COUPLED PROBLEMS AND FREE SURFACE FLOWS

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ABSTRACT

The focus of this session is to discuss numerical methods or industrial applications that involve coupled problems, free surface flows or their interaction. These kind of problems have been studied for several years and the results have been applied in numerous engineering endeavors. More recent developments in the area of parallel computing have allowed researchers to replace assumptions or simplifications by the full approximation of the conservation equations providing more detailed and accurate representation of the reality. Although parallel computing is not the main focus of this MS presenters are encouraged to share their experience in this area.

Coupled problems are regarded as problems where two or more domains approximate different sets of conservation laws and where the final solution depends on their interaction. Some examples include:

* thermal/electromagnetic coupling with buoyancy effects,
* conjugate heat transfer and cooling problems,
* fluid-structure interaction: ship hulls in the presence of waves, sloshing problems, etc.
* wave energy generation devices,
* dam brake and impact problems,
* pollutants transport in air, water and soil environments.