

# Antoniette Greta Grima

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## Areas of Specialisation

Geodynamics – Subduction and Deep Slab Dynamics – Numerical Modelling

## Education

- 2015 – 2020 **Ph.D.** Computational Geophysics, University College London  
Research Title: ‘**How the Relationship Between Subduction and Mantle Dynamics Shapes Slab Evolution at Upper-Lower Mantle Depths**’  
Supervisor: Carolina Lithgow-Bertelloni
- 2011 – 2012 **M.Sc. Distinction**, Geoscience, University College London
- 2007 – 2009 **B.A. First Class, Honours**, Geography, University of Malta

## Professional Positions

- 06/2020 – present **Postdoctoral Fellow**, Department of Geological Sciences and Institute for Geophysics, Jackson School of Geosciences, The University of Texas at Austin
- 01/2019 – 06/2019 **Visiting Research Scholar**, University of California, Los Angeles

## Awards

- 2018 **EGU Outstanding Student Poster and Pico Award (OSPP)**  
Awarded the outstanding student poster award for the poster – ‘Orphan Slabs: Mid-Mantle Slab Break-Off’

## Publications

**Grima, A.G.**, Lithgow-Bertelloni, C.R., Crameri, F., (2020), ‘Orphaning Regimes: The missing link between flattened and penetrating slab morphologies’, *Front. in Earth Sci.*  
(doi:<https://doi.org/10.3389/feart.2020.00374>)\* **Invited Manuscript**

Crameri, F., Magni, V., Domeier, M., Shephard, G.E., Chotalia, K., Cooper, G., Eakin, C.M., **Grima, A.G.**, Gürer, D., Király, A., Mulyukova, E., Peters, K., Robert, B., Thielmann, M. ‘A transdisciplinary and community-driven database to unravel subduction zone initiation’ (2020), *Nat. Comm.* (doi: [10.1038/s41467-020-17522-9](https://doi.org/10.1038/s41467-020-17522-9))

Citron, R., Lourenço, D.J.L., Wilson, A., **Grima, A.G.**, Wipperfurth, S.A., Cottar, S., Montesi, L., Rudolph, M.L., (2020), ‘Effects of heat-producing elements on the stability of deep mantle thermochemical piles’, *Geochem., Geophys., Geosys.*(doi: <https://doi.org/10.1029/2019GC008895>)

**Grima, A.G.**, Lithgow-Bertelloni, C.R., Crameri, F., (in prep.), ‘Orphan Slabs Are Markers of Long-Lived Subduction Regimes’

**Grima, A.G.**, Lithgow-Bertelloni, C.R., Cramer, F., (in prep.), ‘Deep Slab Dynamics and The Overriding Continental Plate’

Chen, M., Xi, Z., **Grima, A.G.**, (in prep.), ‘Existence of a low-viscosity layer beneath the 660-km discontinuity based on the orphan slabs imaged beneath East Asia’

## Others

**Grima, A.G.**, (2019), ‘How to make a subduction zone on Earth’, EGU-Geodynamics Blog ([Link here](#))

## Presentations

### Oral

#### **\*Invited**

**Grima, A.G.**, Lithgow-Bertelloni, C.R., Cramer, F. (2020), ‘Orphaning Regimes: The Missing Link between Flattened and Penetrating Slab Morphologies’, Geophysics and Tectonics International Virtual Seminar

**Grima, A.G.**, Cramer, F., Lithgow-Bertelloni, C.R. (2019), ‘Slab Orphaning: The Role of Phase Transitions in Shaping Mid-Mantle Slab Morphologies’, AGU Fall Meeting

**Grima, A.G.**, Lithgow-Bertelloni, C.R., Cramer, F. (2019), ‘Deep Slab Dynamics’, University of California, Los Angeles

**Grima, A.G.**, Cramer, F., Lithgow-Bertelloni, C.R. (2018), ‘Orphan Slabs: A Mechanism for Deep Slab Break-Off’, CEED, University of Oslo

**Grima, A.G.**, Lithgow-Bertelloni, C.R., Cramer, F. (2016), ‘The Relationship between Subduction Dynamics, Mantle Response and the Resulting Surface Deformation’, CEED, University of Oslo

### Oral

**Grima, A.G.**, Cramer, F., Lithgow-Bertelloni, C.R. (2019), ‘Deep Slab Dynamics and The Overriding Continental Plate’, AGU Fall Meeting

**Grima, A.G.**, Lithgow-Bertelloni, C.R., Cramer, F. (2019), ‘Deep subduction modes and mid-mantle slab mobility’, EGU General Assembly

**Grima, A.G.**, Citron, R., Lourenço, D.J.L., Wilson, A., Wipperfurth, S.A., Cottaar, S., Montesi, L., Rudolph, M.L. (2018), ‘SHEEP – Stability of HPE Enriched Provinces’, CIDER Pre-AGU Workshop

**Grima, A.G.**, Citron, R., Lourenço, D.J.L., Wilson, A., Wipperfurth, S.A., Yan, J., Lin, X., Escobar, M.T., Cottaar, S., Montesi, L., Rudolph, M.L., Parai, R., Mukhopadhyay, S. (2018), ‘SHEEP – Stability of HPE Enriched in Earth Provinces’, CIDER Workshop

**Grima, A.G.**, Cramer, F., Lithgow-Bertelloni, C.R. (2018), ‘Orphan Slabs: Slab Break-Off at Mid-Mantle depths’, UCL Post Graduate Research Seminar

### Posters

Chen, M., Xi, Z., **Grima, A.G.**, (in prep.), ‘Existence of a low-viscosity layer beneath the 660-km discontinuity based on the orphan slabs imaged beneath East Asia’ (2020), Mini-Workshop on the Feedbacks Between Mantle Composition, Structure and Evolution

Chotalia, K., Cooper, G., Cramer, F., Domeier, M., Eakin, C., **Grima, A.G.**, Güreş, A., Király, Á., Magni, V., Mulyukova, E., Peters, K., Robert, B., Shephard, G., and Thielmann, M. (2019) Subduction Zone Initiation Database 1.0, EGU General Assembly

**Grima, A.G.**, Lithgow-Bertelloni, C.R., Cramer, F. (2018) ‘Deep Slab Flattening’, AGU Fall Meeting

**Grima, A.G.**, Escobar, M.T, Citron, R., Lin, X., Lourenço, D.J.L., Wilson, A., Wipperfurth, S.A., Yan, J., Cottaar, S., Montesi, L., Mukhopadhyay, S., Parai, R., Rudolph, M.L, (2018), 'Effects of heat-producing elements on the long-term evolution of thermochemical piles at the base of the mantle', AGU Fall Meeting

**Grima, A.G.**, Cramer, F., Lithgow-Bertelloni, C.R. (2018), 'Mid-Mantle Orphan Slabs', EGU General Assembly

**Grima, A.G.**, Cramer, F., Lithgow-Bertelloni, C.R. (2017), 'The Role of Mantle Viscosity in Slab-Mantle Interaction and Surface Deformation', CEED, Conference

**Grima, A.G.**, Cramer, F., Lithgow-Bertelloni, C.R. (2017), 'The Role of Mantle Viscosity in Slab-Mantle Interaction and Surface Deformation', XV International Workshop on Numerical Modelling of Mantle and Lithosphere Dynamics

**Grima, A.G.**, Lithgow-Bertelloni, C.R., Cramer, F. (2016), 'Effect of Slab-Mantle Interaction on Trench Retreat and Migration', AGU Fall Meeting

**Grima, A.G.**, Lithgow-Bertelloni, C.R. (2016), 'The Role of Dynamic Flow in the Tethyan Closure', Workshop on the Origin of Plate Tectonics

**Grima, A.G.**, Lithgow-Bertelloni, C.R. (2015), 'The Role of Dynamic Flow in Marginal Basin Formation', XIV International Workshop on Numerical Modelling of Mantle and Lithosphere Dynamics

## Funding

- 2016      **AGU Student Travel Grant**  
Applied for and was awarded \$1000 to attend and present at AGU's 2016 Annual Fall Meeting
- 2015      **Commonwealth Commission Scholarship Award for Developed Countries**  
This is a highly prestigious and competitive funding scheme, with only 9 scholarships offered globally for the year 2015. This supported my PhD research at UCL
- 2009      **Erasmus Exchange Programme**  
Applied for and was awarded EU funded scholarship to participate in the Erasmus Exchange Program for undergraduate students

## Supervising

- 06/20 –      Supervisor, Natali Arzola, JSG, Geo-Vision Summer School Program  
09/20
- 06/20 –      Co-supervisor, Edward Clennett, UT- Geosci. & UTIG  
present
- 09/20 –      Co-supervisor, Erin Heilman, UT- Geosci. & UTIG  
present

## Teaching

- 2016 – 2018      **TA: Geodynamics and Global Tectonics, UCL**  
Final year undergraduate course covering plate tectonics, geodynamics and an introduction to numerical modelling. Duties included leading two-hour practical sessions, providing support, marking coursework, organising drop-in sessions and providing feedback to the students and course organiser.

- 2017 – 2018 **TA: Introduction to MATLAB for Earth Sciences**, UCL  
 First year undergraduate course, intended to equip students with programming concepts and a familiarity with MATLAB scripting. Duties included preparing course material, assisting with practical sessions, mentoring and monitoring student process and working in tandem with the other tutors and course organiser.
- 2016 – 2017 **TA: Global Geophysics**, UCL  
 Tutoring, organising support and drop-in sessions for 40+ second year undergraduate students, supplemented with extra math sessions. Duties also included weekly marking of coursework, together with providing suggestions and feedback on the practical session material.
- 2014 **Lecturer and course coordinator: Geology of the Mediterranean**, University of Malta  
 April – June Duties included preparation of material and lecturing for an evening course on the geology and tectonics of the Mediterranean Basin. The course was also supplemented by a day fieldtrip which I organised and led.
- 2010 – 2011 **Teacher: Geography**, St. Martin's College, Malta  
 Taught years 7-9/grades 5-8 (10-13-year-olds). This included the preparation of teaching material and a complementary subject booklet for each year. Duties also included organising field work and extra-curricular activities for school wide events.

## Other Research and Work Experience

- 2015 **GIS Officer and Geoscientist** at the Continental Shelf Department, Malta
- 2014 **Research Assistant** for the CUMECS-2 expedition on board the Research Vessel, OGS Explora

## Professional Service and Outreach

- 2020 **Session Convener**, Interdisciplinary Perspective on Mantle Melting and Volcanism
- 2020 **Journal Reviewer**, Geochemistry, Geophysics and Geosystems
- 2020 **Mentor**, Geo-Vision research traineeship at the Jackson School of Geosciences
- 2020 **Social Media Manager**, EGU GD division
- 2016 – 2017 **UCL Earth Science Outreach Program**  
 Participated in outreach campaign for new, prospective students.
- 2013 – 2014 **National Natural History Museum**, Imdina, Malta  
 Volunteer geologist, responsible for the identification and classification of the Museum's rock samples, also involved in outreach activities, organisation of exhibitions and in the modernisation of museum exhibits and displays

## References

Available on request