

# Armageddon

Supervisor: Murray Pollock (Warwick)\*

*\*Interested students should schedule a meeting to discuss this project prior to selection\**  
*\*Find updated project listing / availability at <https://warwick.ac.uk/mpollock/projects> \**

## Overview

“The number of asteroids slamming into Earth has nearly tripled since dinosaurs first roamed” was the catchy summary appearing in The Guardian ([Sample, 2019]) of the recent work of [Mazrouei et al., 2019].

Determining the terrestrial impact rate of asteroids is an extremely challenging problem — not only have impact craters to be found (and dated), but erosion (for instance, ice sheets and shifting continental masses) is popularly believed within the Earth Sciences to eliminate older craters creating a bias in the time dispersal of the craters we can observe. [Mazrouei et al., 2019] instead collected data on lunar craters (it is assumed that asteroids hit the Earth and Moon in similar proportion) and strikingly came to the conclusion that the lunar (and hence terrestrial) impact rate increased by a factor of 2.6 about 290 million years ago. Furthermore, by contrasting the lunar impact rate with known terrestrial craters inference has been made on geological forces causing terrestrial erosion, which indicates that 650 million years ago there have been a massive global-scale erosion event.

This will be a challenging project that will focus on how to infer time inhomogeneous event rates from observations (which may be partially observed, or observed with error), and will consider under what modelling assumptions such claims can be made. This project is suitable for only one student.

## References

- [Mazrouei et al., 2019] Mazrouei, S., Ghent, R. R., Bottke, W. F., Parker, A. H., and Gernon, T. M. (2019). Earth and moon impact flux increased at the end of the paleozoic. *Science*, 363(6424):253–257.
- [Sample, 2019] Sample, I. (2019). Asteroid strikes ‘increase threefold over last 300m years’. *The Guardian*.

---

\*Email: [m.pollock@warwick.ac.uk](mailto:m.pollock@warwick.ac.uk)