

# FreeVol++: 2D Finite volume solver inside FreeFem++

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**Abstract :** FreeVol++ is a numerically solver for finite volume method (FVM) on an unstructured grid inside FreeFem++ [5] software dedicated to solve PDE with the finite element method (FEM). We will describe in the sequel, the way to build several fluxes used in the FVM and apply this technique first on the advection 2D equation with the parallel version of the code then on the shallow water system and finally, since we can solve now FVM and FEM inside FreeFem++, we will present a simple way to couple between these two methods and apply this on a 2D BOUSSINESQ system of the BENJAMIN–BONA–MAHONY (BBM)-type that describe the surface wave propagation of small amplitude and large wave length.

## References

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