JECAM Science Meeting

SIGMA Overview and Status

22 July 2014, Ottawa, Ontario, Canada

Sven Gilliams

Outline

- SIGMA
  - Facts
  - Structure
  - Sites
  - Data
    - Remote Sensing
    - In Situ
    - Challenges
- Points for Discussion

SIGMA
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Facts

- Started 1 November 2013 – 30 March 2017 (42 Months)
- Agriculture AND Environment
- GEO and GEOGLAM
- 22 partners, 17 countries
  - VITO, CIRAD, JRC, IIASA, Alterra, RADI, NMSC, DEIMOS, GeoSAS, RCMRD, Aghrymet, RCMRD, Sarvision, Sarmap, INTA, Geoville , UCL, EFTAS, FAO, ITC, GISAT, IKI, SRI
- 9 M EUR (total EC contribution)
- http://www.geoglam-sigma.info

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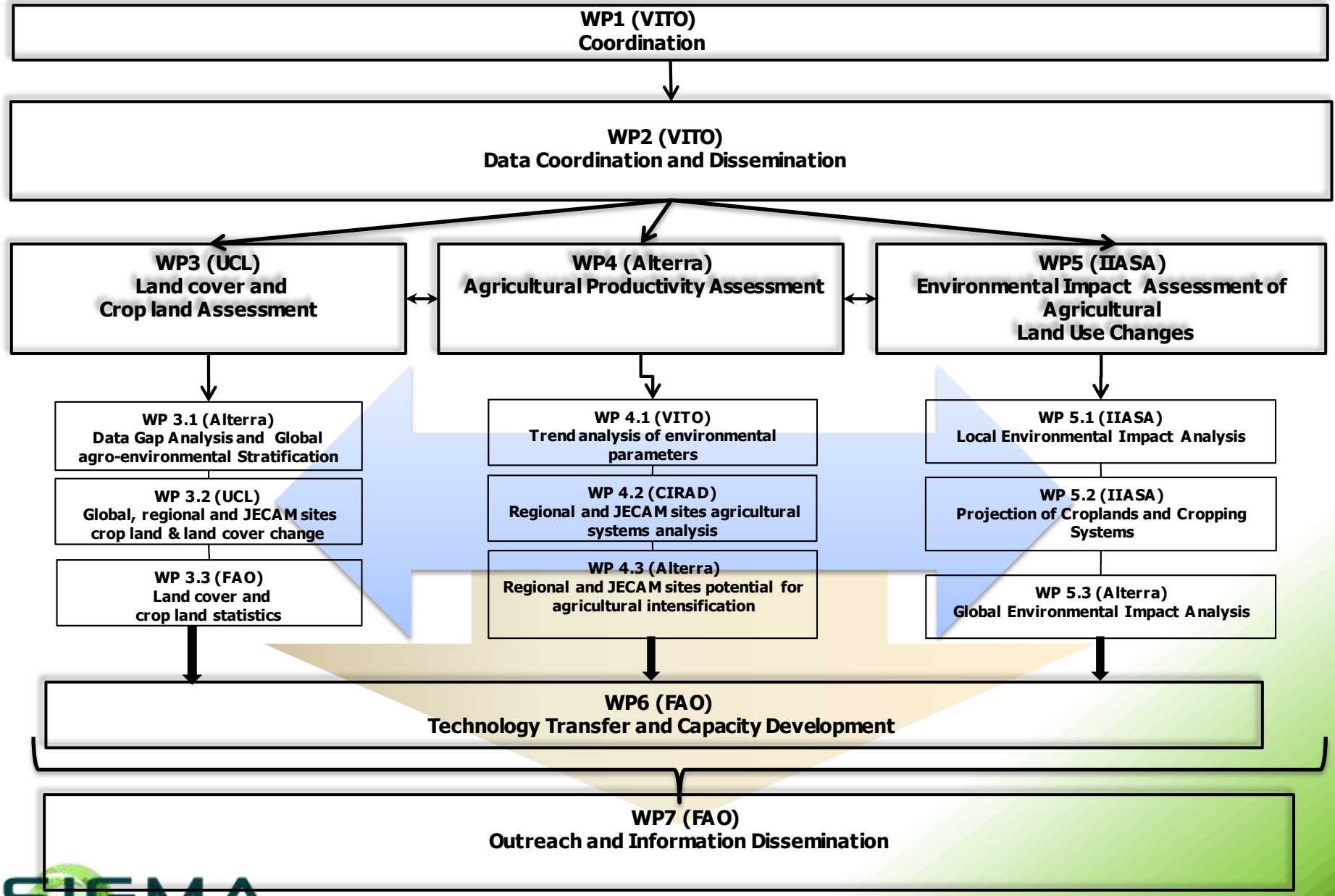
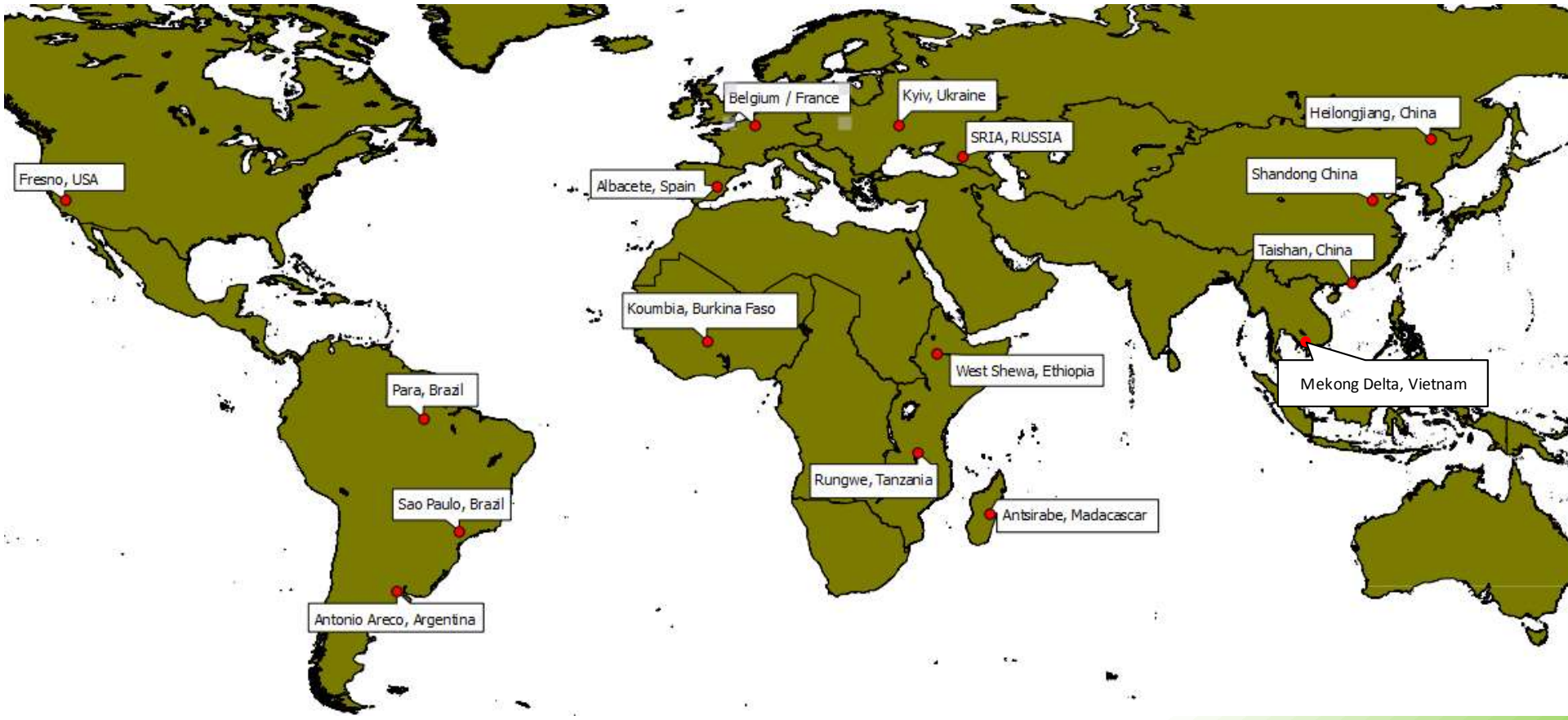


Blue (horizontal) arrow indicates close collaboration and exchange between WP 3,4,5. Outputs of WP 3,4,5 and 6 will feed into WP 7 on outreach

SIGMA SITES



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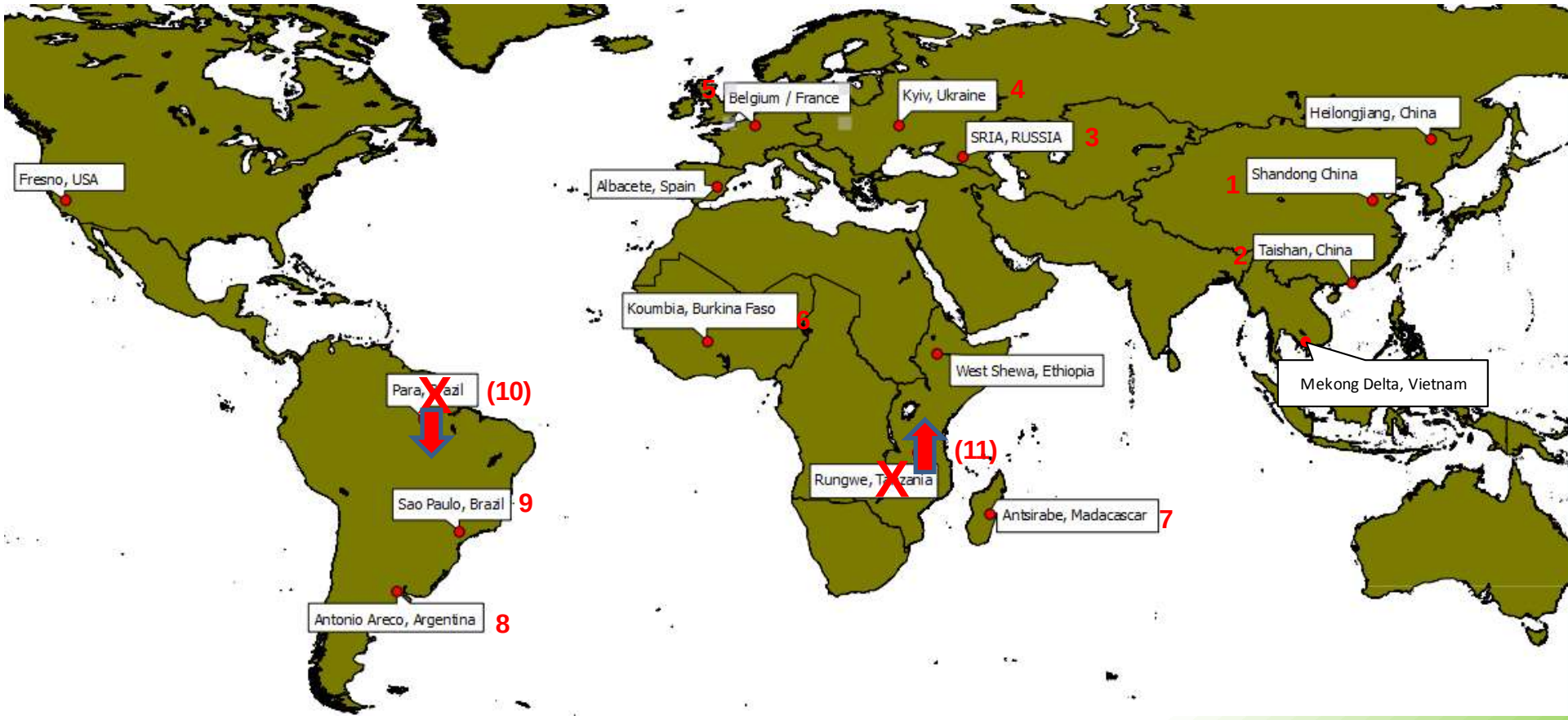
JECAM SITES

Interactive Map

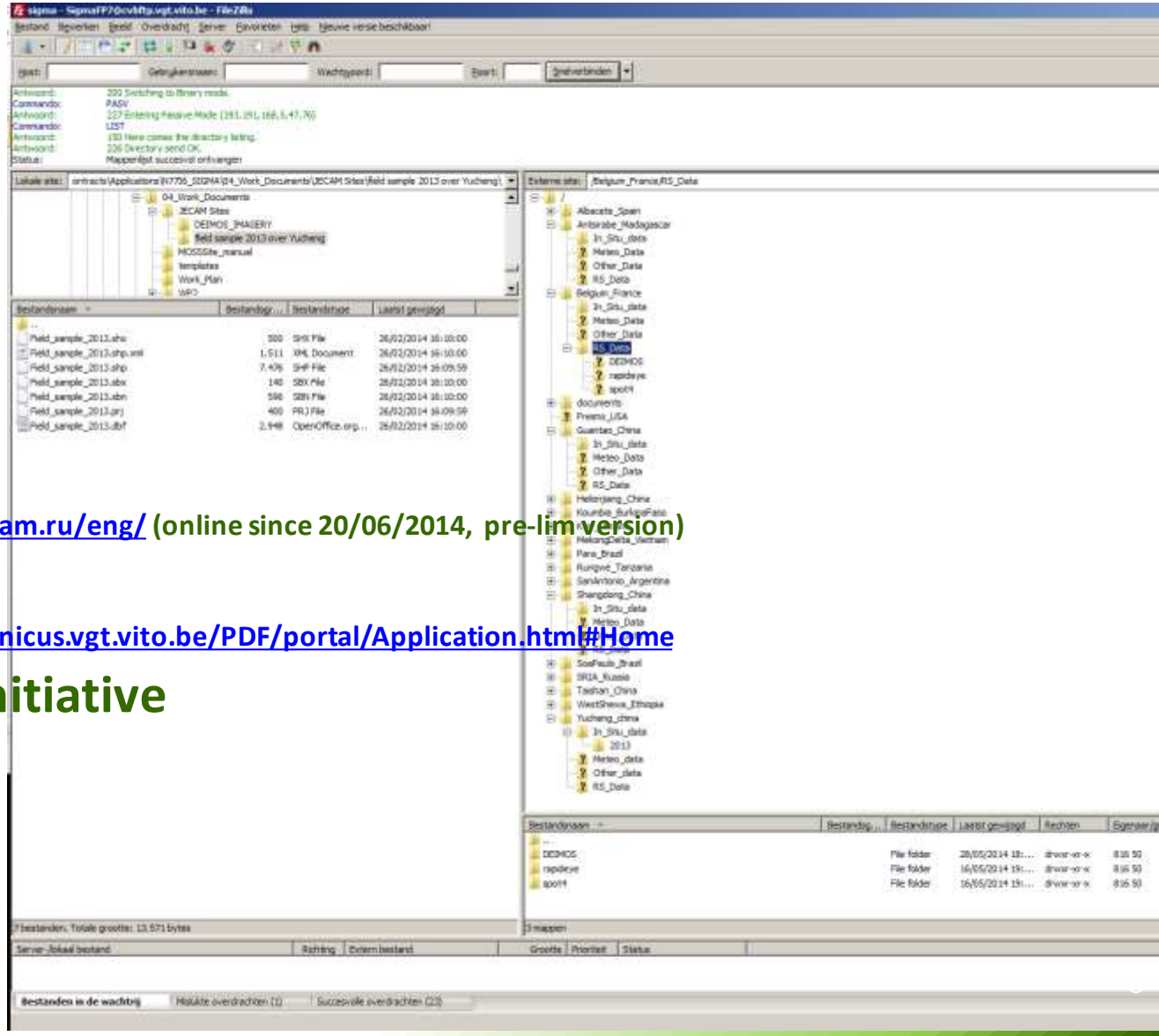
Select from any JECAM study site in the world to learn more

SIGMA SITES (updated)



SIGMA RS Data Availability

- **SIGMA FTP site**
  - **DEIMOS DATA**
  - **SPOT4-TAKE data**
    - **SPOT4**
    - **RAPIDEYE**
- **VEGA SYSTEM**
  - **Modis**
  - **Landsat**
  - **DEIMOS data**
    - **http://vega.geoglam.ru/eng/ (online since 20/06/2014, pre-lim version)**
- **GIO-LAND**
  - **http://land.copernicus.vgt.vito.be/PDF/portal/Application.html#Home**
- **Proba-V 100 m initiative**
- **FengYun data**



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DEIMOS HR DATA ACQUISITIONS

- Archived data request

AoI	Area		Cov 2010	Cov 2011	Cov2012	Cov 2013	Archive area
Heilongjiang/China	810	JECAM	-	2.367	810	533	3.710
Taishan/China	5.743		-	13.806	-	8.071	21.878
Shangdong/China	4.946	JECAM	7.117	13.459	2.276	9.892	32.745
Guantao/China	1.375		1.375	2.750	1.375	-	5.501
MekongDelta/Vietnam	2.150		-	-	-	-	-
SanAntonio/Argentina	7.585	JECAM	-	-	24.303	-	24.303
Belgium/France	30.650	JECAM	-	-	-	-	-
SaoPaulo/Brazil	15.871	JECAM	13.203	35.597	22.197	15.872	86.868
Pará/Brazil	12.092	JECAM	-	12.092	18.429	10.649	41.170
Koumbia/BurkinaFaso	3.860	JECAM	3.857	3.857	3.032	3.857	14.603
Antsirabe/Madagascar	3.725	JECAM	-	-	-	-	-
WestShewa/Ethiopia	35.000		-	-	-	-	-
Rungwe/Tanzania	75.500	JECAM	-	-	-	-	-
Kyiv/Ukraine	54.582	JECAM	-	47.881	100.256	99.554	247.690
SRIA/Russia	66.196	JECAM	49.815	26.300	115.653	31.746	223.514
Fresno/USA	6.400		-	-	-	-	-
Albacete/Spain	6.400		-	-	-	-	-
			75.367	158.110	288.331	180.174	701.982

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DEIMOS HR DATA ACQUISITIONS

- Requested New Aquisitions

		Requested New Acquisition					
AoI	Area	Acquisition Window	Cov 2014	Cov 2015	Cov 2016	Cov 2017	New Acq Area
Heilongjiang/China	810	May to October (1 per month)	6	6	6	6	19,440
Taishan/China	5,750	April to November (1 every 2 months)	4	4	4	4	92,000
Shangdong/China	5,000	March to November (1 per month)	9	9	9	9	180,000
Guantao/China	1,375	March to November (1 per month)	9	9	9	9	49,500
MekongDelta/Vietnam	2,150	Any month, cloudfree (3 or 4 scenes)	3	3			12,900
SanAntonio/Argentina	7,500	Mid Feb(1) + Mid March (1)+October(1)+November(1)	4	4			60,000
Belgium/France	30,650	March - October (all cloudfree, ~15-20)	17	17			1,042,100
SaoPaulo/Brazil	16,000	Jan to Dec (1 every 3 months)	4	4			128,000
Pará/Brazil	12,000	¿Mar - Dec ? ¿1 per month?	10	10			240,000
Koumbia/BurkinaFaso	4,000	June - November (2 per month)	12	12			96,000
Antsirabe/Madagascar	4,000	1st Feb - 15 May (10 days frequency)	11	11			88,000
WestShewa/Ethiopia	35,000	May to November (4 or 2 per month)	14	14			980,000
Kyiv/Ukraine	55,000	Mid March - November (2 per month)	17	17			1,870,000
SRIA/Russia	66,000	March - November (1-2 per week, ~39-78)	17	17			2,244,000
Fresno/USA	6,400	March - October (8)	8	8			102,400
Albacete/Spain	6,400	March - October (8)	8	8			102,400

600% over proposal estimate

DEIMOS HR DATA ACQUISITIONS

- New Aquisitions

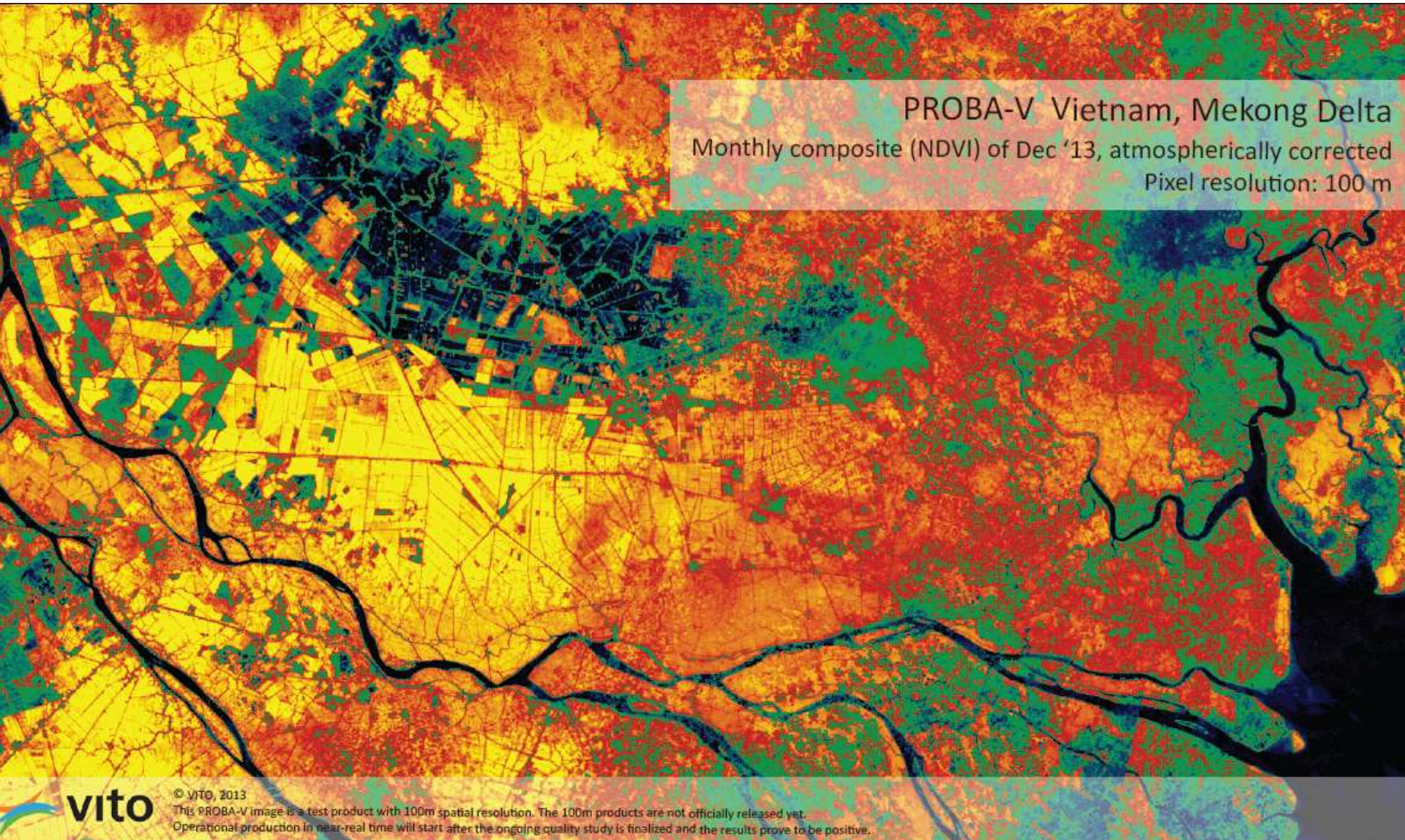
	Proposed New Acquisition						
AoI	Area	Acquisition Window	Cov 2014	Cov 2015	New Acq Area	Success estimation [1..5]	Comments
Heilongjiang/China	5,000	May to October (1 per month)	6	6	60,000	3. Medium	Cloud prone, specially start-end period
Taishan/China	5,750	April to November (1 every 2 months)	4	4	46,000	2. Difficult	Cloud prone, specially start-end period
Shangdong/China	5,000	March to November (1 per month)	8	8	80,000	3. Medium	Cloud prone, specially start-end period
Guantao/China	5,000	March to November (1 per month)	8	8	80,000	3. Medium	Cloud prone, specially start-end period
MekongDelta/Vietnam	5,000	Any month, cloudfree (3 or 4 scenes)	3	3	30,000	1. Very Difficult	Very cloud prone
SanAntonio/Argentina	7,500	Feb(1)+March (1)+May(1)+Oct(1)+Dec(1)	5	5	75,000	4. Feasible	-
Belgium/France	20,000	March - October (1 per month)	6	6	240,000	3. Medium	Cloud prone, specially start-end period
SaoPaulo/Brazil	16,000	Jan to Dec (1 every 3 months)	4	4	128,000	2. Difficult	Cloud prone
Pará/Brazil	12,000	Dec (1) + Feb - June (1 every 1.5 month) + Jul (1)	6	6	144,000	1. Very Difficult	Very cloud prone
Koumbia/BurkinaFaso	5,000	June - November (1 per month)*	6	6	60,000	2. Difficult	Very cloud prone, specially mid period
Antsirabe/Madagascar	5,000	1st Feb - 15 May (10 days frequency)	6	6	60,000	1. Very Difficult	Very cloud prone
WestShewa/Ethiopia	20,000	May to November (1 per month)*	-	6	120,000	3. Medium	Cloud prone, specially start-end period
Kyiv/Ukraine	18,000	March - November (1 per month approx)*	6	6	216,000	3. Medium	Cloud prone, specially start-end period
SRIA/Russia	18,000	March - November (1 per month approx)*	6	6	216,000	3. Medium	Cloud prone, specially start-end period
Albacete/Spain	6,400	March - October (1 per month)*	6	6	76,800	3. Medium	Cloud prone, specially start-end period

DEIMOS HR DATA ACQUISITIONS

- List of already delivered products

AoI	Coverage	Acquisition Date(UTC)	Cloud estimation AoI
Antsirabe/Madagascar	#1	10/03/2014 7:36	20-30%
Antsirabe/Madagascar	#2	20/03/2014 7:42	10-20%
Antsirabe/Madagascar	#3	02/04/2014 7:40	10-20%
Antsirabe/Madagascar	#4	15/04/2014 7:36	10-20%
Antsirabe/Madagascar	#5	05/05/2014 7:48	0-10%
Antsirabe/Madagascar	#6	18/05/2014 7:46	0-10%
Belgium/France	March 2014	10/03/2014 9:32	0-10%
Guantao/China	March 2014	22/03/2014 2:25	0-10%
Guantao/China	April 2014	08/04/2014 2:45	0-10%
Guantao/China	May 2014	04/05/2014 2:40	0-10%
MekongDelta/Vietnam	#1	18/03/2014 3:34	0-10%
MekongDelta/Vietnam	#2	26/04/2014 3:27	10-20%
Shangdong/China	March 2014	22/03/2014 2:25	0-10%
Shangdong/China	April 2014	07/04/2014 2:15	0-10%
Shangdong/China	May 2014	04/05/2014 2:40	0-10%
SRIA/Russia	April 2014	27/04/2014 7:23	0-10%
SRIA/Russia	May 2014	16/05/2014 7:04	0-10%
Taishan/China	April 2014	28/04/2014 2:52 28/04/2014 2:52	10-20%
SaoPaulo/Brazil	Jan-Mar 2014	10/03/2014 14:06	10-20%
SaoPaulo/Brazil	Apr-Jun 2014	05/04/2014 14:03	0-10%
SanAntonio/Argentina	Mid Feb 2014	23/02/2014 14:43	5-10%
SanAntonio/Argentina	Mid Mar 2014	12/03/2014 15:03	0-10%
SanAntonio/Argentina	Mid Mar 2014	22/03/2014 15:10	0-10%
Kyiv/Ukraine	April 2014	18/04/2014 7:49	0-10%
Kyiv/Ukraine	May 2014	08/05/2014 7:59	0-10%

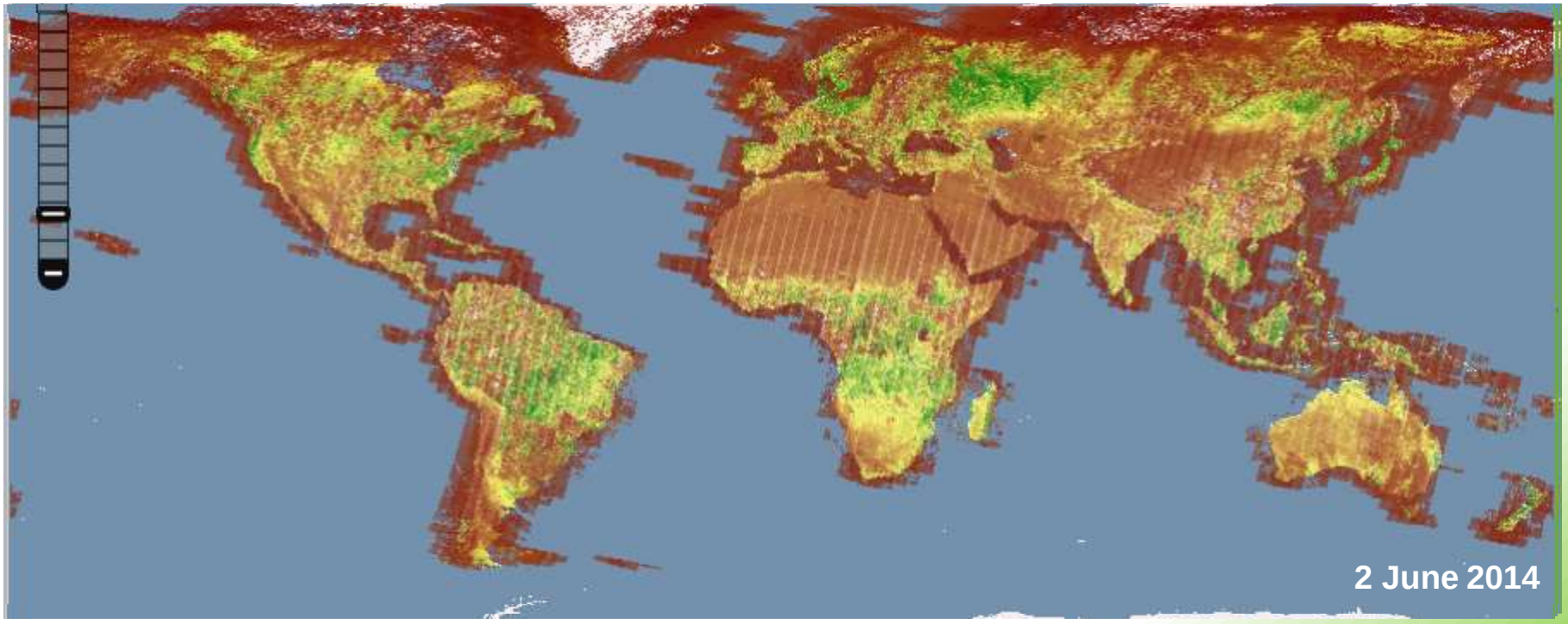

PROBA-V 100M product
Ganges Delta



This PROBA-V image is a test product with 100m spatial resolution. The 100m products are not officially released yet.
Operational production in near-real time will start after the ongoing quality study is finalized and the results prove to be positive.

PROBA-V 100m data: incremental coverage

- PROBA-V 100m: 25 May 2014 – 2 June 2014



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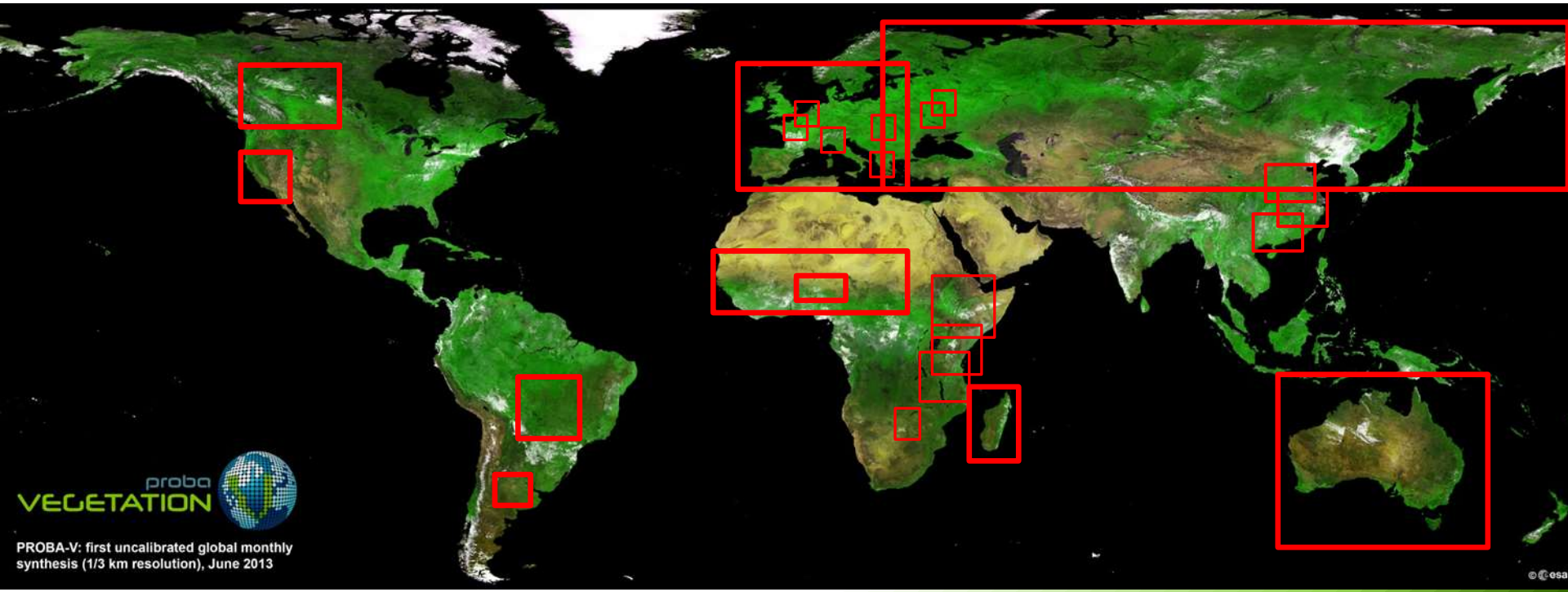
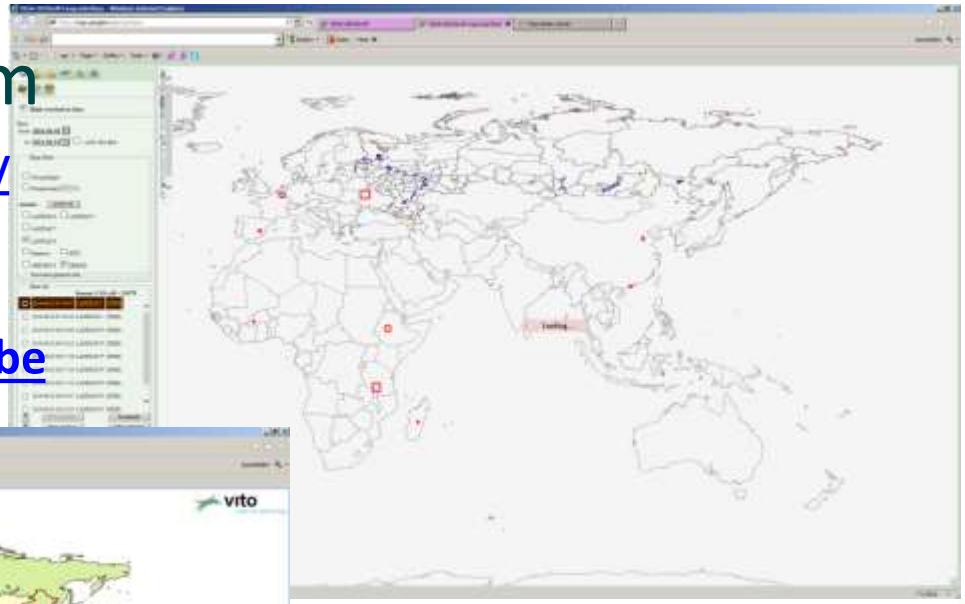
Experiment!

- Is there an interest in 100m resolution frequent imagery?
  - Who? What applications? Unique?
- Request for interest launched in April 2014
  - Tremendous & immediate response
  - World-wide, Environment, Agriculture
  - Convene in November 2014 to discuss results -> SIGMA sites!!!



SIGMA DATA Viewers

- SIGMA – VEGA system
  - http://vega.geoglam.ru/eng/
- SIGMA Viewer
  - http://tsviewer.vito-eodata.be



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SIGMA Geoportal

- Objectives
  - Offer a Web based portal to **discover** available **output** data and metadata

    ➔ Heterogeneous data, globally – regional – site level
  - **View** data (where applicable)
  - **Download** data, possibly access restricted
  - Access to product related **documentation**
- Links to all SIGMA tools available: sPAF – sPEF
- Focus on ‘ease of use’

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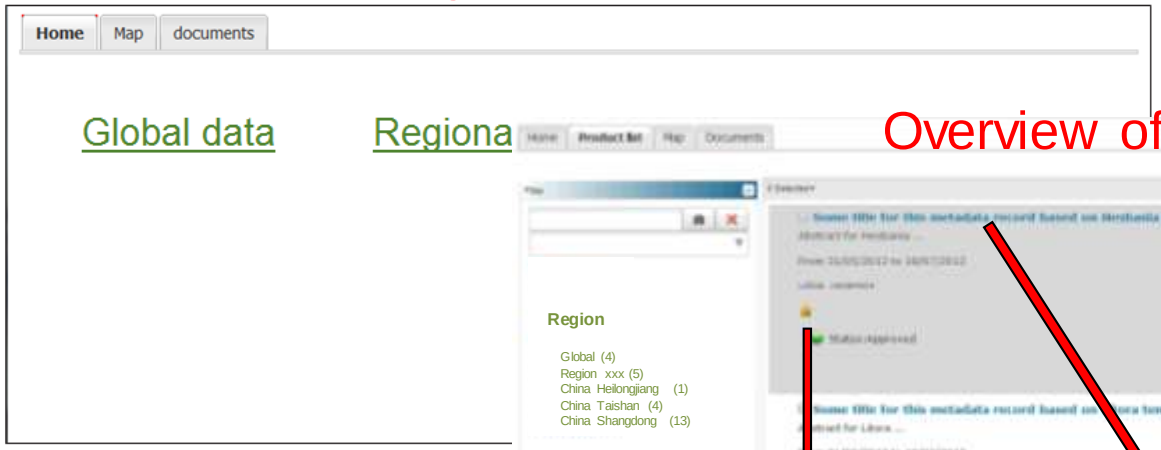
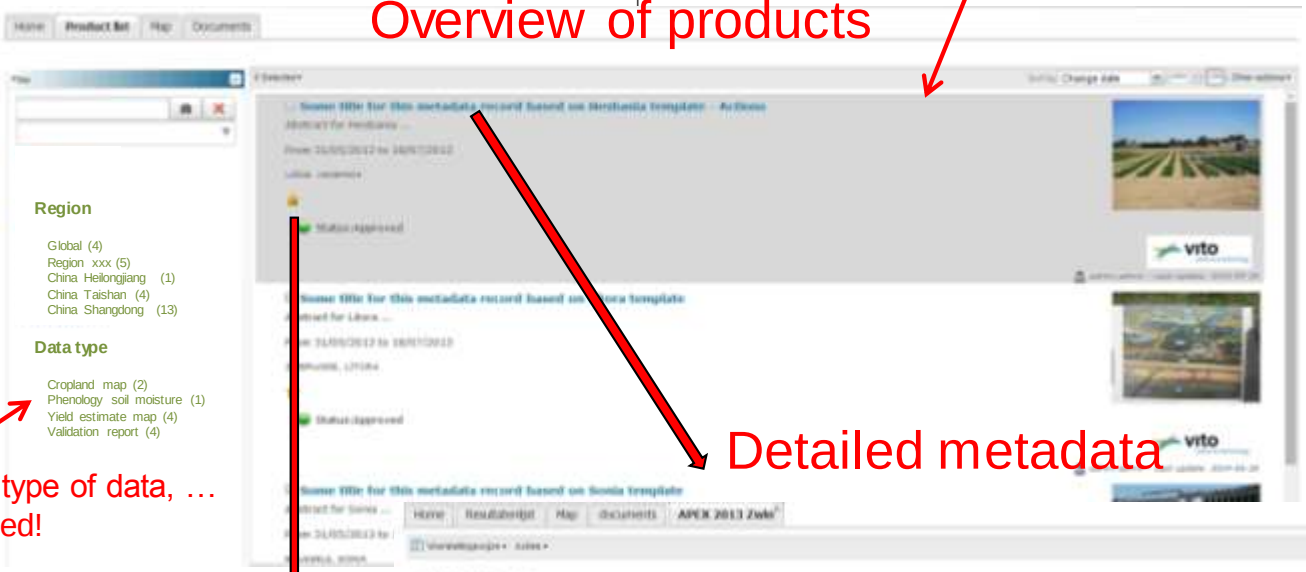
Home: select region



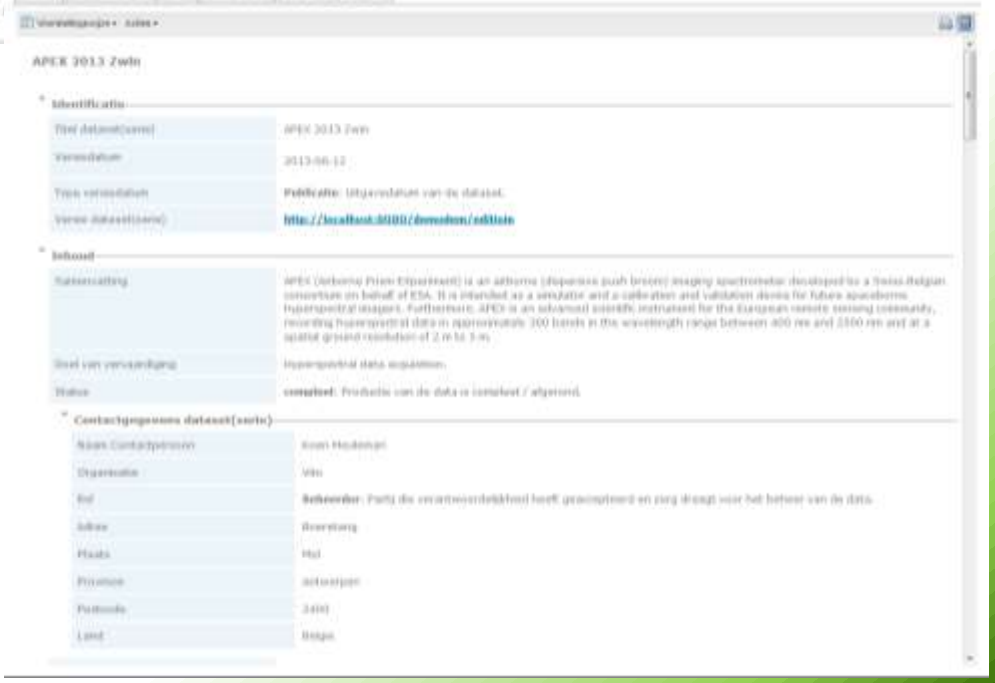
List of 'matching products' with:
- Abstract, date, …
- Link to download (incl. documents)
- Link to view data
- …

Overview of products



Easy filter on type of data, …
➔ To be agreed!

Detailed metadata



Link to Geo-Wiki (where applicable)

Vie

In Situ Data sets

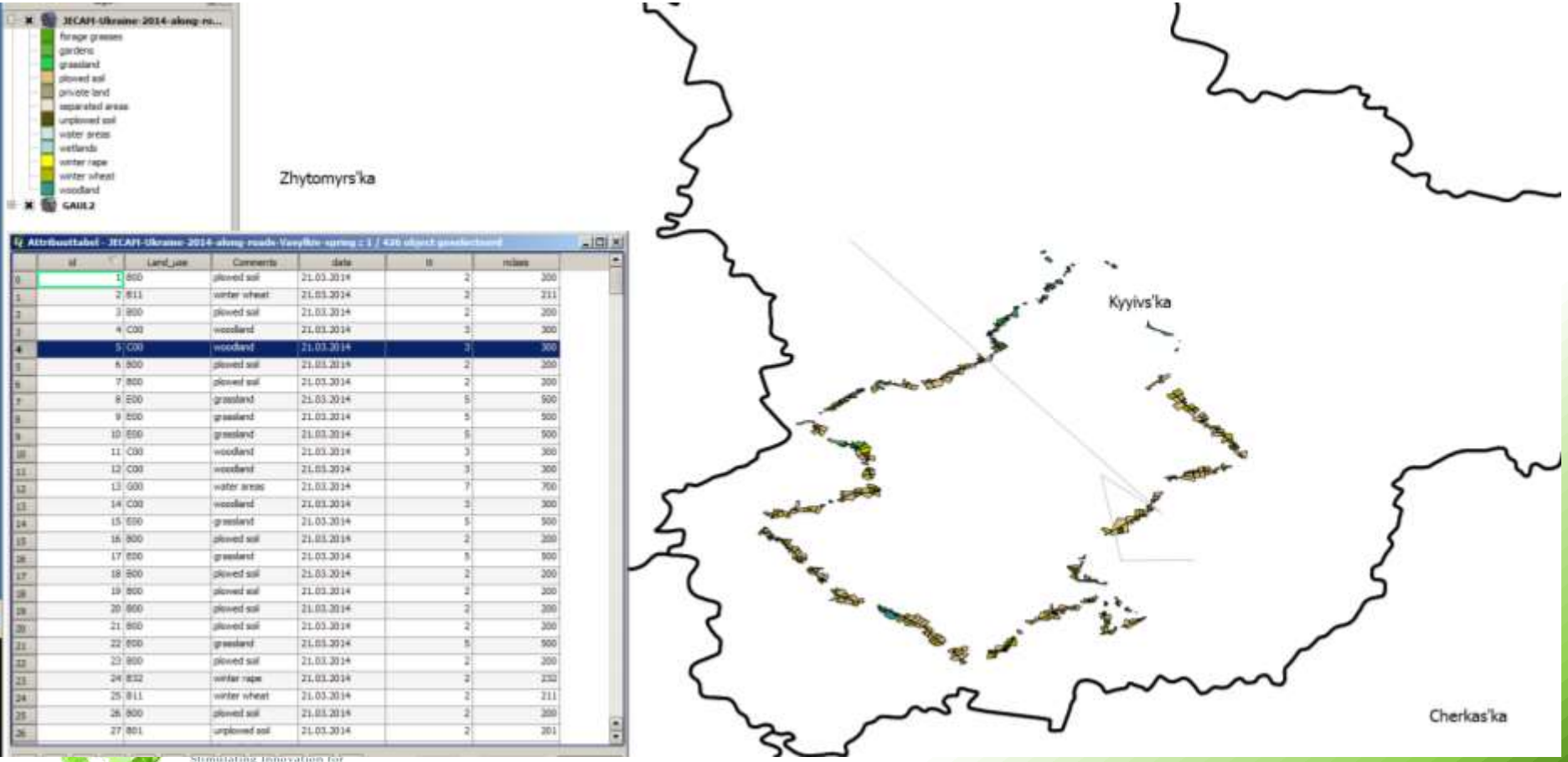
- What is available vs What is Needed
- SIGMA request
  - Per WP set of parameters needed for the processing

Category	Required data	Remarks	Period	Alternative	Suggestions	Comments
Topography	Location	JECAM region (boundary box in lat, lon)	n.a.			
	Elevation					SRTM DEM 90 m resolution
	Existing					
Meteo	Daily glo					
	Daily mi					
	Daily ma					
	Air humi					
	Windspe					
	Precipita					
	* Neede					
Crop	Official c					
	Official c					
	Actual yi					
	Maximu					
	Potentia					

	A	B	C	D	E	F	G
	Category	Required data	Remarks	Period	Alternative	Suggestions	Comments
	Land cover / crop type	Temporary cropping	Single cropping	2010-2014	Monoculture (each year the same) / rotation		Crop type / Crop rotation maps (ongoing JECAM / SIGMA activities)
			Multiple cropping	2010-2014	Intercropping / sequential cropping / mixed multiple cropping		Crop type / Crop rotation maps (ongoing JECAM / SIGMA activities)
		Temporary meadow / pasture		2010-2014			Crop type / Crop rotation maps (ongoing JECAM / SIGMA activities)
		Permanent cropping	Forestry / ratoon	2010-2014			Crop type / Crop rotation maps (ongoing JECAM / SIGMA activities)
		Permanent meadow/pasture		2010-2014			Crop type / Crop rotation maps (ongoing JECAM / SIGMA activities)
		Cropping under cover Nursery cropping	In the open / under cover				
	Topography	Slope	Degrees, length, orientation, structures against erosion	n.a.			
	Meteo	Daily global incoming shortwave radiation*	JECAM specific might be sufficient	1960-2014	See tab "General"		3 weather stations Located <100 Km from JECAM site
		Daily minimum air temperature	JECAM specific might be sufficient	1960-2014	See tab "General"		3 weather stations Located <100 Km from JECAM site
		Daily maximum air temperature	JECAM specific might be sufficient	1960-2014	See tab "General"		3 weather stations Located <100 Km from JECAM site
		Air humidity*	JECAM specific might be sufficient	1960-2014	See tab "General"		3 weather stations Located <100 Km from JECAM site
		Windspeed at 10 m*	JECAM specific might be sufficient	1960-2014	See tab "General"		3 weather stations Located <100 Km from JECAM site
		Precipitation	Should be field specific	1982-2014			Located <20 Km from JECAM monitoring site. Weather RADAR data at 1Km resolution since 2013.
		* Needed to derive Potential Evapotranspiration	JECAM specific might be sufficient		See tab "General"		

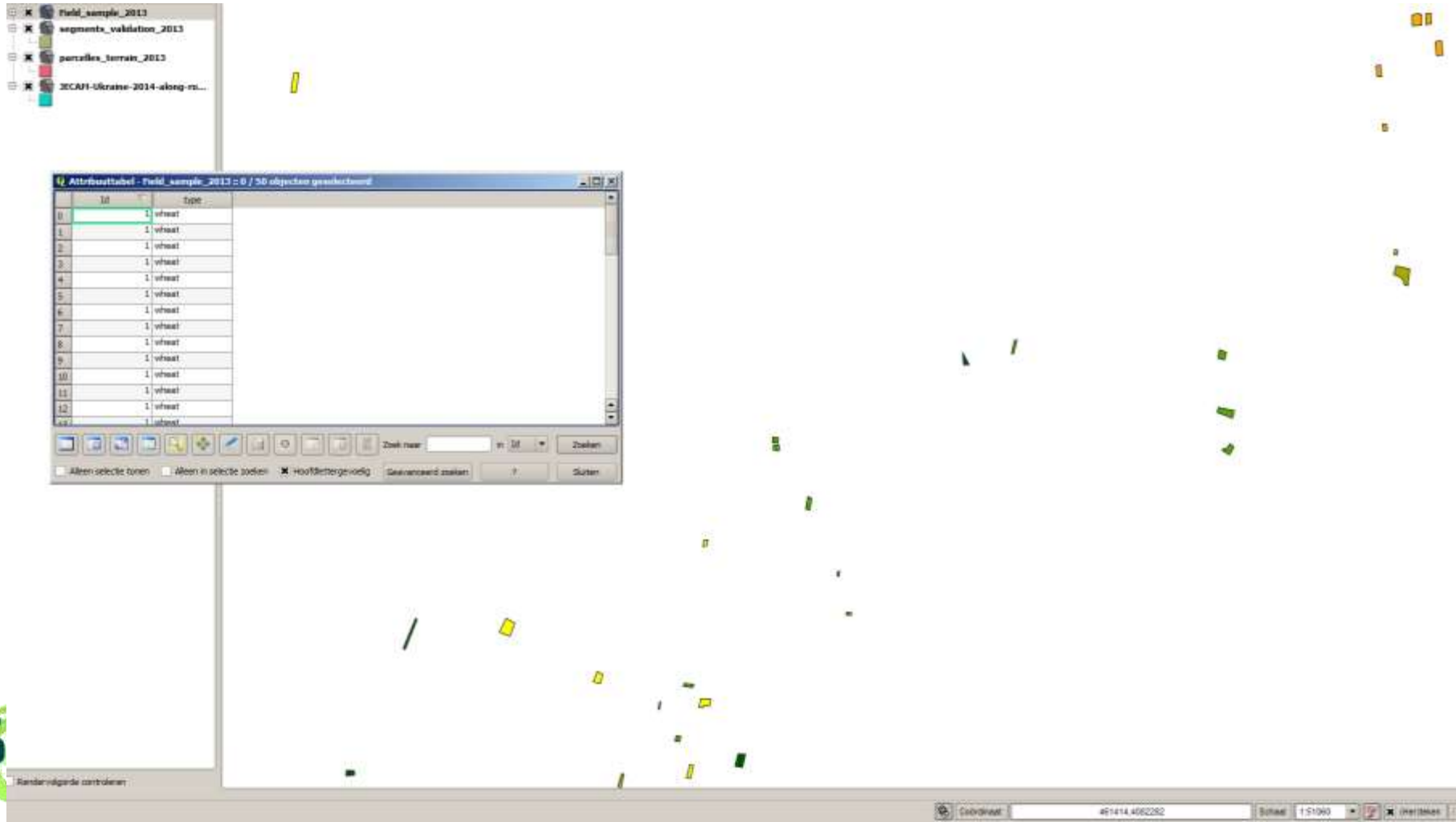
In Situ Data Sets

- Ukraine
  - Road survey / class information



In Situ Data Sets

- China -> field classifications



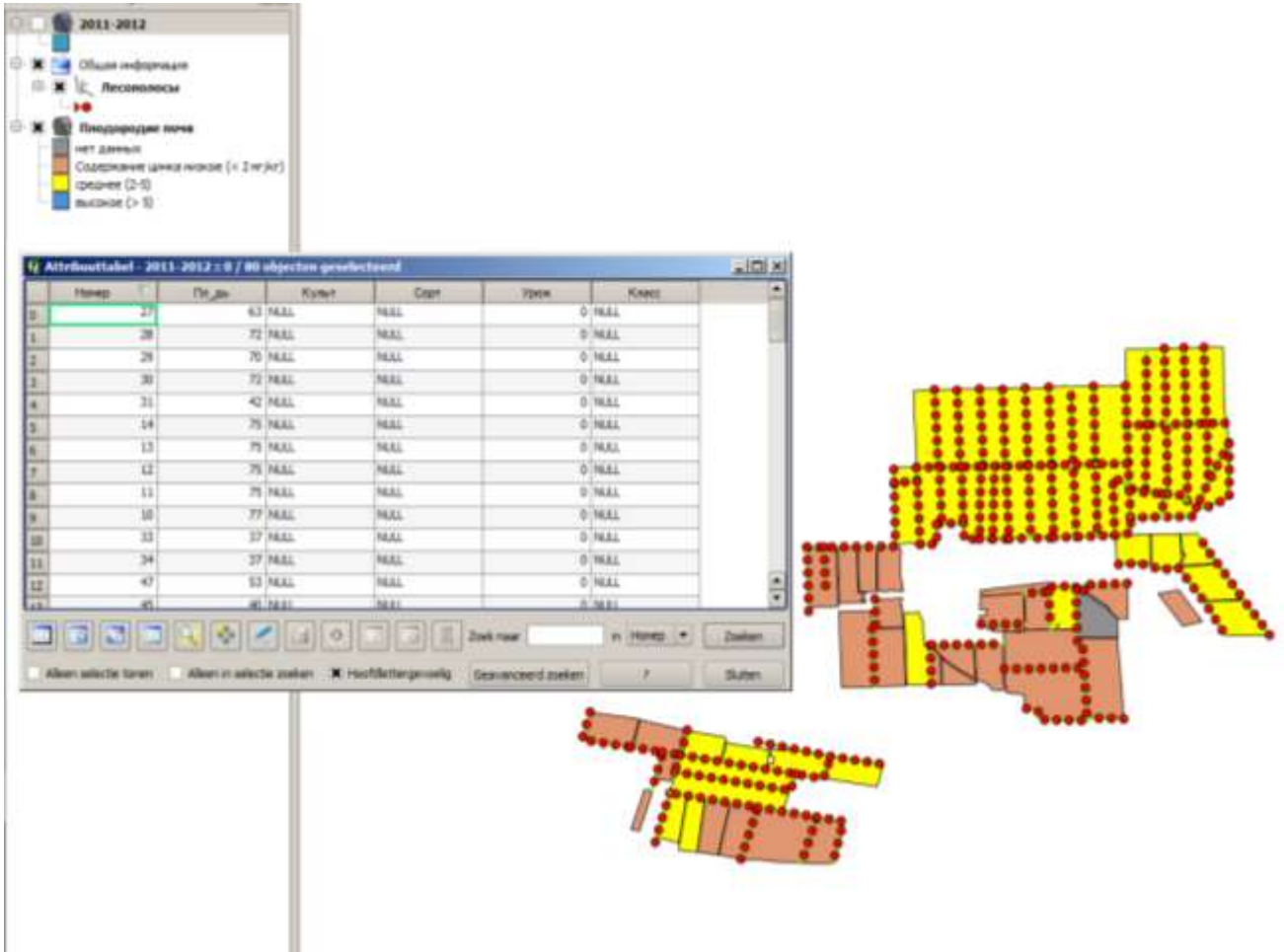
In Situ Data Sets

- Burkina

	FID_1	Id	FID_2	num_point	photo1	photo2	culture	recolte	residu	remarque	date	cult2012	Distance	cult2013
0	314	0	0	542	712	NULL	sorgho	n	n	NULL	2013/10/19	non cultivé	0	3
1	313	0	1	543	714	NULL	coton	n	n	NULL	2013/10/19	NULL	0	1
2	315	0	2	544	715	NULL	mais	n	n	NULL	2013/10/19	coton	0	2
3	316	0	3	545	716	NULL	niebe	n	n	NULL	2013/10/19	sorho	0	6
4	317	0	4	546	717	NULL	mais	n	n	NULL	2013/10/19	coton	0	2
5	318	0	5	547	718	NULL	niebe	n	n	NULL	2013/10/19	NULL	0	6
6	320	0	6	548	721	NULL	niebe	o	o	NULL	2013/10/19	NULL	0	6
7	319	0	7	549	722	NULL	foret	NULL	NULL	foret protégée	2013/10/19	NULL	0	20
8	321	0	8	550	723	NULL	sésame	n	n	NULL	2013/10/19	NULL	0	8
9	322	0	9	551	724	NULL	sorgho	n	n	NULL	2013/10/19	NULL	0.01452171	2

In Situ Data Sets

- Russia
  - Fish eye data / soil + environmental data



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Challenges

- Different formats
  - Shapefiles -> pictures
- Different classes
- Different targets / objectives
- Different techniques (road surveys,…)
- Different languages
- …..

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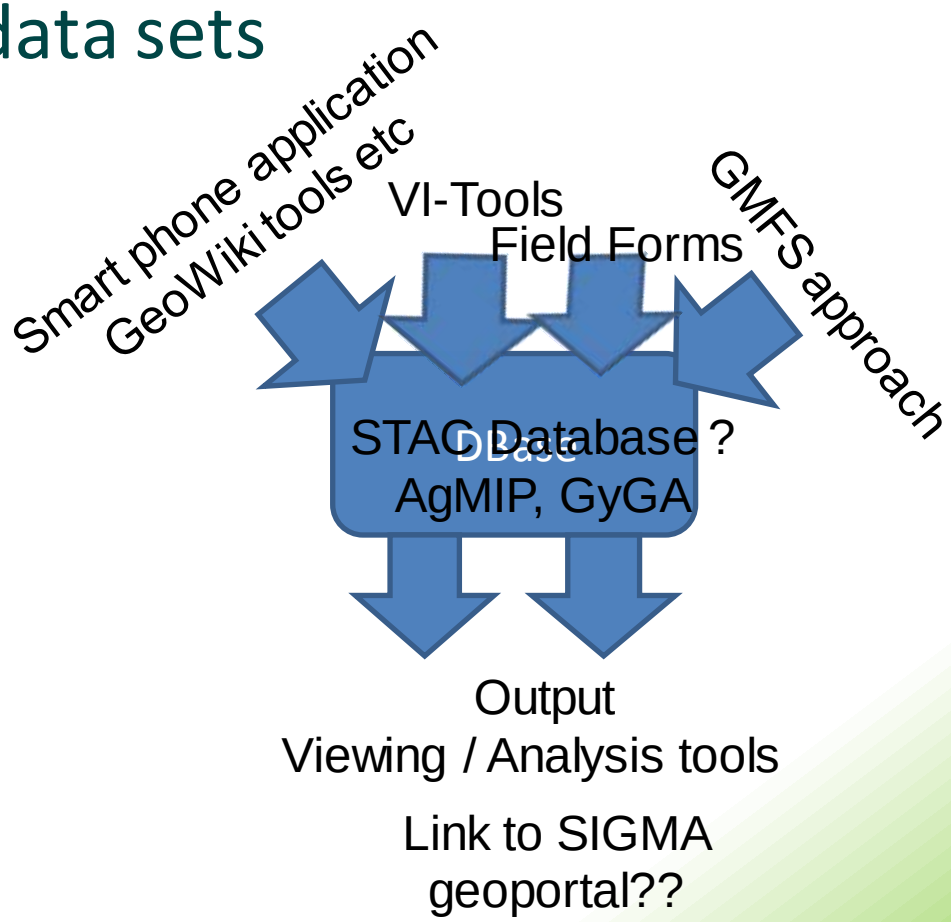
Challenges

- How to store these data sets
  - SIGMA FTP
  - Database ??



Points for Discussion

- To be Discussed;
  - Fieldwork protocols
    - Per WP -> mininmum data sets
  - Data Collection Tools
  - Database

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Thank You!