

Table 1: Listing of commercially available remotely sensed data dimensions and sources (October 2005)

Modified from: Phinn, S.R., Stanford, M., Held, A. and Ticehurst, C. (2001) Evaluating the Feasibility of Remote Sensing for Monitoring State of the Wet Tropics Environmental Indicators. Cooperative Research Centre for Tropical Rainforest Ecology and Management Technical Report Rainforest CRC, Cairns (71 pp), ISBN 0 86443 684 X.

Notes for table interpretation: - refer to supporting graphs Figures a-c**Spatial resolution**

The spatial scale of remotely sensed data have been categorised into:

- | | | |
|----|------------------|-----------|
| 1. | extremely fine | <5m |
| 2. | fine | 5-20m |
| 3. | medium | 20-250m |
| 4. | coarse | 250-1000m |
| 5. | extremely coarse | >1000m |

Spectral resolution

This refers to the wavelength intervals (types of light) in which data are collected. Spectral resolution controls the information which can be derived from image data.

1. high (hyper spectral, Greater than 20, narrow spectral bands (< 20nm))
2. medium (multi spectral, 3-20, broad spectral bands)
Medium designed for land application (2-8 broad spectral bands (60-100 nm))
Medium designed for coastal and Ocean water (8 to 15 broad spectral bands (5-20 nm))
3. low (panchromatic, analog or digital images) (1 band or true or false colour with 3 to 4 spectral bands (60-100 nm))

Radiometric resolution

Radiometric resolution defines the sensitivity or precision of the imaging sensor and is a quantitative measure of the level of variation in reflected light able to be detected by the sensor. The higher the radiometric resolution, the more detailed changes in reflected light able to be measured. As radiometric resolution is increased more detailed changes in reflected light are able to be measured.

Temporal resolution

Pertains to time image data are collected (AM or PM) and the frequency at which images are collected over a site.

1. Extremely high - multiple daily
2. High - daily
3. Medium – weekly
4. Low – < monthly, seasonally or yearly

Data Type Sensor (platform)	Spatial Scale Extent (GRE)	Spectral Resolution	Radiometric Resolution	Temporal Resolution Frequency (Time of Day)	Source/Cost	Archive
Field spectrometers	Field sample plots < 1m ²	High Range:350 – 2500nm #bands: > 1000	High > 10 bit (>1024 levels)	User controlled	Hire From: universities (Univ.of Qld, Univ. NSW, USQ) A.Dekker (CSIRO Land & Water) Purchase for AU\$10k	Site specific for Rainforest CRC project from 9/1999 onwards.Contact S.Phinn(Univ.Qld) or A.Held(CSIRO)
Underwater digital camera or video linked to GPS	Field sample plots < 1m ² but repeated over areas of 100m ²	Multispectral (blue, green, red)	Medium	User controlled	Basic high quality cameras and housing can be purchased for < \$1000. Use with analysis software - http://www.nova.edu/ocean/cpce/	
Aerial photographs PAN stereo Colour stereo CIR stereo	Extremely fine to fine (local) 1:5000 – 1:25000 Extent: 1.3 – 33km ² Per photo GRE: 5m – 250m	Low - Broad band - Visible - Colour - Green, Red, NIR	Medium Not applicable (depends on scanning device)	User controlled (subject to weather and aircraft availability)	\$90 frame to fly and buy hardcopy Scanning and georeferencing require additional costs Various government agencies and	Contact companies or agencies to determine (at least annual from 1970)

					private companies.	
Airborne multi-spectral Specterra DMSV Daedalus-1268 ADAR	Extremely fine to fine (local) Extent: 100km ² GRE: 0.5 – 3.0m	Medium Range:350 – 2500nm #bands: 3 - 20	Medium 8 bit (256 levels)	User controlled (subject to weather and aircraft availability)	Contact companies for quotes (approx \$2- \$6/km ² for georeferenced image): Specterra Systems AirTarget Services	Contact companies for details.
Airborne Hyperspectral CASI Hymap	Extremely fine to fine (local) Extent: 100km ² GRE: 0.5 – 10m	High Range:400 – 2500nm #bands: > 20	High > 12 bit (4096 levels)	User controlled (subject to weather and aircraft availability)	Contact companies for quotes (approx > \$20/km ² for georeferenced image): DSTO (CASI) Hyvista Corporation (Hymap)	Contact companies for details. CASI and HYMAP data held by A.Held CSIRO Land and Water
Satellite multispectral Ikonos Quickbird	Extremely fine (local) Extent: 10 - 20km GRE: 1m (pan)or 4m(multi)	Medium Range:400 – 1000nm #bands: 3	Medium 8 bit (256 levels)	AM 3 days - pointable	Geoimage US\$29/km ² for georeferenced image	Extensive archives for each sensor, see Quickbird archivetool3.digitalgl

Landsat ETM Landsat TM SPOT XS IRS SPOT VMI NOAA AVHRR SeaWifs (Orbview2 Or SEASTAR)	Medium (Province – Region) Extent: 34225 km ² Or 185 x 185km GRE: 15-30m Coarse (Region) Extent: 2500km wide GRE: 1km Coarse (Region) Extent: 2200km wide GRE: 1km	Medium Range:400 – 2500nm 10µm – 12.5µm #bands: 4 - 7 Medium Range: 400 – 2500nm 10µm – 12.5µm #bands: 4 Medium Range: 400 – 885nm #bands: 8	Medium 8 bit (256 levels) High 10 bit (1024 levels) High 10 bit (1024 levels)	AM 16 days AM 16 days AM 26 days - pointable AM 24 days AM 2 days AM + PM twice daily AM 1 day	Geoimage or ACRES \$1950 for geocoded full scene (200km)	obe.com Ikonos www.spaceimaging.com/ Geoimage is an Australian company responsible for coordinating multi- agency purchases and has access to a number of archives of these data in Australia, see www.geoimgae.com.au ACRES maintains Landsat and SPOT archives acres.ga.gov.au/intro.html Seawifs data can be accessed through the oceancolour website oceancolor.gsfc.nasa.gov/
Satellite hyperspectral MODIS (EOS- terra and Aqua platforms) Hyperion	Coarse (Region) Extent: 2048km wide GRE: 250, 500, 1000m Medium Extent: 7.5 x	High Range: 400 – 2500nm 10µm – 12.5µm #bands: 36 High Range: 400 –	High 10 bit (1024 levels) High 10 bit (1024 levels)	Daily (Terra = AM and Aqua = PM) AM – 16 days (follows ETM)	EOS Data Information System eos.nasa.gov/eo sdis EOS Data	MODIS data can be accessed through the oceancolour website oceancolor.gsfc.nasa.gov/ No archive

MERIS	100km GRE: 30m Coarse (Region) Extent: 2500km wide GRE:300m	2500nm #bands: 220 High Range: 400 – 1000nm #bands: 15	High 10 bit (1024 levels)	3 days	Information System eos.nasa.gov/eosdis http://envisat.esa.int/instruments/meris/data-app/dataprod.html	
Airborne laser altimeters AAM surveys Optech ALTM 1210 - Profiling laser Enerquest Systems - Scanning laser	Extremely fine to fine (local) Extent: 100km ² Sampling intensity: 5000 – 10000 pulses per second. 2- 10 samples per 1m ²	Not applicable	Not applicable	User controlled (subject to weather and aircraft availability)	Rotor Resources \$12.50ha for georefernced DEM + aircraft mobilization ex-Brisbane South-West Pacific Helicopters	No archive.

Airborne SAR						
NASA - AirSAR	Medium (Province) Extent: 12 x 120km GRE: 10m	Medium C band (5cm) L band (24cm) P band (60cm)	Not applicable	Restricted to research missions November 1996 September 2000 To be announced 2002	NASA JPL http://airsar.jpl.nasa.gov/ No costs Or S.Phinn (UnivQld) and A.Held (CSIRO Land & Water)	Archive from 11/1996 of Daintree Estuary and 9/2000 Daintree – Cooktown at CSIRO land & Water
Satellite SAR						
Radarsat	Medium (Province Region) Extent: 100x100km GRE: 30m	Low C band (5cm)	Not applicable	AM 3~5 days	Geoimage or ACRES US\$3500 for georeferenced 100k x 100km scene	Collected since 1995,
ERS-1/2	Medium (Province Region) Extent: 100x100km GRE: 10 - 30m	Low C band (5cm)		AM - 35 days	\$2200 for georeferenced single scene	Collected since 1995,
JERS 1	Medium (Province Region) Extent: 75x100km GRE: 18m	Low L band (24cm)		AM – 44 days Ceased operation in 2000	\$1500 for georeferenced single scene	Collected 1992 – 1998, no CRC archive.
ASAR (ENVISAT)	Medium (Province) Extent: 100x100km GRE: 150m	Low L band (24cm)		AM - 3 ~5 days	Not available	