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**Gypsum at Cheverie, just some boring white rock?**

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Along the coast of the Bay of Fundy there are several locations where gypsum outcrops. The ones at Cheverie reveal two important points to the careful observer. The first one is the rate of weathering. Visiting the outcrop after a timelag shows that those rocks lying on the beach have visibly been eroded during a period of only a few months, due to the abrasion of the waves, but also to solution by the water. There are several types of gypsum crystals visible and they appear to have a slightly varying solubility. If these rocks erode so fast, why are they still

forming cliffs? From another point of view, the erosion caused by the ice during the last ice age left very visible striations on the very hard Meguma Group migmatitic rocks and levelled them. Why then are there substantial hills in this area, underlain by gypsum that can be scratched by finger nails? The explanation is that the gypsum is still moving up, and a roughly calculated rate is on the order of millimetres to a centimetre per year. This is similar to rates found at diapirs on Axel Heiberg Island.

The second point is that there are calcareous layers within the gypsum. These have a strong algal appearance, and vary in density and colour. This is not remarkable. In brine that is precipitating gypsum, algae and bacteria are about the only life forms that can flourish there in the absence of the normal predators. The algae can form “sheaths” when there is still enough calcium available. Further in the precipitation process there may not be enough calcium and no sheaths are formed. Algae are the precursors of Type I, or oil-prone, source rock. Even very light scratching of the calcareous layers at Cheverie produces a strong hydrocarbon smell, like diesel oil. Measurements with Rock Eval were not successful, likely because the volatile material escaped prior to entry into the instrument due to the required grinding of the rock. The calcareous sheaths are visible; the ones formed farther in the cycle not. Thus, the potential of these evaporites to form a source rock should not be overlooked, even though there are few visible clues. As an example, in the world class petroleum system of the Gulf of Mexico oils with an algal source signature that do not conform to the established source rocks have been found.