

## Summary

The flow field and hydrodynamic forces around ships and under water vehicle are investigated using the theoretical, experimental and computational fluid dynamics to understand the relationship between the hull or vehicle form and the performance. Many ship related projects such as optimum hull form design, low drag body design and new propulsor development are carried out.



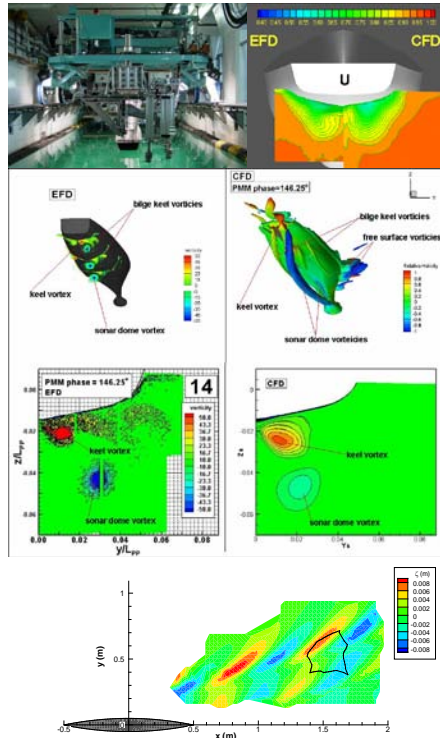
## Ship Performance

New drag reduction technique using new-painting and air lubrication method

Development of image measurement technique For Flow and Wave field

Development of new sensors for real-ship experiment

Development of CFD code for unsteady motion



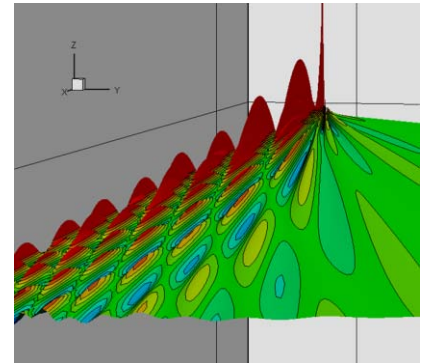
## The underwater vehicle with two undulating side fins (Squid robot)

Research on propulsive forces produced by undulating side fins and the motions produced by side fins.



## Theoretical ship hydrodynamics and its analogy to other fields

- New variation principle to wing theory
- Psychology of navigation officer using fluid mechanics analogy
- Fundamental research on waves produced in laminar boundary layer



## Numerical Ocean Model

- Hybrid hydrostatic and full-3D model and representation of marine structure using body force distribution
- Simulation on marine environment and marine utilization
- Open Web online version (MEC model) <http://tsumuji2.ga.osaka-u.ac.jp/>

