

Mapping fire severity in the Cederberg Mountains, South Africa

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Abstract:

Fires are essential to seed germination, vegetation regeneration and maintaining ecosystem functions in biomes such as the Mediterranean Fynbos biome in of South Africa. The Cederberg Mountains contain many endemic species of the Fynbos biome, most notably *Aspalathus linearis*, which is commercially grown and exported as herbal tea (rooibos tea) due to its proven health benefits and medicinal properties. It is estimated that South Africa exported just below 10 000 tons of rooibos tea by 2019 and the industry provides many employment opportunities in the Western Cape Province of South Africa. Fire events occur frequently in the region, during the austral summer to autumn period. Recently it has been projected that in future the western parts of southern Africa will experience more heatwave conditions and an increase in the number of fire danger days due to climate change. With the projected drying of the region, this study explores the extent to which fire severity has changed over time. Open-source data from Landsat and Sentinel-2 satellites were extracted from the Google Earth Engine (GEE). Subsequently, manipulation of data through machine learning techniques such as cloud computing of burn ratios and were employed to create fire severity maps of the Cederberg Mountains.