

# Landgate's Operational Remote Sensing Program in Western Australia: From Local to National Scale

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**Abstract-** The Western Australian Land Information Authority (Landgate) is responsible for land information in the state of Western Australia. Here land information is a very broad term and encompasses land, oceans and atmosphere. This definition has in part been shaped by the operations of the Satellite Remote Sensing Services (SRSS) branch of Landgate with the aim that a strong remote sensing program remains central to the efficient and effective functioning of Western Australian state government. This paper describes a selection of the remote sensing based services delivered by SRSS to the benefit of state government and the community.

**Keywords:** MODIS, remote sensing, emergency response, agriculture

## 1. INTRODUCTION

Landgate SRSS is a branch of modest size within the larger Western Australian Land Information Authority. Its activities span the complete remote sensing operations chain from operation of multiple satellite receiving dishes to the online delivery of remote sensing based products and services.

As the state government arm of the Western Australian Satellite Technology and Applications Consortium (WASTAC), the vision of WASTAC to 'Improve the economy, society and environment through the acquisition of satellite observations of Western Australia and its oceans for research and near-real time applications' (WASTAC, 2009) is key to SRSS' role within the state government of Western Australia.

SRSS has a strong research and development base. It participates in national remote sensing programs such as the Terrestrial Ecosystem Research Network (TERN) under the National Collaborative Research Infrastructure Strategy (NCRIS) and engages with the spatial sector through the Co-operative Research Centre for Spatial Information. SRSS works with international space and remote sensing agencies and is involved with global programs for the technical development of satellite applications and programs including software testing and product validation (Maier, 2006 ; Broomhall et al. 2009 ; McAtee and Maier, 2006 ; McAtee and Maier, 2009).

The satellite-based services which SRSS delivers across government and to the community are described in more detail in the following sections.

## 2. REMOTE SENSING-BASED SERVICES

### 2.1 Emergency Services

The near-real time (NRT) nature of SRSS' operations are of most importance to the emergency services sector where response times and spatial information are often critical.

The FireWatch service (<http://firewatch.landgate.wa.gov.au/>) provides fire location information in NRT and updated within an hour of satellite overpasses which occur four to six times daily. Associated data sets such as fire burnt area and curing indices describing fuel loads are also provided.

The FloodMap ([http://floodmap.dli.wa.gov.au/landgate\\_floodmap\\_public.asp](http://floodmap.dli.wa.gov.au/landgate_floodmap_public.asp)) service maps water bodies across the country. It delivers imagery which facilitates the tracking of flood waters and also provides historical flood information and maps of soil moisture.

### 2.2 Agriculture

SRSS, in collaboration with the Commonwealth Scientific and Industrial Research Organisation (CSIRO), delivers a number of agricultural services derived from satellite imagery, including pasture growth rates and available feed on offer for sheep and cattle (<http://www.pasturesfromspace.csiro.au/PGR.htm>) at the paddock scale. Agricultural services are also delivered at higher spatial resolution via the Agimage service ([http://agimage.dli.wa.gov.au/landgate\\_agimage\\_public.aspservice](http://agimage.dli.wa.gov.au/landgate_agimage_public.aspservice)).

### 2.3 Natural Resource Management

As part of a state government consortium SRSS coordinates the Land Monitor project and supports Land Monitor website (<http://landmonitor.landgate.wa.gov.au/>) and data dissemination. The Land Monitor archive now contains over 20 years of Landsat imagery covering the south west of Western Australia. It provides imagery mosaics, vegetation and salinity maps and digital elevation models to track land cover and land use change over the south west region and is used by numerous state government partner agencies such as the Department of Environment and Conservation.

Other natural resource management applications with which SRSS are involved include biosequestration for carbon accounting (<http://carbonwatch.landgate.wa.gov.au/>) and forest health monitoring.

## 2.4 The Marine Environment

Landgate SRSS performs operational monitoring of the ocean. The Oceanwatch service (<http://oceanwatch.landgate.wa.gov.au/>) focuses on sea surface temperature (SST) and water clarity. SRSS also develops customised marine products and data packages for government and private users, frequently for marine impact assessments and investigations.

## 3. CONCLUSION

Landgate SRSS is the state government arm of the Western Australian Satellite Technology and Applications Consortium. It delivers remote sensing based products and services across government in Western Australia, as well as nationally and to the public sector and community with a focus on near-real time operations. It continues to be at the forefront of satellite-based applications delivery with the ongoing aim of deriving the maximum societal benefit from global Earth observation programs.

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