



## **Coupled model of normal modes of Gibraltar Strait's short period oscillations**

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Tide gauge records from different harbours in the Strait of Gibraltar area show events of short period oscillations, which persist from several hours to one-two days. The frequencies of these oscillations, with significant energy bands centered at periods of 7.5, 12, 17, 22 min, are characteristic of the place in which the observations have been collected, with a more selective tuning in Tarifa than in Ceuta or Algeciras. The spatial coherence of these events exhibits scale of at least Gibraltar's Strait. The numerical model developed to investigate these oscillations shows that they correspond with harbour resonances (excitation of the fundamental harbour's mode) which are excited by the normal modes of the Strait of Gibraltar (regional domain) with the same frequency: coupled model of normal modes.