SAFARI 2000 Landscape Photographs of Kalahari Transect, Mongu, Skukuza Sites

Abstract

This data set contains Global Positioning System (GPS) imprinted landscape photographs at 100 m intervals along the Large Grid Transects at Kalahari Transect sites in Botswana and at measurement sites in Kataba Forest, Mongu, Zambia and in the vicinity of the Skukuza flux tower site in Kruger National Park, South Africa. The Kalahari sites visited were Pandamatenga, Maun, Okwa Valley, and Tshane. There are about 30 pictures per site.

In a related study, vegetation cover and composition were measured at various locations along the Kalahari Transect and trends in major vegetative cover, including species types and richness, were recorded (Ringrose and Matheson, 2004). The sites visited showed interesting degrees of variability despite the apparent homogeneity of the Kalahari sands and predominantly semi-arid savanna shrub-woodland vegetation cover. In this data set, the photography provides a visual characterization of species composition and vegetation cover along the Kalahari Transect. The photographs are intended to aid in the interpretation of other data sets, and can be used to suggest canopy height, gap fraction, grass, soil, and sky conditions.

Background Information

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Project: Southern Africa Validation of EOS (SAVE)
SAFARI 2000

Data Set Title: SAFARI 2000 Landscape Photographs of Kalahari Transect, Mongu, Skukuza Sites

Site: Kalahari Transect
Westernmost Longitude: 19.17
Easternmost Longitude: 25.49
Northernmost Latitude: -18.66
Southernmost Latitude: -24.17

Data Set Citation:

Privette, J. L. and Y. Tian. 2004. SAFARI 2000 Landscape Photographs of Kalahari Transect, Mongu, Skukuza Sites. Data set. Available on-line [http://daac.ornl.gov/] from Oak Ridge National Laboratory Distributed Active Archive Center, Oak Ridge, Tennessee, U.S.A.

Data File Information

This data set contains Global Positioning System (GPS) imprinted landscape photographs at 100 m intervals along the Large Grid Transects at the Kalahari Transect Campaign measurement sites, and at Mongu and Skukuza. There are about 30 pictures per site. The photographs are provided as JPEG images.

The imprinted information across the top of each photograph is formatted as:

CCCDDDDDDDTTTTTT*PPOOOOOOOOOAAAAAAAAA BBB

where: **CCC** = Camera number
DDDDDDD = Date mode (G=UTC time) and date (YYMMDD format)
TTTTTT = Time (HHMMSS format)
PP = locational mode (1 char) and DOP value (A < 1, J > 9.1)
OOOOOOOO = Longitude (N, S), followed by DDMM.MMM format
AAAAAAAAA = Latitude (E, W) followed by DDDMM.MMM format
BBB = Bearing (degrees) from magnetic north (indicates direction of shot)

The coordinates are in WGS-84 land survey datum.

Sample image from Mongu, with the GPS code at the top.

Study Area

Spatial Coverage

Photographs were taken along the Large Grid, which covered a 750 m x 500 m area. Generally, the Large Grid shared a side with the Medium Grid used by Scholes (2004) and the Small Grid used by Caylor (2004). A description of the different grids is provided in Privette et al. (2004). Photographs were taken at each 100 m, starting from the end of the transect. The one exception to this rule occurred at the center of the transects, were photographs were taken at 75W, 0, and 75E, before resuming again

at 100 m intervals (see labeling scheme below).

Grid Description

The Large Grid consisted of three 750 m parallel transects, each aligned in an east-west direction. The distance between adjacent transects was 250 m. Stake Flags were placed each 25 m along each transect to facilitate measurements. The positions were labeled according to their distance and direction relative to the center of the given transect, specifically:

375W, 350W, 325W, 300W, 275W, 250W, 225W, 200W, 175W, 150W, 125W, 100W, 75W, 50W, 25W, 0, 25E, 50E, 75E, 100E, 125E, 150E, 175E, 200E, 225E, 250E, 275E, 300E, 325E, 350E, 375E.

In this scheme, 0=center, "W" indicates west of the center, and "E" indicates east of the center. For example, a flag at 250W was 250 m west of the transect center.

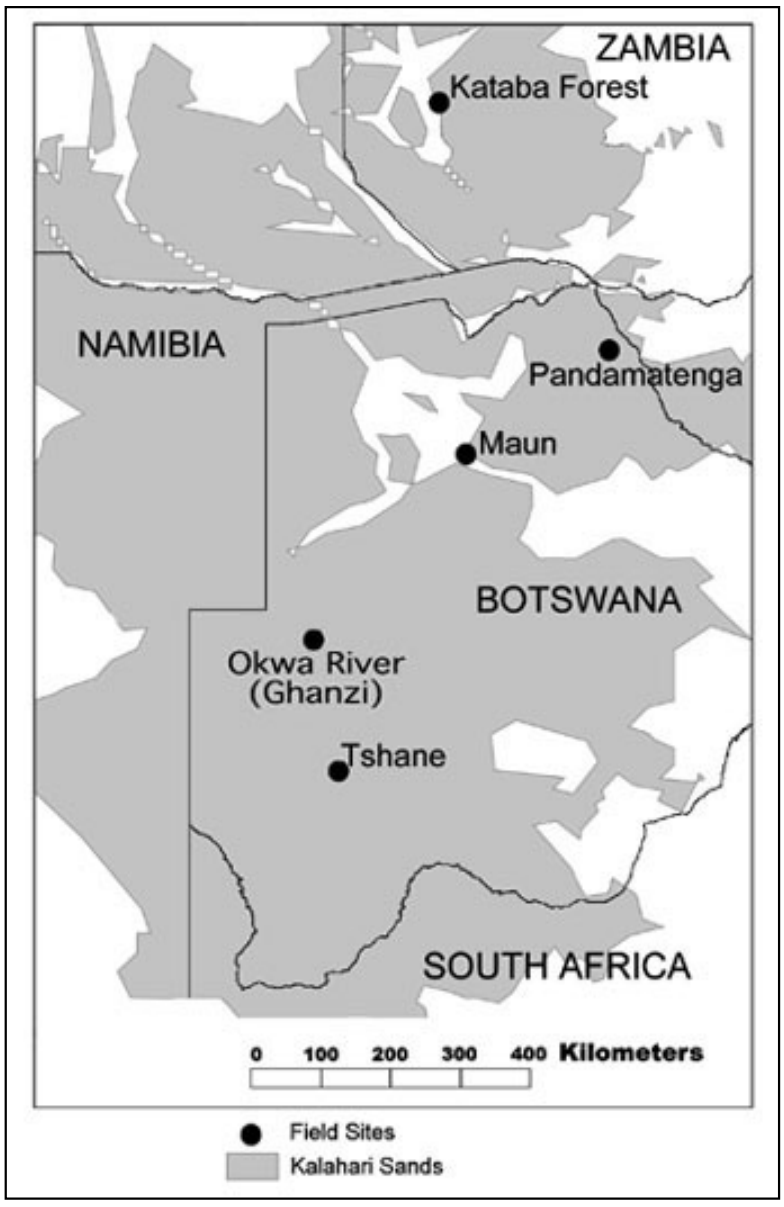
The letter before the number (N, A, B) indicates the position of the transect relative to the other transects, where N=northernmost, A=middle, and B=southernmost. The three transect centers form a line from north to south. At Mongu, the transects were labeled A=northernmost, B=middle and C=southernmost.

The letter before the colon in the image title indicates the Kalahari site, where M=Mongu, Zambia; P=Pandamatenga, Botswana; D=Maun/Okavanga Delta, Botswana; O=Okwa River Crossing, Botswana; and T=Tshane, Botswana.

For more information, see GPS_Coords_transect_endpts.txt which contains the GPS coordinates for the grid transect end points at the Kalahari Transect sites.

Temporal Coverage

The exact time (in UTC, from GPS) of each photograph is imprinted at the top of the photograph. Photographs were taken as opportunities presented themselves. Although typically the photographs were taken sequentially along a transect, that was not always the case. The user can easily check the times on the photos to determine sequence.



Site Summary Table

Sites	Latitude	Longitude
Ghanzi/Okwa River Crossing	-22° 24' 33"	21° 42' 47"
Maun	-19° 55' 22"	23° 35' 40"
Mongu (Kataba Forest)	-15° 26' 16"	23° 15' 10"
Pandamentanga	-18° 39' 19"	25° 30' 01"
Skukuza (located in Kruger National Park, South Africa, not on map)	-25° 01' 12"	31° 29' 48"
Tshane	-24° 09' 51"	21° 53' 34"

Data Notes

Photographs are intended to aid in the interpretation of other data sets, and can be used to suggest canopy height, gap fraction, grass, soil, and sky conditions. These photographs were taken with ISO200 speed Kodak Kodacolor film. The film was developed at NASA's Goddard Space Flight Center. The photographs were digitally scanned by Yuhong Tian at Boston University.

The GPS camera batteries started failing at Okwa and Tshane. Therefore, as necessary, the photo documentation was completed using an Olympus point-and-shoot camera with slide film. Those photos do not have GPS and date/time information imprinted; however, their positions along the transects is provided by the image file name. The coordinates of the positions can be estimated by interpolating the GPS photograph coordinates or the general transect GPS coordinates. The slides were scanned by David Landis at NASA's Goddard Space Flight Center (GSFC).

The Konica camera has a fairly early-generation GPS system. Coordinates are within 100 m, according to company literature. Bearing information should not be trusted. At the time of the Kalahari Transect Campaign, GPS "Selective Availability" (artificially-induced noise) was still in use. However, in many cases the stake flag along the 750 m transect is visible in the photograph, so very good knowledge about the canopy at the measurement point is available.

In general, these photographs were taken by moving from the center stake flag a few meters and turning to aim the camera in the general direction of the Grid center (center of 750 m x 500 m) such that the stake flag would be in the field of view along with the canopy, the horizon (if visible), and part of the sky.

Manufacturer of Sensor or Instrument:

Konica Corp.
Digital Systems Division
GPS Sales Dept.
No. 2970
Isikawa-cho, Hachiouji-shi
Tokyo, 192, Japan

Additional Sources of Information

Additional related data sets collected during the Kalahari Transect Wet Season Field Campaign are archived by ORNL DAAC. A list of these data sets is available at: http://www.daac.ornl.gov/S2K/safari.html.

Global Positioning System (GPS) coordinates for the grid transect end points were collected at the Kalahari Transect sites and can be found in the file GPS_Coords_transect_endpts.txt.

References

Caylor, K. 2004. SAFARI 2000 Stem and Canopy Characterization, Kalahari Transect, 1995-2000. Data set. Available on-line [http://daac.ornl.gov/] from Oak Ridge National Laboratory Distributed Active Archive Center, Oak Ridge, Tennessee, U.S.A.

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