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# User vs Production Priority

**Scott H. Thompson**

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**21 February 1996**

# What is examined?



**Question: How will priority affect user turnaround times?**

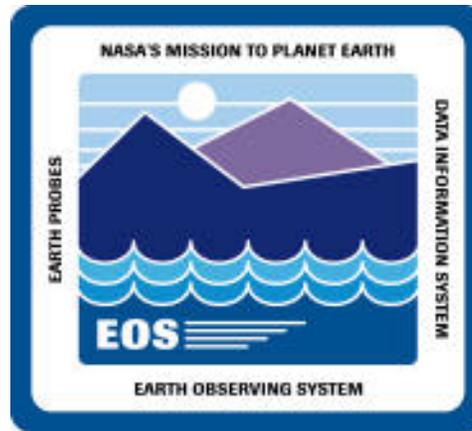
## **Simulations**

- **standard base run with users having lower priority than processes**
- **standard base run with users having higher priority over processes**

**August v2.2 baseline, including V0, Landsat and ASF generators**

**All instruments, except MODIS L3/L4**





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# **Users (lower priority)**

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**February 1996**

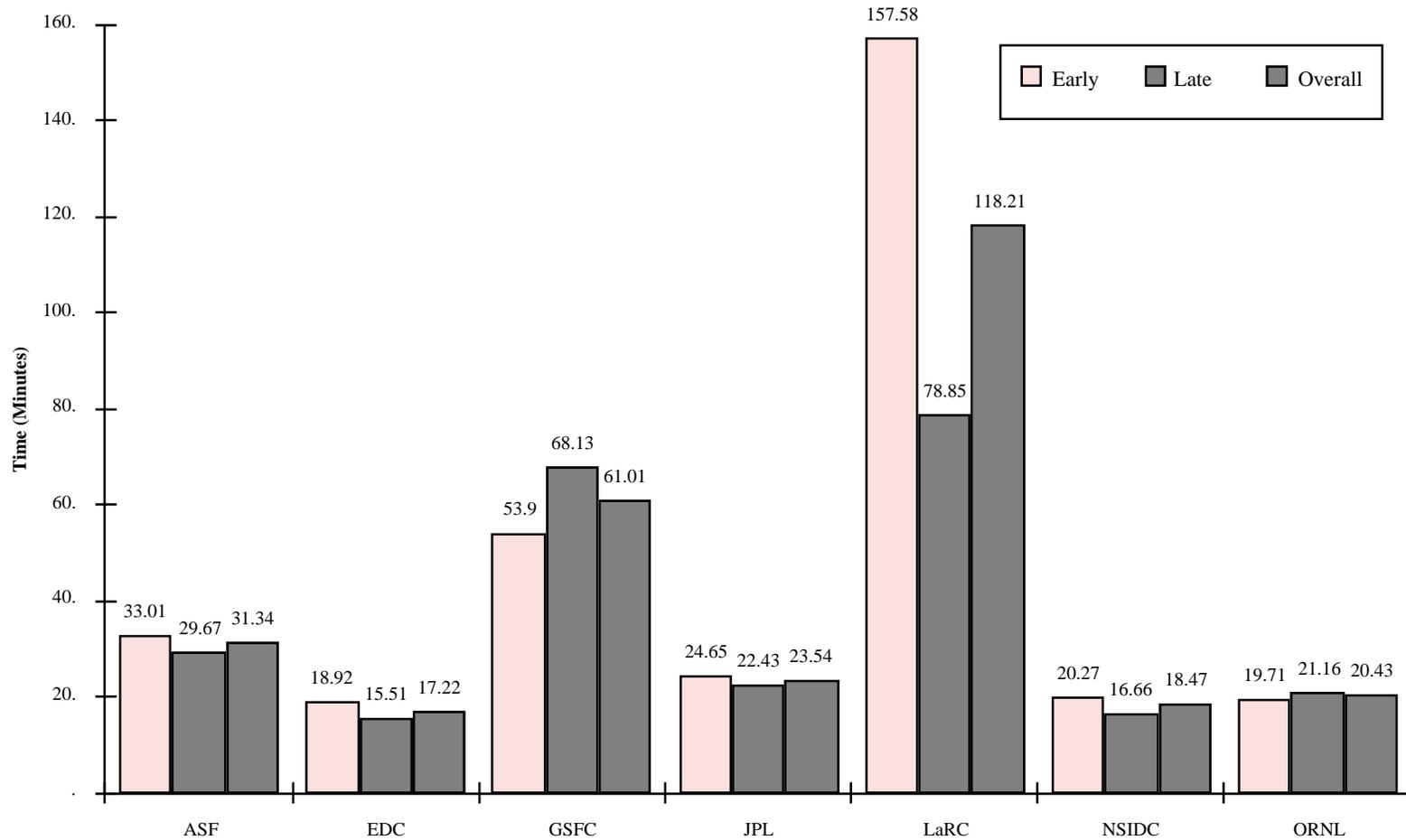
# Chart information



## Turnaround times

- **Early**
  - » **User response time during the first ten days of the simulation**
  - » **Takes into account higher loads of monthly processing**
- **Late**
  - » **User response time during the last eleven days of the simulation**
  - » **Reflects response time during a lower loaded period (no monthly processing)**
- **Overall**
  - » **User response time averaged between the two time periods**

# Average User Turnaround Times



# Distribution Chart Information



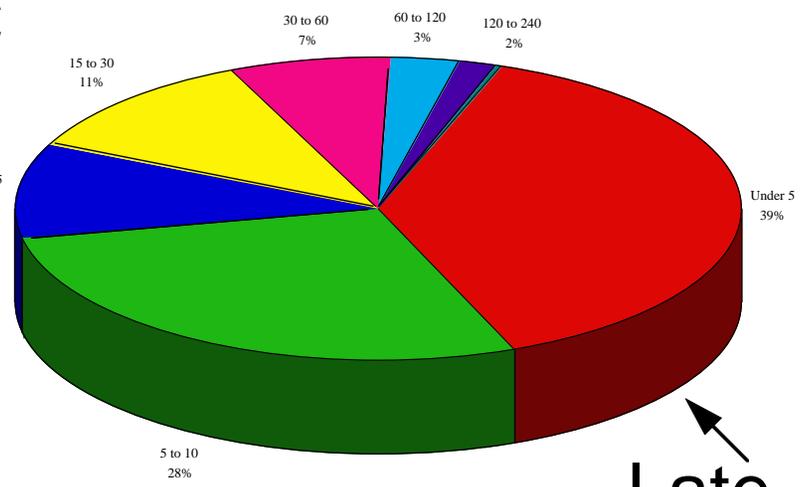
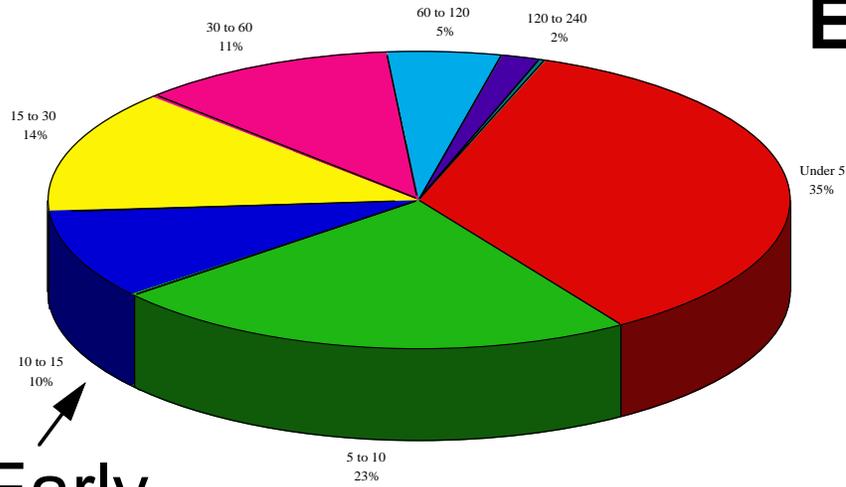
## User response times during Early and Late time periods

- Under 5 minutes
- 5 to 10 minutes
- 10 to 15 minutes
- 15 to 30 minutes
- 30 to 60 minutes
- 60 to 120 minutes (1 to 2 hours)
- 120 to 240 minutes (2 to 4 hours)
- 240 to 480 minutes (4 to 8 hours)
- Over 480 minutes (longer than 8 hours)

# User Response Time Distribution



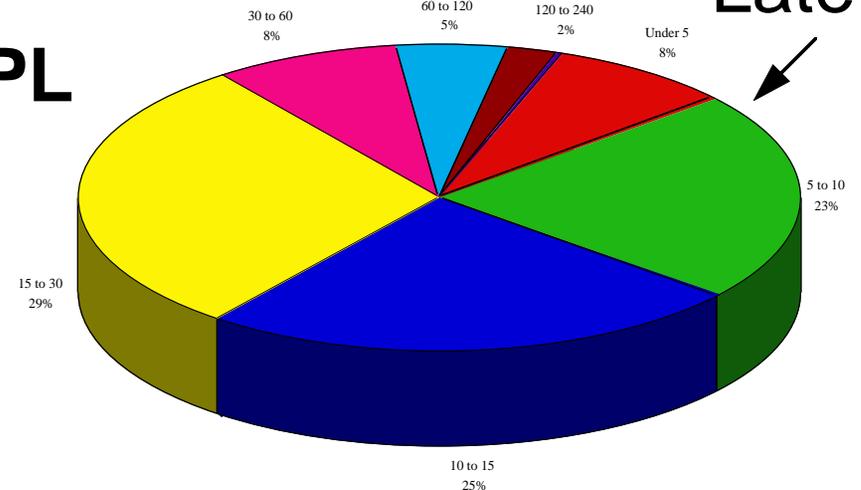
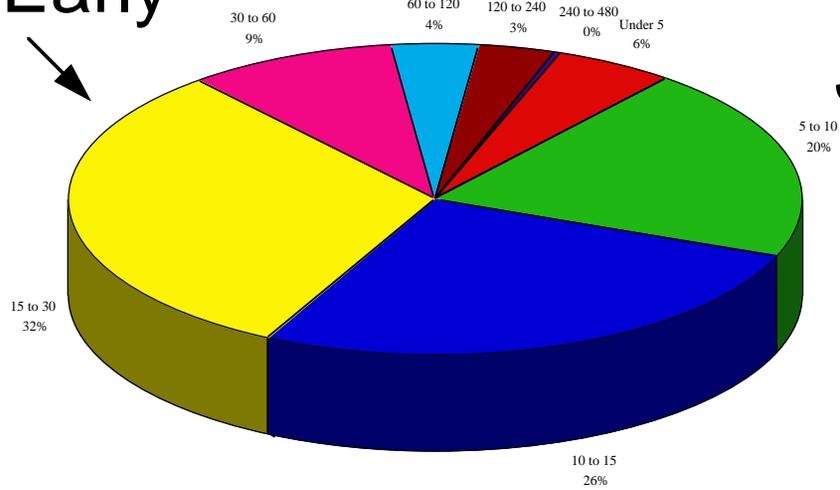
**EDC**



**Early**

**Late**

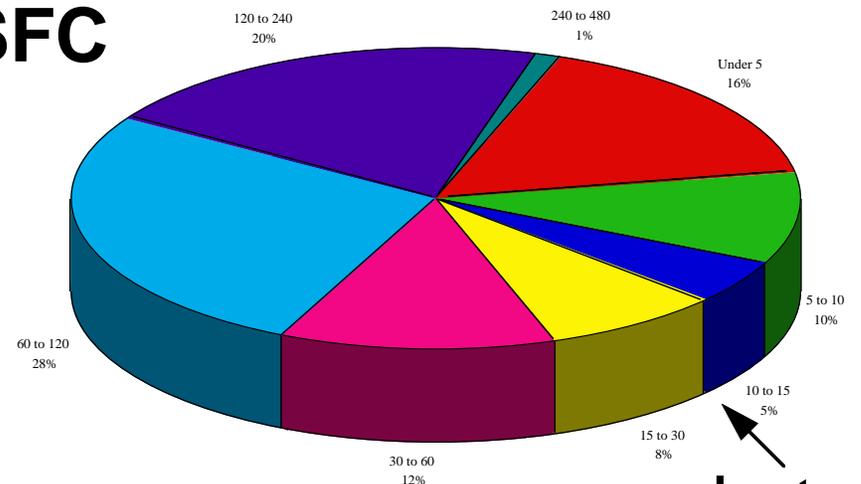
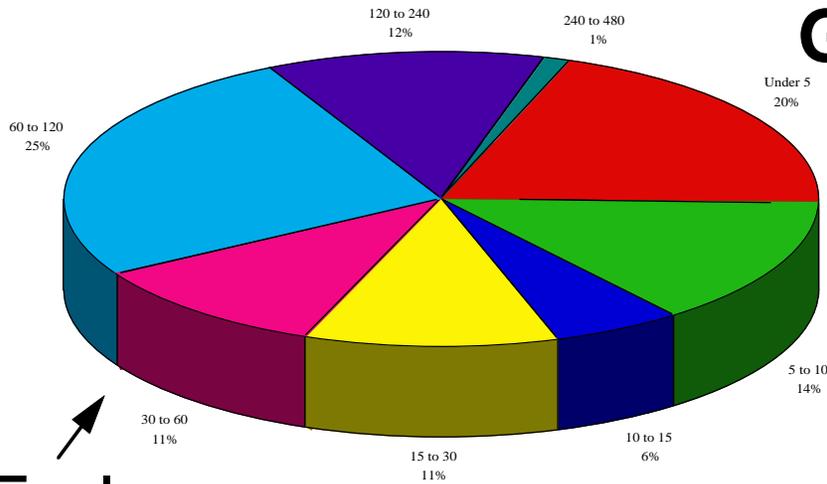
**JPL**



# User Response Time Distribution



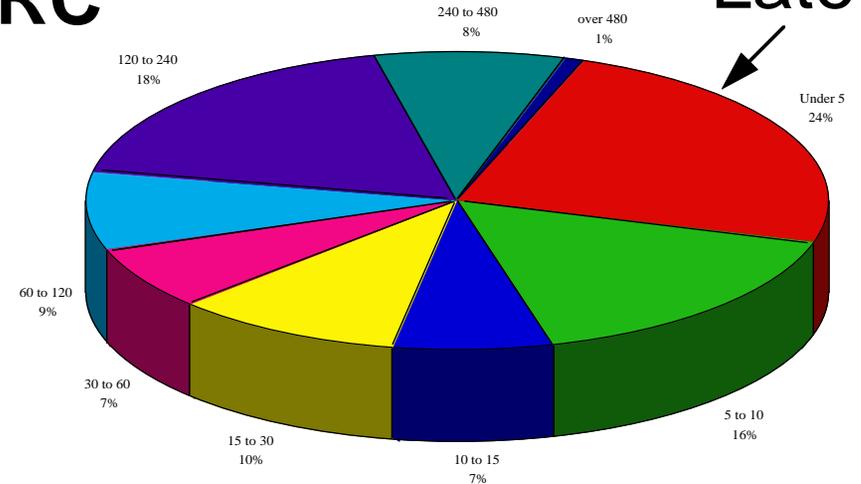
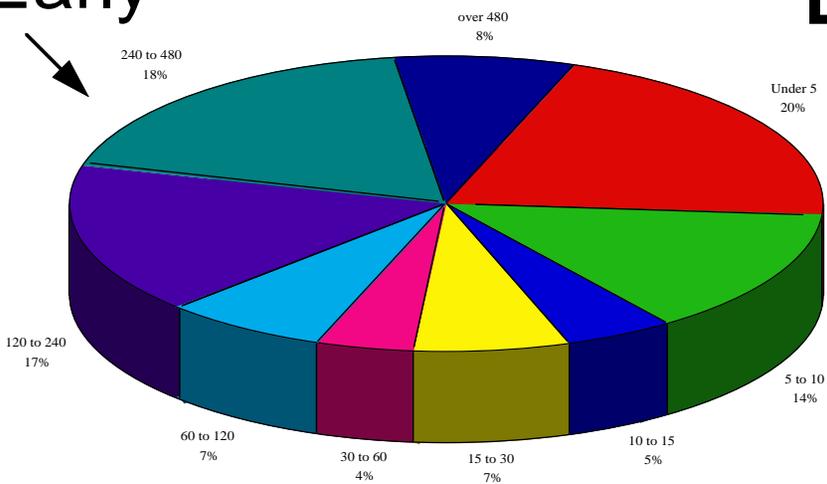
## GSFC



Early

## LaRC

Late



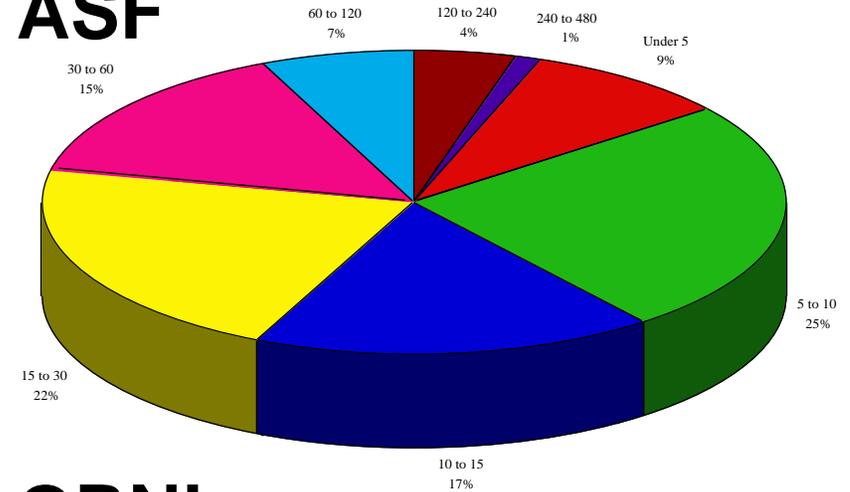
# User Response Time Distribution



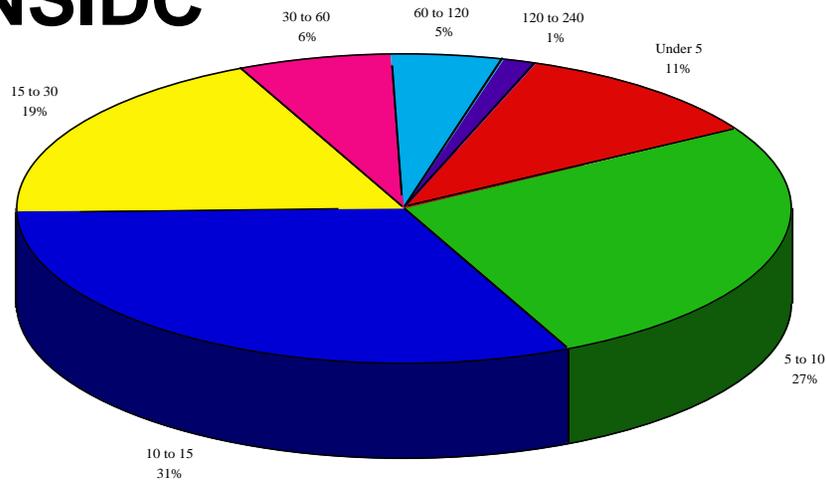
## Overall statistics

- average of early and late
- values had little variation

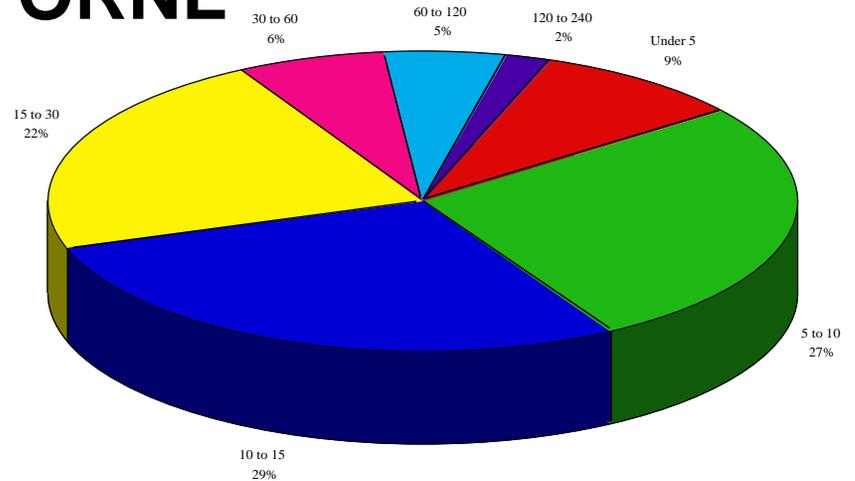
## ASF



## NSIDC



## ORNL

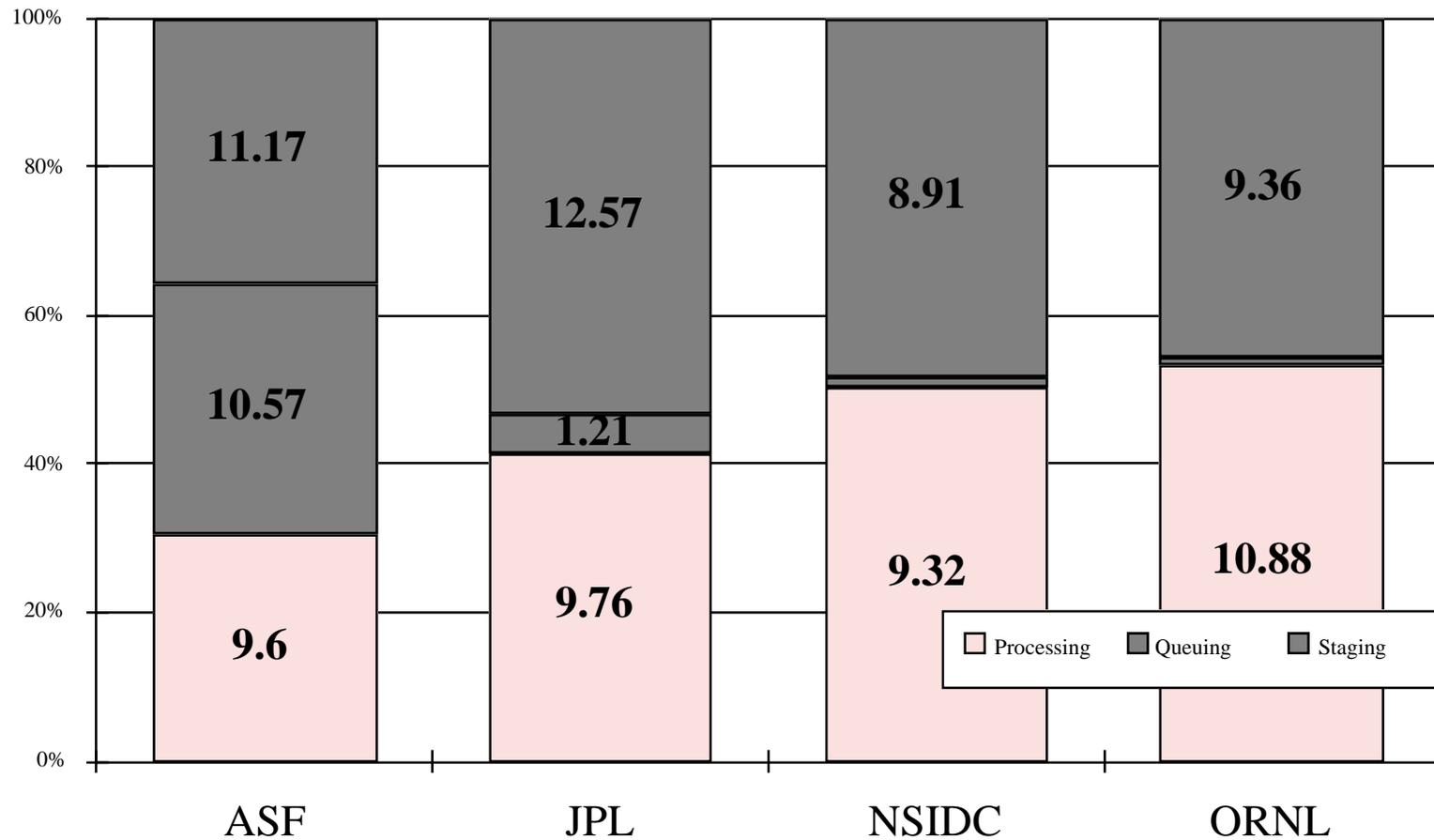


# User Distribution Table

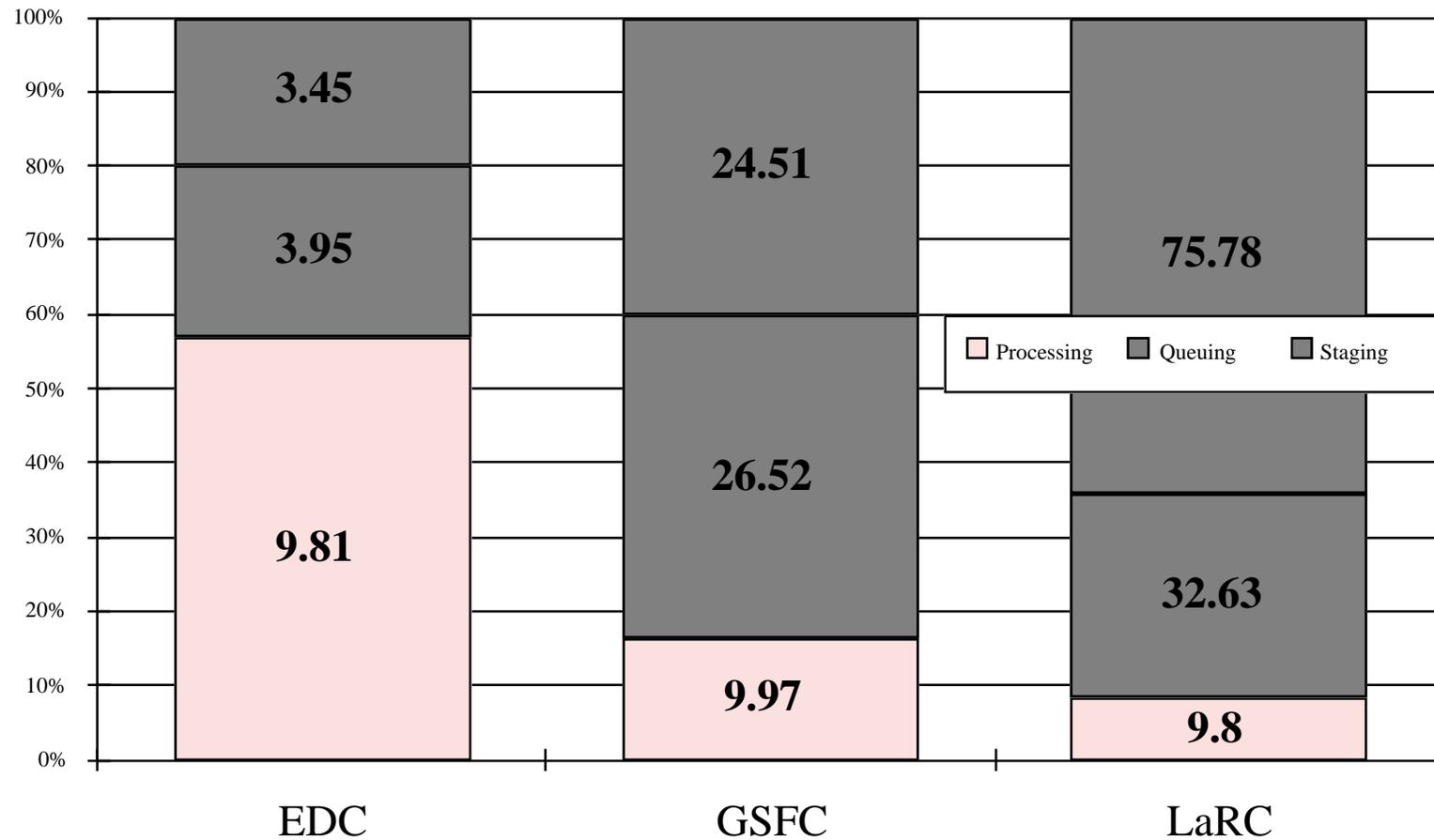


Site	Early or Late	Average (Minutes)	Under 5	5 to 10	10 to 15	15 to 30	30 to 60	60 to 120	120 to 240	240 to 480	over 480	# of Requests	Requests per day
	Early	33.01	96	267	177	204	141	92	44	14		1035	103.5
	Late	29.67	105	288	212	280	185	58	53	9		1190	108.18
<b>ASF</b>	<b>Totals</b>	31.34	201	555	389	484	326	150	97	23	0	2225	105.95
	Early	18.92	4595	2962	1270	1790	1434	641	219	28		12939	1293.9
	Late	15.51	5465	3975	1494	1609	1005	461	215	27		14251	1295.55
<b>EDC</b>	<b>Totals</b>	17.22	10060	6937	2764	3399	2439	1102	434	55	0	27190	1294.76
	Early	53.9	1824	1241	513	975	963	2353	1074	87	2	9032	903.2
	Late	68.13	1628	1022	477	760	1232	2698	2002	96		9915	901.36
<b>GSFC</b>	<b>Totals</b>	61.01	3452	2263	990	1735	2195	5051	3076	183	2	18947	902.24
	Early	24.65	25	92	119	143	42	17	15	1		454	45.4
	Late	22.43	39	109	119	141	41	24	10	1		484	44.
<b>JPL</b>	<b>Totals</b>	23.54	64	201	238	284	83	41	25	2	0	938	44.67
	Early	157.58	643	424	144	202	125	216	524	558	238	3074	307.4
	Late	78.85	790	534	228	323	217	287	595	275	19	3268	297.09
<b>LaRC</b>	<b>Totals</b>	118.21	1433	958	372	525	342	503	1119	833	257	6342	302.
	Early	20.27	16	37	53	36	11	9	3			165	16.5
	Late	16.66	23	59	59	31	12	8	1			193	17.55
<b>NSIDC</b>	<b>Totals</b>	18.47	39	96	112	67	23	17	4	0	0	358	17.05
	Early	19.71	13	46	57	41	9	11	3			180	18.
	Late	21.16	19	45	39	34	13	7	3			160	14.55
<b>ORNL</b>	<b>Totals</b>	20.43	32	91	96	75	22	18	6	0	0	340	16.19

# Where was average user distribution?



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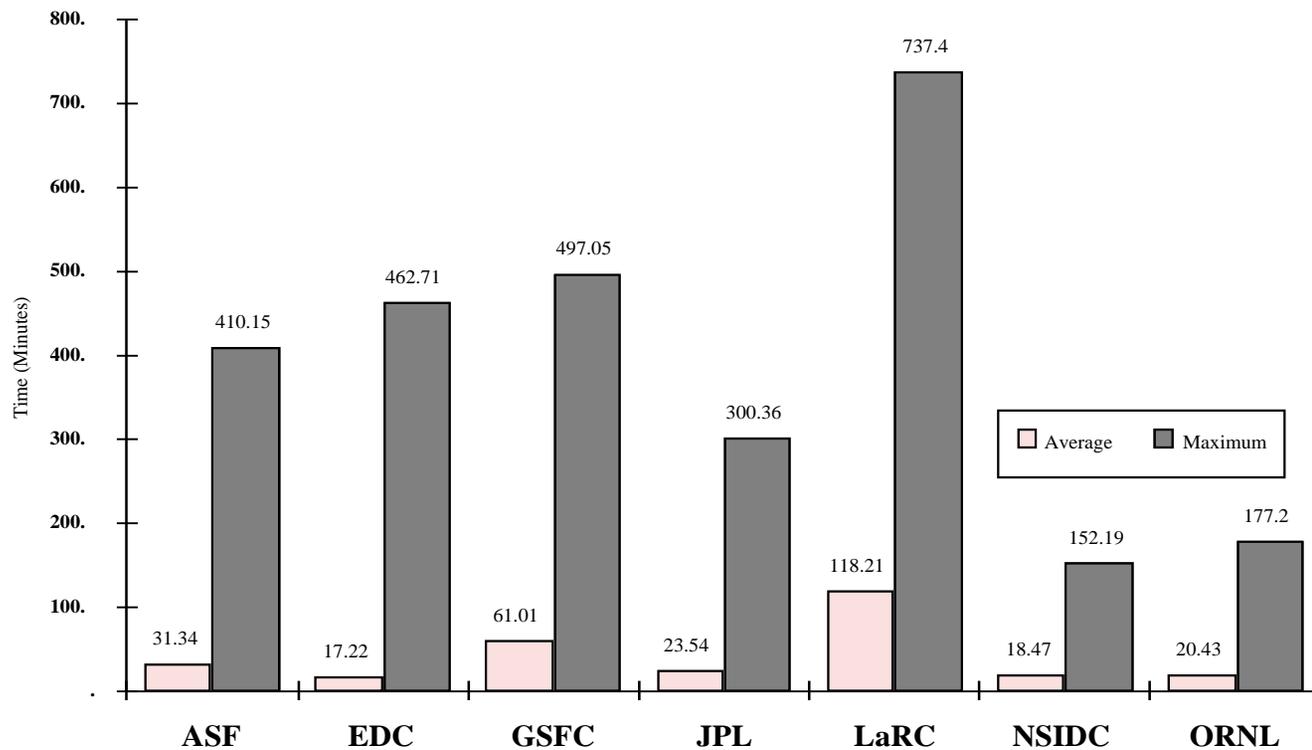


# Turnaround Times

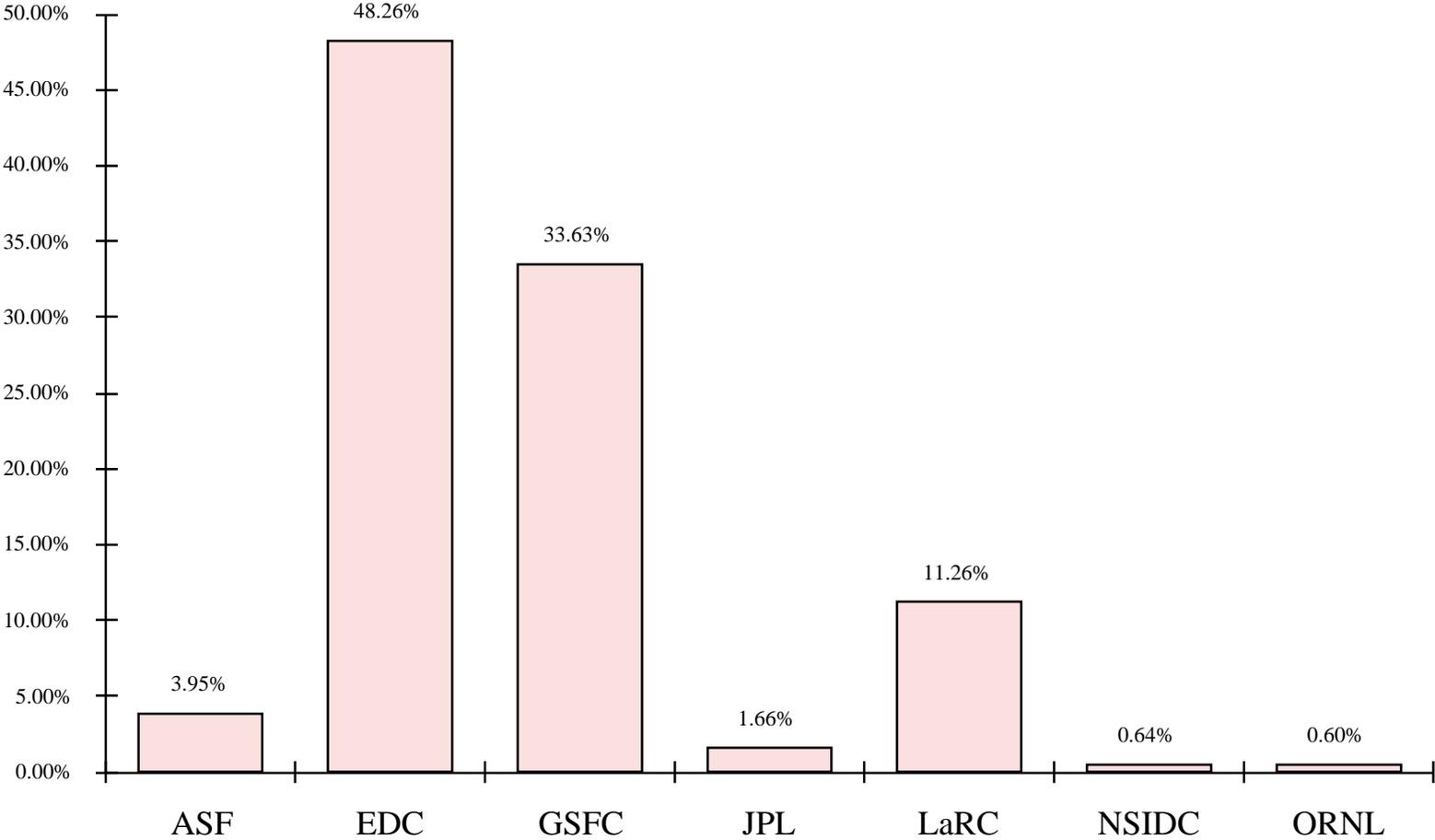


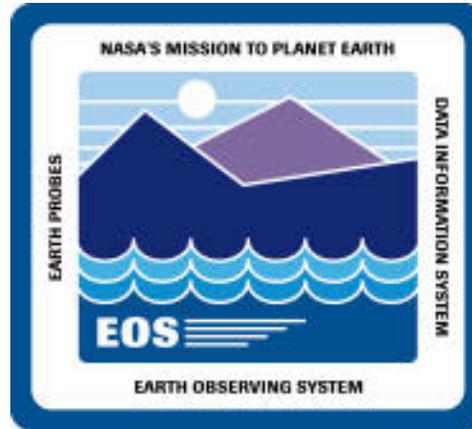
## Statistics

- Minimum was between 1 and 2 minutes for all sites



# Where were user requests distributed?





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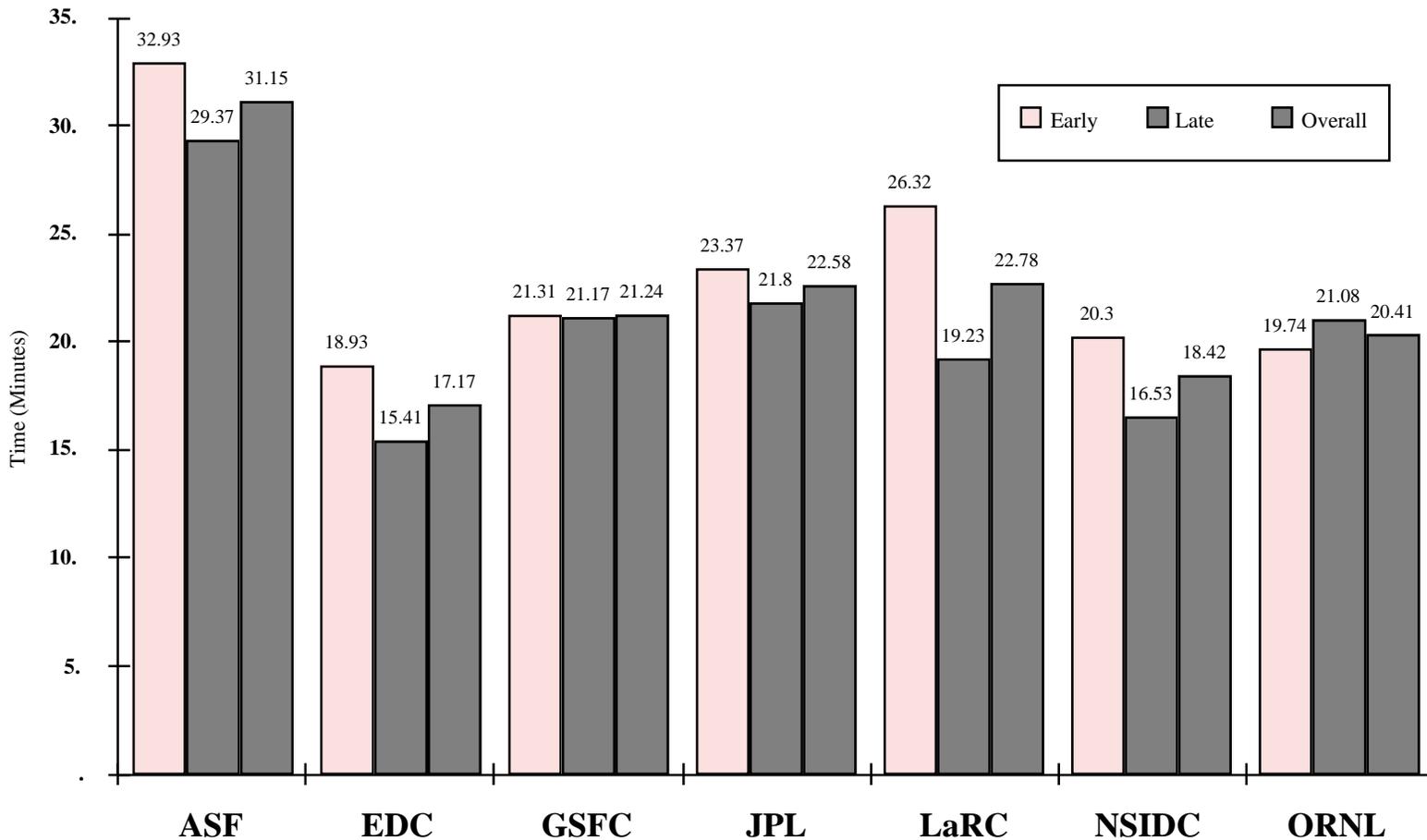
# Users (higher priority)

Scott H. Thompson

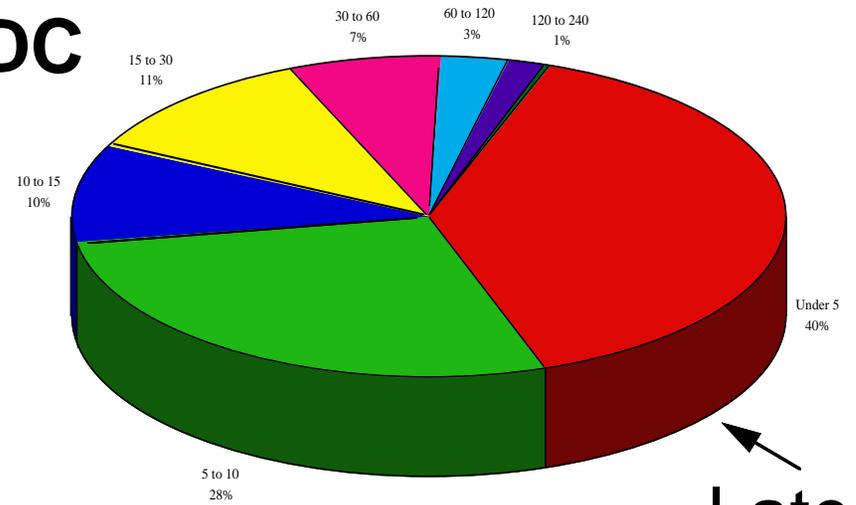
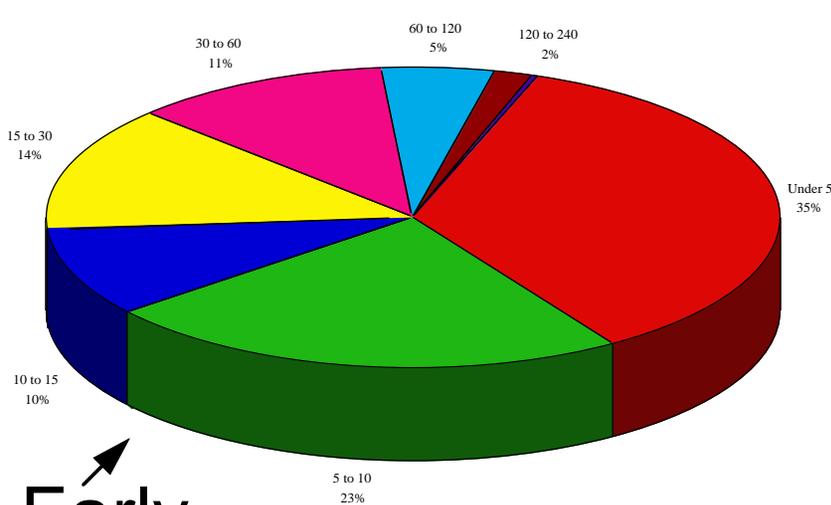
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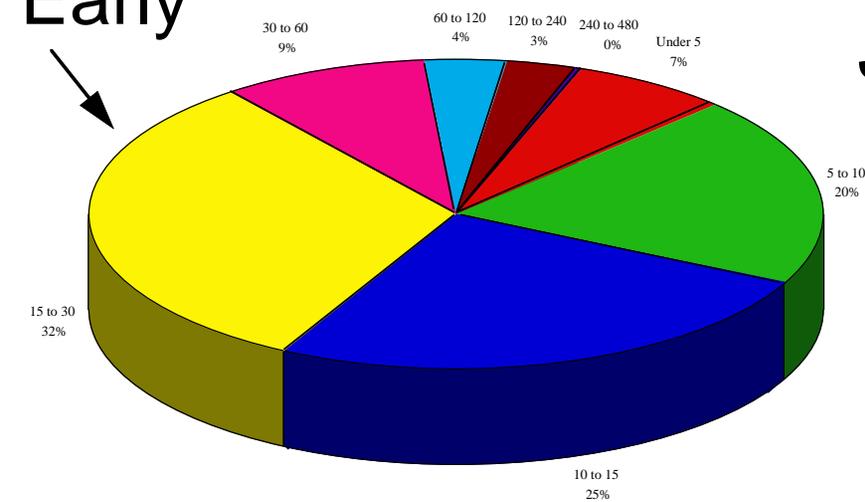


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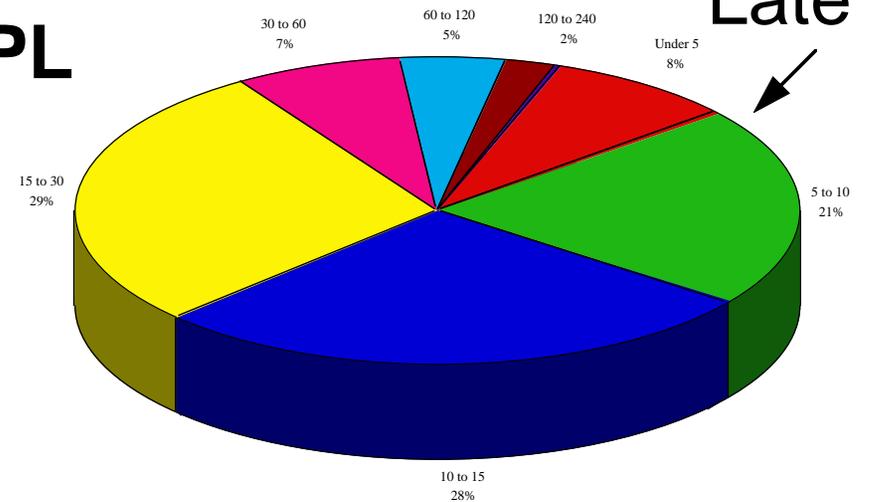


Early

Late



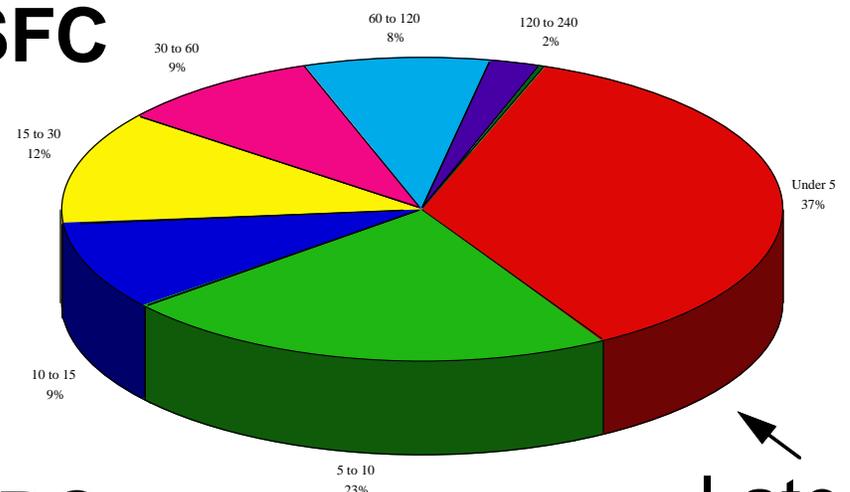
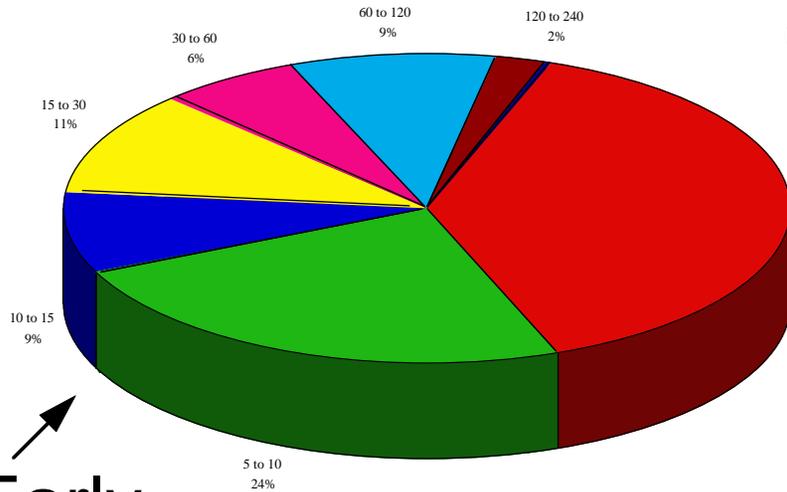
JPL



# User Response Time Distribution



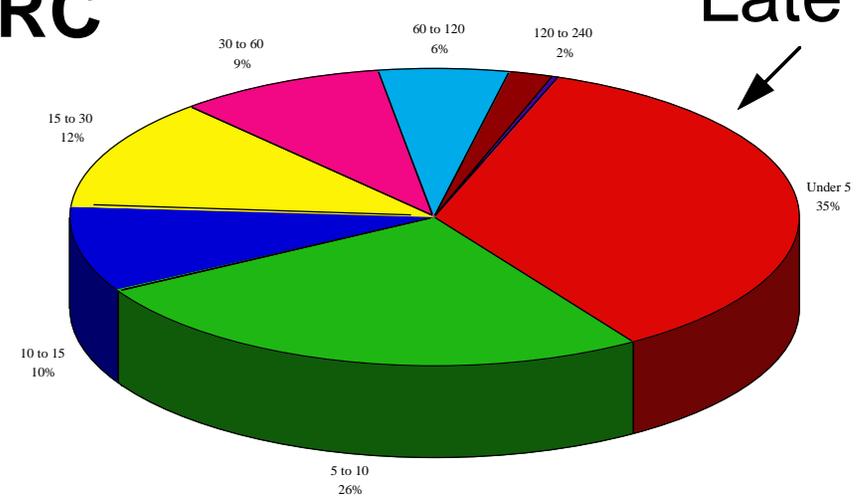
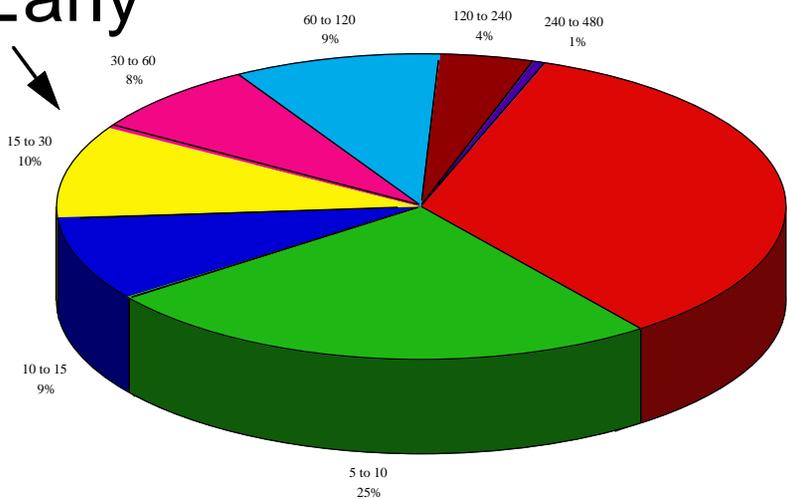
**GSFC**



**Early**

**Late**

**LaRC**



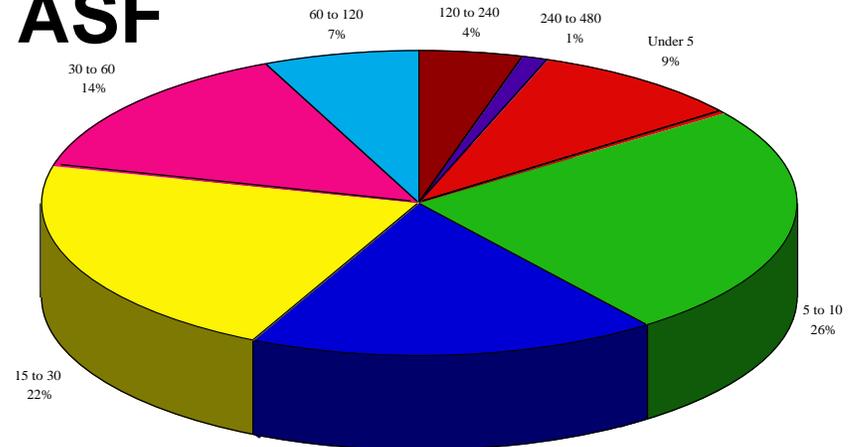
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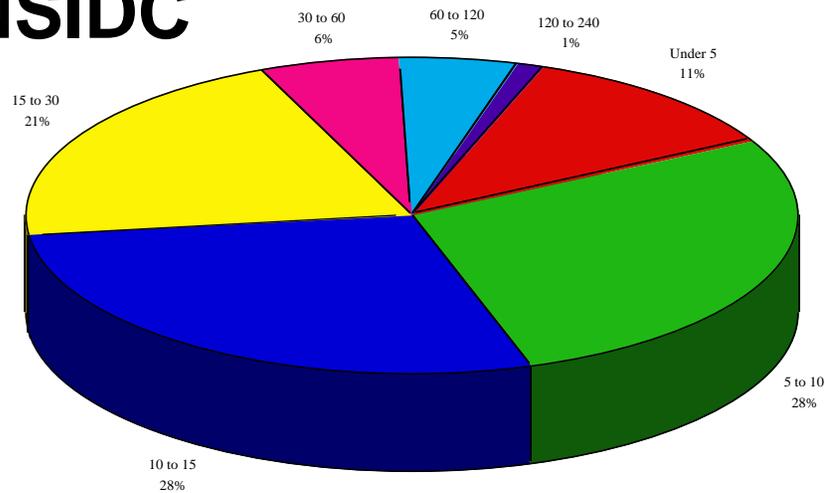
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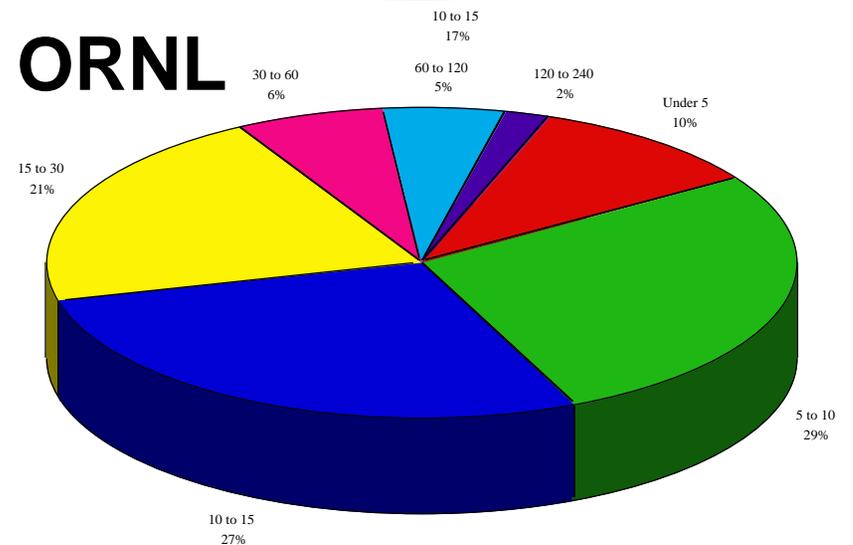
## ASF



## NSIDC



## ORNL

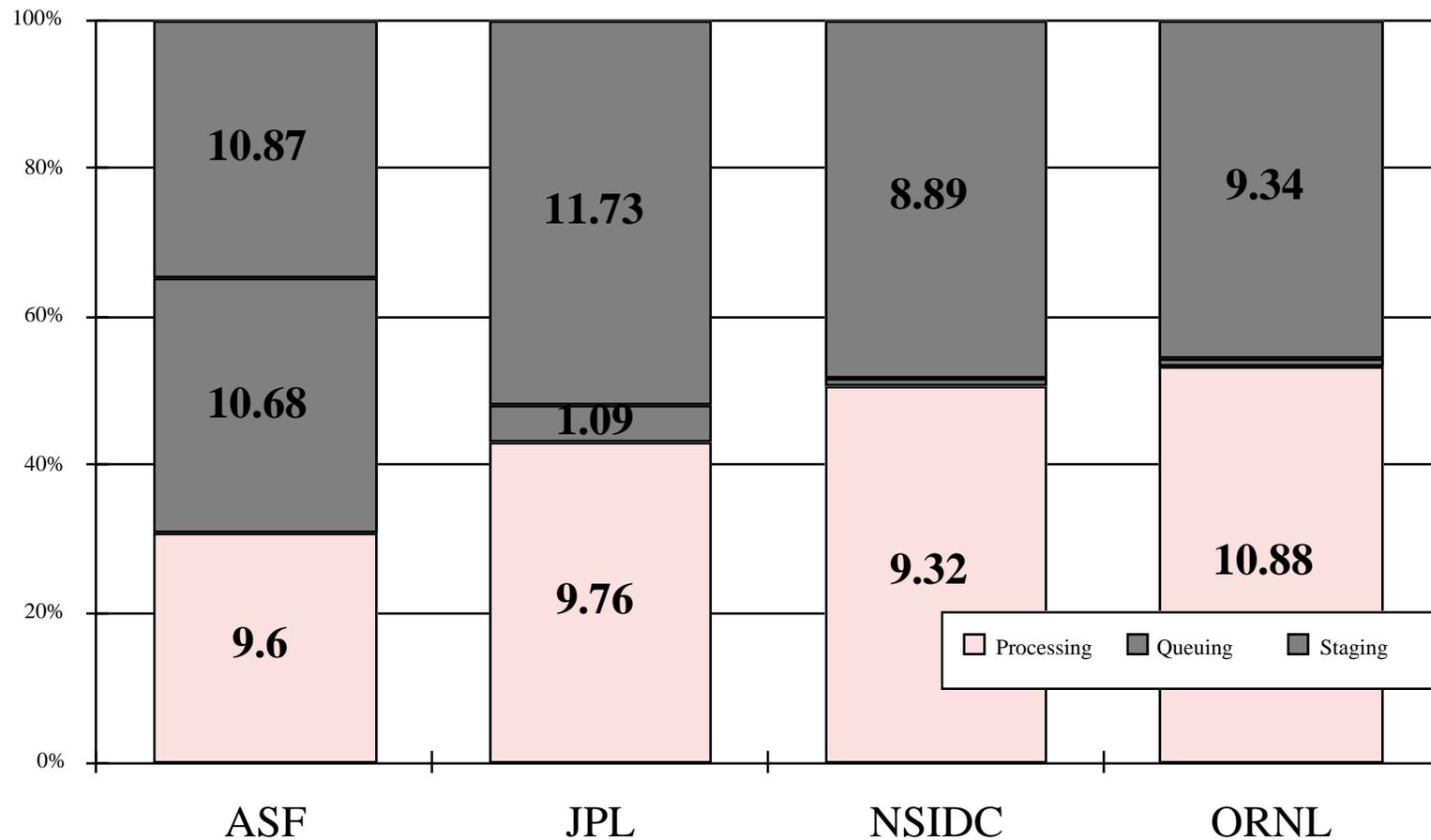
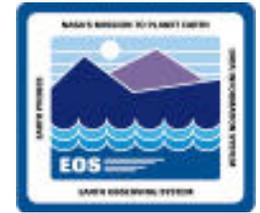


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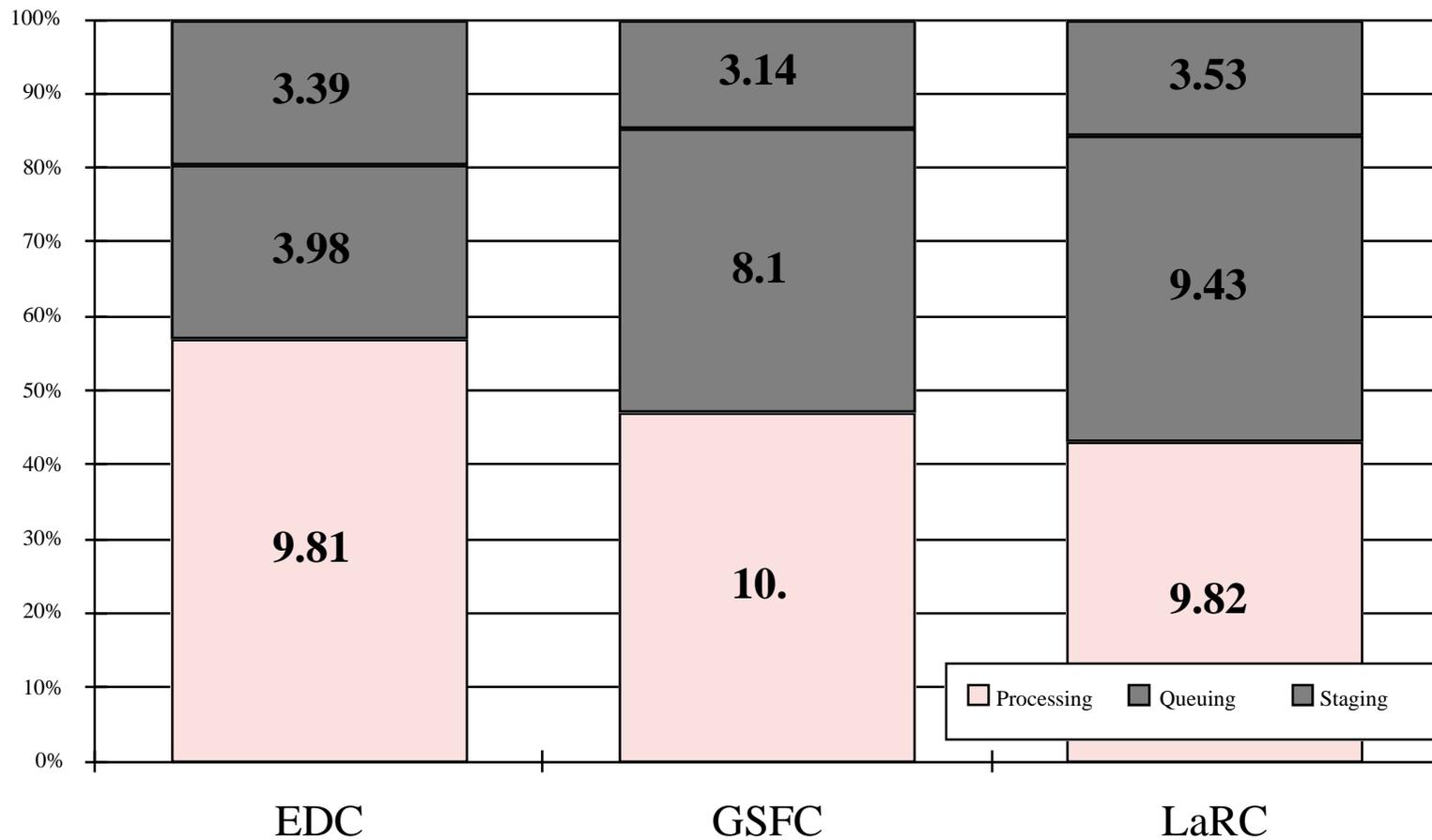


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	Late	29.37	110	287	218	280	176	57	52	10		1190	108.18
<b>ASF</b>	<b>Totals</b>	31.15	204	562	387	487	314	152	96	23	0	2225	105.95
	Early	18.93	4587	3000	1230	1785	1452	638	220	27		12939	1293.9
	Late	15.41	5605	3902	1463	1579	1002	462	211	27		14251	1295.55
<b>EDC</b>	<b>Totals</b>	17.17	10192	6902	2693	3364	2454	1100	431	54	0	27190	1294.76
	Early	21.31	3490	2163	807	973	570	808	201	19	1	9032	903.2
	Late	21.17	3587	2223	918	1215	906	842	208	21		9920	901.82
<b>GSFC</b>	<b>Totals</b>	21.24	7077	4386	1725	2188	1476	1650	409	40	1	18952	902.48
	Early	23.37	31	92	115	144	41	17	13	1		454	45.4
	Late	21.8	41	104	132	137	36	23	10	1		484	44.
<b>JPL</b>	<b>Totals</b>	22.58	72	196	247	281	77	40	23	2	0	938	44.67
	Early	26.32	1052	770	271	318	238	286	122	17		3074	307.4
	Late	19.23	1179	863	320	403	298	195	65	7		3330	302.73
<b>LaRC</b>	<b>Totals</b>	22.78	2231	1633	591	721	536	481	187	24	0	6404	304.95
	Early	20.3	15	44	44	39	11	10	2			165	16.5
	Late	16.53	26	57	55	36	10	8	1			193	17.55
<b>NSIDC</b>	<b>Totals</b>	18.42	41	101	99	75	21	18	3	0	0	358	17.05
	Early	19.74	23	46	36	32	13	7	3			160	16.
	Late	21.08	12	48	57	40	9	11	3			180	16.36
<b>ORNL</b>	<b>Totals</b>	20.41	35	94	93	72	22	18	6	0	0	340	16.19

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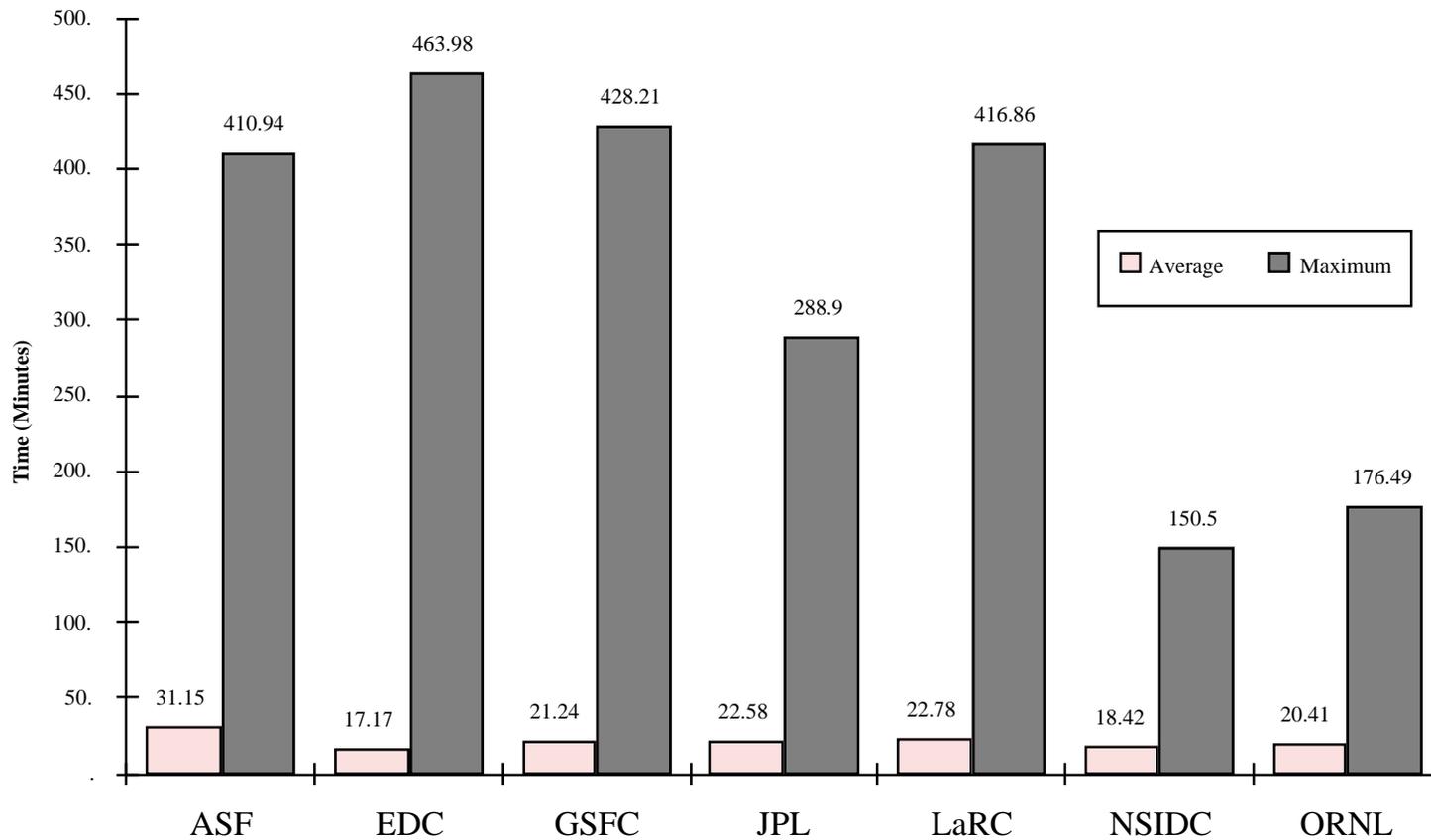


# Turnaround Times

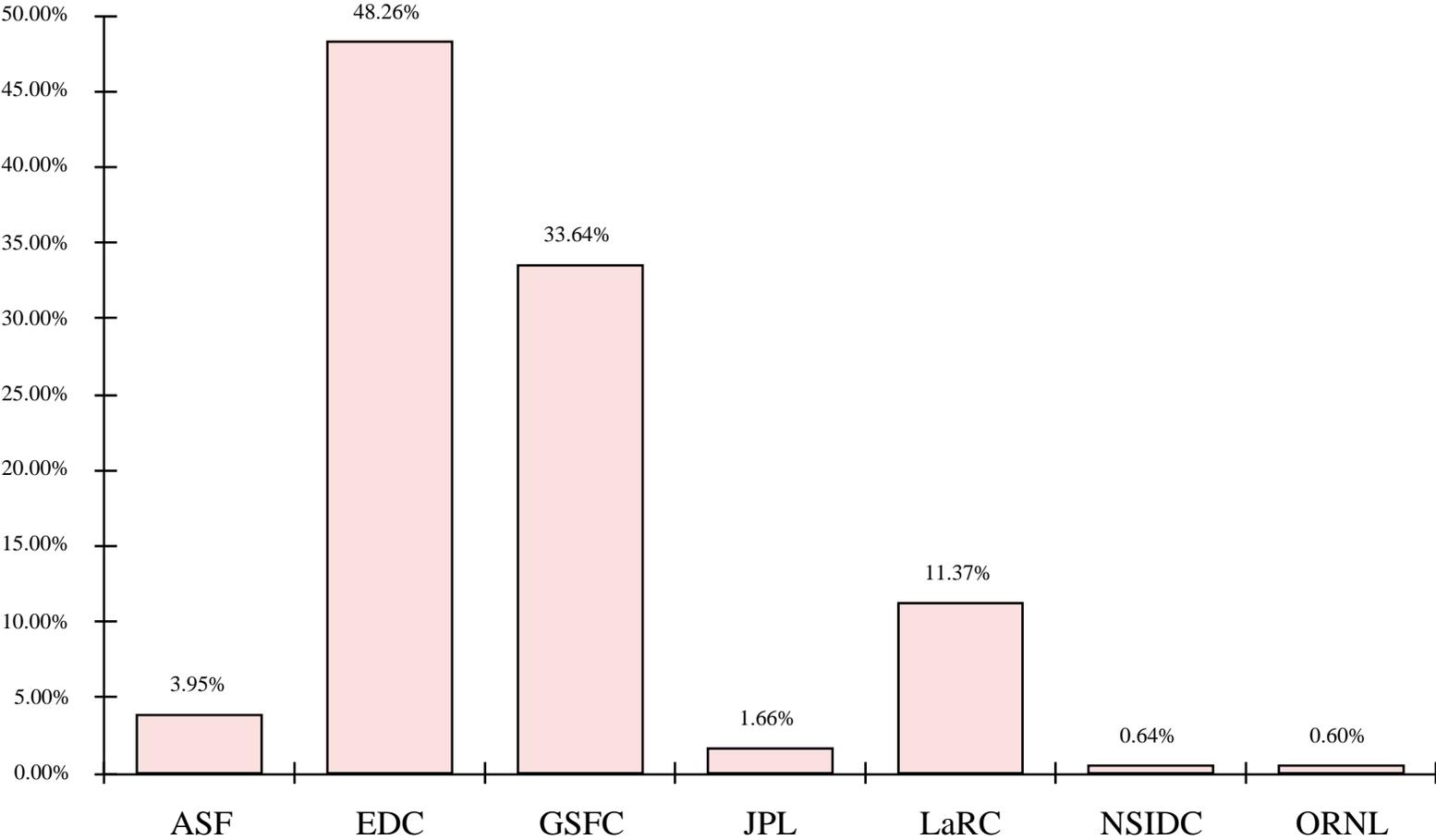


## Statistics

- Minimum was between 1 and 2 minutes for all sites



# Where were user requests distributed?





# How did higher priority affect users?

## Users had better turnaround times

- ASF, EDC, JPL, NSIDC, ORNL
  - » had small decreases in average times (about 2 minutes)
  - » similar maximums
- GSFC
  - » decrease in average times (about 40 minutes)
- LaRC
  - » considerable decrease in average times (about 97 minutes)

Lower Priority		ASF	EDC	GSFC	JPL	LaRC	NSIDC	ORNL
	Early	33.01	18.92	53.9	24.65	157.58	20.27	19.71
	Late	29.67	15.51	68.13	22.43	78.85	16.66	21.16
Higher Priority		ASF	EDC	GSFC	JPL	LaRC	NSIDC	ORNL
	Early	32.93	18.93	21.31	23.37	26.32	20.3	19.74
	Late	29.37	15.41	21.17	21.8	19.23	16.53	21.08
High - Low Changes		ASF	EDC	GSFC	JPL	LaRC	NSIDC	ORNL
	Early	-.08	.01	-32.59	-1.28	-131.26	.03	.03
	Late	-.3	-.09	-46.96	-.63	-59.61	-.13	-.07
Time in Minutes								

# How did this affect processing?



## ASTER

- lower average turnaround times
- higher maximums

## CERES TRMM & AM

- non-monthly
  - » overall a very small increase in averages and maximums
- monthly
  - » overall a large increase in turnaround times

## DAO

- increase of both averages and maximums

## DFA/MR

- little or no change of averages

# How did this affect processing?



## LIS

- little or no change in averages

## MISR

- daily
  - » mostly a small increase in averages
  - » maximums were much higher
  - » only one process did not meet the 24 hour turnaround requirement
    - its maximum exceeded the requirement for both lower and higher user priorities
      - △ 11 times out of 306 at the lower priority
      - △ 12 times out of 306 at the higher priority
    - mainly due to its processing requirements (21.5 hours) plus some staging requirements
    - on average (96% of the time) it did meet the 24 hour requirement (21.75 hours)
- monthly
  - » large increase in average turnaround times

# How did this affect processing?



## MODIS

- **high frequency jobs (585 times per day)**
  - » **1 case - increase in average and maximum**
  - » **3 cases - reduced averages and maximums**
- **lower frequency (58 times per day or less)**
  - » **overall, a small change in averages**
  - » **maximum were mostly higher**
  - » **Exceptions**
    - some processing actually improved with lower averages and lower maximums

## MOPITT

- **daily varied from mostly no change to large of averages & maximums**
- **10-day processing had little change in averages and maximums**

## SWS

- **little change in averages and maximums**

# What was the effect on resources?



## PGS CPUs

- No effect

## Data Handler R/W Stations

- very small effects
  - » lower values
    - ASF, EDC, JPL, NSIDC
  - » higher values
    - GSFC, LaRC, ORNL

## Data Handler Robots

- very small effects
  - » lower values
    - ASF, ORNL
  - » higher values
    - EDC, GSFC, JPL, LaRC, NSIDC