Making an analog model of magma source region

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The propagation of magma-filled cracks is the dominant mechanism of magma transport in the Earth's lithosphere. The problem is from where cracks take off that can traverse the lithosphere. Our working hypothesis is that they originate from the top of partially molten region where a sufficient amount of melt could be accumulated. In order to clarify the nature of this region, we are now conducting analog experiments using a mixture of glass spheres, sodium carbonate (Na2CO3), and water. If the bottom of a column is heated and the top cooled, the column compacts from the bottom and the solution is squeezed upward. The low-porosity cap is created at the top, and the solution is accumulated there. We will show qualitative results to demonstrate the importance of this low-porosity cap.