Investigating Deep-Sea Mining Technologies

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# ABSTRACT

Deep sea mining could provide the valuable minerals and resources to help transition into a renewable energy supply. Polymetallic nodules are one of the three main types of deep-sea mining resources and are the focus of this paper due to their abundance and high mineral content. Nodules are found lying on the seabed in the abyssal zone at a depth of 3000-6000m below sea level. They are formed in a time span of a million years and contain minerals such as Mn, Fe, Ni, Co, and other rare earth minerals. Each nodule varies in size and shape however they are commonly seen to be 5-15cm. On the sea floor nodules have been shown to have a distribution density up to 35 kg/m2. While simple polymetallic nodule mining machines have been proposed and constructed, the question of their impact to the surrounding environment is still unknown and could be significant due to the collection and discharge plumes associated with this technology. New technologies could be developed and deployed to facilitate a more efficient and less environmentally damaging mining process.