

Cool Burning Scientific Research

Scientists and land managers wanted to know whether an early season burn regime would help to reduce the amounts of greenhouse gases produced by bushfires. Working together, scientists and traditional land owners conducted a study that ran for 20 years, from 1990 to 2010. This study was conducted in western Arnhem Land which joins onto Kakadu National Park in the Northern Territory.

Around 23% of this region burns every year, contributing between 1% and 3% of Australia's greenhouse gases. However, this figure only accounts for the officially noted emissions of nitrous oxide and methane, rather than the total emissions - which would include any carbon dioxide that is not absorbed by new growth.



Much of the research has been done in partnership with the traditional owners. The research has included:

- measuring the fuel load before and after both cool and hot burns. This fuel load includes grasses, shrubs, soil, leaf litter, logs, fallen branches and twigs, stands of trees and their canopy and individual trees.
- measuring the different concentrations of gases being generated from cool and hot burns. The gases being measured include carbon dioxide, methane, nitrous oxide and carbon monoxide.
- using satellite technology to monitor fires daily and to compile data sets of fire mapping to generate fire histories across northern Australia.
- measuring the impact of fire on biodiversity.
- measuring the recovery and growth of grass for grazing cattle.
- setting up trials to find out whether cool mosaic burns reduce hot burns later in the dry season.
- establishing the methodology required for land managers to apply for and claim carbon credits. This includes how independent validation of cool burns can be achieved.

The research data clearly shows that cool burns can achieve a major decrease in hot burns and therefore:

- can achieve a large measurable reduction in greenhouse gases.
- have positive biodiversity outcomes.
- can be used to manage certain weeds and restore poorly managed pastoral land.
- is a very cheap way to manage a vast landscape.
- is an economical way for unused land and grazing properties to earn carbon credits.
- has potential applications in the management of National Parks.

More information about this study can be found here: [Cleaning, Protecting, or Abating? Making Indigenous Fire Management "Work" in Northern Australia](#)