AD-A137 104 IMPLEMENT OF THE COMPUTER PROGRAM-SYSTEM MOSS (MAP OVERLAY AND STATISTICA..(U) INSTITUTE FOR IMAGE PROCESSING COMPUTER MAPPING GRAZ (AUSTRIA.. F LEBERL

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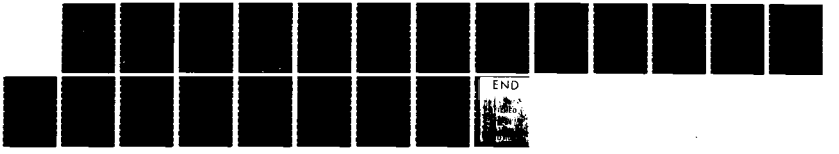

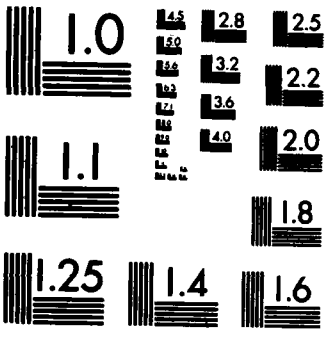

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18. SUPPLEMENTARY NOTES

19. KEY WORDS *(Continue on reverse side if necessary and identify by block number)*

MOSS Program; Computer Programming; Map Overlay; Computer Mapping

20. ABSTRACT *(Continue on reverse side if necessary and identify by block number)*

The following activities are reported:

1. Program source code has been read in from tape and most of the syntactic incompatibilities have been corrected.
2. Standardization of file handling programs has been done.
3. The concept of subprocesses as they are defined under VAX-AMS has been introduced to support the intertask-communication of the MOSS-system, and
4. An input module was written to get data from MDS into the MOSS database structure so that specific and well defined data are available for testing of

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20.

the MOSS modules. MDS is a manual digitizing system developed at the Graz Research Center. A table of all MOSS commands and their current state of revision has been compiled and included in the report.

IMPLEMENTATION OF THE COMPUTER PROGRAM-SYSTEM MOSS ON A VAX-11 SERIES COMPUTER UNDER VMS

Principal Investigator:

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Contract Number: DAJA 45-84-C-0011

Contractor:

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First Interim Report

Covering the contract period from
12-01-83 to 12-31-83

The research reported in this document has been made possible through the support and sponsorship of the U.S. Government through its European Research Office. This report is intended only for the internal management use of the contractor and the U.S. Government.

1. Scientific Work done during the Report period

To get the MOSS (Map Overlay and Statistical System) software package on to a VAX-11 computer the following activities have been performed during the first month of the project:

- Program source code has been read in from tape and most of the syntactic incompatibilities have been corrected.
- Standardization of file handling programs has been done.
- The concept of subprocesses as they are defined under VAX-VMS has been introduced to support the intertask-communication of the MOSS-system.
- An input module was written to get data from MDS into the MOSS database-structure so that specific and well defined data are available for testing of the MOSS modules. MDS is a manual digitizing system developped at the Graz Research Center.

A table of all MOSS-commands and their current state of revision has been compiled and is enclosed with this report.

2. Future plans

Source programs - especially the modules which exist only in a Data General-version - will be converted to VAX-VMS. The conversion will be performed as specified in the "Statement of Work" for the contract.

The suitability of MOSS will be tested to serve as an interface between the digitizing procedures and an image interpretation system.

A1

3. Significant Administrative Action

The project team has been formed. The associate investigator responsible to the principal investigator for the work on the project is M. Ranzinger. I. Heim serves as research associate.

4. Other Information

None.

5. Financial Statement

ERO-Support only

Amount received	None
Personnel (one month)	US 1470.-
Other expenses (Overhead of administration, Equipment use)	US 350.-
Amount spent	US 1820.-

6. Important Reports Acquired

None.

Graz, 31 December 1983

Prof. Dr. F. Leberl

Attachment

to

First Interim Report

List of

Moss-Commands

TABLE OF ALL M O S S - COMMANDS

All commands which are available in the DG-Version (April 1982) of MOSS are described in this table.
For each command a brief description of its functions is given.
For some commands additional functions will be provided.
A suggestion for new commands is included at the end of the table.
An asterisk in the columns 2 - 4 indicates the current state of the command.

COMMAND	O.K.	logical errors	syntactic errors	only DG-version
GENERAL PURPOSE COMMANDS				
AUDIT	*			

displays a table showing for each item in the map:
- subject item number
- perimeter (or length) in kilometers
- area in squaremeters
- number of islands
- number of coordinate pairs

extensions made for VAX-version:
displayed table is printed (optional)

COST				*

provides the following information about the current run up to the point the cost command was issued:
- total CPU-time used
- number of record transferred from mass-storage
- total job cost

FINISH	*			

terminates a MOSS-session

HELP				*

provides either a listing of all MOSS-commands or a description of the functions of a specific MOSS command

LOCATE	*			

determines the UTM coordinates of any point displayed on the graphics CRT

extensions made for VAX-version:
the coordinate values at the specified point are also displayed on the graphic CRT

NEWS				*

provides the user with news on the latest changes and additions to MOSS

QUERY		*		

identifies the map, subject and item of any point on the graphic CRT

ACTIVE	*			

produces a table that numbers and describes the active map data

extensions made for VAX-version:
print the contents of the active map table (optional)

DATA BASE MANAGEMENT COMMANDS

ADD	*			

data base management command which allows the user to add maps to a MOSS data base

changes made for VAX-version:
transfer datafiles selected from the DESBOD-data base directly into the MOSS data base

ARCHIVE				*

archives maps to tape and removes the archived data files from disk
(has to be written new for VAX-VMS, since this is a machine dependent function)

LIST ARCHIVE				*

lists all archived maps

DEARCHIVE				*

retrieves archived data files from tape
(has to be written new for VAX-VMS, since this is a machine dependent function)

COMPRESS				*

creates a bit map from multi value raster data

DELETE		*		

deletes maps out of the MOSS data base or the workfiles

FREE	*			

deactivates all or a specific map referenced in the active map table

LIST	a,b			c

performs three basic tasks:
a) lists the names of all maps stored in the data base and in the workfiles
b) lists the header or subjects for a particular
c) browses attribute data base (not implemented on VAX, since the attribute data base is not used in the PDP-version of MOSS)

extensions made for VAX-version:
print the informations given by this command (optional)

MERGE		*		

several adjoining maps of the same theme are combined into one map

suggested extensions:
allow merging of cell data

OPEN				*

permits the user to open an alternative data base
(PDP version of MOSS allows only one MOSS data base!)

POLYCELL	*			

converts point, line or polygon maps to raster maps
the cell size is specified by the user

REPORT				

generates reports out of the associated attributes data base (not available in PDP version)

SAVE	*			

saves any map referenced in the active map table as part of the user's workfile

SELECT	a,b,c			d

activates all or a specific portion of a map stored in the database or in one of the workfiles
four selection types are possible:
a) ALL: activates all items of the map
b) SUBJECT: specifies that a subject is used as criterion for selection
c) ITEM: an item is used as criterion for selection
d) ATTRIBUTE: an attribute from the associated attribute data base is used as criterion for selection

STATUS			*	

prints out the number of maps stored in the data base and in the workfiles or the number of items and coordinates for a particular map

STUDYAREA			*	

constructs a new boundary around any map or series of maps referenced in the active map table.
The result is saved as part of the polygon workfile

suggested extensions:
the command can also be applied to cell maps

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SPATIAL RETRIEVAL COMMANDS

CONTIGUITY		*		

spatial retrieval command: selects all polygons of two active maps, which are adjacent to one another (contiguity tolerance is user-defined).

EDGE		*		

spatial retrieval command: computes the common boundaries shared by subjects associated with two or more maps in the active map table

SIZE	*			

spatial retrieval command: activates polygon or lines based on the size or length of the polygons or lines

ANALYSIS COMMANDS

AREA	*			

produces a table of the area, percentage and frequency of each subject in an active map

extensions made for VAX-version:
output of the table on the printer (optional)
unit in which the area is calculated can be chosen by the user (optional, default = squaremeters)

BUFFER		*		

draws a zone of influence of user-specified size around any map data referenced in the active map table (polygons, lines or points).

COMPOSITE		*		

allows the user to do Boolean and algebraic manipulations of data from one or more raster maps

DISTANCE	*			

measures the distance in miles and kilometers between any two points on the graphic CRT either along a straight line or along a path.

extensions made for VAX-version:
- the chosen path is marked on the graphic CRT

FREQUENCY	*			

produces a table showing the frequency and percentage of each subject contained on any active map

extensions made for VAX-version:
output of the table on the printer (optional)

GRID			*	

performs point-to-grid interpolation; a sparse matrix of (x,y,z)is interpolated to an (x,y) complete matrix in which each (x,y) element contains an interpolated z-value

LENGTH	*			

produces a table showing the length, frequency and percentage of each subject associated with a line map

extensions made for VAX-version:
output of the table on the printer
unit in which the line is calculated can be chosen by the user (optional, default = kilometers)

LPOVER		*		

synthesizes a new map by determining the logical intersection between a polygon map and a line map

OVERLAY	*			

synthesizes a new map by determining the logical intersection between two polygon maps

PERIMETER	*			

produces a summary table of length, frequency and percent of the perimeter for each subject in an active map

extensions made for VAX-version:
output of the table on the printer
unit in which the perimeter is calculated can be chosen by the user (optional, default = kilometers)

SAMPLE				*

takes a random sample of all items in a map and produces an active data set excluding the sampled items.

SPSS				*

produces a data file that the user can then save and use for later analysis with a statistical package or input into ESRI grid processing software. Only cell data is used

STATISTICS CROSSTABS		*		

produces a two way frequency table of the contents of

two cell maps

STATISTICS DESCRIBE		*		

produces summary statistics for any polygon or line map referenced in the active map table. For each subject associated with a map, the command computes:
- minimum area or length
- the maximum area or length
- the total area or length
- the range, mean, variance and standard deviation

STATISTICS HISTOGRAM		*		

produces a bar graph or histogram of the frequency distribution of the subjects in any active map

WEED	*			

removes unneeded points from a line or polygon (line generalization)

==========

DISPLAY COMMANDS

all data displayed on the graphic CRT by any display command can be drawn on a hardcopy plotting device by calling the new command "HARDCOPY"
(up to now only available for those display commands which have already been converted)

ASPECT			*	

provides the user with a method of showing the aspect of elevation data.

BLOWUP	*			

allows the user to magnify a portion of the display window specified by the WINDOW-command

CELLPLOT			*	

generates a shaded raster map from cell data on a CALCOMP plotter

will not be implemented in our VAX-version (is now done by calling 'SHADE' and 'HARDCOPY' afterwards)

CELLVERS				*

generates a shaded raster map on a Versatec plotter from cell data (same as above)

CONTOUR			*	

generates a contour map from a grid of elevations

ERASE	*			

clears the display screen of the graphic CRT and also deletes the current plotfile

LEGEND		*		

produces a legend or labels the items for any map referenced in the active map table

LINE		*		

	plots one or more line maps on the CRT using one of 30 different line symbols			
NUMBER			*	
	assigns integer numbers to sets of polygons or to plot polygon item numbers at the centroid of the polygon			
PLOT	*			
	displays any active point, line or polygon map			
RESET	*			
	erases the screen and returns the data display to the window specified by using the WINDOW command			
SHADE	*			
	shades active polygon maps on the CRT screen			
SLOPE			*	
	analysis/display command which calculates the slope of elevation data. The command produces a new map which contains a matrix of cells assigned a value dependent upon their percent slope			
SYMBOL		*		
	allows the user to select one of 30 symbols and have that symbol plotted for point or polygon data (at the polygon centroid)			

TESTGRID	*			

superimposes a cell grid over any map displayed on the graphic CRT. The cell size is user-specified in squaremeters. The height of the cell is 1.25 the width

THREED				*

allows the user to create a threedimensional display for an elevation map

WINDOW	*			

initiates a rectangular window on the map data base. Only those map data that fall within the specified window will be analyzed and displayed

extensions made for VAX-version:
the coordinate values of the map corners are displayed on the graphic CRT
by using the option 'BORDER" with the window command the window can be set to the borders of a map as they are defined in the map data base

WRITE	*			

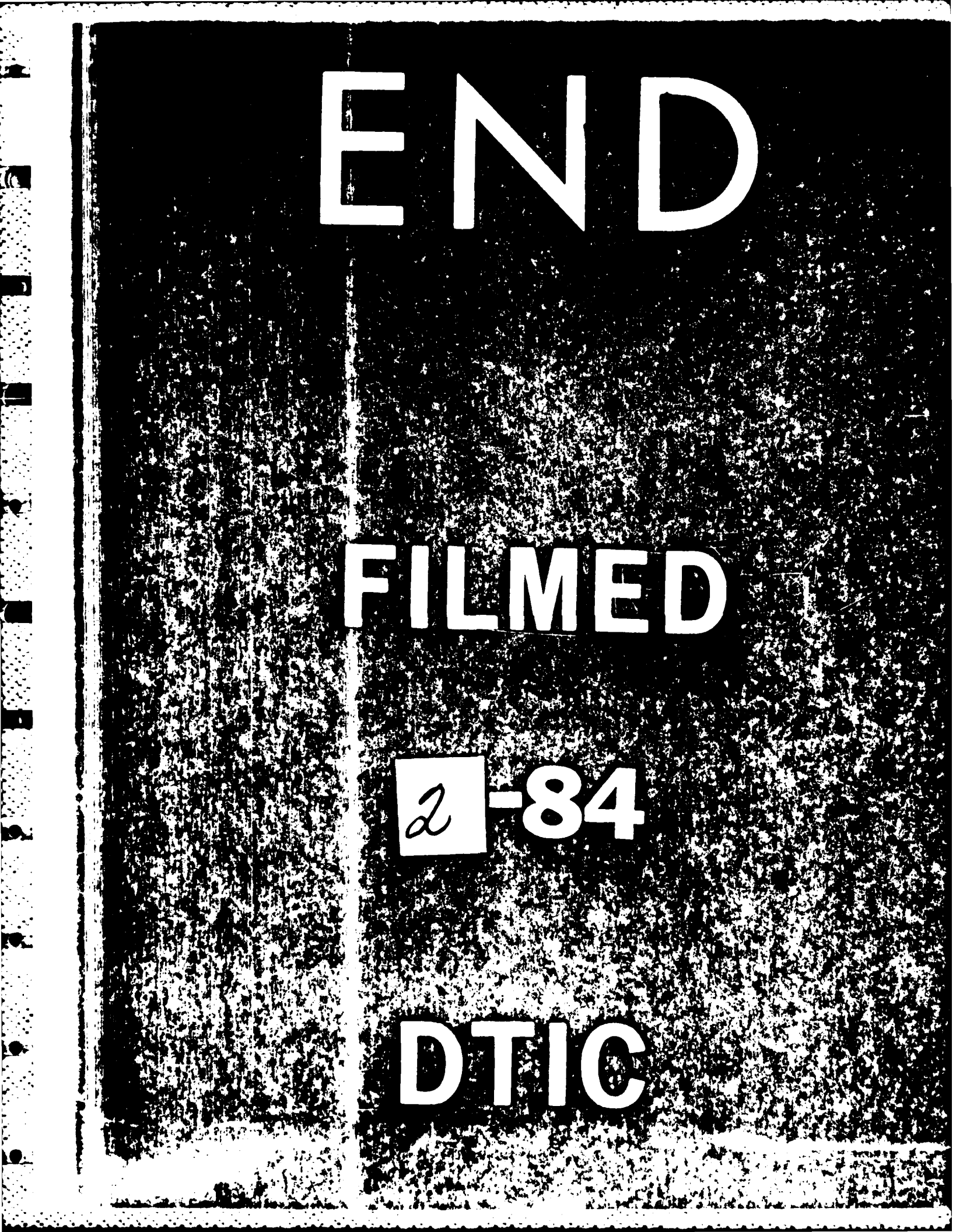
generates a line printer map of active cell maps (new program, old one deleted!)

NEW COMMANDS IN MOSS

	working	not working
TEXT	*	

displays a user-defined text on the graphic CRT (the location, angle and width of the text string are chosen by the user)

HARDCOPY	*	
this command allows the user to plot the contents of his graphic CRT on any plotting device (BENSON, GPl, PRISM, VERSATEC, etc.) The current contents of the graphic screen are saved in a plot-file; every time the graphic screen is erased the old plotfile is deleted and a new is initialized a scaling factor and a title for the plot can be defined by the user		
FILL		*
filling of polygons with user defined symbols		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