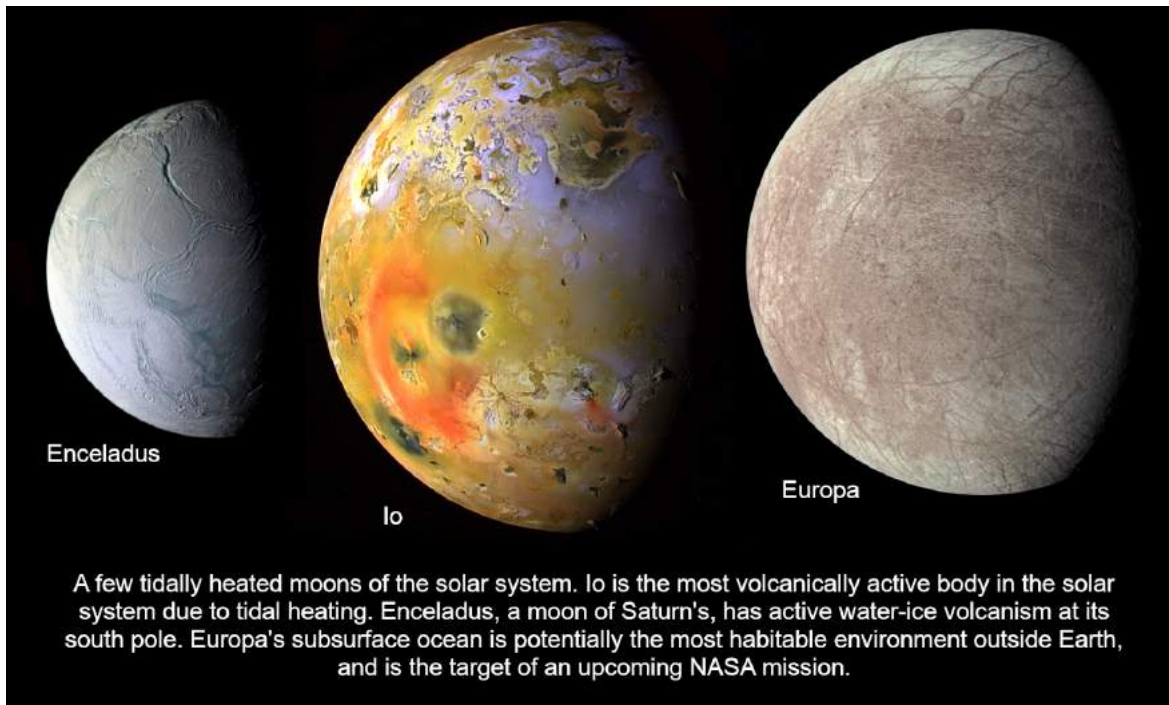


Fully-funded PhD position in planetary science to start Autumn 2023:
Mathematical modelling of tidal mechanics in planetary bodies

A fully-funded PhD position to study the dynamics of tidally heated planetary bodies is available in the Department of Earth Sciences (affiliation with Department of Mathematics) at the University of Oxford. We seek a candidate to develop mathematical theory for the tidal mechanics of these bodies, some of which have global liquid-water oceans beneath their frozen surfaces, and even global volcanism driven by tides. There are a range of potential projects, including two-phase flow in partially molten rock/ice interiors, subsurface ocean circulation of icy moons, and tidal dynamics of highly-irradiated super-Earth planets. Candidates are sought who have substantial training in continuum mechanics, with capacity and enthusiasm for PDE-based analytical and numerical modelling. Anyone interested should contact us to discuss further.



Eligibility: UK national, settled status, pre-settled status, or indefinite leave to remain.

Contact: [Richard Katz \(richard.katz@earth.ox.ac.uk\)](mailto:richard.katz@earth.ox.ac.uk), [Ian Hewitt \(hewitt@maths.ox.ac.uk\)](mailto:hewitt@maths.ox.ac.uk), [Hamish Hay \(hamish.hay@earth.ox.ac.uk\)](mailto:hamish.hay@earth.ox.ac.uk)

More about applications: <https://www.earth.ox.ac.uk/teaching/graduates/graduate-admissions/>

Application deadline: 18 June 2023

Example project: <https://tinyurl.com/oxford-io-project>

Further reading: [1] de Kleer, et al. Tidal Heating: Lessons from Io and the Jovian System, *Final Report for the Keck Institute for Space Studies*, 2019. [2] Spencer, D. C., et al. (2020). Compositional layering in Io driven by magmatic segregation and volcanism. *JGR: Planets*, e2020JE006604. [3] Tyler, R.H. 'Strong Ocean Tidal Flow and Heating on Moons of the Outer Planets'. *Nature* 456, no. 7223 (2008): 770–72. [4] Běhounková, M., et al., (2021). Tidally induced magmatic pulses on the oceanic floor of Jupiter's moon Europa. *GRL*, 48, e2020GL090077.