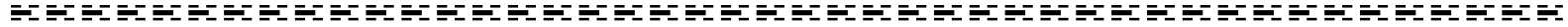


Data Storage at ASF—



A Continuing Challenge

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THIC Meeting, Del Mar Hilton, Del Mar CA

January 20, 1998



98.01.20-21



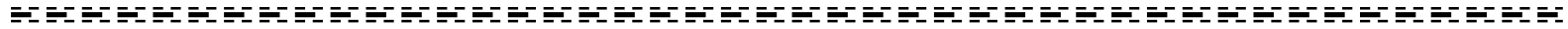
CAW 1

ASF in Words

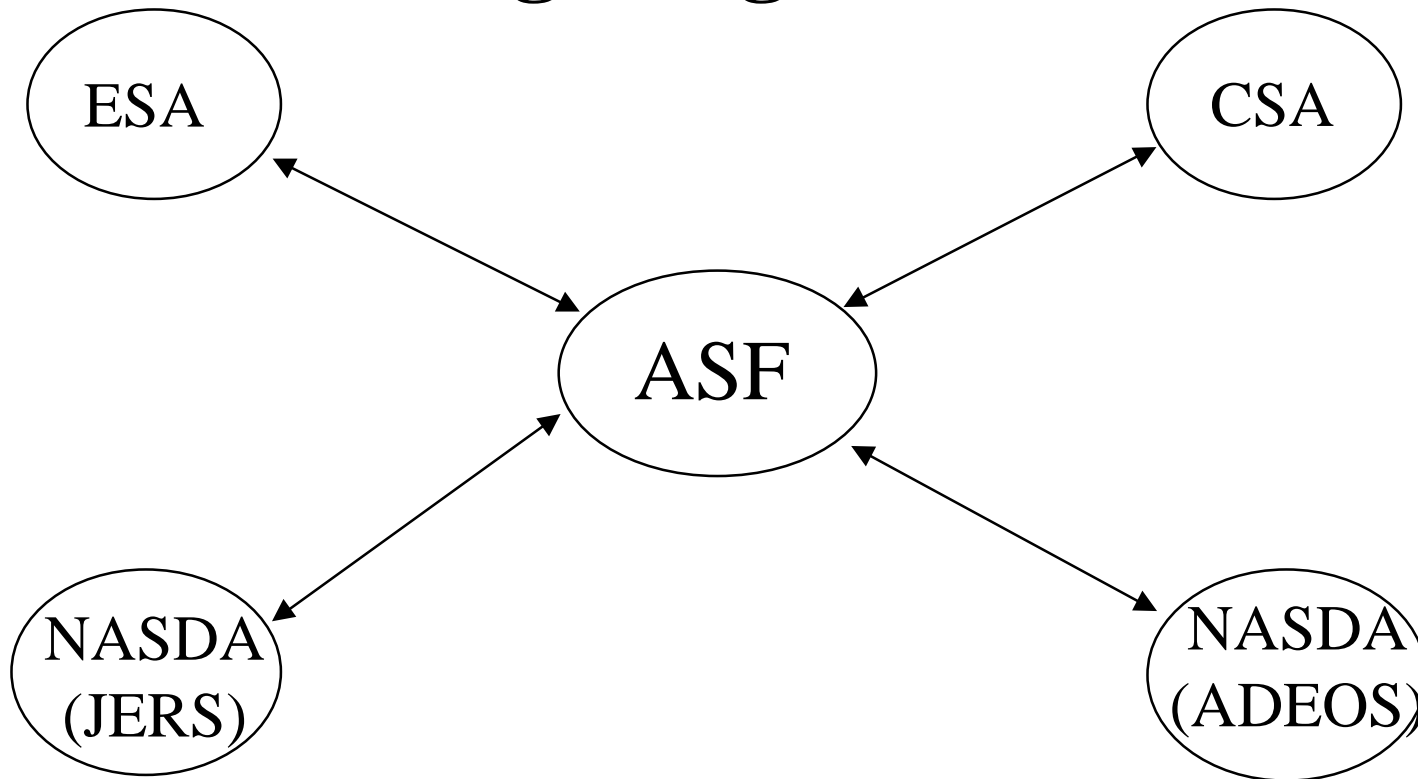
- The Alaska SAR Facility (ASF) is a NASA-funded data center which is part of the University of Alaska Fairbanks. It receives, processes, archives, and distributes synthetic aperture radar (SAR) data. The data is received from ESA's ERS-1 and ERS-2, NASDA's JERS-1, and CSA's RADARSAT. ASF primarily supports 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).



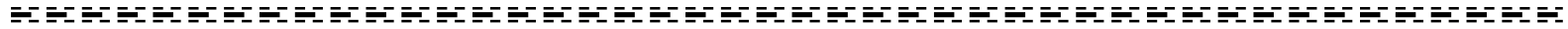
ASF Organizational Interactions



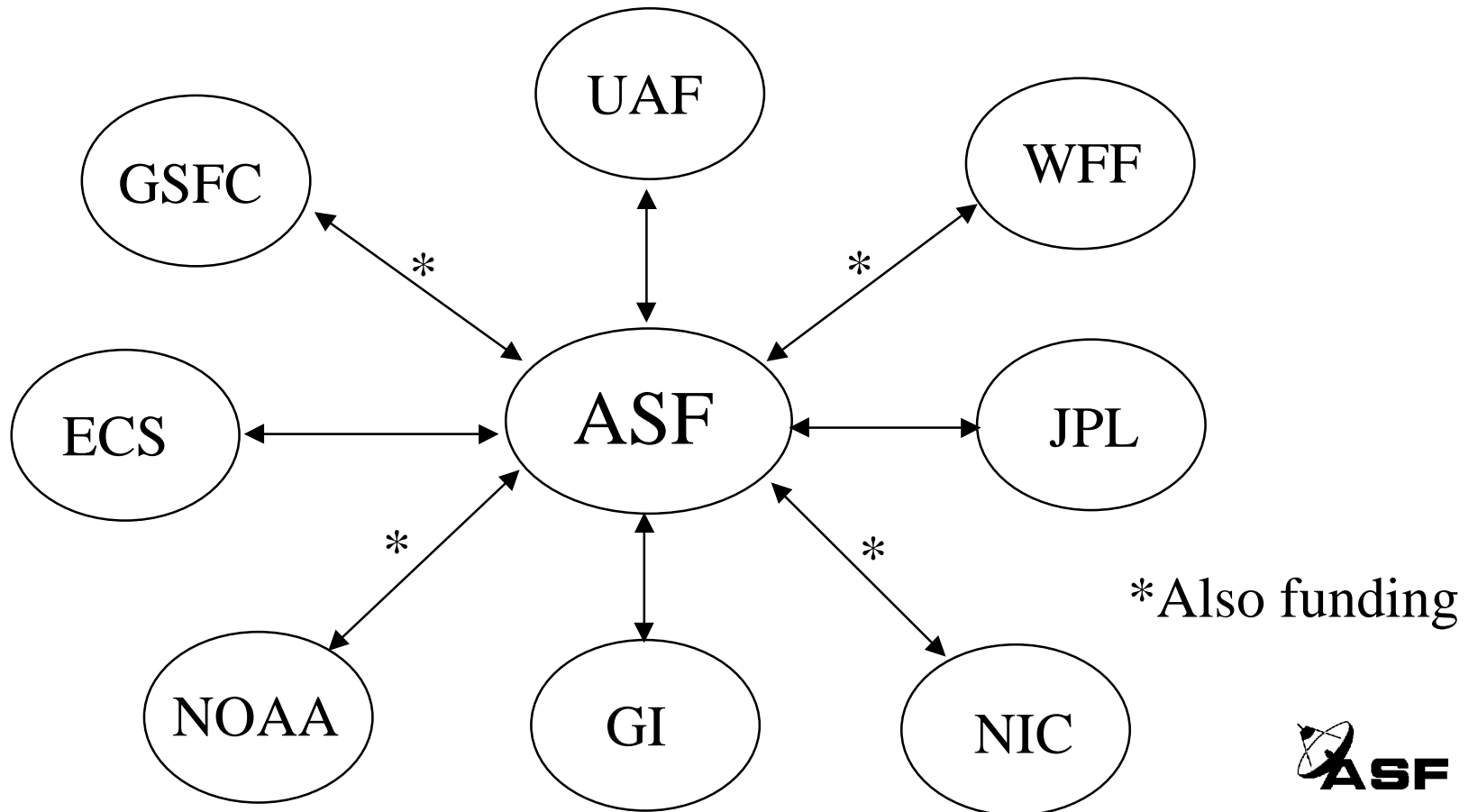
Flight Agencies



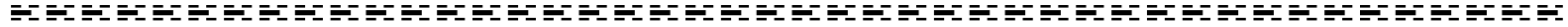
ASF Organizational Interactions



Programmatic



ASF in Numbers

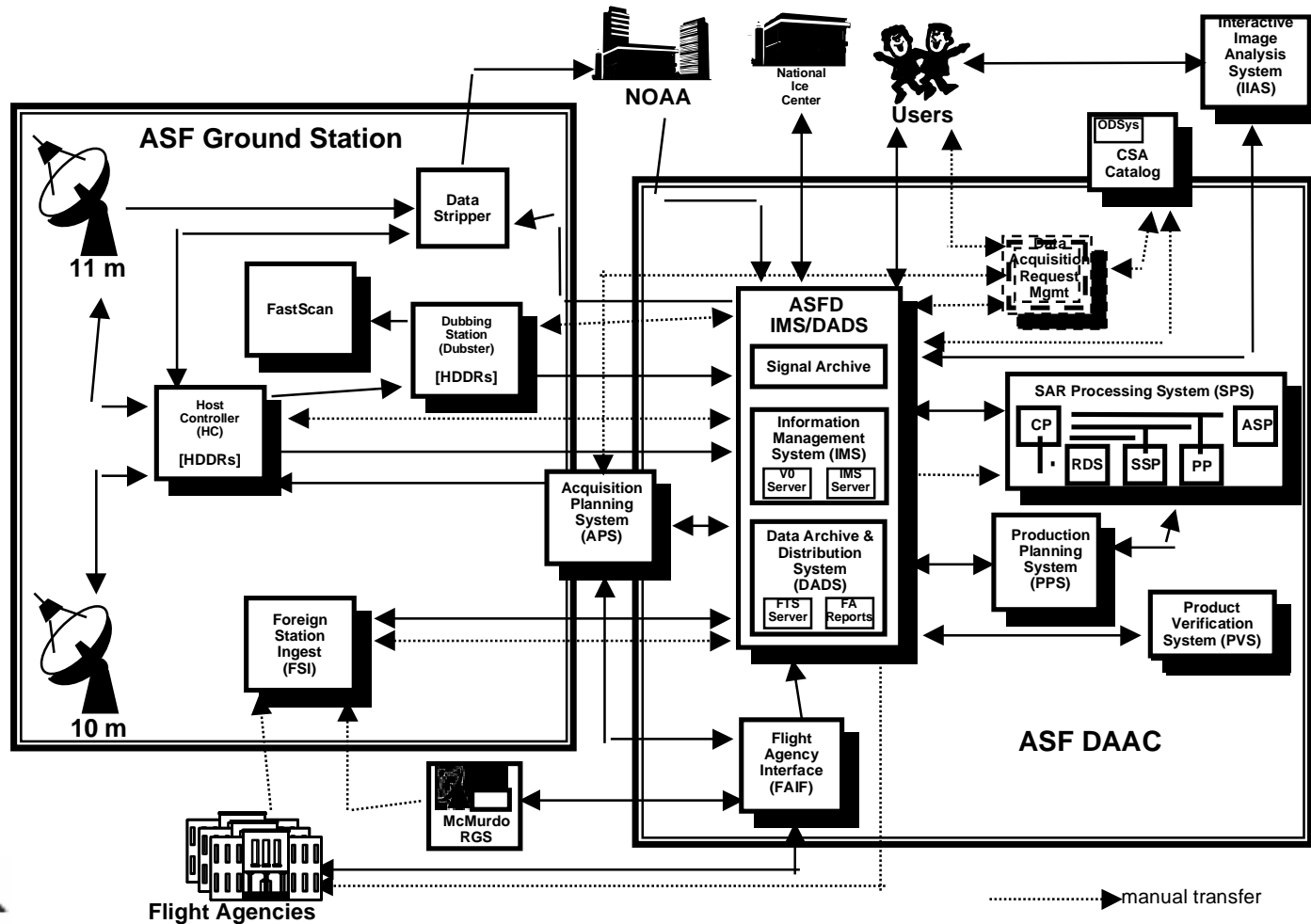


	Minutes Received(raw signal archival)	TB	Products Distributed
ERS-1	65687.8	105.1	
ERS-2	10113.2	21.1	
JERS-1	51483.2	29.8	
RADARSAT	14109.0	34.2	
ADEOS	40993.9	N/A	
TOTAL	182387.1	190.2	~80,000



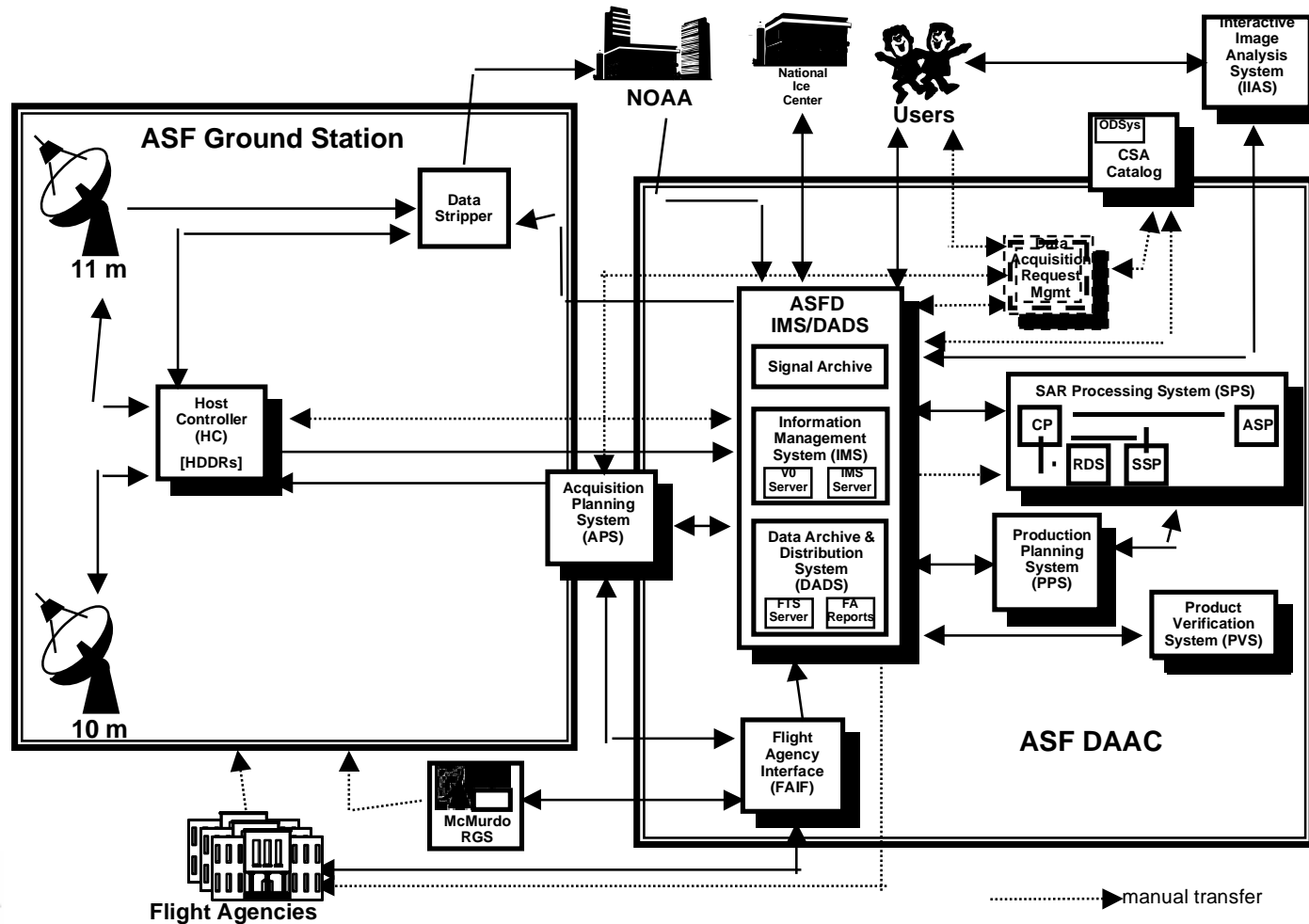
ASF Block Diagram

January 1998



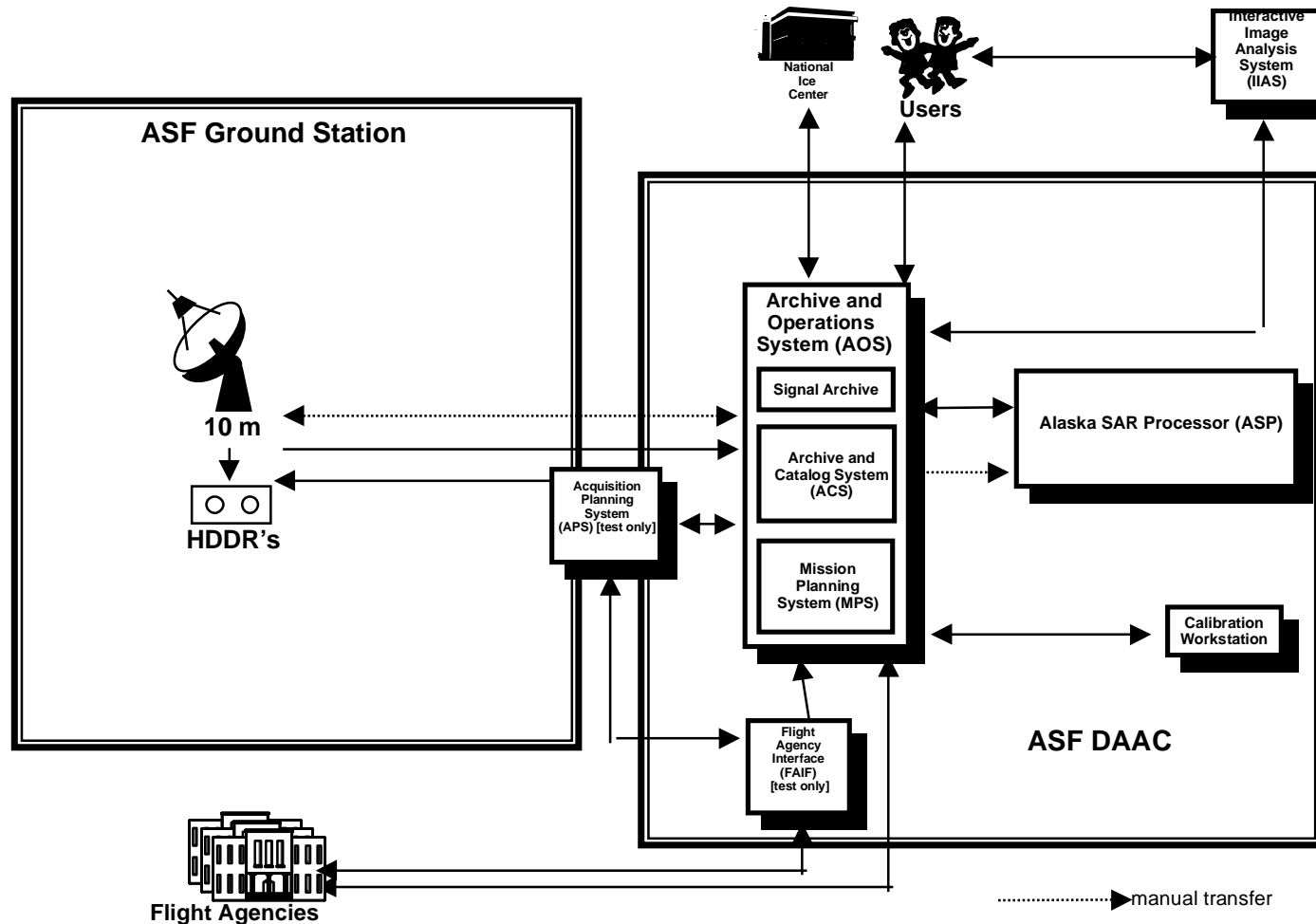
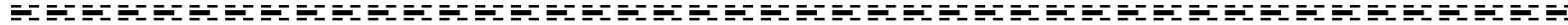
ASF Block Diagram

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

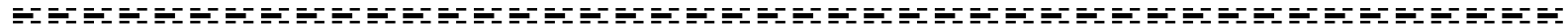


Data Exchange & Data Sources— Other Stations (cont'd)

- 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



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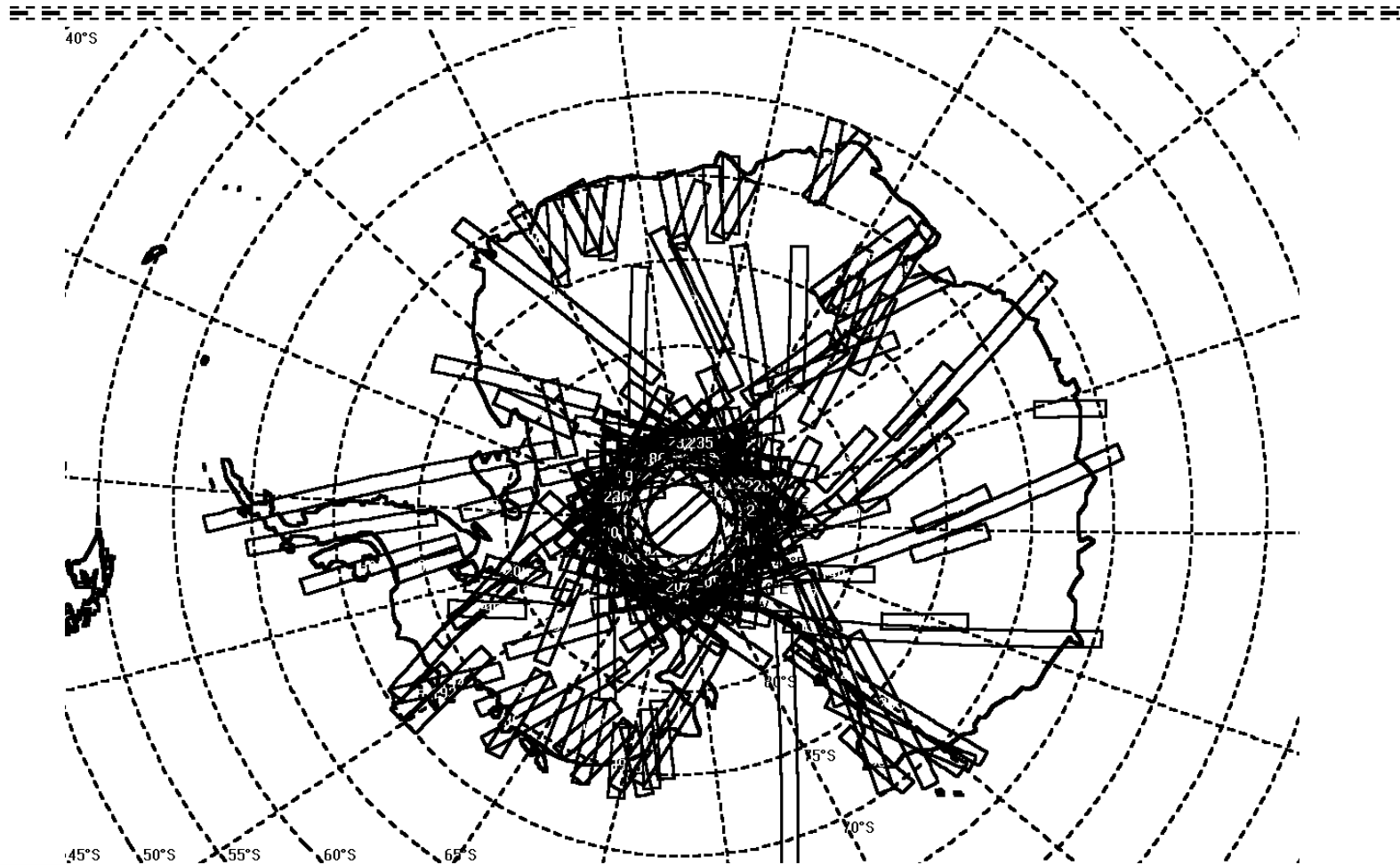


CAW 18

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