

# **Numerical modelling of the laguna verde nuclear power station thermal plume discharge to the sea**

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## **Abstract**

The coastal water pollution is a problem that responds to the overpopulation, natural resources exploitation and the increase of technologic development; this has led to an alteration of the physical, chemical and biological parameters of both continental and coastal waters. Among the main sources of pollution are those arising from industrial activities, this is the case of the electricity generation industry which requires large volumes of water for cooling systems. This work contributes to the knowledge of the behaviour of thermal discharges into coastal waters, and it requires solving the Navier-Stokes-Reynolds equations for shallow waters, using a numerical model formerly developed; water quality equations associated are solved too. The results obtained are satisfactory, since dispersion patterns of the thermal plume are well reproduced in accordance with the patterns measured for different climate scenarios in the zone.

## **keywords**

Cooling systems, Discharge (fluid mechanics), Marine pollution, Numerical models, Pollution Supercomputers, Thermal plumes, Water pollution, Water quality.