



# **Australian fire regimes: contemporary patterns (April 1998 – March 2000) and changes since European settlement**

Jeremy Russell-Smith  
Bushfires Council of the Northern Territory

Ron Craig and Richard Smith  
Western Australian Department of Land Administration

Malcolm Gill  
CSIRO Plant Industry

Jann Williams  
RMIT University

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For further information, please contact the Community Information Unit of the Department of the Environment and Heritage, GPO Box 787, Canberra ACT 2601. Phone, toll free, 1800 803 772, Facsimile 02 6274 1970.

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## PREFACE

The papers in this report address three related issues concerning the description and ecological impact of fires and, more pointedly, fire regimes, in Australia.

The first issue is the assessment of contemporary fire patterns at a continental-scale using satellite imagery. This provides a detailed snap-shot of the distribution, extent and seasonality of large fires in Australia for the period April 1998 - March 2000, derived from continental-wide, daily, but relatively coarse-scale coverage provided by the Advanced Very High Resolution Radiometer (AVHRR) instrument on board the NOAA series of satellites. This assessment was undertaken by Ron Craig, Belinda Heath, Natalie Raisbeck-Brown, Mike Steber, Jackie Marsden and Richard Smith, from the Department of Land Administration (DOLA), Western Australia; an organisation that provides a routine operational landscape-fire detection and mapping service to fire management agencies and other land managers in the Northern Territory, South Australia and Western Australia. The importance of this assessment cannot be overstated since, by comparison with the reliability of “information” on fire regimes provided in the first *Australia State of Environment* report (1996: Fig.2.7), it is evident that a national fire mapping program using satellite data would be of great value.

The second issue addressed by this report is the reliability of the continental-scale fire map data. Such mapping of fires has certain well recognised biases and limitations, and many of these are critically examined both within DOLA’s paper addressing the national distribution of fires, as well as in two further papers presented as appendices. The first of the appendices, by Malcolm Gill, Gerry van Didden and Peter Moore, examines biases associated with the use of daily “Fire Hot Spots” (FHS), for detecting active fires. The study focused on the south-west forest region of Western Australia, on estate managed by the Western Australia Department of Conservation (formerly the Department of Conservation and Land Management—CALM). The second appraisal, by Cameron Yates and Jeremy Russell-Smith, examines the accuracy of mapping burnt areas, or Fire Affected Areas (FAA), with reference to detailed ground-truth assessment data, and fine-resolution Landsat imagery. This component of the project covered five Landsat scene areas across the fire-prone savannas of northern Australia.

The third issue addressed by the report concerns ecological assessment of the impacts of current fire regimes in three broad Australian landscapes and, additionally, how such landscape-scale fire regimes and impacts may have changed with time since European settlement. Each of these landscape-scale assessments is presented as a separate case study as follows: the *south-west forests of Western Australia*—by Malcolm Gill; the *mulga (Acacia aneura) landscapes of central Australia*—by Jann Williams; and the *savanna landscapes of northern Australia*—by Jeremy Russell-Smith.

With the exception of the appendices, the report were externally and independently refereed. Collectively, these papers were commissioned as part of a consultancy report to the State of Environment Section, entitled *Assessing fire patterns and their environmental impacts*.

Jeremy Russell-Smith  
Ron Craig  
Malcolm Gill  
Richard Smith  
Jann Williams

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