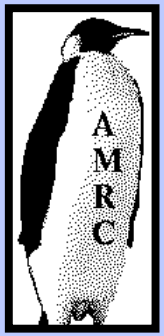


Status Report on the Antarctic Meteorological Research Center

Matthew Lazzara,

Shelley Knuth, Linda Keller, & Charles Stearns

Antarctic Meteorological Research Center

Space Science and Engineering Center

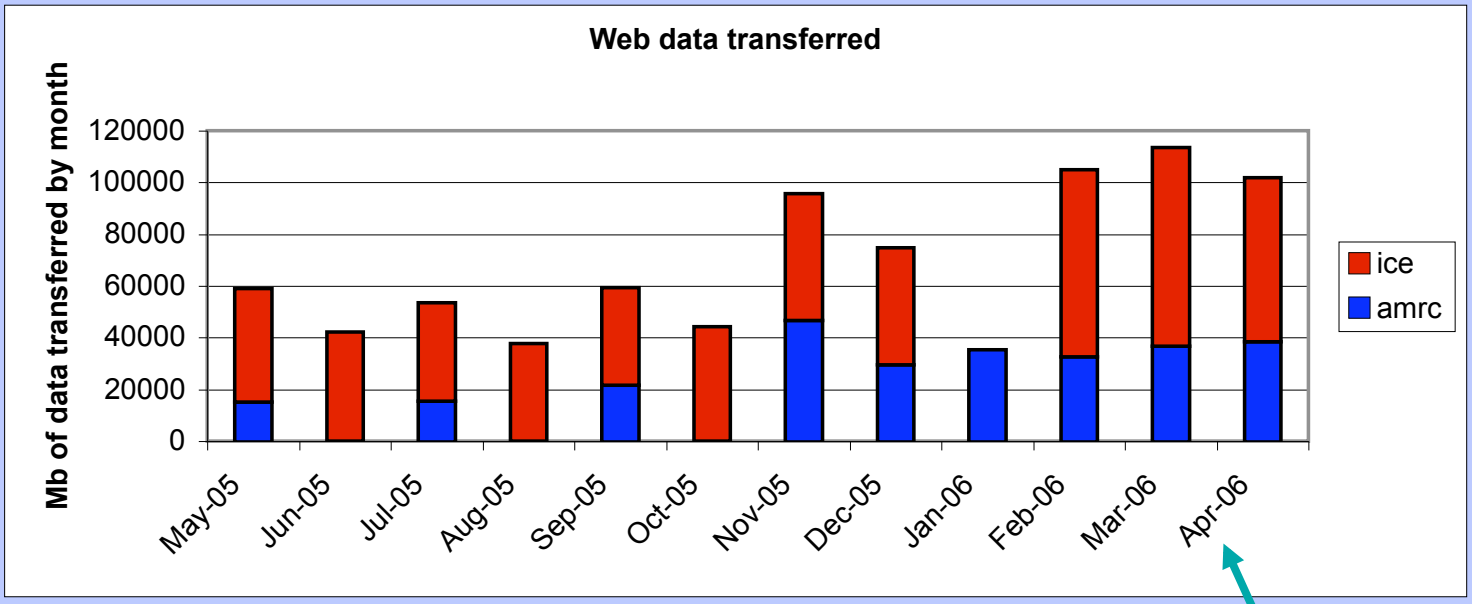
University of Wisconsin-Madison

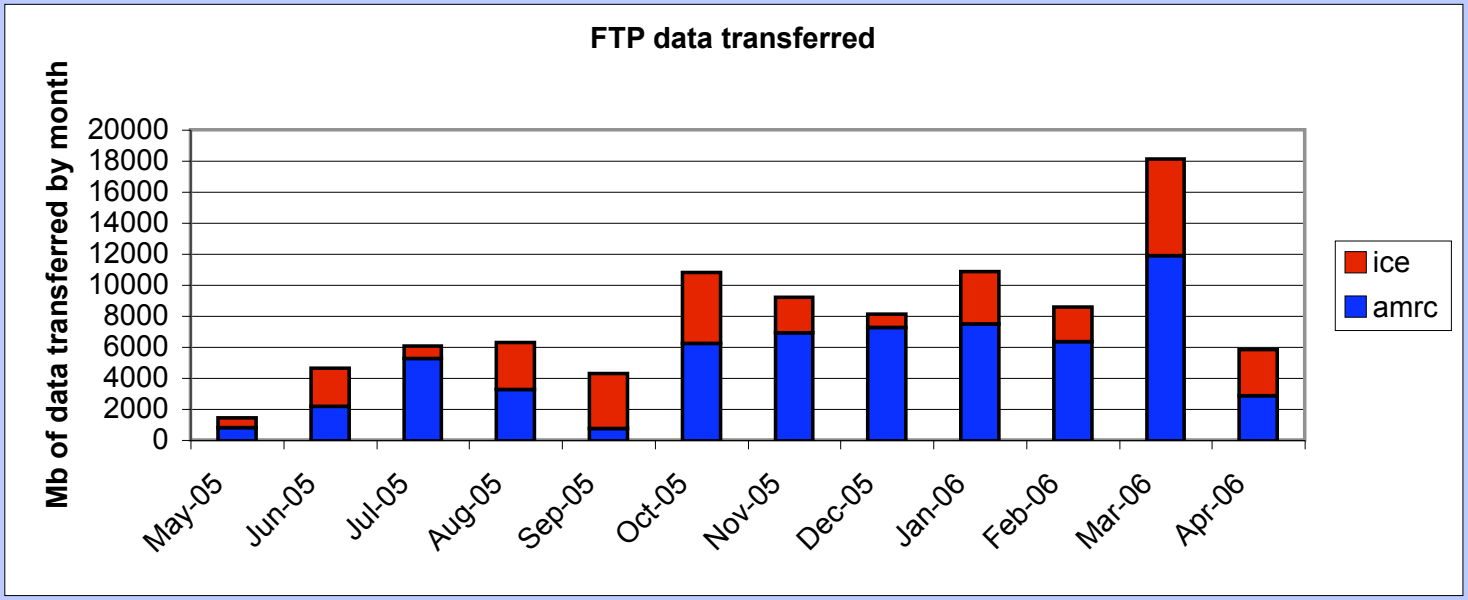
Outline

- Statistics
  - Outreach & Data Requests
- AMRC topics
  - Copy of AMRC's Archive
  - Antarctic-IDD Status
  - Re-Tooling the AMRC
  - Research
- Issues and Topics:
  - WMO
  - Peter the First Island Experiment
  - AWS Observations and Palmer
  - Black Island Weather Observations
- Future Plans

Generated Data and Products	Satellite Imagery and Data	Model Analyses & Forecasts	Observational Data (GTS/ NOAAPORT)	Text Data (GTS etc.)	USAP Station Data
Antarctic Composites •IR •WV •VIS *experimental* •Pseudo-Color	NOAA •HRPT (McMurdo & Palmer-*RT*) •GAC (Project FROST/by request) •LAC (Iceberg)	NCEP •GFS •WWFM	METAR	METAR (McMurdo area South Pole, SA)	South Pole
		Met Office (UK)	PIREP/AIREP	TAF (McMurdo Area)	Palmer
UW & SPAWAR AWS Data	Terra/Aqua MODIS Products *(Real time)*	ECMWF (Europe)	Synoptic (US and ABoM - ABoM ends March 2006)	AIREP (New Zealand Region)	McMurdo
GMS/GOES Satellite wind charts *(Courtesy of CIMSS)* *MODIS Winds - J. Key (Real time)*	DMSP •OLS •SSM/I (McMurdo & Palmer) *(Real time)*	AMPS *(Real time)*	Radiosonde	USAP Ship SIT-REPS	Including NCDC Data holdings up to 1998
		CRAS *(Real time)*	Ship & Buoy		Field Camps & MAWS

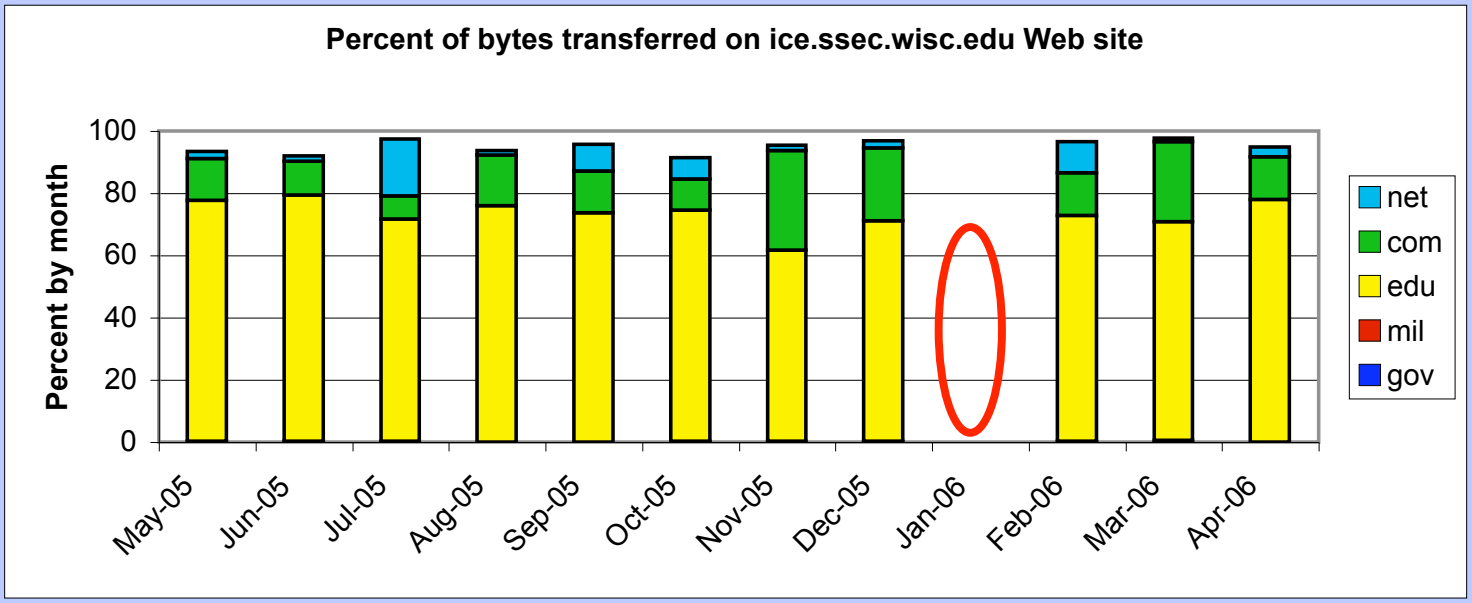
Web & FTP Stats

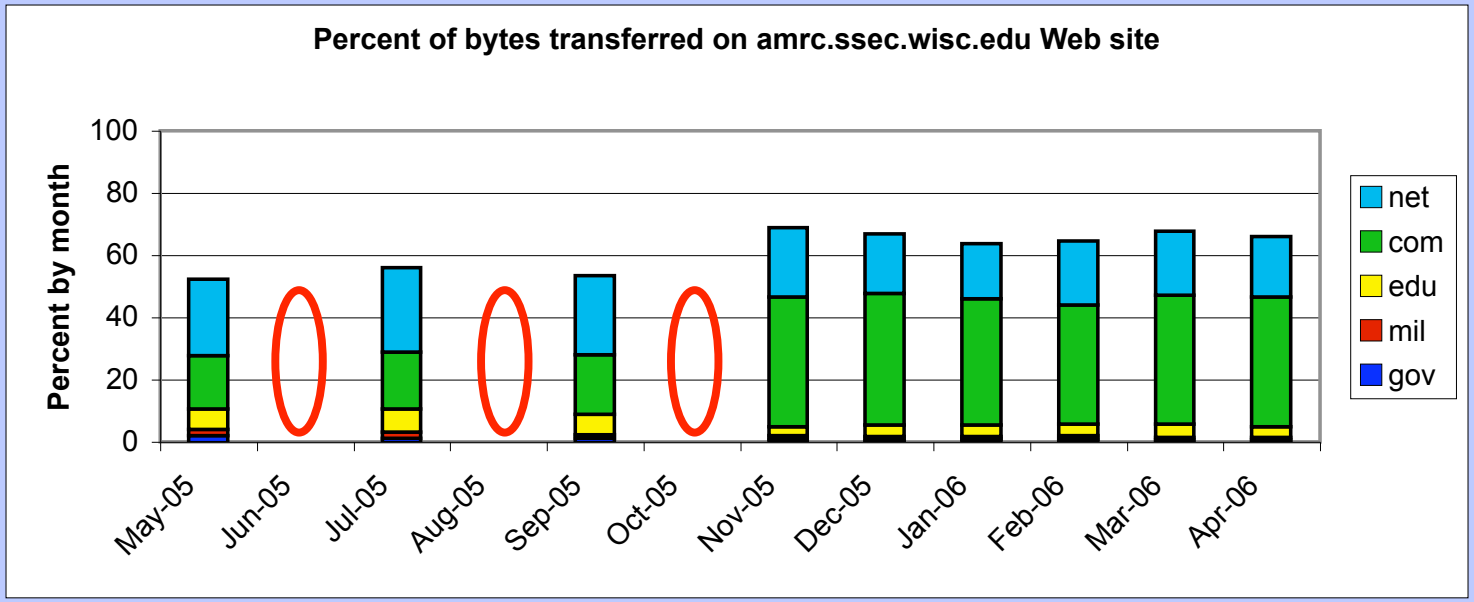




Reached 100 Gb Mark!!!!

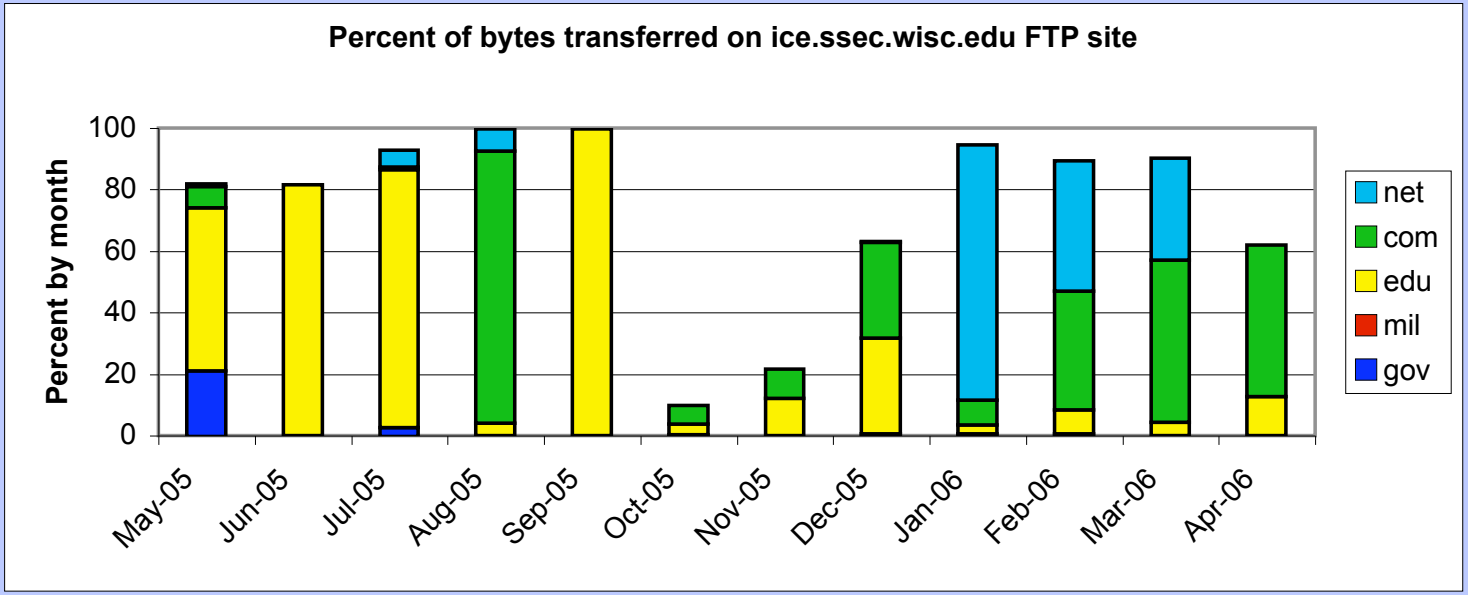
More Stats

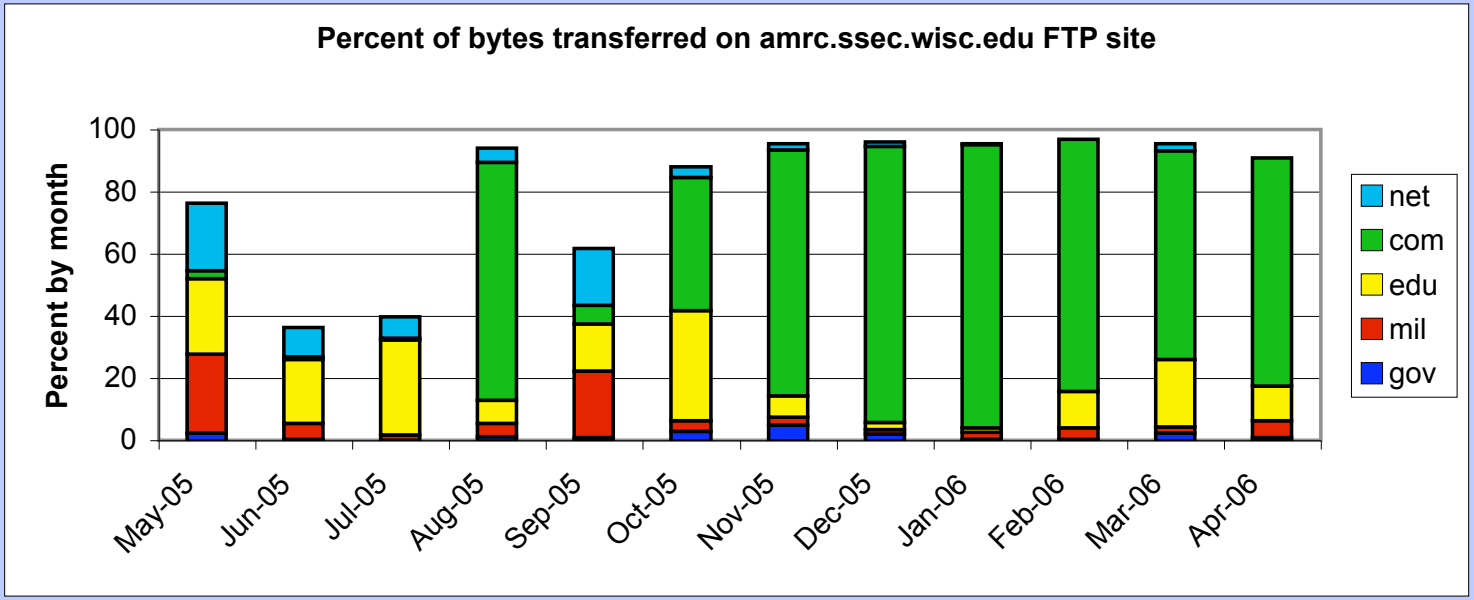




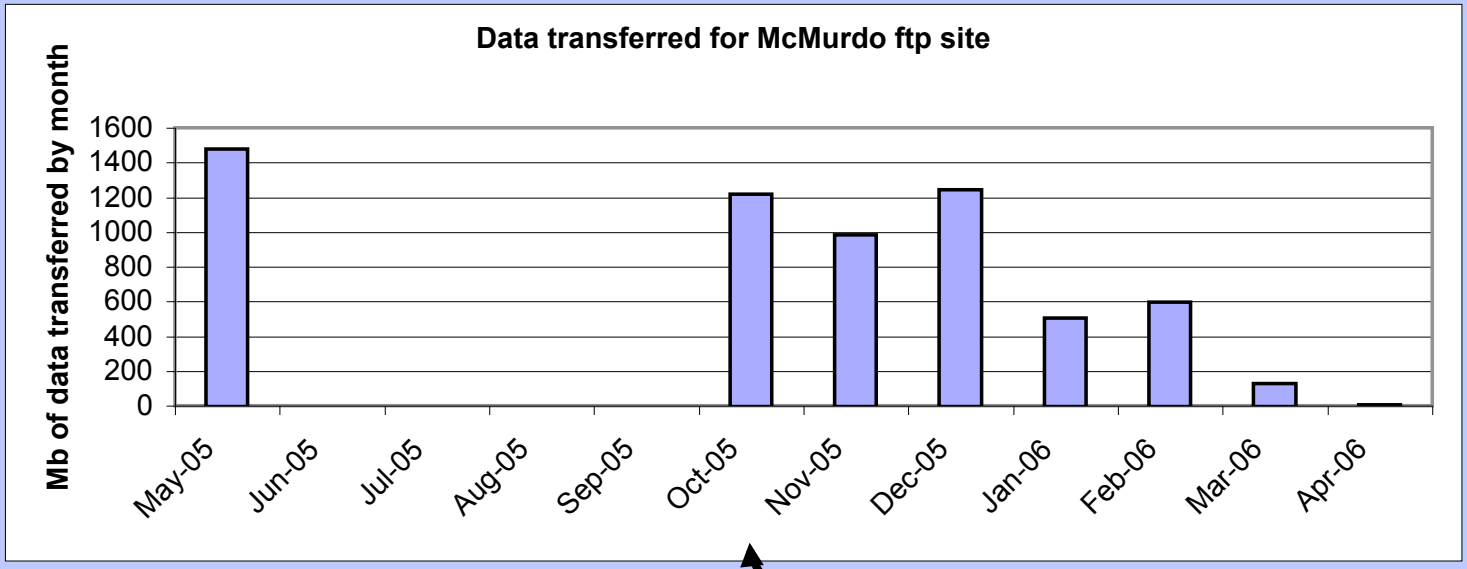
Missing Data

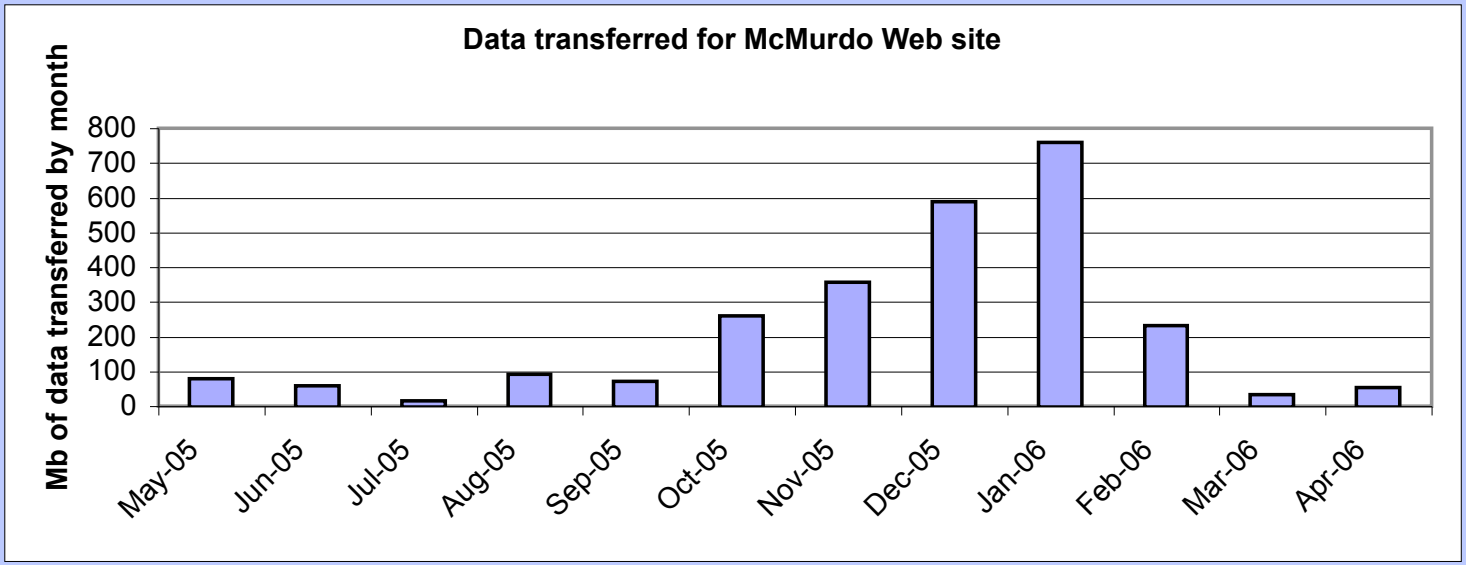
Even More Stats





McMurdo Stats





Start of The Field Season

Outreach Activities

- At UW-Madison:
  - SSEC Tours
  - Hundreds of e-mails
  - Grandparents University
  - "Wednesday Night at the Lab"
  - CIMSS Wisconsin Space Grant Workshop
  - UW Space Place
- CNN & WORT-FM
- Madison Urban Adventures Program
  - Joint UW-Madison & Madison Public Schools
- Jefferson Middle School Madison, WI
- Lodi Area Middle School, Lodi, WI
- Deerfield Public Library, Deerfield, WI
- Madison Area Technical College, Madison, WI

Data Requests

Domestic:

- Amanda Adams, UW
- Kathleen Allen, CPA
- Gonzolo Hernandez, U. Washington
- Kim Nielson, Utah State
- Mark Seefeldt, UC
- Bill Smith, 109th NYANG
- Esteban Vazquez, BRPC/ OSU
- Rebecca Wolf, USNA
- Zhien Wang, NASA

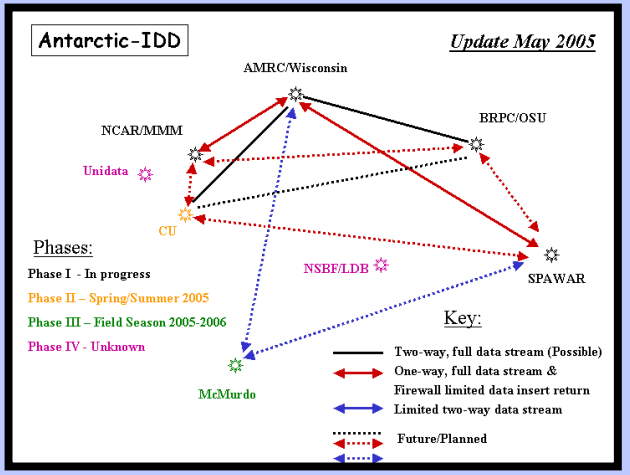
International:

- Australia
  - Clare Oatley
  - Meraz Mostafa
- Chile
  - Viviana Urbina
- Germany
  - Andreas Will
- India
  - Raghavendra Babu
- Italy
  - Stefano Di Battista
  - Carlo Medaglia
- New Zealand
  - Penny Clendon
- Malaysia
  - N.C. Sheeba
  - Wayna Suparta
- UK
  - Edward King

AMRC Archive Copy Project

- Copy CD/DVD onto 3590 Tape
  - Up to end of 2005
  - 3590 tape copy - 2 copies!
  - On-line RAID/5 up into 2005
    - Mostly compressed or gzipped
- Issues with media
  - Some tape failures (before archiving!)
  - Only 10 year life
  - Future - tape archive of on-line RAID(s)
- Future
  - 2nd tape copy to Wisconsin State Records
    - Fair bit of paperwork & cataloging required
  - Larger RAID for full on-line access (ADDE, FTP, perhaps Web, perhaps THREDDS, etc.)

Antarctic-IDD



- Data to and from McMurdo:
  - USES allotments
  - AMRC & SPAWAR sharing
- Use Ant-IDD to send everything
  - Using FTP and ADDE as backup or on-the-fly
- Concern: Satellite data sharing
  - Raw form(SDI), TDF?, or McIDAS AREA (AMRC requirement)
  - JPEG or GeoTIFF (SPAWAR requirement)
- Discussion Topics:
  - Implement big brother or nagios monitoring software
    - Run parallel to RPSC or SPAWAR??
  - Archive of the data stream?
  - Getting Unidata & RPSC & Palmer on the Ant-IDD?
  - Complete the topology of the network
  - Compression (bzip2 and GRIB2)?

AMRC's New McMurdo Home

History:

- Crary Science and Engineering Center 1992 to 2005
- Mac Weather 2006 to present
- Concept of Operations Agreement
- (Discussion off-line to approve continued application?)
- Thank you to SPAWAR, RPSC and NSF

Re-Tooling the AMRC

- AMRC Systems in McMurdo: Our Goal
  - 2 Rack mount systems (Linux)
    - Jeff Key's system will likely become rack mounted too
    - Combine with Jeff Key's system/Mutual Backups/RAID?
  - 1 flat panel/keyboard/mouse/KVM for our "Home"
    - AMRC will purchase per NSF
- AMRC Satellite Ingest Systems: Questions
  - Do we do SDIs or develop TDF reader?
  - What of real-time AWS decoding?
  - Archive: AARC? AMRC?
- AMRC Display in Crary Lab
  - Interactions with SPAWAR web pages on station?
  - Do we need a bigger display?
  - Not rack mounted - this years upgrade an "older" Linux system

Research Projects

- McMurdo Climatology
  - (and Fog…PhD)
  - Draft Beta Version only
  - Comments welcome
  - Handout…
- Fog Case Studies
  - In progress
  - 3 started
  - Events affecting McMurdo (town)
- Satellite Reports
  - Update only for 2006
  - Thanks to SPAWAR and NSF
  - Available online
  - Handout…

WMO CLIMAT Message Project

- USAP manned (and AWS) stations NOT filing CLIMAT messages monthly.
- Testing out one station first using new WMO CLIREP software
  - South Pole (See Kathie's talk…)
  - Thanks to WMO, NSF and NOAA/NCDC
- Based on lessons learned:
  - McMurdo
  - Palmer
  - AWS
  - Historic (Siple, Plateau, etc.)?
  - Funding/support

Future: All AWS on GTS

- Approximately ~1/3 to ~1/2 AWS stations on GTS
  - Via ARGOS (now CLS America, Inc.)
  - Some issues at present - under investigation
- WMO and NOAA encourage the remaining be placed on GTS:
  - In MOBIL SYNOP format
  - No WMO IDs required - reported by Lat/Lon
    - What of elevation?? Need to look into this…
  - Via NOAA Telecommunications Gateway
    - Wisconsin to Washington DC via Internet
  - Proposed future work

RESOLUTION 17 (EC-XXXIX)

THE EXECUTIVE COUNCIL,

NOTING:

That supply ships operation in the Antarctic have adequate communication facilities and may carry meteorological staff,

That aircraft are extensively used for the supplying of bases in the Antarctic,

CONSIDERING:

That supply ships do not at present always make and transmit meteorological observations,

That most supply ships are also suitable for the carrying out of upper-air observations,

That aircraft reports are of particular importance in the area south of 60°S to supplement data from radiosonde/radiowind stations,

URGES MEMBERS to ensure that:

All supply vessels operating in the Antarctic make regular surface synoptic observations at main synoptic hours, and transmit these data to appropriate radio or coastal ground stations in accordance with procedures presented in the Manual on the Global Telecommunications System (GTS), Volume I, Part I, Attachment I-1 and WMO Publication No.9 TP:4, Volume D,

Supply vessels, whenever practicable, also make upper-air observations and transmit these reports on a real-time basis,

Aircraft operating south of 60°S make observations as a matter of routine and transmit them to the appropriate radio stations or satellites for further distribution on the GTS on an agreed format,

REQUEST the Secretary-General to invite Members, in particular Parties to the Antarctic Treaty, to obtain the maximum collaboration from operators of ships and aircraft in implementing this resolution.

USAP & WMO Resolution #17

- Impact for all USAP *Vessels* and *Aircraft:*
  - USAP intercontinental AIREPs already on GTS
    - But only 0 and 12 UTC intracontinental AIREPs
  - USCG Icebreakers ship obs already on GTS
    - USAP research and supply vessels NOT reporting on GTS
  - Language says “supply” vessels - but the spirit is *all* vessels - including research (per. comm. J. Shanklin, BAS)
- Strongly suggest #17 be followed:
  - Standard Operating Procedure (SOP)
  - Impacts RPSC, SPAWAR(ATC) and Supply Vessels
  - Observations get into global models
    - In turn the global models impact the regional models (e.g. AMPS)

WMO Information System

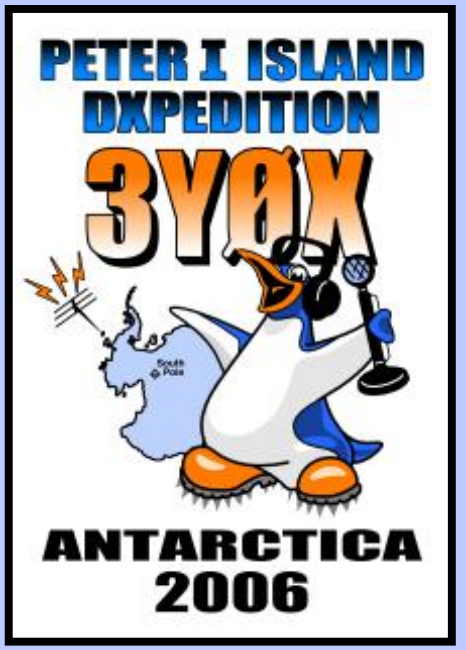
- The WIS will be replacing the GTS
  - Use more push-pull technology
- A WIS key issue is interoperability:
  - specifically metadata standards and
  - metadata profile of ISO 191 standards
- In 2006 WMO hopes to produce WIS metadata catalogs and an Internet portal
- The WMO Executive Council approved:
  - BUFR in 1988 and
  - CREX in 2000.

WMO Information System (Part II)

- The GTS already has 1.3GB per day of BUFR and CREX (e.g., U.S. radiosonde data in BUFR), and the WMO wants every member to switch to table driven code forms like BUFR and CREX.
- They have a template for all traditional ob types like Synoptic, Ship, etc. at http://www.wmo.int/web/www/WMOCodes.html
- Concerns include WMO making encoder/decoder software available for formats like BUFR and CREX
- ****CREX is only an interim format? Toward a goal of BURF? GRIB2 and EBURF the end game??****
- ****Thanks to Barry Roth, SSEC, for this report from the Family of Services Meeting at the Annual AMS meeting in Atlanta, GA****

Peter the First Island

- UW AWS - See AWS talk for more
- Amateur Radio/HAM Operators
  - Special expedition
  - Tested out relay of temporary weather observations and information
  - Automatic post to Antarctic-IDD and AMRC FTP site



Peninsula AWS

Concern with AWS observations…

Sunlight Iceberg Gathering, near Palmer Station

NEWS FROM THE LAB
Tracey Baldwin, Senior Assistant Supervisor, Laboratory Operations

O-283-P ANTARCTIC AUTOMATIC WEATHER STATIONS (AWS).
Charles Stearns, Principal Investigat

The Research Associate monitors da
from Bonaparte Point, Hugo Island,
system, with only Bonaparte Point c
forwarded to UCSB for B 032 P (Sm

O-202-P ANTARCTIC METEOR
SATELLITE DATA INGESTOR.
Charles Stearns, Principal Investigat

The Research Associate operates an
AMRC SDI computer processes sate
TeraScan system, extracting Automa
infrared imagery and sending the res

The system ran the entire month without incident.

TeraScan system:

- Not updated for ARGOS ID changes
- Unable to decode some AWS systems
  - Kirkwood Island
  - Dismal Island
  - New BAS AWS (Fossil Bluff, etc.)

Recommend use of AMRC SDI system

- Updated
- Can decode most AWS systems

Black Island Observations

(Pre-SPAWAR)

- Observations from McMurdo Station Electronics Shop database 1994-2000
  - After 2000 left on hard disk of ET shop computer
- Hard disks at AM
  - *Thanks to everyo*
- Unable to read da
  - Wonderware Indu
  - Need proper PC &
  - Not cost effective
- Result
  - We will have a gap in data availability:
  - 28 Dec 2000 - 9 Oct 2003 (start of SPAWAR data)

Breaking News!:

•RPSC may YET be able to assist!

•Still has the Wonderware license

•AMRC to send the drives back

•RPSC to give this one more go

Thanks to Kathie Hill and Kent Colby!

E-mail Lists: *Please Join Today!*

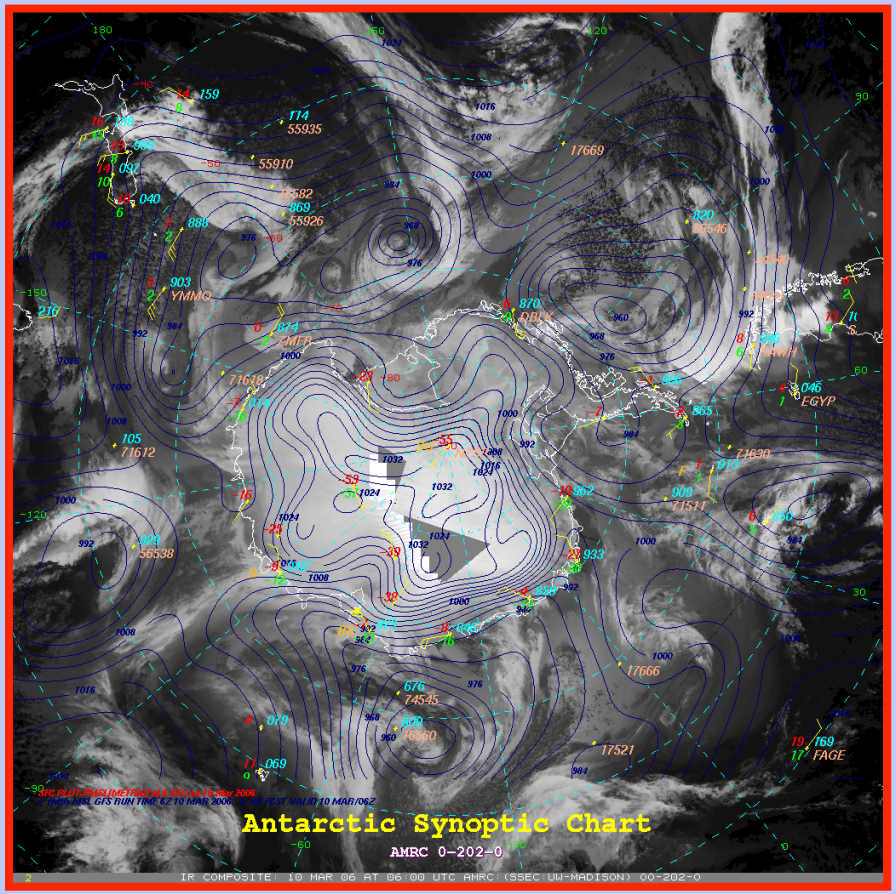
- **ANTIDD** – Antarctic-IDD mailing list
- **ANTDISCUSSION** – Antarctic meteorology discussion group
- **ANTAWS -** Information and updates on AWS data
- **ANTOBS -** Information and updates on all other observational datasets
- **ANTOPS -** Notices on AMRC's real-time data availability, distribution and status
- **ANTICEBERG -** Notices on latest Iceberg monitoring images posted to the web site
- **ANTCOMMUNITY -** Infrequent notices to the Antarctic community on events and significant developments

E-mail: amrc@ssec.wisc.edu to join!

Future Activities…

- Composite re-mastering project…
- Composite science activities…
- Composite data fusion activities…
  - On-line Collaboration Software: VISITview
- Educational modules??
  - Possible Topics
    - Fog
    - X-band usage
- X-band system for Palmer Station?
  - Winds and Products, etc. (See William's talk…)
- Next Year's Meeting:
  - In Italy - at IUGG in Perugia? (July)
  - In Madison? (Usual June or sooner - March??)
  - FYI: Polar AMS In St. Johns joint with CMOS meeting (May)

Thank you!



Thanks to NSF-OPP!!

- OPP-#0126262
- OPP-#0540849

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