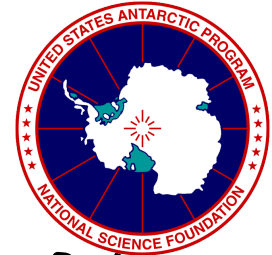




Antarctic-IDD System

Talk and Group Discussion



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⁵University of Colorado (UC), Boulder, CO

⁶SPAWAR Office of Polar Programs (Code 66B) SPAWAR System Center, Charleston, SC

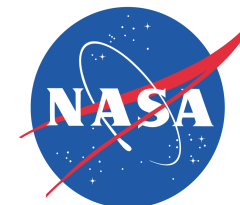
⁷Unidata Program Center, University Corporation for Atmospheric Research Boulder, CO



THE UNIVERSITY
of
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MADISON



Colorado
University of Colorado at Boulder



The Antarctic-IDD

- Where are we at?
- Topics of Discussion...
 - Outcomes:
 - Action list
 - Time line
- *This is an open discussion - input welcome!*



```
#include <stdio.h>
int main(void)
{
    int count;

    for (count = 1; count <= 500; count++)
        printf("I will not throw paper airplanes in class.");

    return 0;
}
```

AMEND 10-3



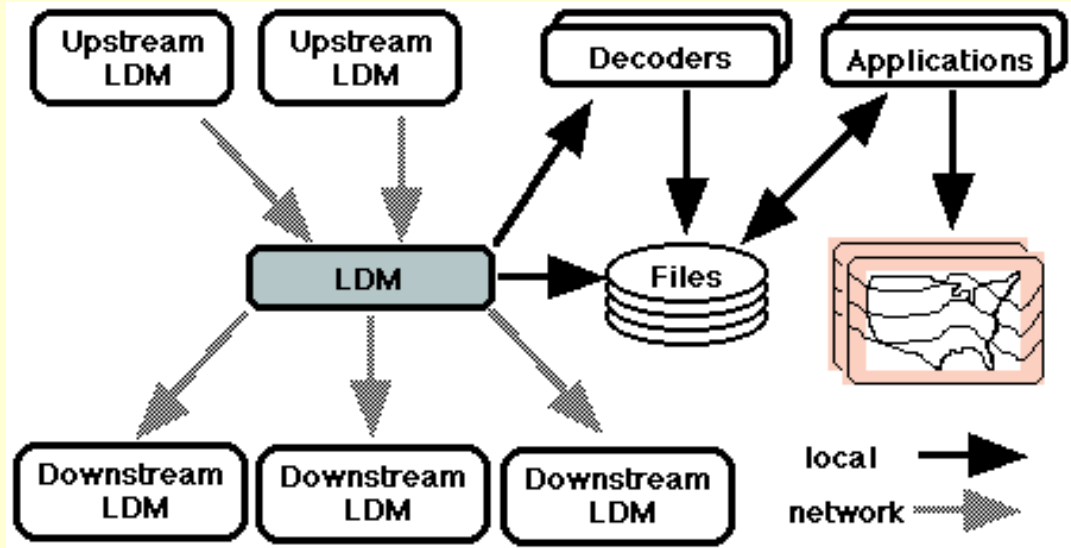
Background

- Initial discussion of Unidata helping the US Antarctic Program (several years back - circa 2000)
 - Cliff Jacobs/NSF & Unidata & SPAWAR (& AMRC)
- Antarctic meteorology meeting synergy discussion 2004:
 - Al Sutherland/NSF
- Start of the “antdiscussion” e-mail list, 2004:
 - Matthew Lazzara/AMRC
- “Data sharing” topic chosen:
 - Using Unidata Local Data Manager (LDM) software
 - Hence birth of the Antarctic-Internet Data Distribution (Antarctic-IDD) system

Why do this?

- Improved exchange and availability of Antarctic meteorological data
 - Internal community need and interest
 - Wider audience reaching the external community
- Establish a better data exchange network
- *Redundancy and Reliability*
- System with potential for:
 - Throttling data selection
 - Coupling with future advanced data comp methods
- “The price is right”, and will have long term support





What is LDM?

- Get data from one or more upstream data sources
- Relay data to one or more downstream data sinks
- Store selected data products in local files
- Pass data through local decoder programs
- Freely available software
 - Used by the Unidata community
 - Internet Data Distribution (IDD)
 - Used in private sector, government & internationally

What data are we sharing?

- AMRC

- Satellite Composites

- Infrared, Water Vapor, Experimental Visible, and Pseudo-color

- Automatic Weather Station (AWS) Observations

- Received at Palmer, McMurdo, Gilmore Creek (AK), & Wallops Island (VA) ground stations

- Miscellaneous Observations

- Aircraft, METAR, Synoptic, Radiosonde, Ship/Buoy, etc.

- NCAR

- Antarctic Mesoscale Prediction System (AMPS)

- Hemispheric, Antarctic continental, South Pole, Ross Island, and McMurdo grid domains

- SPAWAR

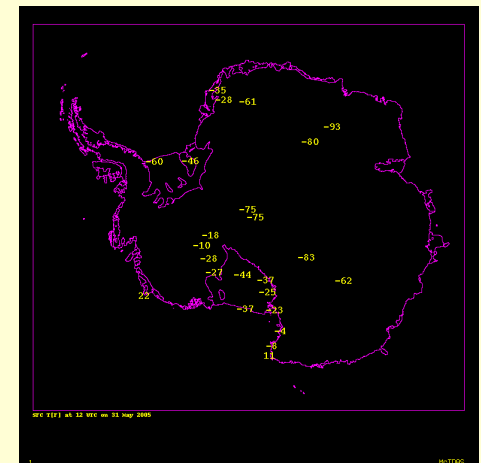
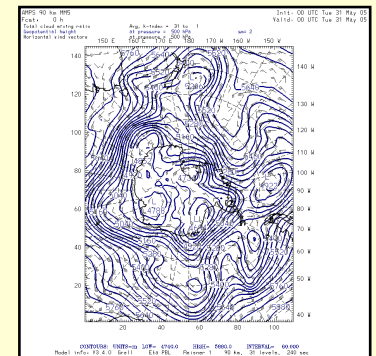
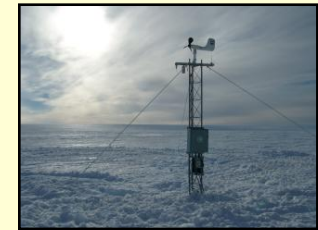
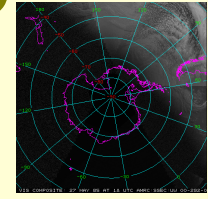
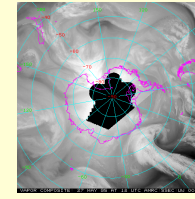
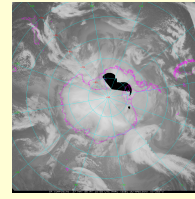
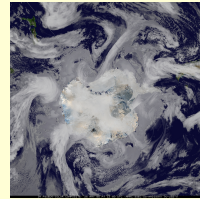
- AWS and McMurdo Area Wind Sensor networks

- Terminal Aerodrome Forecasts

- AWI (Alfred Wegener Institute - Germany)

- Via FTP to AMRC for insertion into the Antarctic-IDD

- Radiosonde and Synoptic data from Neumayer Station



File Naming Convention

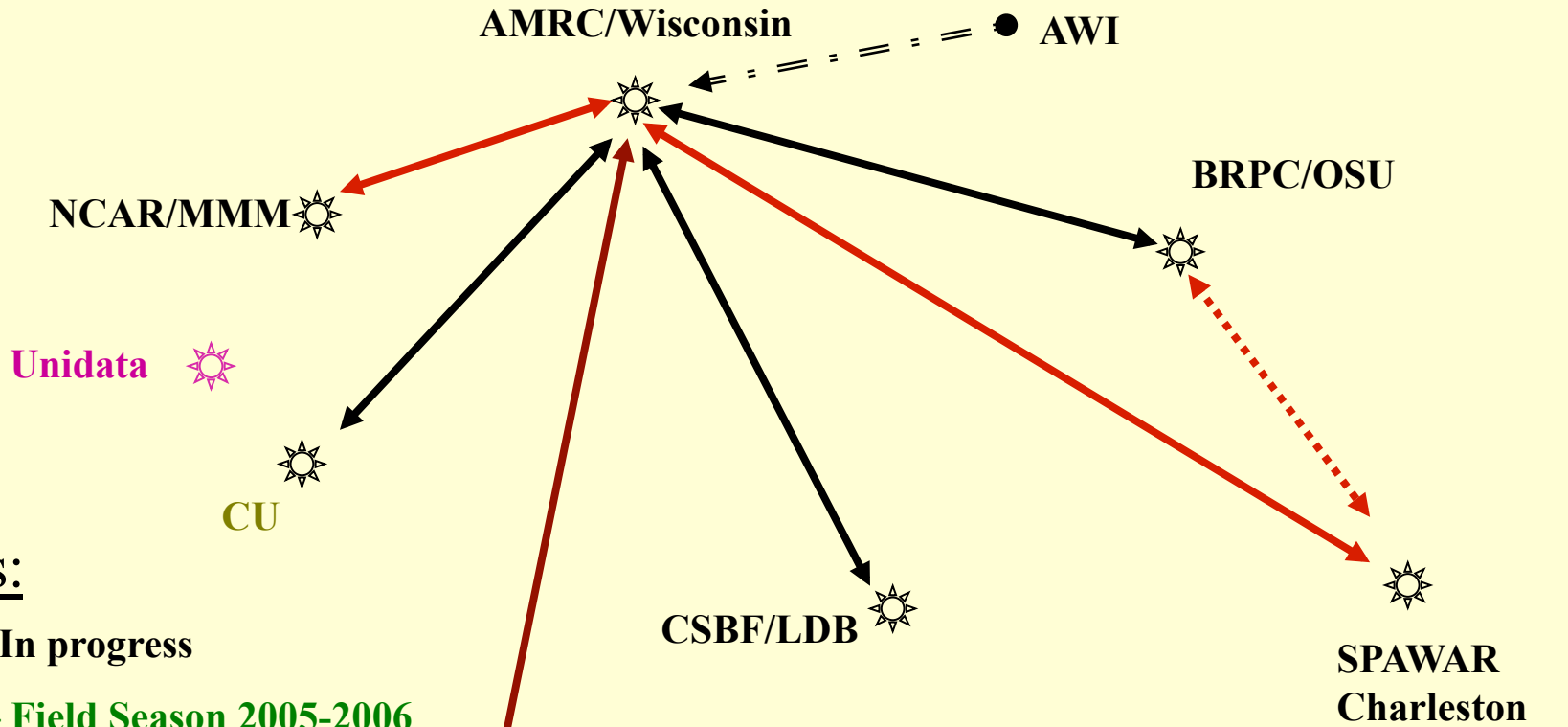
- Using the experimental (EXP) data feed in LDM
 - Issue with need to share feed with other data flows
- Hence file names are prefixed as:

USAP.Center.Data.Day.Time.etc.etc.

- **USAP** = Antarctic-IDD product prefix
 - **Center** = Originating group or source
 - e.g. AMRC, NCAR, SSCC, etc.
 - **Data** = Type of Data
 - e.g. AWS, Composite, GRIB, etc.
 - **Day, time, model level, forecast hour, spectral band, etc.**
- Test model for the Unidata community
 - Least specific to most specific

Antarctic-IDD

Status of 7 June 2006



Phases:

Phase I - In progress

Phase II – Field Season 2005-2006

Phase III - Field Season 2006-2007

Key:

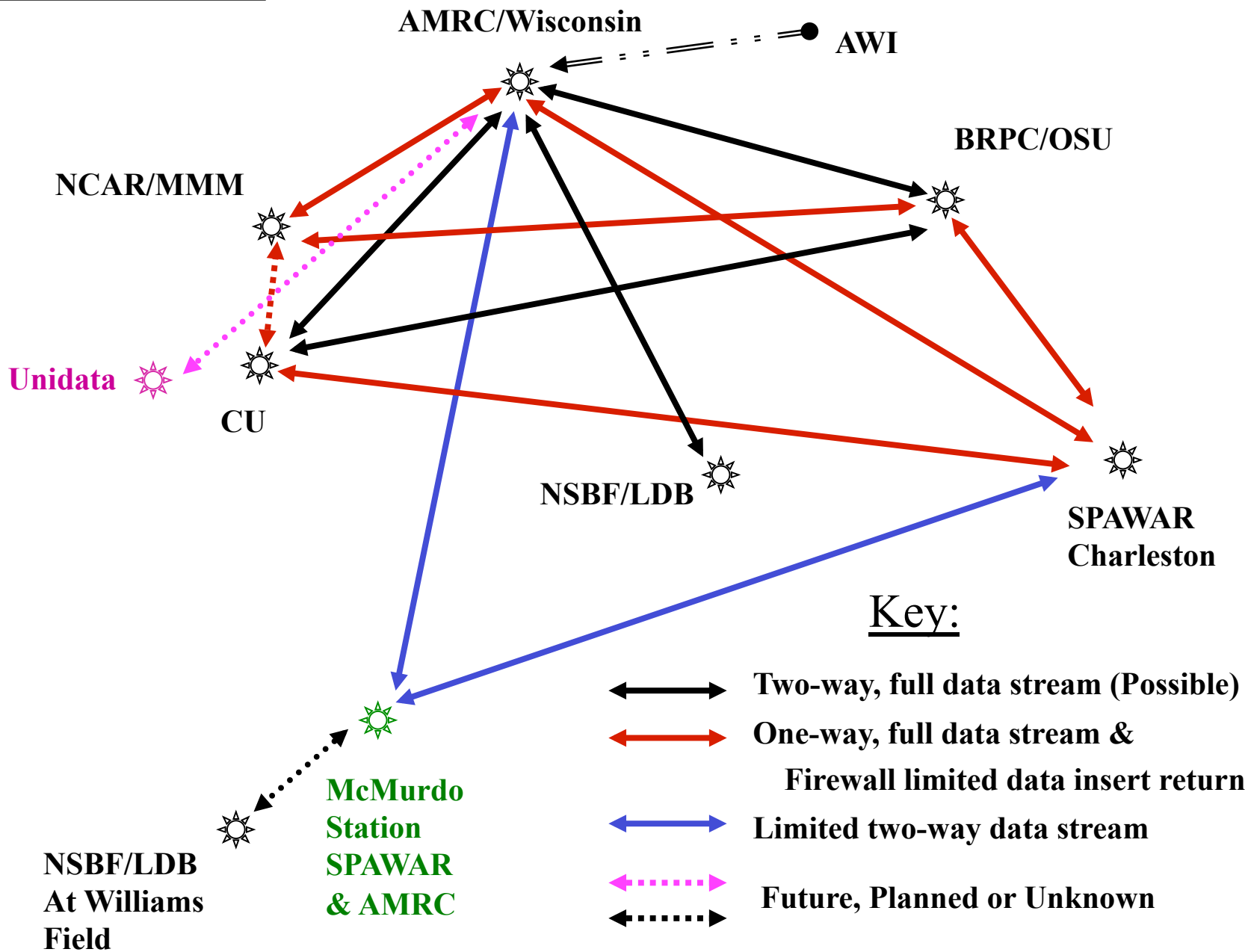
- ↔ Two-way, full data stream (Possible)
- ↔ One-way, full data stream & Firewall limited data insert return
- ↔ Limited two-way data stream
- ← . - → FTP Insert to Antarctic-IDD
- ⋯ Tested transmission

CSBF/LDB
At Williams
Field

McMurdo
Station
SPAWAR
& AMRC

Antarctic-IDD

Where we need to be



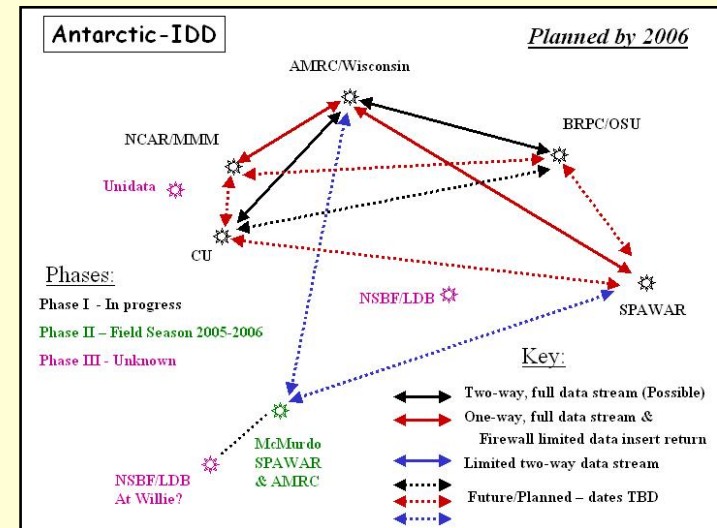
- Reducing duplication of moved data...out of McMurdo
- Mixed Data Formats
 - Satellite Data, primarily
 - McIDAS
 - GeoTIFF
 - TDF
 - Costs
- Bandwidth & Compression
 - Making use of the exiting T1 USES
Internet in/out of McMurdo (>1.544Mbs)
 - Test out compression methods
 - Unix Compress
 - GZIP
 - AREA2PNG
 - Wavelet ??
 - Others ??

Issues



Future Plans

- Continue implementation
 - Especially to/from McMurdo
 - AMRC to convert some items from ADDE to Antarctic-IDD/LDM
 - Share/complement SPAWAR's efforts
- Add users/relay sites
 - Domestic
 - International
- Strengthen the network topology!
 - Add secondary feed site links
- Add data
 - Polar winds....
 - Possible future special products from Colorado/Ohio?
 - Polar LAPS?
 - Others?



Acknowledgements

- National Science Foundation
 - Atmospheric Sciences (ATM)
 - Office Of Polar Programs (OPP) & US Antarctic Program (USAP)
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 - Grant #OPP-0229645
- German Antarctic Program
 - Ralf Brauner, Gert Koenig-Langlo, and Mathias Zoellner

Contact Matthew Lazzara if you wish to join the Antarctic-IDD:
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"Scientific endeavor in Antarctica distinguishes itself from similar activities in other parts of the world by the auspicious development of friendly and fruitful international cooperation on a broad base... international understanding again and again has been an important stimulus as well as a fortunate by-product of scientific work of Antarctica.

May it continue to be so."

W. Schwerdtfeger, 1970

World Survey of Climatology

- Network Topology Robustness & Testing
- Satellite Transmission Format Discussion
 - JPEG and/or TDF or "raw"? Can we do both?
- Adding products to the stream
 - Polar Winds...
 - AMPS - Polar MM5 & Polar WRF?
 - Anything from Colorado/Ohio?
 - Anything else? Polar LAPS?
- Compression (bzip2, GRIB2, etc.)
- File naming convention (AMPS/GRIB)
- Adding to the network:
 - RPSC, Palmer Station, LDB at Willie, Anyone else?
- Archive of the data stream?
- Coordination in McMurdo between SPAWAR & AMRC
 - Feeding LDB at Willie Field
- Monitoring software (big brother/nagios)?

*Topics for
Discussion*