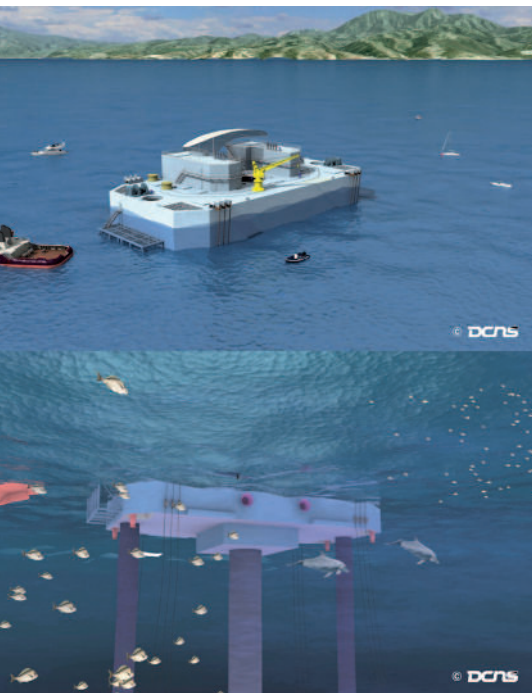
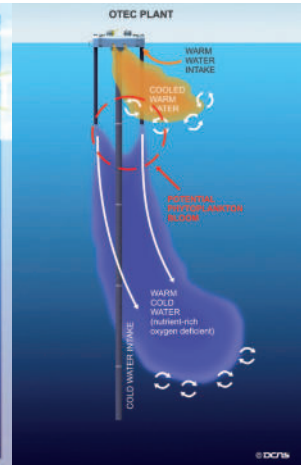
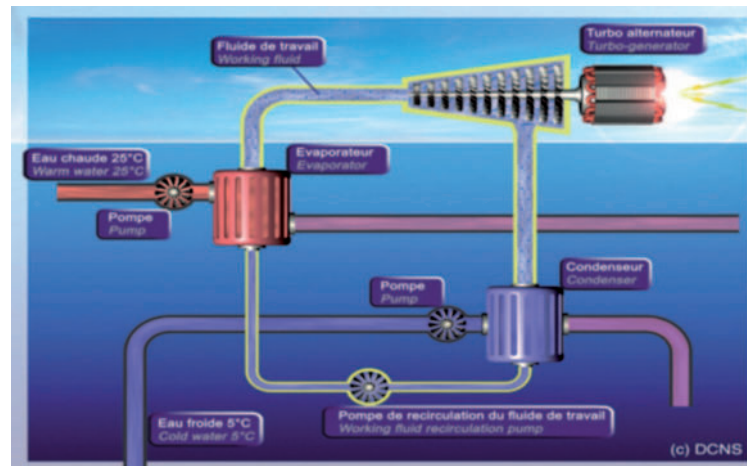




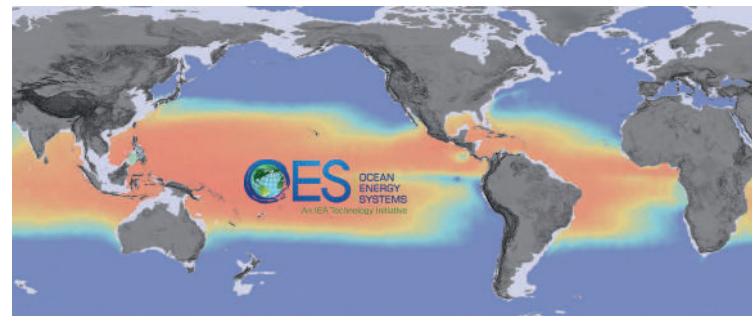
Ocean thermal energy conversion



The IMPALA project's name comes from a French acronym for the equivalent of "artificial upwelling's impacts on microplankton". It deals with Ocean Thermal Energy Conversion, or OTEC. OTEC consists in utilizing the difference in temperatures at the surface and in the deep ocean to operate a heat engine. Producing power with OTEC is optimal with a temperature difference greater than 20°C (typically, 5°C in water -1000 m deep and 25°C at the surface). This means that the inter-tropical zone is well suited for the purpose.

The IMPALA project aims to study the potential impacts of releasing deep sea water below the surface from an ocean thermal energy plant. Effectively, the inflow of bottom water, whose temperature and chemical composition are quite different, into the sub-surface layer as well as the cooling of surface water at the exchanger's outlet, could locally induce alterations in planktonic ecosystem function. It is comparable to setting up an artificial upwelling.

Thus, the IMPALA project will specify what biogeochemical processes are at work in an artificial upwelling linked to use of an OTEC plant in an oligotrophic environment. It will improve knowledge about tropical environments and their biogeochemical functioning and apply this knowledge to studying the impacts of discharges from a future OTEC plant.



A RESEARCH PROJECT

- Collaborative work by France Energies Marines, the university of western Brittany (UBO), LEMAR, LEGOS and DCNS.
- A PhD thesis on the biogeochemical impacts of artificial upwelling discharges.
- Various tools used: modelling, laboratory experiments and field work (data acquisition in the tropical environment).
- Taking advantage of a project conducted by an industrial firm.

