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REPORT ON PHASE TWO OF 1990 OSSA DATA CENSUS

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October 1991

National Space Science Data Center
National Aeronautics and Space Administration
Goddard Space Flight Center
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Preface

NASA's Office of Space Science and Applications (OSSA) and its predecessor organizations have been responsible for hundreds of scientific spacecraft that have made observations in and from space since 1958. A great deal of data has been produced by these spacecraft. To date there has been no single information base about all these data, although there are many information bases about various subsets of them. The National Space Science Data Center, on behalf of NASA/OSSA, is endeavoring to build a comprehensive information base about these data. One key element in this effort was a 1990 census which surveyed more than 200 former Principal Investigators. This report is primarily the result of that census. While the response was less than 100%, it was determined that the extant data from over 80% of the inactive investigations for which there were responses were fully archived at NSSDC.

TABLE OF CONTENTS

Preface	iii
Introduction	1
1990 Census - Phase One	2
The Database	3
The Survey Instrument	4
Response to the Survey	5
Conclusion	6
Acknowledgement	6
Appendix 1 - Phase One Report	7
Appendix 2 - GSFC Data Sets Identified During Phase One	21
Appendix 3 - The Survey Package	23
Appendix 4 - Investigators Surveyed and Their Responses	33
Appendix 5 - Overview of the 1981 Data Census	59
Appendix 6 - Data Sets Newly Identified in 1990 Census	61

Census-90 Report

Introduction

The 1990 NASA Office of Space Science and Applications (OSSA) data census contributed significantly to a database intended to identify and briefly describe all archived data and potentially archive-desirable data from active and inactive NASA/OSSA spaceflight investigations. This database is being created at the National Space Science Data Center (NSSDC) and will be more comprehensive than the databases describing data held at individual sites such as NSSDC.

For the purposes of this report, active investigations are defined as those flying on currently operational spacecraft or those that flew on recently operational spacecraft for which project-coordinated data archiving is continuing. Inactive investigations are those that flew on spacecraft that are no longer operational, and for which systematic archiving has ended.

Discipline-specific subsets of the database will be created and provided to groups of discipline scientists for comments (prioritization) relative to (1) restoration (defined later in this document) of archived or not-yet-archived data, and (2) archiving of the not-yet-archived data.

The principal purpose of this report is to describe phase two of the 1990 census. The previously reported phase one of this census, as well as a relevant 1981 census, will be briefly discussed. Then the phase two survey instrument will be described, those surveyed and respondents/responses will be identified, and data sets from inactive OSSA investigations "discovered" during the 1990 census (phase two) will be briefly discussed individually.

NSSDC plans to issue a subsequent series of discipline-specific reports, to address the present comprehensive database relevant to inactive investigations, using information collected both within and outside the 1990 census activity. Finally, yet later reports in this series will address the status of data from currently active missions. These later reports will be based on knowledge of ongoing interactions among project offices, Principal Investigators (PI) or the equivalent, and NASA archive representatives, with limited additional information from the 1990 census.

NSSDC has not addressed the archiving of data from non-spacecraft NASA data sources, such as rockets, balloons, and aircraft. It is NSSDC's general intent to do so after the completion of the spacecraft portion of the effort which represents the vast majority of the data by volume and by unmined science content.

1990 Census - Phase One

The 1990 NASA/OSSA census was taken in two phases. During the first phase, data held by Jet Propulsion Laboratory (JPL) scientists, data held by various JPL institutional data processing/management facilities, and data held by non-JPL scientists involved with JPL-managed spaceflight missions were surveyed under the lead of Margaret Johnson/JPL, while data held at NSSDC and by Goddard Space Flight Center (GSFC) scientists were surveyed by NSSDC staff.

Data held under the sponsorship of GSFC/Information Processing Division (IPD) are largely the counterparts of some JPL data that are now the subject of an institutional "inventory/categorize/restore" program. These JPL data were identified in census phase one. Little attempt was made to survey all such IPD data since these data are, for the most part, very low level data and not typically archive-desirable. (The author did receive from GSFC/IPD, however, a listing of the data sets IPD continues to hold which were used as input to the final processing step in which data sets transmitted to PI teams were generated.)

JPL took the lead in generating a report summarizing the first phase of the census. This report, dated March 12, 1990, contains some statistics and lists all available information about all the data sets identified. This report is available from Margaret Johnson or the present author. In particular, there are 294 data sets from 72 spacecraft identified. Of these, 156 are JPL-associated and 138 are GSFC-related. Of the 156 JPL data sets, 29 are associated with individual scientists or other persons, 33 are related to the NASA Ocean Data System, and the remaining 94 are low-level data sets managed institutionally. On average, these latter 94 are roughly analogous to the GSFC/IPD-managed data sets.

Of the 138 GSFC data sets, seven are related to the Solar Maximum Mission, and all the others are NSSDC-held. Also contained in the Phase 1 report are records of discussions between JPL staff persons and approximately 20 PIs on a range of past (e.g., Ranger) to current (e.g., Pioneer Venus) missions.

Appendix 1 of the present report is the index to the data set listings in the phase one report. Minor inconsistencies may be noted that render the numbers above (72 spacecraft, 294 data sets, etc.) as slight overestimates. For instance, note that "spacecraft" #'s 65 and 71 are the same. Also, the 11 AE-D "data sets" are the same set of tapes. Despite the main thrust of Phase 1 being the identification of GSFC and JPL scientists' data sets, several such GSFC data sets were identified after the Phase 1 report went to press. These data sets are separately identified in Appendix 2 of this report.

The Database

It is useful to note how the information collected has been organized, and, separately, how the 4500 NSSDC-held data sets have been handled. We used dBASE III as the database, in a PC environment, for the first phase. In this phase, the intent was to identify "data sets" where they were found. Some such data sets were entered into the database with additional information to be determined. Also, 131 of the currently most important NSSDC data sets were described in the dBASE database, with the expectation that the rest of the NSSDC holdings would be identified/described in the full and final Census Database (CDB).

Phase two of the census did not take the perspective of trying to find and identify/describe sets of tapes (or other media) as they existed around the NASA environment. Rather, this phase began with a list (which NSSDC has) of all OSSA-funded spaceflight investigations and an attempt to ascertain what data exist from each.

(This new [phase two] view of the census database, assigning primacy to the spaceflight investigations as the organizing principle as opposed to known extant sets of tapes, meant that JPL would need to continue using the original dBASE database to manage its on-going effort to better identify sets of tapes as associated with individual spacecraft and investigations, and to describe these data sets. Such data sets, when sufficiently well identified and described, would then be appropriate for inclusion in the definitive NASA/OSSA Census Database.)

To accommodate the results of both phases of the 1990 data census and other information concerning extant data from OSSA investigations, NSSDC undertook to build a relational database on a Britton Lee (Sharebase) database machine to facilitate compatibility with other NSSDC databases, especially the Master Directory and the AIM file (which is the principal repository of information about the 4500 NSSDC-held data sets). However, after the early response to the community survey, it became apparent that the great majority of data sets to be identified/described in the CDB were NSSDC-held data sets. Therefore, NSSDC decided to terminate the creation of a dedicated CDB and chose instead to modify the AIM file to accommodate the few incremental requirements of the CDB. Thus, CDB may now be viewed as a census view into the AIM file.

The CDB/AIM will be the database identifying all known data of potential archive value from OSSA-funded investigations. As mentioned above, it will be used to provide discipline-subsetted lists and descriptions of data sets to discipline-specific groups of scientists so that they may prioritize data sets for archiving/restoration/etc. This process will be central to the overall data revitalization effort of the OSSA Data Management Initiative.

A key feature of the CDB/AIM database is that it will contain an instrument-level free text description that, before launch, will identify plans for all data sets to be generated

and (the subset thereof) to be archived for a given instrument. Then, after launch, it will be used to track the implementation of the prelaunch data generation and archiving plans. This is in addition to more detailed dataset-level descriptions of the data sets themselves.

The Survey Instrument

NSSDC designed a survey to send to potential holders of extant data from OSSA-funded investigations. This report is intended to address the following questions concerning the survey and its results. (The phase two survey, addressed in detail in this report, was slightly modified from the earlier phase one survey.)

Who was contacted?
What was asked of them?
What were the responses?
What not-yet-archived data sets were discovered?
What can be done about the (mainly old) investigations for which there may be additional, unknown data?

A survey package was mailed, during the week of August 22, 1990, to 213 scientists possibly holding potentially archive-desirable data. It should be noted that 42 persons were included who were involved in active investigations only. Further discussion of the selection of recipients is given below.

A copy of the main part of the census survey package is contained in this report as Appendix 3. It consists of a cover letter from Joseph Alexander/OSSA soliciting cooperation, a more detailed set of instructions by Joseph King, a Data Set Identification (DSI) form intended to facilitate the quick and easy identification of relevant data sets, a Data Set Description (DSD) form intended to capture the additional information needed in the eventual data set prioritization-for-restoration/archiving process, guidelines for information needed for each field of the DSD, and a list of discipline keywords whose use would enable the database subsetting for the discipline-specific prioritization process.

In addition, each survey package contained a part specific to individual recipients. This showed what data NSSDC already held from the one or several instruments with which the recipient was associated. Inclusion of this part was intended to aid those persons who may have forgotten just what subsets of all their data they had already archived at NSSDC.

The recipients of the survey letter are listed alphabetically in Appendix 4 of this report. The list of investigations about which each was queried and the nature of the response, if any, are also given. The recipients were selected as follows. First, the NSSDC AIM file was reviewed to verify that a reliable separation of OSSA-funded investigations (i.e., those of census relevance) from all other investigations was realized. (The NSSDC AIM file captures information about spacecraft missions

Conclusion

This report was intended as a factual accounting of the second phase of the 1990 OSSA data census. It will be followed by several other reports. These will be discipline specific (i.e., corresponding to the individual OSSA Discipline Divisions) reports on the state of data from the inactive missions of each division and then similar reports for the active missions. Note that knowledge of the state of the data from OSSA investigations will have been gleaned from the census results reported herein as well as from other sources. Thus several investigations listed as having no census phase two response in this report will appear in the following reports as having known data situations.

It is these reports that are expected to be provided to discipline-specific groups of scientists under the auspices of the Discipline Divisions for consideration and prioritization for restoration and archiving. It is further expected that, relative to each investigation for which additional data are presently unknown, the advisory groups will either recommend (1) further efforts at learning of more possible data, owing to high continuing intrinsic importance of the data, or (2) the "closing off" of those investigations.

As results of the deliberations of these science groups come in, the database will be updated, until each inactive OSSA investigation either has all its archive-desirable data known to be archived or marked for restoration/archiving, or is written off as having insufficient scientific potential to justify further efforts to find associated archive-desirable data.

In the future, it is expected that new OSSA approaches to data management (early Project Data Management Plans, sufficient staffing of OSSA archives to monitor and support projects'/investigators' adherence to plans for data product generation and archiving, and to maintain the content of relevant information bases about these data) will render census activities such as that reported herein unnecessary.

Acknowledgement

Drs. Joy Beier and Ed Bell of NSSDC have provided excellent support for this effort over the past several months. Dr. Anand Swaroop supported the early part of phase two. Greg Hunolt and Joe Bredekamp at NASA/Headquarters, and Margaret Johnson at JPL, played key roles in the early definition and implementation phases of the overall census effort.

worldwide.) The AIM file characterizes missions as NASA or non- NASA or as joint missions. Since there are various ways in which missions may be joint between NASA and another agency or nation, the investigations on all such joint missions were reviewed to determine which were likely OSSA-funded investigations. Investigation-level (as opposed to spacecraft level) flags were set then to select all OSSA-funded, census-relevant, instrument- level AIM records.

This list was then reviewed at NSSDC. Records corresponding to instruments whose PIs were surveyed in a similar census conducted by NSSDC in 1981 and for which PI replies asserting "no more data beyond what's already at NSSDC" were received, were mostly deleted from the 1990 census effort. (Note that Appendix 5 of this report gives an overview of that 1981 census.) Also, GSFC and JPL scientists were deleted as having been reached during phase one of the 1990 census. Finally, certain very recently launched missions (e.g., the COsmic Background Explorer, COBE) were excluded from the census effort. Not all active investigations (as defined above) were so excluded. In retrospect, this is regrettable, since persons already actively archiving or preparing to archive their data responded quite inconsistently. Also, a few persons who ought to have been surveyed may have been missed; NSSDC staff is reviewing this situation now and is preparing appropriate follow-up action.

Response to the Survey

Appendix 4 reveals that the survey package went to 213 scientists. The survey involved 549 inactive investigations and 106 active investigations. Forty-two of the 213 scientists were involved in active investigations only. Of the 171 scientists associated with one or more inactive investigations, 73 responded with information about one or more of those investigations. It should be noted that some of these responses were stimulated by follow-up contacts by NSSDC staff, when the original deadline for submission of information to NSSDC had passed.

Of the 549 inactive investigations, 167 involved no more archive-desirable data, 37 had more potentially archive-desirable data, while for the remaining 345 there was no response. Appendix 6 discusses further the potentially archive-desirable data identified in the census phase two.

It is noteworthy that the great majority of inactive investigations (82%) for which there were responses have no more potentially archive-desirable data. It is also noteworthy that there were many non-respondents, although it is probable that the fraction of investigations associated with these non-respondents with no further archive-desirable data is at least 82%.

APPENDIX 1. Excerpts From Census Phase 1 Report

NASA DATA CENSUS--PHASE 1 REPORT
March 12, 1990

Margaret Johnson
Editor

Jet Propulsion Laboratory

1.0 INTRODUCTION 1

2.0 CENSUS TASK IMPLEMENTATION 1
2.1 Objectives of Phase 1 1
2.2 The Census Data Base 1
2.3 Information Collection Strategy 2

3.0 CENSUS DATA SUMMARY 3
3.1 Number of spacecraft 3
3.2 Number of datasets 3
3.3 Number of media types reported. 4
3.4 Database quality 4
3.5 Principal Investigator Contacts 8

4.0 RESPONSE TO THE MISSION DATA SURVEY 8
4.1 Responses from Principal Investigators . . . 8
4.2 Summary of PI reaction to the survey 12

APPENDIX A CENSUS DATA BASE CONTENTS 1

1.0 INTRODUCTION

This report contains a summary of the progress of the NASA Data Census being conducted at Goddard Space Flight Center (GSFC) and the Jet Propulsion Laboratory (JPL). This census was begun in August 1989 at the request of Code EC at NASA in order to determine the quantity and quality of data being stored at NASA centers as well as NASA data being stored by other institutions. The scope of Phase 1 was limited to GSFC and JPL in order to define and implement the Census system on a reasonable scale. Phase 2 of this task will extend the scope of the census to institutions. The information collection for phase 2 should be completed by the end of this fiscal year.

Phase 1 of this task represents a four month effort of information collection largely coordinated by G. Hunolt (HQ/EC), M. Johnson (JPL) and J. King (GSFC/NSSDC). The information in this report is based on that effort. This report describes the implementation of the Census task and also provides a summary of the data collection efforts through January 1, 1990. A complete listing of the data collected as of this date is provided as an appendix to this report. (It should be remembered that this report does not reflect information gathered after this date and is merely a snapshot of the state of the database at that time.) Section 4 of this report shows a sampling of Principal Investigator responses to the Census.

2.0 CENSUS TASK IMPLEMENTATION

2.1 Objectives of Phase 1

The objectives of Phase 1 of the Data Census were the following:

1. Definition of what information was necessary to include in a "census" entry.

2. Development of a database to capture and use the information collected in the census.

3. Begin collection efforts at JPL and GSFC for resident data sets.

4. Produce a phase 1 report describing progress to date.

2.2 The Census Data Base

The Census data base was developed to capture the following information:

Data Set Name

Spacecraft/platform
Experiment/instrument
Time span and Time resolution
Type and quantity of the media on which the data resides
Status/condition of the media
Status of documentation
Data Set size
Cognizant scientist
Data custodian
Location of the data set
Discipline keywords
Data set Key Parameters
Ancillary data requirements

This database was implemented in an identical fashion at both JPL and GSFC so that both centers could input data. The data was then integrated into a master database.

Analysis of the data base has shown that in order to increase its utility, standardization of values must be accomplished in phase 2. Elements that will track the review and prioritization of the data sets will also be added.

2.3 Information Collection Strategy

Two methods of data collection were employed in phase 1. The first method, used only by JPL, was the collection of existing inventories and integrating them into the database. This method, while identifying large numbers of tapes, furnished very incomplete information. This is because the data kept by some inventories about their holdings was minimal. The most common parameters were the name of the person storing the data, a title, quantity, storage date and media type. This method did provide names to contact using the second method of data collection.

An exception to the minimal information found in inventories, were the archive systems set up to identify science information of interest. Examples of high information content were the NASA Ocean Data System and the Planetary Data System as well as the NASA Master Directory. These systems provided almost all of the information required except for some of the media parameters.

The second method of data collection was the data survey. A form was created and sent to those individuals and organizations that have cognizance of science data. The scope of this effort was focused on the 20 "core" missions identified by NSSDC and CODMAC, which account for the great majority of NSSDC user requests. This method, provided more detailed and useful census entries. The time required, however, to send out, receive and input the survey forms meant that relatively few census entries could be input into the phase 1 database.

The scope of this effort will be expanded in Phase .

3.0 CENSUS DATA SUMMARY

3.1 Number of spacecraft

Number of spacecraft captured in the database = 72.

Comment. This number includes one phantom mission that contains eleven data sets that did not identify the spacecraft or platform. It also contains a data set called "multi-spacecraft" that will need to be further analyzed. The complete list of missions can be found in Appendix A.

3.2 Number of datasets

Number of datasets in the database = 294 (156 from JPL and 138 from GSFC)

110 datasets were collected using the first method of data collection. 7 datasets of the 138 GSFC datasets are not resident at NSSDC while 3 datasets of the 156 JPL datasets are not resident at JPL.

Comment. This number includes only the data sets that were actually entered into the database. Survey forms have been collected since the cut off that have not been entered. Furthermore, there are sets of data such as at EROS and the University of Iowa that have been identified but have not been entered since it is not clear what responsibility, if any, NASA has for these datasets. Further analysis during phase 2 will clarify this point.

3.3 Number of media types reported.

Media Type	Number Reported
556 7-Track Tape	25
556, 800 Tape	9
800 7-Track Tape	680
800 Tape	801
800, 1600 Tape	48536
800, 1600,6250 Tape	16000
11 in SONY Opt Disc	250
12 in WORM Opt Disk	0
1600 7-Track Tape	150
1600 Tape	11149
1600, 6250 Tape	8199
6250 Tape	14953
6250 Tape FITS	156
8 MM Tape Cartridges	0
CD-ROM	8
Disk(VAX)& 6250 Tape	1
Exabyte 8 MM Cart.	0
Optical Disk	0
Tape	33054
Tape, Mostly	64000
Type Not Specified	21402
*** Total ***	219277

Comment. As can be seen in the table, not all data sets identified the number of media that the data set resides on. In addition there were datasets that did not identify the media at all. This means that the total number in the table is understated. Phase 2 work will identify the type of media and number for all data sets. It will also break apart combinations such as (800, 1600, 6250 tape).

3.4 Database quality

The quality of the entries in the census database is currently poor. This was expected in Phase 1 due to the information gathering strategy employed. Now that the initial information has been gathered, the census can focus on refining information of current entries as well as adding the survey entries that are continuing to arrive. In addition, NSSDC has recently added staff for the Phase 2 effort to help increase information uniformity.

Table of Contents

1 Spacecraft/Platform Unspecified 1
1.1 Airborne Visible Infrared Imaging spectr . . 1
1.2 THERMAL INFRARED MULTI-SPECTRAL SCANNER . . . 1
1.3 DIGITAL ELEVATION MODEL 2
1.4 Once was Mariner 5, Now 114,115, 116 2
1.5 Venus Radar Mapping 3
1.6 MARK IV Interferometer EDRs 3
1.7 Venus Radar Mapping (VRM) 3
1.8 IRAS 4
1.9 Atmospheric Parameter Map (APM) 4
1.10 Radar 4
1.11 Radar 5

2 AE-C 5
2.1 AE-C UA TAPES 5

3 AE-D 6
3.1 AE-D UA TAPES 6
3.2 AE-D UA TAPES 7
3.3 AE-D UA TAPES 8
3.4 AE-D UA TAPES 9
3.5 AE-D UA TAPES 10
3.6 AE-D UA TAPES 11
3.7 AE-D UA TAPES 12
3.8 AE-D UA TAPES 13
3.9 AE-D UA TAPES 14
3.10 AE-D UA TAPES 15
3.11 AE-D UA TAPES 16

4 AE-E 17
4.1 AE-E UA TAPES 17
4.2 AE-E UA TAPES 18
4.3 AE-E UA TAPES 19
4.4 AE-E UA TAPES 20
4.5 AE-E UA TAPES 21
4.6 AE-E UA TAPES 22
4.7 AE-E UA TAPES 23
4.8 AE-E UA TAPES 24
4.9 AE-E UA TAPES 25

5 AEM-2 26
5.1 SAGE OZONE, AEROSOL, NO2 PROFILE 26

6 AMPTE-CCE 28
6.1 6.4-MIN. MASS, ENERGY SPECTRA 28
6.2 6.4-MIN, MASS-ENERGY SPECTRA 29
6.3 6.4-MIN. CHARGE-ENERGY-MASS SPECTRA 30
6.4 62-S AVERAGEAND PEAK VALUES 32
6.5 68-S MAGNETIC FIELD VECTORS 33

7 AMPTE-IRM 35
7.1 5-SEC AVERAGED MAGNETIC FIELD VECTORS . . . 35
7.2 5-S AVERAGED PLASMA PARAMETER 36
7.3 5-S AVERAGE PLASMAWAVE AMPLITUDES 37
7.4 5-S AVERAGED SUPRATHERMAL IONS 39

8 DMSP 40
8.1 Sea Surface Wind Speed (Wentz GDR) 40
8.2 Integrated Water Vapor (EGD) 41
8.3 Integrated Water Vapor (Wentz GDR) 42
8.4 Atmospheric Liquid Water (Wentz GDR) 43

9 ERBS 44
9.1 ERBE PROCESSED ARCHIVAL TAPE (PAT) 44
9.2 ERBE SCANNER DATA (S-9) 45
9.3 ERBE NONSCANNER DATA (S-10) 46
9.4 SAGE II OZONE PROFILE 47
9.5 SAGE II AEROSOL PROFILE 48

10 Galileo 49
10.1 GALILEO 49
10.2 GALILEO 49
10.3 GALILEO 50
10.4 Mariner 64 50
10.5 Galileo 51
10.6 Galileo 51

11 Geology Applctn A/C 51
11.1 Geology Application Aircraft 51
11.2 Geology Application Aircraft 52
11.3 Geology Application Aircraft 52

12 Geos-3 53
12.1 Sea Surface Height (GDR) 53
12.2 Sea Surface Wind Speed (GDR) 54

13 Geosat 55
13.1 Sea Surface Height (see parameters) 55
13.2 Sea Surface Height (WDR) 56

14 HCMM 56
14.1 HCMM IMAGE TAPES 56
14.2 HCMM DAY/NIGHT REGISTERED IMAGE TAPES . . . 57

15 HEAO A-2 58
15.1 HEAO A-2 COSMIC X-RAY PULSE HEIGHT DATA . . 58
15.2 HEAO A-2 DISCOVERY SCALER 60
15.3 HEAO A-2 PHA DATA ON MAGNETIC TAPE 61
15.4 HEAO A-2 XRATES DATA BASE 62
15.5 HEAO A-4 REDUCED DB, .MH + .FB FILES 64

16 HEAO A-3 65

16.1 HEAO A-3 REDUCED X-RAY COUNT DATA 65
16.2 HEAO A-3 REDUCED SCANNING DATA 66

17 HEAO B 68
17.1 HEAO B-3 FPCS REDUCED DATA 68

18 HEAO C 69
18.1 HEAO C3 HEAVY NUCLEI PROCESSED DATA GOLD . 69

19 HEAO-A2 71
19.1 HEAO A-2 COSMIC X-RAY PULSE HEIGHT DATA . . 71

20 Helios 72
20.1 Helios - Radio Science data 72

21 IRAS 72
21.1 IRAS 72

22 ISEE 3 73
22.1 ISEE3 Magnetometer RDRs 73

23 ISEE-1 74
23.1 ISEE-1 multi-coordinate ephemeris 74
23.2 ISEE-1 solar wind ion moments 75
23.3 LEPEDEA 3-D distribution functions 76
23.4 1-MINUTE AVERAGED MAGNETIC FIELD 78
23.5 3-sec avg electric and magnetic fields . . 79
23.6 3-s avg plasmaspheric electric field . . . 80
23.7 SUMMARY R-FILES (FORMAT 4) PLASMA COMP. . . 81

24 ISEE-2 82
24.1 1-MINUTE AVERAGED MAGNETIC FIELD SUMMARY . 82

25 ISEE-3 83
25.1 84-SECOND ELECTRON MOMENTS (GEOTAIL) . . . 83
25.2 SOLAR WIND ELECTRON MOMENTS (168-SEC.) . . 84
25.3 MIN, HOURLY, & DAILY AVGD MAGNETIC FIELD . 85
25.4 1-MINUTE AVERAGED FIELD WITH SPEED 87
25.5 0.33 SEC. MAG. FIELD G-Z COMET ENCOUNTER . 88
25.6 512-S ION COUNT RATES, H, He, Z>2 89
25.7 3-CH. PROTON FLUX 256-SEC OMNI & SECTOR . . 90
25.8 15-MINUTE AVERAGED FLUXES, H, He 91
25.9 HOURLY AVERAGED FLUXES H, He, AND Z>2 . . . 92
25.10 GAMMA RAY BURST SPECTROMETER DATA . . 93

26 ISEE-3/ICE 93
26.1 SW PLASMA MOMENTS (INCL. G-Z ENCOUNTER) . . 93
26.2 JPL ICE TRAJECTORY G-Z ENCOUNTER 94

27 Infrared Ast. Sat. 96
27.1 IRAS LOW RESOLUTION SPECTRA 96

28 Infrared Astr. Sat. 97
28.1 IRAS FASINT SOURCE PLATES 97
28.2 IRAS SKY BRIGHTNESSIMAGES (HCON 3) 98
28.3 IRAS LOW RESOLUTION ALL SKY MAPS 99
28.4 IRAS SKY BRIGHTNESS IMAGES (HCON 1) . . . 100
28.5 IRAS GALACTIC PLANE IMAGES 101
28.6 IRAS ADDITIONAL POINTED OBSERVATIONS . . . 102
28.7 IRAS SKY BRIGHTNESS IMAGES (HCON 2) . . . 103
28.8 IRAS SURFACE BRIGHTNESS MAPS OF LARGE . . 105
28.9 IRAS CHOPPED PHOTOMETRIC CHANNEL 106

29 LANDSAT 107
29.1 THEMATIC MAPPER 107

30 Lick Observatory 107
30.1 Voyager Uranus Reference Star Catalog . . 107
30.2 Voyager Neptune Reference Star Catalog . . 109

31 Mariner 111
31.1 Mariner-Graphics Programs/Fortran 111

32 Mariner 10 111
32.1 Mariner 10 Celestial Mech. & Radio Sci. . 111
32.2 Mariner 10 SEDR 112
32.3 Mariner 10 unknown 112
32.4 Mariner 10 unknown 112
32.5 Mariner 10 unknown 113
32.6 Mariner 10 unknown 113
32.7 MARINER VENUS MERCURY (MARINER 10) EDRs . 114
32.8 Mariner 10 114
32.9 Mariner 10 114
32.10 Mariner 10 unknown 115

33 Mariner 5 115
33.1 Mariner 5 MDL 115
33.2 Mariner 5 MDL Reacquisition Tapes 116
33.3 Unknown 116

34 Mariner 6 117
34.1 Mariner 6 (Master Data Records-MDR) . . . 117
34.2 Mariner 6 TV RDR Data 117

35 Mariner 64 118
35.1 Mariner 64 118

36 Mariner 67 118
36.1 Mariner 67 118

37 Mariner 69 118
37.1 Mariner 69 118
37.2 Mariner 69 119

38 Mariner 7 119
38.1 Mariner 7 (Master Data Records - MDRs) . . 119
38.2 Mariner 7 TV RDR Data 120

39 Mariner 71 120
39.1 Mariner Mars 71 RDRs 120
39.2 Mariner 71 121
39.3 Mariner 71 121

40 Mariner 9 121
40.1 MM71 Science Extract 121
40.2 Mariner 9 IRIS Reduced Data 122
40.3 Mariner 9 Celestial Mechanics EDR 122
40.4 Mariner 9 MM71 Engineering EDR 123
40.5 Mariner 9 IRIS Int 123
40.6 Mariner 9 POG OL 123
40.7 MM71 Imaging Preliminary EDR 124
40.8 MM71 TV SEDR 124
40.9 MM71 UVS EDR 125
40.10 MM71 UVS SAP 125
40.11 Mariner 9 IRR Reduced Data 126
40.12 Mariner 9 Disk UV file 126
40.13 Mariner 9 Plot file 126
40.14 Mariner 9 IRIS Disk tape 127
40.15 Mariner 9 IRR Disk tape 127
40.16 Mariner 9 UV Stack 128
40.17 Mariner 9 UVS SEDR (FINAL) 128
40.18 Mariner 9 IRIS SEDR (FINAL) 128
40.19 Mariner 9 IRR SEDR (FINAL) 129
40.20 Mariner 9 Preliminary UVS SEDR 129
40.21 Mariner 9 Preliminary IRIS SEDR . . . 130
40.22 Mariner 9 Preliminary IRR SEDR 130
40.23 Mariner 9 UVS Reduced data 130
40.24 Mariner 9 unknown 131
40.25 Mariner 9 unknown 131
40.26 Mariner 9 unknown 132
40.27 Mariner 9 unknown 132
40.28 Mariner 9 unknown 132

41 Multi-Spacecraft 133
41.1 Multi-Mission Tapes (Break down later) . . 133

42 NOAA 134
42.1 Integrated Water Vapor (EGD) 134
42.2 Sea Surface Temperature (see parameters) . 135

43 Nimbus 7 136
43.1 LIMS INV TMP&SPECIES PFL ARCH TP,LAIPAT . . 136
43.2 LIMS RADIANCE ARCHIVAL TAPE (RAT) 137
43.3 LIMS RADIANCE PROFILE TAPE (PROFILE-R) . . 138
43.4 SAMS RADIANCE ARCHIVAL TAPE (RAT) 139
43.5 SAMS GRIDDED TEMPERATURE TAPE (GRID-T) . . 140

43.6 SAMS ZONAL MEANS N20 6 CHH TAPE (ZMT-G) . 140
43.7 CZCS 1-KM CALIB-LOCATED TAD CRITT (NI7) . 141
43.8 SAM II RAW DATA ARCHIVE TAPE (RADT) . . . 143
43.9 SAM II BETA-AEROSOL NO DEN ARCH TP,BANAT . 144
43.10 ERB MASTER ARCHIVAL TAPE (MAT) . . . 145
43.11 ERB SOLAR 6 EARTH FLUX DATA TAPE (SEFDT) 146
43.12 ERB POST MAT CALIBRATION TAPE (DELMAT) 147
43.13 SMMR ANTENNA TEMPERATURE TAPE (TAT) . 148
43.14 SMMR HOR & VERT POLRIZ BRGH TMP,CELL-ALL 149
43.15 SMMR CALIBRATED TEMPERATURE TAPE (TCT) 150
43.16 TOMS TOTAL OZONE DATA TAPE (HDTOMS) . 151
43.17 SBUV TOTAL & PROFILE OZONE TAPE (HDSBUV) 152
43.18 TOMS RAW UNITS TAPE (RUT-T) 154
43.19 SBUV RAW UNITS TAPE (RUT-S) 155
43.20 THIR CALIB-LOCAT RAD DATA TAPE (CLDT) 156
43.21 THIR CLOUD DATA ERB FOR MAT (NCLE) . 157

44 Nimbus-7 158
44.1 Phytoplankton Pigment Concentration . . . 158

45 Pioneer 159
45.1 PIONEER 159
45.2 Gravity Wave Search 159
45.3 Pioneer-Graphics Programs/Fortran 160

46 Pioneer 10 160
46.1 ONE MIN., HOURLY, DAILY AVG. CRUISE MAG. . 160
46.2 PULSE HGT. ANALYSIS & 1 5-MIN COUNT RATE . 161
46.3 JUPITER ENCOUNTER TRAPPED RADIATION DATA . 162
46.4 TRAPPED RADIATION DETECTOR CRUISE DATA . . 163
46.5 JUPITER ENCOUNTER PROT & ELEC CNT RATES . 163
46.6 PROTON & ELECTRON 1-HR CRUISE CNT. RATES . 164
46.7 6-HOUR COSMIC-RAY FLUXES 165
46.8 FULL SOLAR WIND PROTON PLASMA DATA (MIT) . 165
46.9 JUPITER ENCOUNTER C.R. SPECTRA FLUXES . . 166
46.10 Pioneer 10 Magnetometer RDRs 167

47 Pioneer 11 168
47.1 PULSE HGT. ANALYSIS & 1 5-MIN COUNT RATE . 168
47.2 1-MIN AVG. VECTOR MAG. FIELD CRUISE DATA . 169
47.3 JUPITER ENCOUNTER TRAPPED RADIATION DATA . 170
47.4 TRAPPED RADIATION DETECTOR CRUISE DATA . . 171
47.5 SATURN ENCOUNTER TRAPPED RADIATION DATA . 171
47.6 JUPITER ENCOUNTER PROT & ELECT CNT RATES . 172
47.7 SATURN ENCOUNTER PROT & ELEC CNT. RATES . 173
47.8 PROTON & ELECTRON 1HR CRUISE COUNT RATES . 174
47.9 JUPITER ENCOUNTER C.R. SPECTRA FLUXES . . 174
47.10 SATURN ENCOUNTER C.R. SPECTRA FLUXES 175
47.11 6-HOUR CRUISE COSMIC-RAY SPECTRA FLUXES 176

47.12 JOVIAN ENCOUNTER HI-RES. MAG. FIELD DATA 177
47.13 SATURN ENCOUNTER HI-RES. MAG. FIELD DATA 177
47.14 FULL SOLAR WIND PROTON PLASMA DATA (MIT) 178
47.15 Pioneer 11 Magnetometer RDRs 179

48 Pioneer 12 180
48.1 Pioneer 12 - Radio Science 180

49 Pioneer Venus 181
49.1 Pioneer Venus - Radio Science 181
49.2 Pioneer Venus Infrared Radiometer EDRs . . 182

50 Pioneer Venus Orbitr 183
50.1 Pioneer Venus Orbiter - RFDTs,see params . 183

51 RANGER 184
51.1 Ranger 9 Master Tapes 184

52 Radar 185
52.1 Radar 185

53 SEASAT 185
53.1 SEASAT PROJECT TAPES 185
53.2 Sea Surface Height (SDR) 186
53.3 Sea Surface Height (GDR) 187
53.4 Sea Surface Wind Speed (SDR) 188
53.5 Sea Surface Wind Speed (GDR) 189
53.6 Sea Surface Wind Speed (SDR) 190
53.7 Sea Surface Wind Speeds. (GDR) 191
53.8 Sea Surface Wind Stress Vector 192
53.9 Sea Surface Wind Vector (SDR) 193
53.10 Sea Surface Wind Vector. (GDR) 194
53.11 Sea Surface Wind Vector (see parameters) 195
53.12 Sea Surface Wind Vector (see parameters) 196
53.13 Sea Surface Wind Vector (see parameters) 197
53.14 Sea Surface Wind Vector (see parameters) 198
53.15 Sea Surface Wind Vector (see parameters) 199
53.16 Integrated Water Vapor (SDR) 200
53.17 Integrated Water Vapor (GDR) 201
53.18 Atmospheric Liquid Water (SDR) 202
53.19 Atmospheric Liquid Water (GDR) 203
53.20 Sea Surface Temperature (SDR) 204
53.21 Sea Surface Temperature (GDR) 205
53.22 Sea Surface Temperature (SDR) 206

65.1 VOYAGER 1 & 2 MDR & SDR 229

66 Viking 230
66.1 RADIOMETRIC DATA 230
66.2 VIKING 231
66.3 Viking - Radio Science 231

67 Viking Lander 232
67.1 Viking Lander 232
67.2 Viking Lander 232

68 Viking Orbiter 233
68.1 Viking Orbiter 233
68.2 Viking Orbiter 233

69 Viking Orbiters 1&2 233
69.1 Viking 1 & 2 Ephemeris data 233

70 Voyager 235
70.1 Planetary Radio Astronomy - DEDRs 235

71 Voyager 1 & 2 236
71.1 VOYAGER 236
71.2 Planetary Radio Astronomy - High Rate . . 236
71.3 Planetary Radio Astronomy - EDRs 238
71.4 Voyager 1 & 2- Radio Science 239
71.5 Voyager Navigation 240
71.6 Voyager Imaging CD-ROMs 241
71.7 Voyager 1 & 2 243
71.8 Voyager 1 & 2 243
71.9 Voyager 1 & 2 243

72 Voyager 2 244
72.1 Uranus Small Satellite Observations 244
72.2 Neptune Small Satellite Observations . . . 245

53.23 Sea Ice Extent/Concentration (see para.) 207

54 SME 208
54.1 SME IRR 208
54.2 SME IR OZONE RADIANCE DATA TAPE 209
54.3 SME VISIBLE LIMB RADIANCE 210
54.4 SME LYMAN-ALPHA SOLAR IRRADIANCE 211

55 STS-41G 212
55.1 SIR-B IMAGE TAPES 212

56 STS-51B/Spacelab 3 213
56.1 ATMOS RAW ATMOSPH IR SPECTRAL TAPES . . . 213
56.2 ATMOS RAW SOLAR SPECTRAL TAPE 214

57 Seasat 215
57.1 SEASAT (NASA) LASER DATA 215

58 Solar Maxi. Mission 216
58.1 SMM CORONAGRAPH/POLARIMETER DATA 216
58.2 SMM RADIOMETER DATA 217
58.3 SMM GAMMA-RAY DATA 218
58.4 X-RAY IMAGES OF SOLAR FLARES FROM SMM . . 219
58.5 SMM HARD X-RAY DATA 220
58.6 SMM ULTRAVIOLET DATA 221
58.7 SMM X-RAY POLYCHROMATOR DATA 222

59 Solar Maximum Mision 223
59.1 Solar Irradiance Monitoring Data Base . . 223

60 Solar Mesosph Explor 225
60.1 SME UV OZONE RADIANCE DATA TAPE 225

61 SpaceLab 3 226
61.1 SpaceLab 3 - ATMOS EDRs 226

62 Surveyor 226
62.1 MDL Reacquisition / SURVEYOR 226
62.2 Alpha Scatter 227
62.3 Mass Spectral Data 227
62.4 Unknown 227
62.5 Surveyor 228
62.6 Surveyor 228

63 ULYSSES 228
63.1 ULYSSES 228

64 VARIOUS 229
64.1 MIPL 229

65 VOYAGER 1 & 2 229

APPENDIX 2. GSFC Data Sets Identified in Phase One

Several data sets held in various Goddard laboratories were identified during phase one of the census, but were not included in the Census Phase One Report summarized in Appendix 1 of this report. For completeness, those data sets are identified below.

Code 660, Laboratory for High Energy Astrophysics

- Helios A & B CEDR, FLUX, PHA, and RATE databases
- IMP 6, 7, & 8 Counts, PHA, and FLUX databases
- ISEE 3 Library and Encyclopedia databases
- Pioneer 10 & 11 RATE, PHA, and FLUX databases
- Voyager 1 & 2 Library and Encyclopedia databases

Code 680, Laboratory for Astronomy and Solar Physics

- OSO 7 EUV & Soft X-Ray Spectroheliograph data
- OSO 5 & OSO 8 Hard X-Ray Spectrometer data

Code 690, Laboratory for Extraterrestrial Physics

- IMP-B magnetometer data at 20-sec resolution
- Mariner 10 magnetometer data at 40-msec resolution

Code 910, Laboratory for Atmospheres

- AE C, D, & E NACS Geophysical Units data
- AE C, D, & E NATE Geophysical Units data
- ISIS 2 RPA Experimenter data tapes
- PVO OETP data

Code 920, Laboratory for Terrestrial Physics

- Tracking data for many spacecraft for gravity studies

Code 940, Goddard Institute for Space Studies

- ISCCP B3, C1, and C2 data sets
- PVO Photopolarimetry and UV Imagery data
- Distributions of Wetlands and of Animal Populations
- Global Vegetation & Land Use (UNESCO)
- AVHRR-Based Global Vegetation Index
- Land Surface Temperature Climatology

Code 970, Laboratory for Hydrospheric Processes

Nimbus 7 SMMR Polar Brightness Temperatures
Seasat Ice Sheet Elevations

National Aeronautics and
Space Administration

Washington D.C.
20546

Dear Colleague:

As NASA moves towards the future with major multi-spacecraft programs such as the Earth Observing System, the Great Observatories in Astrophysics, and the International Solar Terrestrial Physics program, it is important to know the state of NASA's present database, built from years of operations of past and current NASA spacecraft, and to know that the data constituting this invaluable national resource are in a position to be further exploited in the coming years. The key questions are: What data are where, and what is their state?

The National Academy of Science's Committee on Data Management and Computation (CODMAC) has stressed this area in recent reports, and this survey is one of several NASA efforts undertaken in response to this and other CODMAC recommendations.

We would like you to report any data, derived from NASA missions, that you hold that may be of scientific value to other researchers. It is our intent to then work with the science community to prioritize those data sets not now readily accessible to the community, and to take steps to make them conveniently accessible.

The enclosed survey materials contain forms we would like you to complete, along with specific instructions for completing them.

I urge your full cooperation with this very important endeavor to complete the definition of the NASA science database, and I thank you in advance for that cooperation.

Sincerely,

Joseph K. Alexander
Assistant Associate Administrator for
Space Science and Applications
(Science and Applications)

Enclosures

INSTRUCTIONS FOR DATA CENS SURVEY FORMS

You should send to NSSDC, for eac :ata set you hold which has science content not contained in data sets already archived at NSSDC, a . .ta Set Identification (DSI) form and a Data Set Description (DSD) form. The **Data Set Identification** (DSI) form simply identifies the data set, and should be returned by **September 7, 1990.** The **Data Set Description** (DSD) form calls for further descriptive information about the data set, and should be returned by **October 5, 1990.**

Note that copies of each of these two forms are attached. Also, for persons with electronic access to NSSDC, the forms may be copied from the following files: **NSSDCA::[ANONYMOUS.FORMS]DSI.FORM** and **NSSDCA::[ANONYMOUS.FORMS]DSD.FORM** to your directory for completing with an editor and returning to NSSDC via E-mail to SPAN: **NCF::SWAROOP.** Additional enclosures in this package are guidelines for providing the various information items requested (also on **NSSDCA::[ANONYMOUS.FORMS]GDLNS.TXT**) and the valid discipline keyword lists which will be used for database subsetting for discipline-specific review (also on **NSSDCA::[ANONYMOUS.FORMS]KWRDS.TXT**) . It is intended that the collected information will be used to define, with science community involvement, a prioritized list of those data sets most in need of resource expenditure to bring them, and their documentation, to a state of community accessibility and usability.

Attached also is a list of spacecraft and instruments, and resulting data sets at NSSDC, which we have associated with you. If in fact there is another person we should be in touch with about any of these, please call Dr. Anand Swaroop at NSSDC (301-794-5268) or myself (301-286-7355) with the identification of the right person. Please note that if you have no additional data sets beyond those already archived at NSSDC, or have no possibility of significantly extending any NSSDC-held datasets beyond their present extents, then one copy of the DSI form should still be returned to us informing us of this.

As separate items, we are also interested in the correctness and completeness of the contents of our personnel database and of our Master Directory database of accessible/usable data sets. We have included a listing of your record from our personnel database, and ask that you return it, annotated as appropriate or fill the blank Personnel Information sheet (also on **NSSDC::[ANONYMOUS.FORMS]PINFO.TXT**), with your DSI form(s).

With respect to the Master Directory, if you have data sets which you are willing to share with the community from your site, either electronically, or by replicating data volumes, then we request that yc indicate this at the appropriate place on the DSI form. If, on the other hand, you have data sets you'd like to transfer to NSSDC (or another NASA archive) for community accessibility, please indicate this c the DSI form.

If you have any questions, please call or send E-mail to Dr. Swaroop (301-794-5268) or myself.

Joseph H. King

Joseph H. King
Head, Central Data Services Facility
National Space Science Data Center, Code 933
Goddard Space Flight Center
Greenbelt, Maryland 20771
(SPAN: NCF::KING)

DATA SET IDENTIFICATION (DSI) FORM (1990 DATA CENSUS SURVEY)

1. **Do you hold unarchived NASA Space/Earth Science data? (Y/N):**
   (If you answered N, go to 10 below, and then return this form.
   If you answered Y, then please answer questions 2-9 on separate
   copies of this form for each data set.)

2. **Data Set Name (< 80 characters):**

3. **Spacecraft:**

4. **Instrument:**

5. **Media (e.g., magnetic tape):**

   Approximate number of media (if readily estimated):

6. **Is this an extension of an already archived data set? (Y/N):**

7. **Best person for further information about this data set:**

   Name:
   Telephone No.:

8. **Can/will you archive this data set (or extension)
   soon, as being of likely community interest and as
   having adequate documentation for secondary use? (Y/N):**

   (A Yes to this question will bring a call from NSSDC, or possibly
   from some more appropriate discipline-specific NASA archive staff, to
   pursue arrangements for transfer of data/documentation; a No does
   not preclude eventual archiving.)

9. **If you answered 8 negatively, are you willing to share
   this data set with the research community from your site? (Y/N):**

   (A Yes to this question will bring a call from the NASA Master
   Directory staff.)

10. **Any general comments (or lack thereof) about the data described above?**

Your Name :

Telephone : **EMAIL:**

DATA SET DESCRIPTION (DSD) FORM (1990 DATA CENSUS SURVEY)

(Note the companion sheet with brief discussions for providing answers to these questions)

Data Set Name (as provided on DSI form):

Spacecraft:

Instrument:

Media: (e.g., 6250 bpi mag tape):

Number of media:

Byte size estimate:

Time span:

Time resolution:

Spatial extent:

Spatial resolution:

Primary discipline keyword(s) (see list):

Secondary discipline keyword(s) (see list):

Scientist:

Name:
Telephone:
E-mail:

Person responsible for data maintenance:

Name:
Telephone:
E-mail:

Current Data location:

Parameters:

Quality Control or validation procedures used:

Ancillary data:

Adequacy of documentation (& effort to create/upgrade if needed):

State of the media:

DATA SET DESCRIPTION (DSD) FORM (Page 3 of 3)

Importance of the data set (your opinion):

Other comments:

Your Name :

DATA CENSUS SURVEY - GUIDELINES FOR DATA SET DESCRIPTION FORM

This Guideline is intended to define the various information items to be provided as part of the data census. Some fields may have multiple values for a few data sets: if so, please add additional lines at the end of the form. Not all fields may be appropriate for each data set.

Data Set Name: A descriptive, informative name. If the data is widely known by a less descriptive but common name, then use the common name (up to 80 characters).

Spacecraft: Common name of the spacecraft, or equivalent platform, from which data set was obtained (up to 40 characters).

Instrument: Common name (e.g., magnetometer) or proper name (e.g., Total Ozone Mapping Spectrometer) of the instrument collecting the data (up to 40 characters).

Media: The media used in storing the data set such as magnetic tape, magnetic cartridge, optical disk, microfilm, microfiche, black/white and color photograph.

Number of Volume: The total number of media units (magnetic tapes, etc.)

Byte Size Estimate: Specify an estimated byte count for the data set.

Time Span: Specify in the form YY/MM/DD - YY/MM/DD.

Time Resolution: (Typical) time interval between successive like data records or measurements in the data set. (What is the time resolution of the phenomena addressable with these data?)

Spatial Extent: For non-global Earth remote sensing data sets, specify latitude and longitude for lower left and upper right corners in the format LL: ± LT, ± LON; UR: ± LT, ± LON. For example, LL: -20, -160; UR: +20, +100. Note that south latitudes and west longitudes are negative. For global data sets, answer "Global".

Spatial Resolution: Typically relevant to Earth remote sensing gridded data sets. Specify needed information-number(s) and units thereof (up to 20 characters). The units should be in km for Earth and Arcsec for Astro.

Primary and Secondary Disciplinary Keywords: These are intended to (mostly) mirror the (present) discipline organizational structures at NASA/HQ. These will facilitate the selection and prioritization of data sets for restoration/archiving/etc. by discipline-specific science advisory groups. Multiple values are acceptable. Permissible values are given in the attachment to the guideline.

Scientist: Knowledgeable person, possibly the Principal Investigator, who can discuss the scientific content and significance of the data set, and the state of the associated documentation. Specify full address, telephone number, and E-mail address if available.

Data Person: Person responsible for the continued maintenance of the data volumes. Specify name, telephone number, and E-mail address if available.

Current Data Location: Where are the data physically held (e.g., facility, building, room)?

Parameters: likely values are "sensor outputs" for telemetry data (irrespective of extent to which ancillary data are folded in), "images", "radiances," or specification of the important geophysical parameters (e.g., temperature relative humidity, etc.) derived from the sensor outputs and contained in the data set.

Quality/Validation: Discuss the extent to which the data have been validated and/or quality controlled. Discuss parameter uncertainties and errors still in the data.

Ancillary Data: Are the ancillary data needed to select, retrieve, and correctly interpret the science data of the data set contained within the data set? If not, where are they and how are they accessed?

Adequacy of the Documentation: Is the documentation needed to enable an advanced graduate student in the data's discipline to retrieve and correctly use the data readily available. If this is a low level data set (e.g., sensor outputs), then are data processing software available? What is the state of documentation of this software? How transportable is it?

Effort to Create/Upgrade Documentation: Specify your estimate for creation of the needed documentation, if it does not already exist. On what premises do you base your estimate?

State of Media: This information is intended to estimate the imminence of data volume deterioration. Discussion should include the age range of the media, durations since media was last read, conditions under which data volumes have been stored, recent experiences in trying to read these media, etc.

DATA CENSUS SURVEY
PERMISSIBLE DISCIPLINE KEYWORDS

Primary keywords are capitalized and underlined. Secondary keywords are capitalized and discussions of these follow in lower case.

ASTROPHYSICS

HIGH ENERGY (X-rays, Gamma Rays; not cosmic ray particles)
OPTICAL/UV
LOW ENERGY (infrared, radio waves, microwaves,etc.)

EARTH SCIENCE

ATMOSPHERE (from just above land/ocean surface to 80 km)
LAND SURFACE
OCEAN (hydrosphere)
GEOPHYSICS (seismology, low altitude magnetometry, gravimetry, etc.)

LIFE SCIENCE

MICROGRAVITY (materials science, etc.)

PLANETARY/LUNAR

LUNAR

GEOLOGY
ATMOSPHERES
F&P (fields & particles)
SMALL BODIES (comets, asteroids, etc.)
IMAGING
NAIF (JPL facility for ephemeris data, etc.)

SOLAR/SPACE PHYSICS

SOLAR (electromagnetic)
HELIOSPHERE (cosmic rays, solar wind, etc.)
MAGNETOSPHERE
IONOSPHERE (including neutral atmosphere down to 80 km)

APPENDIX 4. Investiators Surveyed and Their Responses

This appendix identifies the scientists surveyed during phase two of the 1990 OSSA data census. Further details about the data identified during this census, related to inactive investigations, are given in Appendix 6. (An asterisk before an experiment designates an experiment on board a spacecraft that is either still active or still has an active project office or archival effort.)

PI	Experiment Name	Response

Response Key
N = No response
R/N = No more data
R/Y = More data

Acton, L. W. - LOCKHEED PALO ALTO, CA	
OSO 8, MAPPING X-RAY HELIOMETER	N
*SMM, SOFT X-RAY POLYCHROMATOR	R/Y
Alexander, W. M. - BAYLOR U., WACO, TX	
IMP-E, MICROMETEORITES	N
MARINER 2, COSMIC DUST	N
MARINER 4, COSMIC DUST	N
Alley, C. O. - U. OF MARYLAND, COLLEGE PARK, MD	
APOLLO 11 OLM/EASEP LASER RANGING RETROREFLECTOR	N
Alvarez, J. M. - NASA-LARC, HAMPTON, VA	
METEO. TECH. SAT., IMPACT FLUX	R/N
METEO. TECH. SAT., METRO. VELO.	R/N
Anderson, D. L. - CALIF. INST. TECH., PASADENA, CA	
VIKING 1 LANDER, SEISMOLOGY	R/N
VIKING 2 LANDER, SEISMOLOGY	R/N
Anderson, H. R. - SCIENCE APPL., INC., SEATTLE, WA	
MARINER 2, COSMIC RAY IONIZATION	N
OGO 2, COSMIC RAY IONIZATION	N
OGO 4, COSMIC RAY + POLAR REGION ION	N

Anderson, K. A. - U. OF CALIF., BERKELEY, BERKELEY, CA	
APOLLO 15D, PART. SHADOW LAYER, S173	N
APOLLO 16D, PART. SHADOW LAYER, S173	N
IMP-A, ENERGETIC PARTICLE EXP	N
IMP-B, TOTAL IONIZATION EXP	N
IMP-C, TOTAL IONIZATION EXP	N
IMP-D, ION CHAMBER + GIEGR CNTR	N
IMP-E, ENERGETIC PART. FLUX	N
IMP-F, ION CHAMBER	N
IMP-G, CHANNELTRON PRTCL. DET.	N
IMP-G, ION CHAMBER	N
IMP-I, GM DET. PROT. + ELECT	N
*ISEE 1, ELECTRONS AND PROTONS	N
*ISEE 2, ELECTRONS AND PROTONS	N
*ISEE 3, X- AND GAMMA-RAY BURSTS	N
OGO 1, SOLAR COSMIC RAYS	N
OGO 3, SOLAR COSMIC RAYS	N
OGO 5, XRAY + PART. DET., SOLAR FLARE	N
Argo, H. V. - LOS ALMOS NAT. LAB., LOS ALMOS, NM	
OSO 6, SOLAR X-RAYS, 16-40A	N
Arnold, J. R. - U. OF CALIF. SAN DIEGO, LA JOLLA, CA	
APOLLO 15A, GAMMA-RAY SPECTROMETER	N
APOLLO 16A, GAMMA-RAY SPECTROMETER	N
RANGER 4, GAMMA RAY	N
RANGER 5, GAMMA RAY	N
Arnoldy, R. L. - U. OF NEW HAMPSHIRE, DURHAM, NH	
ATS 6, LOW ENERGY PRTN-ELECTRON	R/N
Bader, M. - NASA-ARC, MOFFETT FIELD, CA	
EPE-A, ELETROSTATIC ANALYZ.	N
Baker, K. D. - UTAH STATE U., LOGAN, UT	
EXPL 6, TELEVISION	N
Bame, S. J. - LOS ALMOS NAT. LAB., LOS ALMOS, NM	
IMP-I, PLASMA	N
Banks, P. M. - STANFORD U., STANFORD, CA	
SPACELAB 2, VHCLE CHRGE + POT. (VCAP)	N
STS 3, VEHICLE CHARG. + POTEN EXP.	N
Barkstrom, B.R. - NASA-LARC, HAMPTON, VA	
*ERBS, EARTH RADN. BUDGET EXP/ERBE	R/Y

Barnes, A. - NASA-ARC, MOFFETT FIELD, CA	
*PIONEER Venus 1, Plasma Analyzer	N
Barth, C. A. - U. OF COLORADO, BOULDER, CO	
AE-C, UV NITRIC OXIDE EXP. (UVNO)	N
AE-D, UV NITRIC OXIDE EXP. (UVNO)	N
MARINER 5, UV PHOTOMETER EXPER.	N
MARINER 6, UV SPECTROMETER EXPER.	N
MARINER 7, UV SPECTROMETER EXPER.	N
MARINER 9, UV SPECTROMETER	N
OGO 2, AIRGLOW STUDY	N
OGO 4, UV AIRGLOW SPECTROMETER	N
OGO 5, UV AIRGLOW, 1304A AND 1216A	N
OGO 6, UV PHOTOMTR. 1304A + 1216A	N
OSO 8, HIGH-RESOLUTION UV SPECTROMETER	N
SME, INFRARED RADIOMETER	N
SME, LIMB VIEWING UV OZONE SPECTROMETER	N
SME, NEAR IR (1.27-MICRON) SPECTROMETER	N
SME, SOLAR PROTON ALARM	N
SME, SOLAR UV MONITOR	R/Y
SME, VISIBLE NITROGEN DIOXIDE	N
Bates, J.R. - NASA-JSC, HOUSTON, TX	
APOLLO 14C, LUNAR DUST DETECTOR	N
Bedo, D.E. - USAF GEOPHYS. LAB., BEDFORD, MA	
OGO 6, SOLAR UV, 170-1700A	N
Belcher, J.W. - MASS. INST. OF TECH., CAMBRIDGE, MA	
*VOYAGER 1, PLASMA SPECTROMETER	R/Y
*VOYAGER 2, PLASMA SPECTROMETER	R/Y
Benton, E.V. - U. OF CALIF. SAN FRANC., SAN FRANCISCO, CA	
SPACELAB 1, HZE-PARTICLE DOSIMETRY	R/Y
Biemann, K. - MASS. INST. OF TECH., CAMBRIDGE, MA	
VIKING 1 LANDER, MOLEC. ANALYSIS	R/N
VIKING 2 LANDER, MOLEC. ANALYSIS	R/N
Boese, R. W. - NASA-ARC, MOFFETT FIELD, CA	
*PIO78PB, IR RADIOMETER	N
Bohn, J.L. - TEMPLE U., PHILADELPHIA, PA	
OGO 1, INTERPLAN DUST PARTICLES	N
OGO 3, INTERPLAN DUST PARTICLES	N

Bostrom, C.O. - APPLIED PHYSICS LAB., LAUREL, MD

IMP-F, SOLAR PROTON MONITOR	N
IMP-G, SOLAR PROTON MONITOR	N
IMP-I, SOLAR PROTON MONITOR	N

Bowyer, C. S. - U. OF CALIF., BERKELEY, BERKELEY, CA

ASTP, EUV SURVEY (MA-083)	R/N
ASTP, HELIUM GLOW (MA-088)	R/N
SPACELAB 1, FAR UV OBSERVATIONS	R/N

Bridge, H. S. - MASS. INST. OF TECH., CAMBRIDGE,MA

IMP-A, FARADAY CUP	N
IMP-B, FARADAY CUP	N
IMP-C, FARADAY CUP	N
IMP-D, FARADAY CUP	N
IMP-E, FARADAY CUP	N
IMP-H, SOLAR PLASMA, FARA. CUP	R/N
MARINER 10, SCAN. ELCTOSTAT. ANALYZR	N
MARINER 4, FARADAY CUP	N
MARINER 5, FARADAY CUP	N
OGO 1, FARADAY CUP	N
OGO 3, FARADAY CUP	N
P 14, FARADAY CUP PLASMA PROBE	N
PIONEER 6, FARADAY CUP	N
PIONEER 7, FARADAY CUP	N

Brinton, H. C. - NASA HEADQUARTERS, WASH., DC

AE-B, RF ION MASS	R/N
AE-C, BENNETT ION MASS SPEC. (BIMS)	R/N
AE-E, BENNETT ION MASS SPEC. (BIMS)	R/N

Broadfoot, A. L. - U. OF SOUTHERN CALIF., TUSCON, AZ

*VOYAGER 1, UV SPECTROMETER	N
*VOYAGER 2, UV SPECTROSCOPY	N
MARINER 10, EUV SPECTROSCOPY	N

Brown, W. L. - BELL TELEPHONE LAB., MURRAY HILL, NJ

ATS 1, PARTICLE TELESCOPE	N
ATS 2, PARTICLE TELESCOPE	N
ATS 2, VLF RECEIVER, 5-45	N
EPE-C, ANGULAR DISTRIBUTION	N
EPE-C, ELECTRON ENERGY DISTR.	N
EPE-D, CHARGED PARTICLES	N
IMP-F, LOW ENERGY TELESCOPE	N
IMP-G, LOW ENERGY TELESCOPE	N
RELAY 1, CHARGED PARTICLE DETS.	N
RELAY 2, P-N JUNCT. ELEC., PROT. DETS.	N

Brueckner, G. E. -US NAVAL RESEARCH LAB., WASH., DC	
SPACELAB 2, HRTS, SOLAR UV TEL/SP	R/Y
SPACELAB 2, SUSIM, SOLAR UV MONIT.	R/Y
STS 3, SOLAR UV SPECTRAL IRRAD.	R/N
Burch, J. L. - SOUTHWEST RES. INST., SAN ANTONIO, TX	
*DYNAMICS EXPLORER 1 HIGH ALTITUDE PLASMA	R/Y
Burnett, D. S. - CALIF. INST. OF TECH., PASADENA, CA	
APOLLO 17 LM/ALSEP NEUTRON PROBE	N
Cahill, JR., L. J. - U. OF MINNESOTA, MINNEAPOLIS, MN	
EPE-A, 3-AXIS FLUX. MAGNETOMETERS	N
EPE-B, FLUX-GATE MAGNETOMETERS	N
EPE-C, FLUXGATE MAGNETOMETER	N
EPE-D, MAGNETIC FIELD	N
S-CUBED A, FLUXGATE MAGNETOMETERS	N
S-CUBED A, SRCH COIL MAGNETOMETERS	N
Cain, J. C. - US GEOLOGICAL SURVEY, DENVER, CO	
OGO 2, RUBIDIUM VAPOR MAGNETOMETER	R/N
OGO 4, MAGNETIC FIELD SURVEY	R/N
OGO 6, MAG. SURVEY, RUBID. VAP. MAGNETOMETERS	R/N
Carignan, G. R. - U. OF MICHIGAN, ANN ARBOR, MI	
*DE-B, NEUT. ATMOS. COMP. SPECTR. (NACS)	N
Carr, M. H. - US GEOLOGICAL SURVEY, MENLO PARK, CA	
VIKING 1 ORBITER, IMAGERY	R/N
VIKING 2 ORBITER, IMAGERY	R/N
Carruthers, G. R. - US NAVAL RESEARCH LAB., WASH., DC	
APOLLO 16C, FAR UV CAMERA/SPECT.	R/N
SKYLAB, UV CAMERA	R/N
Champion, K. S. W. - USAF GEOPHYS. LAB., BEDFORD, MA	
AE-C, TRI.-AX. ACC. SYS. (MESA)	N
AE-D, TRI.-AX. ACC. SYS. (MESA)	N
AE-E, TRI.-AX. ACC. SYS. (MESA)	R/N
Chappell, C. R. - NASA-MSFC, HUNTSVILLE, AL	
*DYN. EXPL. 1 RETARDING ION MASS SPECTROMETER	R/Y
Chase, JR., S. C. - SANTA BARBARA RES. CTR., GOLETA, CA	
MARINER 10 TWO-CHANNEL IR RADIOMETER	N

Chubb, T. A. - US NAVAL RESEARCH LAB., WASH., DC
OSO 2, SOLAR X-RAY BURST N
OSO 4, SOLAR X-RAY DETECTOR N
OSO 5, SOLAR X-RAY, 0.5-60A N

Chupp, E. L. - U. OF NEW HAMPSHIRE, DURHAM, NH
OSO 7, GAMMA RAY SPECT. 0.3-10MEV N
*SMM, GAMMA-RAY SPECTROMETER (GRE) R/Y

Clark, M. A.. - AEROSPACE CORP., EL SEGUNDO, CA
OGO 6, LYMAN-ALPHA PHOTOMETER N

Clark, G. W. - MASS. INST. OF TECH., CAMBRIDGE, MA
OSO 3, CELESTIAL GAMMA-RAY DETECT R/N
OSO 7, X-RAY SOURCES, 1.5-9A N
SAS-C, EXTRAGALACTIC 1.5-10KEV N
SAS-C, GALACTIC ABS. 0.2-10KEV N
SAS-C, GALACTIC MONITOR 1.8-8KEV N
SAS-C, SCORPIO MONITOR 0.4-80KEV N

Code, A. D. - U. OF WISCONSIN, AMDISON, WI
OAO 2, STELLAR PHOTOM 900-3000A R/N

Coleman, JR., P. J. - U. OF CALIF., LA, LOS ANGELES, CA
APOLLO 15D, MAGNETOMETER, S174 R/N
APOLLO 16D, MAGNETOMETER, S174 R/N
ATS 1, BIAX FLUXGATE MAGNETOMETER R/N
ATS 6, MAGNETOMETER, 3 AXIS FLUXGATE N
EXPL 6, FLUXGATE MAGNETOMETER R/N
MARINER 2, 3 AXIS FLUXGATE MAGNETOMETER R/N
OGO 5, ELECTRON PITCH ANGLE DIST. R/N
OGO 5, TRIAX. FLUXGATE MAGNETOMETER R/N

Counselman, C. C. - MASS. INST. OF TECH., CAMBRIDGE, MA
*PIO78PB, ATMS. CIRCULATION PATTERNS R/N
*PIO78PC, ATMS. CIRCULATION PATTERNS R/N
*PIO78PD, ATMS. CIRCULATION PATTERNS R/N
*PIO78PE, ATMS. CIRCULATION PATTERNS R/N

Cour-Palais, B. G. - NASA-JSC, HOUSTON, TX
APOLLO 11A, WINDOW METEOROID DET. N
APOLLO 12A, WINDOW METEOROID N
APOLLO 13A, WINDOW METEOROID N
APOLLO 14A, METEOROID WINDOW N
APOLLO 15A, WINDOW METEOROID (S176) N
APOLLO 17A, WINDOW METEOROID (S176) N

Cowings, P. S. - NASA-ARC, MOFFETT FIELD, CA
SPACELAB 3, AUTOGENIC TRAINING — N

Croft, T. A. - SRI INTERNATIONAL, MENLO PARK, CA
MARINER 5, TWO FREQUENCY BEACON — R/N
PIONEER 7, TWO FREQUENCY BEACON — R/N
*PIO78PB, ATMOS. PROPAGATION (MPRO) — N
*PIO78PC, ATMOS. PROPAGATION (MPRO) — N
*PIO78PD, ATMOS. PROPAGATION (MPRO) — N
*PIONEER Venus 1, Radio Science — N

Crook, G. M. - GAINES M. CROOK ASSOC., CANOGA PARK, CA
OGO 5, PLASMA WAVES, ELEC + MAG ANT. — N

Darosa, A. V. - STANFORD U., STANFORD, CA
ATS 1, RADIO BEACON — N
ATS 3, IONS PROPAGATION EXPER. — N
ATS 5, BEACON — N

Davies, K. - NOAA-ERL, BOULDER, CO
ATS 6, RADIO BEACON — N

De Vaucouleurs, G. H. - U. OF TEXAS, AUSTIN, TX
MARINER 9 MARTIAN MAPPING — N

Doering, J. P. - JOHN HOPKINS U., BALTIMORE, MD
AE-C, PHOTOELECT. SPEC. (PES) — N
AE-D, PHOTOELECT. SPEC. (PES) — N
AE-E, PES-PHOTOELECT SPECTROMETER — N

Doyle, F. J. - US GEOLOGICAL SURVEY, RESTON, VA
APOLLO 15A, HANDHELD PHOTOGRAPHY — R/N
APOLLO 15A, METRIC PHOTOGRAPHY — R/N
APOLLO 15A, PANORAMIC PHOTOGRAPHY — R/N
APOLLO 16A, METRIC PHOTOGRAPHY — R/N
APOLLO 16A, PANORAMIC PHOTOGRAPHY — R/N
APOLLO 17A, HANDHELD PHOTOGRAPHY — R/N
APOLLO 17A, METRIC PHOTOGRAPHY — R/N
APOLLO 17A, PANORAMIC PHOTOGRAPHY — R/N

Dyal, P. - NASA-ARC, MOFFETT FIELD, CA
APOLLO 14C, PORTABLE MAGNETOMETER — N
APOLLO 15C, LUNAR SURFACE MAGNETOMETER — N
APOLLO 16C, LUNAR SURFACE MAGNETOMETER — N
APOLLO 16C, PORTABLE MAGNETOMETER — N

El-Baz, F. - ITEK CORP., LEXINGTON, MA
APOLLO 14A, PHOTOGRAPHY R/N
ASTP, EARTH OBS. + PHOTOS (MA-136) R/N

Erickson, W. C. - U. OF MARYLAND, COLLEGE PARK, MD
IMP-I, UMD/GSFC RADIO ASTR. N

Eshelman, V. R. - STANFORD U., STANFORD, CA
PIONEER 6, TWO FREQUENCY RECEIVER R/N
PIONEER 9, TWO FREQUENCY BEACON R/N
PIONEER 8, TWO FREQUENCY BEACON R/N

Evans, D. S. - NOAA- ERL, BOULDER, CO
OGO 3, LOW ENERGY PROTON ANALYZER N
OGO 6, AURORAL E + P, 1-20KEV. N

Evans, W. D. - LOS ALAMOS NAT. LAB., LOS ALAMOS, NM
PIONEER VENUS 1 Gamma-Ray BURST Detector (OGBD) N

Faller, J. E. - U. OF COLORADO, BOULDER, CO
APOLLO 14C, LASER RETRO-REFLECTOR N
APOLLO 15C, LASER RETRO-REFLECTOR N

Fastie, W. G. - JOHN HOPKINS U., BALTIMORE, MD
APOLLO 17A, FAR UV SPECTROMETER R/N

Fazio, G. G. - SAO, CAMBRIDGE, MA
OSO 1, HIGH ENERGY GAMMA R/N
SPACELAB 2, INFRARED TELESCOPE R/N

Fillius, R. W. - U. OF CALIF., SAN DIEGO, LA JOLLA, CA
*PIONEER 10, JOVIAN TRAPPED PARTICLE N
*PIONEER 11, JOVIAN TRAPPED PARTICLE N

Foshee, L. L. - USA ELECTRONICS CMD, FORT BELVOIR, VA
NIMBUS 1, HRIR N
NIMBUS 2, HRIR N

Frank, L. A. - U. OF IOWA, IOWA CITY, IA
IMP-G, LEPEDA, LOW ENERGY PROTON + ELECTRON R/Y
IMP-G, SECOND LEPEDEA R/Y
IMP-H, LEPEDEA 25EV-50KEV R/Y
IMP-I, ELECTRON + PROTON, 25EV-50KEV R/Y
INJUN 5, LOW ENERGY PROTON + ELECTRON DIFFEANAL R/Y
OGO 3, LOW ENERGY ELECTRON + PROTON R/Y
OGO 5, CYL. ANAL., ELECTRON + PROTON/GM TUBE R/Y

Freeman, J. W. - RICE U., HOUSTON, TX

APOLLO 12C, SUPRATHERMAL ION	R/N
APOLLO 14C, SUPRATHERMAL ION	R/N
APOLLO 15C, SUPRATHERMAL ION	R/N
ATS 1, SUPRATHERMAL ION DETECTOR	R/N

Friedman, H. D. - US NAVAL RESEARCH LAB., WASH., DC

ASTP, SKY-EARTH SOFT X-RAY (MA-048)	N
HEAO 1, LARGE AREA X-RAY SURVEY	N
OSO 4, SOLAR X-RAY SPECT, 1-8A	N

Fritz, T. A. - NOAA-ERL, BOULDER, CO

ATS 6, LOW ENERGY PROTONS	N
S-CUBED A, 25-872KEV PROT. + ALPDET	N

Gehrels, T. - U. OF ARIZONA, TUSCON, AZ

*PIONEER 10, IMAGE PHOTOPOLARIMETER	N
*PIONEER 11, IMAGE PHOTOPOLARIMETER	N

Giacconi, R. - SPACE TELESCOPE SCI. IN., BALTIMORE, MD

HEAO 2, CRYSTAL X-RAY SPECTROMETER	N
HEAO 2, HIGH-RESOLUTION IMAGERY	N
HEAO 2, IMAGING PROPORTIONAL CENTER	N
HEAO 2, MONITOR PROPORTIONAL CENTER	N
HEAO 2, SOLID-STATE SPECTRM (SSS)	N
OSO 4, EXTRASOLAR X-RAY DETECTOR	N
OSO 4, SOLAR X-RAY TELESCOPE	N
SAS-A, XRAY ALL-SKY SURVEY	N

Gille, J. C. - NATL. CTR. FOR ATMOS. RES., BOULDER, CO

NIMBUS 6, LIMB RAD INVER RAD., LRIR	N

Gloeckler, G. U. OF MARYLAND, COLLEGE PARK, MD

*AMPTE/CCE, CHARGE-E-MASS SPECTROMETER	R/Y
IMP-H, SOLR IONS + ELEC., 100KEV	R/Y

Gorenstein, P. - HARVARD COLLEGE OBS., CAMBRIDGE, MA

APOLLO 15A, ALPHA PART. SPECTROMETER, S162	R/N
APOLLO 16A, ALPHA-PART. SPECTROMETER, S162	R/N

Gosling, J. T. - LOS ALMOS NAT. LAB., LOS ALMOS, NM

IMP-H, PLASMA ELECTRO. ANALYZER	R/Y
*IMP-J, PLASMA, ELECTRO. ANALYZER	R/Y
*ISEE 1, FAST PLASMA + SOL WIND ION	R/Y
*ISEE 3, SOLAR WIND PLASMA	R/Y

Greenstadt, E. W. - TRW SYSTEMS GROUP, REDONDO BEACH, CA	
*ISEE 3 Plasma waves spectrum analyzer	N
PIONEER 5 SEARCH-COIL MAGNETOMETER	N
Gurnett, D. A. - U. OF IOWA, IOWA CITY, IA	
*DE-A, PLASMA WAVE INSTRUMENT(PWZ)	N
HAWKEYE 1 ELF/VLF	N
IMP-I, IOWA AC ELECT+MAG FLDS	N
IMP-I ELECTROSTATIC WAVES AND RADIO NOISE (PROJECT)	N
*IMP-J ELECTROSTATIC WAVES AND RADIO NOISE	N
INJUN 5 VLF RECEIVER, 30CPS-16KC	N
*ISEE 1 PLASMA WAVES	N
*ISEE 2 PLASMA WAVES	N
S-CUBED A, AC ELCT. FLD. MSRE	N
STS 3/OSS-1 PLASMA DIAGNOSTIC PACKAGE	N
*VOYAGER 1 PLASMA WAVE (.01-56KHZ)	R/Y
*VOYAGER 2 PLASMA WAVE (.01-56KHZ)	R/Y
Gurtler, C. A. - NASA-LARC, HAMPTON, VA	
LUNAR ORBITER 1, METEOROID DETS.	N
LUNAR ORBITER 2, METEOROID DETS.	N
LUNAR ORBITER 3, METEOROID DETS.	N
LUNAR ORBITER 4, METEOROID DETS.	N
LUNAR ORBITER 5, METEOROID DETS.	N
S 55A PRESSURIZED CELL MICROMETEORITE DETECTOR	N
S 55B PRESSURIZED CELL MICROMETEORITE DETECTOR	N
S 55C PRESSURIZED CELLS	N
Haddock, F. T. - U. OF MICHIGAN, ANN ARBOR, MI	
IMP-I, MICH. RADIO ASTRONOMY	R/N
OGO 1, RADIO ASTRO,. 2-.4MC, 2-4MC	R/N
OGO 2, RADIO ASTRONOMY 2, 2.5 MHZ	R/N
OGO 2 ELECTRON DENSITY MEASUREMENTS	R/N
OGO 3, 4-2 MHZ SOLAR BURSTS	R/N
OGO 4, RADIO ASTRO, 2.5, 2.0 MHZ	R/N
OGO 5, RADIO ASTRO, 50KHZ-3.5MHZ	R/N
Hallinan, T. J. - U. OF ALASKA, FAIRBANKS, AK	
STS-51B/SPACELAB 3, AURORAL IMAGING	R/N
Hanson, W. B. - U. OF TEXAS, DALLAS, RICHARDSON, TX	
AE-C, RETARD POT'L ANALYZER (RPA)	R/N
AE-D, RETARD POT'L ANALYZER (RPA)	R/N
AE-E, RPA-RETARDING POTENT ANALYZER	R/N
*DE-B, RETARDING POTENT, ANALYZER (RPA)	N
OGO 6, ION MASS SPECT.	R/N
OGO 6, PLANAR ION TRAP	R/N

Hargraves, R. B. - PRINCETON U., PRINCETON, NJ
VIKING 1 LANDER, MAGNETIC PROP. N
VIKING 2 LANDER, MAGNETIC PROP. N

Hart, J. E. - U. OF COLORADO, BOULDER, CO
SPACELAB 3, GEOPHY. FLUID FLOW CELL N

Hays, P. B. - U. OF MICHIGAN, ANN ARBOR, MI
AE-C, VISIBLE AIRGLOW EXP. (VAE) R/Y
AE-D, VISIBLE AIRGLOW EXP. (VAE) R/Y
AE-E, VISIBLE AIRGLOW EXP. (VAE) R/Y
*DE-B, FABRY-PEROT INTERFER. (FPI) R/Y

Heelis, R. A. - U. OF TEXAS, DALLAS, RICHARDSON, TX
*DE-B, ION DRIFT METER (IDM) R/Y

Helliwell, R. A. - STANFORD U., STAFORD, CA
*DE-A, WAVE PARTICLE INTERACTINS. THEORY N
EXPL 6, VLF RECEIVER R/Y
*ISEE 1, VLF WAVE PROPAGATION R/Y
OGO 1, VLF RECEIVER R/Y
OGO 2, VLF RECEIVERS (012-100KHZ) R/Y
OGO 3, VLF RECEIVER R/Y
OGO 4, VLF RECEIVER R/Y
OGO 6, VLF RECEIVER, 20HZ-30KHZ R/Y

Hemenway, C. L. - DUDLEY OBS., ALBANY, NY
LUNAR ORBITER 2, MICROMETEORITES N

Hinteregger, H. E. - USAF GEOPHYS. LAB., BEDFORD, MA
AE-C, SOLAR EUV SPECTROMETER (EUVS) N
AE-D, SOLAR EUV SPECTROMETER (EUVS) N
AE-E, SOLAR EUV SPECTROMETER (EUVS) N
OGO 2, SOLAR UV SPECTROMETER N
OGO 4, SOLAR UV SPECTROMETER N
OSO 3, SOLAR EUV, 260-1300A N

Hoffman, J. H. - U. OF TEXAS, DALLAS, RICHARDSON, TX
AE-C, MAG. ION MASS SPEC. (MIMS) R/N
AE-D, MAG. ION MASS SPEC. (MIMS) R/N
APOLLO 15, CSM MASS SPECTROMETER R/N
APOLLO 16, CSM ORBITAL MASS SPECTROMETER R/N
APOLLO 17, LM/ALSEP ATMOSPHERIC COMPOSITION R/N
*PIONEER VENUS PROBE LARGE NEUTRAL PARTICLE MASS SPECTROMETER (LNMS) R/N

Hovis, W. A. - NOAA-NESDIS, SUITLAND, MD
NIMBUS 4 FILTER WEDGE SPECTROMETER (FWS) N
NIMBUS 5 SFC COMP. MAPPING RADIOMETER (SCMR) R/N
*NIMBUS 7, COASTAL ZONE COLOR SCANNER (CZCS) N

Howard, H. T. - STANFORD U., STANFORD, CA
APOLLO 14, CSM DOWN-LINK BISTATIC RADAR OBVS. N
APOLLO 15, CSM BISTATIC RADAR N
APOLLO 16, CSM BISTATIC RADAR N
MARINER 10, S- AND X-BAND RADIO PROPAGATION N

Ingersoll, A. P. - CALIF. INST. OF TECH., PASADENA, CA
*PIONEER 10, INFRARED RADIOMETER N
*PIONEER 11, INFRARED RADIOMETER N

Ipavich, F. M. - U. OF MARYLAND, COLLEGE PARK, MD
*IMP-J, SOLID STATE DETECTORS N

Israel, M. H. - WASHINGTON U., SAINT LOUIS, MO
HEAO 3, HEAVY NUCLEI N

Jacchia, L. G. - SAO, CAMBRIDGE, MA
AD-A, NONSYST. CHANGES AIR DENSITY N
AD-B, NONSYST. CHANGES AIR DENSITY N
AD-C, NONSYST. CHANGES AIR DENSITY N
EXPLORER 8, ATMOS. DRAG DENSITY R/N
OV3-3 SATELLITE DRAG ATMOSPHERIC DENSITY R/N
VANGUARD 2 SATELLITE DRAG ATMOSPHERIC DENSITY N
VANGUARD 3 SATELLITE DRAG ATMOSPHERIC DENSITY N

Johnson, F. S. - U. OF TEXAS, DALLAS, RICHARDSON, TX
APOLLO 12C, COLD CATHODE ION R/N
APOLLO 14C, COLD CATHODE ION GAUGE R/N
APOLLO 15C, COLD CATHODE ION R/N

Jones, L. M. - U. OF MICHIGAN, ANN ARBOR, MI
OGO 2, NEUTRAL PART + ION CO N
OGO 4, NEUTRAL PARTICLE-ION N

Judge, D. L. - U. OF SOUTHERN CALIF., LOS ANGELES, CA
*PIONEER 10, UV PHOTOMETER, 200-800A N
*PIONEER 11, UV PHOTOMETER, 200-800A N

Kaplon, M. F. - U. OF ROCHESTER, ROCHESTER, NY
OSO 3, COSMIC RAY CHARGE SPECTRUM N

Kaula, W. M. - U. OF CALIF., LA, LOS ANGELES, CA
APOLLO 15, CSM LASER ALTIMETER N
APOLLO 16, CSM LASER ALTIMETER N
APOLLO 17, CSM LASER ALTIMETER N

Keating, G. M. - NASA LARC, HAMPTON, VA
AD-A, SYSTEMATIC CHANGES AIR DEN. R/N
AD-C, SYSTEMATIC CHANGES AIR DEN. R/N
*PIONEER Venus 1, Atmospheric Drag R/N

Kellogg, P. J. - U. OF MINNESOTA, MINNEAPOLIS, MN
IMP-I, MINN AC ELEC + MAG FIELDS N

Kieffer, H. H. - US GEOLOGICAL SURVEY, FLAGSTAFF, AZ
VIKING 1 ORBITER, RADIOMETER R/N
VIKING 2 ORBITER, RADIOMETER R/N

Kinard, W. H. - NASA-LARC, HAMPTON, VA
*PIONEER 10, METEOROID DETECTOR N
*PIONEER 11, METEOROID DETECTOR N

Knecht, R. W. - NATL. BUREAU OF STD., BOULDER, CO
IE-A, FIXED FREQ IONOSONDE N

Knollenberg, R. G. - U. OF CHICAGO, CHICAGO, IL
*PIONEER VENUS PROBE LRG CLOUD PARTICLE SIZE SPECTROMETER (LCPS) N

Knudsen, W. C. - LOCKHEED PALO ALTO, PALO ALTO, CA
*PIONEER Venus 1, Retard. Pot. Anal. R/Y

Konradi, A. - NASA JSC, HOUSTON, TX
OGO 1, 0.1-10MEV PROT + ELEC SCINT. R/N
OGO 3, 0.1-10MEV PROT + ELECT SCINT. R/N

Kovach, R. L. - STANFORD U., STANFORD, CA
APOLLO 14C, ACTIVE SEISMIC R/N
APOLLO 16C, ACTIVE SEISMIC R/N
APOLLO 17C, SEISMIC PROFILING R/N

Kraushaar, W. L. - U. OF WISCONSIN, MADISON, WI
OSO 1, GAMMA-RAY TELESCOPE R/N
OSO 8, SOFT X-RAY BKGND. RADIATION R/N
S 15, GAMMA RAY TELESCOPE R/N
SKYLAB, 0.2-12 KEV SKY SURVEY N

Kreplin, R. W. - US NAVAL RESEARCH LAB, WASH, DC

OGO 2, ION WAKE STUDY	N
OGO 2, SOLAR X-RAYS	N
OGO 4, SOLAR X-RAY	N
OGO 5, SOLAR X-RAY, 2 TO 20KEV, PRO. CT.	N
OGO 6, SOLAR X-RAY, 0.15-6.2A	N
OSO 6, SOLAR X-RAY, SPEC + GM + SCINT.	N
RANGER 2, LYMAN ALPHA TELESCOPE	N
SOLRAD 8, SOLAR X-RAY AND ULTRAVIOLET MONITOR	N
SOLRAD 9, SOLAR RADIATION DETECTORS	N
SOLRAD 10, SOLAR RADIATION DETECTORS	N
SOLRAD 10, ALL-SKY X-RAY SURVEY	N

Krimigis, S. M. - APPLIED PHYSICS LAB, LAUREL, MD

IMP-H, CHARGED PARTICLE MEASUREMENTS EXPERIMENT	R/Y
*IMP-J, CHARGED PARTICLE MEASUREMENTS EXPERIMENT	R/Y
*VOYAGER 1, LOW ENERGY CHARGED PART. EXP (LECP):	R/Y
*VOYAGER 2, PART ANALYZER/TELESCOPE	R/Y

Laaspere, T. - DARTMOUTH COLLEGE, HANOVER, NH

OGO 6, VLF RECEIVER, 50HZ-540KHZ	N

Langseth, M. G. - LAMONT-DOHERTY GEO. OBS, PALISADES, NY

APOLLO 15, LM/ALSEP HEAT FLOW	N
APOLLO 16, LM/ALSEP HEAT FLOW	N
APOLLO 17, LM/ALSEP HEAT FLOW	N

Lazarus, A. J. - MASS. INST. OF TECH., CAMBRIDGE, MA

*IMP-J, SOLAR PLASMA FARADAY CUP	R/Y

Leavitt, C. P. - U. OF NEW MEXICO, ALBUQUERQUE, NM

OSO 2, COSMIC GAMMA 100-1000MEV DETECTOR	N
OSO 6, NEUTRON FLUX, 20-130MEV	N

Leighton, R. B. - CALIF. INST. OF TECH., PASADENA, CA

MARINER 4, TELEVISION	N
MARINER 6, MARS SURFACE TV CAMERA	N
MARINER 7, MARS SURFACE TV CAMERA	N

Lennartson, O. W. - LOCKHEED PALO ALTO, PALO ALTO, CA

*ISEE 1 Energetic ion-mass spectrometer 0-17 keV-q; 1 AMU TO 150 AMU	R/Y

Lin, F. J. - U. OF ARIZONA, TUCSON, AZ

IMP-G CHANNELTRON ELECTRON DETECTOR	N

Low, F. J. - U. OF ARIZONA, TUCSON, AZ	
APOLLO 17, CSM INFRARED SCANNING RADIOMETER	N
Macqueen, R. M. - HIGH ALTITUDE OBS., BOULDER, CO	
SKYLAB, WHITE LT. CORONAGPH (S052)	N
*SMM CORONAGRAPH/POLARIMETER	R/Y
Mange, P. W. - US NAVAL RESEARCH LAB., WASH, DC	
OGO 1, GEO LYMAN ALPHA	R/Y
OGO 2, GEO LYMAN ALPHA	R/Y
OGO 3, GEO LYMAN ALPHA	R/Y
OGO 4, GEO LYMAN ALPHA + UV AIRGLO	R/Y
OSO 4, GEOCOR, HYDROG LYM-ALP TELE	R/Y
Masley, A. J. - TRW SYSTEMS GOUP, REDUNDO BEACH, CA	
ATS 6, SOLAR COSMIC-RAY EXPER.	N
OGO 6, LOW ENERG COSMIC RAY MEAS.	N
Masursky, H. - US GEOLOGICAL SURVEY , FLAGSTAFF, AZ	
MARINER 9, TELEVISION PHOTOGRAPHY	N
McCormick, M. P. - NASA LRC, HAMPTON, VA	
*ERBS, STRAT AROSOL & GAS EXP/SAGEII	R/Y
*NIMBUS 7, SAM-II, STRAT AEROSOL MEA.	R/Y
SAGE, STRAT. AERO + GAS EXP.	R/Y
McCracken, K. G. - CSIRO, N RYDE, NSW, AUSTRALIA	
IMP-F, COSMIC RAY ANISOTROPY	N
IMP-G, COSMIC RAY ANIOTROPY	N
PIONEER 6, COSMIC RAY DETECTOR	N
PIONEER 7, COSMIC RAY ANISOTROPY	N
PIONEER 8, COSMIC RAY ANISOTROPY	N
PIONEER 9, COSMIC RAY ANISOTROPY	N
McDonald, F. B. - NASA HEADQUARTERS, WASH, DC	
*PIONEER 10, CHARGED PARTICLE TELE.	R/Y
*PIONEER 11, CHARGED PARTICLE TELE.	R/Y
McIlwain,C. E. - U. OF CALIF., SAN DIEGO, CA	
ATS 2, OMNI PROT.-ELEC. DETECTORS	N
ATS 5, LOW ENRG. PROT., ELECTRONS	N
ATS 5, ENRG. PART. (E/.5-5, P/12-24)	N
ATS 6, AURORAL PRTCLS. EXPERIMENT	N
EPE-C, OMNI + DIR (E/5, .5 P 40-110)	N
EPE-D, ELECTRON PROTON	N
RELAY 1, PROTON-ELECTRON COUNTERS	N
RELAY 2, PROTON-ELECTRON COUNTERS	N

Mende, S. B. - LOCKHEED PALO ALTO, PALO ALTO, CA	
SPACELAB 1, ATMOS. EMISS. PHOTO IMAG.	N
Mendillo, M. J. - BOSTON U., BOSTON, MA	
SPACELAB 2, PLASMA DEPLETION	N
Meyer, P. - U. OF CHICAGO, CHICAGO, IL	
*IMP-J, COSMIC RAY ELECTRONS	N
*ISEE 3, CSMC RAY ELTRNS, NUCLEI	R/Y
OGO 5, PART. TELE., CR ELECTRONS	R/Y
SPACELAB 2, COSMIC RAY NUCLEI	R/Y
Michael, JR., W. H. - NASA-LARC, HAMPTON, VA	
LUNAR ORBITER 1, SELENODESY	R/N
LUNAR ORBITER 2, SELENODESY	R/N
LUNAR ORBITER 3, SELENODESY	R/N
LUNAR ORBITER 4, SELENODESY	R/N
LUNAR ORBITER 5, SELENODESY	R/N
VIKING 1 LANDER, RADIO SCIENCE	R/N
VIKING 1 ORBITER, RADIO SCIENCE	R/N
VIKING 2 LANDER, RADIO SCIENCE	R/N
VIKING 2 ORBITER, RADIO SCIENCE	R/N
Mitchell, J. K. - U. OF CALIF., BERKELEY CA	
APOLLO 11C, SOIL MECHANICS	N
APOLLO 12C, SOIL MECHANICS	N
APOLLO 14C, SOIL MECHANICS	N
APOLLO 15C, SOIL MECHANICS	N
APOLLO 16C, SOIL MECHANICS	N
APOLLO 17C, SOIL MECHANICS	N
Mozer, F. S. - U. OF CALIF., BERKELEY, BERKELEY, CA	
ATS 5, ENRG. PART. E. + P. GT 5KEV	R/N
*ISEE 1, QUASI-STATIC ELECTRIC FIELD	R/N
Muehlberger, W. R. - US GEOLOGICAL SURVEY, FLAGSTAFF, AZ	
APOLLO 16C, FIELD GEOLOGY	R/N
Murray, B. C. - CALIF. INST. OF TECH., PASADENA, CA	
MARINER 10, TELE. PHOTO.	R/N
Nagy, A. F. - U. OF MICHIGAN, ANN ARBOR, MI	
*DE-B MAGNETOSPHERIC ENERGY COUPLING	R/N
OGO 6, LANGMUIR PROBES	R/N
*PIONEER VENUS 1 INTERDISCIPLINARY SCIENTIST	R/N

Naumann, R. J. - NASA-MSFC, HUNTSVILLE, AL	
PEGASUS 1, METEOROID DETECTORS	N
PEGASUS 2, MICROMETEORITE	N
PEGASUS 3, MICROMETEORITE	N
Neel, JR., C. B. - NASA-ARC, MOFFETT FIELD, CA	
OSO 3, DIRECTIONAL RADIOMETER	N
OSO 3, EARTH ALBEDO EXP.	N
Neugebauer, G. - CALIF. INST. OF TECH., PASADENA, CA	
MARINER 2, INFRARED RADIOMETER	R/N
MARINER 2, ELECTROSTATIC ANALYZER	R/N
MARINER 6, CHAN. IR RADIOMETER	R/N
MARINER 7, 2 CHAN. IR RADIOMETER	R/N
MARINER 9, INFRARED RAD.	R/N
Newton, G. P. - NASA HEADQUARTER, WASH, DC	
AE-A, PRESSURE GAUGE	R/N
AE-B, REDHEAD IONIZ. GAUGES	R/N
OGO 2, NEUTRAL PARTICLE STUDY	R/N
OGO 4, NEUTRAL PARTICLE	R/N
SAN MARCO 3, NEUT. ATM. COMP. SPECTR.	R/N
SAN MARCO 4, NEUTRAL ATMOS. COMP.	R/N
Ney, E. P. - U. OF MINNESOTA, MINNEAPOLIS, MN	
OSO 2, ZODIACAL LIGHT MONITOR	R/N
OSO 5, ZODIACAL LGT + TERRS. AIRGLOW	R/N
Nier, A. O. C. - U. OF MINNESOTA, MINNEAPOLIS, MN	
AE-C, OPEN SOURCE SPECT. (OSS)	R/N
AE-D, OPEN SOURCE SPEC. (OSS)	R/N
AE-E, OPEN SOURCE SPECTROM. (OSS)	R/N
VIKING 1 LANDER, ATMOSPH. COMP.	R/N
VIKING 1 LANDER, ATMOSPH. STRUCT.	R/N
VIKING 1 LANDER, IONOSPHERIC PROP	R/N
VIKING 2 LANDER, ATMOSPH. COMP.	R/N
VIKING 2 LANDER, ATMOSPH. STRUCT.	R/N
VIKING 2 LANDER, IONOSPHERIC PROP	R/N
Novick, R. - COLUMBIA U., NEW YORK, NY	
OSO 8, STELL + SOL X-TAL SPECTROSCOP	R/Y
STS 3, SOLAR X-RAY POLARIMETER	R/Y
O'Brien, B. J. - DEPT. OF ENVIRON. PROT., PERTH, AUSTRALIA	
APOLLO 12C, DUST DETECTOR, LUNAR	N
APOLLO 14C, CHARGED PARTICLE	N

Owen, T. C. - ILLINOIS INST. OF TECH., CHICAGO, IL
APOLLO 15A, UV PHOTOGRAPHY
APOLLO 16A, UV PHOTOGRAPHY

Oyama, V. I. - NASA-ARC, MOFFETT FIELD, CA
*PIONEER VENUS PROBE LRG GAS CHROMATOGRAPH (LGC)

Paulikas, G. A. - AEROSPACE CORP., LOS ANGELES, CA
ATS 1, OMNI SOLID STATE PART. SPEC R/N
ATS 6, OMNI DIRECTIONAL SPECT. R/N

Peterson, A. M. - STANFORD U., STANFORD CA
IMP-D, LUNAR IONOS. + RADIO P. N
IMP-E, CISLUNAR RF BEACON N

Peterson, L. E. - STANFORD U., STANFORD, CA
HEAO 1, MEV RANGE GAMMA RAY TELES. N
OSO 1, 50-KV 3-MV GAMRAY N
OSO 3, HARD X-RAY SPECTROMETER N
OSO 7, SOLAR X RAYS, 2-323 KEV N
OSO 7, X-RAY SKY SURVEY, 10-550KEV N

Pettengil, G. H. - MASS. INST. OF TECH., CAMBRIDGE, MA
*PIONEER Venus 1, Radar Altimeter N

Phillips, R. J. - LUNAR + PLANETARY INST., HOUSTON, TX
*PIONEER VENUS 1 Internal Density Distribution N

Potemra, T. A. - APPLIED PHYSICS LAB., LAUREL, MD
*AMPTE/CCE, CCE MAGNETOMETER R/Y

Potter, R. A. - NASA-MSFC, HUNTSVILLE, AL
PEGASUS 1, ELECTRON SPECTROMETER N
PEGASUS 2, ELECTRON SPECTROMETER N
PEGASUS 3, ELECTRON SPECTROMETER N

Purcell, J. D. - US NAVAL RESEARCH LAB, WASH, DC
OSO 5, EXTREME UV SPECTROHELIOGRAPH N

Ragent, B. - NASA-ARC, MOFFETT FIELD, CA
*PIO78PC, CLOUD EXTENT, STRUC., DISTR. R/N
*PIO78PD, CLOUD EXTENT, STRUC., DISTR. R/N
*PIO78PE, CLOUD EXTENT, STRUC., DISTR. R/N

Regener, V. H. - U. OF NEW MEXICO, ALBUQUERQUE, NM
OGO 6, SOLAR UV, 1800-3200A N

Reichle, JR., H. G. - NASA-LARC, HAMPTON, VA
STS 2, MEASURE OF AIR POLU. FROM SAT. R/N
STS-41G, MEASUR AIR POLU. FROM SAT. R/N

Rense, W. A. - U. OF COLORADO, BOULDER, CO
OSO 5, SOLAR, EXTREME UV, MONITOR R/N

Roble, R. G. - NATL. CTR. FOR ATMOS. RES., BOULDER, CO
*DYNAMICS EXPLORER 2 NEUTRAL-PLASMA INTERACTIONS N

Russell, C. T. - U. OF CALIF., LA, LOS ANGELES, CA
*ISEE 1, FLUXGATE MAGNETOMETER R/Y
*ISEE 2, FLUXGATE MAGNETOMETER R/Y
*PIONEER Venus 1, Magnetometer R/Y

Russell, III, J. M. - NASA-LARC, HAMPTON, VA
*NIMBUS 7, LIMB IR MON STRATO (LIMS) R/N

Sagalyn, R. C. - USAF GEOPHYS. LAB., BEDFORD, MA
INJUN 4, RETARDING POTENTIAL ANAL. R/N
INJUN 5, SPHERIC. RET. POT. ANAL. R/N
OGO 1, SPHERICAL ELECTROST. ANAL. R/N
OGO 3, SPHERICAL RET-POT ANALYZERS R/N
OGO 5, SPHER. PLASMA TEMP + DEN + FLUX R/N

Schneider, H. J. - NASA-JSC, HOUSTON, TX
SPACELAB 3, LIFE SCI. MINILAB-3 N

Schwartz, D. A. - SAO, CAMBRIDGE, MA
HEAO 1, SCANNING MODULATION COLL. N

Scott, R. F. - CALIF. INST. OF TECH., PASADENA, CA
SURVEYOR 4, MECHANICAL CHARACTERISTICS OF LUNAR SURFACE USING A SURFACE SAMPLER N
SURVEYOR 5, MECHANICAL CHARACTERISTICS OF LUNAR SURFACE USING A SURFACE SAMPLER N
SURVEYOR 6, MECHANICAL CHARACTERISTICS OF LUNAR SURFACE USING A SURFACE SAMPLER N
SURVEYOR 7, SOIL MECHANICS SURFACE SAMPLER N

Seiff, A. - NASA-ARC, MOFFETT FIELD, CA
*PIONEER VENUS PROBE LRG ATMOSPHERIC STRUCTURE (LAS) N
*PIONEER VENUS PROBE SM1 ATMOSPHERIC STRUCTURE (SAS) N
*PIONEER VENUS PROBE SM2 ATMOSPHERIC STRUCTURE (SAS) N
*PIONEER VENUS PROBE SM3 ATMOSPHERIC STRUCTURE (SAS) N

Shapiro, I. I. - MASS. INST. OF TECH., CAMBRIDGE, MA
*PIONEER Venus 1, Celest. Mechanics Experiment R/N

Sharp, G. W. - NASA HEADQUARTERS, WASH, DC
ATS 5, ENRG. PART. E + P .5-500KEV N
OGO 5, MAG. ION MASS SPECTROMETER N
OGO 6, MICROPHONE ATM DEN GAGE N

Sharp, R. D. - LOCKHEED PALO ALTO, PALO ALTO, CA
ATS 5, PROTON ELECTRON DETECTOR N

Shelley, E. G. - LOCKHEED PALO ALTO, PALO ALTO, CA
*AMPTE/CCE, HOT PLASMA COMPOSITION R/Y
*DE-A, ENERGET. ION COMP. SPEC. (EICS) R/Y

Shoemaker, E. M. - CALIF. INST. OF TECH., PASADENA, CA
APOLLO 11, GEOLOGIC SAMPLES N
APOLLO 12C, GEOLOGIC SAMPLES N
SURVEYOR 1, TELEVISION N
SURVEYOR 3, SOIL MECHANICS SURFACE SAMPLER N
SURVEYOR 3, TELEVISION N
SURVEYOR 4, TOPOGRAPHY AND TEXTURE OF LUNAR SURFACE N
SURVEYOR 5, TELEVISION N
SURVEYOR 6, TELEVISION N
SURVEYOR 7, SURFACE SAMPLER -PHOTO N

Shorthill, R. W. - U. OF UTAH, SALT LAKE CITY, UT
VIKING 1 LANDER, PHYSICAL PROP. N
VIKING 1 LANDER, SOIL WATER N
VIKING 2 LANDER, PHYSICAL PROP. N
VIKING 2 LANDER, SOIL WATER N

Simmons, G. M. - MASS. INST. OF TECH., CAMBRIDGE, MA
APOLLO 17C, S/ELECTRICAL PROPERTY N

Simpson, J. A. - U. OF CHICAGO, CHICAGO, IL	
EXPLORER 6 PROPOGATIONAL COUNTER TELESCOPE	N
IMP-A, C. R. PROTONS (R VS ENERGY LOSS	N
IMP-B, C. R. PROTONS (R VS ENERGY LOSS	N
IMP-C, C. R. PROTONS (R VS ENERGY LOSS	N
IMP-F, C. R. PROTONS (R VS DE/DX)	N
IMP-G, C. R. PROTONS (R VS DE/DX)	N
IMP-H, SOLAR FLARE HIGH-Z/LOW-E AND LOW-Z ISOTOPE	R/Y
IMP-I, COSMIC RAYS NUCLEAR COMP.	N
MARINER 10, ENERGETIC PARTICLES	N
MARINER 4, COSMIC RAY TELESCOPE	N
OGO 1, C. R. SPECTRA AND FLUXES	N
OGO 2, ENERGETIC PARTICLE SURVEY	N
OGO 3, C. R. SPECTRA AND FLUXES	N
OGO 4, ENERGETIC PARTICLES SURVEY	N
OGO 5, HI-Z, LO-E PART., SS TELE.	N
PIONEER 5, TRIP COINC. PROP. COUNTER	N
PIONEER 6, COSMIC RAY TELESCOPE	N
PIONEER 7, COSMIC RAY TELESCOPE	N
Smith, B. A. - U. OF ARIZONA, TUCSON, AZ	
*VOYAGER 1, IMAGING	N
*VOYAGER 2, IMAGING	N
Smith, W. L. - NOAA-NESDIS, SUITLAND, MD	
NIMBUS 5, IR TEMP. PROFILE RAD.	N
NIMBUS 6, EARTH RADIATION BUDGET	N
NIMBUS 6, HIGH RES. IR SNDER. (HIRS)	N
OGO 1, TRIAX SEARCH COIL MAGNETOMETER	N
Soberman, R. K. - GENERAL ELECTRIC CO, VALLEY FORGE, PA	
*PIONEER 10, ASTEROID ASTRONOMY	R/N
*PIONEER 11, ASTEROID ASTRONOMY	R/N
Sonett, C. P. - U. OF ARIZONA, TUCSON, AZ	
APOLLO 12C, LUNAR SURFACE MAGNET.	R/N
EXPL 6, SCINTILLATION COUNTER	R/N
EXPL 6, SEARCH COIL MAGNETOMETER	R/N
IMP-D, 3-AXIS FLUXGATE MAGNETOMETER	R/N
IMP-E, 3-AXIS FLUXGATE MAGNETOMETER	R/N
PIONEER 1, IONIZATION CHAMBER	R/N
PIONEER 1, SEARCH COIL MAGNETOMETER	R/N
PIONEER 9, 3-AXIS FLUXGATE MAGNETOMETER	R/N
Spitzer, L. - PRINCETON U., PRINCETON, NJ	
OAO 3, REFL. TELESCOPE, 800-3000A	N

Staelin, D. H. - MASS. INST. OF TECH., CAMBRIDGE, CA	
NIMBUS 5, MICROWAVE SPECTROMETER	R/N
NIMBUS 6, SCANNING MICROWAVE SPECTROMETER	R/N
Stewart, A. I. - U. OF COLORADO, BOULDER, CO	
*PIONEER Venus 1, UV Spectrometer	R/Y
Stone, E. C. - CALIF. INST. OF TECH., PASADENA, CA	
IMP-H, ELEC. + H + HE SLD.	R/N
*IMP-J, ELEC + H + HE SOLID ST. TELE.	R/Y
*ISEE 3, HIGH-ENERGY COSMIC RAYS	R/Y
OGO 6, COSMIC RAY EXPERIMENT	R/N
*VOYAGER 1, COSMIC RAY TELESCOPE	R/Y
*VOYAGER 2, COSMIC RAY TELESCOPE	R/Y
Stowe, L. L. - NOAA-NESDIS, SUITLAND, MD	
*NIMBUS 7, TEMP-HUMID IR RAD. (THIR)	N
Suomi, V. E. - U. OF WISCONSIN, MADISON, WI	
ATS 1, SPIN SCAN CLOUD CAMERA	R/N
ATS 3, SPIN SCAN CLOUD CAMERA	R/N
*PIONEER VENUS PROBE SM1 NET FLUX RADIOMETER	R/N
*PIONEER VENUS PROBE SM2 NET FLUX RADIOMETER	R/N
*PIONEER VENUS PROBE SM3 NET FLUX RADIOMETER	R/N
TIROS 3, LOW-RESOLUTIN OMNI DIRECTIONAL RADIOMETER	R/N
Sutton, G. H. U. OF HAWAII, HONOLULU, HI	
SURVEYOR 5, SEISMIC ACTIVITY AND METEORITE IMPACTS ON THE MOON USING A SINGLE-AXIS SEISMOMTR	N
SURVEYOR 6, SEISMIC ACTIVITY AND METEORITE IMPACTS ON THE MOON USING A SINGLE-AXIS SEISMOMTR	N
SURVEYOR 7, SEISMIC ACTIVITY AND METEORITE IMPACTS ON THE MOON USING A SINGLE-AXIS IMPACTS	N
Swann, G. A. - US GEOLOGICAL SURVEY, FLAGSTAFF, AZ	
APOLLO 14, FIELD GEOLOGY	R/N
APOLLO 15, FIELD GEOLOGY	R/N
APOLLO 17, LUNAR GEOLOGY	R/N
Tandberg-Hanssen, E. A. - NASA-MSFC, HUNTSVILLE, AL	
*SMM, UV SPECTROMETER/POLARIMETER	R/Y
Teske, R. G. - U. OF MICHIGAN, ANN ARBOR, MI	
OSO 3, SOLAR X-RAY DETECTORS	N
Tillman, J. E. - U. OF WASHINGTON, SEATTLE, SEATTLE, WA	
VIKING 1 LANDER METEOROLOGY	R/Y
VIKING 2 LANDER METEOROLOGY	R/Y

Title, A. M. - LOCKHEED PALO ALTO, PALO ALTO, CA	
SPACELAB 2, SOLAR MAG/VELOC. FIELD	N
Torr, M. R. - UTAH STATE U., LOGAN, UT	
SPACELAB 1, IMAG. SPECTROMETRIC OBS,	R/N
Toulmin, III, P. - US GEOLOGICAL SURVEY, RESTON, VA	
VIKING 1 LANDER, INORG. CHEM. INVEST.	R/N
VIKING 2 LANDER, INORG. CHEM. INVEST.	R/N
Tousey, R. US NAVAL RESEARCH LAB., WASHINGTON, DC	
OSO 2, NRL, CORONA, WHITE LIGHT	N
OSO 2, SOLAR UV SCANNING	N
OSO 7, WHITE + EUV CORONAGRAPHS	N
Travis, L. D. - NASA-GISS, NEW YORK, NY	
*PIONEER Venus 1, Cloud Photopolar.	R/Y
Turkevich, A. L. - U. OF CHICAGO, CHICAGO, IL	
SURVEYOR 5, ALPHA SCATTER	R/N
SURVEYOR 6, ALPHA SCATTER	R/N
SURVEYOR 7, ALFA SCAT. SURF. ANAL	R/N
Tyler, G. L. - STANFORD, U., STANFORD, CA	
*VOYAGER 1, COHERNT. S + X BAND RADIO	R/N
Van Allen	
EPE-A, CHARGED PARTICLE EXP.	N
EPE-B, TRAPPED PARTICLES	N
EXPL 4, CHARGED PARTICLE DETECTOR	N
HAWKEYE, MAGNETOMETER	N
IMP-D, GM CNTR. + SLD. STATE DETR.	N
IMP-E, GM CNTR. + SOLD. STATE DET.	N
IMP-F, LEPEDA, LOW ENERGY PARTICLES	N
INJUN 4, CDS DETECTOR	N
INJUN 4, GM DETECTORS (7)	N
INJUN 4, P-NJUNCTION DETECTOR	N
INJUN 4, PLASTIC SCINTILLATORS	N
INJUN 5, S. S. DET. (PROTON, ELEC.)	N
MARINER 2, PARTICLE DETECTOR	N
MARINER 4, GM DET (C. R. PROTON, ELEC.)	N
MARINER 5, TRAPPED RADIATION DET.	N
OGO 1, GM DET. (TRAPPED RAD., PROTON)	N
OGO 2, CYL. ELECSTAT. AN. (TRAP. PART.)	N
OGO 4, TRAP. AND PRECIP. PART.	N
PIONEER 3, GEIGER COUNTERS	N
PIONEER 4, GM DET (TRAP. RAD. PRO. EL.)	N
*PIONEER 10, JOVIAN CHARGED PARTICL.	N
*PIONEER 11, JOVIAN CHARGED PARTICL.	N

Waggoner, J. A. - LAWRENCE LIVERMORE LAB., LIVERMORE, CA	
OSO 4, PROTON-ELECTRON TELESCOPE	N
Warwick J. W. - U. OF COLORADO, BOULDER, CO	
*VOYAGER 1, LF. RF RCVR (.02-40MHZ)	R/Y
*VOYAGER 2, LF. RF RCVR (.02-40MHZ)	R/Y,
Webber, W. R. - U. OF NEW HAMPSHIRE, DURHAM, NH	
OGO 2, GALACTIC + SOLAR COSMIC RAY	N
OGO 4, GALACTIC+SOLAR COSMIC RAYS	N
PIONEER 8, COSMIC RAY GRADIENT DET.	N
PIONEER 9, COSMIC RAY GRADIENT	N
Weber, J. - U. OF MARYLAND, COLLEGE PARK, MD	
APOLLO 17C, SURFACE GRAVIMETER	N
Weinberg, J. L. - SPACE ASTRONOMY LAB., ALBANY, NY	
*PIONEER 10, ZODIACAL LIGHT PHOTOM.	N
*PIONEER 11, ZODIACAL LIGHT PHOTOM.	N
Weller, JR., C. S. - US NAVAL RESEARCH LAB, WASHINGTON, DC	
OSO 8, EUV FROM EARTH + SPACE EXP.	N
West, H. I. - LAWRENCE LIVERMORE LAB., LIVERMORE, CA	
OGO 5, ELECTRON SPECT + PROTON TELE.	N
Whipple, F. L. - SAO, CAMBRIDGE, MA	
OAO 2, 4 HI-RESOLUTION TELESCOPES	R/N
Wiedenbeck, M. E. - U. OF CHICAGO, CHICAGO, IL	
*ISEE 3, HI ENERGY COSMIC RAYS	N
Williams, D. J.- APPLIED PHYSICS LAB., LAUREL, MD	
IMP-H, ELEC. + PROT. TELE. GR. 50KEV	R/Y
*IMP-J, ELEC. + PROT., TELE. GR	R/Y
*ISEE 1, ENRTC. ELEC. AND PRTNS.	R/Y
*ISEE 2, ENRGTC. ELECTRONS AND PRTNS.	R/Y
OGO 6, TRAPPED + PRECIP. ELECT. SSDT.	N
Winckler, J. R. - U. OF MINNESOTA, MINNEAPOLIS, MN	
ATS 1, ELEC. SPEC. 3CH., .05 - .15 - .5-1	N
ATS 2, ELEC. SPEC. 3CH., .05 - .15 - .5-1	N
ATS 6, PRTCL. ACCEL. MEASUREMENT	N
EXPL 6, ION CH. + GM. (E/1.55, 2.86, P)	N
OGO 1, ELECTRON SPECTROMETER	N
OGO 1, ION CHAMBER	N
OGO 3, ELEC. SPEC. 5 CHANNEL. 05-4MEV	N
OGO 3, ION CHAMBER (E*0.7, P*12MEV)	N
PION 5, ION CH. + GM (E/1.55, 2.86 P)	N

Winningham, J. D. - SOUTHWEST RES. INST., SAN ANTONIO, TX
*DE-B, LOW ALT. PLASMA INSTR. (LAPI) R/N

APPENDIX 5. Overview of 1981 Data Census

On March 5, 1981, a survey package similar to that of Appendix 3 of this report was mailed to 100 scientists concerning 347 investigations sponsored by NASA's then-extant Office of Space Science. This survey was coordinated by J.I. Vette at NSSDC and included a cover letter signed by J.D. Rosendahl of OSS. The package was sent to PI's on investigations flown on OSS spacecraft launched after 1962 which, in 1981, no longer had active Science Working Teams. These spacecraft included:

AE A, B
Alouette 2, ISIS 1, 2
Apollo 12, 14, 15, 16, 15S, 16S
Ariel 4
ASTP
ATS 1, 5, 6
EPE-D
Gemini
IMP 1 - 7, AIMP 1, 2
Mariner 2, 4, 5, 6, 7, 9, 10
Injun 5, Hawkeye
OAO 2
OGO 1-6
OSO 2 - 5, 7
Pioneer 6-9
Relay 2
RAE A, B
San Marco 3, 4
SAS-B
S-Cubed-A
Skylab

Note that earth science investigations, then managed by the Office of Applications, were not surveyed as part of this 1981 survey.

Of the 100 scientists surveyed, 83 provided "complete" responses and 8 provided partial responses. Only 9 were judged non- responsive. That more effort was expended by the NSSDC staff to contact the surveyees than has been possible during the 1990 census, and that the oldest investigation surveyed then was <20 years old relative to census-90's effort to survey >30 year-old data, combine to explain the higher response rate of the 1981 survey.

Of the 347 investigations surveyed, NSSDC already held all the extant data for 139 of them, there were either new archive-worthy data sets or add-ons to NSSDC-held data sets for 47 of them, there were 52 PI-held data sets to be identified in the central database but not to be submitted to NSSDC, and there were 44 investigations from

which no useful data existed. Input on 101 investigations were incomplete or nonexistent. Note that, while the 1981 survey was of interest to NASA/HQ/OSS, it was not intended for follow-up by a community dataset prioritization-for-archiving/restoration effort. For the present effort of preparing the Census Database for community attention, all the relevant and reliable information from the 1981 survey will be assimilated.

APPENDIX 6. Data Sets Newly Identified in 1990 Census

This appendix addresses those data sets from inactive investigations identified by scientists responding to the 1990 census survey. A number of respondents identified data from still-active missions (Voyager, IMP-8, ISEE-3, Pioneer Venus), or from recently active missions in which project-coordinated archiving activities continue (DE, ISEE 1&2). These are not identified herein. In some cases, data sets were identified at a low processing level which typically, in the past, had not been considered as reasonable for archiving. In yet other cases, older data sets from long-inactive missions were identified. This appendix identifies all such data sets from inactive missions. The ordering of the information below is insignificant.

T. Garrard & E. Stone, Caltech. About 600 "library tapes" (12 GB) of IMP 7 & 8 full resolution count rates, and 150 tapes (3 GB) of IMP 7 & 8 hour-averaged data. The hourly data are related to the data now being archived by Caltech at NSSDC. Also identified were 600 tapes of full resolution HEAO-3 data from the instrument on which M. Israel, Washington University, is PI. NSSDC holds the lower resolution HEAO-3 data.

P. Meyer, U. Chicago. Identified raw OGO-5 and Spacelab-2 tapes, about 100 each. (P.M. also concerned about 600 ISEE tapes)

D. Gurnett, R. Anderson & W. Kurth, U. Iowa. From IMP-6 and IMP- 8: 2555 digital "experimenter tapes" from GSFC/IPD, 79 calibrated, condensed, & merged tapes, and 11,000 analog tapes, plus film data some of which is already at NSSDC; perhaps 25% from the inactive IMP-6. Also Helios data.

J. Tillman, U. Washington. Mars meteorology data from the Viking program. Tillman expended much effort to identify many distinct temperature, pressure, and winds data sets from Viking Lander 1 and Viking Lander 2. Some data are archived with PDS, with some documentation to be completed. Some lower level data have been supplied to PDS, and are being held by PDS for safekeeping. Some data are at NSSDC. Some data are held online at the Viking Computer Facility for community access by networks. Some data exist only offline at U. Washington.

R. Meier, NRL. 50 books of strip charts from the 1967-launched OGO-4 Lyman Alpha and UV Airglow investigation. "poorly documented."

A. Lazarus, MIT. Mariner 4 solar wind data in a report. Also 30 tapes of Solrad-HI solar wind data which need one student-year of effort to make them archive-ready.

R. Simpson, Stanford U. Viking Orbiter 1&2 bistatic radar data, 300 tapes; need some documentation.

ONE OTHER RESPONSE

Ray Arvidson and Mary Dale-Bannister, Washington U., identified the "Pre-Magellan Radar and Gravity Data Set" CD-ROM archived with PDS, which contains radar data and gravity data from a variety of sources relevant to Venus and other heavenly bodies.
They also identified a collection of 1989-90 Geologic Remote Sensing Field Experiment data (mainly from several aircraft instruments including AVIRIS, TIMS, ASAS, AIRSAR, and ATLAS; also some contemporaneous ground data) to be archived with PDS on 8 CD-ROM's.

LIMITED TELEPHONE INFORMATION

During followup phone calls, we determined that the following persons hold data from the indicated inactive missions, but we have not received further details on the data held. Note that in many cases, these persons have in fact archived much data from their investigations.

C. Barth, U. Colorado, SME
E. Benton, UCSF, Spacelab 1
G. Brueckner, NRL, Spacelab 2
L. Frank, U. Iowa, IMP, Injun, OGO
G. Gloeckler, U. Maryland, IMP 7
J. Gosling, LANL, IMP 7
P. Hays, U. Michigan, AE-C, -D, -E
R. Helliwell, several OGO's
S. Krimigis, JHU/APL, IMP 7
P. McCormick, NASA/Langley, SAGE
R. Novick, Columbia U., OSO 8, STS 3
J. Simpson, U. Chicago, IMP 7
D. Williams, JHU/APL, IMP 7