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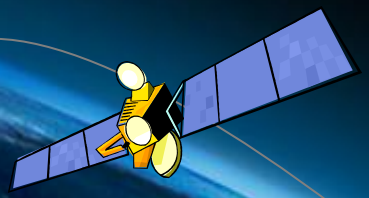
Science for Better Livelihoods in Dry Areas



CRP Dryland Systems
Data Management and Open Access

a quick overview with spatial focus

Chandrashekhar Biradar, PhD

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RESEARCH PROGRAM ON
Dryland Systems

Role of Geospatial Science, Technology and Applications (GeSTA) in Agro-Ecosystems

Youth & Capacity Dev. Engaging and empowering young gen. by creating opportunities

156 Remote sensing missions in orbit°

12 Sensors potential in CRPs/IRPs, etc.

>6 are free

5 Regions

1) The West African Sahel and dry savannas , 2) East and Southern Africa , 3) North Africa and West Asia 4) Central Asia , and 5) South Asia.

Ensuring Food Security

Specific mutual-interaction & synergies between plant and animal species and management practices

Integrated agro-ecosystems: innovative approaches and methods for sustainable agriculture, while safeguarding the environment

Mapping present, emerging & future land use /land cover dynamics, cropping patterns, forage, intensities, water use, pest & diseases, climate change & impacts

Quantification of existing agricultural production systems

Characterization of vulnerable areas for increasing resilience and assist in identifying mitigation pathways with biophysical, socioeconomic and stakeholder feedback as well as specific needs & constraints

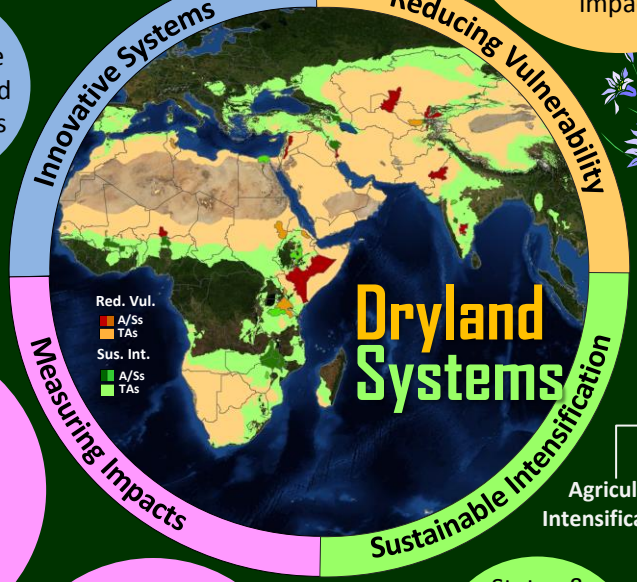
$ Startup 35.47m
Total 122.7m

Cooperative Research and Partnerships

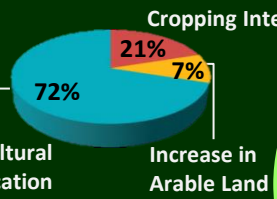
Characteristics of agricultural and livestock production in small holder farming systems and rural livelihoods

Gender Address social inequities, greater roles and priorities

Drylands 41% Earth's land area



increased Food production potential sources



Biodiversity Spatial enrichment and its role in food security, risk mitigation, & sustainability

Measuring the impact at spatial scales, rate, magnitude, synergy among the systems, CRPs, cross-regional synthesis

Mapping the extent of existing & traditional practices, indigenous knowledge, diversity, potential areas for modern & improved, productive, profitable, and diversified dryland agriculture, & linkages to markets

Geospatial commons , KM sharing, stakeholder feedback

Assessing the impact of outcomes in Action Sites, post-project implementation, & M&E

Status & trends of existing production systems

Delineation of potential, suitable areas for sustainable intensification, and diversification of ag. Innovation production systems

Farmers, stakeholders, policymakers, mobilization, & marketing

Health Changing diet patterns, nutrition and health

People 2.5b Live in Drylands

Assessment of present, emerging & future droughts, floods, pests & diseases, extreme events, infrastructure, migration

Livestock 1.5b Depend on Drylands

Improved Livelihoods

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Science for Better Livelihoods in Dry Areas

Data Generation

Getting Started

Where We Are Today

Data Sharing

Data Management

Where We Want To Be

Plan To The Future

CGIAR Consortium

Shifting the goalposts—from high impact journals to high impact data

Anja Gassner[1], Luz Marina Alvare[2], Zoumana Bamba[3], Douglas Beare[4], Marichu Bernardo[5], Chandrashekhar Biradar[6], Martin van Brakel[7], Robert Chapman[8], Guntuku Dileepkumar[9], Ibnou Dieng[10], Sufiet Erlita[11], Richard Fulss[12], Jane Poole[13], Mrigesh Kshatriya[11], Guvener Selim[14] Reinhard Simon[14], Kai Sonder[12], Nilam Prasai[2], Maria Garruccio[8], Simone Staiger Rivas[14], Maya Rajasekharan[14], Chukka Srinivasa Rao[9]

[1] World Agroforestry Centre (ICRAF), United Nations Avenue, Gigiri, PO Box 30677 Nairobi 00100 Kenya
[2] International Food Policy Research Institute (IFPRI), 2033 K St, NW, Washington, DC 20006-1002 USA
[3] International Institute of Tropical Agriculture (IITA), HQ-PMB 5320, Ibadan, Oyo State Nigeria
[4] WorldFish, Jalan Batu Maung, Batu Maung, 11960 Bayan Lepas, Penang, Malaysia, PO Box 500 GPO, 10670 Penang, Malaysia
[5] International Rice Research Institute (IRRI), DAPO Box 7777 Metro Manila 1301, Los Baños, Philippines
[6] International Center for Agricultural Research in the Dry Areas (ICARDA, "Dalia Building 2nd Floor, Bashir El Kassar Street, Verdun, Beirut, Lebanon 1108-2010 P.O. Box 114/5055 Beirut, Lebanon"
[7] International Water Management Institute (IWMI), P. O. Box 2075, Colombo, Sri Lanka, 127, Sunil Mawatha, Pelawatte, Battaramulla, Sri Lanka
[8] Bioversity International, "HQ- Via dei Tre Denari 472/a 00057 Maccarese (Fiumicino) Rome, Italy"
[9] International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Patancheru 502 324 Andhra Pradesh, India
[10] Africa Rice Center (AfricaRice) 01 B.P. 2031, Cotonou, Benin
[11] Center for International Forestry Research (CIFOR), HQ- Jalan CIFOR, Situ Gede Bogor (Barat) 16115, Indonesia, Mailing-P.O. Box 0113 BOCBD Bogor 16000, Indonesia"
[12] International Maize and Wheat Improvement Center (CIMMYT), Km. 45, Carretera, México-Veracruz, El Batán, Texcoco CP 56130, Edo. de México, Apdo. Postal 6-641, 06600 Mexico, D.F., Mexico
[13] International Livestock Research Institute (ILRI), HQ-PO Box 30709, Nairobi, 00100 , Old Naivasha Road, , Nairobi, Kenya
[14] International Potato Center (CIP), Avenida La Molina 1895, La Molina, Apartado Postal 1558, Lima, Peru

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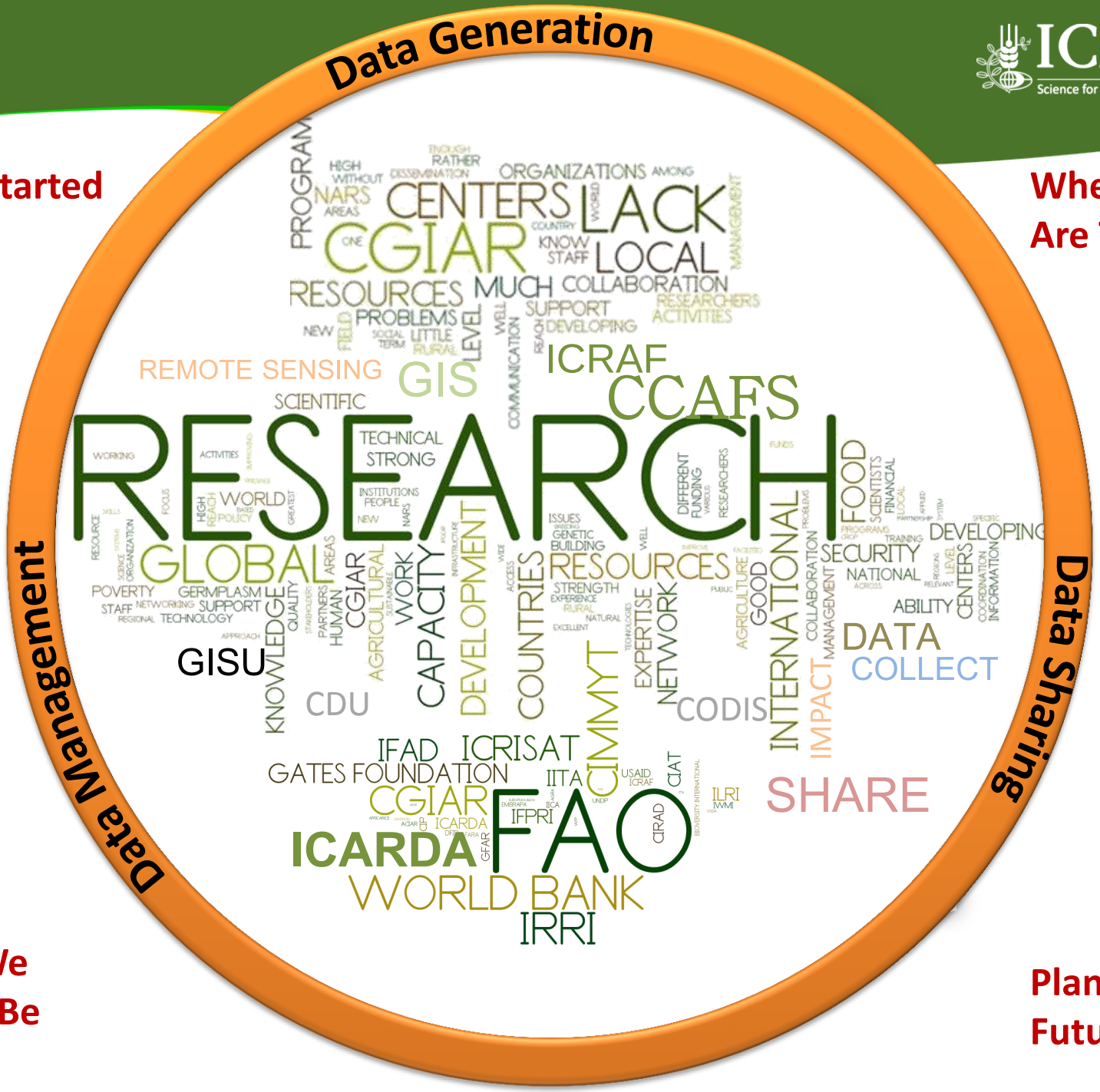
Getting Started

Where We Are Today

Where We Want To Be

Plan To The Future



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Science for Better Livelihoods in Dry Areas

Getting Started

Where We Are Today

Where We Want To Be

Plan To The Future

Data Generation

Data Sharing

Data Management

Data (Management) Life Cycle

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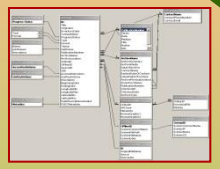
Find/Gather
External, Internal
Original, Derived
Regenerated, …

Indiv. or Team Data

Project Archive

Filtered out

Get Data Organized



Find
Internal Data and Information (Archive and Reuse)

Maintain
(Upgrades and Documentation)

Streamlining

Build Metadata

Redo?

Time Bound

Data Life-Cycle

Use
Data and Other Resources In Research Projects

Display and Delivery
Data and Knowledge to Projects and the Public

Intranet Resources

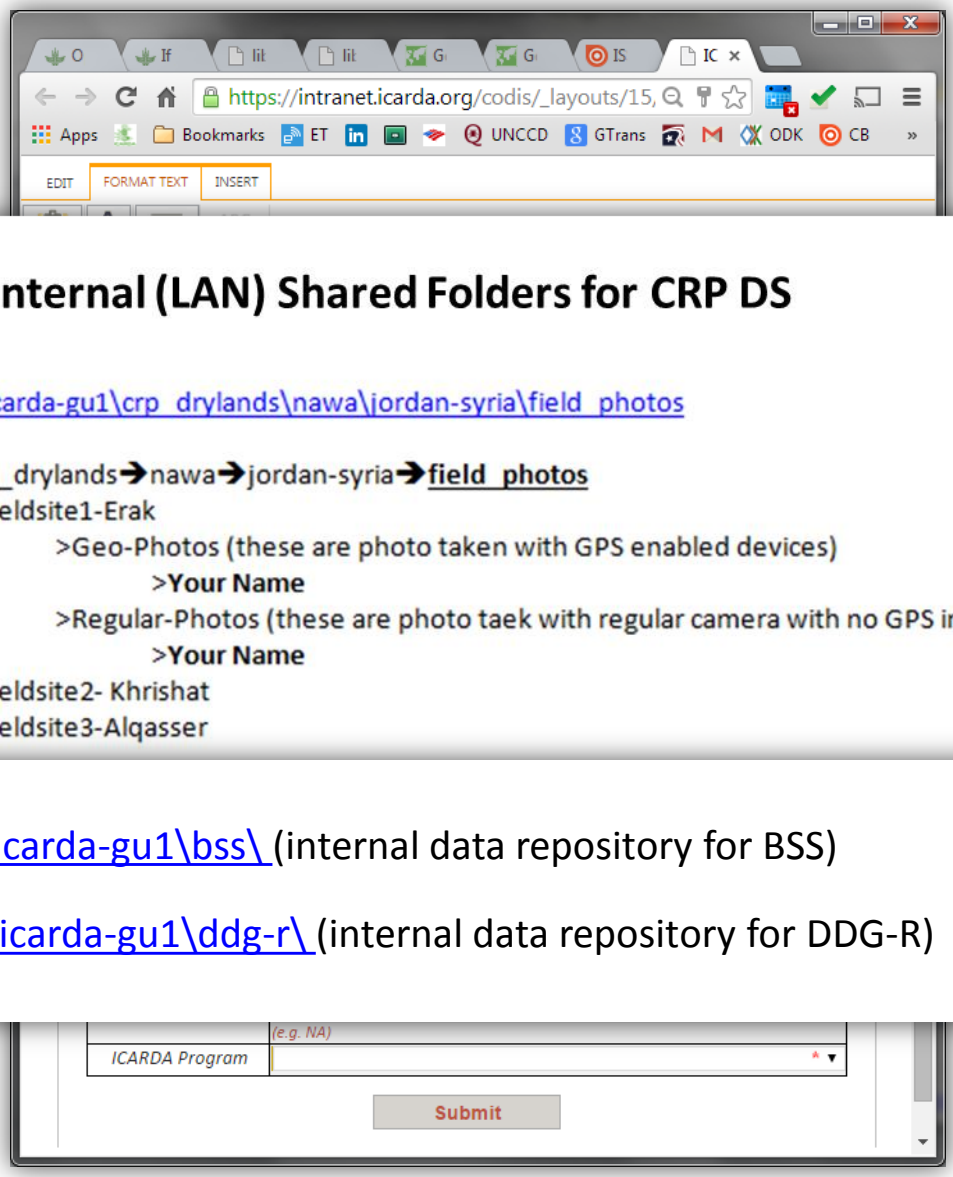
Design and DSS

Data Processing Utilities

Adopted from USGS

Getting data? incentive driven but what?

what encourages them?



When we publish the paper, submit the publication to center or CRPs publication repository inline with annual appraisal process…

Does authors can submit the data used for publishing that particular paper(s)?

will this address?

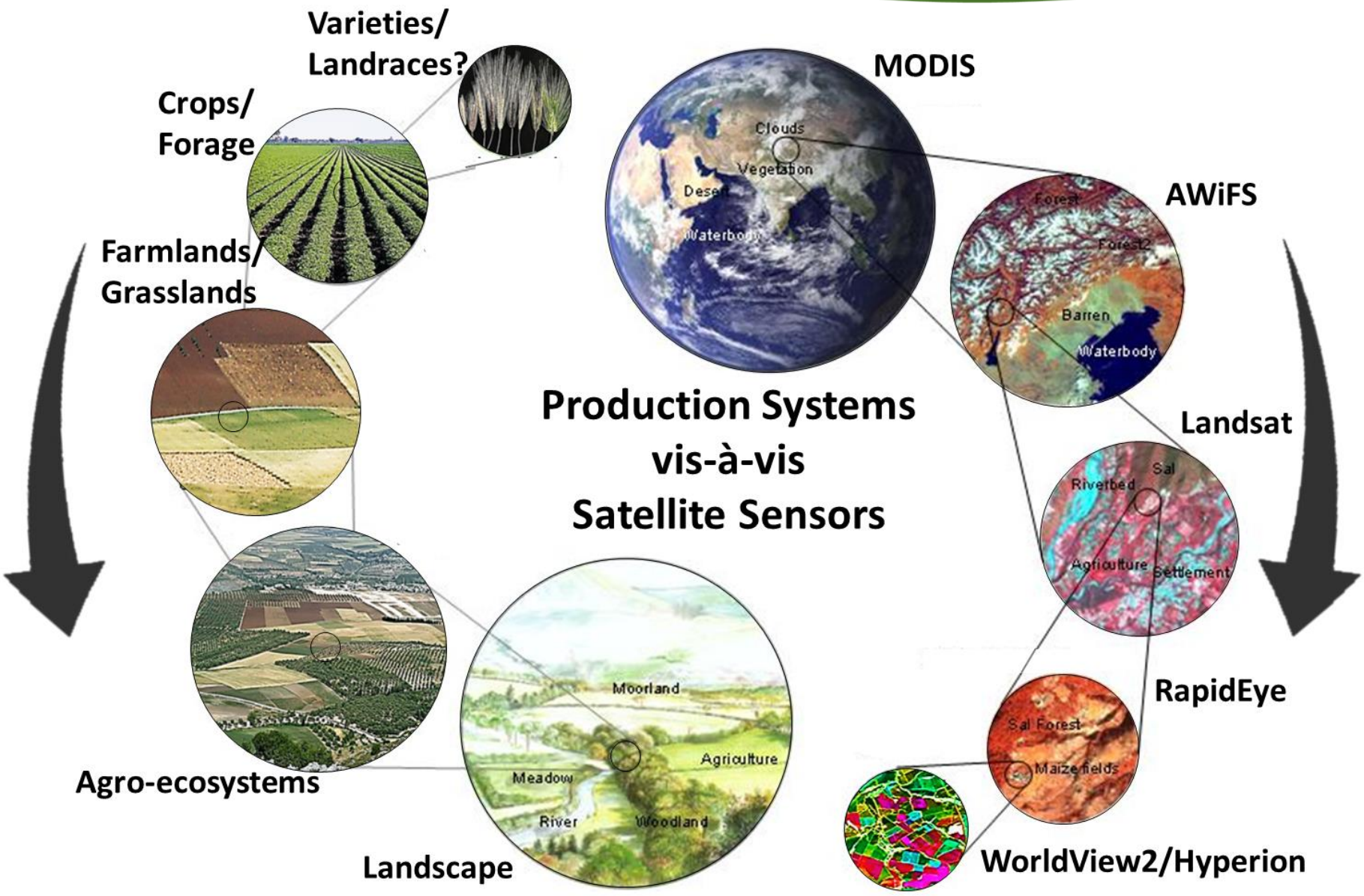
- -authorship
- -citation
- -quality

ICRAF data policy

www.nature.com/sdata/data-policies

Integrated System Approach

across the scale/domains



Data genesis in cross cutting themes

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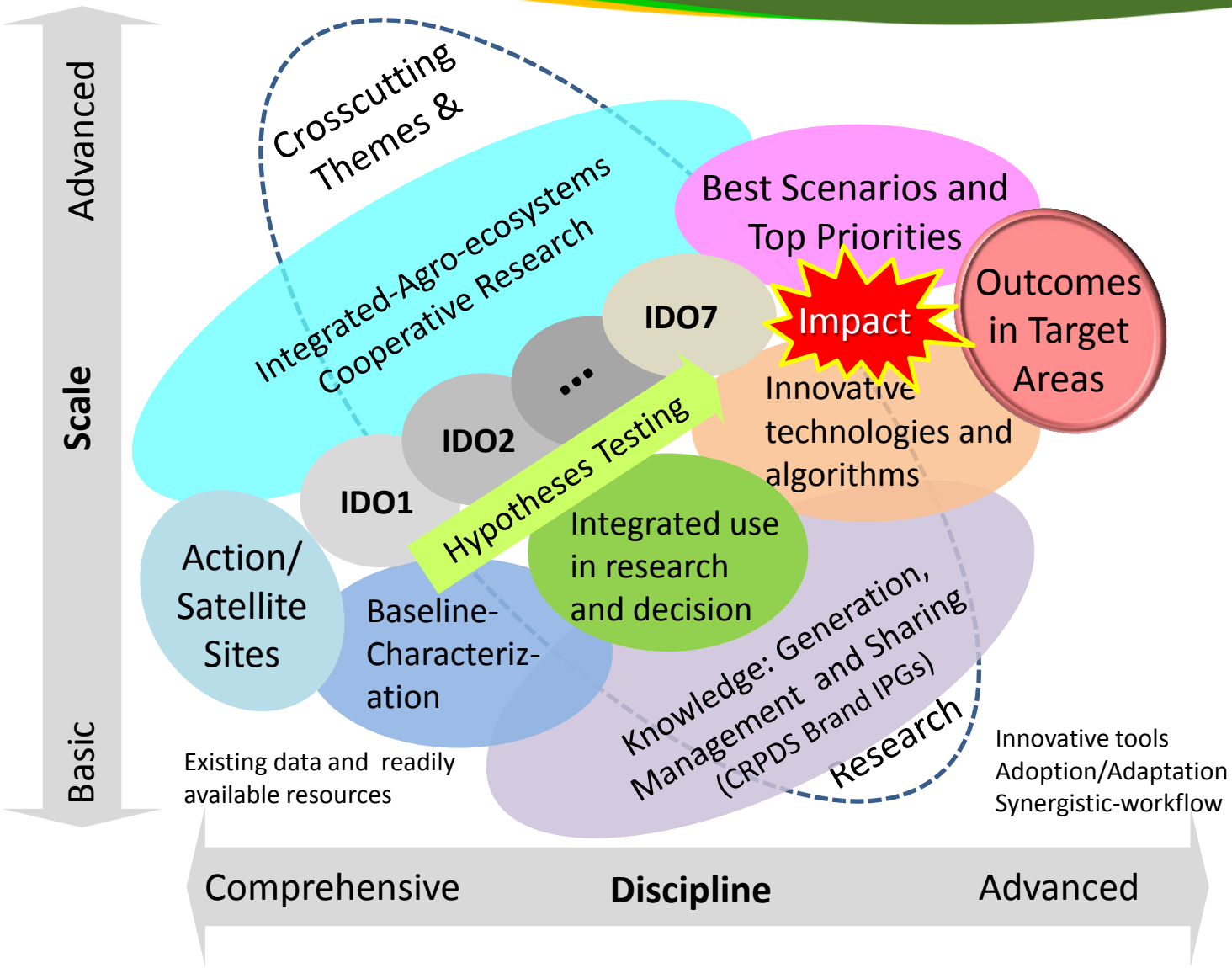
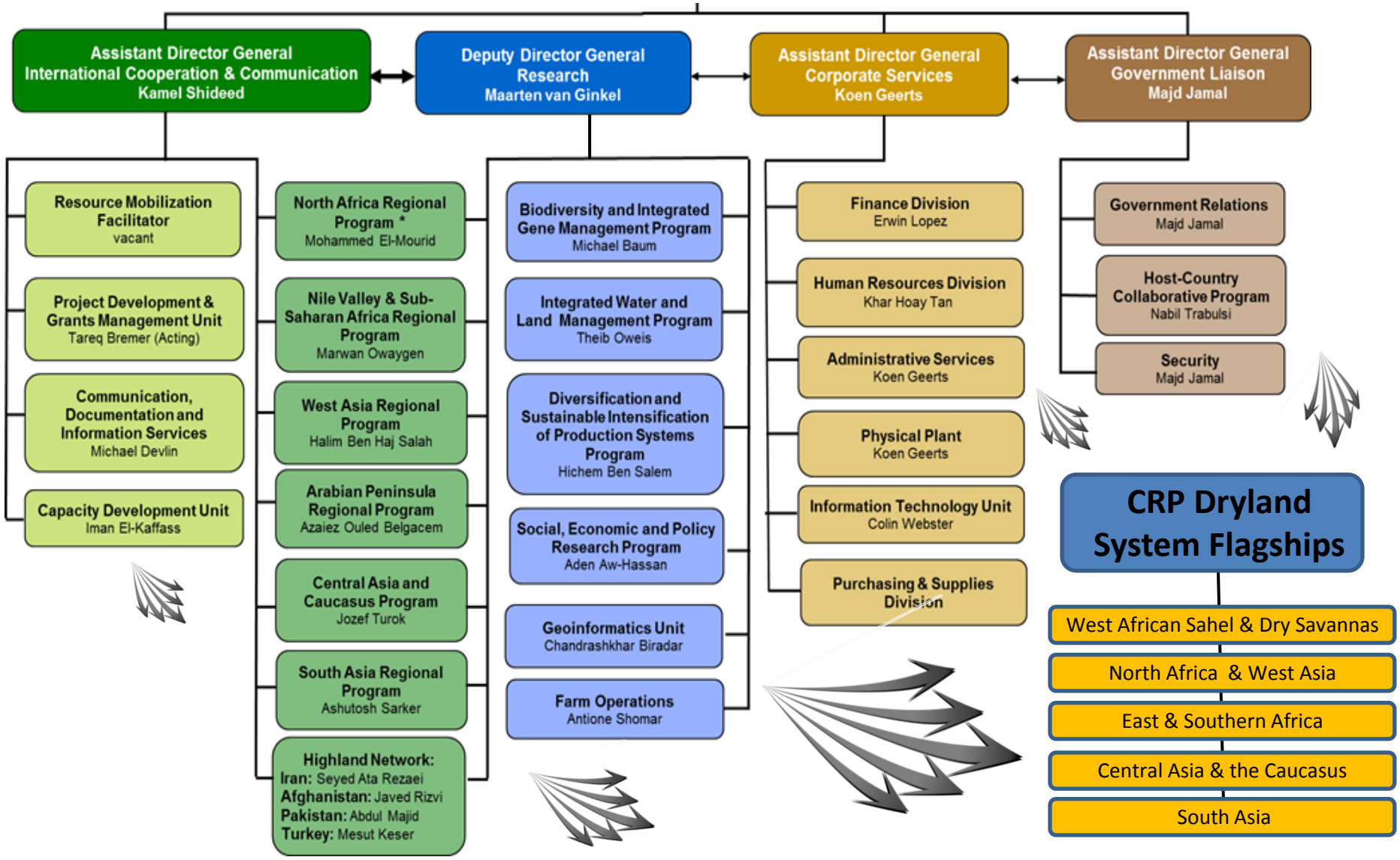
Pathway of Genesis



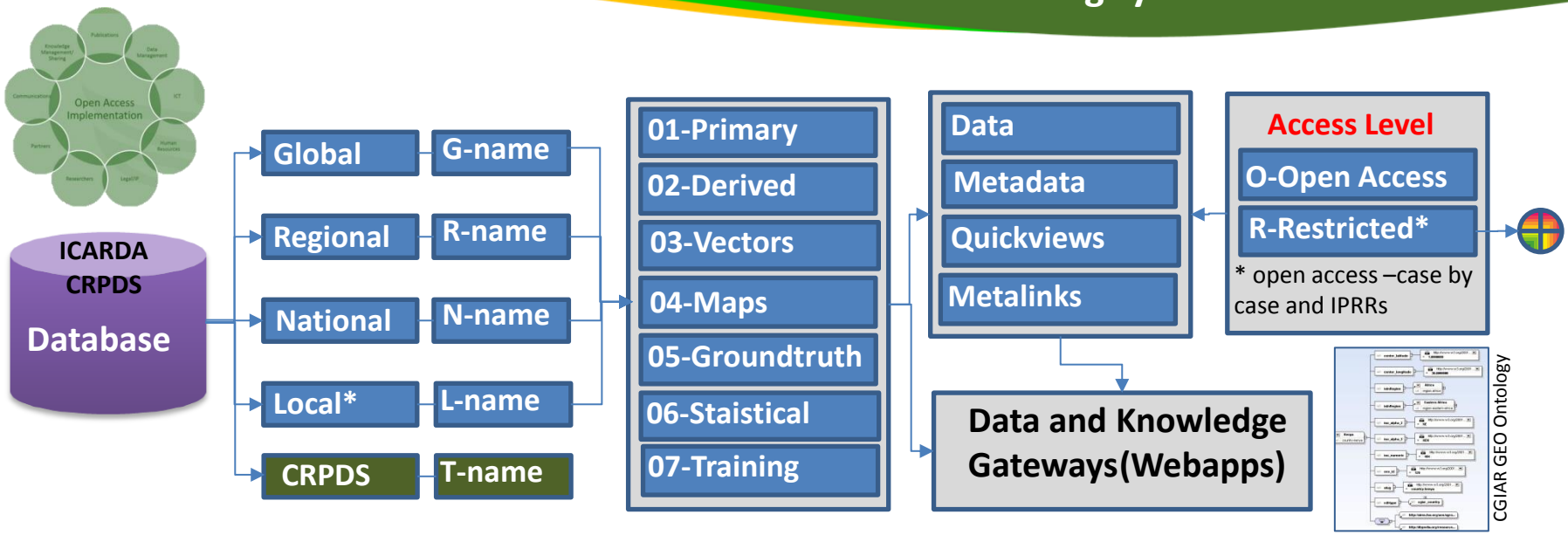
Data flow in the cross cutting themes

Internal (institutional) level



Structure of Centralized Data Warehouse

existing systems



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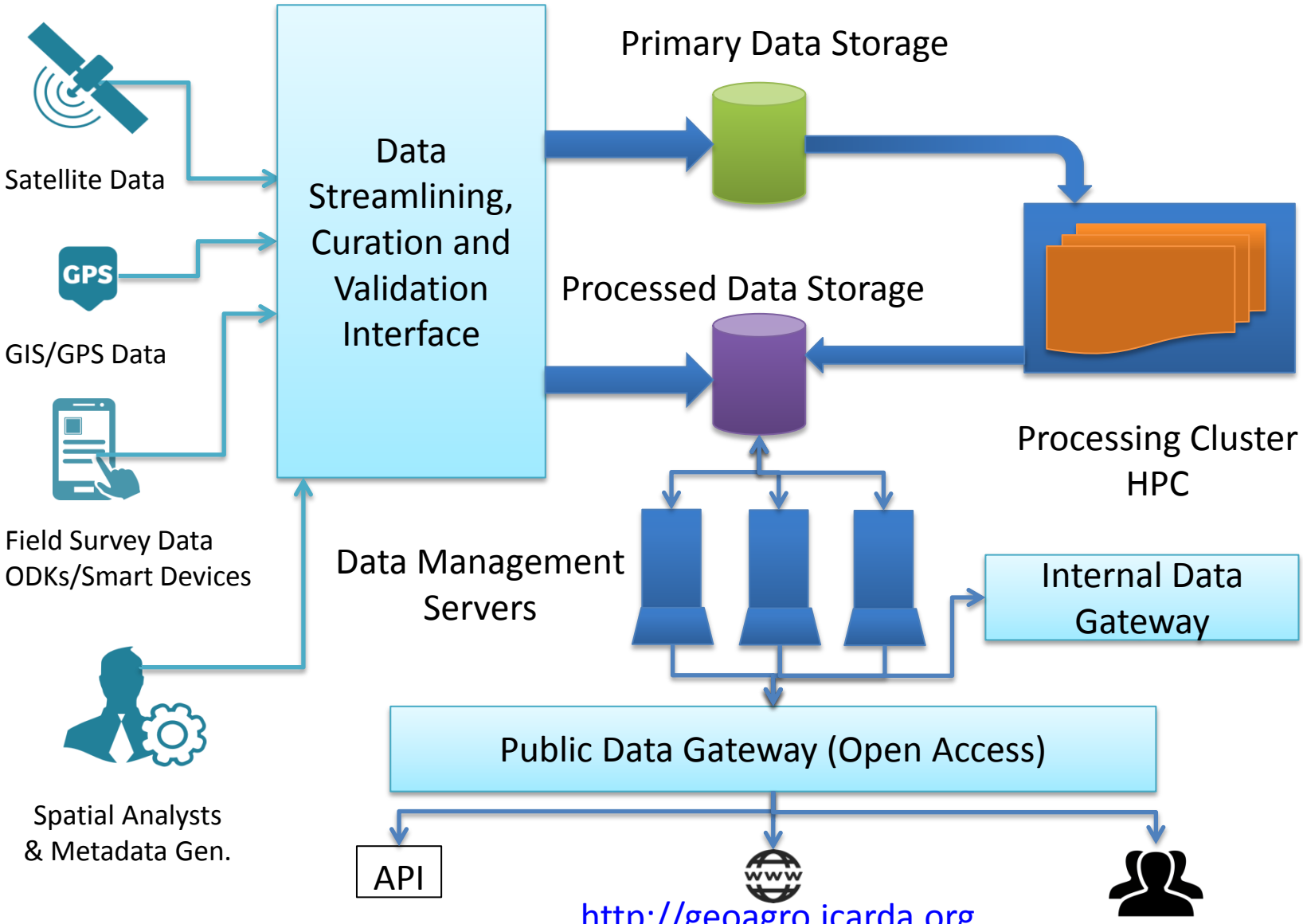
Structure of Centralized Data Warehouse

example of spatial data



Centralized Archiving System

Enterprise level, high fidelity and interoperability

Large Format HR printing and scanning

A3 HR printing

Printing Services

2xCPU (12 Cores)
512 GB RAM
Linux

Linux

8 Cores CPU
32 GB RAM
Win 2012

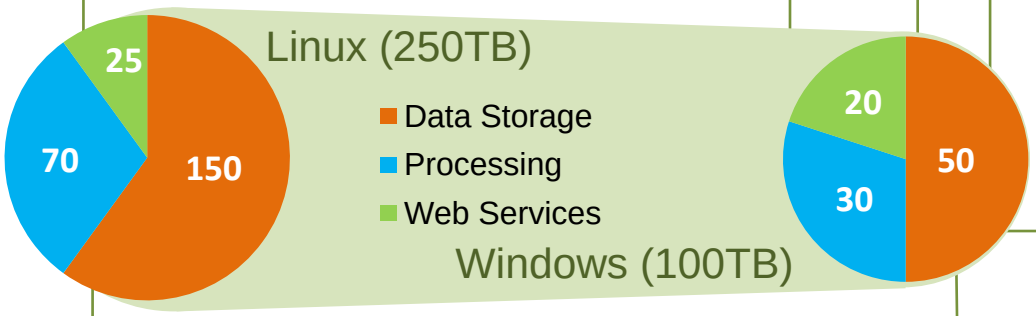
Windows

12 Cores CPU
48 GB RAM
Win 2012

Windows

Field Equipment

[Hyperspectral, HH2, SE-3500, NDVI Camera, Green Seeker, GPS Cameras, HH GPSUs, Field Data Kits, etc.]



[as of March 13, 2014]

Centralized Storage & Dissemination

GLOBAL REGIONAL NATIONAL LOCAL

Geospatial Data Gateways

Terminal Devices

Data Portals

Map Server

Hosted in UK

http://geoagro.icarda.org

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One-stop Gateway for Geospatial data, maps, research tools, services, technical support and outreach activities.

Geoinformatics

Spatial Solutions for Integrated Agro-ecosystems

Geospatial Science, Technology and Application (GeSTA) for integrated agro-ecosystems research towards ensuring food and environmental security for better livelihoods in Dry Areas.

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NFBSFARA : Applica...
Iraq Spatial
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RESEARCH PROGRAM ON Dryland Systems

Atlas of Action Sites

CRP Dryland Systems (1.1)

http://issuu.com/crpds/

Electronic Field Data Collection

ODKs-HH, GT, Livestock, etc.

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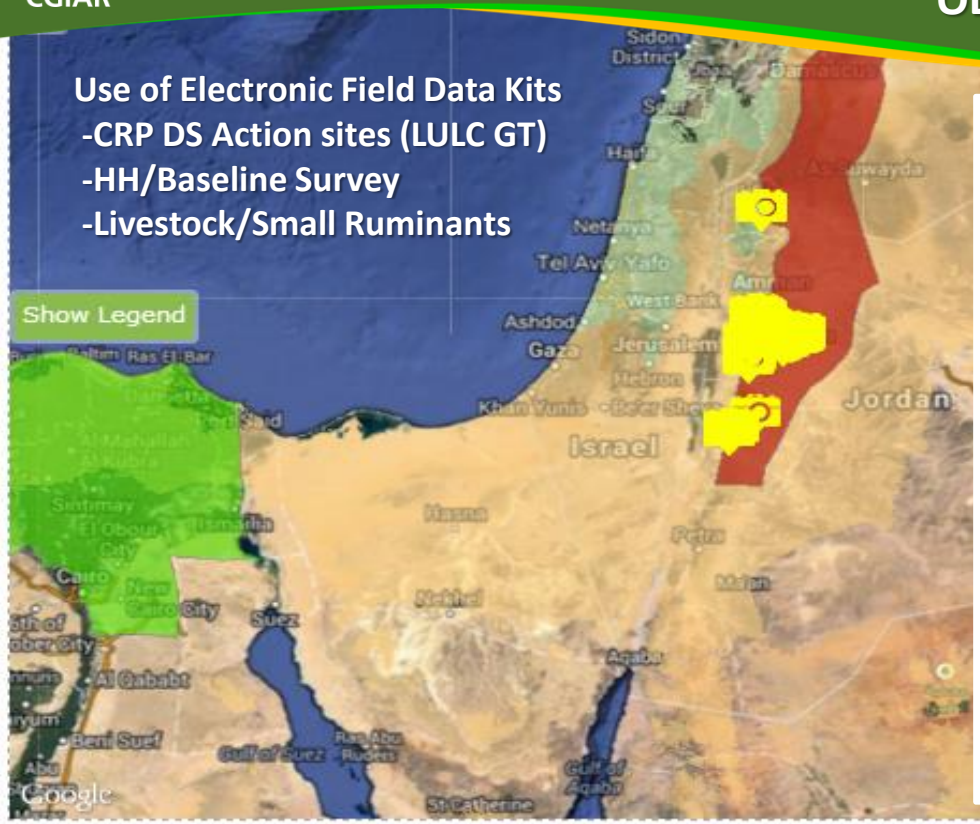
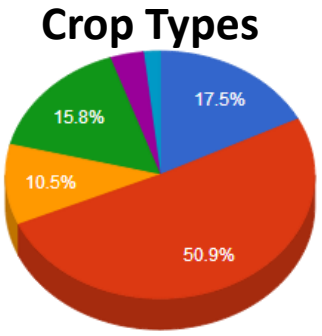
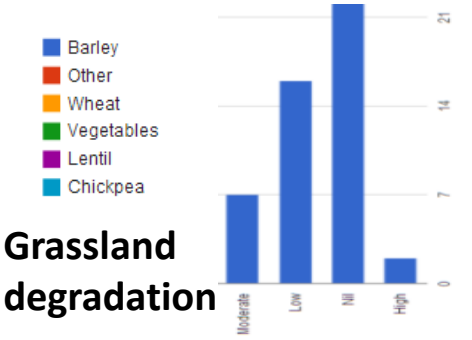
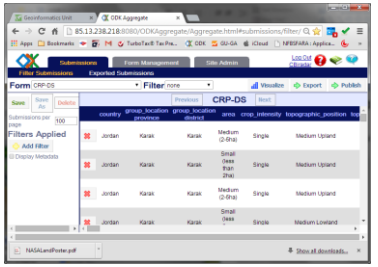






Spatial distribution



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Data Table

Show 10 entries

Search:

ID	Longitude	Latitude	Altitude	Date	Actions
371605dd-0898-4569-9142-9c62d45334a7	35.8632484451	32.5194345647	605.8000000000	2014-04-15 08:33:59	Zoom To | Show Photos
22a04847-4038-446d-982a-d423ca5074f9	35.8629390690	32.5175026199	632.8000000000	2014-04-15 08:33:10	Zoom To | Show Photos
0bfc95dc-60eb-485e-8b08-c0fb04b6410d	35.8665131126	32.5255138334	622.9000000000	2014-04-15 08:32:10	Zoom To | Show Photos
6408d4c6-160a-4fcd-92c6-fb3b8bbe25e8	35.8668613806	32.5261460384	620.2000000000	2014-04-15 08:25:04	Zoom To | Show Photos
217e9b46-a874-4c86-add1-e12f97131546	35.7929547038	31.5707051754	716.3000000000	2014-04-12 14:38:13	Zoom To | Show Photos
99be01b4-d63a-4e3f-acd9-5843e1475a04	35.7852115855	31.5556243295	529.7000000000	2014-04-12 14:09:12	Zoom To | Show Photos
a384d1d5-6f5e-4d26-b137-57d848caa8aa	35.7435396966	31.6170065152	827.7000000000	2014-04-12 13:25:57	Zoom To | Show Photos
2b470642-4087-457f-8620-9dc709892a0c	35.7441195566	31.6194619518	1067.2000000000	2014-04-12 13:14:35	Zoom To | Show Photos
43c485f4-05e0-48db-a8dd-f3b41d1c7d51	35.7869502436	31.6719519440	800.0000000000	2014-04-12 12:57:02	Zoom To | Show Photos
5300eed4-552c-49f4-a10b-5545c7b85362	35.7779035717	31.6694164183	833.1000000000	2014-04-12 12:53:47	Zoom To | Show Photos

Showing 1 to 10 of 57 entries

First Previous 1 2 3 4 5 Next Last

Citizen Science and Community RS

Electronic Field Data Collection & Sharing Tools

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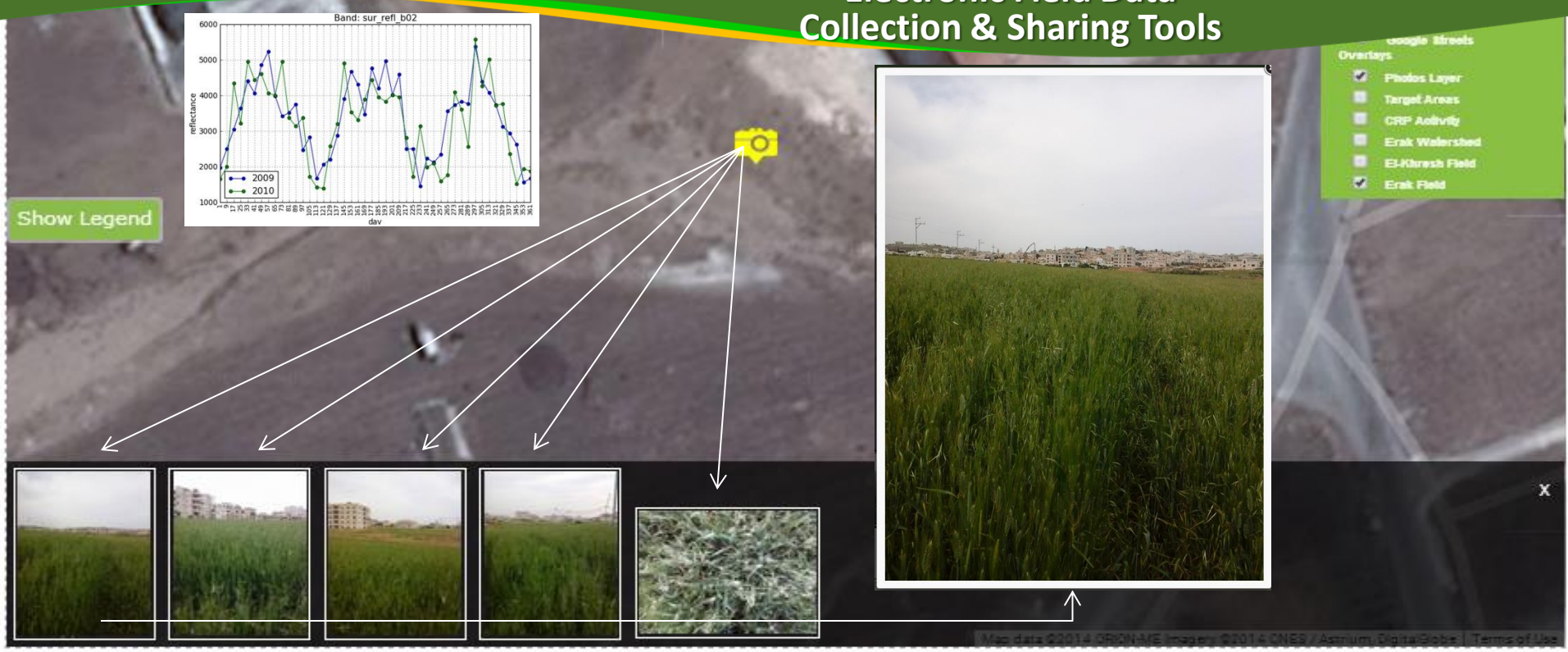

Data Table

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Search:

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22a04847-4038-446d-982a-d423ca5074f9	35.8629390690	32.5175026199	632.8000000000	2014-04-15 08:33:10	Zoom To | Show Photos
0bfc95dc-60eb-485e-8b08-c0fb04b6410d	35.8665131126	32.5255138334	622.9000000000	2014-04-15 08:32:10	Zoom To | Show Photos
6408d4c6-160a-4fcd-92c6-fb3b8bbe25e8	35.8668613806	32.5261460384	620.2000000000	2014-04-15 08:25:04	Zoom To | Show Photos
217e9b46-a874-4c86-add1-e12f97131546	35.7929547038	31.5707051754	716.3000000000	2014-04-12 14:38:13	Zoom To | Show Photos
99be01b4-d63a-4e3f-acd9-5843e1475a04	35.7852115855	31.5556243295	529.7000000000	2014-04-12 14:09:12	Zoom To | Show Photos
a384d1d5-6f5e-4d26-b137-57d848caa8aa	35.7435396966	31.6170065152	827.7000000000	2014-04-12 13:25:57	Zoom To | Show Photos
2b470642-4087-457f-8620-9dc709892a0c	35.7441195566	31.6194619518	1067.2000000000	2014-04-12 13:14:35	Zoom To | Show Photos
43c485f4-05e0-48db-a8dd-f3b41d1c7d51	35.7869502436	31.6719519440	800.0000000000	2014-04-12 12:57:02	Zoom To | Show Photos
5300eed4-552c-49f4-a10b-5545c7b85362	35.7779035717	31.6694164183	833.1000000000	2014-04-12 12:53:47	Zoom To | Show Photos

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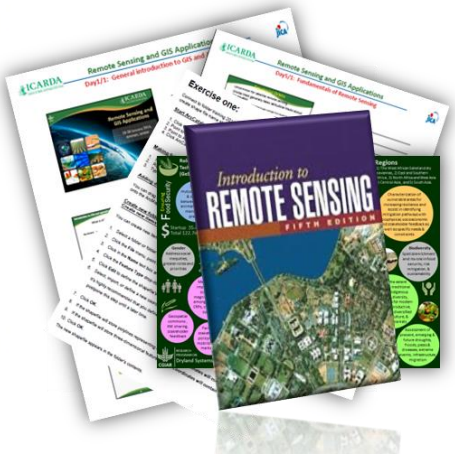
Training

Remote Sensing and GIS Applications

The course will provide an overview on theories, applications, and practices of modern geospatial information technologies, including Remote Sensing (RS), and Geographic Information Systems (GIS), Ground Truth Data and Geospatial Modeling. Key components of the course include lectures, discussions, interactive and hands-on computer exercises, and projects. For details please visit ICARDA Capacity Development

eMaterials



- Demo_data
  - KML
  - Raster
    - ali
    - aster
    - avhrr
    - avhrr_ndvi
    - Boulder
    - cup95av
    - elnino
    - enviout
    - extend
    - goes
    - info
    - landsat
  - Table
  - Vector
- Lectures_notes
  - Week1
    - Day1_GIS_am
    - Day1_GIS_pm
    - Day2_GIS_am
      - Agro-Geoinformatics_FoodSec
      - Geoinformtics_DrylandSystems
      - Mapping Rianfed_Agriculture
      - Remote_Sensing_USAP_EBook
    - Day2_GIS_pm
    - Day3_GIS_am
    - Day3_GIS_pm
    - Day4_WebGIS
    - Day5_SRS_am
  - Week2
- Practicles_notes
- Program_agenda
- Reading_materials

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Poverty
Agriculture
Similarity
Dryland Systems
Regional
National
GIS Datasets
Global
Climate
Soils
Poverty
Agriculture
Similarity
Dryland Systems
North Africa and West Asia
Central Asia
South Asia
Eastern and Southern Africa
West African Sahel and Dry Savannas
Regional
Suitability
Drought
Soil
Climate
Land Use/Land Cover
Central Asia
National
Water harvesting
Poverty Mapping
Suitability
Agro-Ecological Zoning
Database at Various Level and Scales

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Geoinformatics Solutions for Integrated Agro-ecosystems Research

GIS Data

Global
- Climate
- Soils
- Poverty
- Agriculture
- Similarity

Dryland Systems
Regional
National

Global - Poverty

Global drylands and agriculture resource poverty

Agricultural resource poverty is a structural component of environmental poverty, which is principally determined by climatic, topographic and soil constraints, as well as lack of water resources for irrigation, where needed. This global map shows a quantified estimate of the constraints to agriculture as imposed by the biophysical environment, using an index approach, scaled to a range 0-100, with 100 expressing the highest degree of resource poverty. The map has been compiled as a synthesis of individual thematic resource poverty maps (climate, topography, soils and irrigation water resources).

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Global drylands and soil resource poverty

The Soil Resource Poverty Index is the percentage of each grid cell occupied by problem soils. Problem soils include the following categories: saline soils, soils with high sodium content, shallow soils, sandy soils, soils with very poor profile development, soils with severe soil structural and/or textural limitations, soils with severe acidity, infertility or Al-toxicity problems, wetland soils, acid sulphate soils.

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Global drylands and topographic resource poverty

Landscapes that are strongly dissected, i.e. with high elevation differences, contain little land with agricultural value. Where such land exists, it is mostly located in narrow, often disconnected and poorly accessible valleys, On the other hand, flat landforms (plains and plateaux) in general have little land with unsuitable topography. Of course, even in flat areas unsuitable soils or even rock outcrops may occur, but these can be identified from the soil maps and will result in a high Soil Resource Poverty Index . Given the strict separation between topographic and soil resources, the methodology does not allow double counting.

The Topographic Resource Poverty Index (TRPI) is the percentage of each grid cell with slopes above 15%.
For areas between 60º N and 60º S, TRPI is obtained from the SRTM DEM by first identifying those areas with slopes > 15%, followed by aggregation of the result raster to a cell size of SRTM30 DEM (0.008333 decimal degrees), using summation as aggregation technique.

For areas above 60º N, SRTM data are not available and the TRPI was calculated by a relationship established between the TRPI and a low-resolution proxy indicator of slope, obtained from a 1-km DEM. The proxy indicator is the range, or the maximum elevation difference between neighbouring pixels, obtained from the global SRTM30 DEM. The range was for these areas converted into estimated values of TRPI by regression

Global Level Database

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Global
Dryland Systems
- North Africa and West Asia
- Central Asia
- South Asia
- Eastern and Southern Africa
- West African Sahel and Dry Savannas

Regional
National

CRP 1.1 Level Database

Maps in: North Africa and West Asia

Sort: date | title

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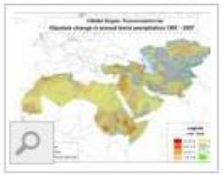

Absolute change in annual trend precipitation 1901-2007

This map is based on the Full Data Reanalysis Product Version 4 of the Global Precipitation Climatology Centre (GPCC). It has been obtained by linear regression fitted to the 107-year time series of annual precipitation of each 0.5x0.5 degree grid cell by the least-squares method and subsequent resampling to 0.008333 degree (about 1 km) spatial resolution. The map shows the average absolute change in mm/year as measured along the trend line between 1901 and 2007. With some exceptions (e.g. parts of the Black Sea coast and the rim of Central Asia mountains) the trend is negative in most of the region.

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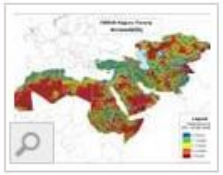

Accessibility to markets

This map shows travel time to cities with at least 50,000 inhabitants as an indicator of accessibility to markets.

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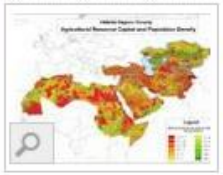

Agricultural Resource Capital and Population Density

A high-potential agricultural resource base can be insufficient for a large rural population, whereas areas with lower potential for agriculture but also lower population densities can be sustainable. This map links agricultural resource poverty to population density.

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Benchmark areas, action and satellite sites of the West Asia-North Africa target region

The map shows a Benchmark Area in West Asia representing SRT2-conditions, and one in North Africa typical for SRT3-conditions. The West Asia Benchmark Area contains two Action Sites. SRT2-AS1 contains the area where research is conducted on the Rangeland-livestock based system in Jordan and Syria.
SRT2-AS2 contains the area where research is conducted on the low-potential rainfed mixed crop-livestock based system.
The North Africa Benchmark Area contains one Action Site (SRT3-AS1 in Morocco) where research is conducted on sustainable intensification of

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- **Regional**
  - Suitability
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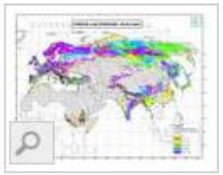
  - Central Asia
- **National**

Regional Level Database

Maps in: Soil

Sort: date | title

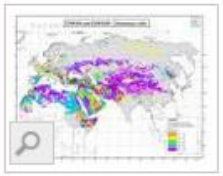
Items per page: 10 | 25 | 50 | Switch



Acid Soils in CWANA and Eurasia

Proportion of acid soils in the Central and West Asia - North Africa and Eurasia regions

Metadata | Request | Full Metadata



Calcareous Soils in CWANA and Eurasia

Proportion of basic reaction (calcareous) soils in the Central and West Asia - North Africa and Eurasia regions

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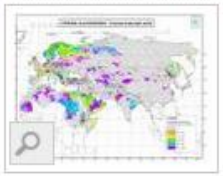

Coarse-textured Soils in CWANA and Eurasia

Proportion of coarse-textured soils in the Central and West Asia - North Africa and Eurasia regions

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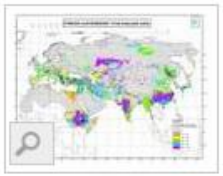

Fine-textured Soils in CWANA and Eurasia

Proportion of coarse-textured soils in the Central and West Asia - North Africa and Eurasia regions

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  - Poverty Mapping
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National Level Database

Maps in: Water harvesting

Sort: date | title

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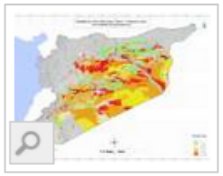

Suitability for Water Harvesting : Macro - Catchment system Areas Suitable for agricultural use

The modeling of suitability for macro-catchments is more complicated than for micro-catchments, because the run-off is generated outside the pixel to be evaluated, and is a largely unknown quantity. The evaluation of suitability for macro-catchments requires the separate evaluation of suitability for a 'catchment' area and for a 'use' area. The criteria for the 'catchment' and 'use' areas are different: - for the catchment area, strongly sloping land with soils that are shallow, rocky, or have poor infiltration capacity is preferable; - for the use area, level or gently undulating land with deep soils and no other limitations to agricultural use is preferable -...

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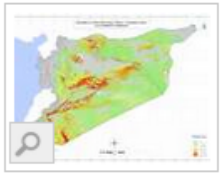

Suitability for Water Harvesting : Macro - Catchment system Areas suitable for catchments

The modeling of suitability for macro-catchments is more complicated than for micro-catchments, because the run-off is generated outside the pixel to be evaluated, and is a largely unknown quantity. The evaluation of suitability for macro-catchments requires the separate evaluation of suitability for a 'catchment' area and for a 'use' area. The criteria for the 'catchment' and 'use' areas are different: - for the catchment area, strongly sloping land with soils that are shallow, rocky, or have poor infiltration capacity is preferable; - for the use area, level or gently undulating land with deep soils and no other limitations to agricultural use is preferable -...

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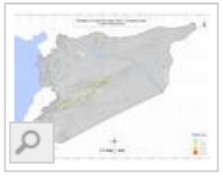

Suitability for Water Harvesting : Micro - Catchment system Contour bench terraces

The systems evaluated include 13 micro-catchment systems, based on combinations of 6 techniques and 3 crop groups, and one generalized macro-catchment system. The environmental criteria for suitability were based on expert guidelines for selecting water-harvesting techniques in the drier environments. They included precipitation, slope, soil depth, texture, and salinity, as well as land use/land cover and geological substratum. The dataset included interpolated surfaces of mean annual precipitation, a high-resolution digital elevation model, a soil map of Syria, a land use/land cover map of Syria, and a geological map of Syria. Contour-bench terraces are constructed on very st...

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Suitability for Water Harvesting : Micro - Catchment system Contour ridges, field crops

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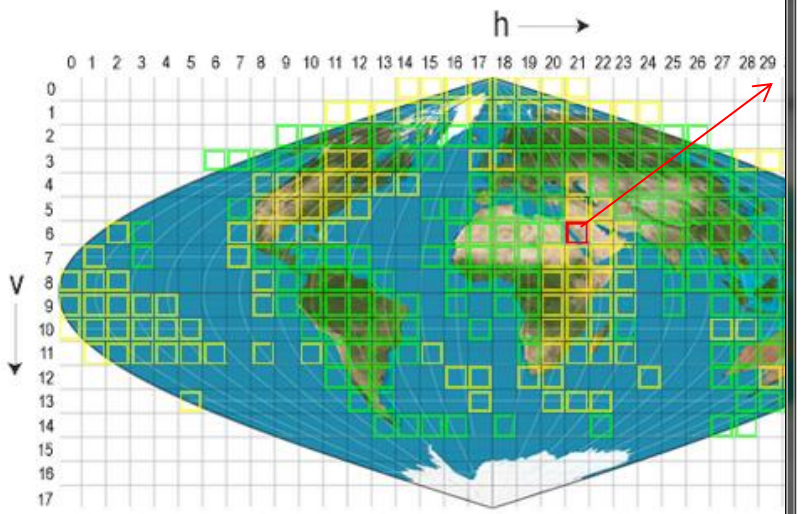
Dataset

MOD09A1 MODIS/Terra Surface Reflectance 8-Day L3 Global 500m ISIN Grid

2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010

MODIS Global Datasets (via Sinusoidal Grid)



Click on a tile to see data inventory

Viewing: mod09a1 | Horizontal: 21 | Lat min: 20 | Lon
Year: 2000 | Vertical: 6 | Lat max: 30 | Lon max: 46.187

- Tiles are 10 degrees by 10 degrees at the equator.
- The tile coordinate system starts at (0,0) (horizontal tile number, vertical tile number) in the upper left corner and proceeds right (horizontal) and downward (vertical). The tile in the bottom right corner is (35,17)

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Data Inventory for Tile h21v06 - Google Chrome

geoagro.icarda.org/tiles/tile-h21v6.html

Data Inventory for Tile h21v06

Product	Year	Days	Missing	Total
MCD43A4	2000	361	1-353	1
	2002	1	9-361	1
MOD09A1	2000	57-361	1-49	39
	2001	1-161, 177-361	169	45
	2002	1-361		46
	2003	1-361		46
	2004	1-361		46
	2005	1-361		46
	2006	1-361		46
	2007	1-361		46
	2008	1-361		46
	2009	1-361		46
	2010	1-361		46
	2011	1-321, 337-345, 361	329, 353	44
	2012	1-33, 49-273, 289-297, 313-329, 345-361	41, 281, 305, 337	42
	2013	1-17, 33-281	25, 289-361	35
	2000	57-361	1-49	39
	2001	1-161, 177-361	169	45
	2002	1-361		46
	2003	1-361		46
	2004	1-361		46

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Climate Database Query cell
-select
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Country * : Lebanon

Station * : ICARDA_TERBOL (SY35CRD2)

Elements *
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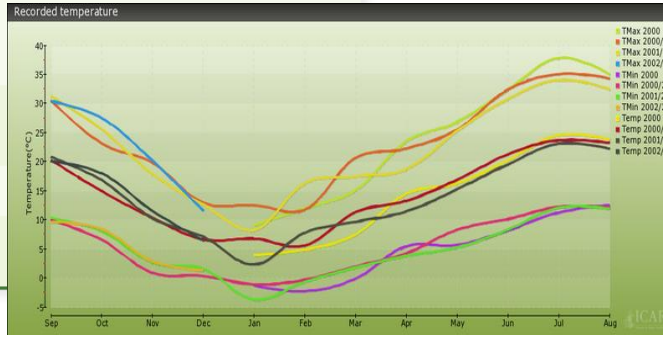
- All Elements
- Temperature, air, max
- Temperature, air, min
- Temperature, air, dly mean
- Precipitation, dly totall
- Temp, dew pt max

Start Period * : Month: 01 Year: 2011

End Period * : Month: 12 Year: 2013

Search



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Element	Year	Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Temperature, air, max	2011	1	11	10	13	9.5	12	13	9.5	9	11	11	13	13	14	11	15	11	9.5	15	13	14.5	15	15	16
Temperature, air, max	2011	2	9	9	10	6.5	9	9.5	9	11	12	13	12	13	11	9	9	8	13	17	19	10	11.5	16	16
Temperature, air, max	2011	3	15	19	19	19.2	18.6	19.5	16	12.5	7	6	8	11	14	17	19	21	22	23	21.5	22.2	20	14	14
Temperature, air, max	2011	4	25.8	22.6	19	14	12	16	17	17.8	17.4	14.8	16	11	15	20.2	21	25.4	27.6	29	22	18	17.5	14.8	15.6
Temperature, air, max	2011	5	19	23	24	26	26	22.6	20	21.8	24	25	24.5	25	15	16	20	24	27	27	25	26.8	24.6	25.4	27
			30	29.5	30	31	31	29.5	26	26	24	22	28	32	31	29	30	31	34	34	33				

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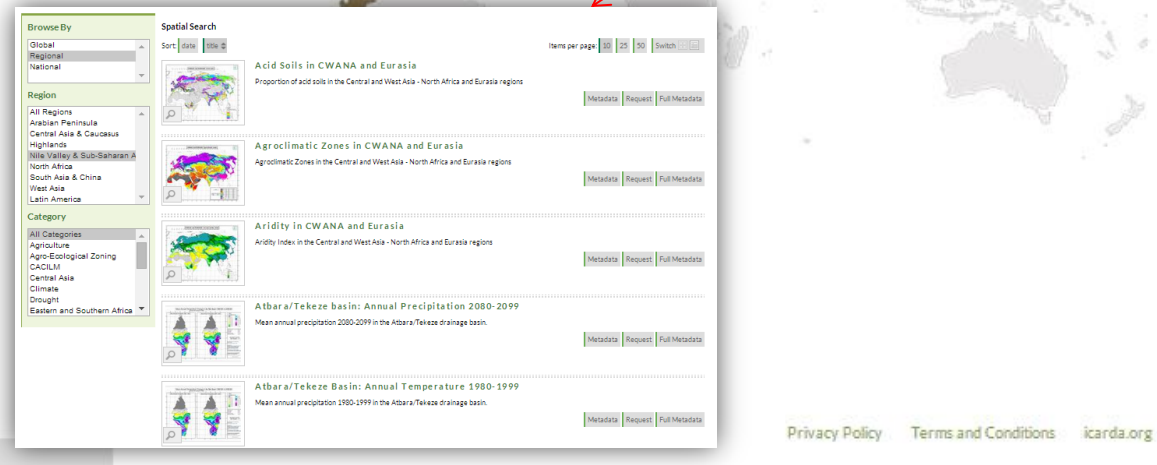

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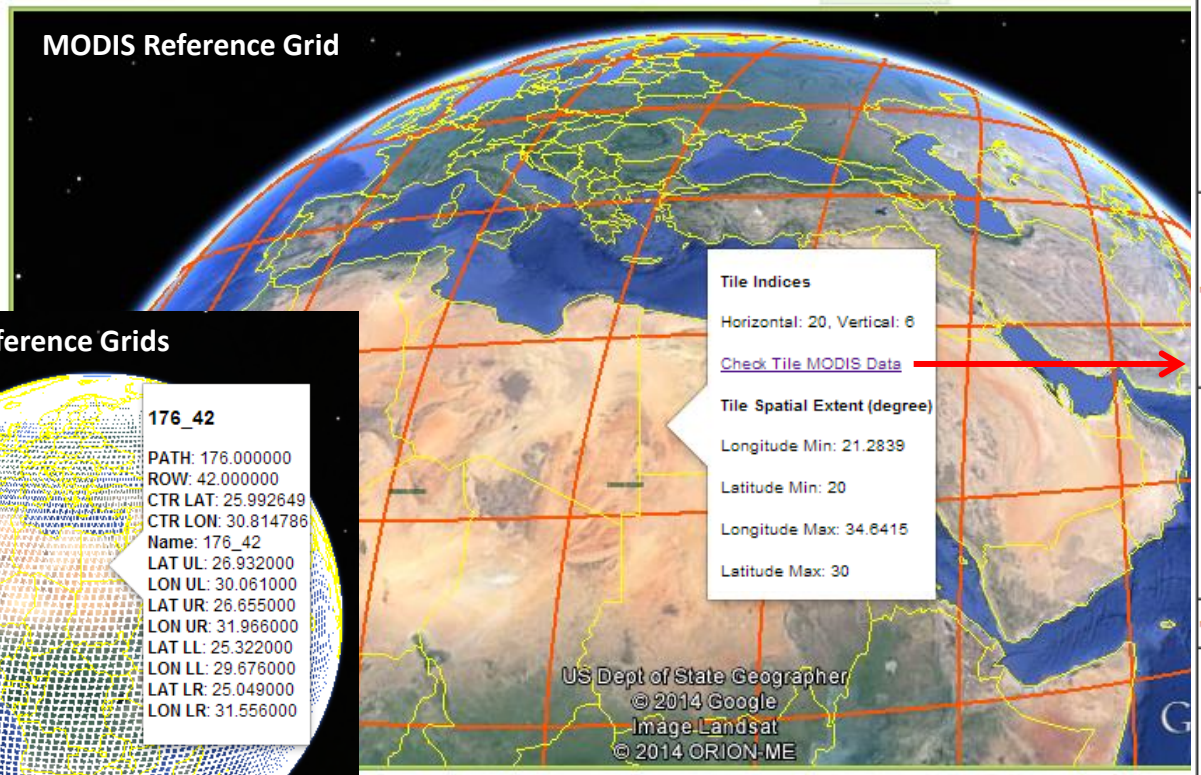

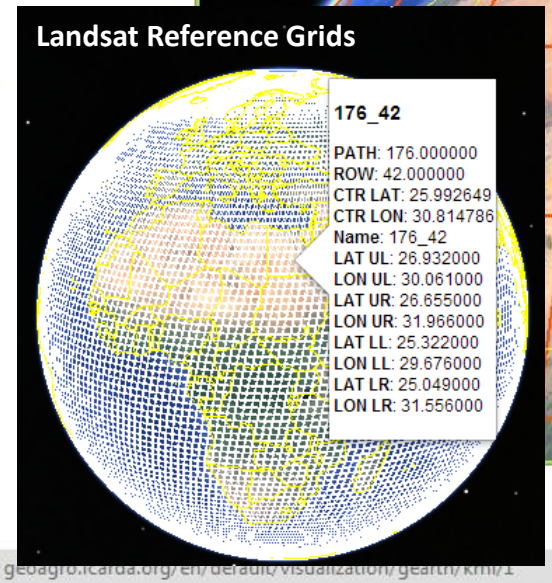

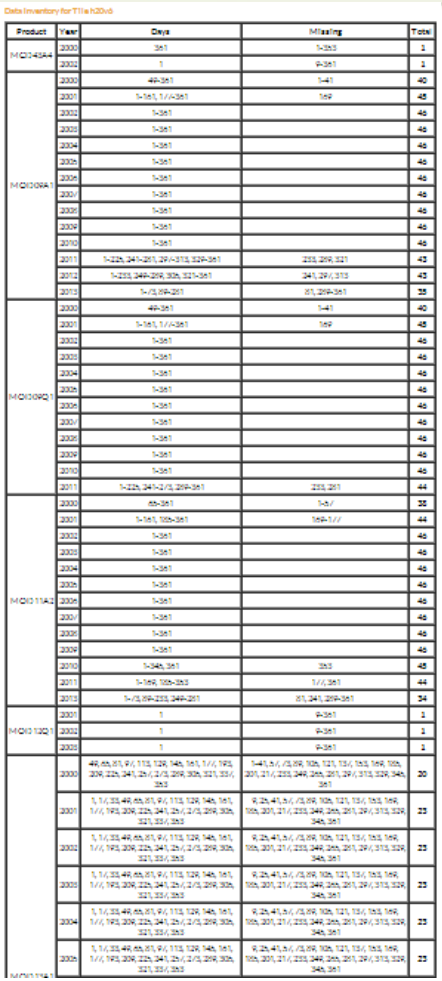

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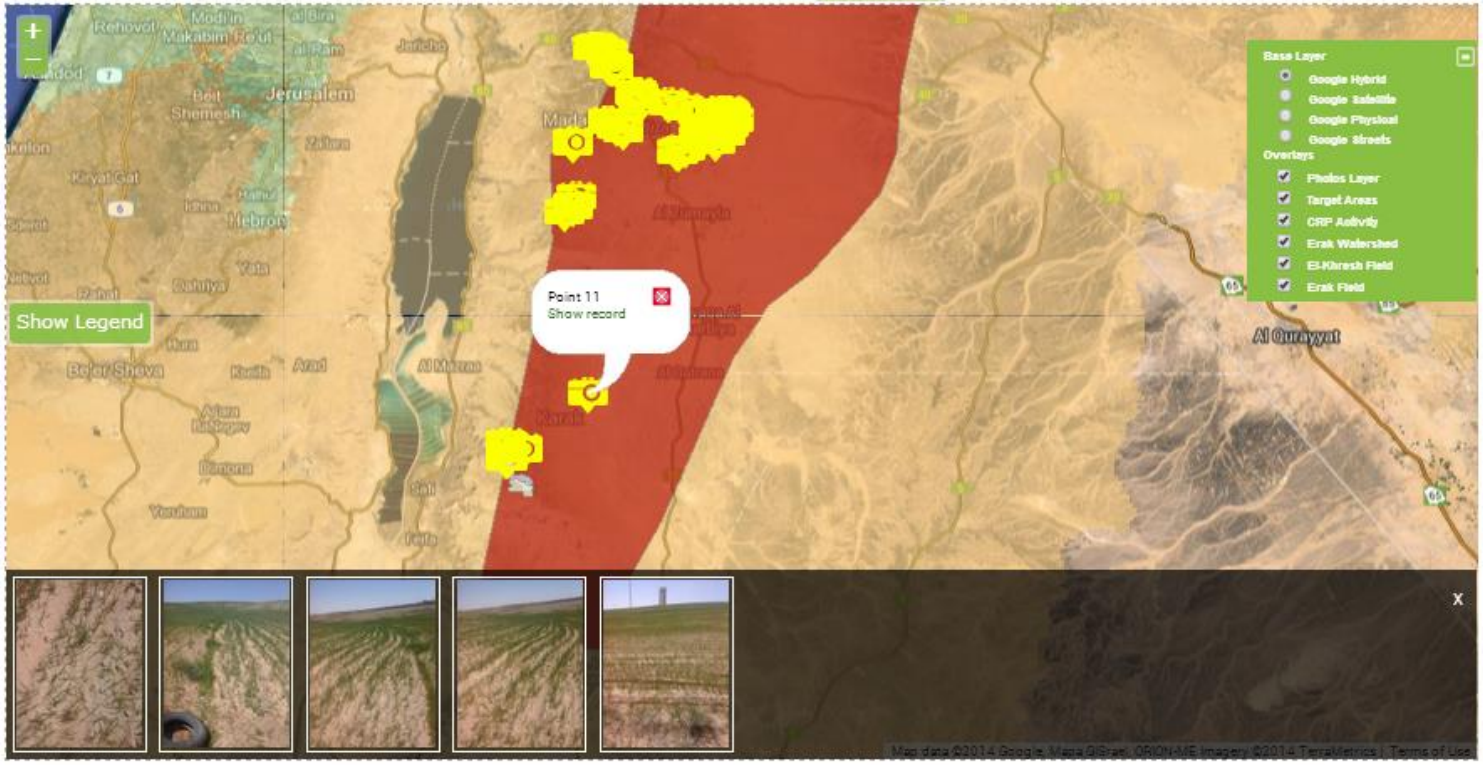

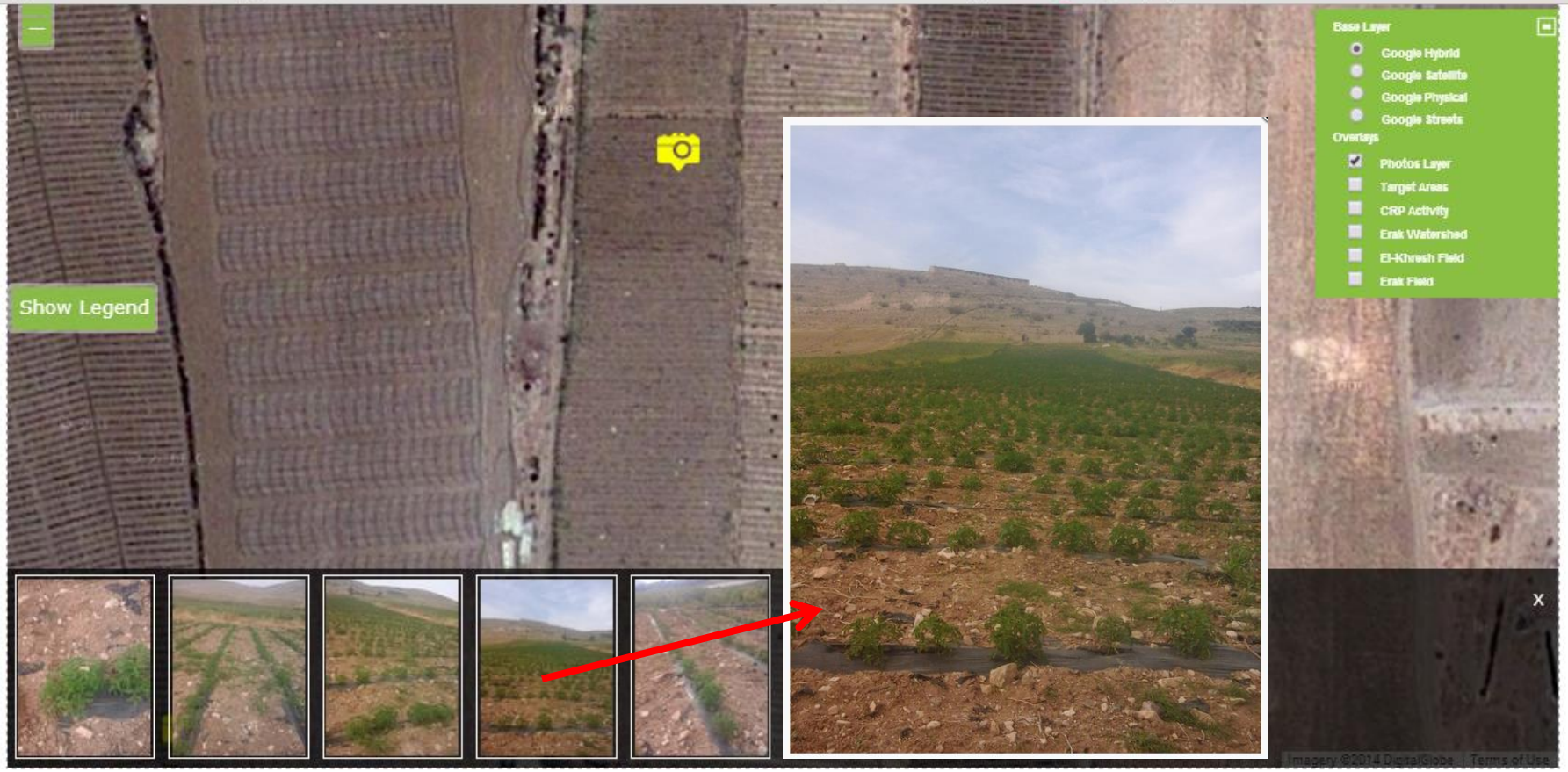

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ID	Longitude	Latitude	Altitude	Date	Actions
371605dd-0898-4569-9142-9c62d45334a7	35.8632484451	32.5194345647	605.8000000000	2014-04-15 08:33:59	Zoom To | Show Photos
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99be01b4-d63a-4e3f-acd9-5843e1475a04	35.7852115855	31.5556243295	529.7000000000	2014-04-12 14:09:12	Zoom To | Show Photos
a384d1d5-6f5e-4d26-b137-57d848caa8aa	35.7435396966	31.6170065152	827.7000000000	2014-04-12 13:25:57	Zoom To | Show Photos
2b470642-4087-457f-8620-9dc709892a0c	35.7441195566	31.6194619518	1067.2000000000	2014-04-12 13:14:35	Zoom To | Show Photos

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Integrated Water and Land Management Program

To assist the targeting of water saving technologies, the GISU is developing, in association with the IWLMP, methodologies for assessing the biophysical potential for water harvesting and supplemental irrigation. Map products are currently available for Syria (Fig. 1) but outscaling to the level of all dryland areas is planned in the case of micro-catchment water harvesting techniques.

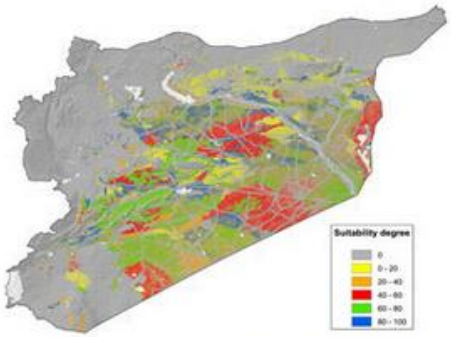

Fig.1. Suitability for water harvesting in Syria, micro-catchment systems, small-runoff basins, tree crops

In collaboration with the Plant Stress and Water Conservation Laboratory of the USDA Agricultural Research System in Lubbock, Texas, a geospatial tool, the ICARDA Agroclimate Tool, was developed, which predicts the risk of climatic stress (drought, heat,cold) for specific environments in CWANA (Fig.2).

Database specific to each research programs, and projects

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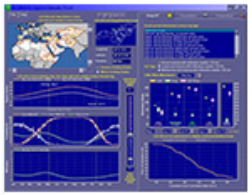

The ICARDA Agro-Climate Tool

The ICARDA Agro-Climate Tool (hereafter 'the application') is a Visual Basic (6) program that can be run on Windows 98, 2000, and XP operating systems. It should be installed on a PC with a Pentium III or better microprocessor and at least 230 Mbytes of available hard disk space. Monitor screen resolution should be at least 1024 X 768 pixels but no more than 1920 X 1440 pixels. Once installed (download here), instructions for the application's u

The application's primary daily va modified GEM6 (Hanson, et al., 19 net outgoing long-wave radiation, and reference grass evapotran Computing Crop Water Requirements' (Allen et al., 1998). Crop e coefficient method.

Bibliography

Allen, R.G., Pereira, L.S., Raes, D., and Smith,M. 1998 Crop Evapotr Agriculture Organization of the United Nations, Rome, Italy. 300p

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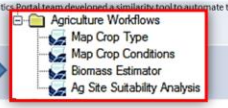
Hanson, C.L., Cummings, A., Woolhiser, D.A., and Richardson, C.W. Department of Agriculture, Agricultural Research Service, ARS-1

Download program here

Download Technical Description Here

Tools	Short Description
GeoAgro Portal	part of ICARDA Geoinformatics Unit integrated systems research portfolio. This online resource provides comprehensive information encompassing all geospatial genres in a streamlined system: remote sensing, GIS, and spatial modeling.
METIS	Intranet Database stores all ICARDA climatic data, since 1979 till 2014, also it stores data collected from many other sources like FAOClim, GSOD, GHCN and others, this system also provides a helpful tools in order to do search and to manage data repository.
Soil Database	Intranet Database used to store soil samples characteristics, these samples were collected from many location and later processes and analyzed in ICARDA laboratories.
AgroClimate	The application's primary daily variables (daily minimum temperature, daily maximum temperature, precipitation) were generated by modified GEM6 (Hanson, et al., 1994)weather generator code. Secondary variables (daily dew point temperature, short-wave surface radiation, net outgoing long-wave radiation, and reference grass evapotranspiration) were derived from primary variables using algorithms drawn from the FAO's 'Guidelines for Computing Crop Water Requirements' (Allen et al., 1998). Crop evapotranspiration values were then derived from the reference grass ET values using the FAO-56 single crop coefficient method.
CLIMAP & ICARDA Station Data App	Climatic data are usually provided in the form of station data, hence the information is very location-specific. However, in most cases, whether it concerns natural resource management or crop breeding, climatic information is needed for locations away, often quite far, from the climatic stations, or has to be area-specific. ICARDA Station data query and download tools
ArcCD	ArcGIS script used to do a simple downscaling process, this tool works based on Zonal Statistics and Raster Resample ArcGIS tools, and till now it's used in order to generate more than 2000 downscaled surfaces.
Arc Tools (multiline raster calc, multiclip, batch processing, etc.)	The Raster Calculator provides you a powerful tool for performing multiple tasks. You can perform mathematical calculations using operators and functions, set up selection queries, or type in Map Algebra syntax. Inputs can be raster datasets or raster layers, coverages, shapefiles, tables, constants, and numbers. This tool provides easy way to clip multi layers based on specific mask, the tool advantage is that it accepts both feature and raster layers and call the appropriate built in tool, then exports all results into one folder.
ODKs/eFeild	Custom ODK forms and kit for various field and HH, baseline surveys based on the Google ODK and Android tabs
ArcGIS netCDF	NetCDF is one of the most common formats for climatic data, and now all centers are distributing their data in this format, extracting surfaces from multidimensional files used to be a challenging process for GIS people, this tool came to help people in extracting time series surfaces from netCDF file.
Similarity Mapping	In order to manage the increasing amount of similarity mapping requests, Geoinformatics Portal team developed a similarity tool to automate the mapping process, this process consists of three parts: 1. Climate Similarity, 2. Soil Similarity, 3. Landform Similarity
Ag Workflows	ENVIU and IDL based automatic/semi-automatic Agriculture Workflows to map 1. Crop Types 2. Crop Health/Condition 3. Biomass Estimation and 4. Ag suitability analysis



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Geoinformatics Solutions for Integrated Agro-ecosystems Research

Outreach
- Tools & Apps
- Methods & Models
- Techs & Tips
- Conferences & Workshops
- Useful Links

Techs & Tips

Satellite Sensors

High resolution (Upto - 1 m)

Satellite Senors	Pan resolution (m)	Multispectral resolution (m)	Bands	Swath width (km)
GEOEYE-1	0.41	1.65	Blue, Green, Red and Near Infrared + Pan	15.2 /9.44 Miles at nadir
IKONOS	0.82	3.2	Blue, Green, Red and Near Infrared + Pan	11.3 at nadir, 13.8 at 26o off-nadir
IKONOS stereo	0.8 - 1	3.28	Blue, Green, Red and Near Infrared + Pan	11.3 at nadir, 13.8 at 26o off-nadir
PLEIADES-1A	0.5	2, color 0.5	Blue, Green, Red and Near Infrared + Pan	20 at nadir
PLEIADES-1B	0.5	2, color 0.5	Blue, Green, Red and Near Infrared + Pan	20 at nadir
Quick Bird	0.61	2.44	Blue, Green, Red and Near Infrared + Pan	16.5 at nadir
WorldView-1	0.46	-	Pan	17.6 at nadir
WorldView-2	0.46	1.8	Pan, Coastal, Blue, Green, Yellow, Red, Red-Edge, NIR1, NIR2	16.4 at nadir

Technical information, trips, for example what are latest satellite sensors for farm to regional scales >>

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Welcome: Chandrashekhar Biradar !

Database access stats

Map Requests

Request NO.	Requested Map	Request Date	Status	Download Link
47	Central Asia and Xingjiang Province (China) Annual minimum temperature 2011-2040 A2 Scenario	Apr 23, 2014 4:53:15 PM	Approved	Download
45	Absolute change in annual trend precipitation 1901-2007	Apr 22, 2014 11:11:24 AM	Approved	Download
37	Absolute change in annual trend precipitation 1901-2007	Jun 4, 2014 10:55:33 AM	Approved	Download

User Map Requests

Request NO.	User	Requested Map	Request Date	Status	Actions
51	j.f.trinhtan@cgiar.org	Drylands and SRT types	Apr 30, 2014 7:46:42 PM	Approved	
50	j.f.trinhtan@cgiar.org	Agricultural Resource Capital and Population Density	Apr 30, 2014 7:45:32 PM	Approved	
49	j.f.trinhtan@cgiar.org	Absolute change in annual trend precipitation 1901-2007	Apr 30, 2014 7:44:55 PM	Approved	
48	j.omary@cgiar.org	Abudeleik (Egypt) Similarity in soil patterns	Apr 28, 2014 7:42:54 AM	Approved	
47	c.biradar@cgiar.org	Central Asia and Xingjiang Province (China) Annual minimum temperature 2011-2040 A2 Scenario	Apr 23, 2014 4:53:15 PM	Approved	
46	j.omary@cgiar.org	Central Asia and Xingjiang Province (China) Annual maximum temperature Current	Apr 23, 2014 3:09:58 PM	Approved	
45	c.biradar@cgiar.org	Absolute change in annual trend precipitation 1901-2007	Apr 22, 2014 11:11:24 AM	Approved	
44	ammarabbas1984@hotmail.com	Soil salinity	Apr 21, 2014 6:20:14 PM	Approved	
43	ammarabbas1984@hotmail.com	Farming systems	Apr 21, 2014 6:12:47 PM	Approved	
42	ammarabbas1984@hotmail.com	Agricultural Resource Capital and Population Density	Apr 21, 2014 6:10:37 PM	Approved	

Thank you

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If you have good data, love it

publish it and set it free!