*Institute of Planetary Research*
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# Dr. Iris van Zelst

## Professional appointments

2021–now **Postdoctoral research fellow**, *German Aerospace Center (DLR)*, Germany.
- Modelling steam atmospheres of exoplanets and the early Earth
- Developing a coupled model for the interior-atmosphere evolution of Venus
- Team leader of the international ISSI team 'Seismicity on Venus: Prediction & Detection'

2020–2021 **Postdoctoral research associate**, *University of Leeds*, United Kingdom.
- Numerical modelling of the thermal structure of subduction zones
- Leading the writing of a synoptic educational review paper on geodynamic modelling

2015–2019 **Doctoral researcher**, *ETH Zürich*, Switzerland.
- Developing a numerical modelling framework to span scales from geodynamics to dynamic rupture
- Thesis: Tsunamigenic earthquakes: from tectonics to dynamic rupture | Awarded: July 28, 2020

2018–2019 **Visiting researcher**, *Utrecht University*, The Netherlands.

2016–2019 **Visiting researcher**, *LMU Munich*, Germany.
- Several two-week trips to collaborate with LMU's dynamic rupture modelling group

## Education

2015–2019 **Doctor of Philosophy**, *ETH Zürich*, Switzerland.

2014–2015 **MSc in Earth structure and dynamics**, *Utrecht University*, The Netherlands, *Cum laude*.
- Completed in 1.5 years instead of the nominal 2 years

2014 **Visiting student**, *Geological Survey of Norway*, Norway.

2011–2014 **BSc in Earth sciences**, *Utrecht University*, The Netherlands, *Cum laude*.
- Completed in 2.5 years instead of the nominal 3 years

2004–2010 **Gymnasium**, *Dr. Mollercollege*, Waalwijk, The Netherlands, *Cum laude*.

## Teaching

I led the development of the course 'Geodynamics 101': an annual introductory course into geodynamic modelling at MSc / PhD level at the EGU General Assembly. Based on this, I wrote the open-access educational review paper Van Zelst et al. (2022a), which is used in several MSc courses and seminar series on geodynamic modelling (e.g., at Utrecht University; UC Davis).

2023–now **Member CIG Education Working Group**, *Computational Infrastructure for Geodynamics*.

2018–now **Guest lecturer (BSc & PhD level)**.
- 2022 Geodynamic modelling (PhD level), TRR 170 Summer School on Planetary Geodynamics
- 2021 Geodynamics (BSc level), Utrecht University
- 2018 Dynamic Earth (BSc level), ETH Zürich

2017–now **Student supervision & mentoring**.

MSc students
- 2023 Edoardo Viero, *Interior-atmosphere evolution of Venus with C-O-H species*, DLR
- 2022 Rajani Shrestha, *Outreach & science communication*, University of Delaware
- 2021 Angus Brown, *Modelling the influence of sediment type on the subduction interface of the Hikurangi margin, New Zealand*, University of Leeds
- 2020 Euan Miles, *Modelling the dynamic triggering of outer rise earthquakes*, University of Leeds
- 2017 Sunniva Moris, *Simulating earthquake-generated subduction zone tsunamis*, ETH Zürich

Pre-university students
- 2022 Moritz Spühler, *Towards estimating the frequency of volcanism and quakes on Venus*, DLR

2012–2015 **Teaching assistant (BSc level)**, *Utrecht University*, The Netherlands.

- Chemistry of the Earth 2 — 2013
- Continuum mechanics — 2014
- Differential equations in the Earth sciences — 2013, 2015
- Linear algebra and vector analysis — 2012, 2013
- Physics — 2013, 2014
- Programming and modelling of Earth processes — 2013, 2014
- System Earth 1 — 2014

## Grants & funding

2022 **ISSI International Team (Team Lead)**, *International Space Science Institute*, Switzerland.
Seismicity on Venus: Prediction & Detection | Monetary equivalent: **CHF 30,000**

2021 **EGU Public engagement grant €1500,-**, *European Geosciences Union*, Germany.
To develop the educational card game 'QUARTETnary' about the geological time scale.

2021 **AGU Sharing science grant $1000,-**, *American Geophysical Union*, USA.
To make the YouTube interview series Science Sisters.

2017 **CIDER Research grant $5000,-**, *Cooperative Institute for Dynamic Earth Research*, USA.
Linking incoming plate faulting and intermediate-depth seismicity

2014 **ESA Travel grant €500,-**, *Post-Alpbach, European Space Agency*, France.

2014 **Student grant €250,-**, *GeoMod Conference*, Potsdam, Germany.

2014 **Student grant €500,-**, *SRON Netherlands Institute for Space Research*, The Netherlands.

## Awards & recognition

2022 **Honourable mention Haiku contest**, *Lunar and Planetary Science Conference*, USA.

2018 **AGU Outstanding student presentation award**, *American Geophysical Union*, USA.

2018 **EGU Best blog post**, *European Geosciences Union*, Germany.

2014 **Oscar for competitiveness of the mission**, *Summer School Alpbach*, Austria.

2014 **Oscar for quality of presentation**, *Summer School Alpbach*, Austria.

## Services to the scientific community

2020–now **Peer review**.
Journals: Communications Earth & Environment; Geophysical Research Letters; Journal of Geophysical Research: Solid Earth; Nature Communications; Tectonophysics.

2018–now **Session organisation & chairing**.

- 2023 EGU GA – Planetary volcanism, tectonics, and seismology
- 2023 EGU GA – Inter- and intraplate seismicity in subduction zones
- 2023 EGU GA – Mind your head: Scared of giving presentations?
- 2023 PLATO German Community Meeting – Planetary transits and oscillations of stars
- 2022 PFE-SPP1992 – (Exo)Planet diversity, formation and evolution
- 2022 Rocky Worlds II – Interior-atmosphere coupling
- 2022 EGU GA – Inter- and intraplate seismicity in subduction zones
- 2022 EGU GA – Outreach: how to get your science out there?
- 2022 EGU GA – Geodynamics 101: Numerical modelling
- 2021 EGU GA – Geodynamics 101: Numerical models
- 2019 EGU GA – Geodynamics 101B: Large-scale dynamic processes
- 2019 EGU GA – Geodynamics 101A: Numerical methods
- 2019 EGU GA – Understanding large subduction earthquakes and tsunamigenesis by integrating geological and geophysical observations, laboratory results, and numerical modeling
- 2018 EGU GA – Geodynamics 101: How to use and interpret numerical models of the solid Earth
- 2018 EGU GA – Seismology for non-seismologists

2023 **Organiser 1st ISSI team meeting on seismicity on Venus: prediction & detection**, Bern, Switzerland.

2019 **Organiser symposium on geophysical space missions to terrestrial planets**, Zürich, Switzerland.

2018 **Organiser & member of scientific committee of the 2nd ASCETE workshop on coupling earthquakes and tsunamis**, Bayrischzell, Germany.

## Departmental duties

2016–2017 **Organiser group seminars and progress meetings**, *ETH Zürich*, Switzerland.

2014–2015 **Member support committee BaMa 3.0**, *Utrecht University*, The Netherlands.
Evaluating the 3rd implementation of the Bachelor/Master structure in the Dutch education system.

2014–2015 **Member MSc education committee**, *Utrecht University*, The Netherlands.

2013–2014 **Student member education board Earth sciences**, *Utrecht University*, The Netherlands.

## Outreach

I am an enthusiastic science communicator, particularly skilled at writing and presenting, with a few media appearances under my belt (e.g., article on Venus in NRC (NL); radio interview in De Nieuws BV (NL)). I am currently developing QUARTETnary, a card game about the geological time scale, and I am an informal consultant for the Royal Astronomical Society (RAS) on geophysics outreach and science communication. I collaborate with ESA's EnVision mission on the YouTube series Science Sisters as part of their outreach programme. I am also an advocate for diversity and inclusion in the planetary and geosciences.

2021–now **Science communicator**, *YouTube*.
I maintain a YouTube channel on life as a researcher in the Earth and planetary sciences. I post sketches and vlogs on postdoc life and host the series 'Science Sisters' where I interview a set of diverse guests to explore different career paths and address current issues in academia.

2017–2023 **Editor-in-Chief EGU Geodynamics blog**, *European Geosciences Union*.
I founded the blog in 2017 and led a team of 10+ editors, columnists, and illustrators. I was also responsible for 70+ published posts as main editor or author. Under my leadership, we averaged 3500+ monthly views and published 100+ blog posts per year.

2014–2015 **Guest lectures (Secondary school level)**, The Netherlands.
- 2015 Seismische tomografie (NL), Utrecht University, The Netherlands
- 2014 Aardwetenschappen (NL), Dr. Mollercollege, Waalwijk, The Netherlands

## Invited seminars

- 2023 University of Liverpool
- 2023 Utrecht University
- 2022 University of Siegen
- 2021 EGU Natural Hazards Webinar
- 2021 Charles University, Prague
- 2021 CEED, University of Oslo
- 2021 Geophysics & Tectonics Seminar, University of Kentucky
- 2021 COMET Webinar
- 2020 University of Cambridge
- 2020 University of Oxford
- 2019 Utrecht University
- 2018 LMU Munich

## Technical skills

languages: Python, Matlab, C++, FORTRAN95, HTML

software: Jupyter Notebooks, Gmesh, Git, LaTeX, VI-editor, Adobe Illustrator, ParaView

geodynamic modelling software:
- Finite volumes: GAIA
- Finite differences: I2ELVIS
- Finite elements: SeisSol, Fieldstone, ELEFANT, ASPECT, SULEC

## Languages

Dutch: Native

English: Bilingual proficiency

ORCID iD: 0000-0003-4698-9910

## Research output & publication summary

- 12 peer-reviewed articles
- 3 preprints/submitted articles
- 5 articles in preparation
- 1 contribution to a book
- 2 contributions to code manuals
- 3 invited conference presentations
- 7 media appearances
- 77 conference abstracts (39 first-author of which 15 talks)

## Citation metrics

according to Google Scholar; retrieved: June, 2023

| | |
|---|---|
| Number of citations: | 285 |
| h-index: | 7 |
| i10-index: | 7 |

## Peer-reviewed articles

12. **Van Zelst, I.**, Craig, T., Thieulot, C. (2023). The effect of temperature-dependent material properties on simple thermal models of subduction zones. In press at *Solid Earth*. Preprint on EarthArXiv: https://doi.org/10.31223/X5B31X
11. Regorda, A., Thieulot, C., **Van Zelst, I.**, Erdös, Z., Maia, J., Buiter, S. (2023). Rifting Venus: Insights from numerical modeling. *Journal of Geophysical Research: Planets*, 128(3), e2022JE007588. https://doi.org/10.1029/2022JE007588
10. **Van Zelst, I.** (2022). Comment on "Estimates on the frequency of volcanic eruptions on Venus" by Byrne & Krishnamoorthy (2022). *Journal of Geophysical Research: Planets*, 127(12), e2022JE007448. https://doi.org/10.1029/2022JE007448
9. **Van Zelst, I.**, Rannabauer, L. , Gabriel, A.-A., and Van Dinther, Y. (2022b). Earthquake rupture on multiple splay faults and its effect on tsunamis. *Journal of Geophysical Research: Solid Earth*, 127(8), e2022JB024300. https://doi.org/10.1029/2022JB024300
8. **Van Zelst, I.**, Crameri, F., Pusok, A. E., Glerum, A., Dannberg, J., Thieulot, C. (2022a). 101 geodynamic modelling: how to design, interpret, and communicate numerical studies of the solid Earth. *Solid Earth*, 13, 583–637. https://doi.org/10.5194/se-13-583-2022
7. Brizzi, S., Becker, T. W., Faccenna, C., Behr, W., **Van Zelst, I.**, Dal Zilio, L., and van Dinther, Y. (2021). The role of sediment accretion and buoyancy on subduction dynamics and geometry. *Geophysical Research Letters*, 48(20), e2021GL096266. https://doi.org/10.1029/2021GL096266
6. Wirp, S. A., Gabriel, A.-A., Madden, E. H., Schmeller, M., **Van Zelst, I.**, Krenz, L., Van Dinther, Y., and Rannabauer, L. (2021). 3D linked subduction, dynamic rupture, tsunami, and inundation modeling: dynamic effects of supershear and tsunami earthquakes, hypocenter location, and shallow fault slip. *Frontiers in Earth Science*, 9, 177. https://doi.org/10.3389/feart.2021.626844
5. Madden, E. H., Bader, M., Behrens, J., Van Dinther, Y., Gabriel, A.-A., Rannabauer, L., Ulrich, T., Uphoff, C., Vater, S., **Van Zelst, I.** (2020). Linked 3-D modelling of megathrust earthquake-tsunami events: from subduction to tsunami run up. *Geophysical Journal International*, 224, 487–516. https://doi.org/10.1093/gji/ggaa484
4. Brizzi, S., **Van Zelst, I.**, Funiciello, F., Corbi, F., and Van Dinther, Y. (2020). How sediment thickness influences subduction dynamics and seismicity. *Journal of Geophysical Research: Solid Earth*, 125(8), e2019JB018964. https://doi.org/10.1029/2019JB018964

3. **Van Zelst, I.**, Wollherr, S., Madden, E. H. , Gabriel, A.-A., and Van Dinther, Y. (2019). Modeling megathrust earthquakes across scales: one-way coupling from geodynamics and seismic cycles to dynamic rupture. *Journal of Geophysical Research: Solid Earth*, 124(11), 11414-11446. https://doi.org/10.1029/2019JB017539
2. Ulrich, T., Vater, S., Madden, E. H., Behrens, J., Van Dinther, Y., **Van Zelst, I.**, Fielding, E. J., Liang, C., and Gabriel, A.-A. (2019). Coupled, physics-based modeling reveals earthquake displacements are critical to the 2018 Palu, Sulawesi tsunami. *Pure and Applied Geophysics*, 176(10), 4069-4109. https://doi.org/10.1007/s00024-019-02290-5
1. Boneh, Y., Schottenfels, E., Kwong, K., **Van Zelst, I.**, Tong, X., Eimer, M., Miller, M. S., Moresi, L., Warren, J. M., Wiens, D. A., Billen, M., Naliboff, J., Zhan, Z. (2019). Intermediate-depth earthquakes controlled by incoming plate hydration along bending-related faults. *Geophysical Research Letters*, 46(7), 3688-3697. https://doi.org/10.1029/2018GL081585

## Preprints / submitted articles

3. **Van Zelst, I.**, Maia, J., Plesa, A.-C., Ghail, R. C., Spühler, M.. Estimates on the possible annual seismicity on Venus. Preprint on EarthArxiv: https://doi.org/10.31223/X5DQ0C.
2. **Van Zelst, I.**, Brizzi, S., Van Rijsingen, E., Funiciello, F., and Van Dinther, Y.. Investigating global correlations between tsunami, earthquake, and subduction zone characteristics. In revision at *Seismica*. Preprint on EarthArXiv: https://doi.org/10.31223/osf.io/dm2t4.
1. Koopmans, R.-J., Białek, A., Donohoe, A., Fernández Jiménez, M., Frasl, B., Gurciullo, A., Kleinschneider, A., Losiak, A., Mannel, T., Muñoz Elorza, I., Nilsson, D., Oliveira, M., Sørensen-Clark, P. M., Timoney, R., and **Van Zelst, I.** (2018). Hesperos: A geophysical mission to Venus. Preprint on ArXiv: https://arxiv.org/abs/1803.06652.

## Articles in preparation

5. Taysum, B., Grenfell, J. L., **Van Zelst, I.**, Rauer, H.. Maintenance of exoplanet biosignatures in small steam atmospheres.
4. Rauer, H. and **the PLATO Mission Consortium**. The PLATO Mission.
3. **Van Zelst, I.**, Garcia, R. F., Gülcher, A. J. P., Horleston, A., Kawamura, T., Klaasen, S., Lognonné, P., Maia, J., Orgel, C., Panning, M., Plesa, A.-C., Sabbeth, L., Smolinski, K., Stähler, S.. Quakes on Venus: Why aren't we looking for them?
2. McArthur, A. D., Brizzi, S., **Van Zelst, I.**, Brown, A., McCaffrey, W. D.. Trench sedimentation control on convergent margin deformation.
1. **Van Zelst, I.** & Pérez Díaz, L.. Distilling the history of the Earth into discrete events for the educational card game QUARTETnary.

## Contributions to books

1. **Van Zelst, I.** & Brachmann, C. (2023). Interior degassing. In: Gargaud M. et al. (eds) *Encyclopedia of Astrobiology*. Springer, Berlin, Heidelberg.

## Contributions to code manuals

2. *Fieldstone*
   Thieulot, C. (2020). http://cedricthieulot.net/manual.pdf
1. ASPECT*: Advanced Solver for Problems in Earth's ConvecTion*
   Bangerth, W., and Heister, T., et al., Computational Infrastructure in Geodynamics (2014). https://aspect-documentation.readthedocs.io

## Invited conference presentations

3. *Earthquake rupture on multiple splay faults and its effect on tsunamis*
**I. van Zelst**, L. Rannabauer, A.-A. Gabriel, and Y. van Dinther. **SIAM 2021**, Milan, Italy (online). *Talk*.

2. *Modelling splay fault rupture and tsunamis with self-consistent initial conditions from a geodynamic seismic cycle model of subduction*
**I. van Zelst**, L. Rannabauer, A.-A. Gabriel, and Y. van Dinther. **AGU 2020**, San Francisco, California, USA (online). *Panel member*.

1. *Tsunamigenic earthquakes preferentially occur in sediment-starved subduction zones with a rough incoming seafloor*
**I. van Zelst**, S. Brizzi, E. van Rijsingen, F. Funiciello, and Y. van Dinther. **AGU 2019**, San Francisco, California, USA. *eLightning Presentation*.

## Theses

2020 *Tsunamigenic earthquakes: from tectonics to dynamic rupture*
PhD thesis, ETH Zürich. Supervisors: A. Fichtner & Y. van Dinther.

2015 *Mantle dynamics on Venus: insights from numerical modelling*
MSc thesis, Utrecht University. Supervisors: A. P. van den Berg, R. C. Ghail & C. Thieulot.

2014 *Numerical geodynamic modelling: compression and extension using ASPECT, SULEC, and ELEFANT*
Guided MSc research, Utrecht University. Supervisors: C. Thieulot & S. J. H. Buiter.

2013 *On the influence of weak zones on lithospheric- and crustal-scale numerical models*
BSc thesis, Utrecht University. Supervisors: C. Thieulot & W. Spakman.

## Media appearances

2023 Stairway to Space (Podcast interview)
*Postdoc life*.

2023 De Nieuws BV (Radio interview, NL)
*Waarom we juist NU naar Venus moeten*.

2023 NRC (Newspaper article written by me, NL)
*We moeten juist nu naar Venus*.

2023 Algemeen Dagblad (Newspaper commentary, NL)
*'Een grote doorbraak', noemen wetenschappers de ontdekte actieve vulkaan op Venus*.

2016 InsideHPC Report (YouTube interview)
Interview at the PASC 2016 conference on my poster on 'Coupling geodynamic seismic cycle and dynamic rupture models'.

2009 Mooi! Weer De Leeuw (TV appearance, NL)
Entertainment show with a segment on a competition I participated in to attend a space science summer school in the USA.

2004 Nederlands Kampioenschap Sparen (TV appearance, NL)
Final of the competition for the best hobby collections where I presented my collection of minerals and fossils.

## Conference abstracts

### 2023

77. *Towards coupled interior-atmosphere models of Earth and Venus*
**I. van Zelst**, B. Taysum, J. L. Grenfell, H. Rauer. **Exoclimes VI**, Exeter, UK.

76. *Comparing Earth, Mars, Venus, and Titan in terms of seismic solid/atmosphere coupling and subsurface/atmosphere elastic compliance*
P. Lognonné, Z. Xu, E. Astafyeva, M. Froment, R. Garcia, T. Kawamura, A. Komjathy, S. Krishnamoorthy, R. Lorenz, D. Mimoun, N. Murdoch, K. Onodera, M. Panning, L. Rolland, and **I. van Zelst**. **IUGG 2023**, Berlin, Germany.

75. *Estimates on the expected annual seismicity of Venus*
**I. van Zelst**, and M. Spühler. **International EnVision Venus Science Workshop**, Berlin, Germany.

74. *On the distribution of seismicity on Venus*
R. C. Ghail, **I. van Zelst**, J. Maia, and A.-C. Plesa. **International EnVision Venus Science Workshop**, Berlin, Germany.

73. *Synergy between VERITAS and EnVision for constraints on effusive volcanism*
N. Mueller, **I. van Zelst**, A.-C. Plesa, M. Knapmeyer, D. Breuer, and J. Helbert. **International EnVision Venus Science Workshop**, Berlin, Germany.

72. *Constraining the lifetime of $SO_2$ in the atmosphere of Venus from a 1D climate-chemistry atmospheric model*
B. Taysum, L. Grenfell, **I. van Zelst**, N. Müller, D. Breuer, A.-C. Plesa, and H. Rauer. **International EnVision Venus Science Workshop**, Berlin, Germany.

71. *Thermal evolution and interior dynamics of Venus: modeling and observations*
A.-C. Plesa, J. Maia, M. Walterová, **I. van Zelst**, and D. Breuer. **International EnVision Venus Science Workshop**, Berlin, Germany.

70. *Estimating the seismicity of Venus by scaling Earth's seismicity*
**I. van Zelst**, J. Maia, M. Spühler, A.-C. Plesa, R. F. Garcia, R. Ghail, A. J. P. Gülcher, A. Horleston, T. Kawamura, S. Klaasen, P. Lognonné, C. Orgel, M. Panning, L. Sabbeth, and K. Smolinksi. **EGU 2023**, Vienna, Austria. *Talk*.

69. *QUARTETnary - The card game about the geological time scale*
**I. van Zelst** and L. Pérez-Díaz. **EGU 2023**, Vienna, Austria. *PICO*.

68. *Evolution of Venusian rifts: insights from numerical modeling* A. Regorda, C. Thieulot, **I. van Zelst**, Z. Erdös, J. Maia, and S. Buiter. **EGU 2023**, Vienna, Austria. *Poster*.

67. *Thermal evolution and interior structure of Venus*
A.-C. Plesa, M. Walterová, J. Maia, **I. van Zelst**, and D. Breuer. **EGU 2023**, Vienna, Austria. *Talk*.

66. *The role of sediments on subduction dynamics and geometry: insights from numerical modeling*
S. Brizzi, T. Becker, C. Faccenna, W. Behr, **I. van Zelst**, L. Dal Zilio, and Y. van Dinther. **EGU 2023**, Vienna, Austria. *Talk*.

65. *First results of our ISSI team: Estimating the current seismicity of Venus*
**I. van Zelst**, A. Fichtner, R. F. Garcia, A. J. P. Gülcher, A. Horleston, T. Kawamura, S. Klaasen, P. Lognonné, J. Maia, C. Orgel, M. Panning, A.-C. Plesa, L. Sabbeth, K. Smolinski, M. Spühler. **#Go4Venus: Venus surface and atmosphere**, Boulder, Colarado, USA. *Talk*.

64. *Constraining the interior structure of Venus through coupled interior-atmosphere models of $CO_2$ and $H_2O$*
**I. van Zelst**, A.-C. Plesa. **#Go4Venus: Venus surface and atmosphere**, Boulder, Colarado, USA. *Talk*.

63. *The rifting process on Venus: Insights from numerical modelling*
A. Regorda, C. Thieulot, **I. van Zelst**, Z. Erdös, S. Buiter. **#Go4Venus: Venus surface and atmosphere**, Boulder, Colarado, USA. *Talk*.

2022

62. *The past and the present of the rocks deep inside the land-water-edge to the right of the US*
R. Shrestha, C. Lynner, **I. van Zelst**. **AGU 2022**, Chicago, Illinois, USA. *Talk*.

61. *Trench sedimentation as a control on convergent margin deformation and seismicity; examples from the Hikurangi subduction margin, New Zealand*
A. McArthur, S. Brizzi, **I. van Zelst**, A. Brown, W. McCaffrey. **The 61st British Sedimentological Research Group Annual General Meeting**, Southampton, UK.

60. *Towards interior-atmosphere coupling on Venus: The C-O-H system*
**I. van Zelst**, A.-C. Plesa, C. Brachmann, F. Sohl, D. Breuer. **Rocky Worlds II**, Oxford, United Kingdom. *Poster*.

59. *QUARTETnary - The card game about the geological time scale*
**I. van Zelst** & L. Perez-Diaz. **EGU 2022**, Vienna, Austria. *Talk*.

58. *Towards interior-atmosphere coupling on Venus: $CO_2$ and $H_2O$*
**I. van Zelst**, A.-C. Plesa, C. Brachmann, D. Breuer. **EGU 2022**, Vienna, Austria. *Talk*.

57. *Exploring feedbacks between the interior and atmosphere of Venus: $CO_2$ and $H_2O$*
**I. van Zelst**, A.-C. Plesa, C. Brachmann, D. Breuer. **LPSC 2022**, The Woodlands, Texas, USA (online). *Poster*.

2021

56. *The effect of temperature-dependent thermal parameters on thermal models of subduction with implications for seismicity*
**I. van Zelst**, T. J. Craig, C. Thieulot. **COMET Annual Meeting**, Leeds, United Kingdom (online). *Poster*.

55. *The effect of temperature-dependent thermal parameters in thermal models of subduction zones*
**I. van Zelst**, T. J. Craig, C. Thieulot. **EGU 2021**, Vienna, Austria (online).

54. *3D linked megathrust, dynamic rupture & tsunami propagation and inundation modelling: dynamic effects of supershear and tsunami earthquakes*
S. A. Wirp, A.-A. Gabriel, M. Schmeller, E. H. Madden, **I. van Zelst**, L. Krenz, Y. van Dinther and L. Rannabauer. **EGU 2021**, Vienna, Austria (online).

53. *How temperature-dependent thermal parameters affect thermal models of subduction zones*
**I. van Zelst**, T. J. Craig, C. Thieulot. **NAC 2021**, The Netherlands (online). *Talk*.

2020

52. *Thermal models of subduction zones revisited*
**I. van Zelst**, T. J. Craig, C. Thieulot. **AGU 2020**, San Francisco, California, USA (online). *Talk*.

51. *The influence of sediment thickness on subducting plate velocity*
S. Brizzi, T. W. Becker, C. Faccenna, **I. van Zelst**, and Y. van Dinther **AGU 2020**, San Francisco, California, USA (online). *Talk*.

50. *Modelling splay fault rupture and tsunamis constrained by geodynamics*
**I. van Zelst**, L. Rannabauer, A.-A. Gabriel, and Y. van Dinther. **GeoUtrecht 2020**, Utrecht, The Netherlands (online). *Talk*.

49. *Subduction earthquakes from geodynamics to dynamic rupture*
**I. van Zelst**, S. Wollherr, L. Rannabauer, E. H. Madden, A.-A. Gabriel, Y. van Dinther. **COMET Annual Meeting**, Liverpool, United Kingdom (online). *Talk*.

48. *The effect of multiple splay fault rupture on tsunamis*
**I. van Zelst**, L. Rannabauer, A.-A. Gabriel, and Y. van Dinther. **EGU 2020**, Vienna, Austria (online). *Virtual display*.

47. *Linking geodynamic subduction models to self-consistent 3D dynamic earthquake rupture and tsunami simulations*
S. A. Wirp, A.-A. Gabriel, E. H. Madden, **I. van Zelst**, L. Krenz, and Y. van Dinther. **EGU 2020**, Vienna, Austria (online). *Virtual display*.

46. *#SciComm via the European Geoscience Union Divisions' blogs: experiences from the editorial teams*
V. Cigala, C. Burgard, H. Davies, **I. van Zelst**, T. Alberti, M. Sprenger, H. Jurikova, E. van Rijsingen, O. Trani, L. Barnard and the Divisions' Blog Teams. **EGU 2020**, Vienna, Austria (online). *Virtual display*.

45. *Modelling megathrust earthquakes from tectonics to dynamic rupture*
**I. van Zelst**, S. Wollherr, E. H. Madden, A.-A. Gabriel, Y. van Dinther. **Understanding earthquakes using the geological record**, London, United Kingdom. *Poster*.

2019

44. *Splay fault rupture dynamics and off-fault deformation constrained by geodynamic subduction modelling*
**I. van Zelst**, A.-A. Gabriel, Y. van Dinther. **AGU 2019**, San Francisco, California, USA. *Poster*.

43. *Sediment thickness and its influence on subduction dynamics and seismicity*
S. Brizzi, **I. van Zelst**, F. Corbi, F. Funiciello, Y. van Dinther. **AGU 2019**, San Francisco, California, USA. *Talk*.

42. *Plastic deformation, slip segmentation, geodynamic constraints and seafloor uplift in dynamic earthquake rupture models of the Great 2004 Sumatra-Andaman earthquake*
A.-A. Gabriel, T. Ulrich, **I. van Zelst**, E. H. Madden, Y. van Dinther. **AGU 2019**, San Francisco, California, USA. *Talk*.

41. *Coupled, physics-based modeling reveals earthquake displacements are critical in generating the 2018 Palu, Sulawesi tsunami*
E. H. Madden, T. Ulrich, S. Vater, J. Behrens, Y. van Dinther, **I. van Zelst**, E. J. Fielding, C. Liang, A.-A. Gabriel. **AGU 2019**, San Francisco, California, USA. *Poster*.

40. *Complex splay fault rupture and its effect on seafloor displacements*
**I. van Zelst**, S. Wollherr, A.-A. Gabriel, Y. van Dinther. **EGU 2019**, Vienna, Austria. *Poster*.

39. *Plastic deformation and seafloor uplift in geomechanically constrained dynamic rupture models of subduction zone earthquakes*
S. Wollherr, **I. van Zelst**, A.-A. Gabriel, E. H. Madden, Y. van Dinther. **EGU 2019**, Vienna, Austria. *Poster*.

38. *Coupled 3D Earthquake Dynamic Rupture - Tsunami Models & the ASCETE framework*
E. H. Madden, J. Behrens, M. Bader, Y. van Dinther, A.-A. Gabriel, L. Rannabauer, S. Rettenberger, T. Ulrich, C. Uphoff, S. Vater, S. Wollherr, **I. van Zelst**. **EGU 2019**, Vienna, Austria. *Poster*.

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37. *A Coupled Method Using Longterm Subduction Models to Provide Realistic Conditions for Dynamic Earthquake Models*
**I. van Zelst**, S. Wollherr, E. H. Madden, A.-A. Gabriel, Y. van Dinther. **AGU 2018**, Washington, D.C., USA. *Talk*.

36. *Coupled Seismic Cycle - Earthquake Dynamic Rupture - Tsunami Models*
A.-A. Gabriel, J. Behrens, M. Bader, Y. van Dinther, T. Gunawan, E. H. Madden, L. Rannabauer, S. Rettenberger, T. Ulrich, C. Uphoff, S. Vater, S. Wollherr, **I. van Zelst**. **AGU 2018**, Washington, D.C., USA. *Poster*.

35. *Physics-based Coupled Models of the 2018 Sulawesi Earthquake and Tsunami*
E. H. Madden, T. Ulrich, L. Rannabauer, S. Vater, A.-A. Gabriel, J. Behrens, D. Li, T. Taufiqurrahman, Y. van Dinther, M. Bader, C. Uphoff, S. Wollherr, **I. van Zelst**. **AGU 2018**, Washington, D.C., USA. *Poster*.

34. *Linking Intermediate Depth Seismicity to Plate-bending Related Faulting*
M. Miller, **I. van Zelst**, K. Kwong, X. Tong, M. Eimer, Y. Hu, Y. Boneh, E. Schottenfels, L. Moresi, J. Warren, D. Wiens. **AOGS 2018**, Honolulu, Hawaii, USA. *Poster*.

33. *A complementary approach to provide realistic long-term stress conditions for a dynamic rupture model of a megathrust earthquake*
**I. van Zelst**, Y. van Dinther, A.-A. Gabriel, S. Wollherr, E. H. Madden. **EGU 2018**, Vienna, Austria. *Talk*.

32. *The influence of subduction zone tectonics on earthquake-generated tsunamis*
**I. van Zelst**, S. Brizzi, Y. van Dinther, F. Funiciello, A. Heuret. **EGU 2018**, Vienna, Austria. *Poster*.

31. *Dynamic rupture models of subduction zone earthquakes with off-fault plasticity*
S. Wollherr, A.-A. Gabriel, **I. van Zelst**, Y. van Dinther, T. Ulrich, E. Madden. **EGU 2018**, Vienna, Austria. *Poster*.

30. *A Benchmarking Setup for Coupled Earthquake Cycle - Dynamic Rupture - Tsunami Simulations*
E. Madden, J. Behrens, M. Bader, Y. van Dinther, A.-A. Gabriel, S. Rettenberger, T. Ulrich, C. Uphoff, S. Vater, S. Wollherr, **I. van Zelst**. **EGU 2018**, Vienna, Austria. *Poster*.

29. *Linking intermediate depth seismicity to plate-bending related faulting*
**I. van Zelst**, K. Kwong, X. Tong, M. Eimer, Y. Hu, Y. Boneh, E. Schottenfels, Z. Zhan, M. Miller, L. Moresi, J. Warren, D. A. Wiens. **EGU 2018**, Vienna, Austria. *Poster*.

28. *Using a geodynamic seismic cycle model to provide realistic stresses for a dynamic rupture scenario*
**I. van Zelst**, Y. van Dinther, C. Pranger, R. Herrendörfer, L. Dal Zilio, C. Petrini, S. Preuss, A.-A. Gabriel, S. Wollherr, E. Madden. **2nd ASCETE workshop on coupling earthquakes and tsunamis**, Bayrischzell, Germany. *Talk*.

27. *Providing realistic stress conditions for a dynamic megathrust earthquake*
**I. van Zelst**, Y. van Dinther, A.-A. Gabriel, S. Wollherr, E. Madden. **2nd ASCETE workshop on coupling earthquakes and tsunamis**, Bayrischzell, Germany. *Poster*.

2017

26. *Linking incoming plate faulting and intermediate depth seismicity*
K. Kwong, **I. van Zelst**, X. Tong, M. Eimer, S. Naif, Y. Hu, Z. Zhan, Y. Boneh, E. Schottenfels, M. S. Miller, L. Moresi, J. M. Warren, D. A. Wiens. **AGU 2017**, New Orleans, Louisiana, USA. *Poster*.

25. *Dynamic rupture models of subduction zone earthquakes with off-fault plasticity*
S. Wollherr, **I. van Zelst**, A.-A. Gabriel, Y. van Dinther, E. H. Madden, T. Ulrich. **AGU 2017**, New Orleans, Louisiana, USA. *Poster*.

24. *How long-term dynamics of sediment subduction control short-term dynamics of seismicity*
S. Brizzi, **I. van Zelst**, Y. van Dinther, F. Funiciello, F. Corbi. **AGU 2017**, New Orleans, Louisiana, USA. *Talk*.

23. *Numerical modelling of tsunamigenic fault systems*
**I. van Zelst**, Y. van Dinther, A.-A. Gabriel, S. Wollherr, E. Madden. **Workshop: Frontiers in Studies of Earthquakes and Faults**, Shenzhen, China. *Poster*.

22. *The influence of tectonics and wave propagation on splay fault activation*
**I. van Zelst**, Y. van Dinther, A.-A. Gabriel, S. Wollherr, E. Madden. **XV International Workshop on Numerical Modelling of Mantle and Lithosphere Dynamics 'NetherMod' 2017**, Putten, The Netherlands. *Poster*.

21. *Tsunamigenic faults: insights from numerical modelling*
**I. van Zelst**, S. Brizzi, E. Madden, Y. van Dinther, A.-A. Gabriel, S. Wollherr, T. Ulrich, A. Heuret, F. Funiciello. **CIDER Summer School 2017**, Berkeley, California, USA. *Poster*.

20. *The role of splay faults in seafloor deformation and tsunami generation during the M 9.1-9.3 2004 Sumatra-Andaman Earthquake*
E. H. Madden, T. Ulrich, A.-A. Gabriel, **I. van Zelst**, Y. van Dinther. **Proceedings of the 14th International Conference on Fracture**, edited by E. E. Gdoutos, Rhodes, Greece. *Poster*.

19. *Coupling a geodynamic seismic cycle to a dynamic rupture model with an application to splay fault propagation*
**I. van Zelst**, Y. van Dinther, A.-A. Gabriel, S. Wollherr, and E. Madden. **EGU 2017**, Vienna, Austria. *Talk*.

18. *Identifying tectonic parameters that influence tsunamigenesis*
**I. van Zelst**, S. Brizzi, Y. van Dinther, A. Heuret, and F. Funiciello. **EGU 2017**, Vienna, Austria. *Poster*.

17. *Dynamic Rupture Models Suggest High Fluid Pressures and Low Differential Stresses for the M 9.2 2004 Sumatra-Andaman Earthquake*
E. Madden, **I. van Zelst**, T. Ulrich, Y. van Dinther, and A.-A. Gabriel. **EGU 2017**, Vienna, Austria. *Talk*.

16. *What favors the occurrence of subduction mega-earthquakes?*
S. Brizzi, F. Funiciello, F. Corbi, L. Sandri, **I. van Zelst**, A. Heuret, C. Piromallo, and Y. van Dinther. **EGU 2017**, Vienna, Austria. *Talk*.

15. *A Coupled Earthquake-Tsunami Simulation Framework Applied to the Sumatra 2004 Event*
S. Vater, M. Bader, J. Behrens, Y. van Dinther, A.-A. Gabriel, E. H. Madden, T. Ulrich, C. Uphoff, S. Wollherr, and **I. van Zelst**. **EGU 2017**, Vienna, Austria. *Talk*.

14. *A Benchmarking setup for Coupled Earthquake Cycle - Dynamic Rupture - Tsunami Simulations*
J. Behrens, M. Bader, Y. van Dinther, A.-A. Gabriel, E. H. Madden, T. Ulrich, C. Uphoff, S. Vater, S. Wollherr, and **I. van Zelst**. **EGU 2017**, Vienna, Austria. *Poster*.

2016

13. *Megathrust vs splay fault: rupture path selection in subduction zones*
**I. van Zelst**, Y. van Dinther, A.-A. Gabriel, S. Wollherr. **AGU 2016**, San Francisco, California, USA. *Talk*.

12. *Identifying tectonic parameters that affect tsunamigenesis*
S. Brizzi, **I. van Zelst**, A. Heuret, F. Funiciello, Y. van Dinther. **AGU 2016**, San Francisco, California, USA. *Poster*.

11. *Using New Constraints on Stress and Strength in Dynamic Rupture Models of the M 9.1-9.3 2004 Sumatra-Andaman Earthquake*
E. H. Madden, **I. van Zelst**, T. Ulrich, Y. van Dinther, A.-A. Gabriel. **AGU 2016**, San Francisco, California, USA. *Poster*.

10. *Rupture path selection of potentially tsunamigeneic earthquakes: Megathrust vs splay fault*
**I. van Zelst**, Y. van Dinther, A.-A. Gabriel. **Volkswagen symposium**, Hannover, Germany. *Poster*.

9. *Mechanical Constraints on Initial Conditions for Dynamic Rupture Models of the 2004 Sumatra-Andaman Earthquake*
E. H. Madden, **I. van Zelst**, T. Ulrich, Y. van Dinther, A.-A. Gabriel. **Gordon Research Conference on Rock Deformation**, Andover, New Hampshire, USA. *Poster*.

8. *Coupling geodynamic seismic cycle and dynamic rupture models*
**I. van Zelst**, Y. van Dinther, A.-A. Gabriel. **PASC 2016**, Lausanne, Switzerland. *Poster*.

7. *Seismo-thermo-mechanical modelling of tsunamigenic earthquakes*
   **I. van Zelst**, Y. van Dinther, J. Behrens, M. Bader, A.-A. Gabriel, E. H. Madden, T. Ulrich, C. Uphoff, S. Wollherr. **From the laboratory to applications for earthquakes and tsunamis: bridging the gap with numerical modelling**, 2016, Rome, Italy. *Talk*.
6. *Coupling geodynamic earthquake cycles and dynamic ruptures*
   **I. van Zelst**, Y. van Dinther, A.-A. Gabriel, and A. Heuret. **EGU 2016**, Vienna, Austria. *Poster*.
5. *Test problems for coupled earthquake-tsunami simulations*
   J. Behrens, M. Bader, Y. van Dinther, A.-A. Gabriel, E. H. Madden, K. Rahnema, T. Ulrich, C. Uphoff, S. Vater, S. Wollherr, and **I. van Zelst**. **EGU 2016**, Vienna, Austria. *Poster*.

2015

4. *Hesperos: A Post-Alpbach Mission Result*
   R.-J. Koopmans, A. Losiak, A. Białek, A. Donohoe, M. Fernández Jiménez, B. Frasl, A. Gurciullo, A. Kleinschneider, T. Mannel, I. Muñoz Elorza, D. Nilsson, M. Oliveira, Paul Sørensen-Clark, R. Timoney, and **I. van Zelst**. **EPSC 2015**, Nantes, France. *Talk*.
3. *Investigating the geophysics of Venus: Result of the post-Alpbach Summer School 2014*.
   R.-J. Koopmans, A. Losiak, A. Białek, A. Donohoe, M. Fernández Jiménez, B. Frasl, A. Gurciullo, A. Kleinschneider, T. Mannel, I. Muñoz Elorza, D. Nilsson, M. Oliveira, Paul Sørensen-Clark, R. Timoney, and **I. van Zelst**. **EGU 2015**, Vienna, Austria. *PICO*.
2. *A geophysical mission to Venus: Result of the Alpbach Summer School 2014*
   R.-J. Koopmans, A. Losiak, A. Białek, A. Donohoe, M. Fernández Jiménez, B. Frasl, A. Gurciullo, A. Kleinschneider, T. Mannel, I. Muñoz Elorza, D. Nilsson, M. Oliveira, Paul Sørensen-Clark, R. Timoney, and **I. van Zelst**. **LPSC 2015**, The Woodlands, Texas, USA. *Poster*.

2014

1. *The role of weak seeds in numerical modelling of continental extensional systems*.
   **I. van Zelst**, C. Thieulot, S. J. H. Buiter, J. Naliboff and W. Spakman. **GeoMod 2014**, Potsdam, Germany. *Poster*.