

# Putting Food Security Research in Practice at Wageningen UR

Exploiting global knowledge for food-security through cooperation, co-creation and sharing of information

ICRI 2014 – Athens, 3 April 2014

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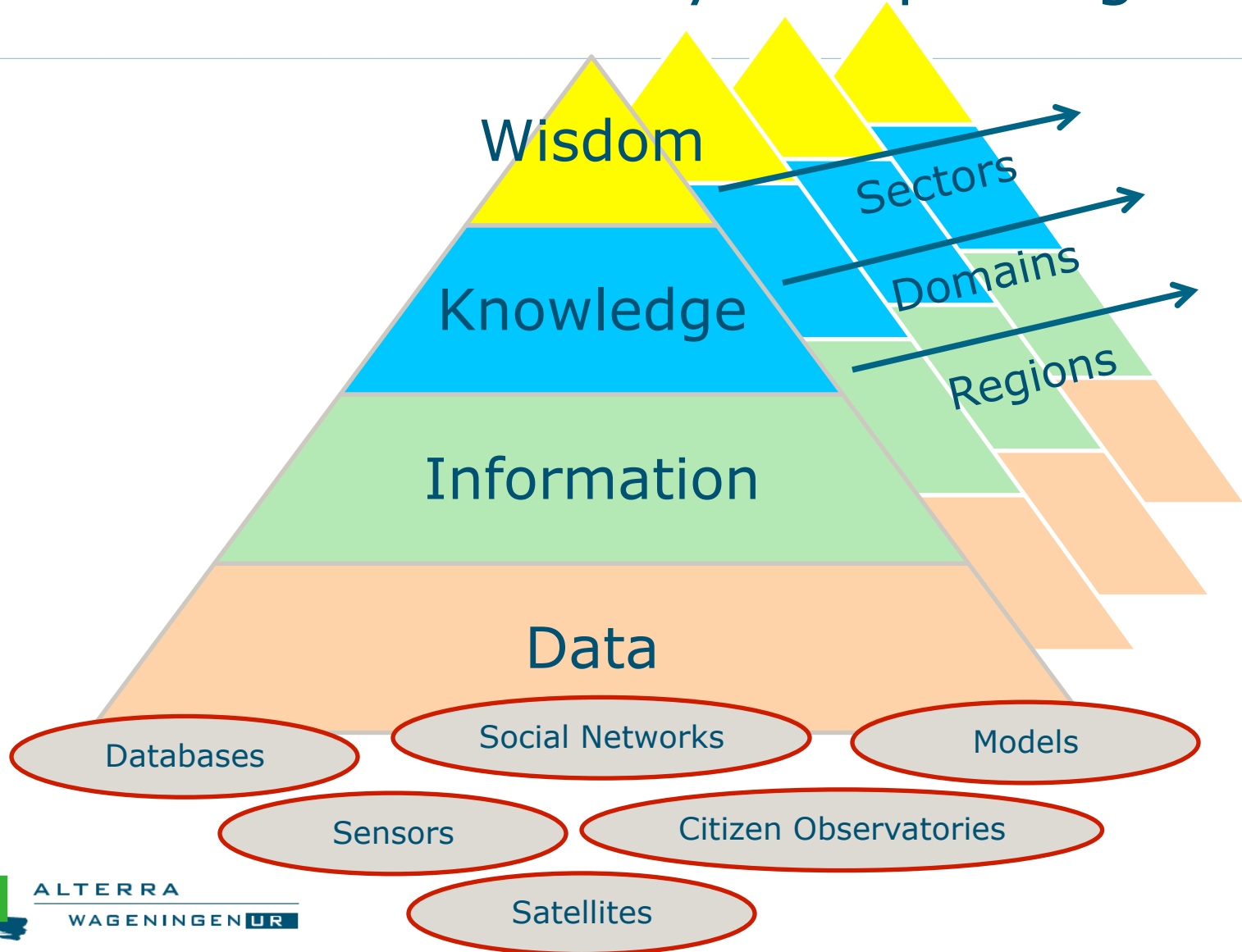


# Food security is a global challenge

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- Food security issues affect developed countries, but the largest of impacts occur and will keep occurring outside Europe, in developing countries
- A wealth of indispensable data and knowledge is available also outside Europe
- Cross-links to other domains: nexus water - land - energy
- Effective integrated solutions can only be achieved through global, multi-domain, multi-disciplinary networks

# The amount of data and information related to food security is exploding!



# Example: Monitoring Agricultural ReSources (MARS)

Wisdom

Knowledge

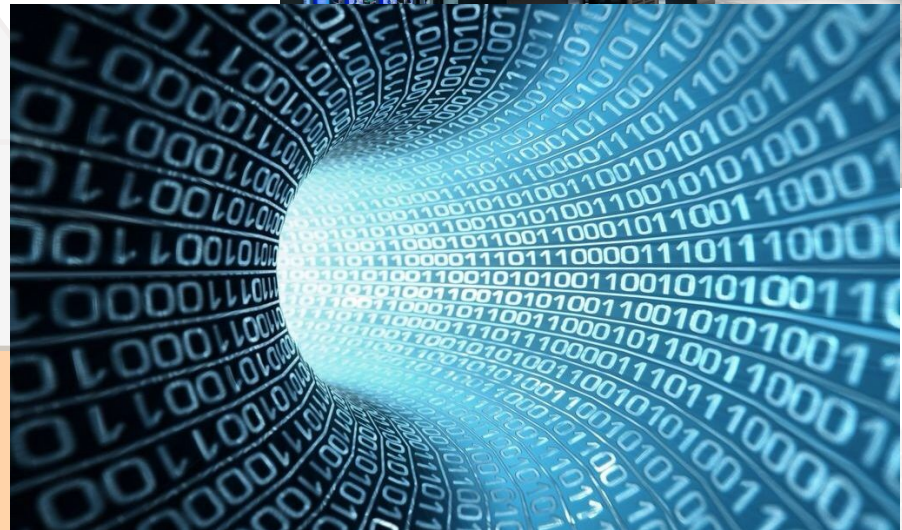
Information

Data

- Owned and operated by EC-JRC
- Crop forecasts at EU level needed to take rapid decisions on Common Agricultural Policy instruments during the year
- Provide information on vulnerability in specific food insecure areas
- In support of:
  - European Common Agricultural Policy on commodities & subsidies (focus on Europe, Asia)
  - Food aid (focus on Africa)
- Monitoring weather and crop conditions of current growing season (early warning, extreme events)

# Example: Monitoring Agricultural ReSources (MARS)

Wisdom  
Knowledge  
Information  
**Data**



weather archives

live data stream

crop, soil databases

PcpIn	WDir
M	0
M	320
M	0
M	110

1/1/1933	4am	55.4	51.8	88	M	100	0.00	90
1/1/1933	5am	53.6	51.8	94	7.00	50	0.00	90
1/1/1933	6am	55.4	51.8	88	8.00	100	0.00	0
1/1/1933	7am	53.6	51.8	94	6.00	0	M	90
1/1/1933	8am	55.4	51.8	88	8.00	0	0.00	0
1/1/1933	9am	55.4	53.6	94	7.00	25	0.00	80
1/1/1933	10am	57.2	51.8	82	9.00	50	0.00	90
1/1/1933	11am	57.2	51.8	82	9.00	88	0.00	200
1/1/1933	12pm	60.8	53.6	77	10.00	100	0.00	0
1/1/1933	1pm	60.8	51.8	72	9.00	88	0.00	40
1/1/1933	2pm	60.8	51.8	72	10.00	25	0.00	60
1/1/1933	3pm	60.8	53.6	77	7.00	88	0.01	0



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# Example: Monitoring Agricultural ReSources (MARS)

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Models

## PRECIPITATION

EPS model (starting 12 April 2012)

Single member aggregation: Cumulated values

Across members aggregation: Probability of exceeding (value=25.00)

From forecast day 0 to 14

13-Apr-2012

Interpolated grid  
of 25x25 km

Units: Probability (0 - 100%)

0 - 10 %

10 - 20 %

20 - 30 %

30 - 40 %

40 - 50 %

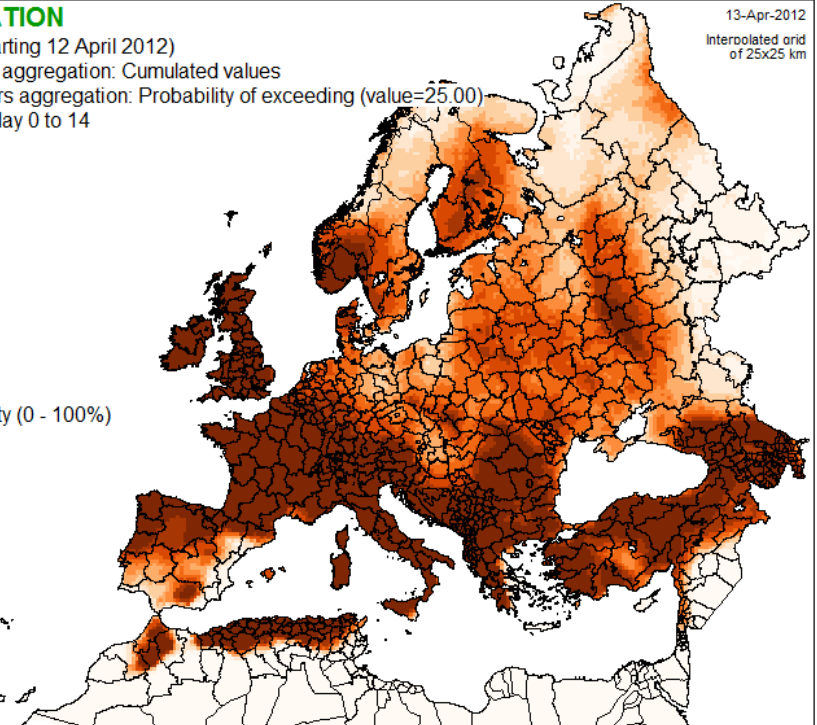
50 - 60 %

60 - 70 %

70 - 80 %

80 - 90 %

90 - 100 %



MARS ies JRC  
EUROPEAN COMMISSION

Source: National Meteorological Services  
Processed by: ALTERRA Consortium  
On behalf of: AGRI4CAST Action - MARS Unit



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# Example: Monitoring Agricultural ReSources (MARS)

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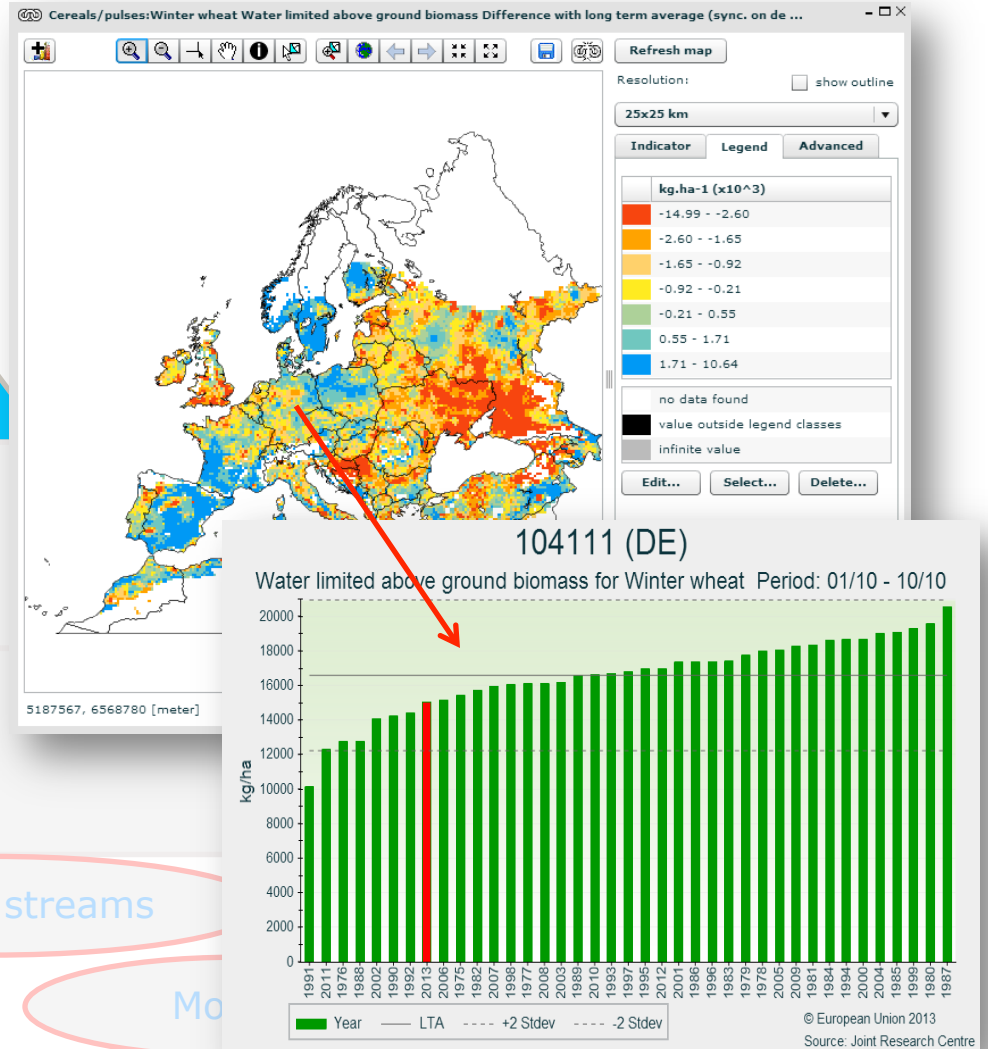
Data

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Mo



# Example: Monitoring Agricultural ReSources (MARS)

## Crop monitoring in Europe

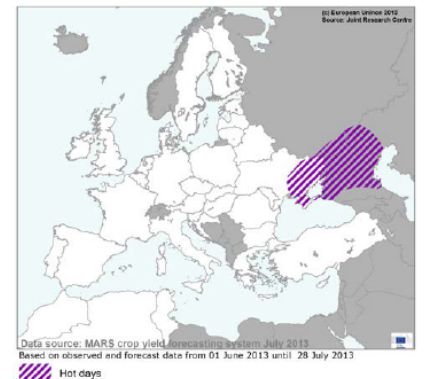
MARS Bulletin Vol. 21 No. 7 (2013)

### Favourable conditions sustain good yields for EU-28

*After the heavy rains of the end of May and beginning of June, Europe experienced rather beneficial conditions for crop growth, with the exception of the plains in eastern Ukraine and neighbouring regions in Russia which experienced hot conditions coupled with scarce precipitation. In northern Italy, there is still a strong delay in the development of summer crops, leading to increased crop vulnerability.*

On balance, the EU-28 crop yield forecasts for all cereals, aside from durum wheat, were revised upwards. The yield forecast for soft wheat was raised for all EU-28 countries with the exception of Italy, Bulgaria, Finland and Greece. Durum wheat yield expectations remain clearly above average at the EU-28 level, despite a downward revision for Greece. The overall EU-28 winter barley forecast was also revised upwards due to higher forecasted yields of the two largest producers, Germany and France. EU-28 spring barley yield forecasts remain exceptionally high due to the excellent season in Spain. Rapeseed yield estimates were revised slightly upwards for the EU-28, but are still forecast to be below last year's level. The EU-28 forecast for grain maize was revised slightly upwards, thanks to an increased yield forecast for Bulgaria, and continues to be clearly above last year's yield. Yield forecasts for sugar beets were revised downwards.

#### AREAS OF CONCERN - EXTREME WEATHER EVENTS



Crop	Yield t/ha				
	2012	MARS 2013 forecasts	Avg 5yrs	%13/12	%13/5yrs
<b>TOTAL CEREALS</b>	4.87	5.32	5.07	+9.1	+5.0
<b>Total Wheat</b>	5.19	5.45	5.37	+5.0	+1.5
soft wheat	5.42	5.69	5.62	+4.9	+1.2
durum wheat	3.13	3.33	3.21	+6.2	+3.8
<b>Total Barley</b>	4.38	4.78	4.39	+9.1	+8.9
spring barley	3.91	4.33	3.83	+10.9	+13.3
winter barley	5.21	5.48	5.25	+5.1	+4.5

Wisdom

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weather archives

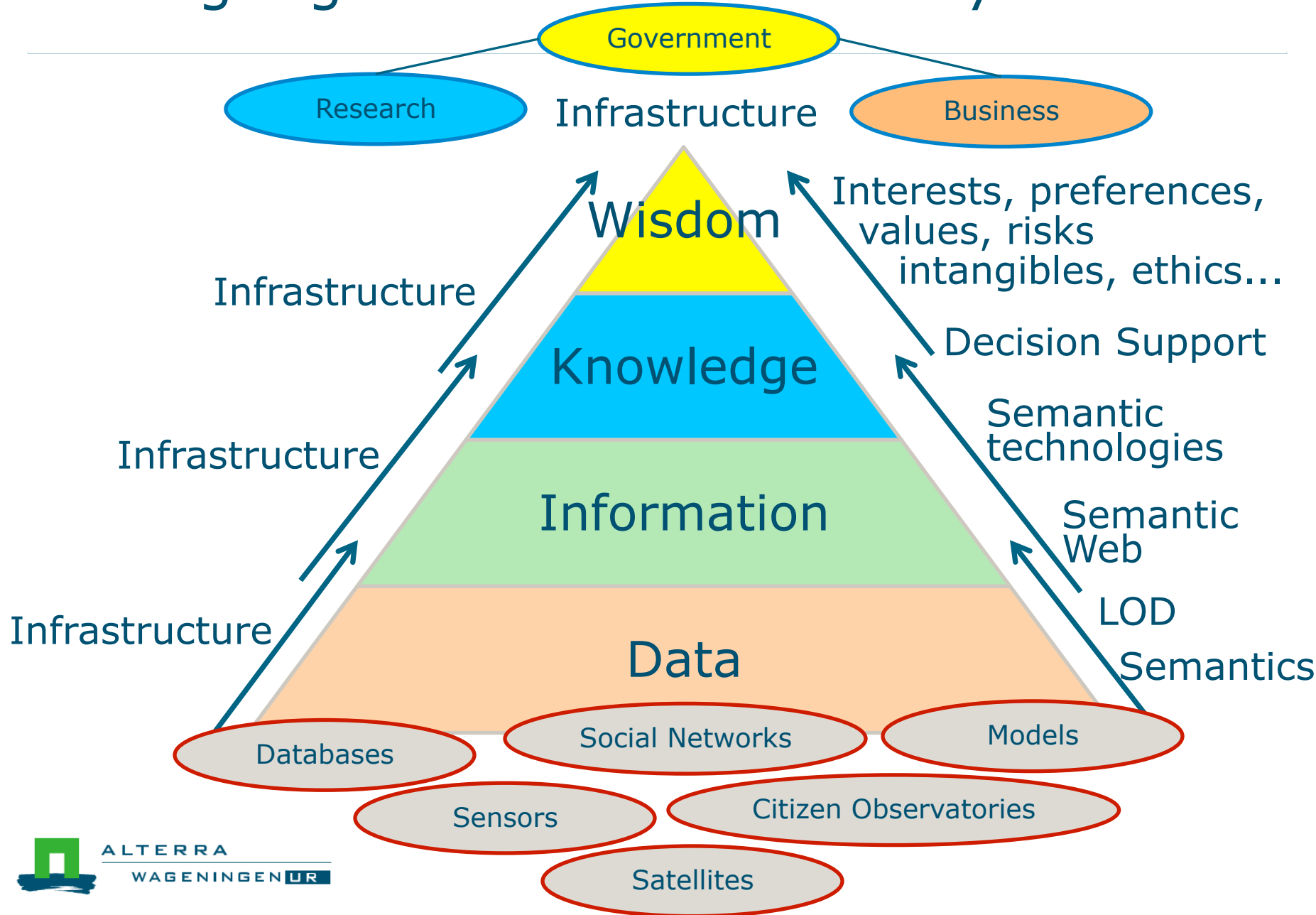
live data

crop, soil databases

Models



# Making Big Data on Food Security of Use

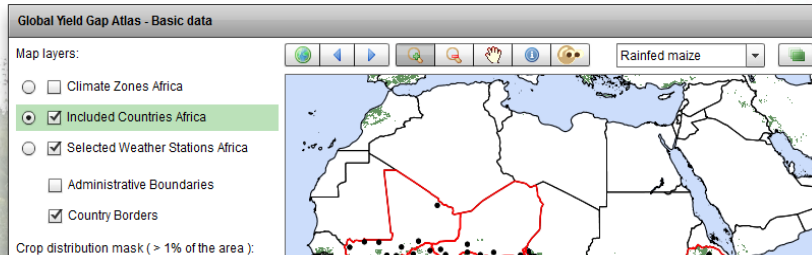


# But: we also need access to this Big Data

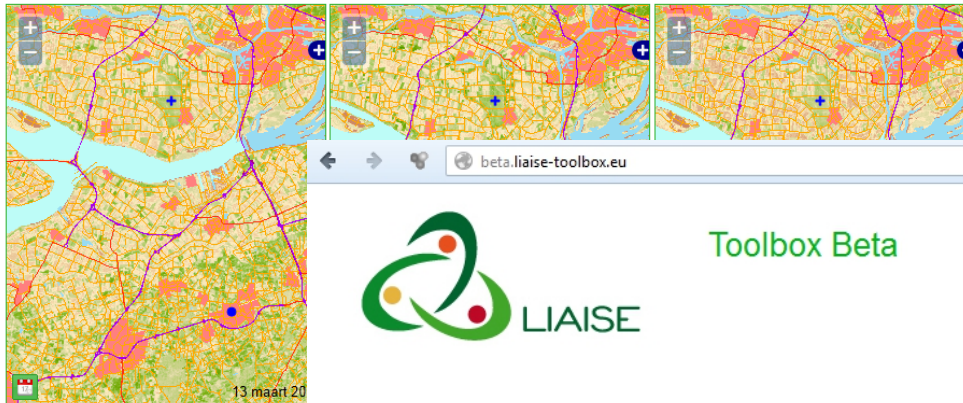
- A lot of essential data is still “locked” in silos or is residing at people’s desks
- Data is shared on a known-and-trusted colleagues basis, not through licences
- So continue opening up access to data and knowledge:
  - Open Data Initiatives
  - Open Data Journals
  - Meta-data repositories for tools and data
  - Efforts to open up currently inaccessible data silos
  - Clear, harmonized licensing policies
  - Transnational access
  - Knowledge sharing between science, business and government

Region of Interest

# s from Wageningen



Groenindex



zoek gemeente

moerdijk

legenda

Groeni	Kleur	Landbouw	Natuur
0	Open water	Open water	
0.1	Drassig/nat...	Wit zand o...	
0.2	Geploegd l...	Kale bodem	
0.3	Net opkom...	Bladverliez...	
0.4	Opkomend...	Naaldbos i...	
0.5	Gesloten g...	Opkomend...	
0.6	Gewas met...	Naaldbos...	
0.7	Gewas met...	Moerasveg...	
> 0.8	Groene vol...	Groen loof...	

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Toolbox Beta



Username

Password

sander.janssen@wur.nl

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## Welcome to the LIAISE Toolbox



Last review by sweiland about 14 hours ago.

[Bookmark this](#)

The **LIAISE Toolbox** is a library of models, publications, projects, good practices, experts, etc. to support policy impact assessments. It also provides a platform for the community of practitioners and researchers in this field.

### What is new in the **LIAISE Toolbox**?

#### Updated content: Cost Benefit Analysis

**Stratos Arampatzis**, senior researcher and consultant from the **LIAISE** partner **University of Thessaloniki** and **lead editor** for the impact area **land use** and the method **cost benefit analysis** has updated the introduction to this method. His article provides a comprehensive overview on this widely applied methodology. He discusses the potential benefits and provides an overview on the criticism of this methodology. (24.3.2013)

#### Updated content: Collection of Economic data

**Klaus Rennings**, **lead editor** for the section on "collection of economic data" has contributed an

#### Table of contents

[Updated content: Cost Benefit Analysis](#)  
[Updated content: Collection of Economic data](#)  
[New feature: Faceted search for examples of IA](#)  
[Presentation of the Toolbox: Workshop on Transport Policies](#)  
[Application of the Toolbox: Identifying Models for the Assessment of Resource Policies](#)

# Key Messages

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- Food security is a global challenge. This concerns both the issues to be solved and the required resources (knowledge, data, tools, funding etc.) that need to be mobilized to solve these issues. So **(even) stronger international cooperation is required.**
- The amount of data related to food security is exploding, due to the evolvment of data warehousing, social networking platforms, earth observation, sensor networks, citizen observatories etc. It is a challenge to make good quality knowledge available from this ocean of data and information. It is thus key to **understand how to exploit Big Data, using Linked Open Data and the Semantic Web.** We are still only scratching the surface here.
- **We should continue opening up access to data and knowledge.** Promotion and further development of Open Data Initiatives, Open Data Journals and meta-data repositories for tools and data is essential to get the most out of available data and knowledge on the European and global scale.

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Thank you for your attention