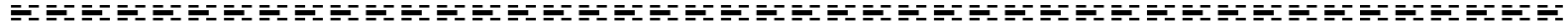


# Data Storage at ASF—



## A Continuing Challenge

**Carl Wales**  
**Alaska SAR Facility**  
**Geophysical Institute, University of Alaska**  
**903 Koyuhuk Dr**  
**Fairbanks AK 99775**  
**phone: +1-907-474-7848**  
**e-mail: cwales@images.alaska.edu**

**THIC Meeting, Del Mar Hilton, Del Mar CA**  
**January 20, 1998**



98.01.20-21



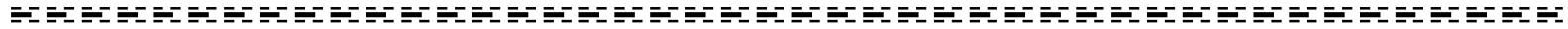
CAW 1

# ASF in Words

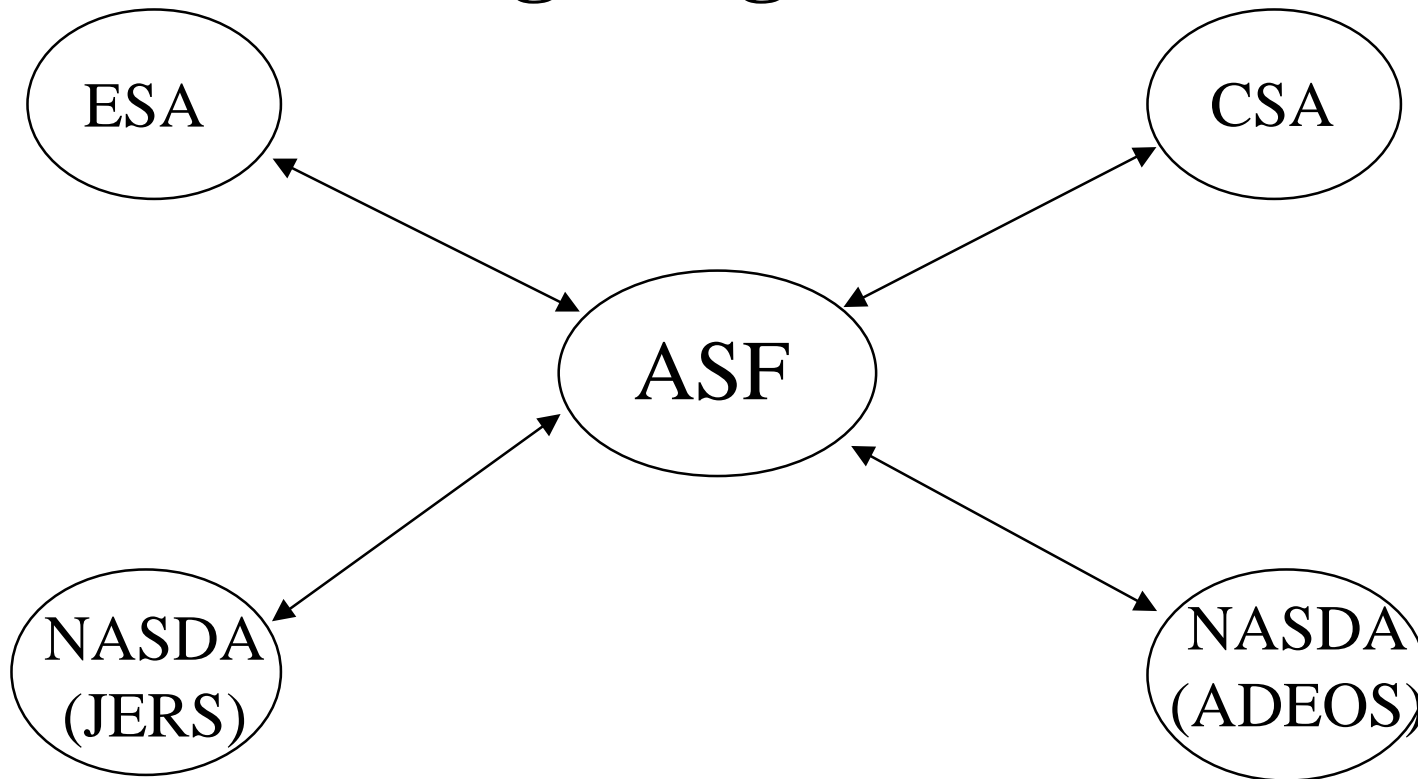
- The Alaska SAR Facility (ASF) is a NASA-funded data center which is part of the University of Alaska Fairbanks. It receives, processes, archives, and distributes synthetic aperture radar (SAR) data. The data is received from ESA's ERS-1 and ERS-2, NASDA's JERS-1, and CSA's RADARSAT. ASF primarily supports the research community, with limited support to operational users such as the US National Ice Center. Additionally ASF has served as a reception facility for the NASDA ADEOS spacecraft. These spacecraft have data rates from 60 Mbps to 105 Mbps. The ASF archive is currently 190.2 terabytes (TB).



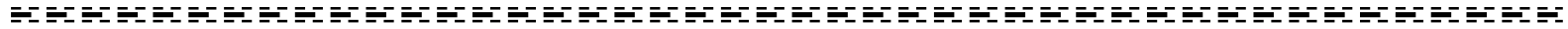
# ASF Organizational Interactions



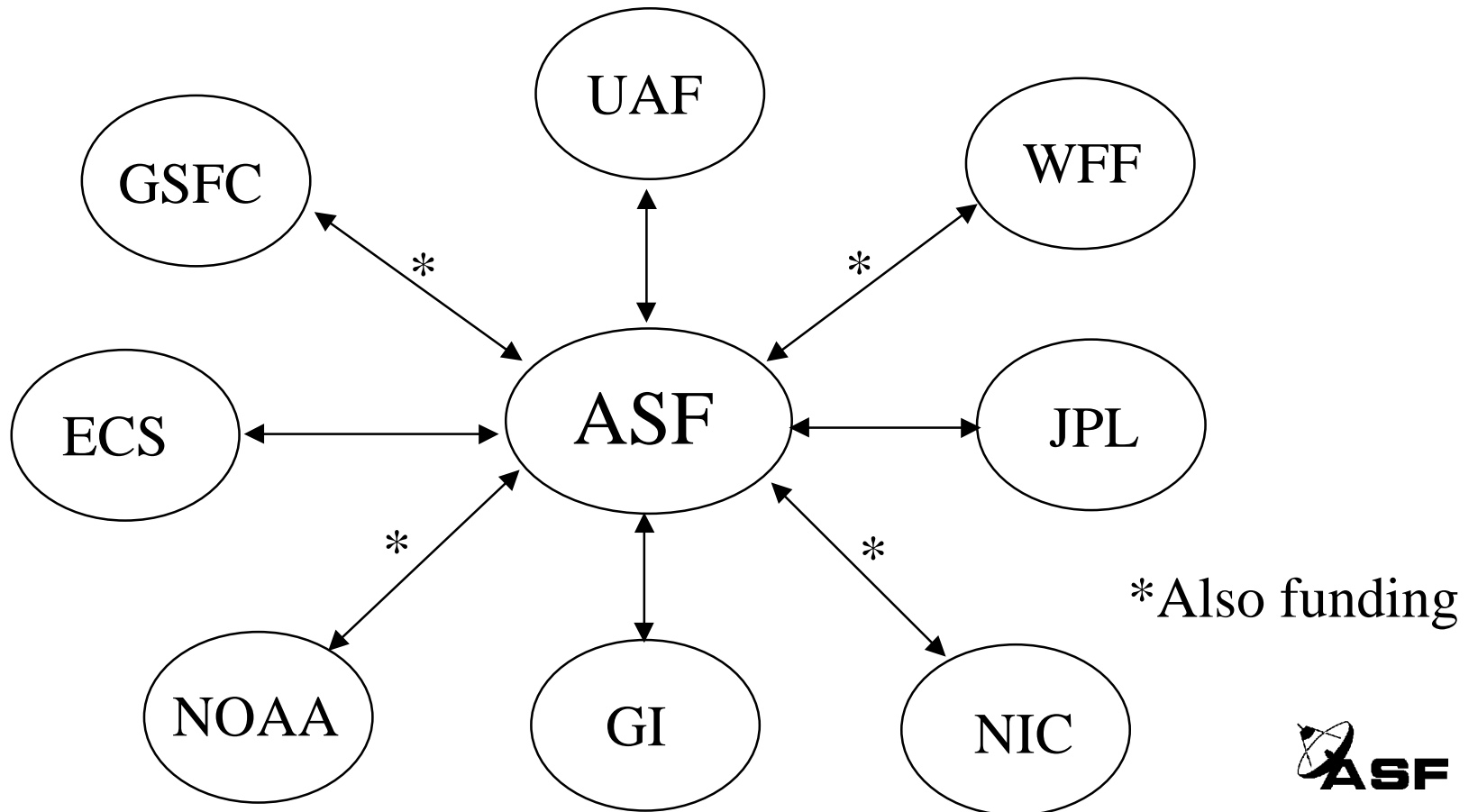
## Flight Agencies



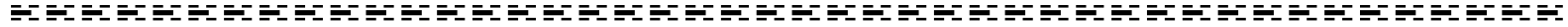
# ASF Organizational Interactions



## Programmatic



# ASF in Numbers

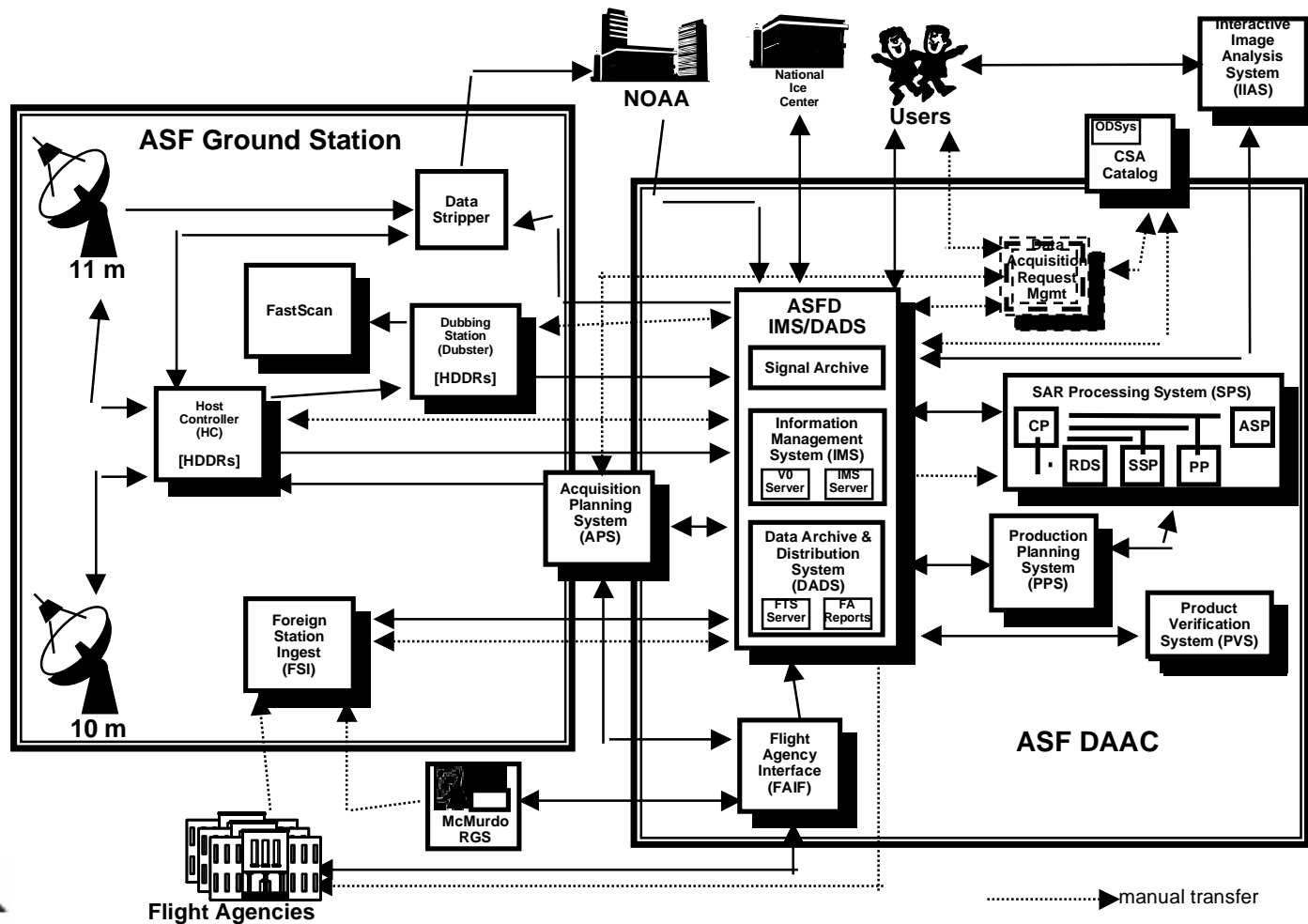


	<b>Minutes Received(raw signal archival)</b>	<b>TB</b>	<b>Products Distributed</b>
ERS-1	65687.8	105.1	
ERS-2	10113.2	21.1	
JERS-1	51483.2	29.8	
RADARSAT	14109.0	34.2	
ADEOS	40993.9	N/A	
<b>TOTAL</b>	<b>182387.1</b>	<b>190.2</b>	<b>~80,000</b>



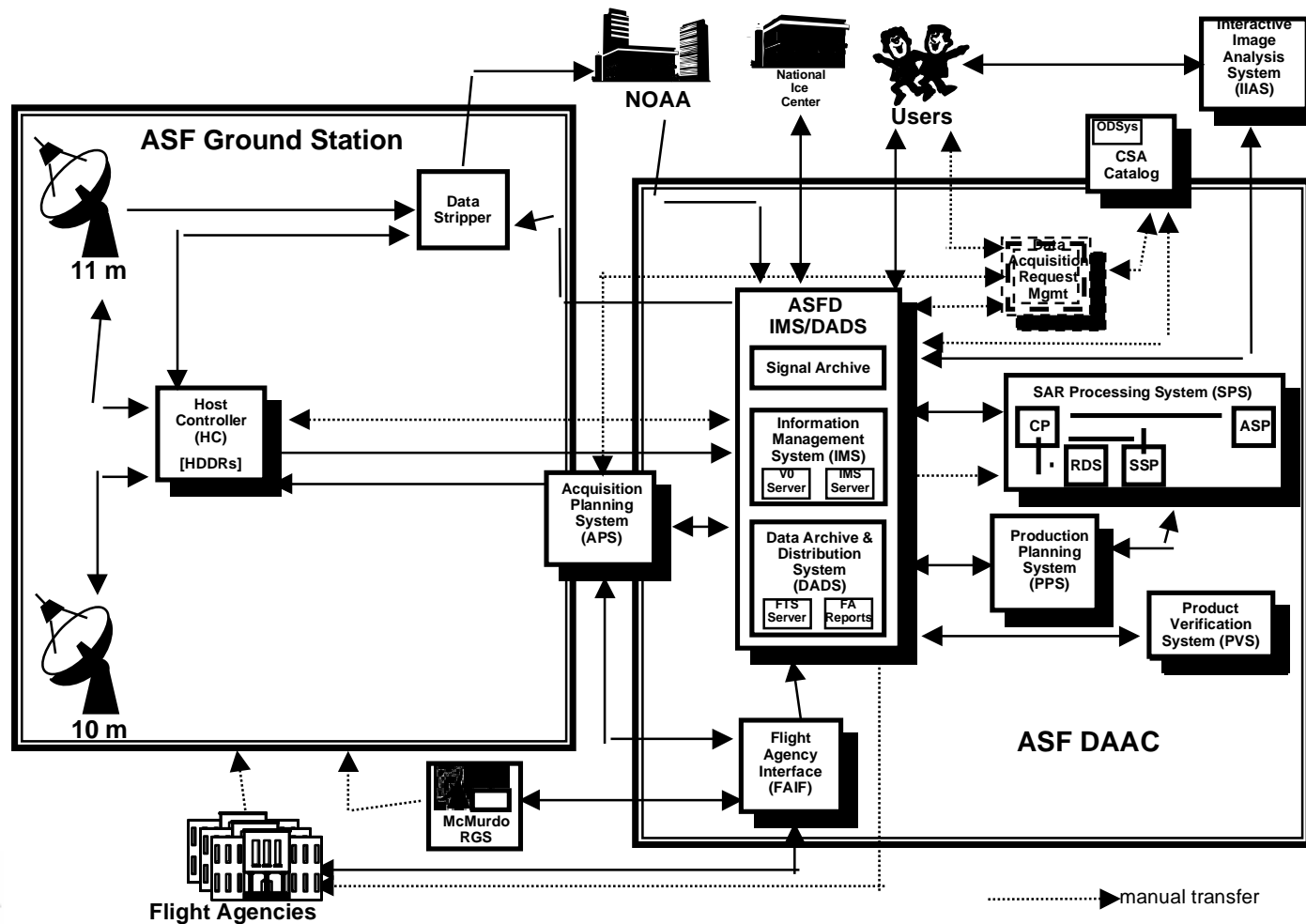
# ASF Block Diagram

## January 1998



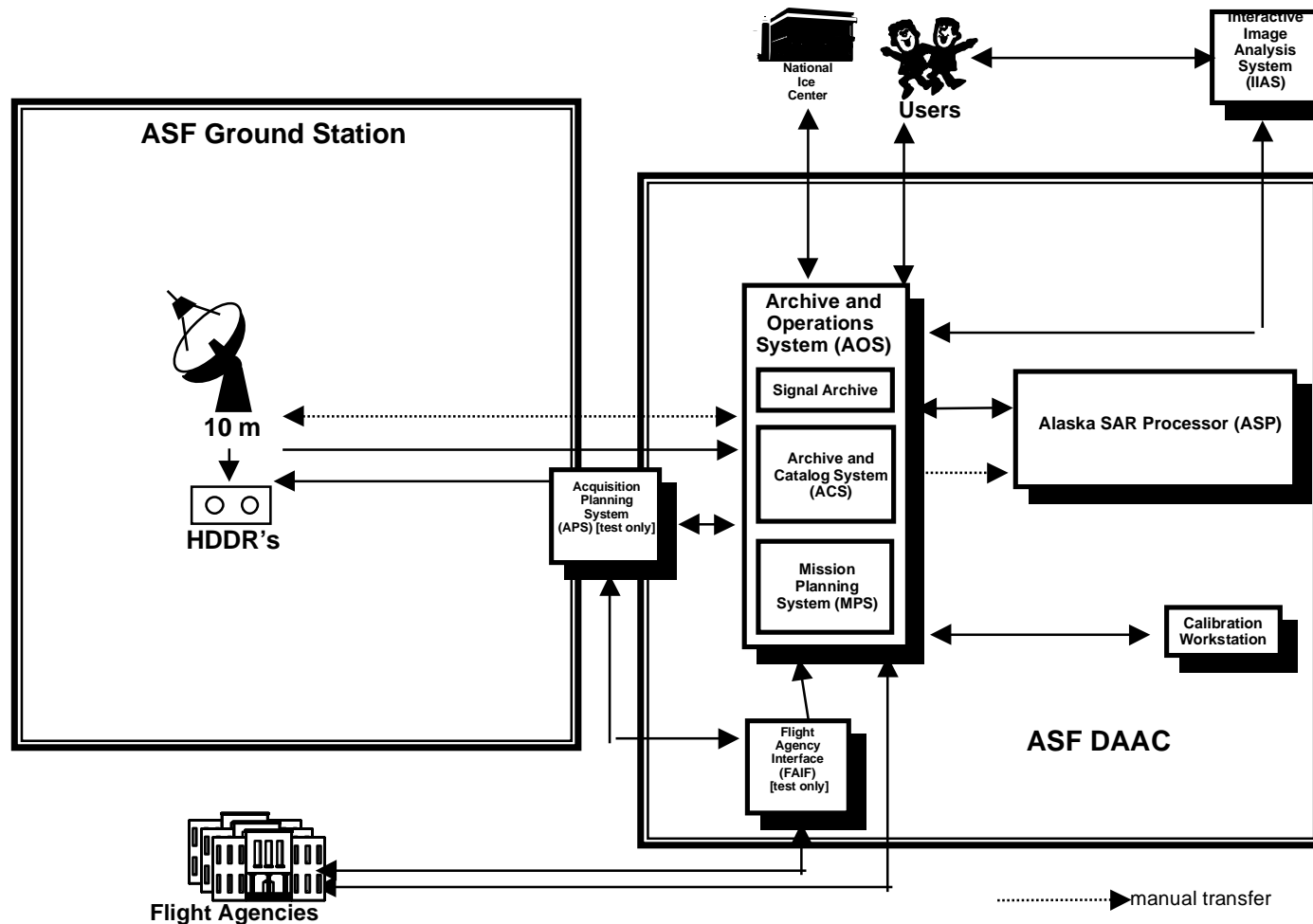
# ASF Block Diagram

## January 1997



# ASF Block Diagram

## January 1996



# Definitions for this Talk

---

- ASF 1996—As ASF was in Jan. 1996 (THIC meeting); reflects changes through calendar '95
- ASF 1997—As ASF was in Jan. 1997, incorporating changes in 1996
- ASF 1998—As ASF is today, incorporating changes in calendar 1997

# ASF Mission History

---

- ERS-1
  - Launch July 91
  - Operational Aug 91
  - On-orbit hibernation June 96
- JERS-1
  - Launch Feb 92
- ERS-2
  - Launch April 95
- ADEOS-I
  - Launch Aug 96
  - Test data Aug-Nov 96
  - Operational Nov 96
  - Last data June 97
- RADARSAT
  - Launch Nov 95
  - Test data Jan 96
  - Operational May 96



# Data Exchange & Data Sources— Other Stations

---

- ESA—starting in 1991
  - EMI-9000
  - DCRSi
- NASDA JERS—starting in 1992
  - HD-96 (NASDA format)
  - Shifted to Sony D-1 in 1997
- CSA/GSS/TSS
  - HD-96 (Landsat format)

*Continued*



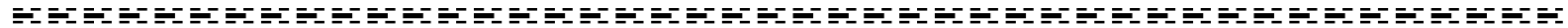
# Data Exchange & Data Sources— Other Stations (cont'd)

---

- McMurdo
  - DCRSi—shipped
  - Sony D-1 from White Sands via TDRS
- Tromso (SE-9000, shifting to DLT in Jan 98)
- DERA—West Freugh (SE-9000)
- Singapore (Sony D-1)
- China (?)
- Australia (?)



# High Data Recorders at ASF



- 1988DCRSi Classics
  - Firmware 4.x 5
  - HD-96 NASDA format 2
  - EMI-9000 ESA ERS-1 format 1
- 1992DCRSi Firmware 5
- 1993Retired EMI-9000
- 1994HD-96 CSA format—
  - modified one of existing HD-96s
  - to be electronically switchable

*Continued*



# High Data Recorders cont'd

---

- 1995–7 Sony DIR-1000 12\*
- 1997 Ampex Model 107 3
- 1997 Brought back EMI-9000 1
- 1997 Added FASTSCAN
- 1997 Permanently modified  
NASDA format HD-96  
to CSA format



# Media Used at ASF

---

- Input
  - HDDT
    - HD-96
    - V-1K
  - HDDR cassettes
    - 600M D-1
    - DCRSi cassettes
  - Electronic

*Continued*



# Media Used cont'd

---

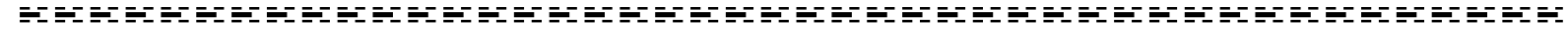
- Output
  - 4mm
  - 8mm                      Electronic
  - Hard copy
- Storage/Archive
  - DCRSi
  - Optical Jukebox (retired 1996)
  - 600M from DIR-1000

# Data Exchange Requirements

---

- Common media
- Common recording format
- Common data format

# Antarctic Mapping Mission



- The most successful data collection campaign at ASF

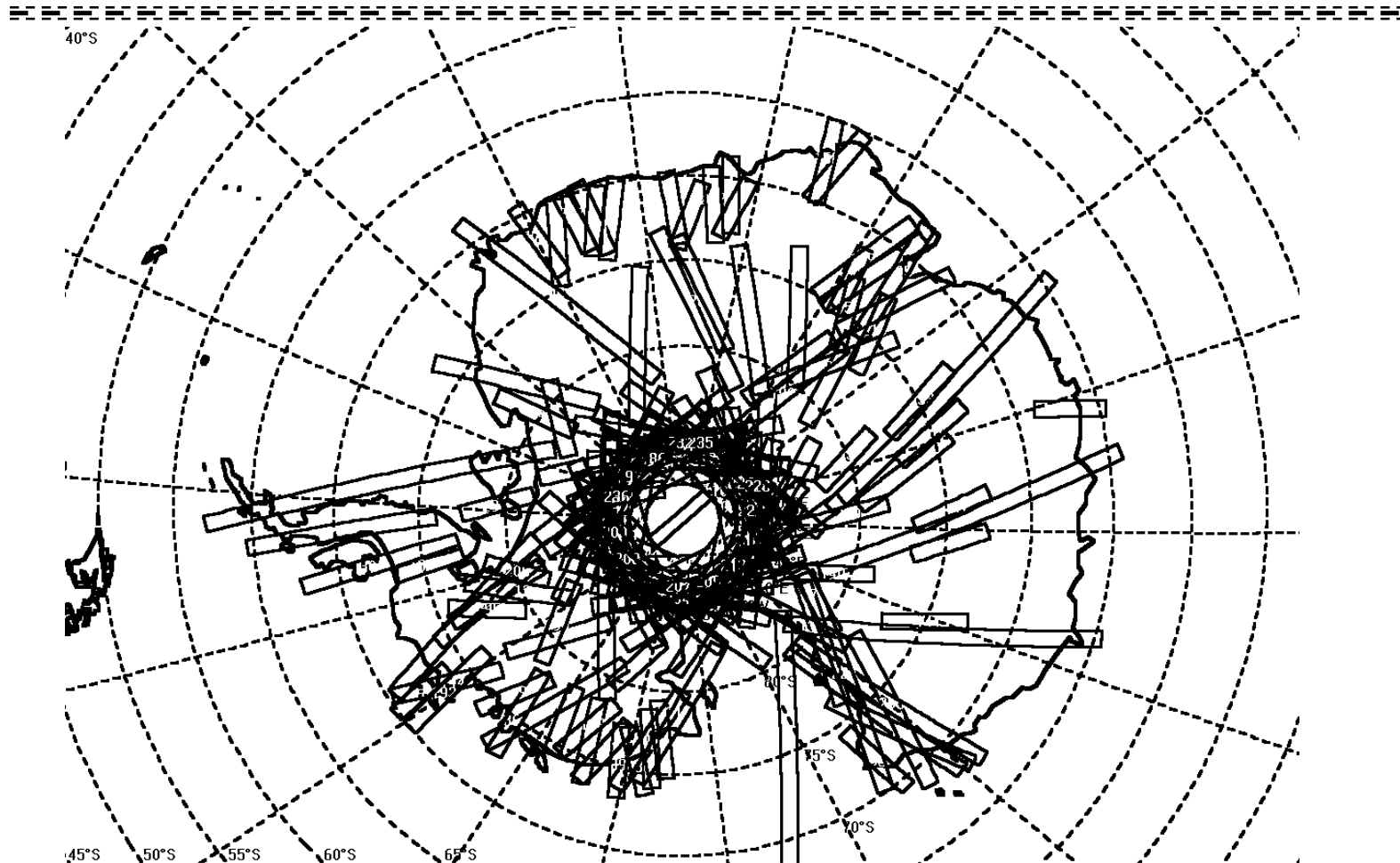


# AMM: Mission Description

---

- The Antarctic Mapping Mission was a data collection campaign in which CSA turned their RADARSAT spacecraft around in orbit to be south looking, allowing its radar to image the interior of the Antarctic continent for the first time ever. Data was collected for approximately four weeks, after which the spacecraft was returned to its normal north-looking mode of operation. The data from this campaign will be used to make the first high resolution map of the Antarctic.

# AMM: Coverage Map of Antarctica



98.01.20-21



CAW 20

# AMM: Data received at

---

- ASF
- Gatineau
- Prince Albert
- McMurdo



*J. Crawford (JPL)*



98.01.20-21



CAW 21

# AMM:

## Total mission numbers

Approx 350 passes

Approx 666 datatakes

Approx 1300 minutes of data

Approx 1 TB of data



# AMM:

## Major contributions to success

---

- One spacecraft
- One family of modes—all 100km images
- One HDDR type used at ASF
- Dub station
- FASTSCAN



# Future Requirements

---

- Archive 15–20 years
- Cross-DAAC compatibility
- Restricted and unrestricted data
- Budget pressure
  - Sustaining costs
  - Operating costs
  - Archive costs

# The Future at ASF

---

- Missions

- ADEOS II 2000 use existing Sony DIR-1000
- RADARSAT II
- Envisat
- LightSAR
- ALOS

- Archive Migration

- Media
- Catalog
- Processing capability

- Data Exchange

- ASF 2000



# Personal Thoughts and Comments

---

- Goals
  - Standards
  - Archives budgeted for long term
  - An architecture which easily adapts to new/evolving
    - Technology
    - Media

# Realities

- International standards for flight agencies are not likely in near future (next 5 years)
- Archiving is recognized as important but never future funded
  - Recommendation: during data collection deposit into a dividend fund for funding archive costs
- Budget for DAACs and data centers in MTPE is declining