Effect of OTEC Thermal Effluent on the Kosrae Coastal Waters of the Micronesia

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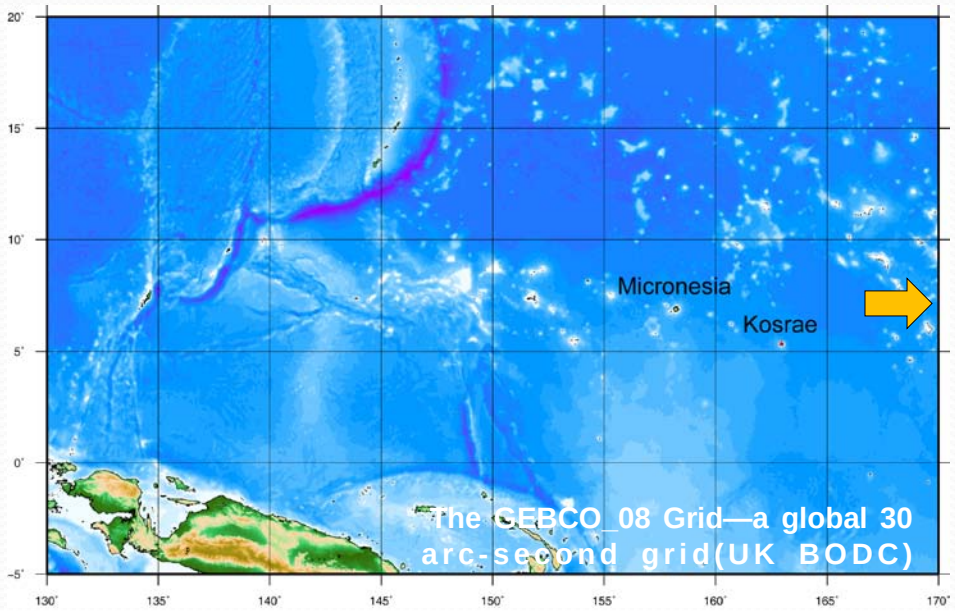
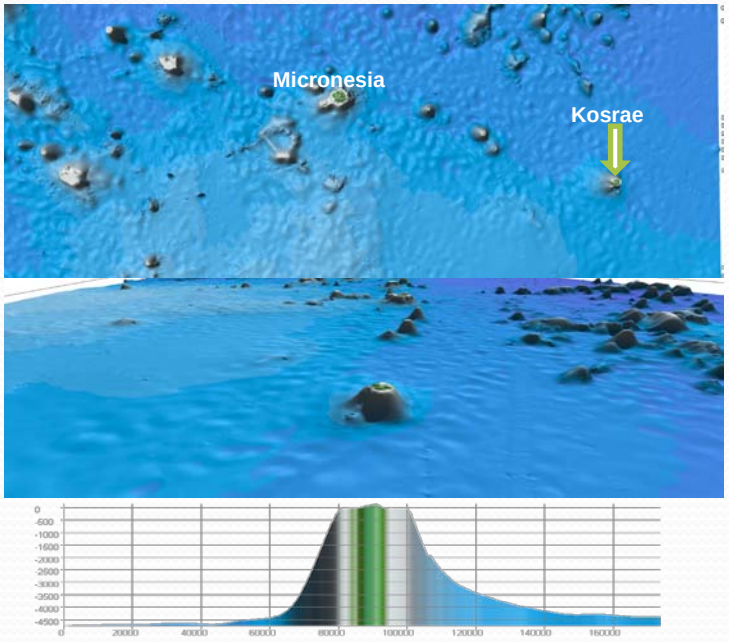
Objective :

- improve our understanding of the flow characteristics around the Kosrae Coastal Waters
- Global Circulation Model(HYCOM) or Regional Ocean Model(FVCOM)
- Plume Model(EFDC Explorer or CFD(Flow-3D))

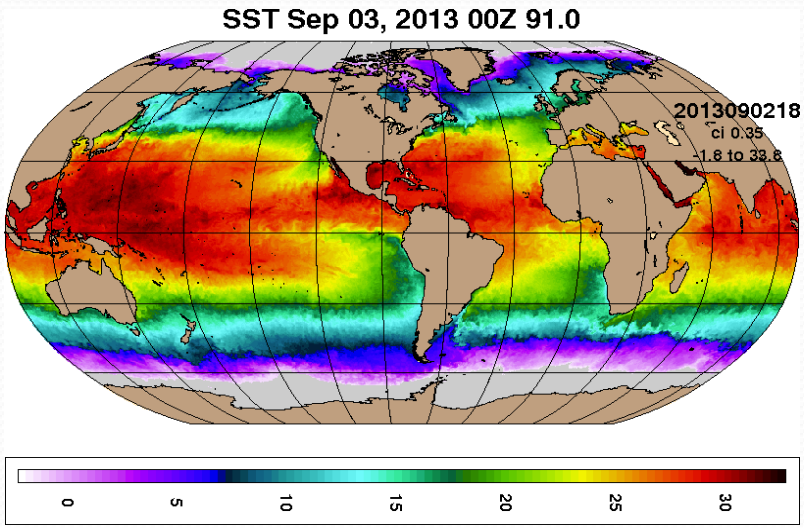


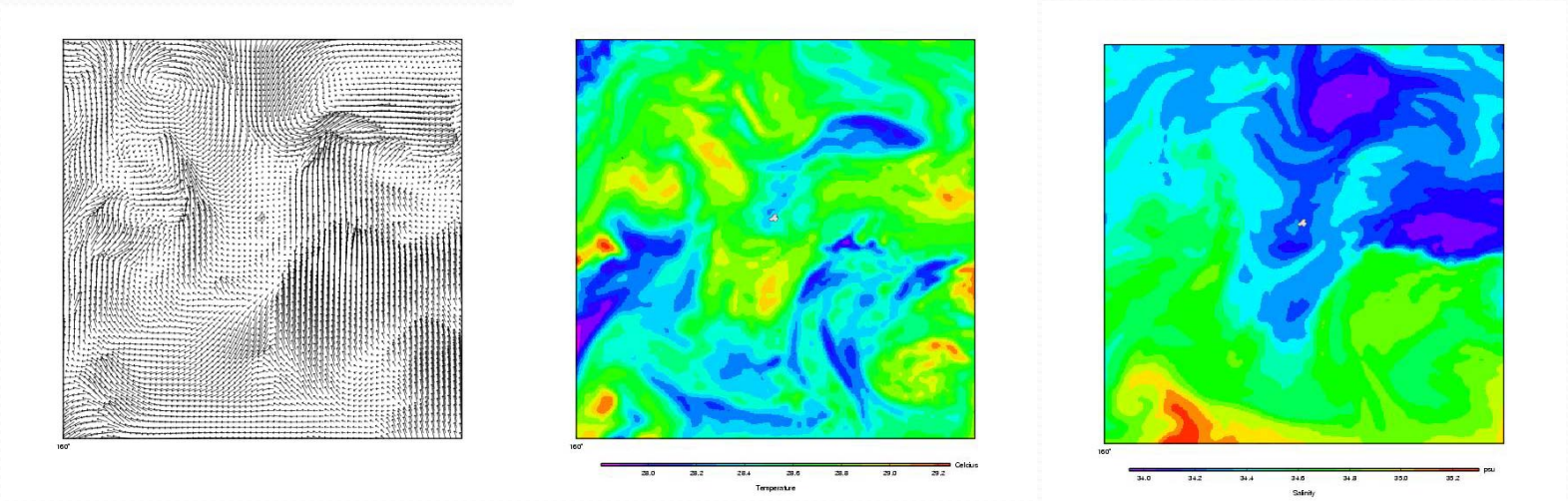


GCM (Global Circulation Model, HYCOM)

Real-time 1/12° Global HYCOM Nowcast/Forecast

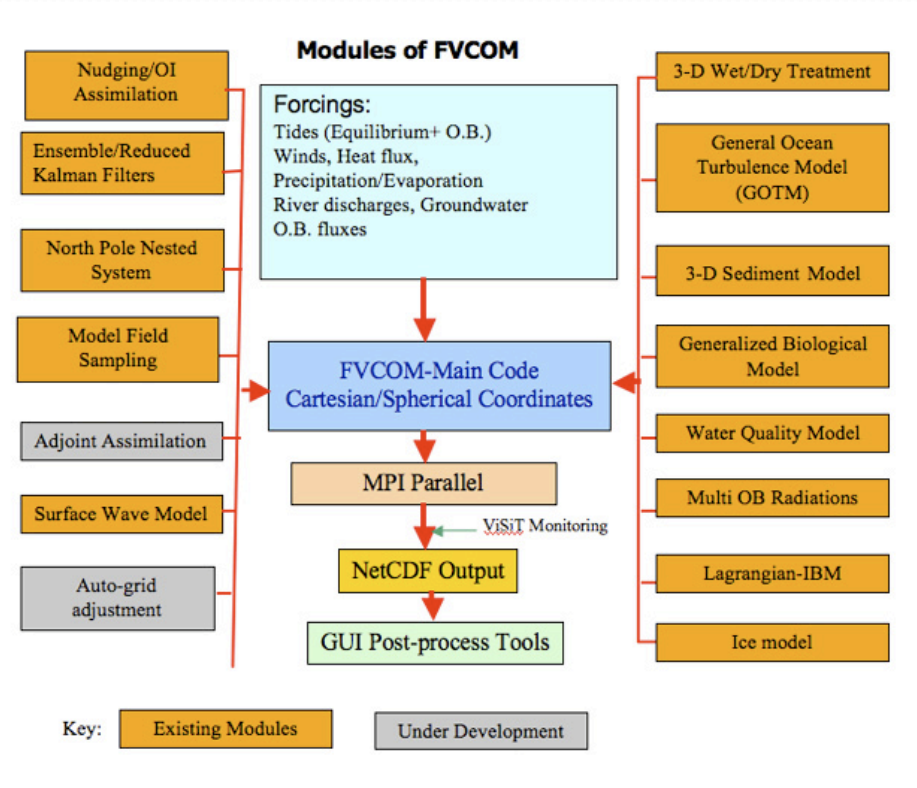
This global system (labeled 90.9) has been using atmospheric forcing from the Navy Operational Global Atmospheric Prediction System (NOGAPS). It has been replaced by the NAVy Global Environmental Model (NAVGEM). The Naval Oceanographic Office switched this system to NAVGEM forcing on August 20, 2013 (labeled 91.0). Posted 21 August 2013

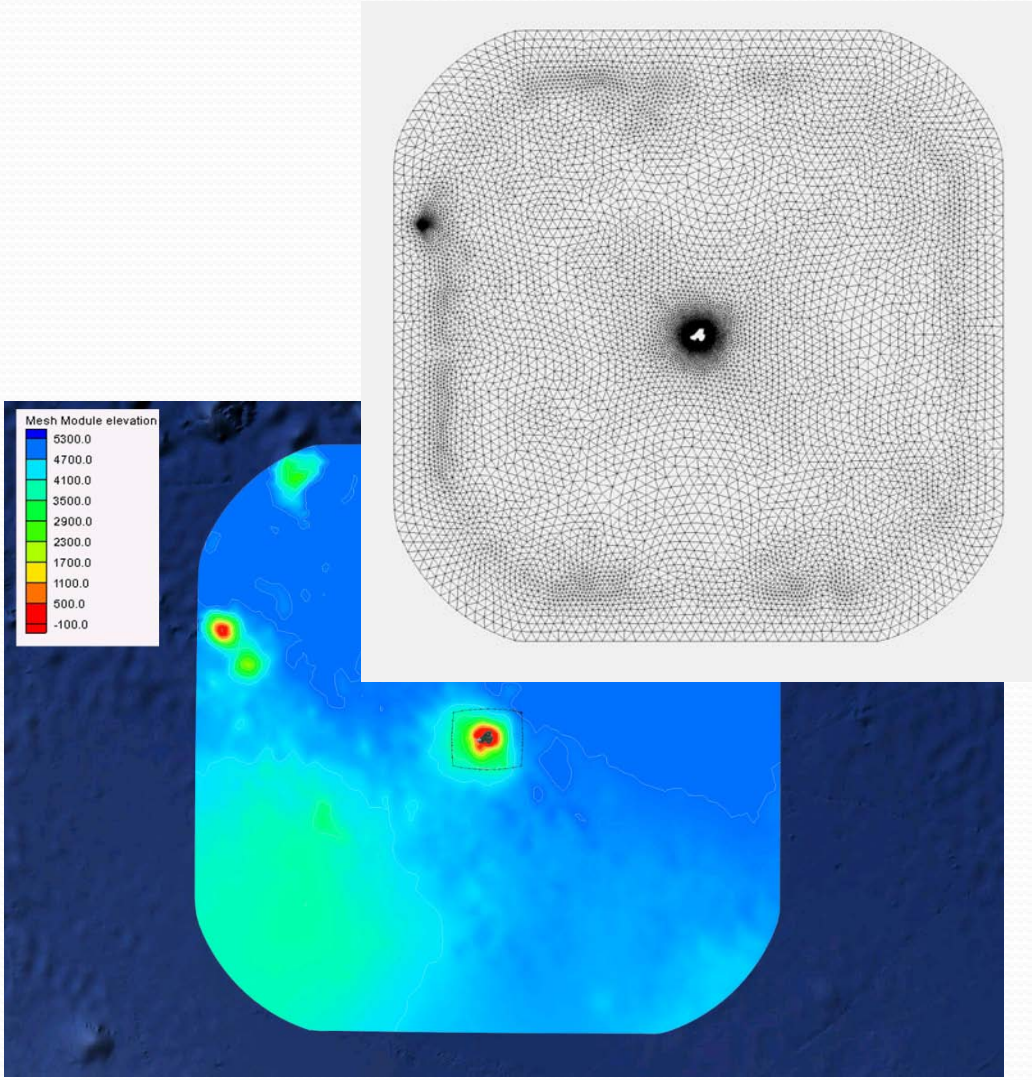




ROM (Regional Ocean Model, FVCOM)

FVCOM(Chen, C. R. H. Liu and R. C. Beardsley, JAOT, 2003)

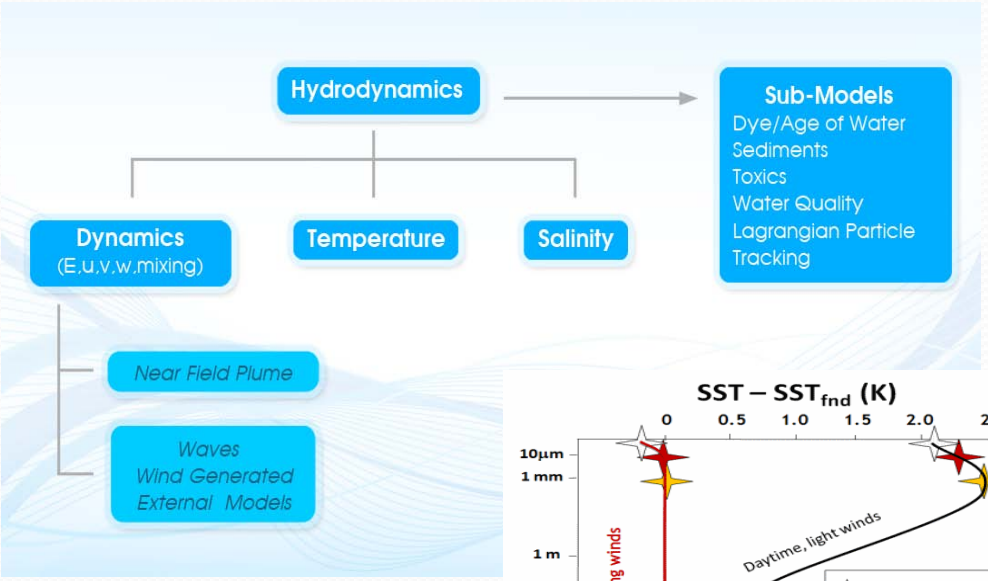


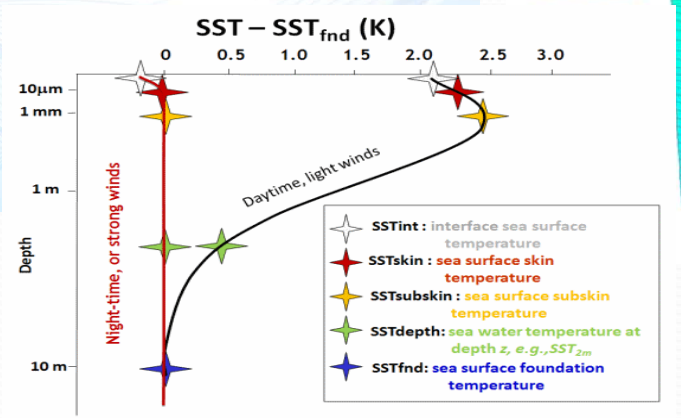


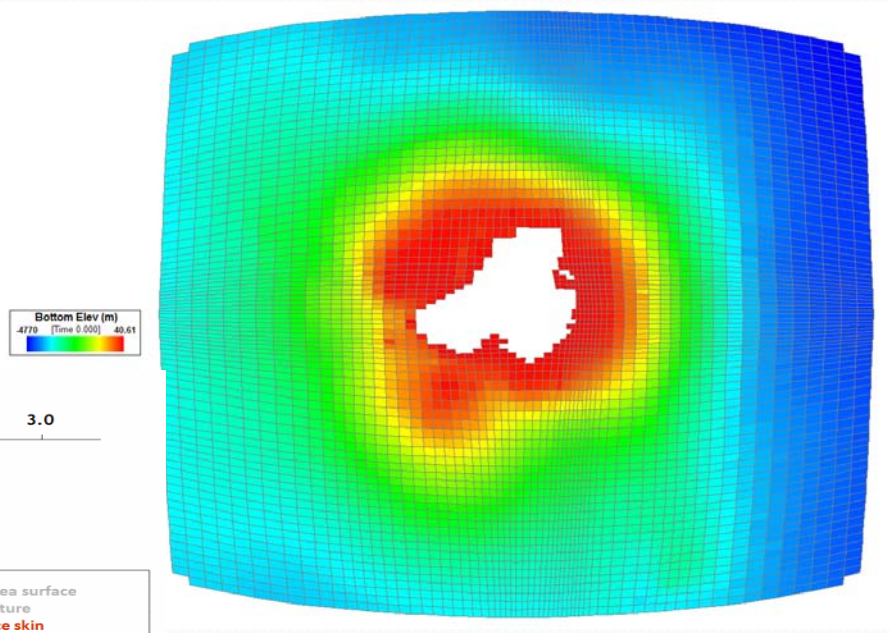
Plume Model (EFDC Explorer and CFD(Flow-3D))

EFDC(Hamrick, 1992, VIMS

Curvilinear grid : 84×69







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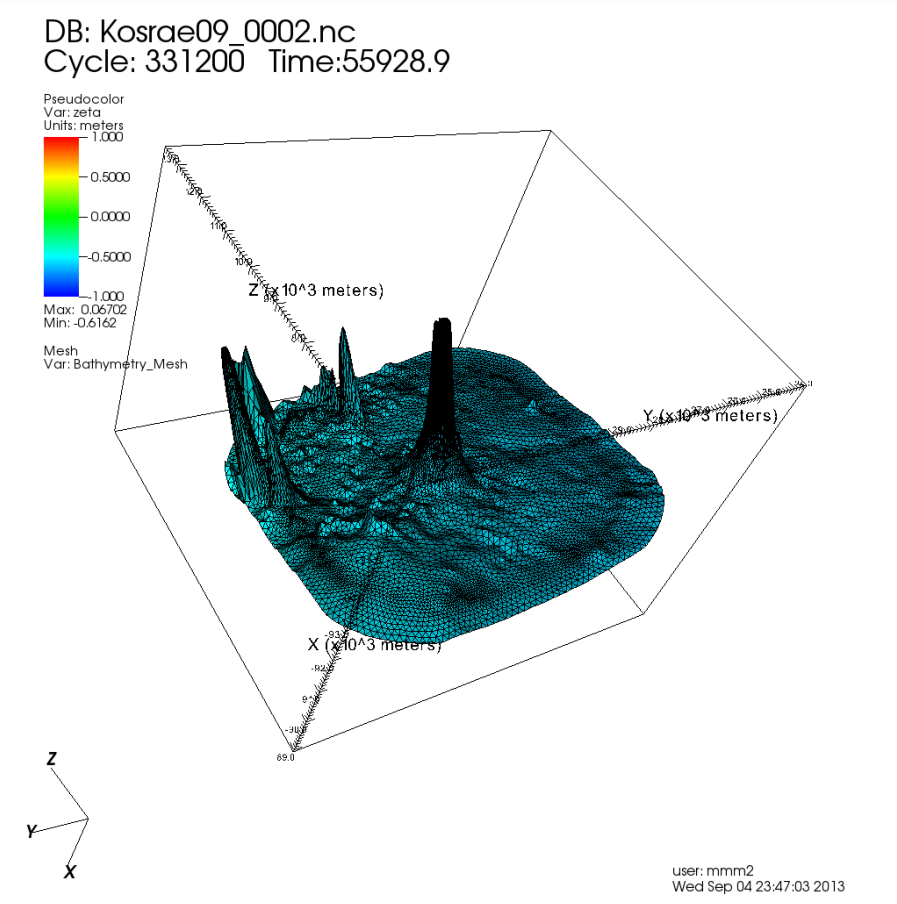

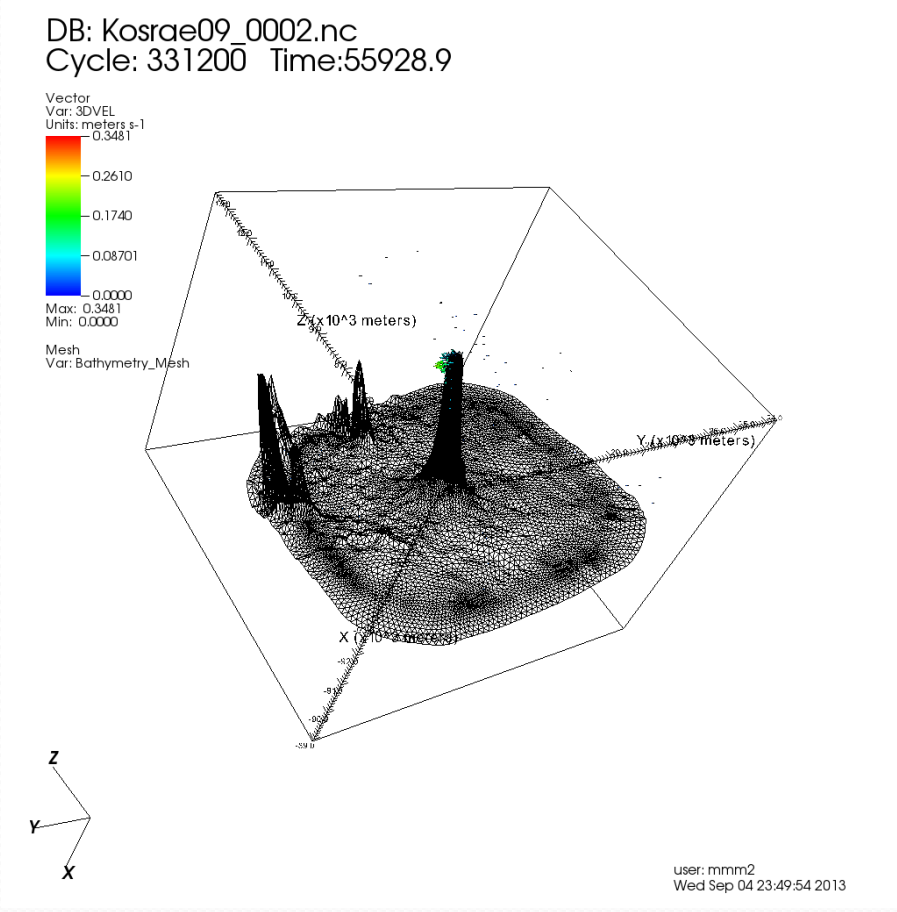

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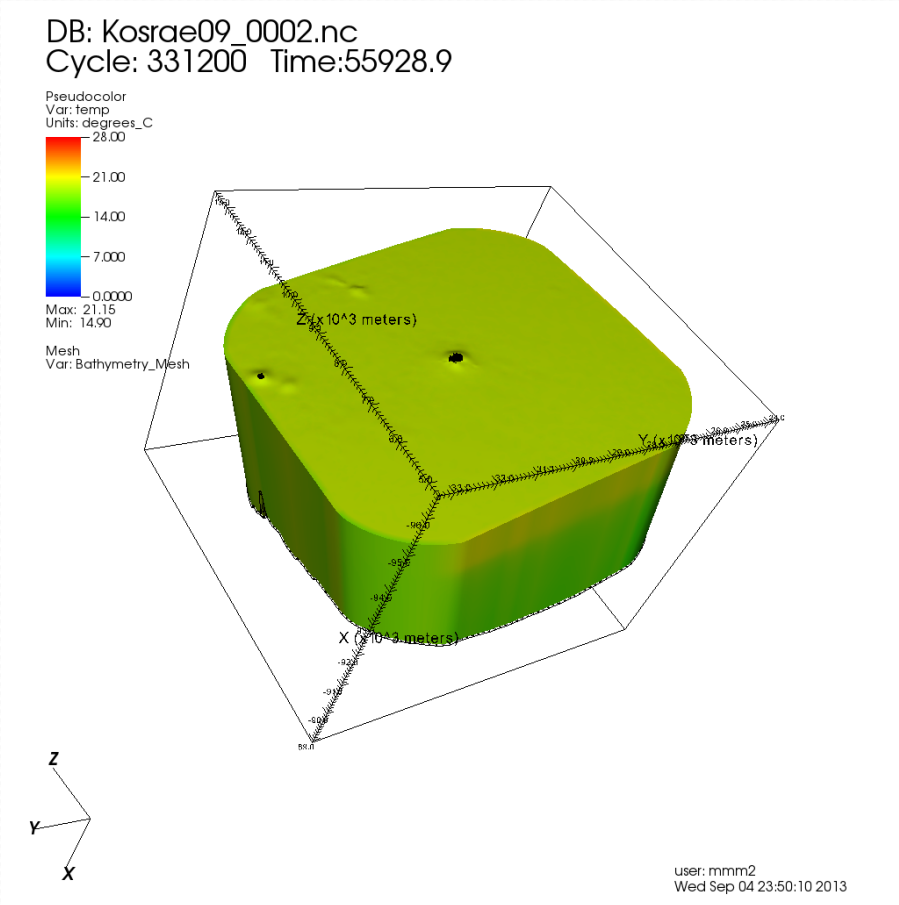
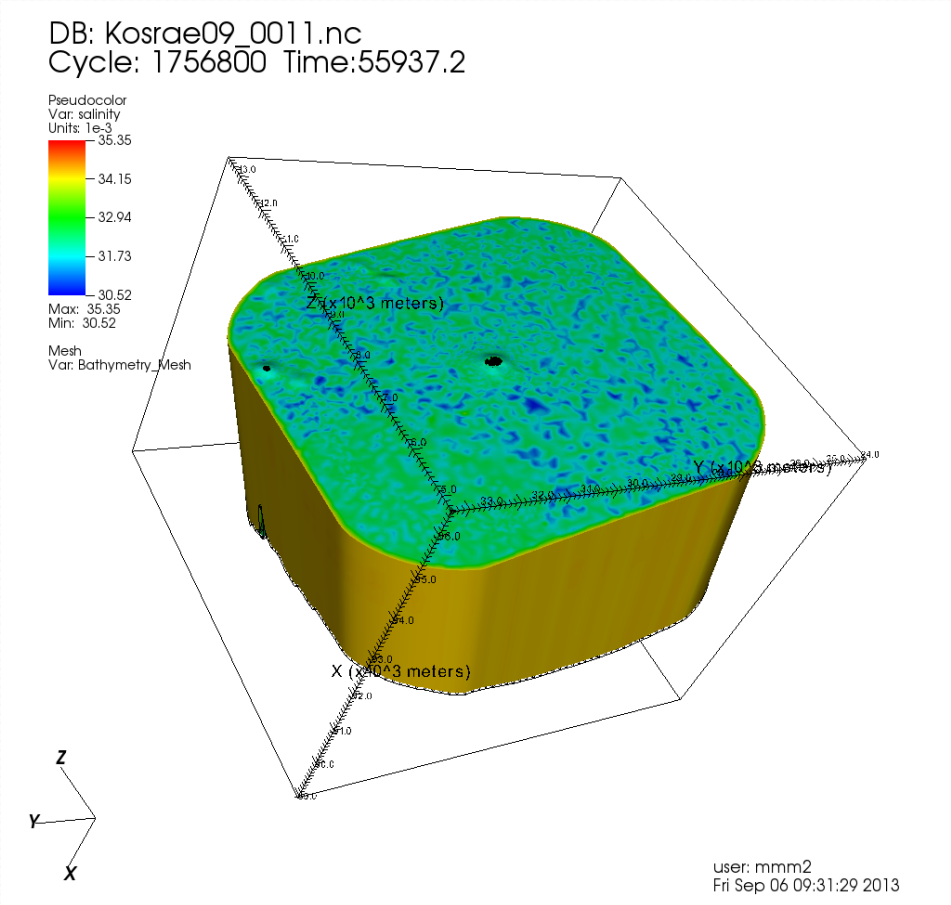
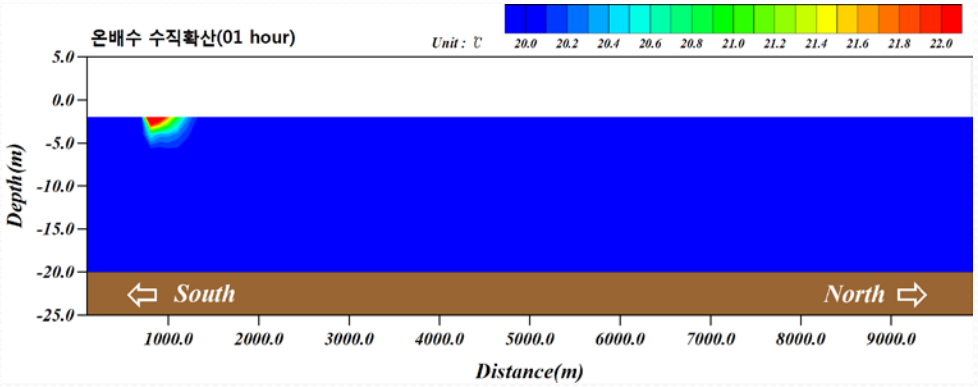


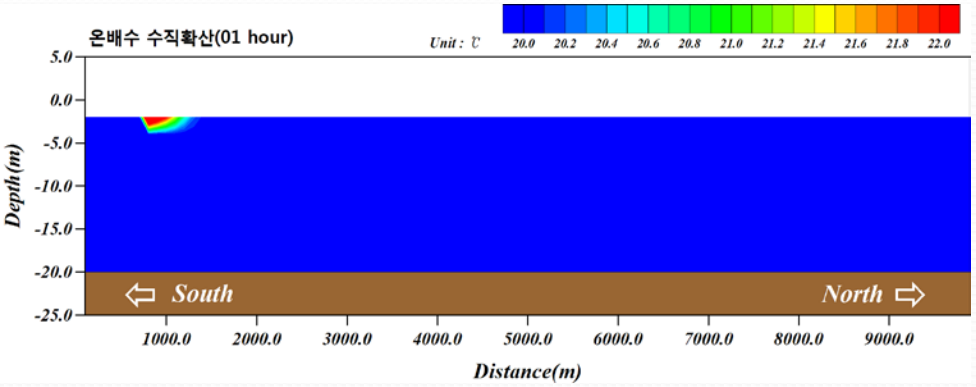


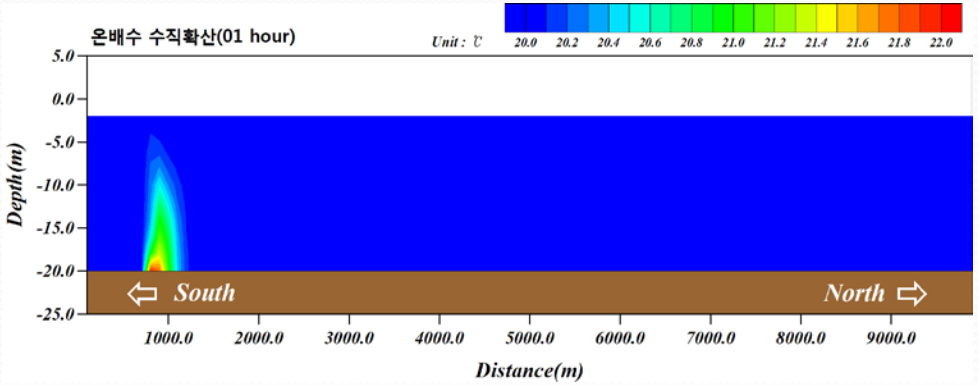
Plume Model(Flow-3D, FLOW Science)

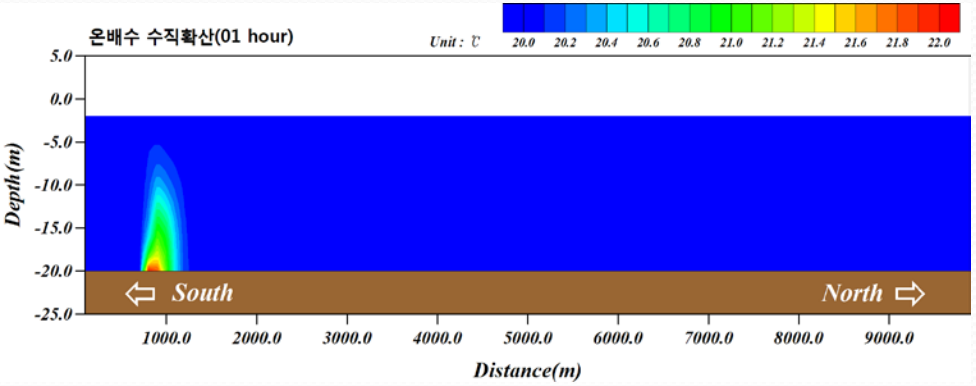
VDC 1E-3 m^2/s



VDC 1E-4 m^2/s

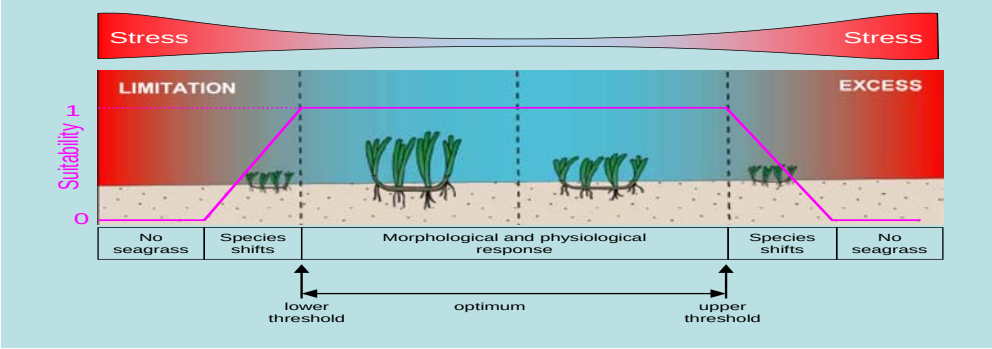


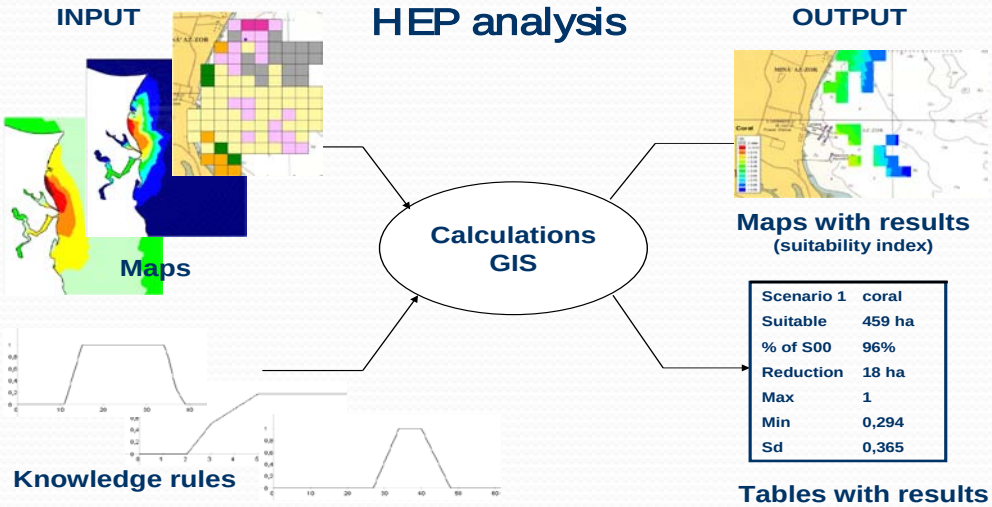




Summary and Perspectives

- The ocean and plume model are helping us make design decisions.
- The degree of impact of an OTEC facility will depend on location & design.
- Further studies are being carried out to analyze the three dimensional nature of fluid flow and to develop better numerical models.





Habitat Evaluation Procedure (HEP)

Thank you for your attention!

For more information, please contact :

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