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Submarine salt glaciers in the central Red Sea

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Surveying of Thetis Deep with a multibeam echo-sounder has revealed a remarkable series of gravity flow structures, which are here interpreted as submarine salt glaciers originating from evaporite beds. Their margins are marked by strike-slip faults accompanied by drag folds and rotated markers. Their fronts in the floor of the deep are rounded in plan view and profile. Some flow surfaces show small closely spaced features resembling extensional faults. Strike-slip and extensional faults lie, respectively, parallel and orthogonal to the direction of maximum seabed gradient, implying that the direction of potential energy gradient causing movement parallels the seafloor gradient. If the flows have uniform thickness, they should accelerate over steepening gradients, but evidence of more intensive extensional faulting or erosion is generally absent in such areas. Explanations for these and other aspects of flow dynamics are explored with available geophysical data and results of laboratory experiments on halite. (European Science Foundation EUROMARGINS project 01-LEC-EMA21F.)