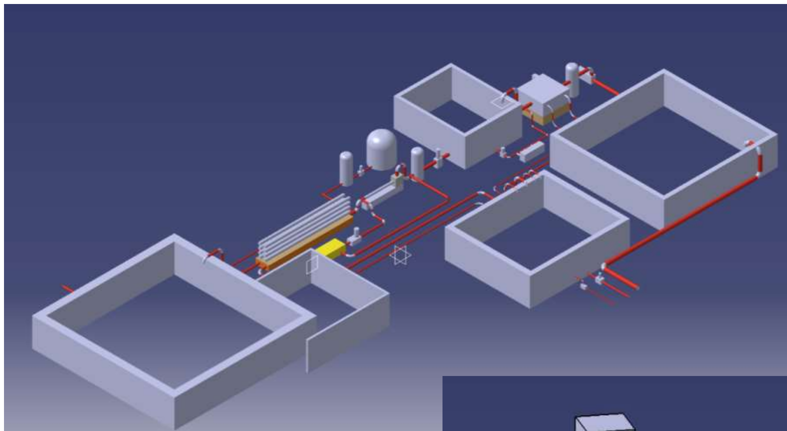


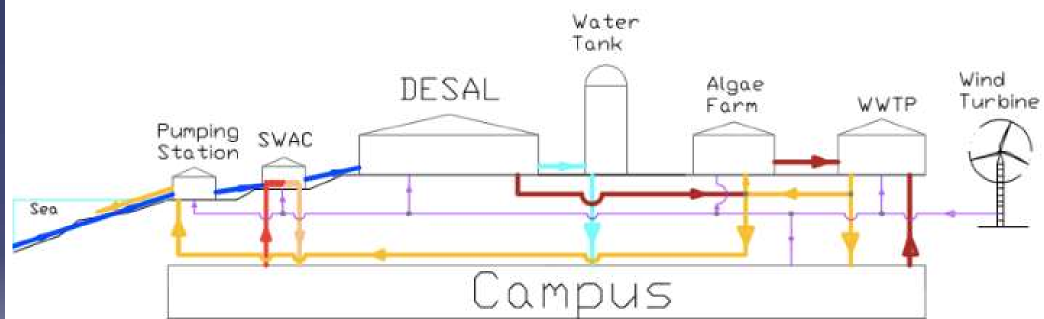


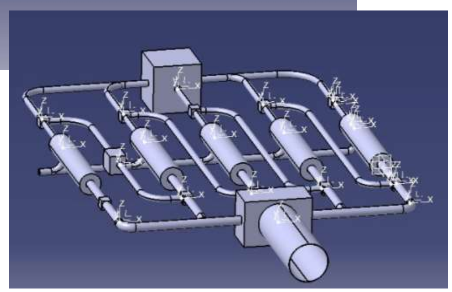


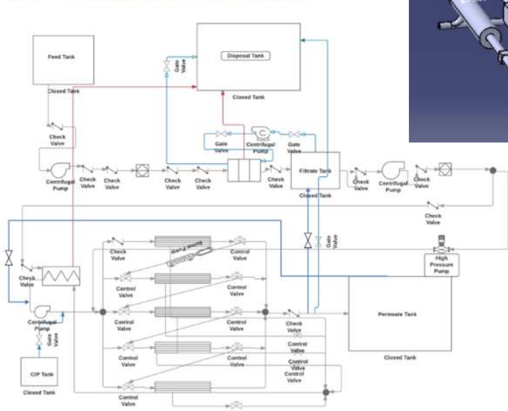


Green Infrastructures: Renewable Energy
Desalination (CE/ChE/ME Interdiscip. Project)

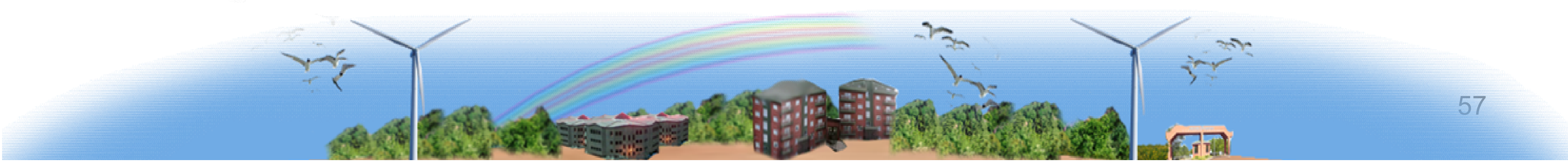








- ❖ Desal system based on excess renewable energy



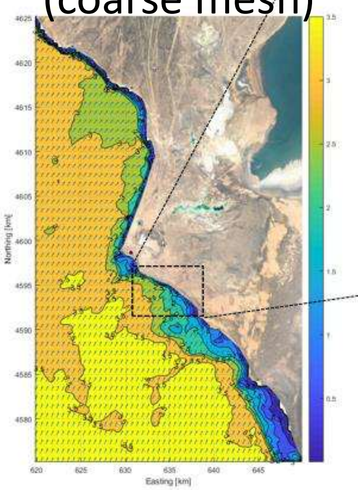
Green Infrastructures: Coastal Protection with Soft Structures - Beach Nourishment

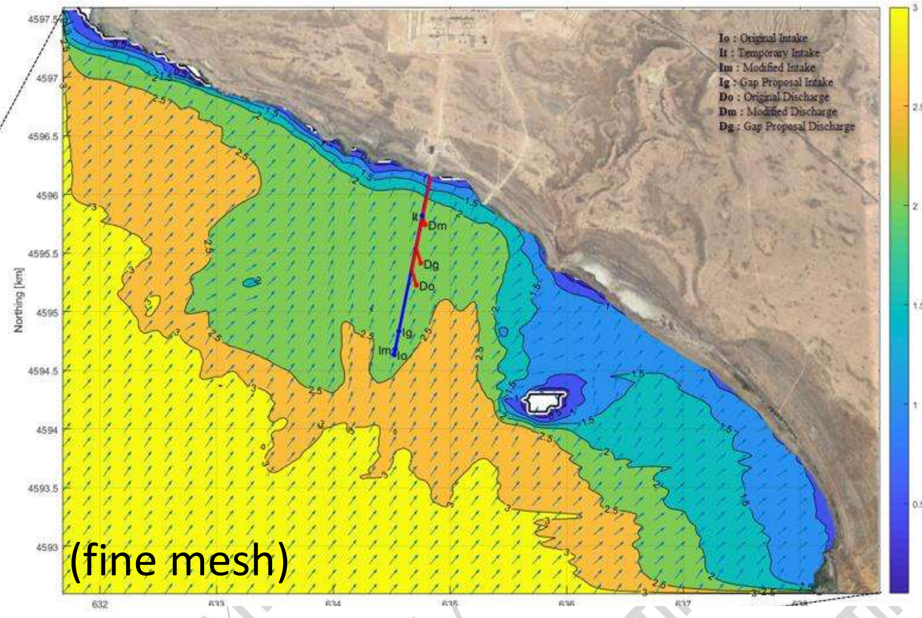
Use of marine sand against coastal erosion

Caspian Sea Intake/Outfall Analysis (sponsored by Gap Construction & Mitsubishi Heavy Industries)

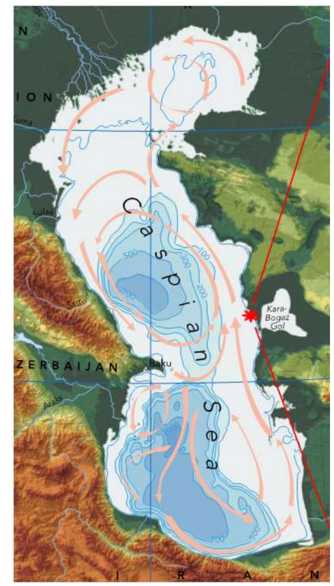
Wave Agitation Analysis

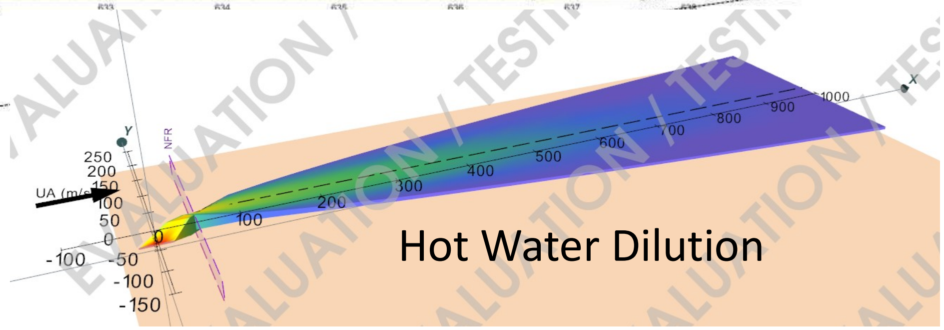
(coarse mesh)





(fine mesh)

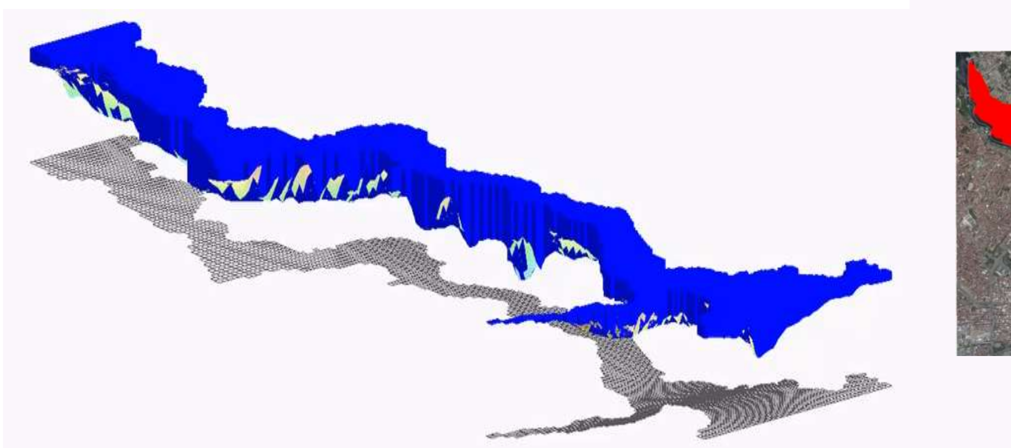


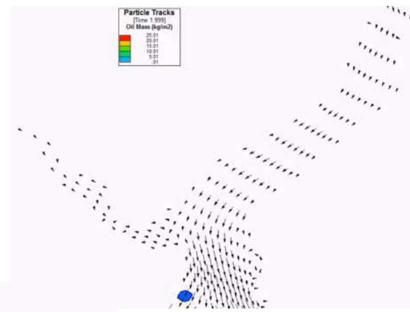


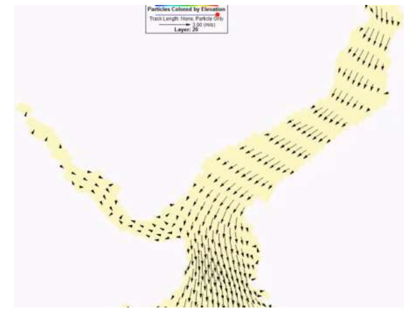
Hot Water Dilution

Marine Contamination: Strait of Istanbul and Golden Horn (sponsored by GalataPort)

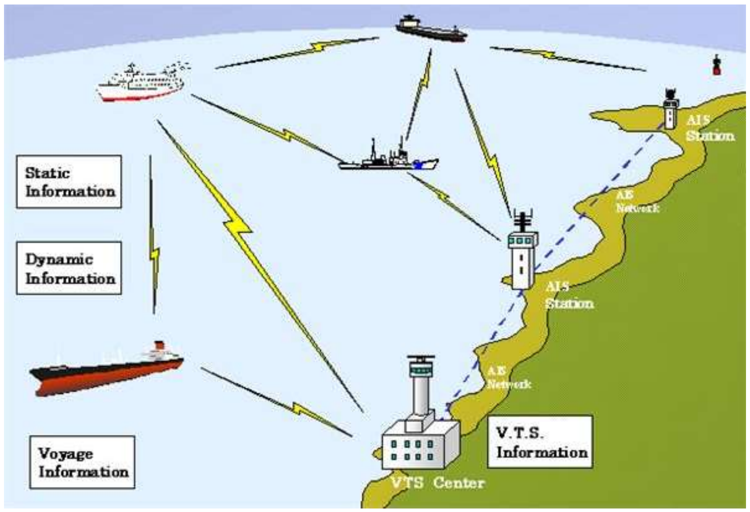
- 3D numerical model of water currents, temperature, salinity and contaminant transport
- Contamination of Golden Horn and the historic peninsula due to potential oil spills.



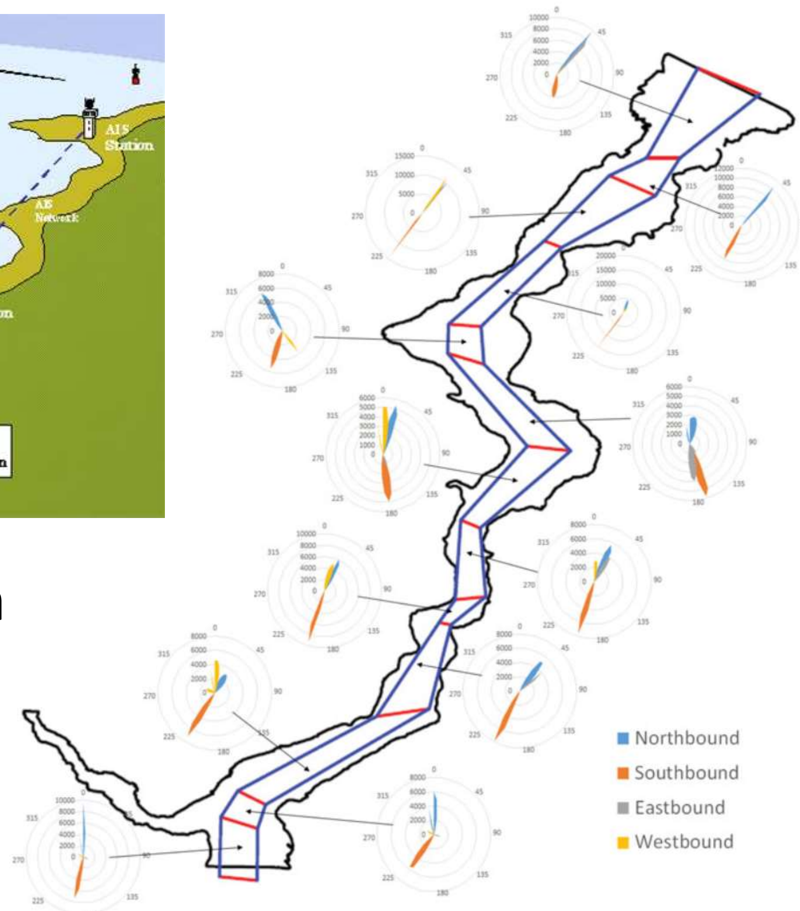




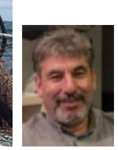
Marine Contamination: Ship Tracking and Risk Mapping (PhD Thesis)



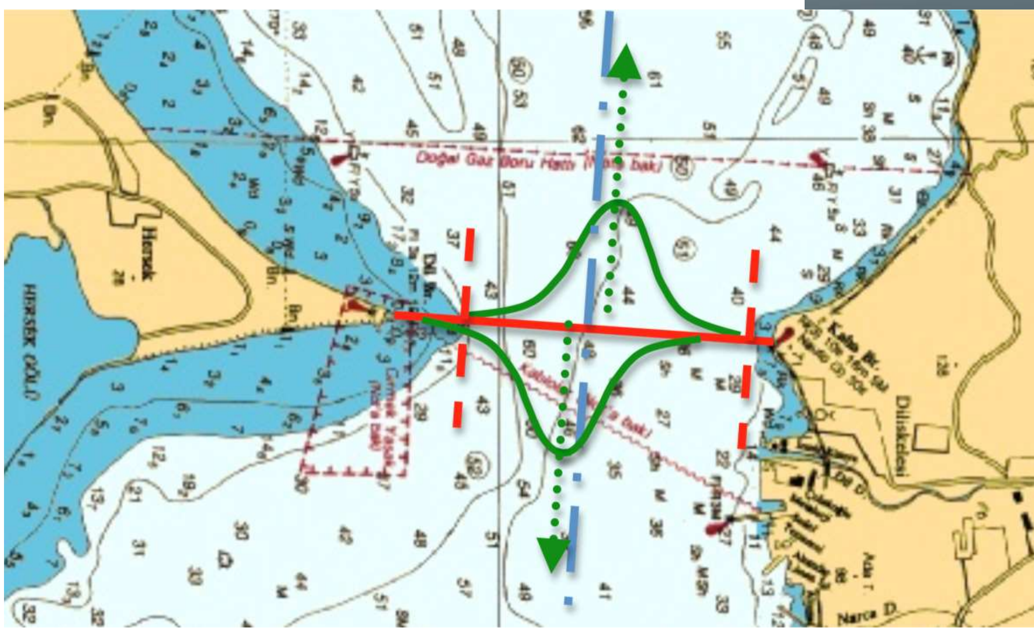
Vessel tracking system recorded 1.5 billion AIS messages from 300.000 ships in 1 yr.

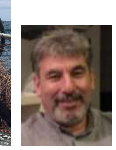


Directional Probability Distribution of Course Over Ground (COG)



Osman Gazi Bridge - Navigation Risk Assessment





MetOcean for Çanakkale Bridge Caissons (sponsored by Daelim, Limak, SK and Yapı Merkezi)

- **Preliminary Hydrodynamic Studies** (design conditions)
- **Measurement** (wind, wave, current, tide, water density)
- **Analysis** (vertical & horizontal profiles, spatial, temporal and reliability analysis)
- **Computer Simulations** (3D current, water density, water level)

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Measured & Modelled Surface Currents