Supporting Information for “Arid Coastal Carbonates and the Phanerozoic Record of Carbonate Chemistry”

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1. Caption for Dataset S1

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Introduction

Dataset S1 Full reference list for all literature used in this study. The formatted data is available for download in Table S1.
Table S1. Formatted data from the literature used in this study. Each entry includes 1. a citation with bibliographic information given in Dataset S1, 2. The name of the Formation or platform as given by the author, 3. a general geographic location, 4. Latitude and longitude (in decimal degrees) estimated from maps in the references, 4. Period and stage information based on the authors’ designation and converted to match the 2018 International Chronostratigraphic Chart (Cohen et al., 2018), 5. Lower and upper age range, 6 information for plotting histograms including the ‘center’ of each age bin, a number, and range to set the width of the bars, and 7. the presence (Y) or absence (N) of tepees and pisoids. This table was used to generate the histograms in Figures 4 and 5 using the R scripts at www.doi.org/10.5281/zenodo.4708344.

Table S2. Data tabulated from studies of modern brines. Each entry includes 1. a citation with bibliographic information in the main text, 2. an approximate geographic location, 3. a sample type designation (surface water, porewater, or non-marine for continental brines), 4. the units in which concentration data are reported, 5. geochemical data, and 6. the temperature of the sample. This table was used to generate the violin plots in Figure 2a using the R scripts at www.doi.org/10.5281/zenodo.4708344.

Table S3. Table with the input parameters for sensitivity analyses of the porewater-equilibrium and surface water-kinetic models. The sources for each ion/parameter are given in Table 1 of the main text. The tornado plots in Figures 3a and 3b were generated using this table and the R scripts at www.doi.org/10.5281/zenodo.4708344.

Table S4. Table with the input parameters for the porewater-equilibrium and surface water-kinetic models in Figure 5a and 5b. The sources for each ion/parameter are given
in Table 1 of the main text. The Phanerozoic trends in Figure 5a and 5b were modeled using the R scripts at www.doi.org/10.5281/zenodo.4708344.

References

Figure S1. World map showing study locations compiled in the database (top) as well as their densities in 5°x5° bins.
Figure S2. Model outputs for porewater and surface water models using both calcite and aragonite as the primary phase. The plots were “spliced” along the divides between calcite and aragonite seas to create Fig. 5c and 5d in the main text.