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# Ein globales Beobachtungs-System für den Wandel der Biodiversität

Bedarf, Ziele, Entwicklungsstand und Potenzial



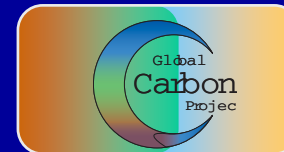
# The Earth System Science Partnership

[www.ess-p.org](http://www.ess-p.org)

**International  
Programme of  
Biodiversity Science**



**International Human  
Dimensions Programme**



**World Climate  
Research  
Programme**



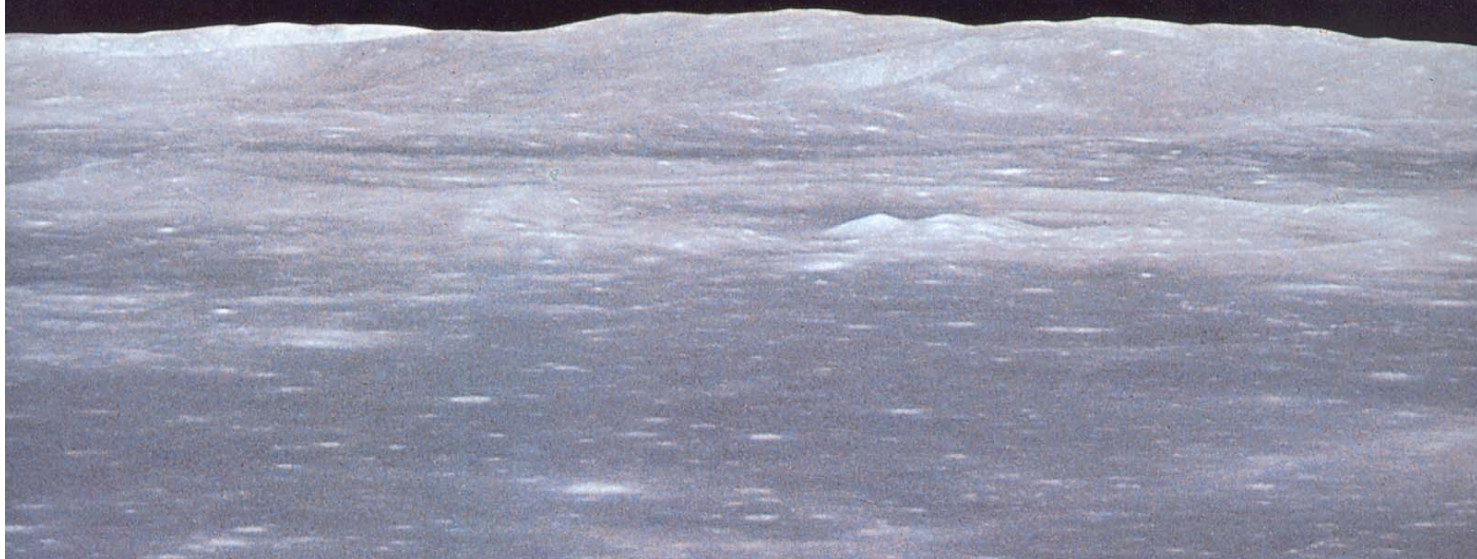
**International Geosphere-Biosphere  
Programme**





**DIVERSITAS**

an international  
programme  
of biodiversity  
science



Ökosysteme...

Energie

Wandel der Umwelt →  
Anpassung

Evolution neuer Biota &  
neuer Fähigkeiten zur  
Kontrolle von Ressourcen

Evolution des Menschen und  
der Beginn des Anthropozäns

# Biosphäre II

**13.000m<sup>2</sup>, 3.800 Arten, 8 Menschen, nach 2 Jahren gescheitert**



**Probleme:**

**CO<sub>2</sub> ↑**

**Sauerstoff ↓**

**Aussterben fast aller  
Arten**

# GEOSS' 9 Societal Benefit Areas

- Natural Hazards and Disasters
- Human Health
- Energy Resource Management
- Weather
- Water
- Climate
- Ecosystems
- Agriculture
- **Biodiversity**

# Globale Biodiversitäts-Beobachtung

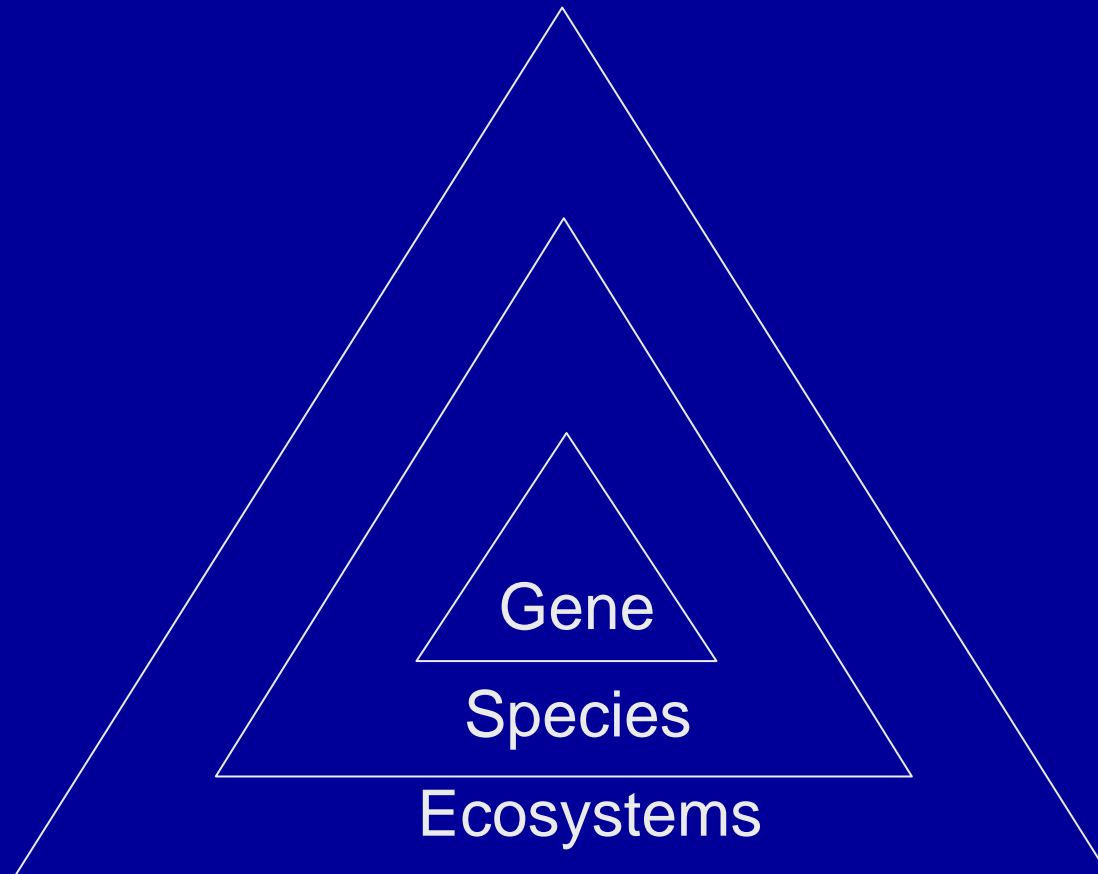
- ◆ Was ist Biodiversität?
- ◆ Wer benötigt Biodiversitätsbeobachtung?
- ◆ Methodische Besonderheiten
- ◆ Vorhandene Systeme und Daten
- ◆ Interoperabilität
- ◆ Schritte im Jahr 2006
- ◆ Strategie für 2007-2009

# Globale Biodiversitäts-Beobachtung

- ◆ Was ist Biodiversität?

# Dimensions of Biodiversity

Composition  
(Species richness)



Structure  
(Land cover)

Function  
(Goods & services & threats)

# Globale Biodiversitäts-Beobachtung


- ◆ Wer benötigt Biodiversitätsbeobachtung?

# Earth Observation Systems GXOS

## Rio de Janeiro 1992

- ◆ Global Ocean Observation System (GOOS)
- ◆ Global Climate Observation System (GCOS)
- ◆ Global Terrestrial Observation System (GTOS)

# GTOS Terrestrial Ecosystem Monitoring Sites (TEMS)



<b>HOME</b>	<b>T.SITES</b>	<b>NETWORKS</b>	<b>VARIABLES</b>	<b>ECOREGION</b>	<b>SEARCH</b>
RESOURCES	MODULES	REGISTER NEW T.SITE	FEEDBACK	SITMAP	LOGIN

T.Sites > Bailey map

Map

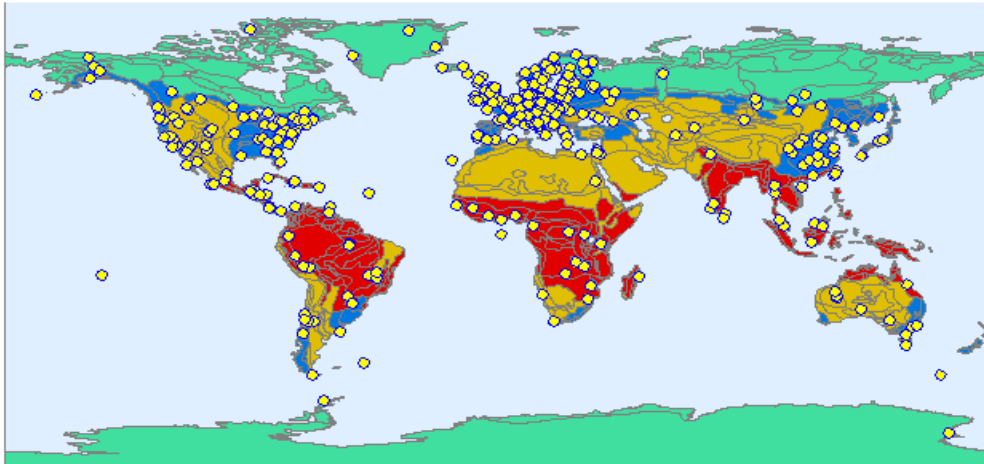
Layer

Coastal buffer (km)  5  10  50

Labels  Grid  Filter

 Legend  Full  Pan

472 T.Sites found



**On the map:**

- Click on the mouse button and drag the cursor to zoom-in.
- Click on any yellow dot to obtain more information on the T.Site.
- Click on any class to filter the T.Sites.

Web directory of  
1,600 sites & 55  
networks in 110  
countries carrying  
out long-term  
terrestrial eco-  
system monitoring  
of 110 variables

Datenquellen



Datenanbieter



Daten



Information



Nutzer



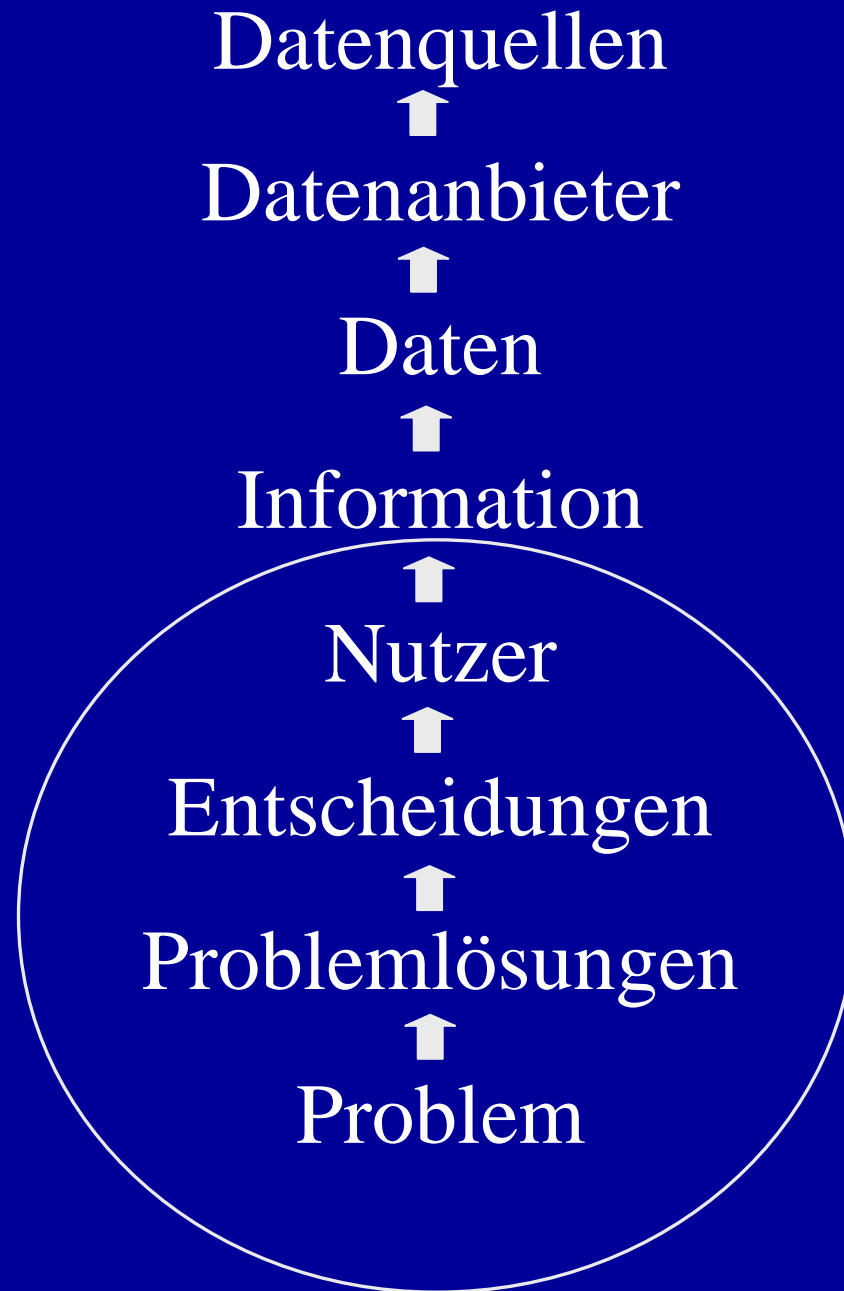
Entscheidungen



Problemlösungen

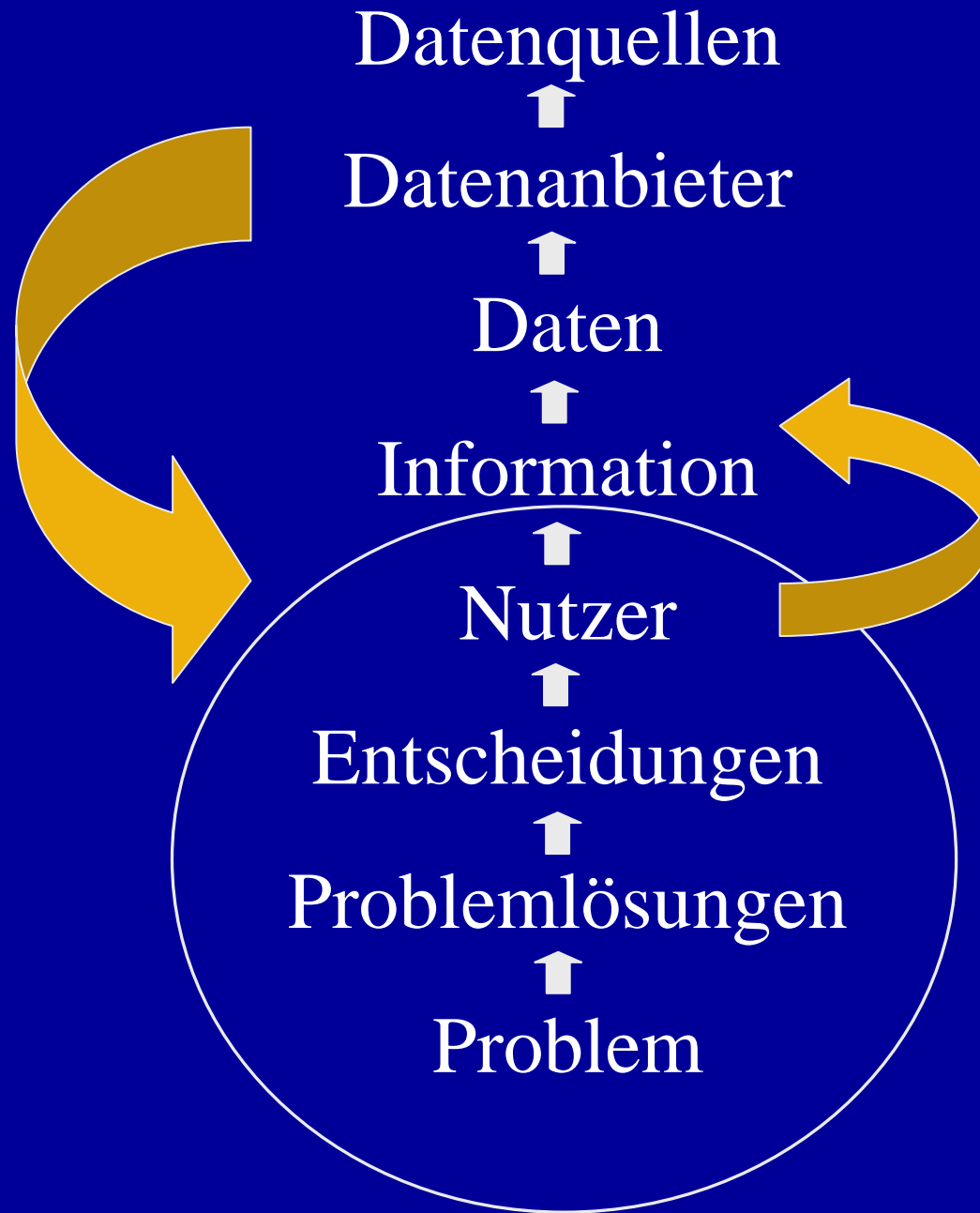


Problem



# Nutzergruppen

- ◆ Internationale Abkommen
  - UNCBD, UNCCD, Ramsar, ...
- ◆ Ressourcennutzer
  - Fischerei, Forstwirtschaft, Ackerbau, Tierhaltung (Schädlinge, Krankheiten, Biologische Invasionen)
- ◆ Naturschutzplanung
  - 2010 target, Artenschutz, Habitatschutz, Evolutionskorridore, ...
- ◆ Gesundheitsbereich
  - Infektionskrankheiten, Virus outbreaks, Trägerorganismen, ...
- ◆ Genetic level
  - GMOs, Verarmung der Sortenvielfalt, Intraspecific genetic diversity, ...
- ◆ Forschung (user & provider)



# Globale Biodiversitäts-Beobachtung

- ◆ Besondere methodische Probleme

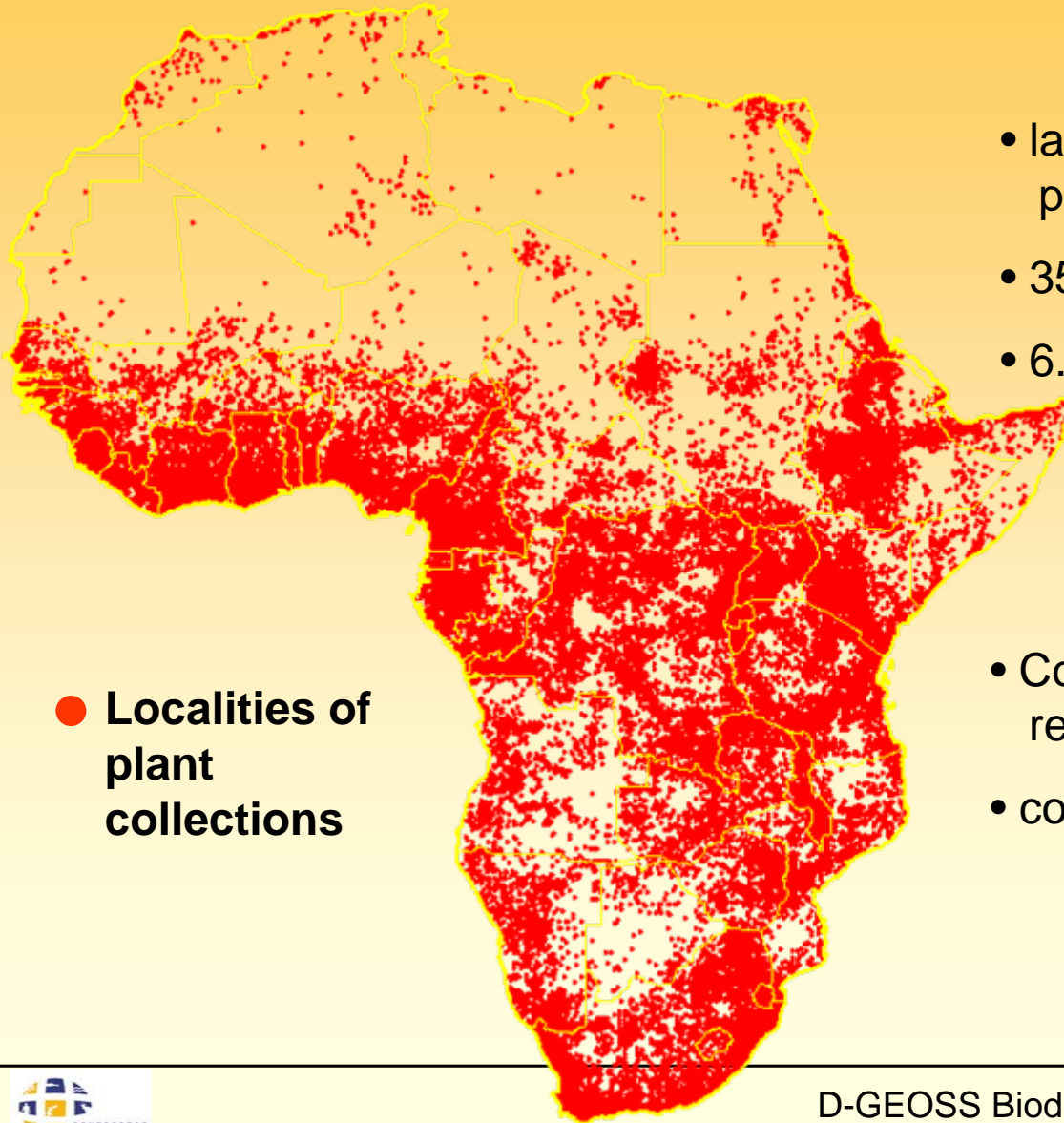
# Methodische Probleme

- ◆ Zu großen Anteilen nicht vom Orbit aus sichtbar
- ◆ Komplexe Gemengelage komplexer Daten

# BIOTA W03: A Biogeographic Information System on African Plant distributions



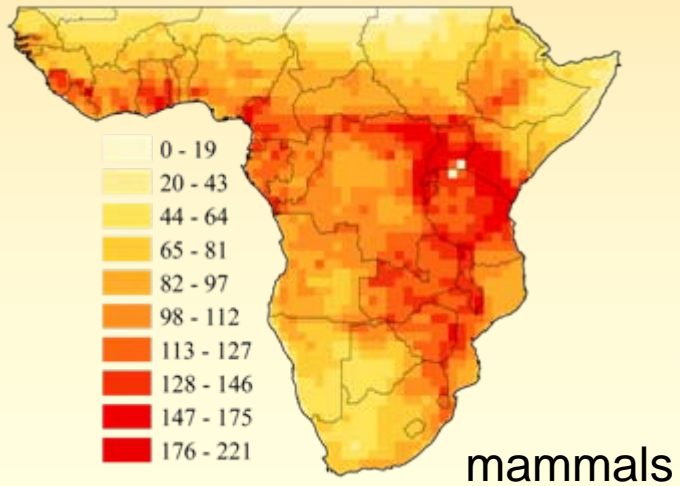
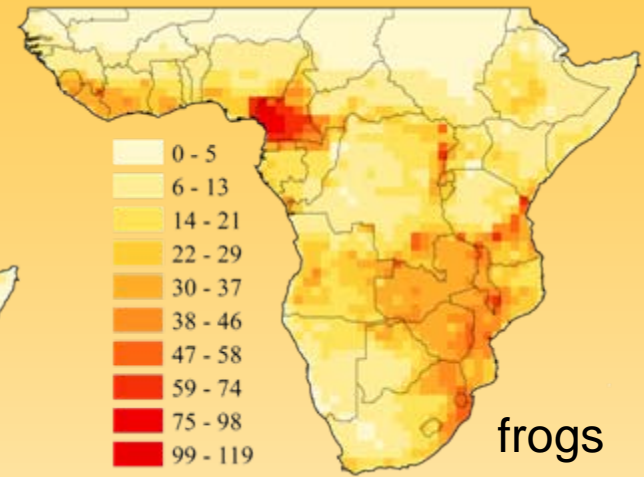
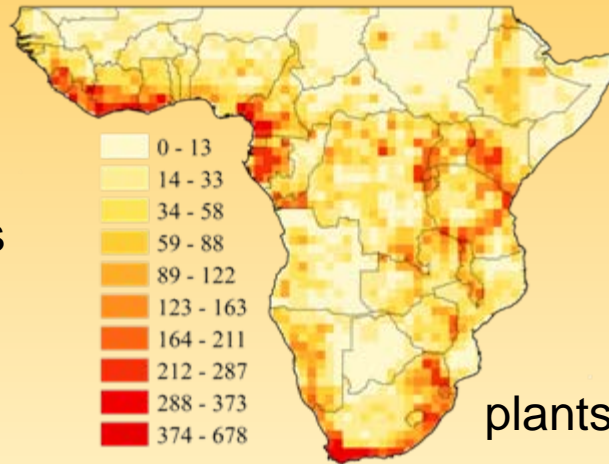
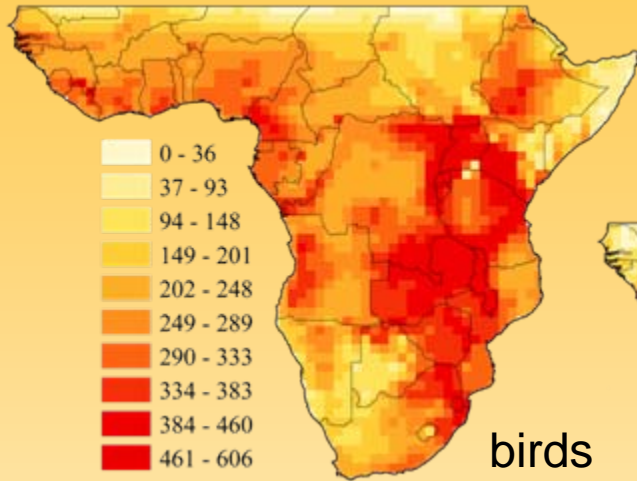
West 03



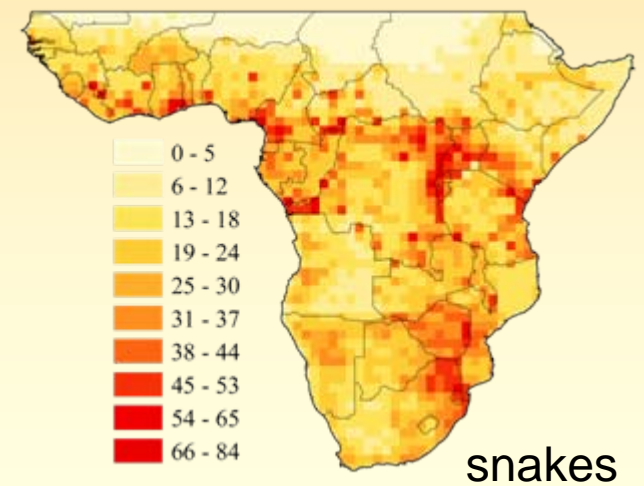
● Localities of  
plant  
collections

- largest dataset on continental plant distributions
- 350.000 distribution records
- 6.500 species
- Collaboration with 13 international research institutions
- coordinated by BIOTA W03

# Species richness patterns of different taxa



Source: BIOTA W03

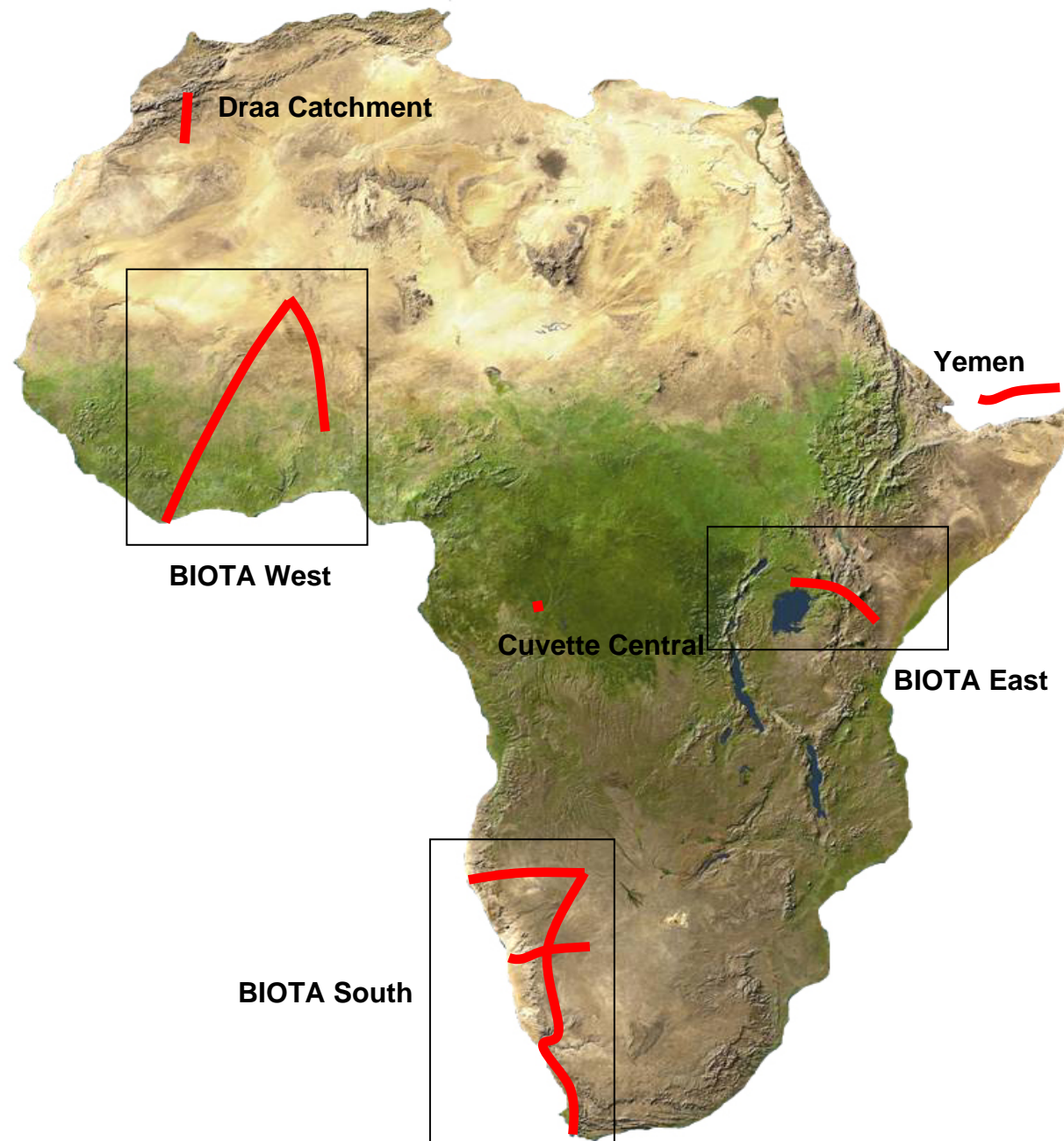


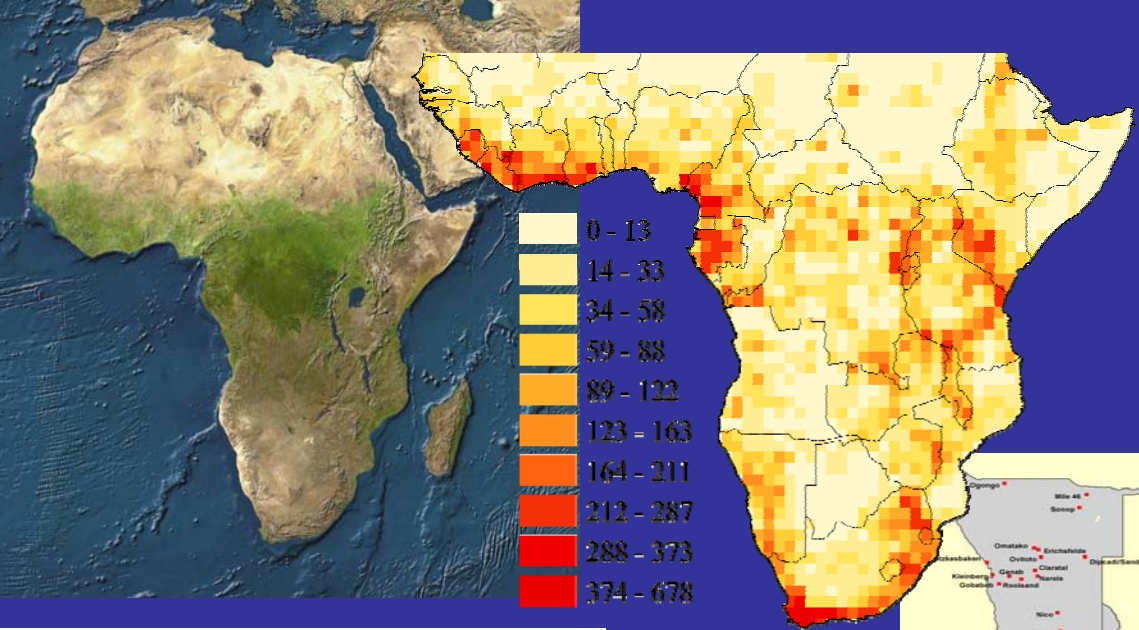
# Methodische Probleme

- Interoperabilität verschiedener Datentypen
  - Remote-sensing Daten
  - Taxon-spezifische biogeographische Punktdaten
  - Prozessdaten aus Observatorien in Ökosystemen
  - Komplexe Interaktionen
  - Raumskalen
  - Fehlen von Standards (Raum, Methoden, Daten)

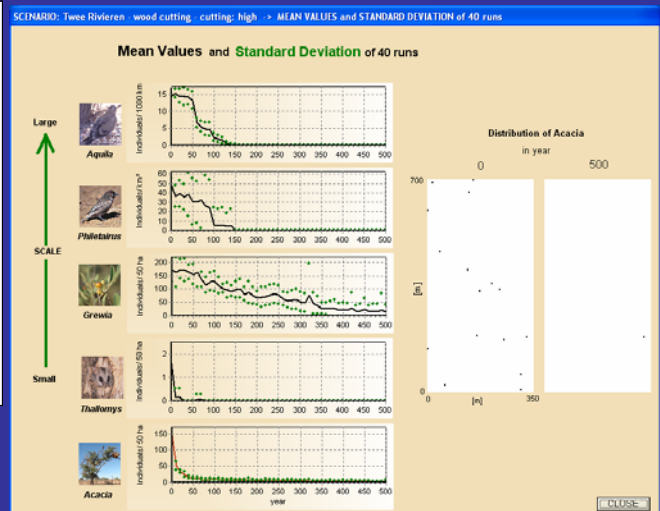
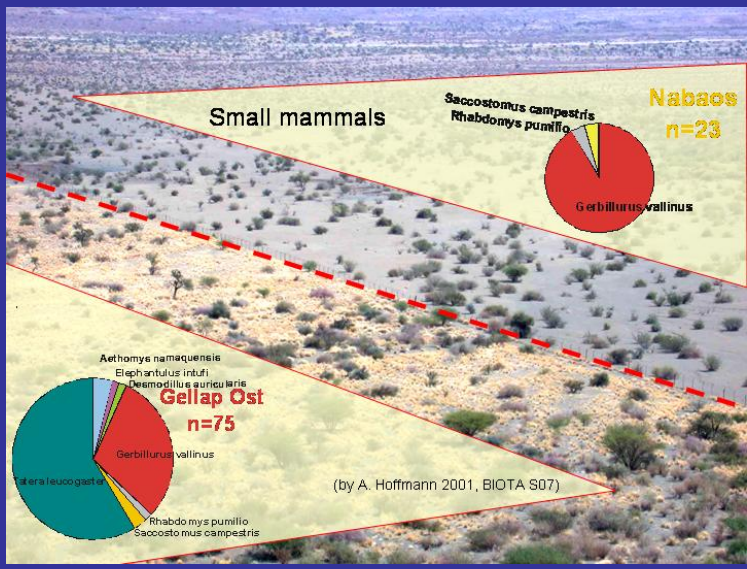
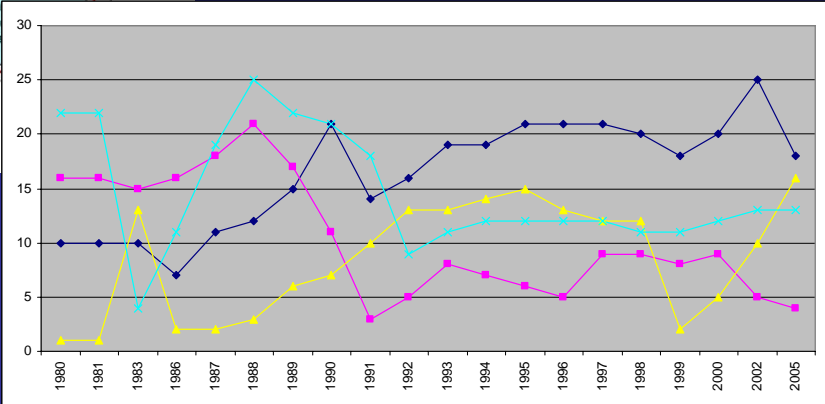
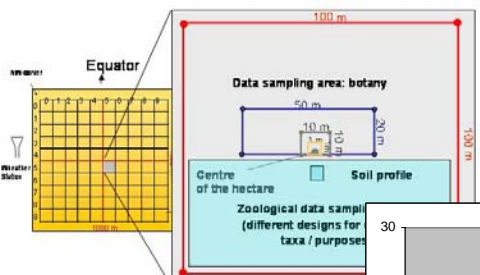
# Globale Biodiversitäts-Beobachtung

- ◆ Interoperabilität





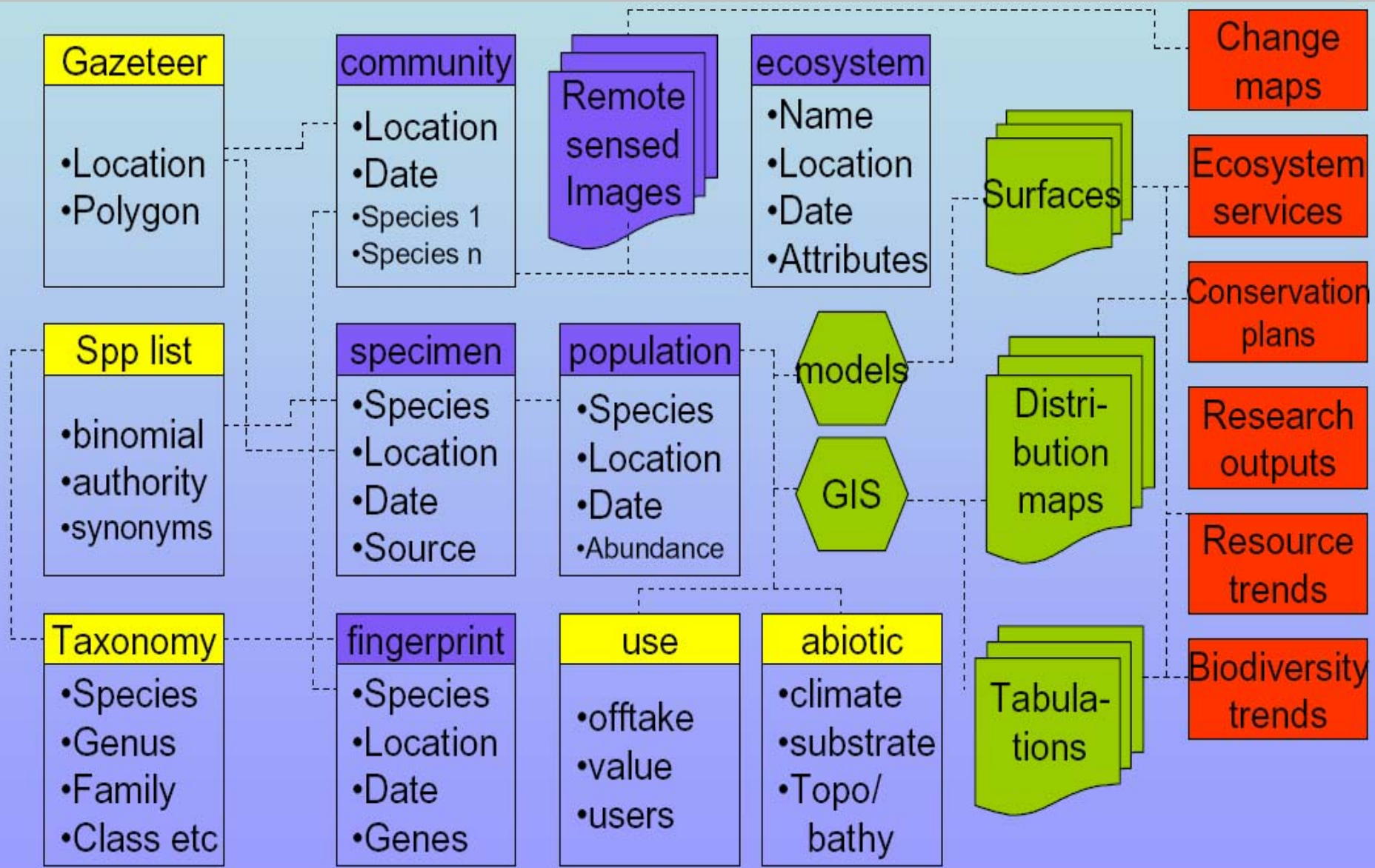
Standard design of BIOTA-AFRICA Biodiversity-Observatories



# Interoperabilität durch Datenarchitektur

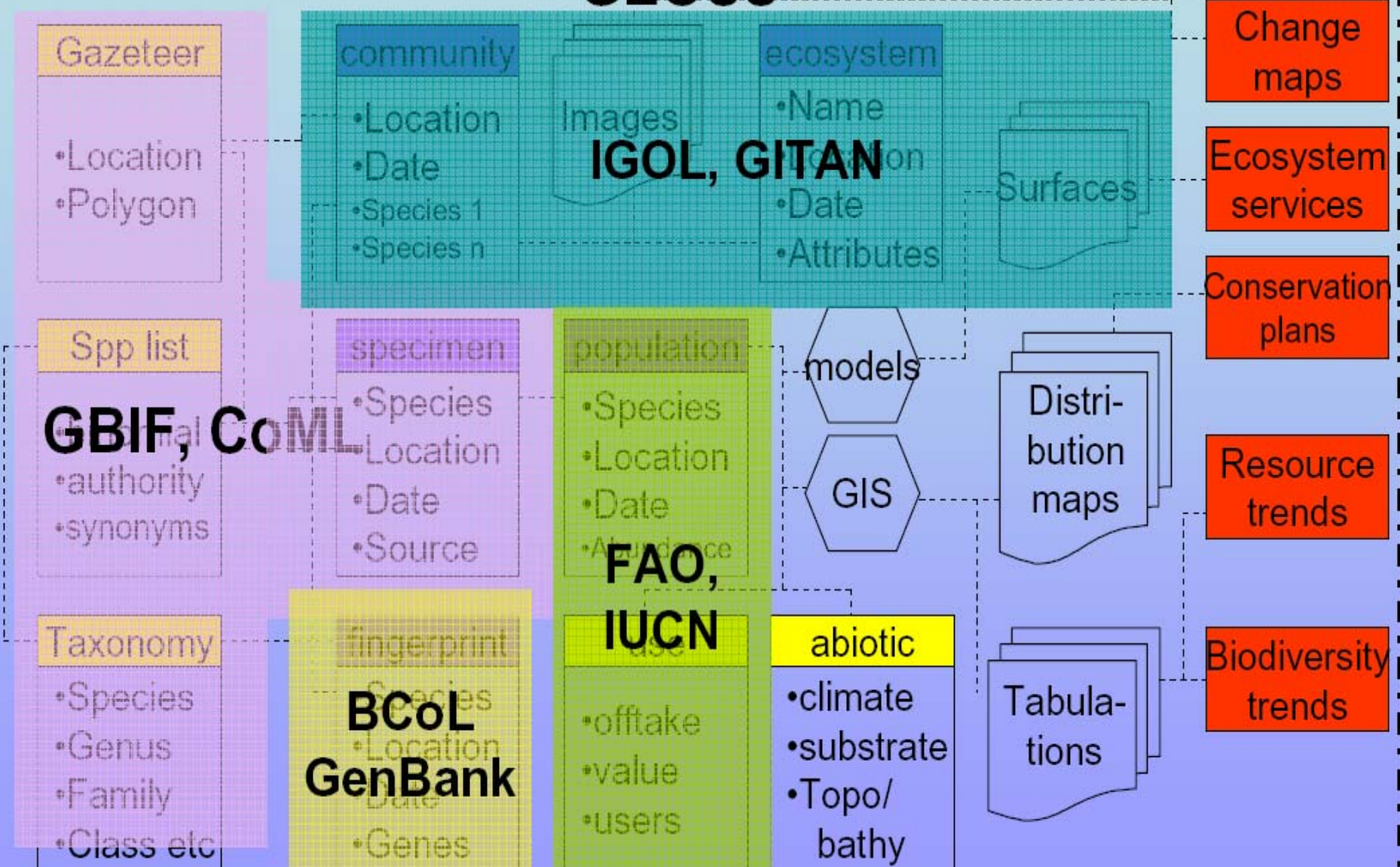
- ◆ ABCD (Access to Biodiversity Collection Data)
- ◆ EML (Ecological Metadata Language)

# An architectural sketch



# Responsibilities

## GEOSS



# Globale Biodiversitäts-Beobachtung

- ◆ Fortschritt im Jahr 2006, Stand der Dinge

# Workshop Genf 21.-25.10.2006

- ◆ Konventionen
- ◆ UN-Institutionen
- ◆ NGO's
- ◆ Wissenschaftliche Communities
  - Taxonomen
  - Biogeographen
  - Ökosystem-Monitoring Community
  - Genetiker
  - Health Community
  - Ressourcennutzer
  - Space Agencies
  - IT Community

- ◆ Formierung einer “World Biodiversity Observation Partnership”
- ◆ Analyse der Nutzerbedarfe (→ Report)
- ◆ Erhöhte Sichtbarkeit für Beispielsprojekte mit GEOSS label (low hanging fruits)
  - GEO Plenary, CBD SBSTTA, CBD-COP
- ◆ Mandat für Arbeitsgruppen
  - (Datenarchitektur, Methoden, Standards)
- ◆ Biodiv-Strategieplan bis Nov 07



UNCBD,

CCD,

Ramsar,

CMS,

FAO,

GLP (Global Land Project),

PAGES (Past Global Changes)

GTOS (Global Terrestrial Observation System)

DIWPA (Diversitas in the West Pacific)

ILTER Int Long-term ecological research

BIOTA Biodiversity Monitoring Transect Analysis

ROSELT

AlterNet

BioMar

OBIS

GTI - Global Taxonomy Initiative

NEON

SAEON

ELTOSA

Australia ERIN

GMBA

INSTAAR

European Environment Agency

Conservation International

IUCN-ISSG

Guyra Paraguay  
UEA Norwich

Smithsonian Institution

GBIF

The Nature Conservancy

Durrell Wildlife Trust

WCMC

WDCBE

MAB

UNEP

ZSL

National Representations

European Space Agency

DIWPA

INBio

JRC – Ispra

Pro-Natura International

WWF

ABC

USGS

CSIR Environmentek

NASA

BirdLife International

IABIN

NBII

MBG

Chinese Biodiversity Monitoring Network

BirdLife International

CI-CABS-TEAM

IUCN

OSS - Observatoire du Sahara et du Sahel

Vielen Dank für die  
Aufmerksamkeit!

