Data and Information System for SAFARI 2000

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Data Planning Meeting

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Goals of the Data and Information System

- Short-term Goal of the DIS:
  - to make data readily available to the project team both in the United States and southern Africa
    - data will be available to the SAFARI 2000 participants within 12 months and to the public after 18 - 24 months
  - to prepare selected data sets for synthesis and analysis
- Long-term Goal of the DIS:
  - after the SAFARI 2000 project, to assist in preparing selected data for archive and distribution to the public

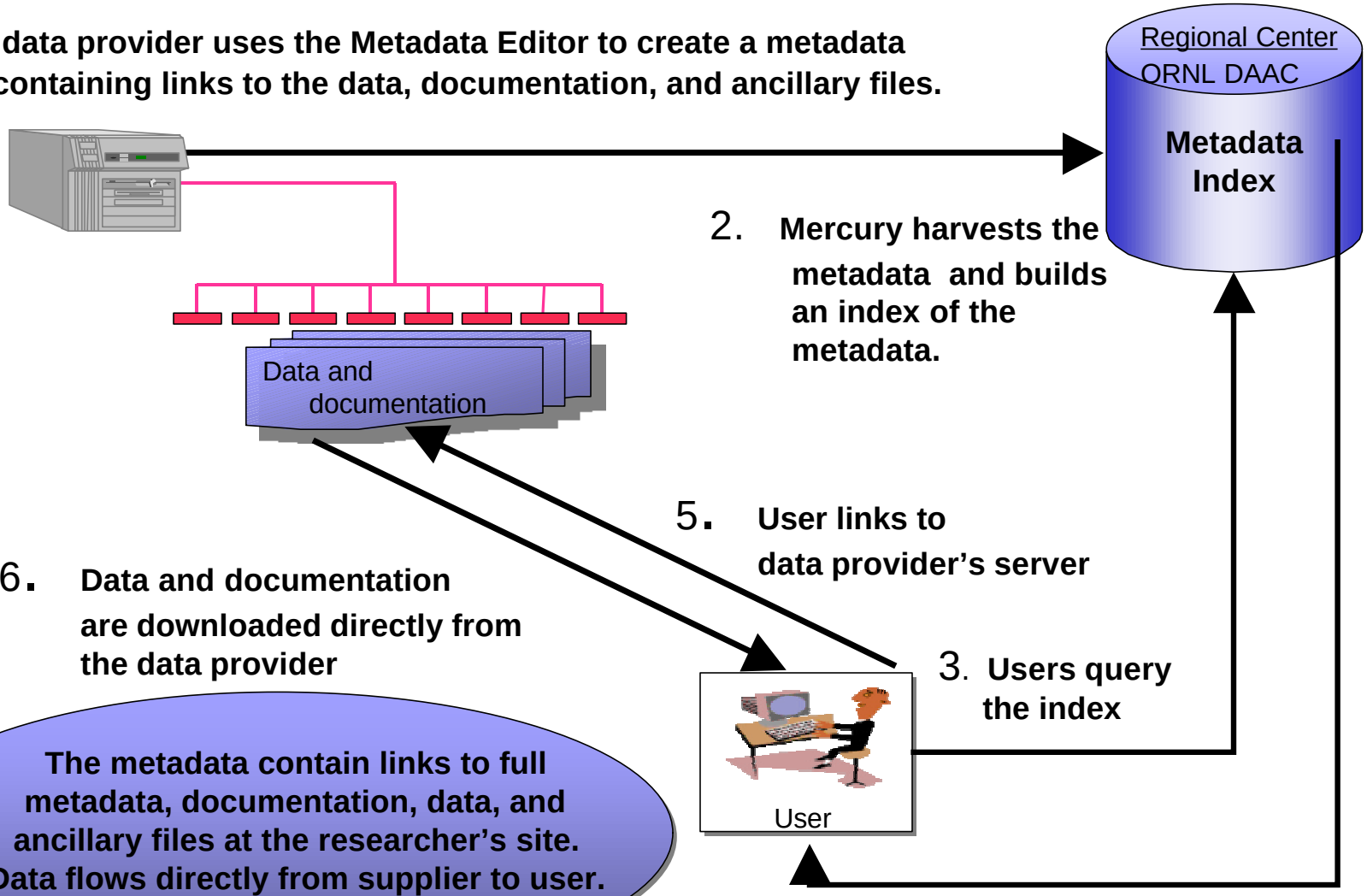
Activities to Meet the Short-term Goal

Short-term Goal: *To make data readily available to the project team both in the United States and southern Africa*

- Establish S2K Data Centers in US and southern Africa, using the Mercury System

Mercury in Brief

1. **The data provider uses the Metadata Editor to create a metadata file containing links to the data, documentation, and ancillary files.**



2. **Mercury harvests the metadata and builds an index of the metadata.**

3. **Users query the index**

4. **Metadata report is returned to the user, including links to the data provider**

5. **User links to data provider's server**

6. **Data and documentation are downloaded directly from the data provider**

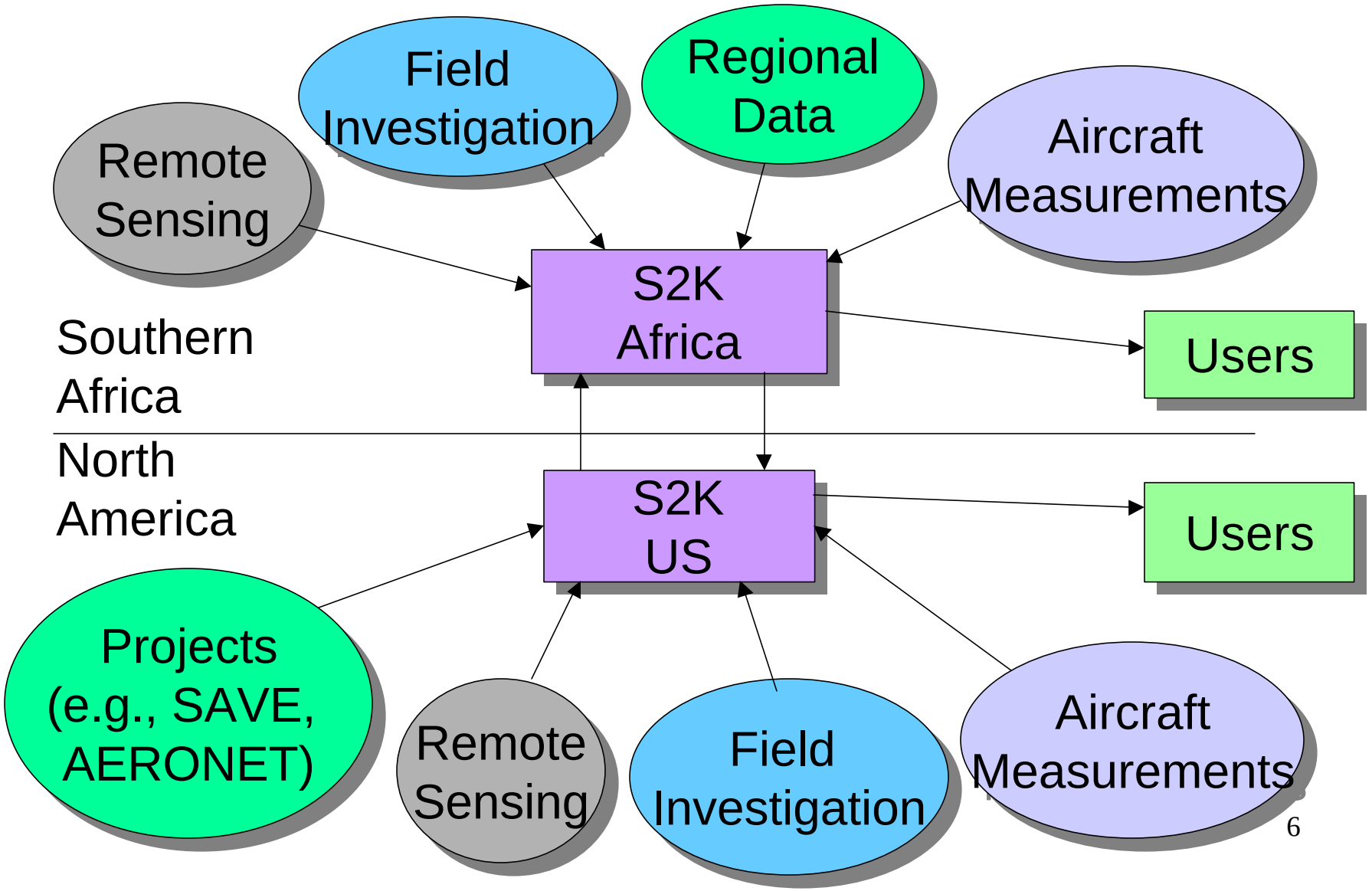
The metadata contain links to full metadata, documentation, data, and ancillary files at the researcher's site. Data flows directly from supplier to user.

Activities to Meet the Short-term Goal

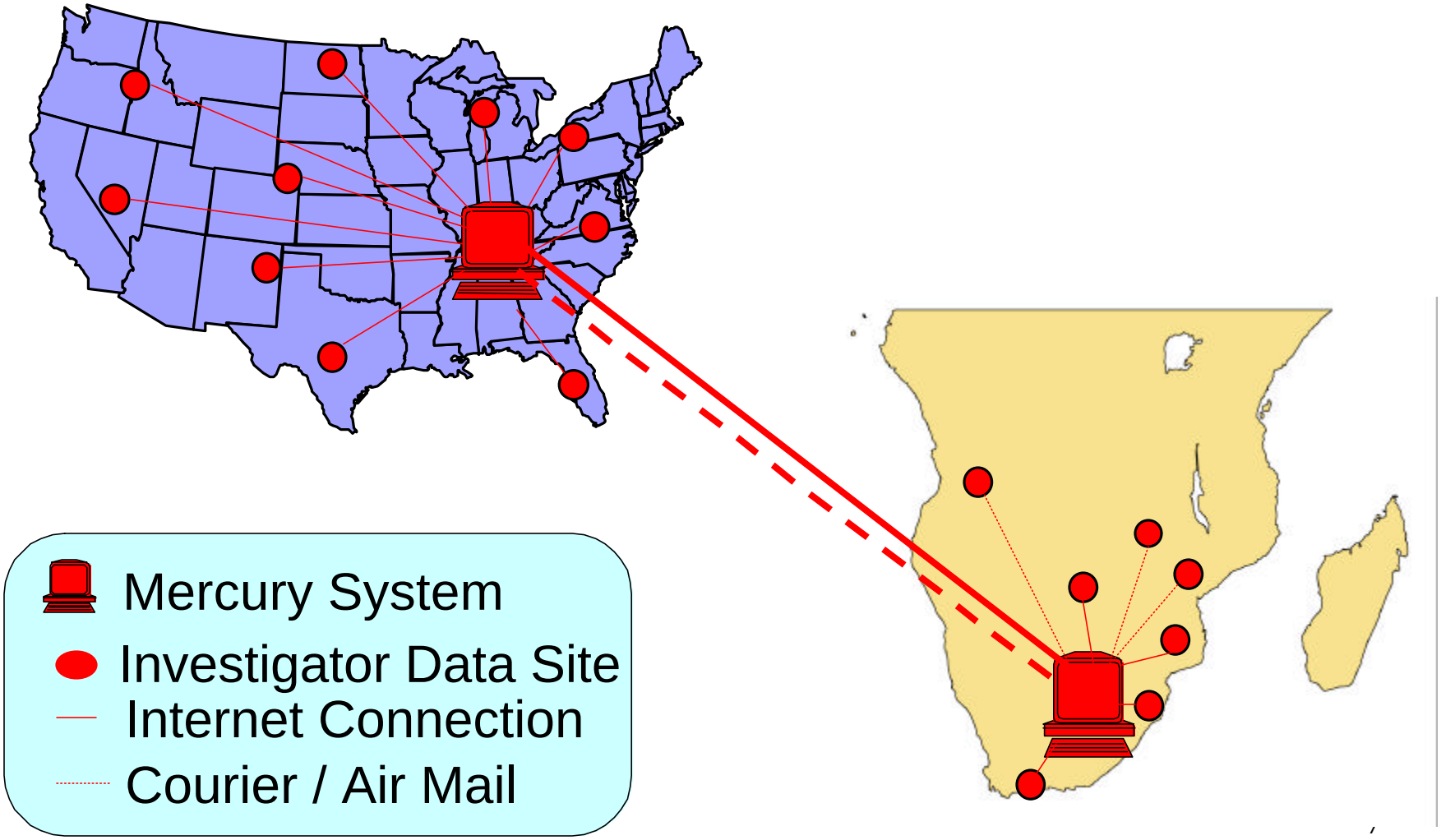
Short-term Goal: *To make data readily available to the project team both in the United States and southern Africa*

- Establish S2K Data Centers in US and southern Africa, using the Mercury System
- Metadata, data, and data center software are shared so that both centers have identical data holdings
- Establish process to transfer data between the two centers

Data Flow to Mirror Data Centers



Data Flow in SAFARI 2000



Activities to Meet the Short-term Goal (cont)

- Estimate number and volume of expected data sets
  - Golden day remote sensing data, regional data, field site data, tower flux data
- Register data sets from PIs, sites, and networks in Mercury in a timely manner
- Compile general information about S2K sites
  - different PIs, multiple sources, published reports
- Compile point and gridded regional data of key characteristics for use in models and synthesis (subsets of global data)
  - climate, soil, vegetation, land cover, land use history, hydrology

Roles and Responsibilities for the S2K Data System

- Acquire and submit data
  - PIs acquire data, perform initial QA and register with the DIS using Metadata Editor
  - EOS supported investigators submit their raw data to the data center / DAAC for their discipline
    - investigator, data center, and S2K DIS coordinate moving selected subsets to Mercury system
- Quick/timely data distribution
  - Mercury System
- US-Regional Data Liaison: ORNL DAAC
  - including quick and long-term data distribution; exchanging data sets between the centers; regional training on Mercury Data System

Roles and Responsibilities for the S2K Data System (cont)

- Defining data for focused studies and synthesis
  - S2K Science Team through Data Workshop(s)
- Metadata QA and packaging of remote sensing and synthesis data sets
  - Goddard Space Flight Center (Jaime Nickeson and Dave Landis)

DIS Activities: Status

- Data questionnaires for March 2000 KT and August 2000 Air Campaign
  - 12 responses from KT investigators
  - 17 responses from Air Campaign investigators
- DAAC document describing best practices for creating ecological data sets
  - available to interested investigators
- Point data for southern Africa
  - subset of compilation for the Terrestrial Carbon Meeting (Portugal, May 2000)
- Gridded data for southern Africa
  - subset of compilation at ORNL DAAC

Activities to Meet the Long-term Goal

Long-term Goal: *To assist in preparing selected data for archive and distribution to the public*

- Collect selected data, metadata, and documentation from investigators and data centers
- Quality assure the metadata and documentation
- Prepare the selected project data for archive at the ORNL DAAC and the southern Africa Data Center

Data Archive Activities

- Critical data products for SAFARI 2000 kept together for easy long-term access
  - includes field data and selected remote sensing data
- SAFARI-2000 data
  - Steering Committee / Science Team selects data sets required for archive
  - Archived at a data center in southern Africa and at ORNL DAAC for Biogeochemical Dynamics
- Raw satellite and airborne remote sensing data (source data) archived at appropriate data center
  - e.g., data collected under NASA sponsorship will be archived at responsible DAACs

Additional Slides

S2K Data Planning Meeting
Charlottesville, VA

Data Registered in Mercury
June 10, 2000

Landsat 7, Level 1G, ETM+ data, Skukuza

Landsat 7, Level 1G, ETM+ data, Mongu (2 dates)

Mongu Site Summary Data

Skukuza Site Summary Data

Global Organic Soil Carbon and Nitrogen Data (Zinke et al.), Southern Africa Subset

ISRIC-WISE 0.5-deg Derived Soil Properties Data Set, Southern Africa Subset

NPP for Towoomba Grassland Site

NPP for Nylsvley Grasssland Site

Global IBP Woodlands Data

Global Osnabruck NPP Data Set

Olson's Major World Ecosystems Ranked by Carbon in Live Vegetation, Southern Africa Subset

1km Land Cover Data Derived from AVHRR, Southern Africa Subset

1km Percent Tree Cover, Southern Africa Subset

Wilson, Henderson-Sellers' Global Vegetation & Soils, 1-Degr, Southern Africa Subset

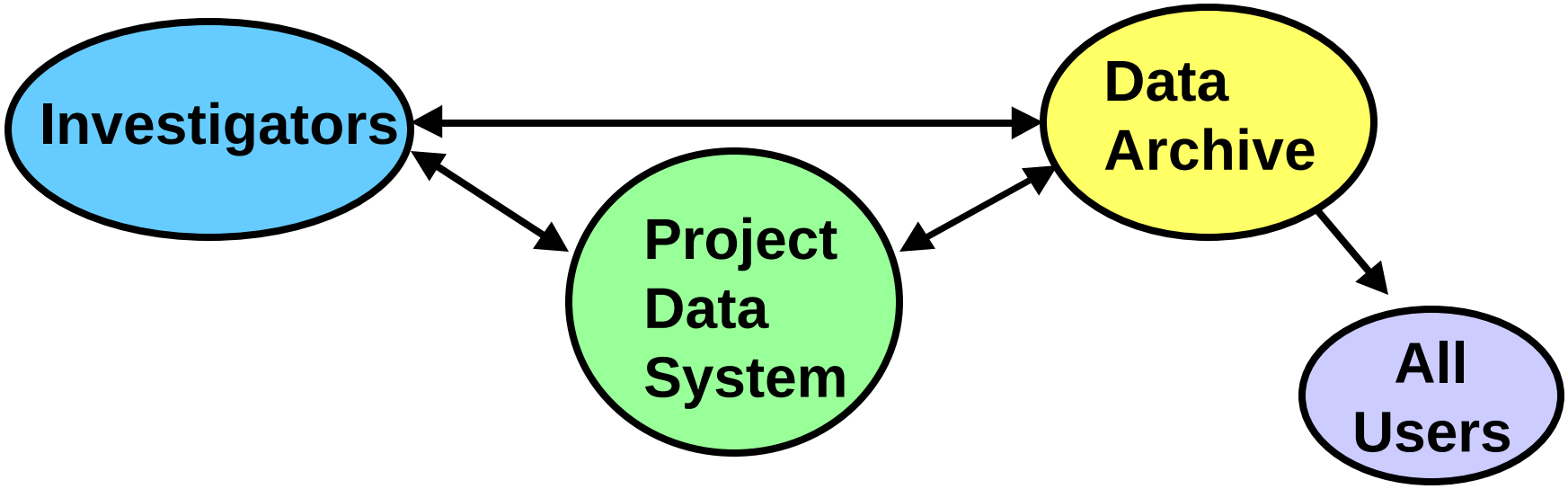
Potential Vegetation Data, Southern Africa Subset

GGHYDRO - Global Hydrographic Data, Release 2.2, Southern Africa Subset

Global Distribution of Freshwater Wetlands, Southern Africa Subset

GISS Wetlands Data Set: Southern Africa Subset

Activities as Data Flows from Investigators to the Archive



- Collect data
- Document
- QA/Process
- Analyze
- Register data in Mercury

- Data Protocols
- Schedules
- Data Catalog
- Metadata QA
- Integration
- Compile Site and Regional Data

- Metadata and Documentation QA
- Archive
- Distribute
- User Support

Some Critical Data Sets that the S2K will generate

SATELLITE DERIVED PRODUCTS

- **Fire distribution and Burn Scar (MODIS; AVHRR)**
- **Aerosol Optical Thickness and Size Distribution (MODIS; MISR; AVHRR)**
- **fPAR/LAI (MODIS)**
- **Land Cover Regional Distribution (% tree cover - AVHRR/MODIS/L7)**
- **Vegetation characteristics (MISR; ASTER; IKONOS)**
- **Carbon Monoxide and Methane profiles (MOPITT)**

AIRBORNE

- **ER2 Data**
  - **MAS, MOPITT-A, CLS, AirMISR transects**
- **CV580, SAWB 690, MRF C130**
  - **Aerosol and Trace Gas Chemistry**
  - **Aerosol physical, optical and radiative properties**

GROUND-BASED

- **Aerosol optical thickness and size distribution - AERONET**
- **Vertical Structure of the atmosphere - Micro Pulse LIDAR data**
  - **Ozonesonde Profiles (SHADOZ)**
  - **Regional Rawindsonde Observations - Windfield analyses**
- **Plot Level Vegetation Composition, Canopy Structure, Land Cover Distribution (% tree cover)**
- **Aerosol and Trace Gas Chemistry and Fluxes**
- **Soil Characteristics**

Table 1. List of Data for Miombo IAM, GOFC and GCC CD-ROM (internal database)

Name	Variables	Resolution	Comment/Source
(Lat/Lon window: left –18.025 Bottom –35.025 Right 54.975 Top 37.975)			
Precipitation	PRE (MAR, mm)	3 arc-mins	Africa SCT
Precip/PET	POVPE	3 arc-mins	
Potential Evapo	ETP	3 arc-mins	
Mean max temp	XT	3 arc-mins	
Mean min temp	IT	3 arc-mins	
Monthly Precipitation	PRE01-12	3 arc-mins	
Monthly min temp	IT01-12	3 arc-mins	
Monthly max temp	MT01-12	3 arc-mins	
Max monthly temperature in year	MAXXT (temperature of hottest month)	3 arc-mins	
Min monthly temperature in year	MINIT (temperature of coldest month)	3 arc-mins	
Elevation	Africa30dem	30 arc-seconds	EDC
Elevation	ELEV	3 arc-mins	CRES, Oz
Slope	SOPE	10 arc-seconds	From EDC DEM
Water Holding Capacity	WHCWSR	2 arc-mins	USDA
Land Cover	USGSLC1	30 arc-seconds	EDC
	UMD1kmLC	*30-arcseconds*	*UMD*
	UMD1km%TC	*30-arcseconds*	*UMD*
Miombo Regional Map	newmap1	30-arcseconds	Miombo Network
Population Density	POPD60,70,80,90	2.5 arc-mins	UNEP-GRID
Socioecon Data	SOCECONG	Country	World Bank
Cattle Density	CATTDENSE	Variable	IRLI, Kenya
Gridded Climate	CRU, IPCC DDC, IIASA	30 mins	CRU, IIASA, IPCC DDC
Station Climate Data	Max and Min Temp, Rainfall		National Holdings
Water Bodies	Basins, water bodies, streams		ALCOM
WRI Indicators	Various	Country	WRI
World Bank	Various	Country	World Bank