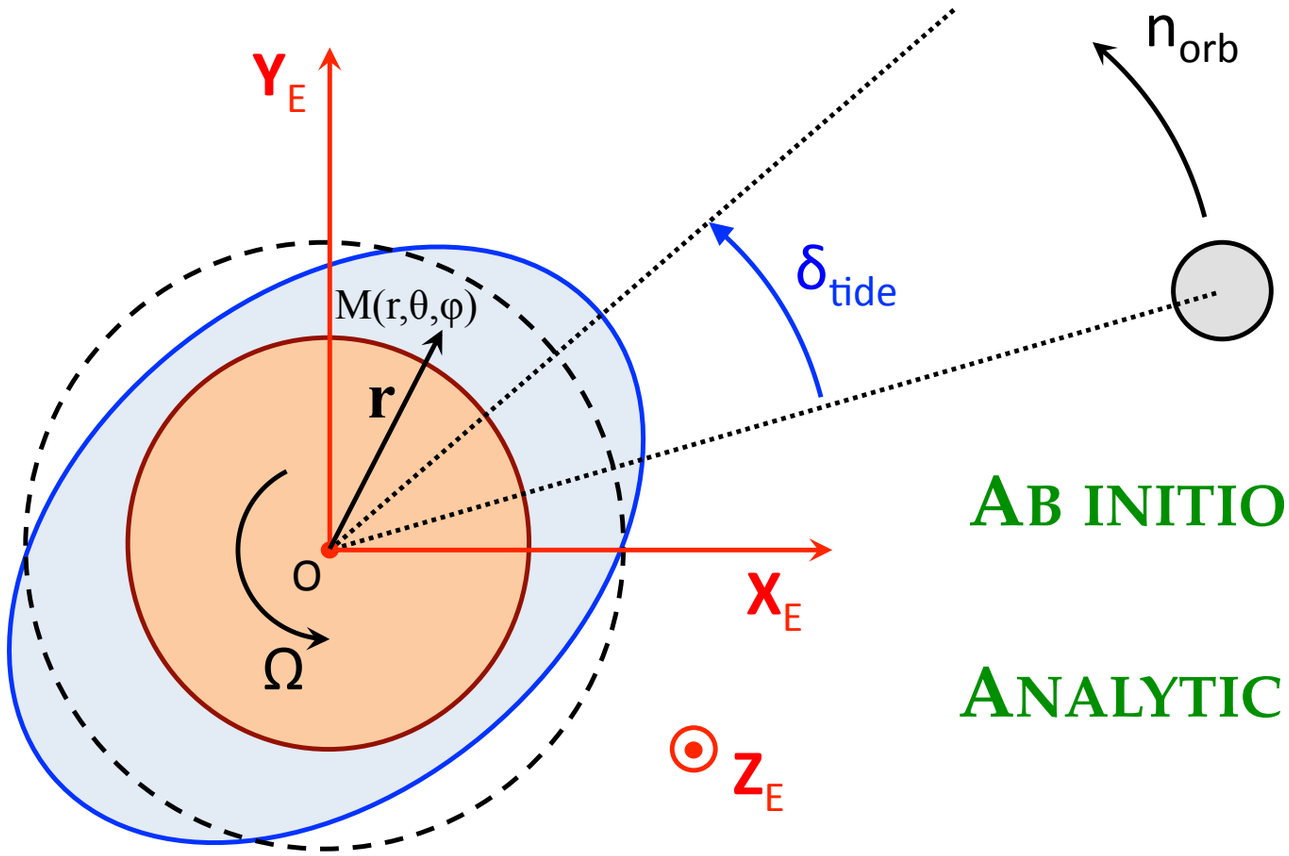
TIDAL DISSIPATION IN DEEP OCEANIC SHELLS: FROM TELLURIC PLANETS TO ICY SATELLITES



AB INITIO MODELING

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ANALYTIC SOLUTIONS

Exploration of the parameters space

Quantification of the energy tidally dissipated

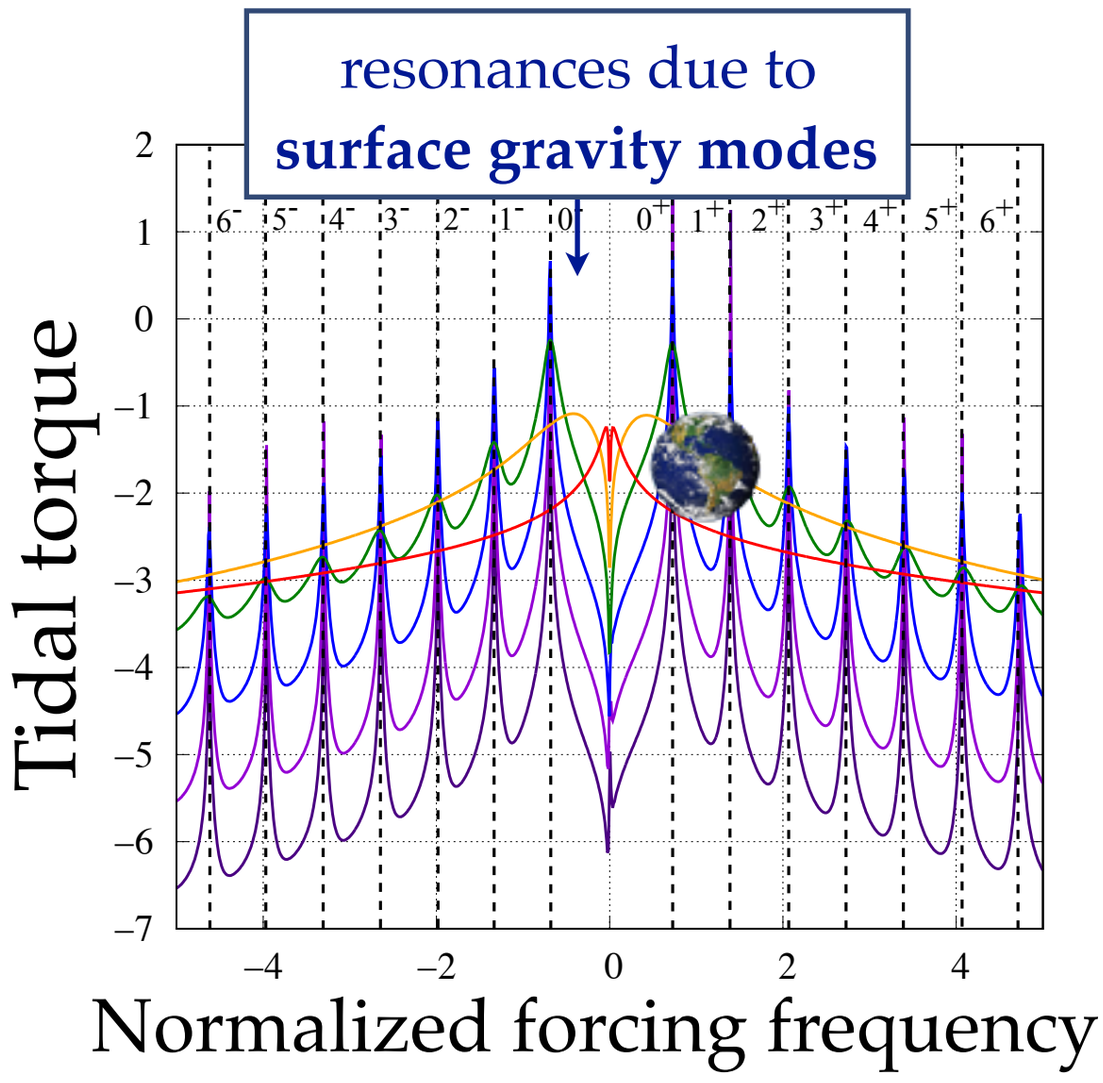
Coupling with evolutionary models

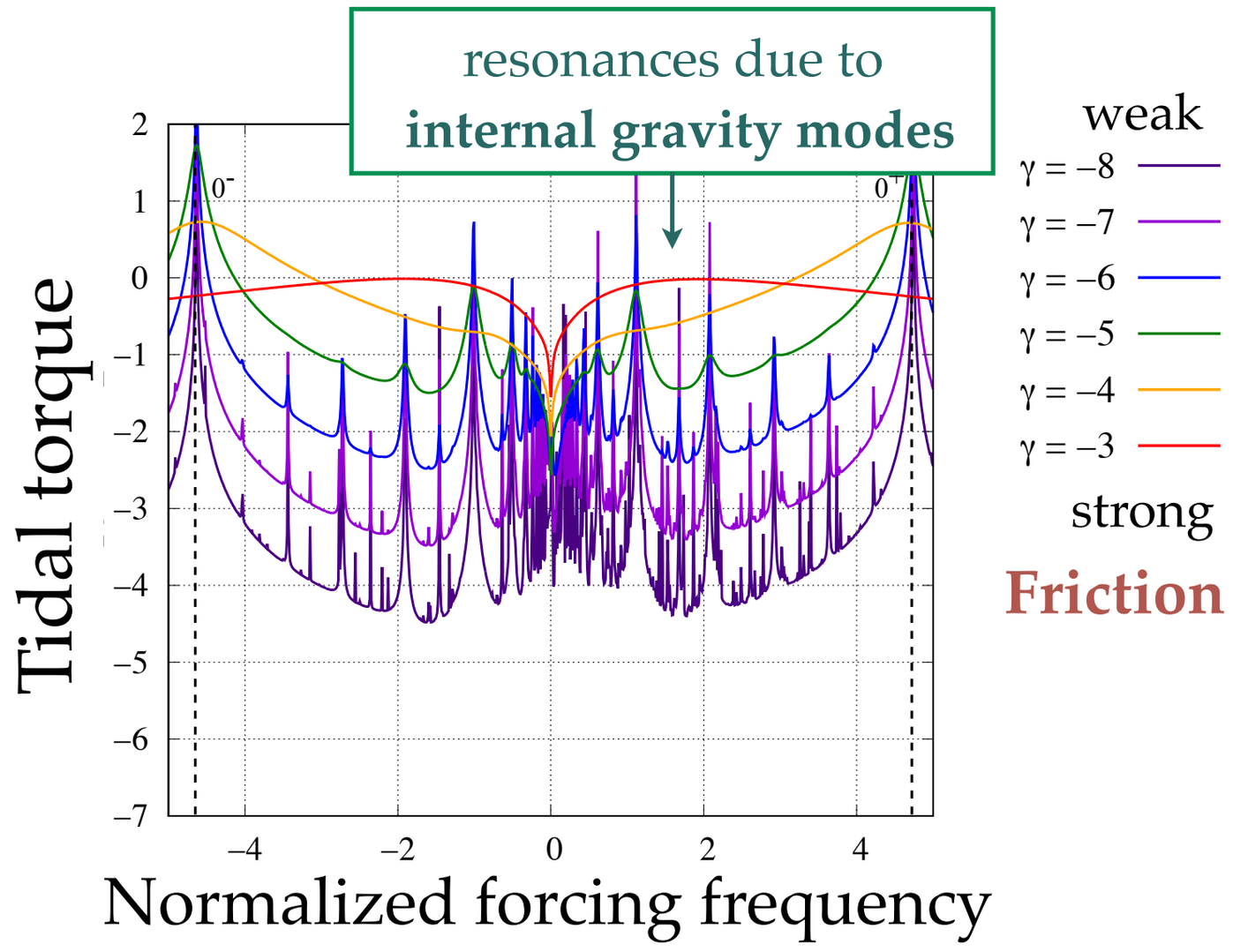
P. Auclair-Desrotour, S. Mathis, J. Laskar, J. Leconte (2018)

European Research Council
Established by the European Commission

Oceanic tidal torque in ocean planets

ANALYTIC SOLUTIONS $$k_2^2 = \frac{\mathscr{G} M_{\rm oc}}{5R} \sum_{n\in\mathbb{Z}} C^{2,\tilde{\nu}}_{2,n,2} \left(Q^{2,\sigma}_{\xi;n} + Q^{2,\sigma}_{\rho;n} \right)$$



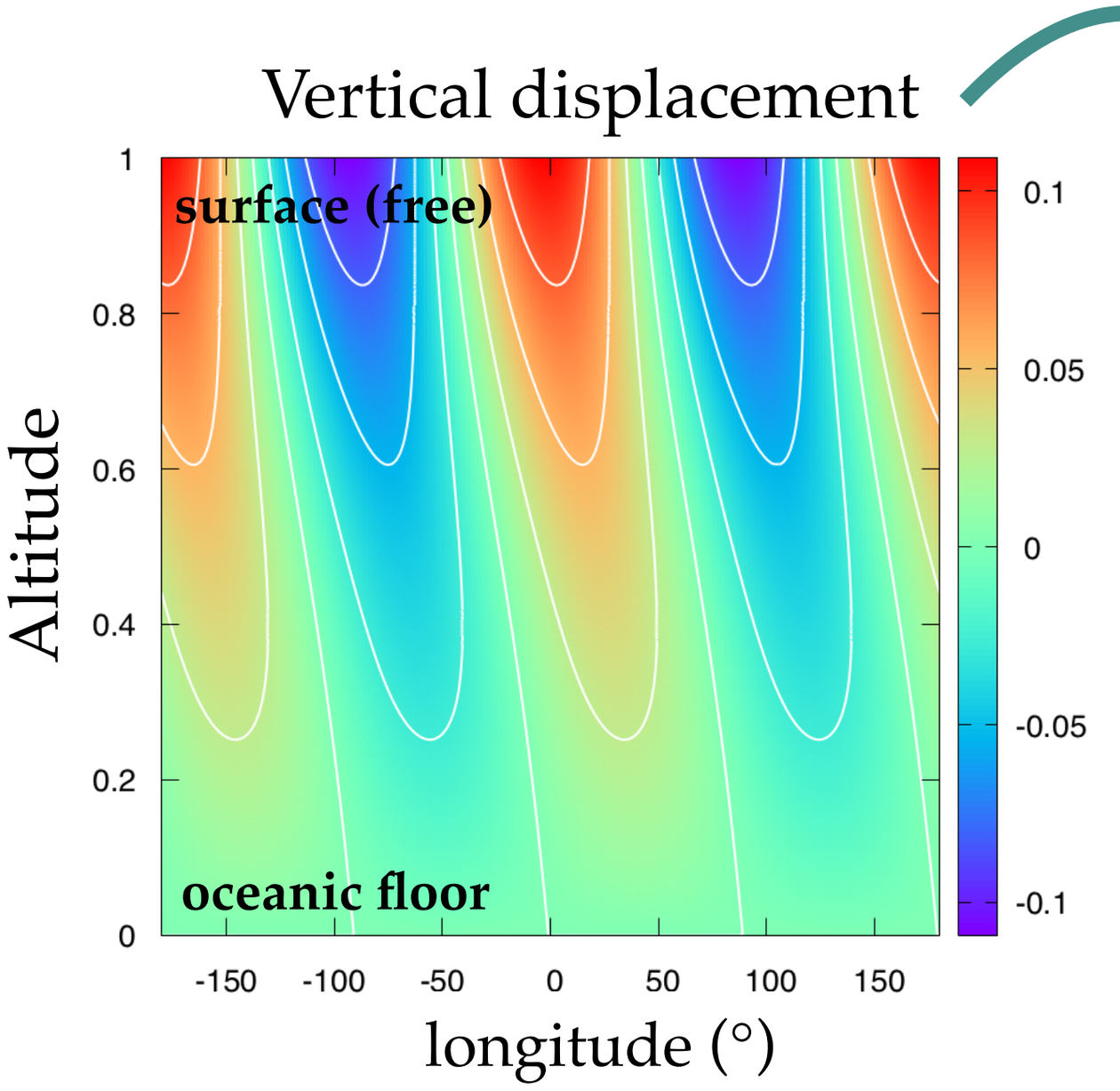


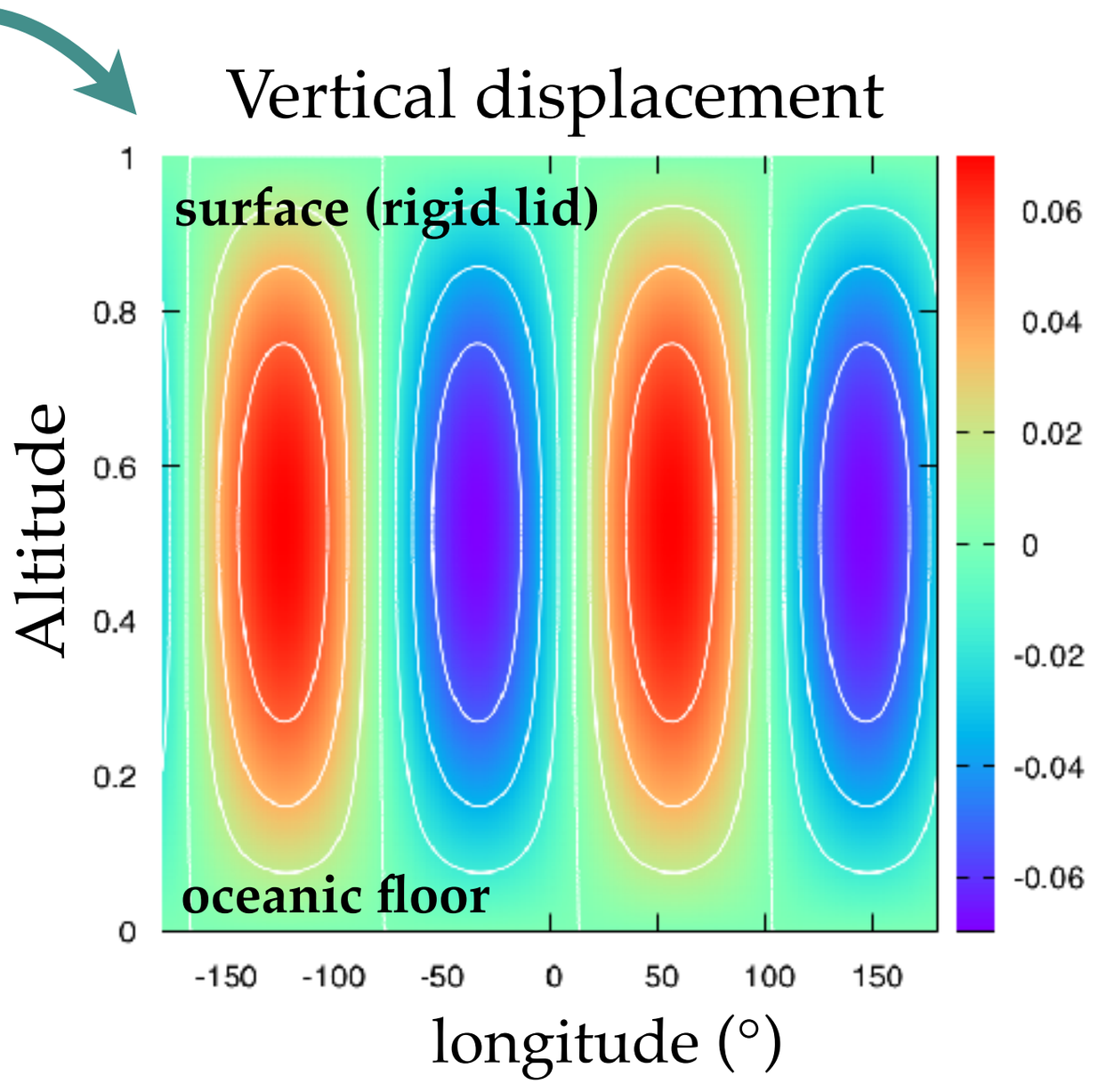
CASE 1: THIN SHELL APP.

CASE 2: DEEP STRATIFIED OCEAN

Prospects for icy satellites

Change of the surface boundary condition





PLANET → **ICY SATELLITE**