

**Session Title:**

Carbonates in Deep Earth

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**Abstract:**

Carbonate minerals play a crucial role in regulating the climate and habitability of our planet. Most carbon sinks to deep Earth via the subduction of carbonates. In the high-pressure and high-temperature environments of subduction zones, carbonates can devolatilize, dissolve in aqueous fluids, melt, or incorporate into carbon-bearing mantle phases. Any liberated CO<sub>2</sub> can be brought back to the surface in magmas and melts, completing the deep carbon cycle. To model these deep Earth processes, it is important to understand the high-pressure and high-temperature behaviour of carbonate minerals and carbonate-bearing melts, as well as their interaction with coexisting phases. Efforts such as the Deep Carbon Observatory have brought the properties and behaviour of carbonates at extreme conditions into better focus. This session welcomes both modelling and experimental results, especially from early career scientists, on the structure, properties, and behaviors of carbonate-bearing phases in the deep Earth.