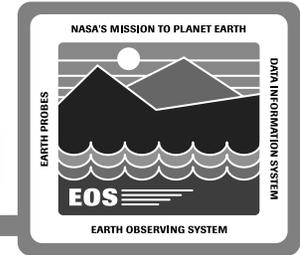


A Cost Comparison of Transferring Inter- DAAC Data via Media versus the ESN WAN

Sidarth Ambardar

17 January 1995

A Cost Comparison of Transferring Inter-DAAC Data via Media versus the ESN WAN



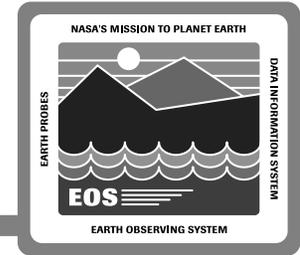
Objective:

- Estimate and compare the cost of transferring ECS Release B production data between DAACs using media or the ESN WAN (Cost of distributing data to users is NOT estimated by this study)

Assumptions:

- Data volume to be transferred is based on November 1994 AHWGP estimate (Includes AM-1 platform and TRMM data)
- Data recorders/readers needed at DAACs for media processing
- Equipment purchased incrementally to meet processing requirement
- Data recorders/readers have a useful life time of 5 years
 - Optical technology likely to be feasible in later years
- Staff needed at DAACs to manage data transfer to/from media
- WAN costs based on 1994 FTS-2000 quotes as projected for 1998 and beyond

Media and ESN WAN Cost Models



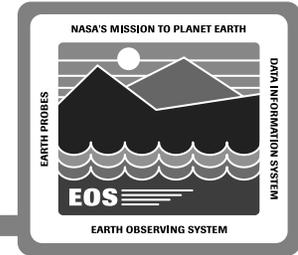
The Media Transfer Cost Model estimates annual costs of

- **Media Inventory at DAACs**
- **Media Equipment at DAACs**
- **Maintenance and Operations (M&O) Staffing**
- **Media Packaging and Shipping**

The ESN WAN Transfer Cost Model estimates

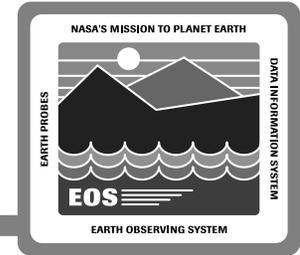
- **Bandwidth required between the DAACs to support data transfer**
- **Annual cost of T1/T3 links needed to support data transfer**

Factors Considered in the Trade



- **Price/Performance characteristics of media processing equipment**
- **Media equipment maintenance costs**
- **Working storage disk space for staging data**
- **Maintenance and operations staffing costs**
- **Spare media equipment units to provide required availability**
- **Media inventory assuming media reuse and monthly replenishments**
- **Media lost/damaged during shipping**
- **Media packaging and shipping costs**
- **Media equipment floor space impacts**
- **Miscellaneous equipment costs**
 - **Bar-code readers and recorder/reader head cleaning cassettes**
 - **Storage racks/cabinets for media cartridges**
 - **File management software**
- **T1/T3 WAN link costs**

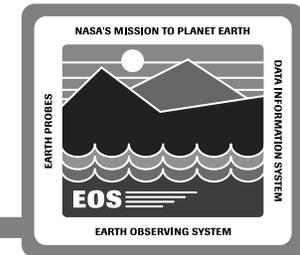
Cost Drivers of the Trade



Sensitivity analysis to identify cost drivers for the two alternatives

- **Data transfer via media**
 - **Media equipment cost (approximately 71% of overall cost)**
 - **M&O staffing costs (approximately 20% of overall cost)**
 - **Media inventory cost (approximately 7% of overall cost)**
 - **Packaging and shipping cost (approximately 2% of overall cost)**
- **Data transfer via the ESN WAN**
 - **T1/T3 WAN link costs (Nearly 100% of overall cost)**

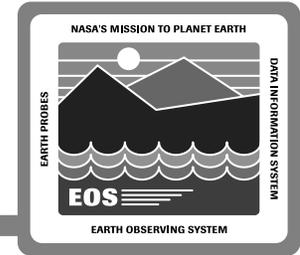
Multi-Variable Analysis Summary



Scenario	Key Parameter	Annual Change	WAN Transfer NPV (\$K)	Media Transfer NPV (\$K)	WAN To Media NPV Ratio
"Media Favored"	Media Equipment Cost	0%	13,465	10,920	1.23
	Equipment Maintenance Cost	+1%			
	Data Handling Tech. Labor Cost	+6%			
	Shipping & Packaging Cost	+5%			
	Media Inventory Cost	-10%			
	WAN Service Cost	-10%			
"Neutral"	Media Equipment Cost	0%	9,686	11,339	0.85
	Equipment Maintenance Cost	+2%			
	Data Handling Tech. Labor Cost	+8%			
	Shipping & Packaging Cost	+5%			
	Media Inventory Cost	-10%			
	WAN Service Cost	-15%			
"ESN WAN Favored"	Media Equipment Cost	0%	6,858	11,787	0.58
	Equipment Maintenance Cost	+3%			
	Data Handling Tech. Labor Cost	+10%			
	Shipping & Packaging Cost	+5%			
	Media Inventory Cost	-10%			
	WAN Service Cost	-20%			

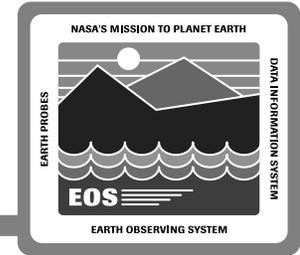
Note: Media equipment cost, Media data capacity (25GB/cartridge) and interest rate (7%) were held constant in all the three scenarios

Conclusions



- **Outcome of trade is driven by assumptions regarding future WAN service prices, media equipment cost and M&O staffing costs**
- **Using a conservative estimate of future WAN price decreases**
 - **Data transfer via media is cheaper than via the ESN WAN**
 - **Ratio of 1.23:1 in favor of media transfer**
- **Using a less conservative estimate of future WAN price decreases**
 - **Data transfer via ESN WAN is slightly cheaper than via media**
 - **Ratio of 0.85:1 in favor of transfer via the ESN WAN**
- **Using an aggressive estimate of future WAN price decreases**
 - **Data transfer via ESN WAN is significantly cheaper than via media**
 - **Ratio of 0.58:1 in favor of transfer via the ESN WAN**

Recommendations



Given the variability in the scenarios and the “soft factors” used to estimate projected costs in the 1998 and beyond time period it is essential to

- **Revise analysis prior to ECS Release B IDR**
 - **Potential changes in data volume to be transferred due to subsetting or other optimizations**
 - **Better understanding and estimation of future WAN pricing**
 - **Closer to-the-event prices for WAN services and media equipment**
- **Continue to monitor and evaluate D3 helical-scan media recording technology**
 - **Confirm its transition from ‘Beta’ status to actual production system**