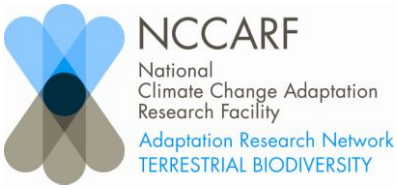
National Climate Change Adaptation Research Facility:
Terrestrial Biodiversity Network
PhD Short Collaborative Visit Report



PhD Candidate:
Gabriele Caccamo, School of Earth and Environmental Science, University of Wollongong, Australia.

Researcher and Institution visited:
Professor Dar Roberts, Geography Department, University of California, Santa Barbara (UCSB), USA. 6 – 10 December 2010.

Major findings and outcomes of the collaboration:
Visiting Professor Dar Roberts at the University of Santa Barbara enabled me to improve my knowledge on advanced remote sensing techniques for fire risk analysis. The visit gave me the opportunity to discuss the results of my research on satellite-based monitoring of live fuel moisture content in the Sydney Basin Bioregion with one of the most important experts in the field.
Professor Roberts provided constructive comments and feedback which definitely improved the quality of my analysis. His suggestions provided the basis for the development of important data analysis that led to significant scientific findings. My research demonstrated that remote sensing is more suitable to monitor moisture conditions of fire-prone vegetation types in the Sydney Basin and the short-wave infrared portion of the electromagnetic spectrum provides the most robust sensitivity to this variable
The feedback gained from this research visit turned out to be extremely worthwhile, resulting in a manuscript on the potential of MODIS data for live fuel moisture content monitoring, submitted to an international peer-reviewed journal in February 2011.

Significance to adapting and protecting Australia's terrestrial biodiversity

This research will have a significant impact on the development of accurate fire risk monitoring systems in the Sydney Basin Bioregion. My research shows that it is possible to use satellite information to produce spatially explicit maps of fuel moisture content at moderate resolution. Similar maps would provide fire authorities with useful information to monitor the spatial distribution of flammable fuels, to classify the landscape into different levels of dryness and to assess fire danger at a finer spatial resolution than traditional (i.e., non-remote sensing) methods. That information could be used by fire authorities to make informed decision and plan fire-fighting resources allocation and mitigation actions with the aim to reduce the impact of fire on forested resources and terrestrial biodiversity.

Future research suggestions
The findings and results of this research will represent the basis to further investigate the relationships between spatial and temporal patterns of flammable fuels and fire activity in the Sydney Basin. The aim is to develop spatially explicit quantitative methods to analyse the mechanism influencing fire size distribution.