Response Summary:

POH requested assistance from ERDC in training and setup of FUNWAVE Boussinesq model for various coastal engineering applications. Use of FUNWAVE via ERDC High Performance Computing (HPC) machines by the Honolulu District in the future will serve many purposes to their navigation projects including: harbor structure repair, investigations of harbor resonance, as well as infragravity (IG) wave energy over fringing reefs.

US Army Corps of Engineers ®
Honolulu District

Period of Performance:

17-June-2018 to 24-June-2018

Benefits of the Response to the USACE Dredging/Navigation Program:

The hands-on workshop delivered to the POH has empowered their coastal engineers to apply and deploy a novel high-fidelity numerical wave model in their current and upcoming projects. This also showcased new and state-of-the-art research and development work that is done at ERDC/CHL under the Navigation Program. The added benefit is that these models and corresponding work are reinstating USACE as the base of technical expertise in nearshore wave modeling and related processes, with subsequently reliable results and guidance provided by a savvy environmental steward.

Deliverables:

In addition to briefing the POH Engineering Division and basic follow up support after the visit, the immediate deliverables were: training/hands-on workshop, technology demonstration and transfer. Activities included training in Linux/Unix and GUI environment on the ERDC HPC machines Topaz and Onyx, where the POH engineers were able to run simulations on hundreds and even thousands of processor cores; thereby expediting the numerical wave modeling exponentially and being able to address larger problems with desirable level of computational/model fidelity and accuracy. The participants were also presented with pre- and post-processing tools for analyzing their field simulations. As a follow on, ERDC/CHL is helping POH in modeling wave transformation and harbor resonance on a project in Guam. Finally, the POH team was able to see the progress and experience first-hand the efforts of deploying FUNWAVE on the HPC Portal, where all interested USACE engineers will soon (FY19) be able to run FUNWAVE remotely via a web browser on the front end and all the work will be done on our HPC machines on the back end – without any system-specific restrictions or bandwidth bottlenecks associated with large parallel simulations and related data analysis and transfer/download.

Providing environmental and engineering technical support to the U.S. Army Corps of Engineers
Operations and Maintenance navigation and dredging missions

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