



## Subduction Zone Initiation Database 1.0

Kiran Chotalia (1), George Cooper (2), Fabio Crameri (3), Mathew Domeier (3), Caroline Eakin (4), Antoniette Greta Grima (1), Derya Gürer (5), Ágnés Király (3), Valentina Magni (3), Elvira Mulyukova (6), Kalijn Peters (7), Boris Robert (3), Grace Shephard (3), and Marcel Thielmann (8)

(1) Department of Earth Sciences, University College London, London, United Kingdom (kiran.chotalia.11@ucl.ac.uk), (2) Department of Earth Sciences, Durham University, Durham, United Kingdom, (3) Centre for Earth Evolution and Dynamics, University of Oslo, Oslo, Norway, (4) Research School of Earth Sciences, Australian National University, Canberra, Australia, (5) School of Earth and Environmental Sciences, University of Queensland, Brisbane, Australia, (6) Department of Geology and Geophysics, Yale University, New Haven, USA, (7) Department of Earth Sciences, Utrecht University, Utrecht, Netherlands, (8) Bavarian Geoinstitute, University of Bayreuth, Bayreuth, Germany

It remains unclear why – in contrast to all other known silicate planets – the Earth’s geodynamic evolution is still characterized by the motion of discrete plates at its surface. While the onset of deep subduction is synonymous with the beginning of ocean-plate tectonics (at some point >800 Ma), the initiation of new subduction zones is likely the key to maintaining ocean-plate tectonics on the Earth more recently.

Despite its importance in maintaining plate tectonics, the process to form new subduction zones on a planet with ongoing plate tectonics remains enigmatic. This is possibly due to the incomplete or missing and geographically discontinuous geologic evidence, as well as the long timescales and the numerous physical processes involved in forming new plate boundaries, thus requiring strongly inter-disciplinary studies to understand this phenomenon.

In a dedicated and collaborative effort, we gathered experts in different fields across the Earth Sciences to provide and collect presently available data on recent subduction zone initiation (SZI) events and build a cross-disciplinary Subduction Zone Initiation Database. This novel database covers recent SZI events currently with a focus on the Circum-Pacific realm, and will be made openly available. The SZI Database is a product of the YoungCEED initiative, which aims to bridge the various subfields of the Earth Sciences and foster new ideas by supporting young scientists. The evidence collected within the SZI Database provides new insight to the long-standing questions about how, where and when new subduction zones have initiated on the Earth in the past 100 Myr.