

CMR Computing – Visual computing and applications

Friday **04 Nov. 2011**, 11.00 - 12.00

Konferanserom C (TM51:KONFC),
VilVite Science Center, Thormøhlensgate 51

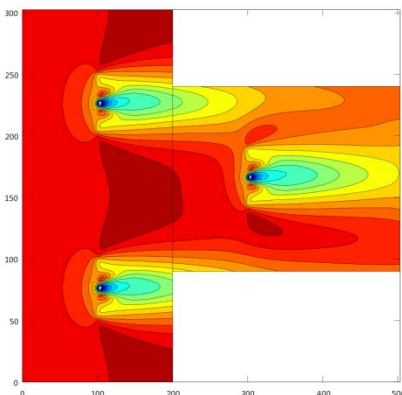
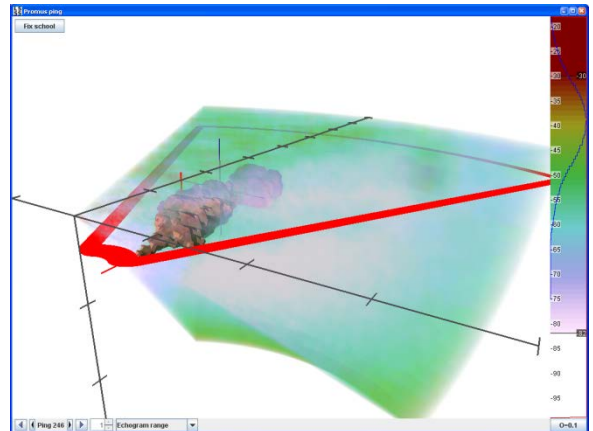
Ola Kristoffer Øye, Yngve Heggelund
PhD, Senior scientists, **CMR Computing**

Abstract:

In this talk we will present two ongoing R&D projects, as well as a general overview of visual computing activities and focus at CMR Computing:

ANALYSIS AND VISUALIZATION OF MARINE ACOUSTICS DATA FOR ABUNDANCE ESTIMATION OF MARINE RESOURCES

Marine acoustics is one of the primary data types used by marine scientist for abundance estimation of marine resources. Large amounts of multi-frequency echosounder and sonar data is regularly collected by research vessels, and analyzing and extracting quantitative measures from these data is crucial for good estimates of fish stocks, which again leads to catch quotas for the fisheries industry. The Institute of Marine Research (IMR) and CMR have for several years developed analysis and visualization techniques for analyzing marine acoustics data. The techniques and work flows has been implemented in the application "LSSS - Large Scale Survey System", which today is in use at IMR and several other marine research institutions around the world. The talk will present some of the techniques, workflows and features that has been developed.



INTERACTIVE COMPUTATION AND VISUALIZATION OF WIND FARM FLOW FIELDS BASED ON MODEL REDUCTION

Wind turbines in wind farms generate wakes, which reduces the power production of turbines downstream of other turbines. CFD (Computation Fluid Dynamics) is the best candidate for describing complex wake effects, but the application of such models is computationally very expensive which limits their practical use. This presentation will outline a method of reduced order modeling based on CFD. This provides a much faster computation of the flow field, which enables the user to make changes of the positioning of turbines within a wind farm and interactively observe the effects. While a CFD simulation takes hours to complete, the flow field can be computed within seconds in the reduced order space.