

**FIELD CONDITIONS AT THE MARICOPA AGRICULTURAL CENTER,
MARICOPA COUNTY, ARIZONA, JUNE 13, 1988**

By Sandra J. Owen-Joyce

U.S. GEOLOGICAL SURVEY

Open-File Report 88-708

Prepared in cooperation with the
ARIZONA DEPARTMENT OF WATER RESOURCES



Tucson, Arizona
December 1988

DEPARTMENT OF THE INTERIOR
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ABSTRACT

Field conditions were documented during the Landsat satellite overpass of the Maricopa Agricultural Center, Maricopa County, Arizona, on June 13, 1988. Crop types were mapped and photographed for each demonstration farm field. Field conditions described include irrigation, cultivation, and orientation of rows. Field and photographic descriptions are presented in tabular form.

INTRODUCTION

The third in a series of experiments was held at the Maricopa Agricultural Center (MAC) June 10-13, 1988, to correspond with the overpasses of the SPOT satellite on June 11 and 12 and the Landsat satellite on June 13. The purposes of the MAC III Experiment were to investigate the spatial and temporal distribution of evapotranspiration over agricultural fields using a variety of techniques and to estimate plant cover from remotely sensed data. Scientists participating in the experiment work independently but cooperatively share the data collected. This report documents the field conditions at the time of the Landsat overpass. The data collection for this part of the experiment was done in cooperation with the Arizona Department of Water Resources.

FIELD CONDITIONS

Ground-truth data were collected during the MAC III Experiment to coincide with the Landsat satellite overpass on June 13, 1988. The data include crop type for each field on the demonstration farm, a description of the crop and field conditions, and photographs (35-millimeter slides) of the fields. Photographs were taken on the day of the Landsat satellite overpass to document field conditions and to provide ground truth for interpretation of the satellite data. Photographs were taken on June 12 and 13, 1988, of participating scientists and their equipment during data collection.

Crop types and descriptions of the fields are presented in table 1. For each photograph, the generalized location from which the photograph was taken, the direction of view, and a brief description of conditions that the photograph documents are listed in table 2. Where possible, all photographs that document field conditions were taken viewing westward. Selected slides were duplicated and are available at the U.S. Water Conservation Laboratory, Phoenix, Arizona; these slides are footnoted on table 2.

Table 1.--Ground-truth data for fields on the demonstration farm, Maricopa Agricultural Center, on June 13, 1988

Maricopa Agricultural Center Field Number	Crop	Description
1101	Fallow	Clods, dry.
1102	Fallow	Clods, smooth, dry on north half. South half is headquarters buildings.
13	Fallow	Wheat stubble.
15 (north half)	Cotton	East-west rows. Cultivated. North half has 28 rows of stakes. South half center rows have been replanted.
15 (south half)	Fallow	Wheat stubble.
17	Cotton	East-west rows. Cultivated
18 (north half)	Fallow	Clods, dry.
18 (south half)	Fallow	Smooth, dry.
19	Alfalfa	Irrigating south to north. North end dry.
20	Fallow	Wheat stubble.
21	Alfalfa	Soil damp.
22	Alfalfa	Irrigating south to north. North end dry.
2301	Cotton	East-west rows. South end of field sparse.
2302	Cotton	East-west rows.
2303	Cotton	East-west rows.
2304	Cotton	East-west rows. With stakes.
25	Cotton	East-west rows. Cultivated.
26	Cotton	East-west rows. Being cultivated south to north, stunted at south end of field.
27	Fallow	Smooth.
28	Cotton	East-west rows.
2901	Cotton	Dry. East-west rows.
2902	Cotton	East-west rows. Standing water at 1235 hrs.
2903	Cotton	Wet. East-west rows.
2904	Cotton	East-west rows.
30	Cotton	East-west rows.
31	Cotton	East-west rows.
3201	Fallow	Smooth.
3202	Fallow	Smooth with weeds.
33	Fallow	Plowed, dry, clods.
34	Cotton	North-south rows, droopy, cultivated.
35	Cotton	North-south rows, droopy, not cultivated.
36	Fallow	Very smooth, dry.
37	Cotton	Not cultivated. East-west rows. East half recently irrigated, wet. West half alternates wet with irrigation and just beginning to irrigate at the far west end.
38	Grapes	North-south rows.
39	Cotton	Cultivated. East-west rows. Bare spot about one-third the field length from the east end.

Table 2.--Photographs (35-millimeter slides) taken of fields on the demonstration farm, Maricopa Agricultural Center, on June 13 and of scientists and equipment on June 12 and 13, 1988

[View direction: SW, Southwest; NW, Northwest; NE, Northeast. Description: BRF, Bidirectional Reflectance Factor; MMR, Modular Multispectral Radiometer; FTIS, Fourier Transform Infrared Spectrometer; LIDAR, Light Detection and Ranging]

Date	Time	Slide	Field number	Location	View direction	Description
6-12-88	--	¹ 0-1	18	North half	SW	BRF equipment and staff--Mike Jasinski.
"	--	0-2	18	" "	NW	" " " "
"	--	0-3	18	" "	West	" " " "
"	--	0-4	28	South side	NE	FTIS equipment and truck.
"	--	¹ 0-5	--	--	Close up	FTIS equipment.
"	--	0-6	28	Middle	West	Eddy correlation equipment--Dave Nichols.
"	--	0-7	28	Middle	West	Eddy correlation equipment--Dave Nichols.
"	--	¹ 0-8	28	Middle	West	Eddy correlation equipment.
"	--	0-10	28	East side	South	Bowen ratio equipment--Dan Cooper.
"	--	0-11	28	East side	NW	" " "
"	--	0-12	28	East side	NW	" " "
"	--	¹ 0-13	28	Middle	East	FTIS mirror and LIDAR truck.
"	--	0-14	28	East end	East	LIDAR truck.
"	--	0-15	28	West half	NW	Double Exotech equipment--Paul Pinter.
"	--	0-16	28	West half	West	Art Warrick, Sheri Musil, Gene Lakotas.
"	--	0-17	28	West half	South	Art Warrick.
"	--	0-18	28	West half	West	Art Warrick, Gene Lakotas.
"	--	¹ 0-19	28	West half	SW	Collecting soil samples--Sheri Musil.
"	--	¹ 0-20	28	West half	SW	Collecting soil samples--Sheri Musil.
6-13-88	--	0-21	18	South half	West	MMR with plate.
"	--	0-22	18	South half	North	" " "
"	--	0-23	18	North half	NW	BRF equipment--Mike Jasinski.
6-12-88	--	1-5	28	South side	East	FTIS equipment.
"	--	¹ 1-6	28	South side	East	FTIS equipment.
"	--	1-7	28	Middle	SW	Eddy correlation equipment--Dave Nichols.
"	--	¹ 1-8	28	Middle	SW	Eddy correlation equipment--Dave Nichols.
"	--	1-9	28	Middle	NW	Eddy correlation equipment--Dave Nichols.
"	--	¹ 1-10	28	Middle	West	Double Exotech equipment--Paul Pinter.
"	--	1-11	28	Middle	South	Eddy correlation equipment--Dave Nichols.
"	--	¹ 1-12	28	Middle	North	Bowen ratio equipment--Dan Cooper.
"	--	1-13	28	Middle	South	Bowen ratio equipment--Dan Cooper.
"	--	1-14	28	Middle	NW	Double Exotech equipment--Paul Pinter.
"	--	¹ 1-15	28	Middle	NW	Double Exotech equipment--Paul Pinter.
"	--	1-16	28	Middle	NW	Double Exotech equipment--Paul Pinter.
"	--	1-17	28	West half	South	Soil sample collection.
"	--	1-18	28	West half	SW	Soil sample collection.
"	--	1-19	28	West half	South	Soil sample collection--Sheri Musil.
"	--	1-20	28	West half	South	Soil sample collection--Sheri Musil.
6-13-88	--	¹ 1-21	18	South half	NW	MMR without plate.
"	--	¹ 1-22	18	South half	NW	MMR with plate to shade.
"	0900	1-23	18	South half	West	Fallow, smooth, dry.

Table 2.--Photographs (35-millimeter slides) taken of fields on the demonstration farm, Maricopa Agricultural Center, on June 13 and of scientists and equipment on June 12 and 13, 1988--Continued

Date	Time	Slide	Field number	Location	View direction	Description
6-13-88	0900	¹ 1-24	18	South half	West	Fallow, smooth, dry.
"	0910	¹ 1-25	18	North half	"	Fallow, clods, dry.
"	--	¹ 1-26	26	South end	"	Cotton, stunted, cultivated with tractor. Field being cultivated south to north at 0915.
"	0915	¹ 1-27	26	North end	"	Cotton, not cultivated.
"	--	¹ 1-28	25	North end	"	Cotton, cultivated.
"	0923	¹ 1-29	30	North end	"	Cotton, cultivated.
"	0923	¹ 1-30	30/31	North end/ south end	NW	Cotton, cultivated.
"	0929	¹ 1-31	15	South end of south half	West	Wheat stubble.
"	0929	1-32	15	"	West	Wheat stubble, plane parking.
"	--	¹ 1-33	15	South half of north half	West	Cotton, cultivated, center rows of replanting.
"	--	¹ 1-34	15	North half of south half	"	Cotton, cultivated, 28 rows of stakes.
"	--	¹ 1-35	2304	Middle	"	Cotton, cultivated, with stakes.
"	--	1-36 ¹	2303	Middle	"	Cotton, cultivated.
"	--	2-1	18	South half	NW	MMR equipment and staff.
"	--	2-2	18	" "	SW	" " " "
"	--	2-3	18	" "	"	" " " "
"	0852	2-4	18	South half	NW	Fallow, smooth, dry.
"	0852	2-5	18	" "	"	" " "
"	0852	2-6	18	" "	"	" " "
"	0943	¹ 3-1	2302	North end	"	Cotton.
"	--	¹ 3-2	22	North end	"	Alfalfa, dry.
"	--	¹ 3-3	22	North end	"	Alfalfa, irrigated.
"	--	3-4	21	North half	NW	Alfalfa, soil damp. Bowen ratio equipment in field.
"	--	¹ 3-5	21	" "	"	Alfalfa, soil damp. Bowen ratio equipment in field.
"	--	3-6	21	" "	SW	Alfalfa, soil damp. Soil heat flux system in field.
"	--	3-7	(²)	North end	NE	Potatoes, harvesting from south to north.
"	--	3-8	(²)	North end	Close up	Potatoes.
"	--	¹ 3-9	19	South end	West	Alfalfa, irrigation in progress--north end dry.
"	--	3-10	1101	North end	"	Local wildlife--Owl.
"	--	¹ 3-11	1101	" "	"	Local wildlife--Owl.
"	--	¹ 3-12	1101	" "	"	Fallow, clods, dry.
"	--	3-13	1101	" "	"	Local wildlife--Owl.
"	--	3-14	1101	" "	"	Local wildlife--Owl.
"	--	¹ 3-15	18	South half	SW	Fallow, smooth, dry. Susan Moran and Tom Clark working on ground and plane in air.

Table 2.--Photographs (35-millimeter slides) taken of fields on the demonstration farm, Maricopa Agricultural Center, on June 13 and of scientists and equipment on June 12 and 13, 1988--Continued

Date	Time	Slide	Field number	Location	View direction	Description
6-13-88	--	3-16	18	" "	--	Plane and sky condition.
"	--	3-17	18	" "	West	Susan Moran and Tom Clark with Exotech.
"	--	3-18	18	" "	--	Plane in air with sun and sky condition.
"	--	3-19	18	" "	--	MPR.
"	--	3-20	18	" "	--	Plane and sky condition.
"	--	¹ 3-21	18	" "	--	Plane and sky condition.
"	--	3-22	18	" "	--	Plane and sky condition.
"	--	3-23	15	South end	--	Plane in air; Susan Moran and Tom Clark working on ground.
"	--	3-24	15	" "	--	Plane in parking area.
"	1100	¹ 4-1	15	" "	--	Plane, Exotech equipment.
"	1100	4-2	15	" "	--	Plane, gear, Dave Ammon.
"	1100	¹ 4-3	15	" "	--	Plane, gear, Dave Ammon.
"	1100	¹ 4-4	15	" "	--	Plane, gear, Dave Ammon.
"	1100	4-5	15	" "	--	Plane, gear, people working.
"	1100	¹ 4-6	15	" "	--	Plane, gear, people working.
"	--	¹ 4-7	34	South end	West	Cotton, cultivated, droopy, north-south rows.
"	--	¹ 4-8	34	" "	Close up	Cotton, droopy.
"	1116	¹ 4-9	36	" "	West	Fallow, very smooth, dry.
"	--	¹ 4-10	37	Middle	"	Cotton, recently irrigated, not cultivated.
"	--	¹ 4-11	38	East end	South	Grapes.
"	--	4-12	38	" "	"	Grapes.
"	--	4-13	38	" "	"	Grapes.
"	--	¹ 4-14	38	" "	North	Cotton, cultivated.
"	--	¹ 4-15	37	West end	North	Cotton, irrigated.
"	--	¹ 4-16	27	Middle	West	Fallow, smooth, dry.
"	--	¹ 4-17	28	" "	"	Cotton.
"	--	4-18	28	" "	North	Cotton, LIDAR truck.
"	--	4-19	28	" "	NW	Cotton, Eddy correlation and Bowen ratio equipment.
"	--	4-20	28	" "	SW	Cotton, FTIR equipment and truck.
"	--	4-21	2904	" "	West	Cotton.
"	--	¹ 4-22	2904	" "	"	Cotton.
"	--	¹ 4-23	30	" "	"	Cotton.
"	--	¹ 4-24	31	" "	"	Cotton.
"	1152	¹ 4-25	3202	" "	"	Cotton.
"	--	5-1	28	East end	South	Cotton, LIDAR truck.
"	--	5-2	28	East end	East	Cotton, LIDAR truck.
"	1235	5-3	2902/ 2901	South end	NW	Cotton, color change--standing water in 2902 and dry in 2901
"	1235	5-4	2902/ 2901	South end	NW	Cotton, color change--standing water in 2902 and dry in 2901.

¹Duplicate slides at the U.S. Water Conservation Lab, Phoenix, AZ.

²Potato field is east of Maricopa Agricultural Center field 19.