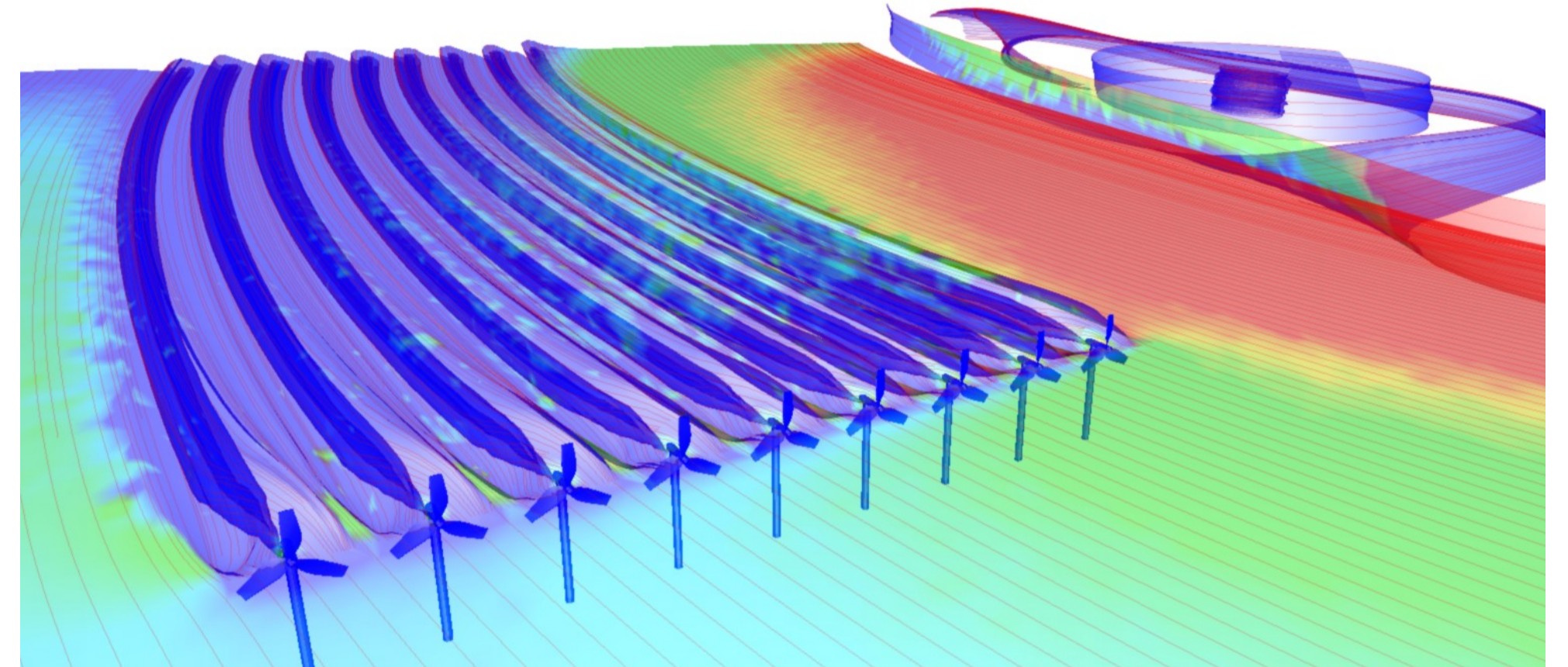


## Benefits of the approach

The method gives high levels of confidence in the size and shape of the wake shadow behind an array of turbines. This will help developers and site operators to design an optimum layout for arrays of tidal energy devices. Consequently, this will improve yield and will lower levelized cost of energy {LCOE}



## Generalized Actuator Disk - Computational Fluid Dynamics

GAD-CFD is an efficient open-source CFD tool that:

Accurately models horizontal axis tidal turbines

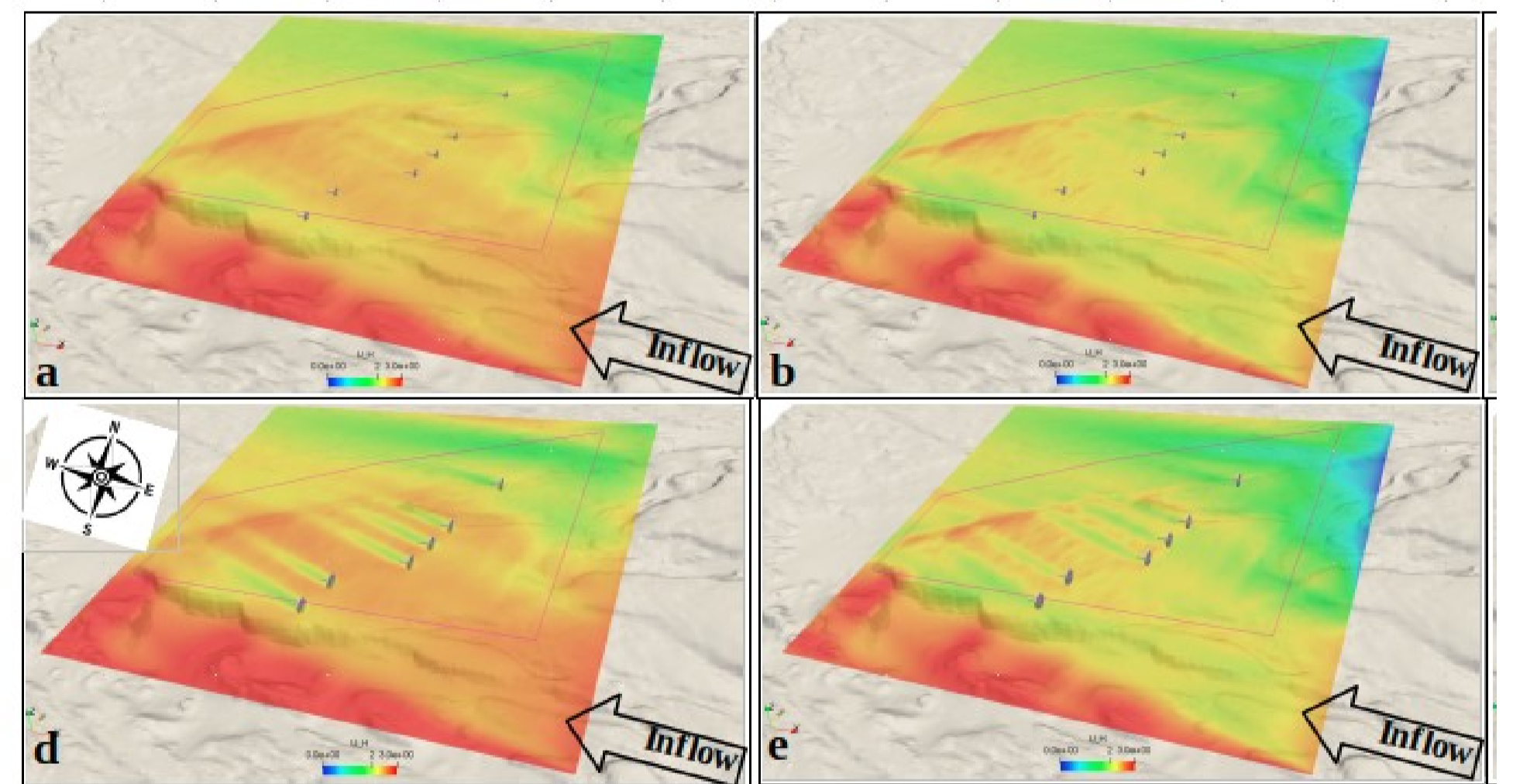
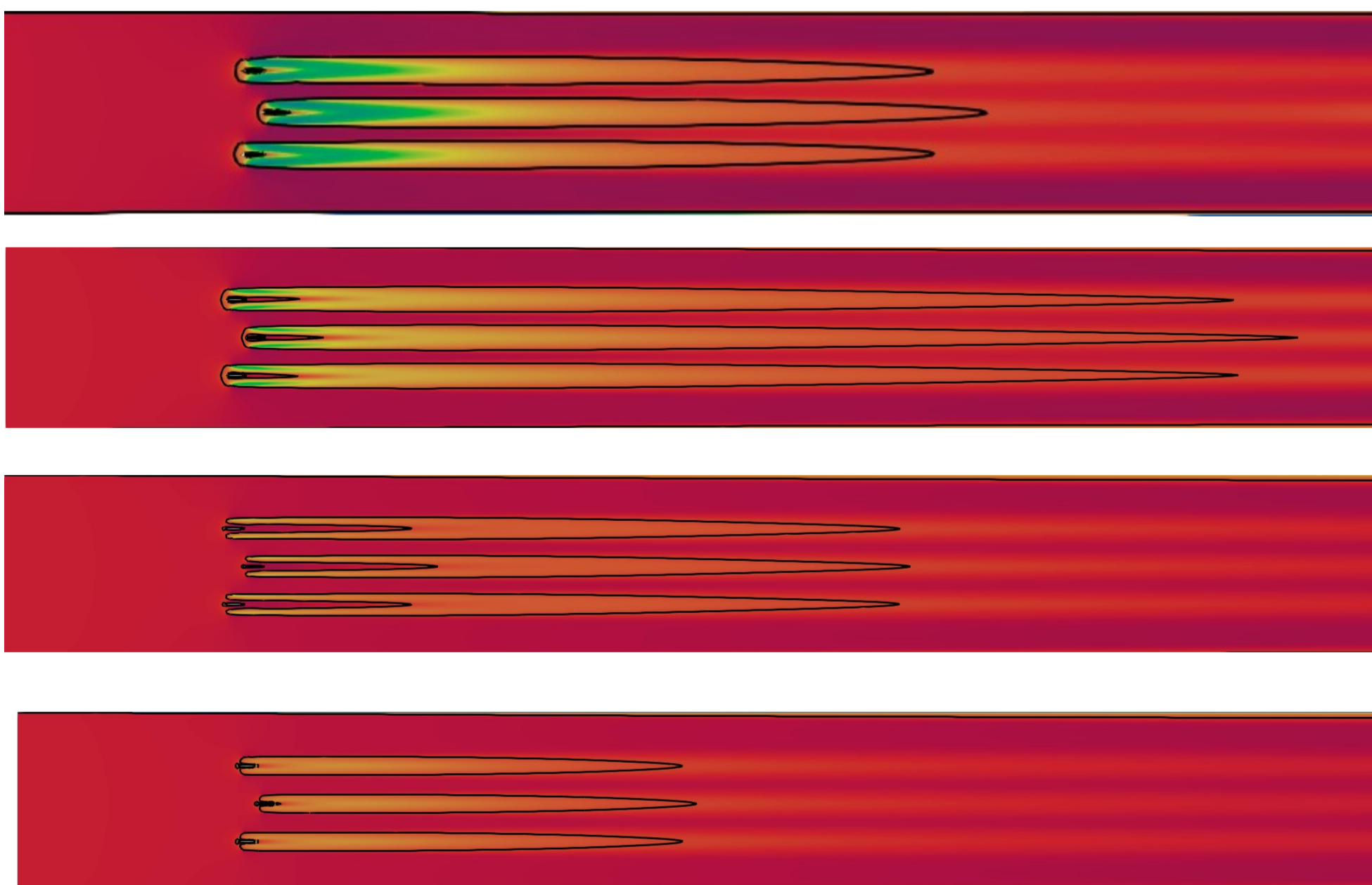
- Performance characteristics
- Wake characteristics

Enables implementation of arrays of devices using realistic deployment site conditions (right)

- Bathymetry
- Flow characteristics

Incorporates power control mechanisms (bottom)

- Stall control
- Pitch control



## Future Potential

The next steps of the tool development is to explore very turbulent locations and consequences for array design.

There is potential for array level control to improve output and that can also be explored.

The method can also be applied to floating wind turbine farms.