

## Is sea level rise threatening ecologically important salt marshes in South African estuaries?



MSc student Athi Mfikili (right) and intern Reanetsi Pohlo measuring sediment elevation with a Rod Set Elevation Table in the Swartkops River estuary

Salt marshes are highly productive and biologically diverse coastal wetlands that are threatened by rising sea-level. Salt marsh habitats within the Swartkops Estuary were examined to determine their structure along an elevation gradient and how this structure has changed over the past seven decades, what the primary drivers of this structure were and whether the salt marsh surface is stable, rising or declining relative to current and future sea-level rise. Relative sea-level has been rising by  $1.82 \text{ mm.yr}^{-1}$  over the past 36 years, with a short-term trend of  $7.48 \text{ mm.yr}^{-1}$

measured during the study period. GIS analyses showed that during the last 70 years, losses of floodplain, intertidal and supratidal salt marsh are mainly attributed to developmental pressure. The main environmental drivers influencing salt marsh distribution were soil moisture and elevation. Elevation dictates tidal inundation periodicity and frequency, and thus acts to influence all edaphic factors influencing vegetation distribution. Rod Surface Elevation Table results for the past six years indicate that the salt marsh surface elevation is keeping pace ( $2.98 \pm 2.34 \text{ mm.yr}^{-1}$ ) with historic relative sea-level rise (RSLR), but at an accelerated RSLR, only two of the eight RSET stations show an elevation rate surplus. These results should be interpreted with caution though because of the short time-series (RSET and RSL) and the high likelihood that the current ratio of sediment elevation change will be accelerated in response to the increased sea-level rise. The full paper can be purchased here: <https://t.co/VMqcLfBxX7>