



Australian Government
Bureau of Meteorology



Recent MAGDAS Activities in Australia

Richard Marshall¹ and the MAGDAS group²

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² ICSWSE, Kyushu University, Fukuoka, Japan

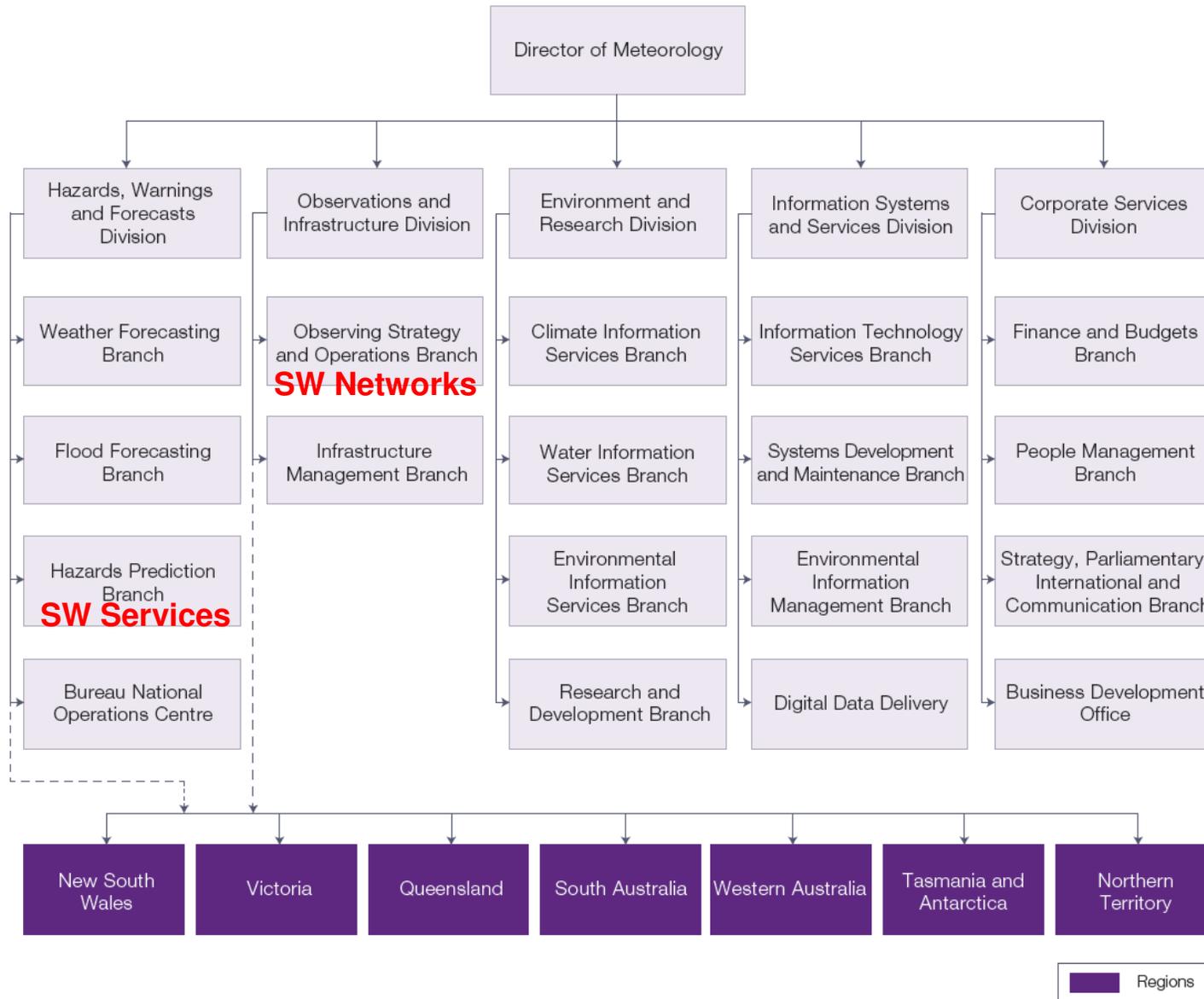


BOM's Space Weather Services

- The Ionospheric Prediction Service (IPS) providing HF Radio services and support since late 1940's
- IPS Radio and Space Services since late 1990's when commenced providing additional Space Weather services and support
- Joined Australian Bureau of Meteorology (BOM) in 2007 – not yet fully integrated
- BOM Realignment 1 July 2014 – IPS divided entity first time since inception
- Munro Review of terrestrial severe weather services – Option 20

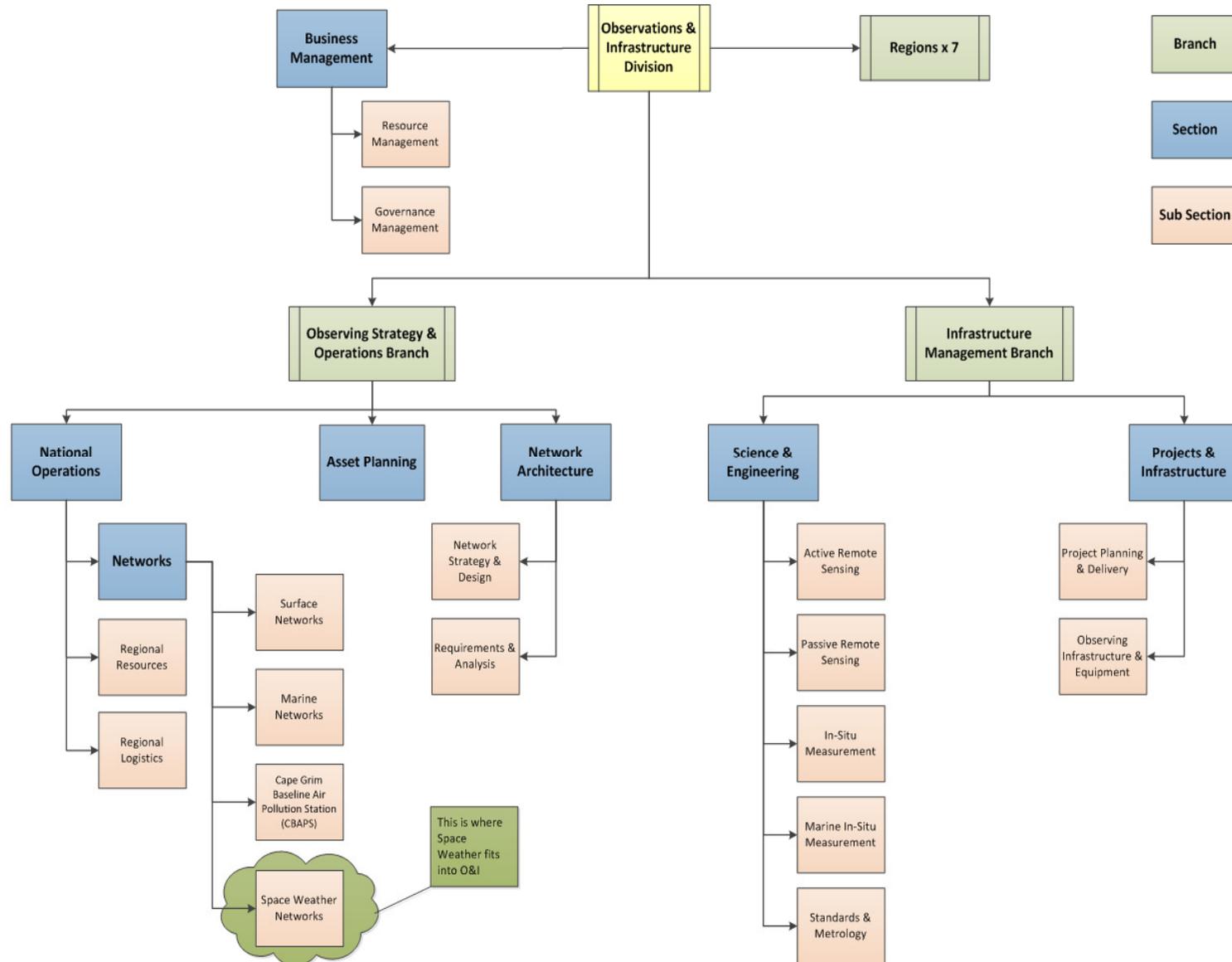


BOM's Realignment Project



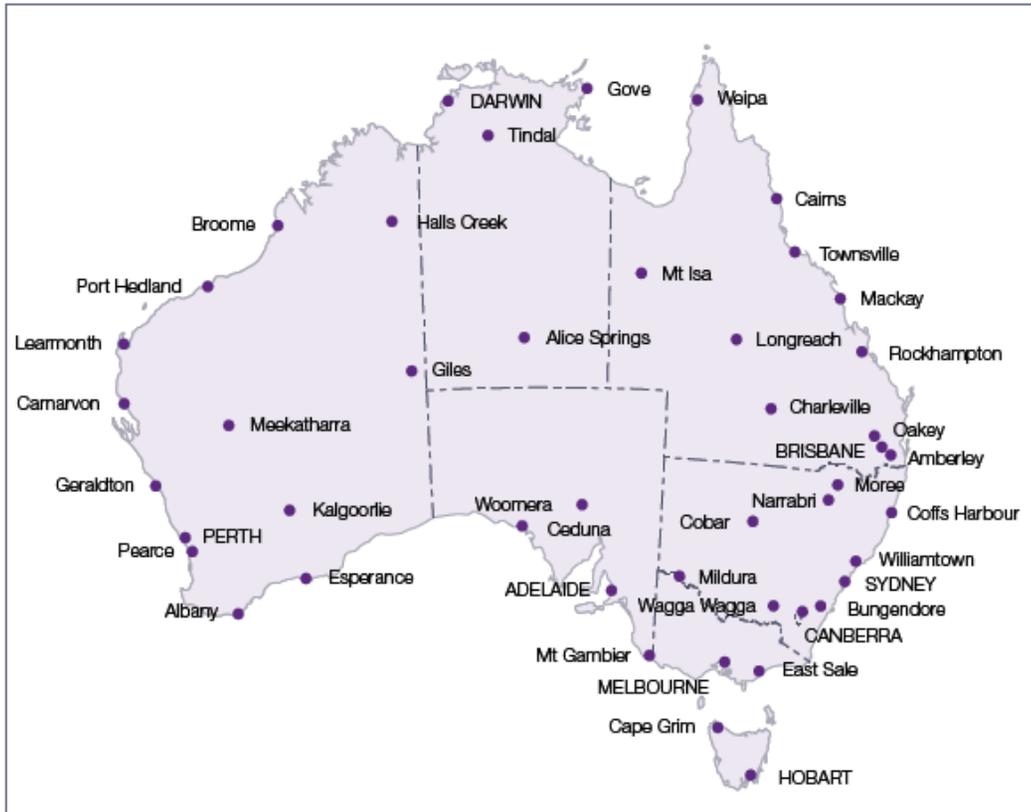
BOM's Space Weather Networks

Observations & Infrastructure Division

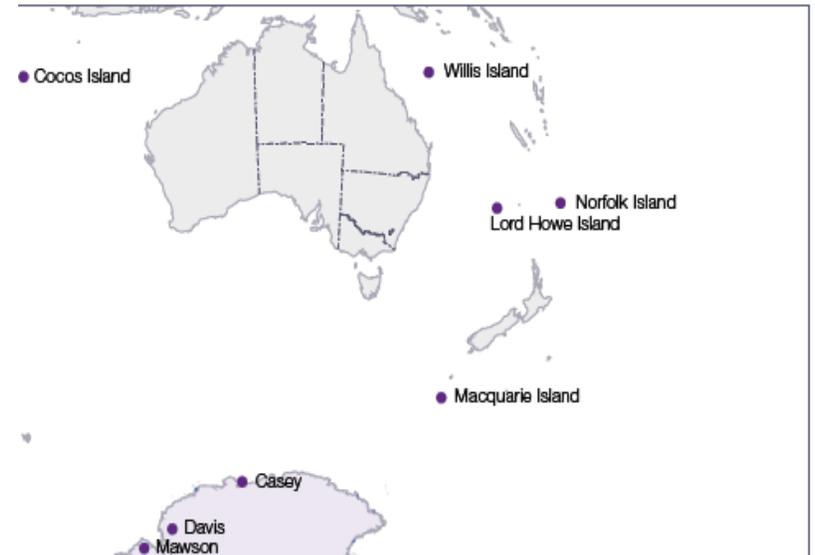


BOM's Observations Network

BUREAU OFFICES



BUREAU OFFICES



BOM's Space Weather Review

Space Weather Services Review

- A Review of the Bureau of Meteorology's extreme weather and seasonal forecasting capacity proposed a number of options for obtaining funding for additional terrestrial weather forecasters
- Option 20: 'Cease or reduce the Ionospheric Prediction Service (IPS), or offer it as a commercial service.'
- Government response was to review the Bureau of Meteorology Space Weather Services (IPS)

The Review Terms of Reference were:

- Review the policy basis for the Bureau's Space Weather services;
- Provide an analysis and international benchmarking comparison of the Bureau's Space Weather services, and **use of observations and infrastructure**, including:
 - their current status;
 - performance and impact;
 - scope;
 - manner of delivery; and
 - adequacy of capabilities and resourcing to deliver the service;
- Evaluate the extent to which the Bureau's Space Weather services meet user needs, especially those of significant user groups and high-impact users;
- Assess the strategic outlook (over 5-10 years) for Space Weather services in Australian, regional and global settings and, in light of 1 to 3 above, provide advice on the capabilities required to meet the future challenges;
- Comment on the potential for cost-recovery of Space Weather services;
- Provide recommendations based on the above analyses, assessments and evaluations.

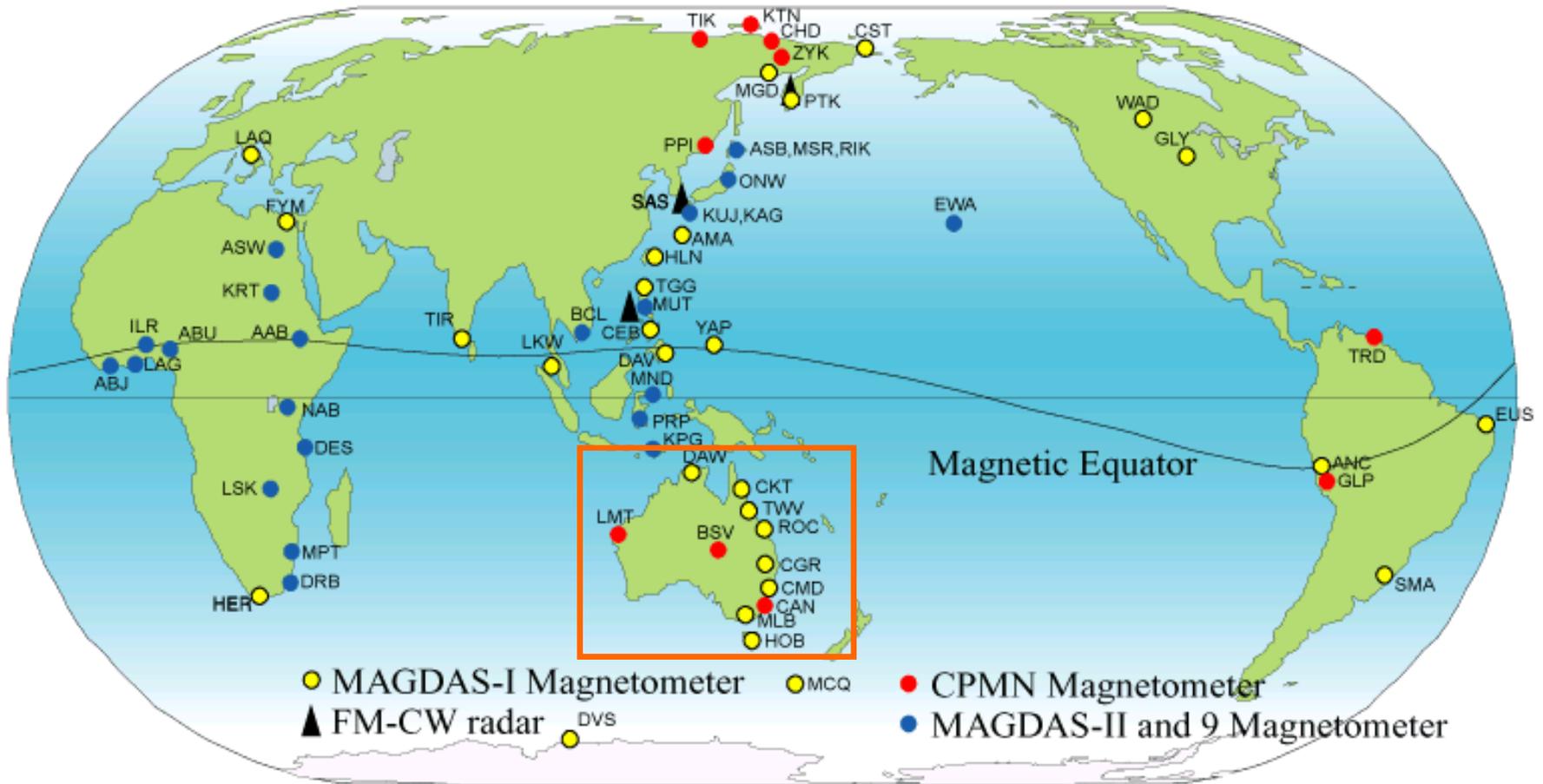
Reviewers: Professor Paul Cannon, University of Birmingham, UK (lead); Dr Terry Onsager, SWPC, NOAA, USA.

Outcome: Space Weather review findings are presently with Minister before being released to public.

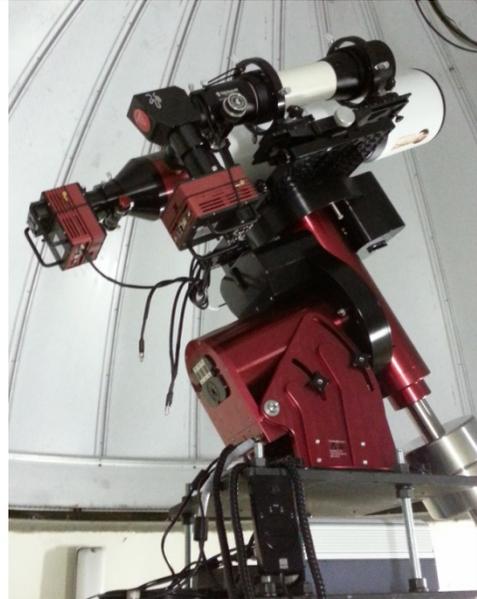
MAGDAS Global

MAGDAS/CPMN

(MAGnetic Data Acquisition System/Circum-pan Pacific Magnetometer Network)



SWN Observatories

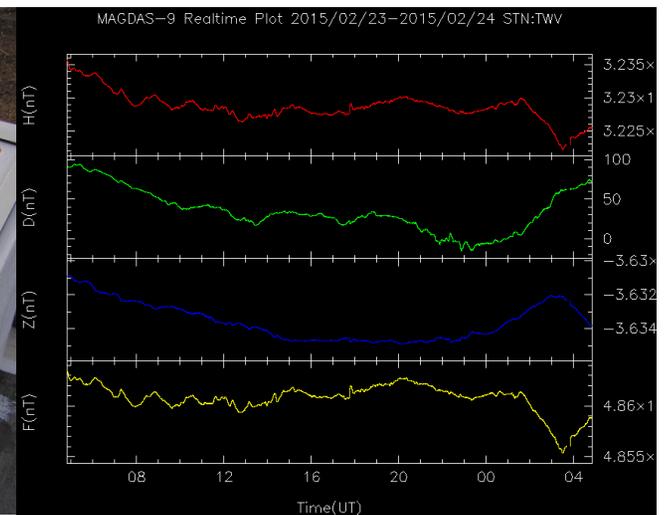


MAGDAS Future in Australia (2012)

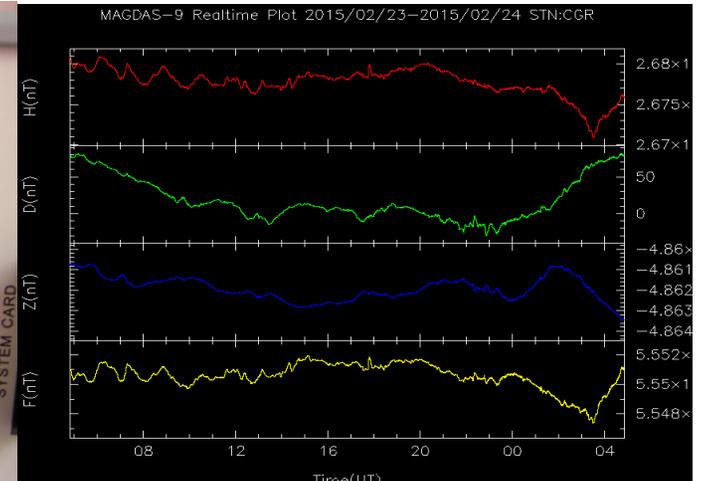
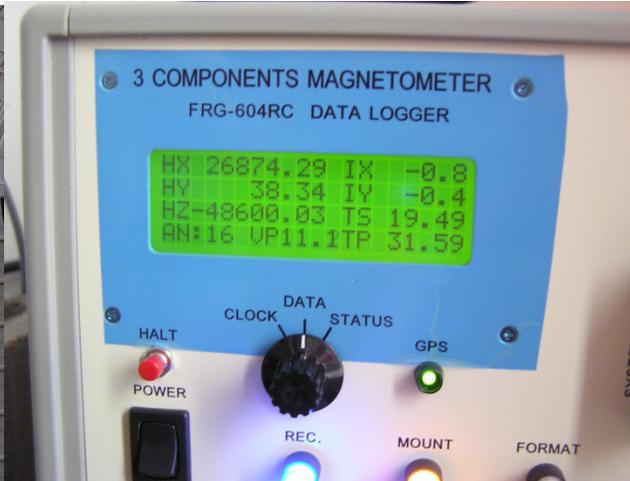
Over the coming 12 months of 2012:

- Continue routine support of MAGDAS operations within Australia
- Develop, test and implement collection of digital data from MAGDAS-9 units
- Upgrade at least one Australian MAGDAS-I system to MAGDAS-9

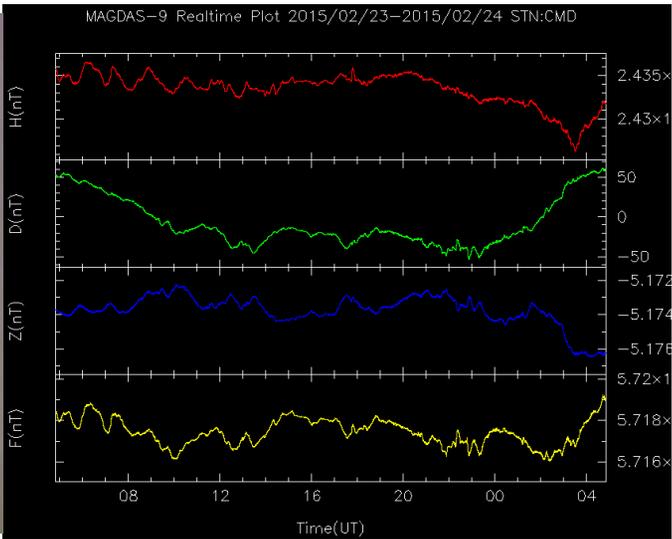
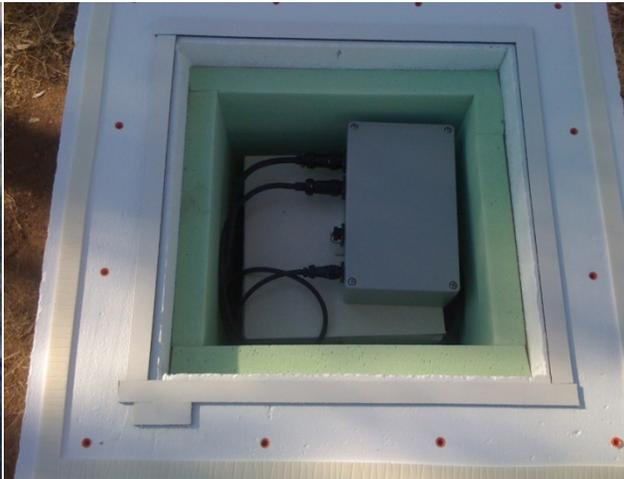
MAGDAS-9 Upgrade: Townsville 2013



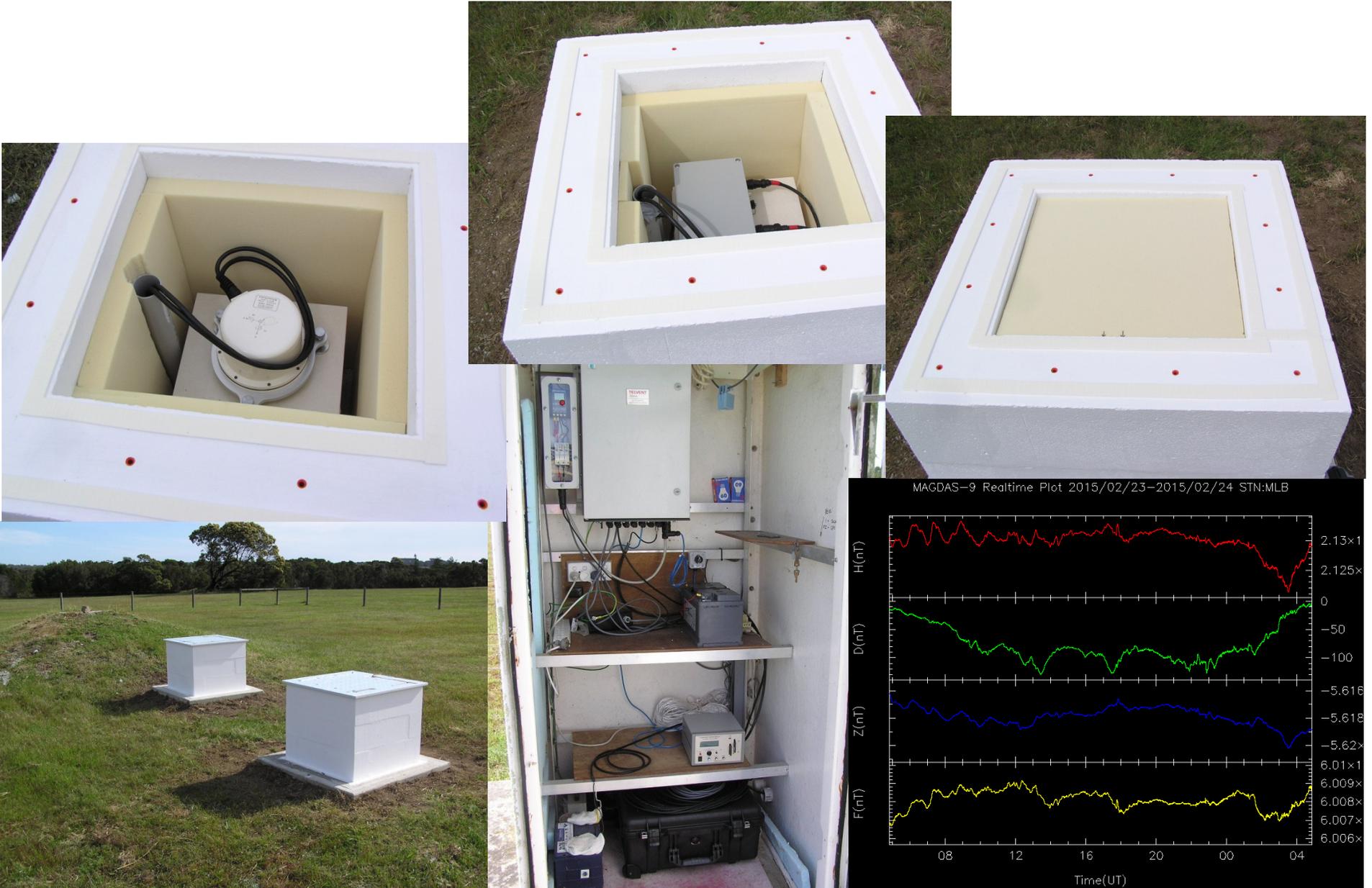
MAGDAS-9 Upgrade: Culgoora 2013



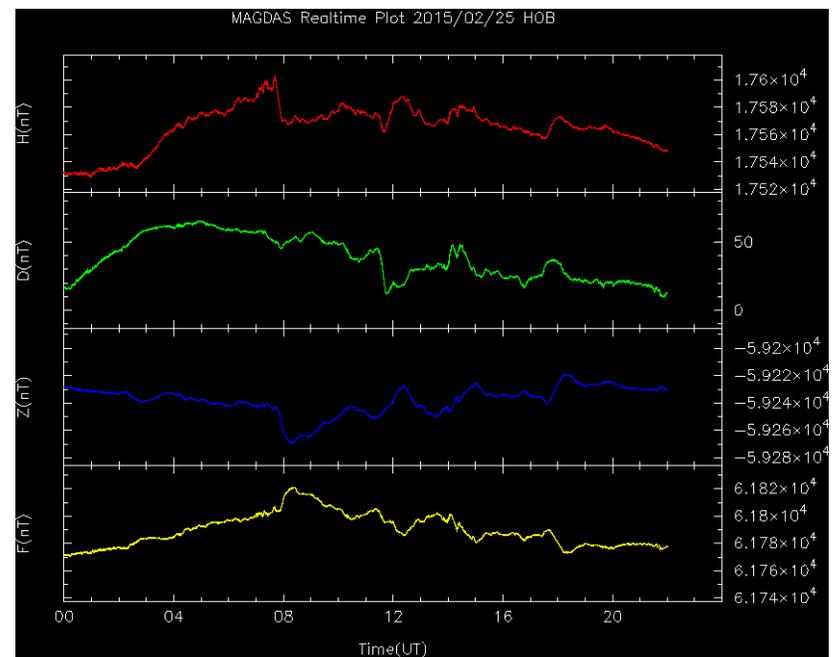
MAGDAS-9 Upgrade: Camden 2014



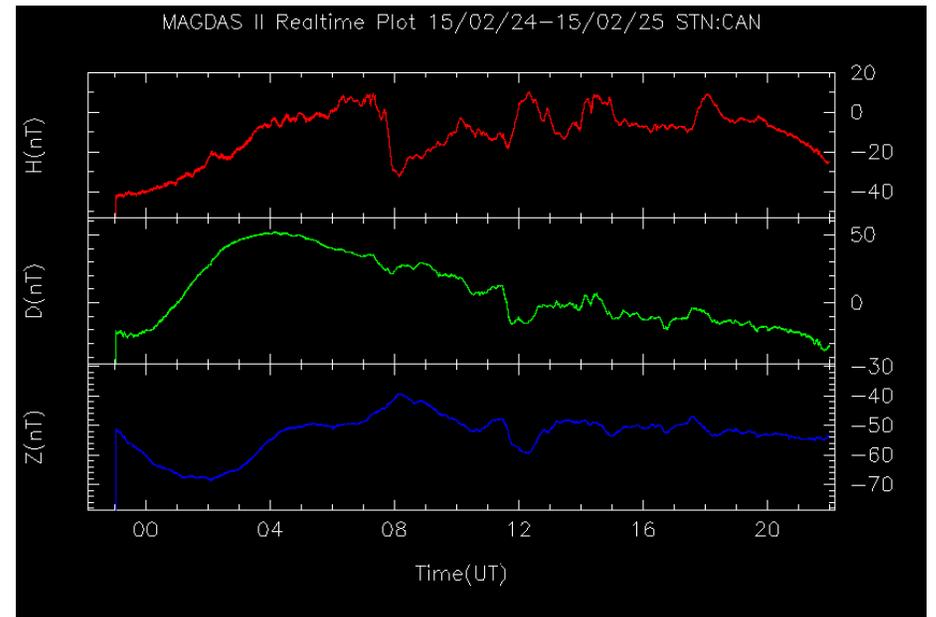
MAGDAS-9 Upgrade: Melbourne 2014



MAGDAS I: Hobart



MAGDAS II: Canberra



MAGDAS DATA → ICSWSE → BOM/SWS

MAGDAS



Real-time Data



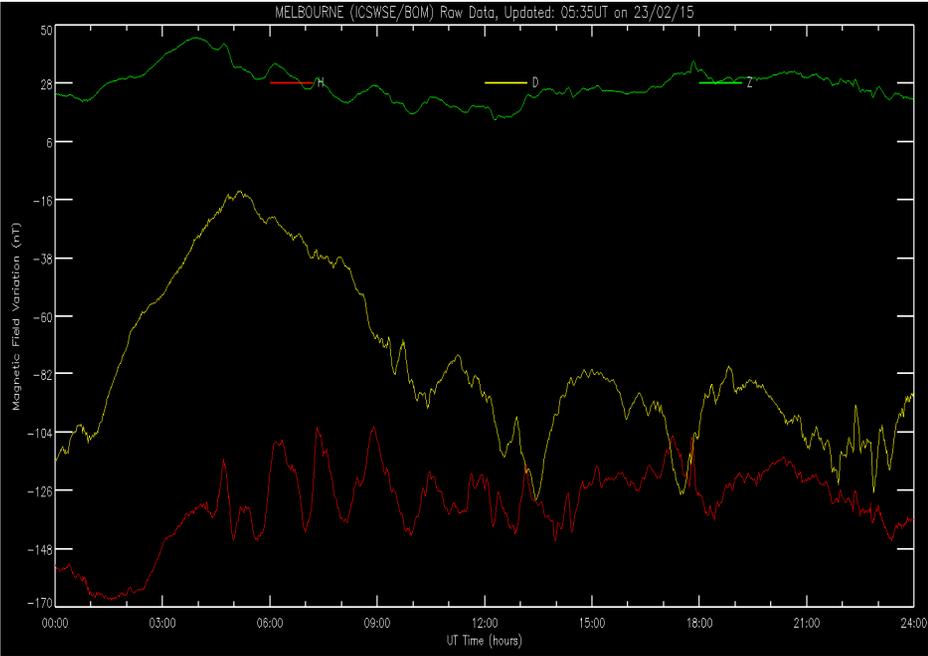
FTP



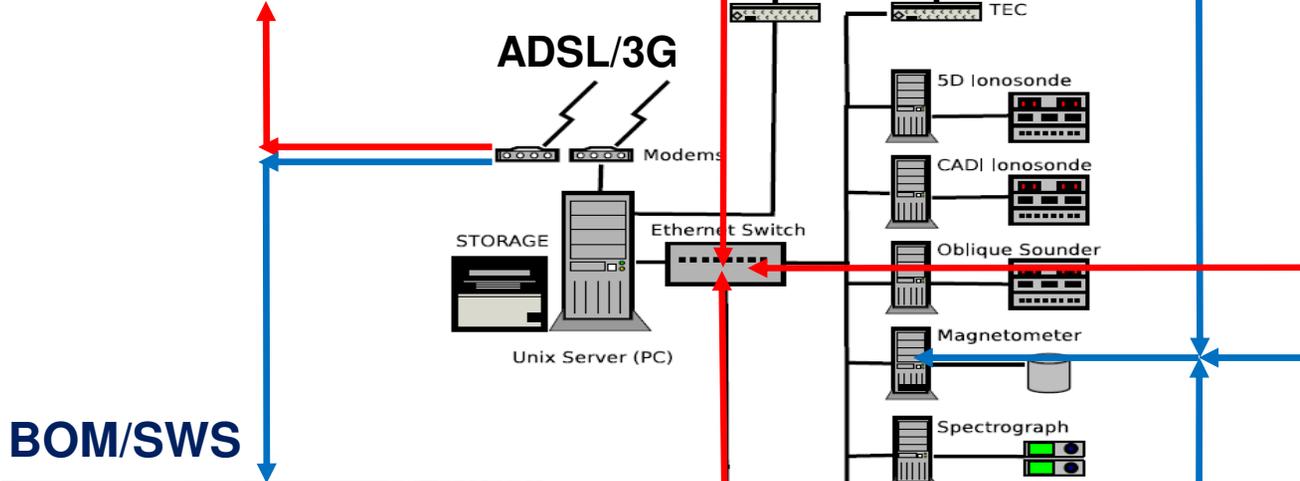
BOM/SWS



BOM/SWS
Software



MAGDAS DATA → BOM SWS/ICSWSE



BOM/SWS



MAGDAS I



MAGDAS II



MAGDAS 9

MAGDAS-9 Serial Data logger

Config Settings

MAGDAS-9 SerDAQ Settings

Please specify configuration settings for the MAGDAS-9 Data Acquisition Software.

Port Settings - this is the serial communication port into which the FRG-604RC data logger is connected. List of aliases shows all possible serial communication ports associated with this machine. Port is accessible if it is recognised as a serial instrument port. Please use USB-RS232 converter if required.

Data Directory - this is the file directory path onto which data files are to be saved (this can be a network path; the default is the local directory of the system where this application resides).

Log File Size (sec) - specifies the file size onto which data will be saved. Number of records equals number of seconds multiplied by the sample frequency. Default is 200 seconds, range is 5 to 2592000.

Clock Data, GPS Data, 10Hz Magnetic Data OR 1Hz Magnetic Data - specifies the data type to be saved on the files. Default data is already assigned as: Clock Data date/time, 1Hz Magnetic Data - X, Y, Z, and Temperature. User may select additional data, please check the appropriate box for required data. Changing these settings will result in more or less columns of data saved onto each file. NOTE: Selecting 10Hz Magnetic data, will log ALL values at 10Hz and result in much larger file size.

Header - this is the header string or text that will appear on top of each file, normally above data, explaining data type, station, system, sensors or else (this can be any ASCII characters). Data is then separated by START DATA and END DATA string lines. Default header is given within.

Clock Data **GPS Data** **10Hz Magnetic Data** **1Hz Magnetic Data**

Initial Character (T, S)
 Year month day hour minute second (YYMMDDHHMMSS)

Data Directory:
C:\Program Files (x86)\IPS\MAGDAS9 SerDAQ Ver2\Data

Log File Size (sec):
200

Port Settings
COM1

Header:

Software: MAGDAS9 SerDAQ v1.0
Station: Townsville
Sensor: MAGDAS9
System: IPSMAGv2.5

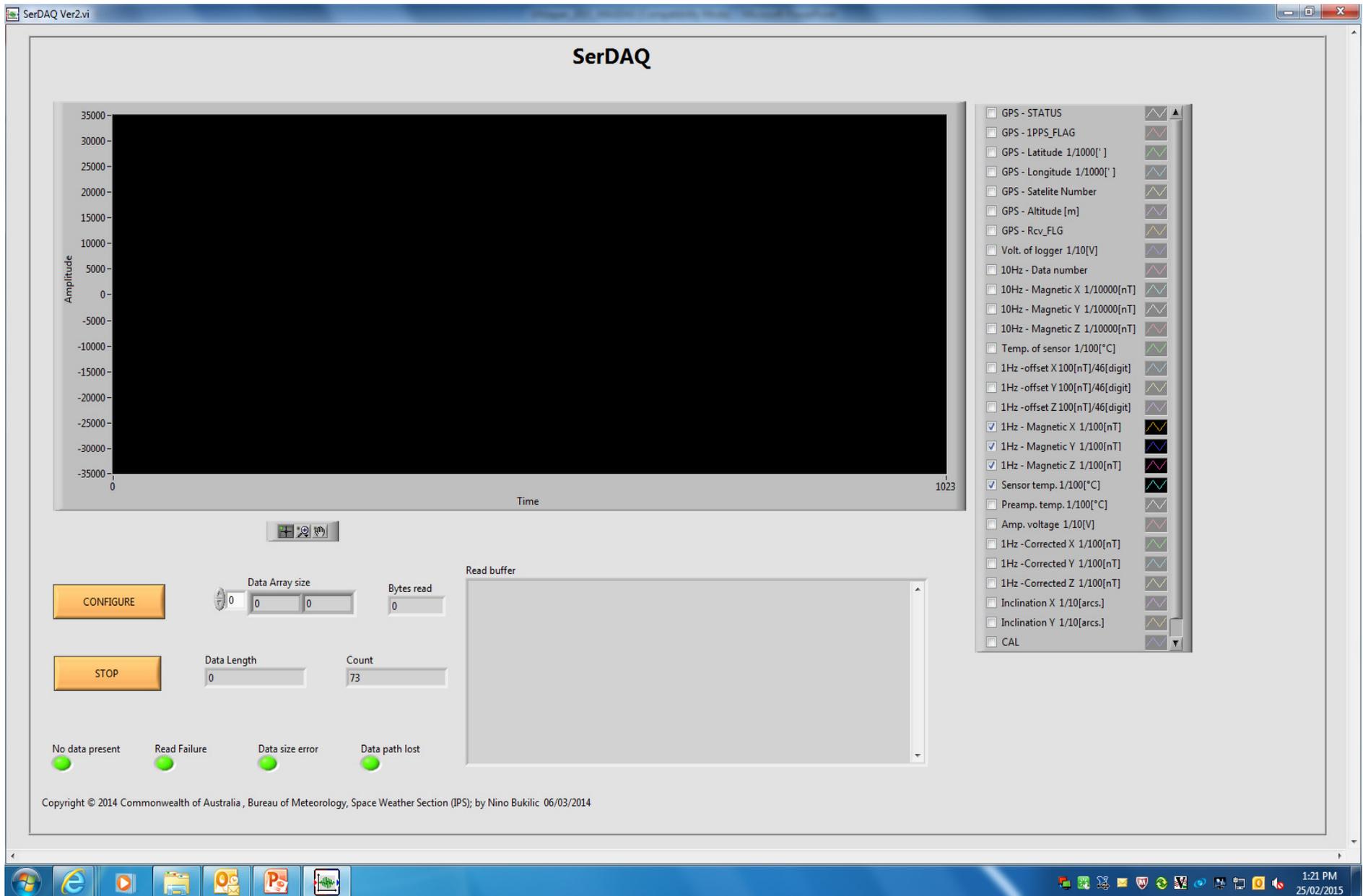
Additional Information:

Time left (300s = Auto Cancel): 84

SAVE CANCEL

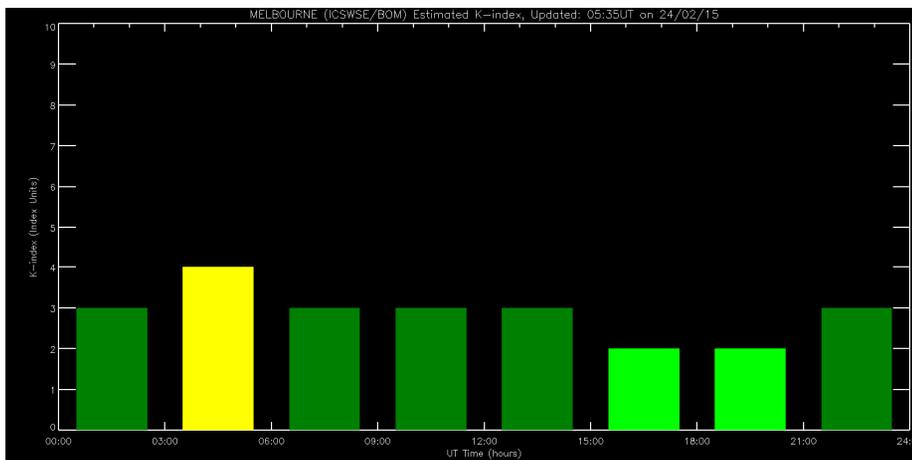
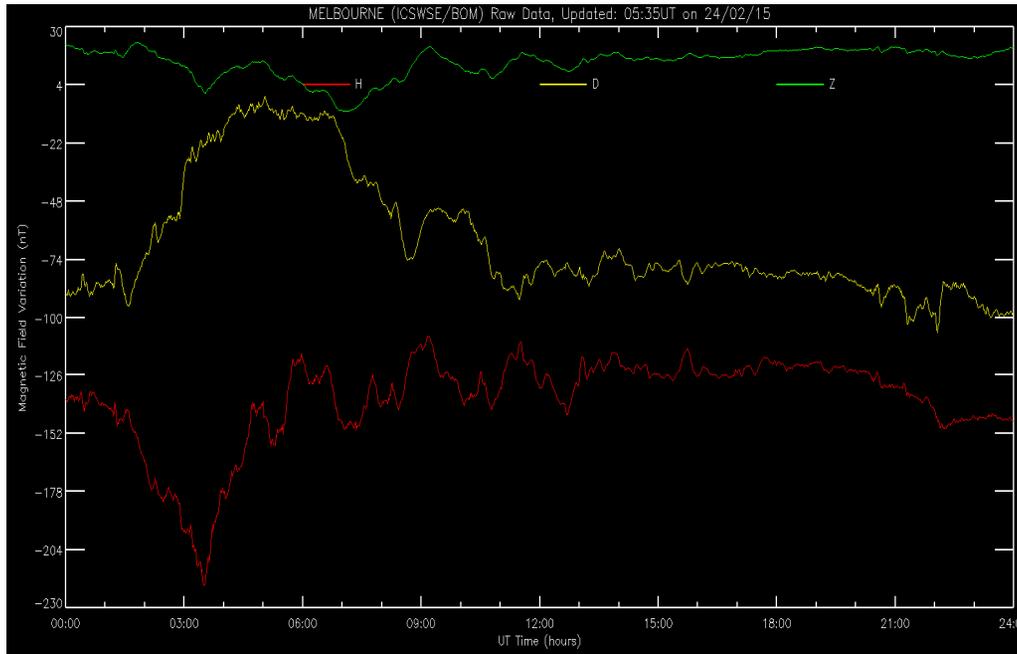
1:20 PM
25/02/2015

MAGDAS-9 Serial Data logger



BOM SW SERVICES - MAGDAS

IPS Daily Report – Geophysical Section



Geomagnetic field for Australian Region
24 Feb: Quiet to Active

Estimated Indices 24 Feb : A K

Australian Region	14	34333223
Cocos Island	9	33232212
Darwin	14	34333223
Townsville	14	34333223
Learmonth	13	44332212
Alice Springs	14	34333213
Norfolk Island	11	33333212
Culgoora	13	24333223
Gingin	14	44332213
Camden	13	24333223
Canberra	11	23333222
Melbourne	14	34333223
Launceston	14	34333223
Hobart	13	34333222

NOTE: Indices may have been generated from data obtained in cooperation with the following organisations: Geoscience Australia, University of Newcastle Space Physics Group, Australian Government Antarctic Division and **International Center for Space Weather Science and Education, Japan.**

MAGDAS Future in Australia

- Continue routine support of MAGDAS operations within Australia
- Maintain and upgrade MAGDAS SerDAQ software for serial data from MAGDAS-9 units
- Upgrade Hobart MAGDAS-I system to MAGDAS-9 (2015/26)
- Provide co-authorship to any scientific research papers utilizing IPS/SERC MAGDAS data