

First-Year Research in Earth Sciences: Dunes

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Abstract: The variability of autumn storms in West Michigan requires more study focused on how storms affect dunes. Local effects of storms were investigated on an artificial dune named Perseverance Dune at Calvin University in Grand Rapids, Michigan. The objectives of this study were to assess storm characteristics, measure the patterns of erosion across the dune surface, and compare dune change with storm characteristics. In the months of October and November 2020, an erosion pin grid was used to measure changes in erosion and sand samples were taken to determine moisture content. On-site measurements of storm characteristics included wind speed and direction and precipitation. During one storm, wind and precipitation caused downslope erosion on the dune. Most of the erosion was from runoff, which was a product of the grass layer beneath the artificial dune. During another storm, strong winds with little precipitation resulted in upslope erosion. The amount of runoff erosion on the artificial dune indicates the importance of good drainage of water through the sands of most natural dunes.