

## **Hyperion data request: Lake Argyle, Western Australia**

**Site Name:**

Lake Argyle

**General location:**

Tropical NW Australia -The Kimberleys - within the state of Western Australia.

**Path/Row:**

Lake Argyle is captured within WRS 107-071 of the Landsat 4-7 series, lying in the lower eastern corner. It was also completely captured by the Landsat 1-2 series in WRS 114-071.

**Long/Lat:**

The coordinates of our reference target point on Lake Argyle (Pumpkin Island) are:

128 deg., 40.72 min. E

16 deg., 16.83 min. S

**Date requested:**

We request these 3 passes to fail-safe our straddling field measurements.

June 20<sup>th</sup> (backup)

July 6<sup>th</sup> (beginning field measurement)

July 22<sup>nd</sup> (ending field measurement)

Landsat TM data will be acquired to support all Hyperion acquisitions.

**Type of ground or airborne data:**

Lake Argyle is a very large man-made fresh water lake in the Kimberley region of Australia. The clarity of the water is unsurpassed on the Australian continent. It is chosen to serve as a dark target for atmospheric correction and water quality experiments with Hyperion, AVHRR, VGT, and other sensors.

Lake Argyle will be characterised with high resolution spectral and geochemical measurements at approximately 20 sites along a 50 km transect. The transect, which is the centre line of the requested Hyperion data take, will intersect bright and dark soils of the lake surrounds and cover the water body from its shallowest to deepest points.

Considerable effort will be expended in characterizing the above- and below-water radiation fluxes. A special boat-mounted ASD will be used above water, and three different instruments will be used for in-water measurements of profiles and surface and bottom reflectance. Laboratory measurements of dissolved organic matter, chlorophyll and total suspended matter are planned.

High resolution spectral measurements of irradiance will be made with several instruments to characterise the aerosol amount and type, as well as precipitable water. Precipitable water will be at moderate levels and only slowly changing whereas the aerosol loading from biomass burning will show large daily variations

**Duration of ground activity:**

The field measurement program of 10 plus days duration will straddle the Jul6th – July 22<sup>nd</sup> acquisitions.

**Maximum acceptable cloud cover:**

Ten percent

**Is this a new request?**

No. However, while coverage of Lake Argyle has been planned for some time, the dates specified above are only lately determined.

**Any supporting information:**

We are asking for the Hyperion acquisitions to make the above reference point to be centre-swathe because all our ground measurement plots will be based on this swathe geography. These geographic specifications are NOT the same as was used in the overpasses independently scheduled by TRW/NASA in the early part of this year..

We recommend the target point above be the centre of a 60 km (approx.) data take. The southern 30 km will cover the shallowest part of the lake, fringing RAMSAR wetlands and the bare newly-exposed red-brown soils. The northern 30 km sector will cover the deepest section of the lake and the eucalypt savannas of the lake surrounds. If the data take is extended to the north, the probability of intersecting fire scars of varying ages, is very high. This could be negotiated closer to the acquisition.

Lake Argyle has been instrumented with a continuously-operating CIMEL sun photometer since 1999, and hyperspectral data were acquired from an aircraft platform (HYMAP) in October 2000.

Site Name: Cape Tribulation

General location: Cape Tribulation, about 150 km north of Cairns, Australia.

Path/Row: 96 / 71

Long/Lat: 145.441 -16.11

Date requested: Primary: Sept. 11, 2001 (local time); Alternates (if cloudy): Sept.27 2001; Oct. 13, 2001

Type of ground or airborne data: Permanent Canopy Crane over rainforest taking continuous measurements of carbon flux and climatic data. Crane also used for studies of leaf/canopy reflectance dynamics & forest recovery after cyclone Rona. Site will be flown with Hymap/casi during overpass including nearby coral reefs. Data from Hymap and AirSAR (PacRim 2000) also available. Field crew will collect spectral irradiance and canopy reflectance off the crane with an ASD FR, as well as reflectances of coral reef benthic substrates and inherent optical water properties over the reefs. Hyperion image contains the rainforest site, key mangroves study sites (Daintree), sugarcane and coral reefs (Cairns Reef - near Cooktown).

Duration of ground activity: Intensive:1.5 weeks September 10 - 20 2001. Revisit once or twice a year thereafter for related work.

Maximum acceptable cloud cover: 10%

Is this a new request? NO

Any supporting information: This site is the main site for a rainforest monitoring project funded by the Cooperative Research Centre for Tropical Rainforest Ecology and Management, based in Cairns Australia. Site also included in SRTM product validation and AirSAR vegetation structure mapping project. The coral reef site is to become a key hyperspectral research site by the Australian Ocean Colour Working Group.

Site Name:Kakadu

General location:Kakadu National Park, NT, Australia

Path/Row:104/069

Long/Lat:12:41:11.37S 132:54:32.18E (WGS84) or 12:41:16.51S  
132:54:27.85E  
(AGD84)

Date requested:14/05/01, 15/06/01, 17/07/01, 18/08/01, 19/09/01,  
21/10/01

Type of ground or airborne data: HyMap1 acquired July 2000, HyMap  
acquired Sept 2000, OARS acquired 2000, IRIS and ASD for cal/val  
sites, comprehensive vegetation and soil surveys

Duration of ground activity: 1 week in September 2001

Maximum acceptable cloud cover: 10%

Is this a new request? No

Any supporting information: This data will be used for investigating the  
use of multi-temporal hyperspectral data for mapping vegetation species  
in tropical woodlands and monitoring the effects of mining activities on  
the environment.

Site Name: Kunoth

General location:

Path/Row: 102/76

Long/Lat: 23° 32'S 133° 33'E

Date requested: May 16

Type of ground or airborne data: (1) Airborne video transects covering the main vegetation communities to be acquired May 10 at a range of spatial resolutions 20cm-2m to characterise the current state of vegetation in order to verify Hyperion results. Video data to be classified, then checked on the ground for different vegetation communities. (2) Ground sites measured for use with Master data acquired Sept 2000 to be remeasured as cover and phenology of ground vegetation has changed substantially. (3) measurements of biodiversity eg bird species richness (not finalised at this stage)

Duration of ground activity: (1) and (2) 3 weeks; (3) monthly

Maximum acceptable cloud cover: 1%

Is this a new request?

Any supporting information:

This work is in collaboration with Melba Crawford of SVT.

## Hyperion data request: Lake Frome, South Australia

**Site Name:**

Lake Frome

**General location:**

Southern Australia within the state of South Australia.

**Path/Row:**

097-081

**Long/Lat:**

The coordinates of our reference target point on Lake Frome are:

139 deg., 40 min. E

30 deg., 51 min. S

**Date requested:**

We request these 3 passes to fail-safe our simultaneous or near-simultaneous field measurements.

Sunday            September 2<sup>nd</sup> (backup)

Tuesday        September 18<sup>th</sup> (simultaneous field measurement)

Thursday        October 4<sup>th</sup> (backup)

**Type of ground or airborne data:**

The surface of Lake Frome (a dry salt lake) will be characterised with high resolution spectral and geochemical measurements at approximately 15 sites along a 30 km transect.

The transect, which is the centre line of the requested Hyperion data take, will cover the extremely bright salt crust, less bright crust variants, the dark clay soils of the islands, and the bright red sandy loams of the lake surrounds.

High resolution spectral measurements of irradiance will be made with several instruments to characterise the aerosol amount and type, as well as precipitable water. Custom launched sondes will supplement these data on the 3 nominated overpass days.

**Duration of ground activity:**

The field measurement program of 10 days duration will be based on the September 18<sup>th</sup> acquisition.

**Maximum acceptable cloud cover:**

Ten percent

**Is this a new request?**

Repeat coverage of Lake Frome has been planned for some time.

However, the dates specified above are only lately determined.

**Any supporting information:**

We are asking for the Hyperion acquisitions to make the above reference point to be centre-swathe because all our ground measurement plots will be based on this swathe geography. These geographic specifications are the same as was used in the overpasses of January 5<sup>th</sup> and 21<sup>st</sup> of this year.

We recommend the target point above be the centre of a 100 km (approx.) data take. The southern 50 km will cover red loam soils, clay-stained salt through to bright salt crust. The northern 50 km sector will

go from bright salt crust through (freshly) clay and silt stained salt surface to a low dunefield of bright red sand.

Site Name:Tumbarumba

General location: South of Canberra near Tumut

Path/Row: 91 / 85

Long/Lat: 148° 15'E 35° 45'S

Data requested: HYPERION / ALI

Type of ground or airborne data: Carbon cycling project, leaf canopy dynamics, forest growth. Plots will be revisited, litter fall established, NPP predicted.

Duration of ground activity: Intensive: 3 weeks October - November 2001, then 1 week per month for 12 months

Maximum acceptable cloud cover: 20%

Is this a new request? NO

Any supporting information:

CSIRO FFP and CSIRO LW (as part of the CSIRO BWG (Biosphere Working Group)) is commencing the carbon flux project at Bago (Tumbarumba), specifically a 1km radius around the eddy flux tower. This work will commence in October 2001, and will involve extensive field work including revisiting many of the Eo-1 plots... It would be great to see if we could get another HYPERION image to cover this activity. It is due to begin 3rd week of October 2001. Previous work has been carried out in SVT collaboration with University of New Hampshire and this will continue with this work.

Site Name: Panorama

General location: Panorama, Pilbara, Western Australia

Path/Row: 112/75

Long/Lat: 119.22/-21.147 (NOTE change from original scene centre which was to far to the east by 2 km)

Date requested: 26th April 2001

Type of ground or airborne data: Airborne profiling hyperspectral VNIR-SWIR-TIR survey scheduled (booked in) 26 June to 4 July 2001. Field campaign with measurements of direct and diffuse sky radince by dual-beam bidirectinal IRIS-Mk IV/V spectrometer.

Duration of ground activity: One in support of the June/July airborne campaign and a second longer field campaign planned for the 12-20<sup>th</sup> September 2001. Precise dates to work around Hyperion scehduling.

Maximum acceptable cloud cover: 0%

Is this a new request? No

Any supporting information:

Mapping mineralogical spectral signatures, especially in the SWIR, of a complete hydrothermal system.

Site Name: Moreton Bay

General location: South-East Queensland, Australia

Path/Row: 89/79

Long/Lat: Moreton Bay (153.133, -27.100 )

Date requested: June 12(UTC)2001 and June 28 (UTC)2001

Type of ground or airborne data: In situ spectral absorption, scattering and reflectance, water samples Duration of ground activity: focussing on day of overpass

Maximum acceptable cloud cover: 30%

Is this a new request? Yes

Any supporting information:

We have very good summer situation HYPERION image of an algal bloom in Moreton Bay (12 January 2001)to be published in the IGARSS 2001 Conference. The June images requested is an attempt to get a winter situation, without the blooms. Thus providing a contrasting dataset, that may be very useful for demonstrating the usefulness of imaging spectrometry data from a satellite sensor for ecological detection and monitoring purposes, filling in the very necessary space between one-off airborne imaging spectrometry campaigns, Landsat and SPOT broad multiband data and Ocean Colour sensors with 1 km pixel size.

