THE EFFECT OF PRESCRIBED BURNING ON SEDIMENT MOVEMENT IN THE MOUNT LOFTY RANGES

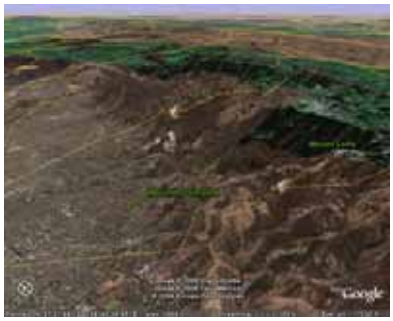
R. Morris[1], B. Ostendorf[1], D. Dragovich[2], M. Henderson[3], A. York [4]

1. School of Earth and Environmental Science, University of Adelaide, South Australia 2. School of Geosciences, University of Sydney, New South Wales 3. Science and Conservation, Department for Environment and Heritage, South Australia 4. School of Forest and Ecosystem Science, University of Melbourne, Victoria

Aim: To assess the effect of prescribed fires on sediment movement in the Mount Lofty Ranges, South Australia.

Background: Prescribed burning is generally used to reduce bushfire risks. The use of prescribed fire alters the protective layer of vegetation exposing the soil surface to water, wind and biological erosion.

Little qualitative data exist about sediment movement following prescribed fire. As part of their environmental assessment, land managers are required to consider the adverse and positive effects prescribed burning has on the environment. Adverse effects may include erosion and sedimentation. This research will provide both qualitative field data and GIS modelling to improve understanding of the sediment movement processes both prior and post burning.



Map: Mount Lofty Ranges

Photo: View from Mount Lofty Summit towards the city

Study Site: The Mount Lofty Ranges are located to the east of Adelaide in South Australia. The area is prone to bushfires and land managers use prescribed burning as a tool to manage bushfire risk. The Mount Lofty Watershed provides 60% (on average) of Adelaide's water supply which could be impacted upon in the event of sedimentation following fire.

Proposed Methods: This research will assess and apply existing erosion models to identify areas of high erosion potential following fire. A network of erosion pins and sediment plots will be installed to monitor sediment movement both before, after, within and adjoining proposed prescribed burns. The co-variables of fire intensity, vegetation cover and biotransfer will be recorded and analysed at the hillslope scale.

Photos: Courtesy of CFS promotion unit
Top, DEH prescribed burn at Greenhill
Bottom, DEH prescribed burn at Morialta

Outcomes: Results will help land managers optimise prescribed burning practices to reduce potential erosion from prescribed fires. Spatial modelling of erosion potential will improve the land manager's decision on optimal locations for prescribed fires. Another useful outcome of the project will be improved knowledge about the role of bioturbation on soil erosion in the post-fire landscape and its implications for biodiversity and sustainable management practices.