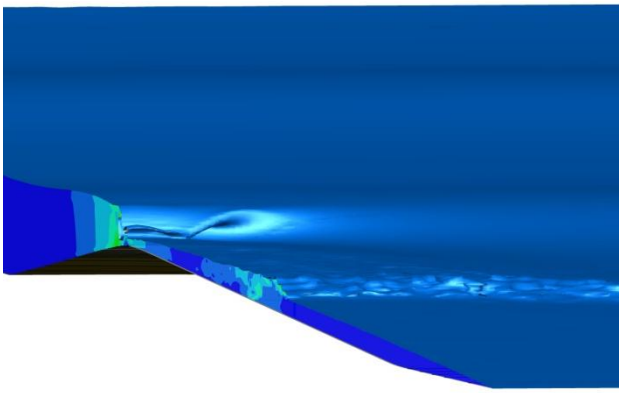
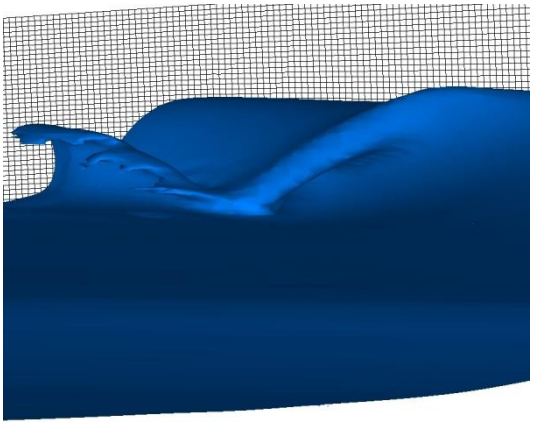
NS3 Modelling of Surfing Reefs

Recent advances in CFD modeling have now made it possible to adopt a new improved method for quick and cost effectively integrate a detailed investigation on surf quality impact into a wide range of coastal planning projects involving elements such as surfing reef design, dredging/by-pass operations and coastal protection.

NS3 is developed by DHI and is a fully non-linear wave model that unlike conventional numerical wave models is capable of modeling breaking waves explicitly and highly accurately, which allows for a much more detailed investigation of the performance of a surfing reef design or the impacts on surf quality in response to an altered bathymetry for an existing surf spot. NS3 can also be coupled with the Boussinesq wave model Mike21 BW to include the influence of greater scale transformations to the incoming wave field such as from large headlands and offshore wave focusing bathymetric features.

This presentation will give an introduction to the numerical tools involved and provide a brief overview of the methodology used for carrying out a surf impact assessment using this CFD approach.





About the speaker

Simon Brandi Mortensen is a specialist in non-linear wave mechanics, coastal morphology, sediment transport and computational fluid dynamics and has been a passionate surfer for the last 13 years.
He holds a Master Degree in coastal and marine engineering from the Technical University of Denmark and has since his graduation been working for the global non-profit organization DHI Water & Environment and been based in their Gold Coast office since 2008.