

Dr Ana Samperiz

CV

Post-Doctoral Research Associate
Florida State University
Department of Earth, Ocean, & Atmospheric Science

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Research interests

- Understanding coral growth and biogeochemical mechanisms of calcification, and their response to environmental changes.
- Development and application of paleoclimate proxies (geochemical and sclerochronological) towards a better understanding of climate sensitivity of ecosystems and past climate variability.

Relevant employment and research experience

Research Associate; Dean's Postdoctoral Fellow

March 2024 – Present PI: Dr Alyssa Atwood

Responsibilities:

- Reconstruction of ENSO events in the central Pacific over the Holocene, and investigate coral biomineralization pathways using geochemical proxies (LA-ICPMS and LA-TOF-ICP-MS).
- Training and overseeing students and research assistants.
- Instructor of Record: Current Issues in Environmental Science (OCE4017/OCE5018)

Research Associate in Trace Elemental Geochemistry, Cardiff University

January 2023 – January 2024 PI: Dr Morten Andersen

Responsibilities:

- Set-up spatial analytical techniques (LA-ICPMS mapping) for high-precision trace and minor elemental measurements on a range of marine and silicate samples.
- Trouble shooting and fault-finding of laboratory instruments.
- Training and overseeing students and LA-ICPMS users at CELTIC facilities.
- Laser Safety Deputy Officer.

Research analyst in Marine Geochemistry, University of Bristol

October 2016 – August 2018 PI: Prof Laura Robinson

Responsibilities:

- Mechanical and chemical preparation of marine carbonate samples for AMS and MC-ICPMS (solution and LA) analyses.
- Curation of marine samples and maintenance of the sample collection database.
- Training visitors and students to the lab.

Education

PhD in Earth and Environmental Sciences, Cardiff University

2018 – 2023

Thesis: *Sclerochronological and geochemical records from Porites spp. in Fiji: Assessing massive coral response to environmental changes.*

Supervisors: Dr Sindia Sosdian, Dr Eleanor John, Dr Erica Hendy, Dr Kenneth Johnson, Dr Stacy Jupiter.

MSci by Research in Earth Sciences, University of Bristol

2016 – 2018

Thesis: *Stylasterid corals: A new paleoceanographic archive?*

Supervisor: Professor Laura Robinson.

BSc Environmental Sciences, Universidad de Zaragoza

2009 – 2015

First class Honours. Thesis: *Design, implementation, and evaluation of an Environmental Education Program in a summer camp.*

Supervisor: Dr Juan Herrero.

Lab skills

- Data acquisition through computerised tomography (CT) and processing of 3-dimensional datasets using AVIZO and FIJI (ImageJ) software.
- Laser Ablation (LA). Sample analysis, methods development and operating, maintaining, and troubleshooting a RESOLUTION-SE 193nm ArF excimer, NWR-213, ImageGeo193 and Iridia laser systems.
- Inductively Coupled Plasma-Mass Spectrometry (ICPMS) and Time-Of-Flight (TOF-ICPMS). Operating and basic maintenance of Agilent 8900 triple quadrupole, iCAP RQ, Element XR and Vitesse instruments (both for solution analysis and in tandem with the LA system).
- Spot, transect and spatial analysis of trace and minor elements in biogenic carbonates and silicate minerals with LA – ICPMS and data processing.
- Stable isotope ($\delta^{13}\text{C}$ and $\delta^{18}\text{O}$) analysis in marine carbonates.
- Stylasterid and scleractinian coral morphological identification up to species level.
- Mineralogical analyses (XRD) and SEM imaging.
- Experience working and maintaining chemistry clean laboratory facilities.
- Environmental data acquisition through remote sensing (satellite data level 2 and level 3).

Other technical skills

- R: For tidying data, statistical analysis, data visualization and spatial analysis. Reproducible research and version control on R Markdown + GIT.
- Python: Basic knowledge for data processing.
- LA-ICPMS data processing: LAtools, iolite4
- ArcGIS and QGIS: Analysis of spatial data and data visualization.
- Corel, Inkscape + GIMP: For graphical enhancement of data visualization.
- Ocean Data View (ODV): For data visualization.
- PADI Open Water diving certificate.
- Languages: Spanish (native), English (proficient), French (basic).

Field experience

- **Galapagos 2024** – 3-week fossil shallow-water coral coring expedition in the Galapagos archipelago on board Yualka II.
August 2024
 - On-land coral drilling, water sampling.
- **Galapagos Deep 2023 (AT50-09)** – 5-week oceanographic expedition on board R/V Atlantis.
March-April 2023
 - Team leader, CTD instrumentation and water sampling, sediment core sampling, deep-sea live and fossil coral sampling, and curation.
- **Fiji COACTION** – Shallow-water coral coring expedition to Fiji.
February 2019
- **ICY-LAB (DY081)** – 5-week oceanographic expedition on board RRS Discovery.
July-August 2017
 - Water sampling, sediment core sampling, deep-sea live and fossil coral sampling and curation.

Publications

- **Samperiz, A.**, Sosdian, S., John E. H., Hendy, E., Jupiter S. D., Johnson, K. Overcoming growth effects in Fijian corals for the application of trace element paleothermometry. (*In preparation*).
- **Samperiz, A.**, Sosdian, S., Hendy, E., Johnson, K., John E. H., Jupiter S. D., Albert S. Coastal seawater turbidity and thermal stress control growth of reef-building Porites spp. corals in Fiji. (*Under review – Scientific Reports*).
- Liu, Q., Robinson, L., Hendy, E., Prokopenko, M. G., Stewart, J. A., Knowles, T. D. J., Li, T., **Samperiz, A.** 2023. Reinterpreting radiocarbon records in bamboo corals – New insights from the tropical North Atlantic. *Geochimica et Cosmochimica Acta*, 348: 296-308. doi: 10.1016/j.gca.2023.03.019.

- Kershaw J., Stewart J. A., Strawson I., de Carvalho Ferreira M. L., Robinson, L. F., Hendry K. R., **Samperiz, A.**, Burke A., Rae J. W. B., Day R. D., Etnoyer P. J., Williams B., Häussermann V. 2023. Ba/Ca of stylasterid coral skeletons records dissolved seawater barium concentrations. *Chemical Geology*, 121355. doi:10.1016/j.chemgeo.2023.121355.
- Li, T., Robinson, L., Chen, T., Wang, X., Burke, A., Rae, J., Pegrum-Haram, A., Knowles, T., Li, G., Chen, J., Ng, H.C., Prokopenko, M., Rowland, G., **Samperiz, A.**, Stewart, J., Southon, J., Spooner, P. 2020. Rapid shifts in circulation and biogeochemistry of the Southern Ocean during deglacial carbon cycle events. *Science Advances*, 6:42. doi:10.1126/sciadv.abb3807.
- **Samperiz, A.**, Robinson, L., Stewart, J., Strawson, I., Leng, M., Rosenheim, B., Ciscato, E., Hendry, K., Santodomingo, N. 2020. Stylasterid corals: a new paleotemperature archive. *Earth and Planetary Science Letters*, 545:116407. doi:10.1016/j.epsl.2020.116407.
- Stewart, J., Robinson, L., Day, R., Strawson, I., Burke, A., Rae, J., Spooner, P., **Samperiz, A.**, Etnoyer, P., Williams, B., Paytan, A., Leng, M., Häussermann, V., Wickes, L., Bratt, R., Pryer, H. 2020. Refining trace metal temperature proxies in cold-water scleractinian and stylasterid corals. *Earth and Planetary Science Letters*, 545:116412. doi:10.1016/j.epsl.2020.116412.
- Hendry, K., Huvenne, V., Robinson, L., Annett, A., Badger, M., Jacobel, A. Ng, H.C., Opher, J., Pickering, R., Taylor, M., Bates, S., Cooper, A., Cushman, G., Goodwin, C., Hoy, S., Rowland, G., **Samperiz, A.**, Williams, J., Achterberg, E., Arrowsmith, C., Brearley, A., Henley, S., Krause, J., Leng, M., Li, T., McManus, J, Meredith, M., Perkins, R., Woodward, M. 2018. The biogeochemical impact of glacial meltwater from Southwest Greenland. *Progress in Oceanography*, 176:102126. doi:10.1016/j.poccean.2019.102126.
- **Samperiz, A.** and Herrero, J. 2018. Evaluation of a summer camp environmental education program in Spain. *Applied Environmental Education & Communication*, 17(1), 79-90. doi:10.1080/1533015X.2017.1366881.

Presentations

- (Poster) **Samperiz, A.**, Sosdian, S., Hendy, E., John, E. H., Johnson, K. G., Jupiter, S. D. *Environmental controls and growth effects on trace element composition of coral aragonite: Application of paleothermometry proxies in Fijian massive Porites spp.* (Abstract 18559). Goldschmidt, July 2023.
- (Invited Talk) **Samperiz, A.** Sosdian, S., Hendy, E., John, E. H., Johnson, K. G., Jupiter, S. D. *Overcoming growth effects in Fijian massive Porites spp. for the application of trace element paleothermometry.* Topical Meeting of the DFG Priority Programme "Tropical Climate Variability & Coral Reefs" (SPP 2299), May 2023.
- (Poster) **Samperiz, A.**, Sosdian, S., Hendy, E., John, E. H., Johnson, K. G., Jupiter, S. D. *Can environmental changes be linked to coral calcification in Fijian inshore reefs?* (A-1902). International Coral Reef Symposium (ICRS), July 2022.
- (Talk) **Samperiz, A.**, Sosdian, S., Hendy, E., John, E. H., Johnson, K. G., Jupiter, S. D. *Trace element LA-ICPMS analysis of Porites corals from Fiji as indicators of coastal water quality and climatic events.* Geochemistry Group Research in Progress (GGRiP), May 2022.
- (Invited Talk) **Samperiz, A.**, Robinson, L. *Small but mighty: The potential of stylasterid corals as paleoceanographic archives.* International Fossil Coral and Reef Society (IFCRS) Early Career Researcher symposium, October 2021.
- (Invited Talk) **Samperiz, A.**, Robinson, L. *Small but mighty: The potential of stylasterid corals as paleoceanographic archives.* Sclerochronology Group, University of Exeter, April 2021.
- (Poster) **Samperiz, A.**, Sosdian, S., Hendy, E., John, E. H., Johnson, K. G., Jupiter, S. D. *Do Fijian coral skeletons record watershed environmental changes?* Geological Society of America (GSA), October 2020.
- (Poster) **Samperiz, A.**, Sosdian, S., Hendy, E., John, E. H., Johnson, K. G., Jupiter, S. D. *Linking environmental changes and coral calcification in Fijian inshore reefs using computed tomography.* Reef Conservation UK (RCUK), December 2019.
- (Poster) **Samperiz, A.**, Robinson, L. F., Leng, M. J., Stewart, J., Rosenheim, B. E.,

- Santodomingo, N., Stylasterids: a new paleoceanographic archive? International Sclerochronology Conference (ISC), June 2019.
- (Poster) **Samperiz, A.**, Sosdian, S., Hendy, E., John, E. H., Johnson, K. G., Jupiter, S. D. *Deriving skeletal signatures from CT Scans: implications for coral growth and sensitivity to environmental change in Fijian corals*. NERC DTP Wessex conference, March 2019.
- (Poster) **Samperiz, A.**, Robinson, L. F., Leng, M. J., Santodomingo, N., Stylasterids: a new paleoceanographic archive? RCUK, December 2018.
- (Invited talk) **Samperiz, A.**, *Environmental Education in non-formal teaching settings*. Guest Lecturer for Environmental Education, University of Zaragoza – January 2016.

Awards and Grants

- **RCUK Student Travel Grant**, Reef Conservation UK (2019) £250 to cover travel expenses to assist to the RCUK 2019 meeting.
- **International Sclerochronology Conference**, Best Student Poster (2019).
- **Hazel Prichard Impact Prize**, School of Earth and Ocean Sciences, Cardiff University (2019). £500 to support the implementation of the outreach activity “REEFsistence”.
- **NERC GW+4 Doctoral Training Programme**, Cardiff University (2018). £80,000 to carry out research leading to acquisition of a doctoral degree.
- **NERC Isotope Geosciences Facilities Grant Application** (2017). To cover the analysis of marine carbonate samples for stable oxygen and carbon isotopes measurements.
- **Alumni Foundation Award**, University of Bristol (2017). £1,000 to support the outreach program “Rock Wow Days”.
- **Best 4th Year thesis Award**, Escuela Politecnica Superior, Universidad de Zaragoza (2015).

Teaching experience

- **Instructor of Record – Florida State University**
 - Current Issues in Environmental Science (OCE4017/OCE5018; Year 2024-2025)
- **Student supervision – Cardiff University**
 - Mr Jacob Lloyd Newman: MSci research dissertation “Potential drivers of bioerosion in massive *Porites* on an inshore reef in Fiji” (Year 2020-2021).
- **Teaching assistant during practical sessions in undergraduate modules – Cardiff University**
 - Marine Environmental Systems (Year 2021-2022).
 - Coral Reefs (Year 2020-2021).
 - Biogeochemistry (Years 2019-2020, 2020-2021).
 - Earth surface processes (Year 2018-2019).

Current outreach activities

- **Coral geochemistry** – April 2024 to Present. Outreach activity aimed towards adults and young adults. Implemented on FSU and MagLab Open Days.
- **Being a coral detective** – May 2019 to Present. Outreach workshop aimed towards Secondary Schools. Implemented in different education centres in Cardiff and Vale of Glamorgan (UK) and in Huesca (Spain).

Community Contributions

- **Conference organization:** Geochemistry Group Research in Progress (GGRiP) – May 2022; EARTH 3-minute talks, seminar series – June to December 2021.
- **Reviewer** for Paleoceanography and Paleoclimatology, PLOS ONE, Biogeosciences, and Journal of Geophysical Research – Oceans.
- **Professional memberships:** *International Coral Reef Society, European Association of Geochemistry.*