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

Rob Lokers & Sander Janssen - Alterra, Wageningen UR

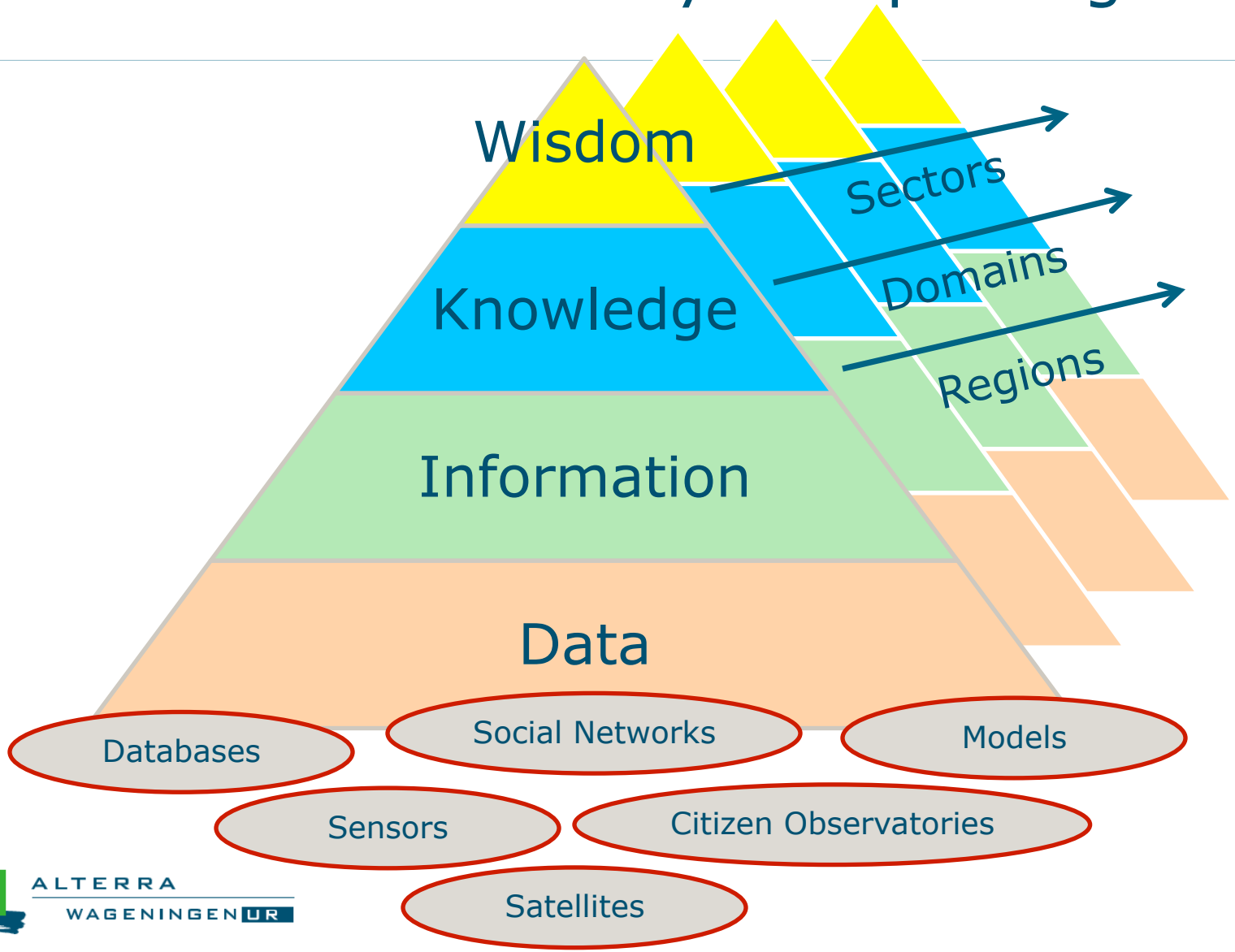


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Food security is a global challenge

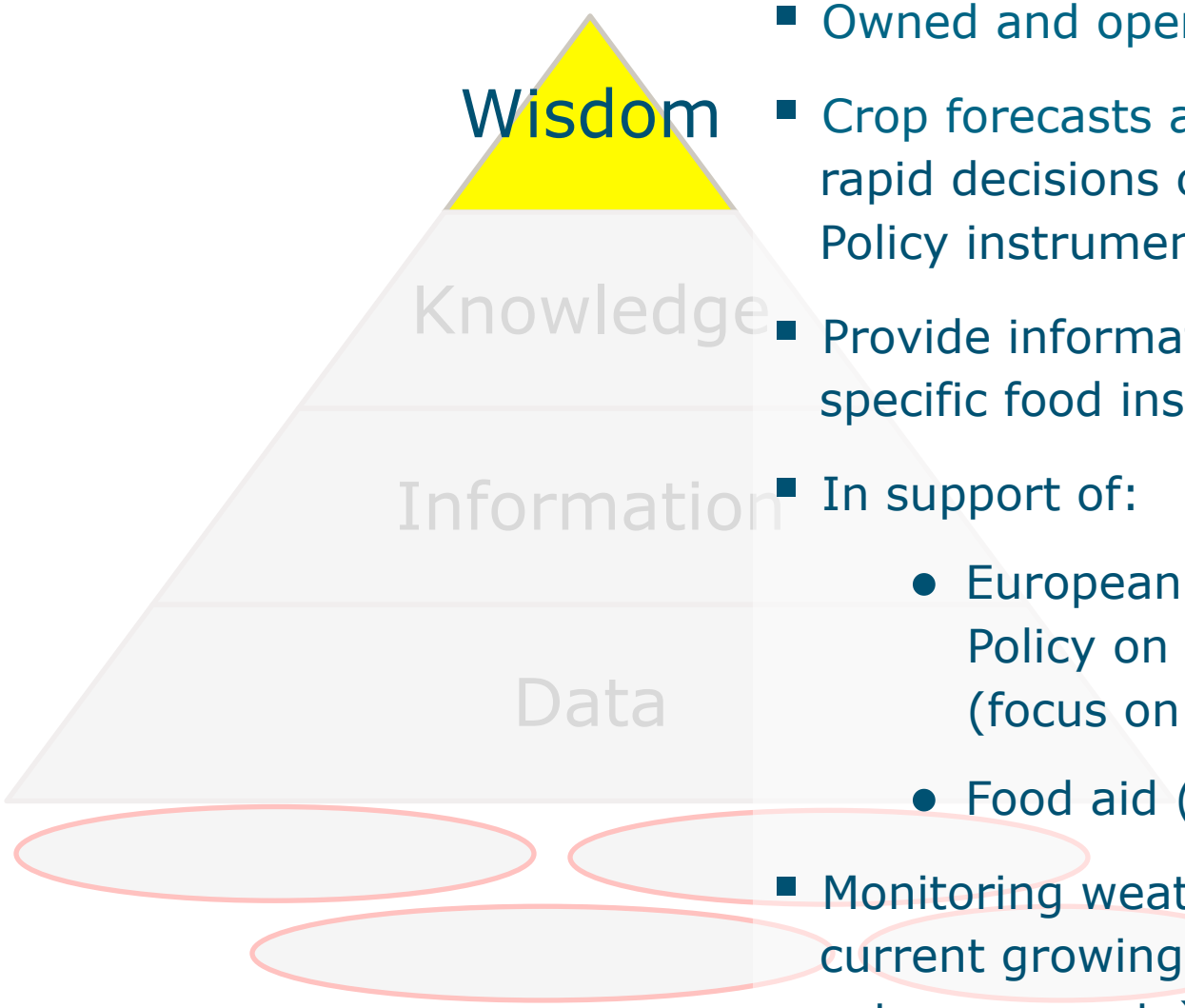
- Food security issues affect developed countries, but the largest of impacts occur and will keep occurring outside Europe, in developing countries
- A wealth of indispensable data and knowledge is available also outside Europe
- Cross-links to other domains: nexus water - land - energy
- Effective integrated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

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



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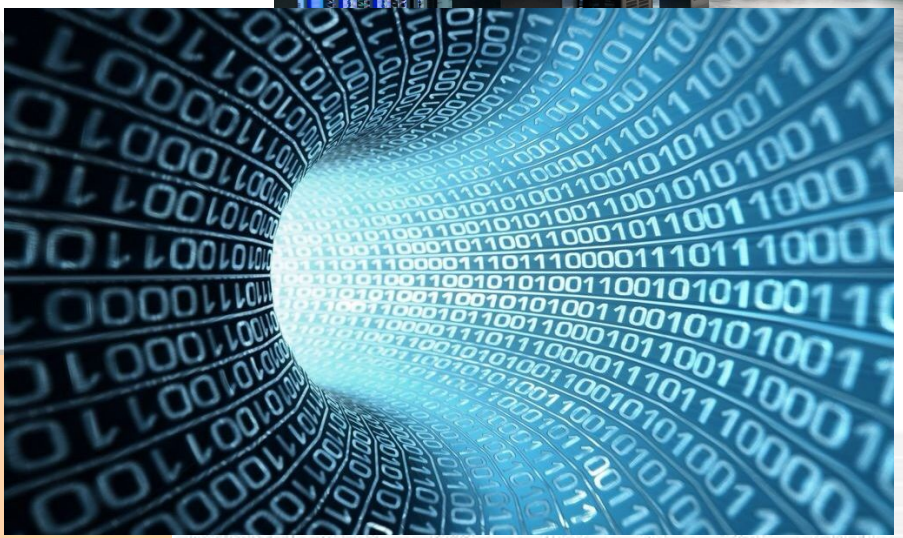
Example: Monitoring Agricultural ReSources (MARS)



- 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
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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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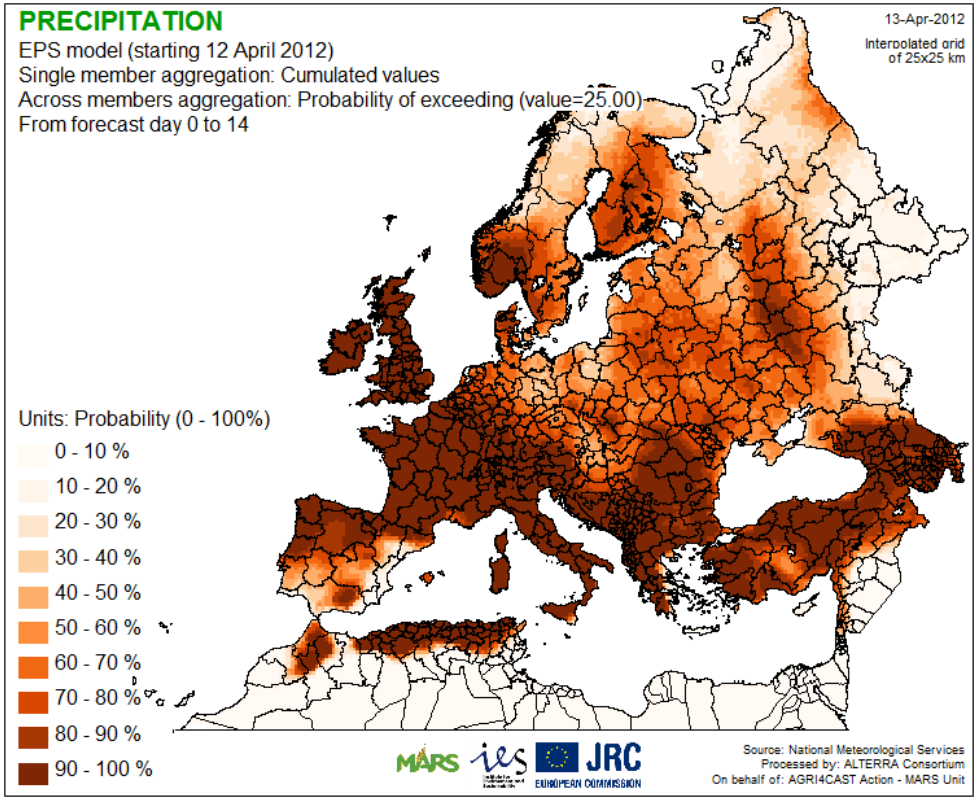
Example: Monitoring Agricultural ReSources (MARS)

Wisdom

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weather archives

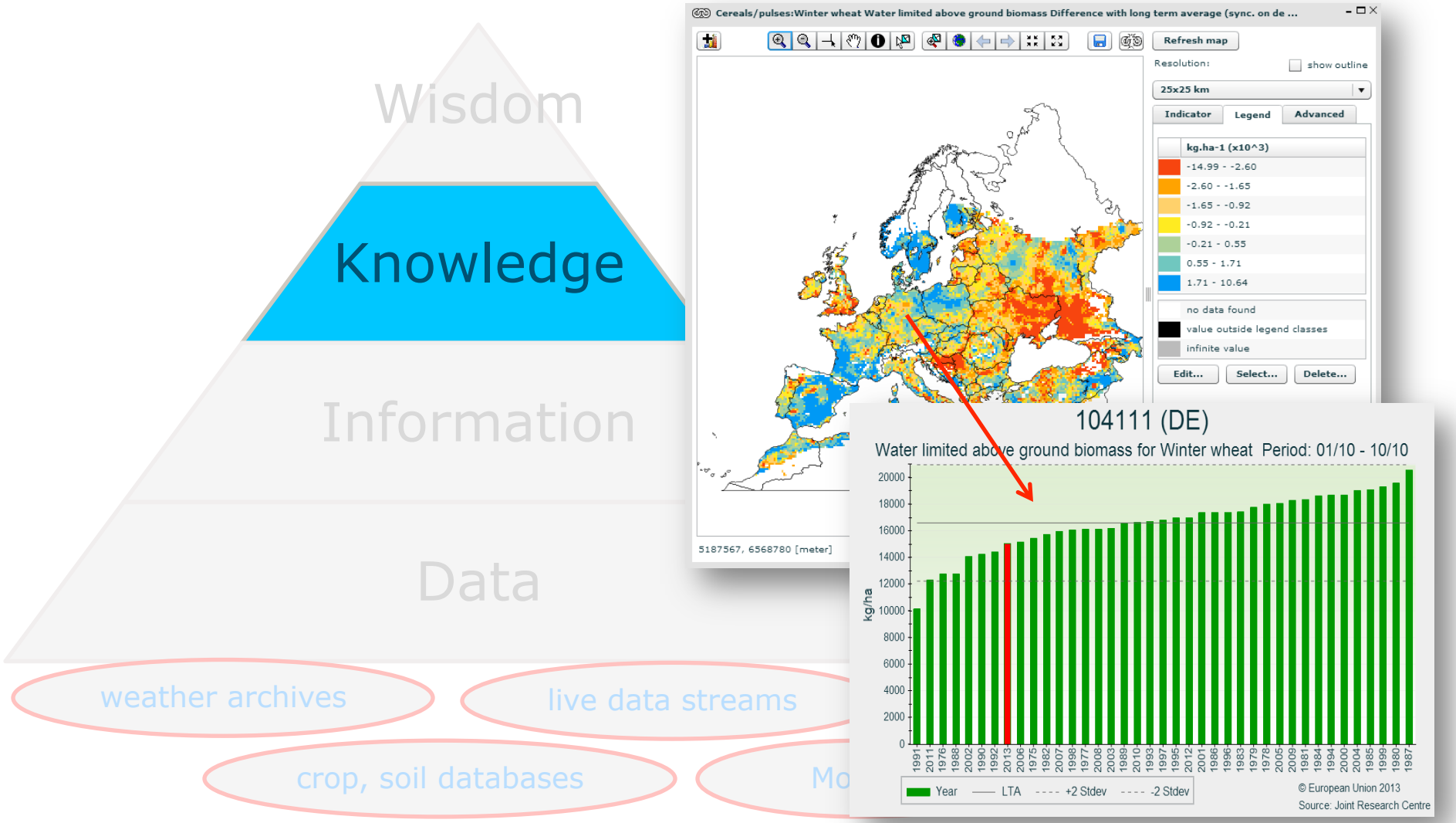
live data streams

crop, soil databases

Models

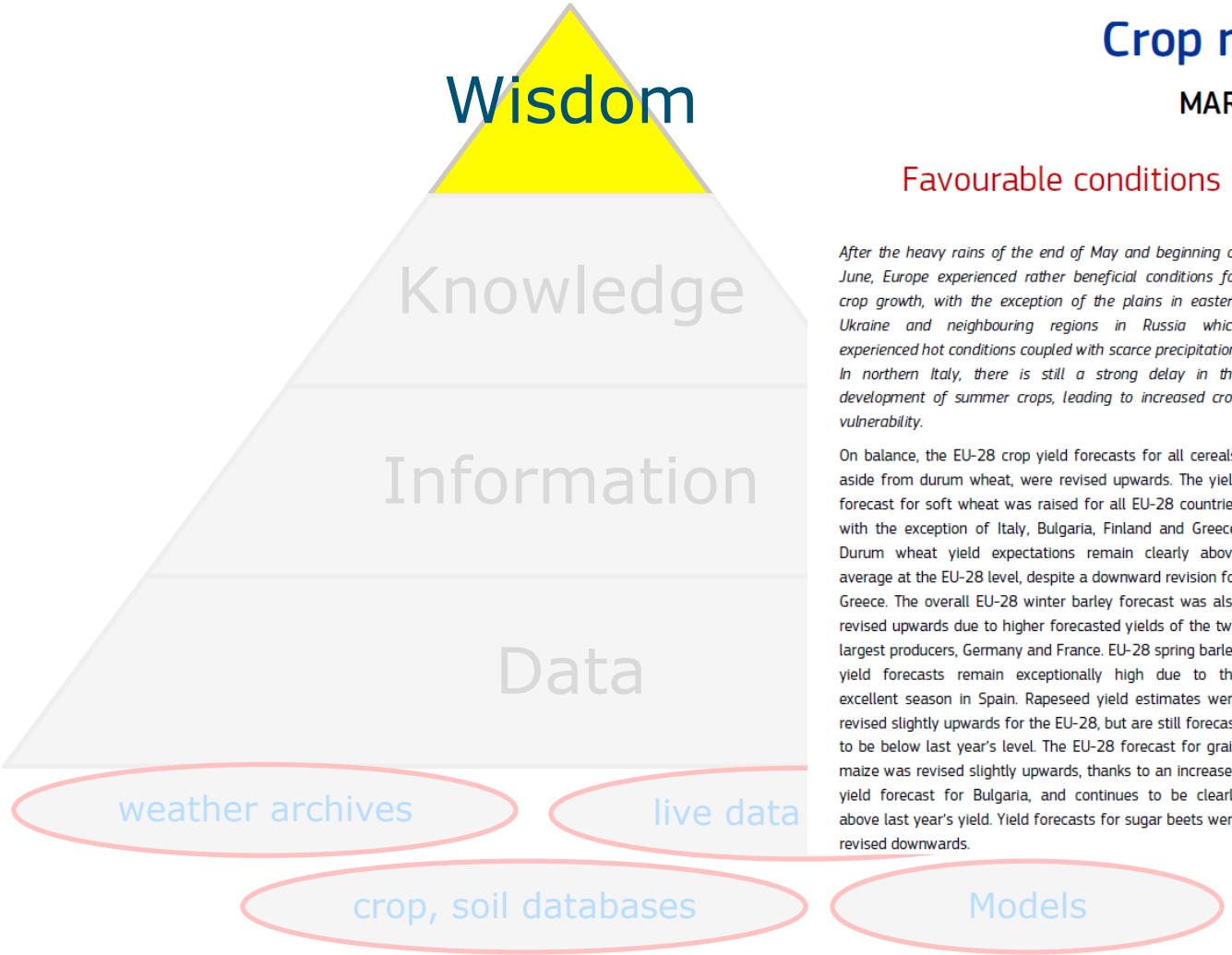
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Example: Monitoring Agricultural ReSources (MARS)



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Example: Monitoring Agricultural ReSources (MARS)



Crop monitoring in Europe

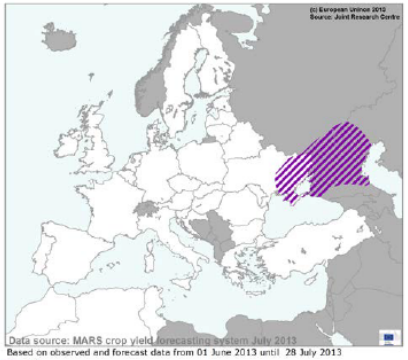
MARS Bulletin Vol. 21 No. 7 (2013)

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.

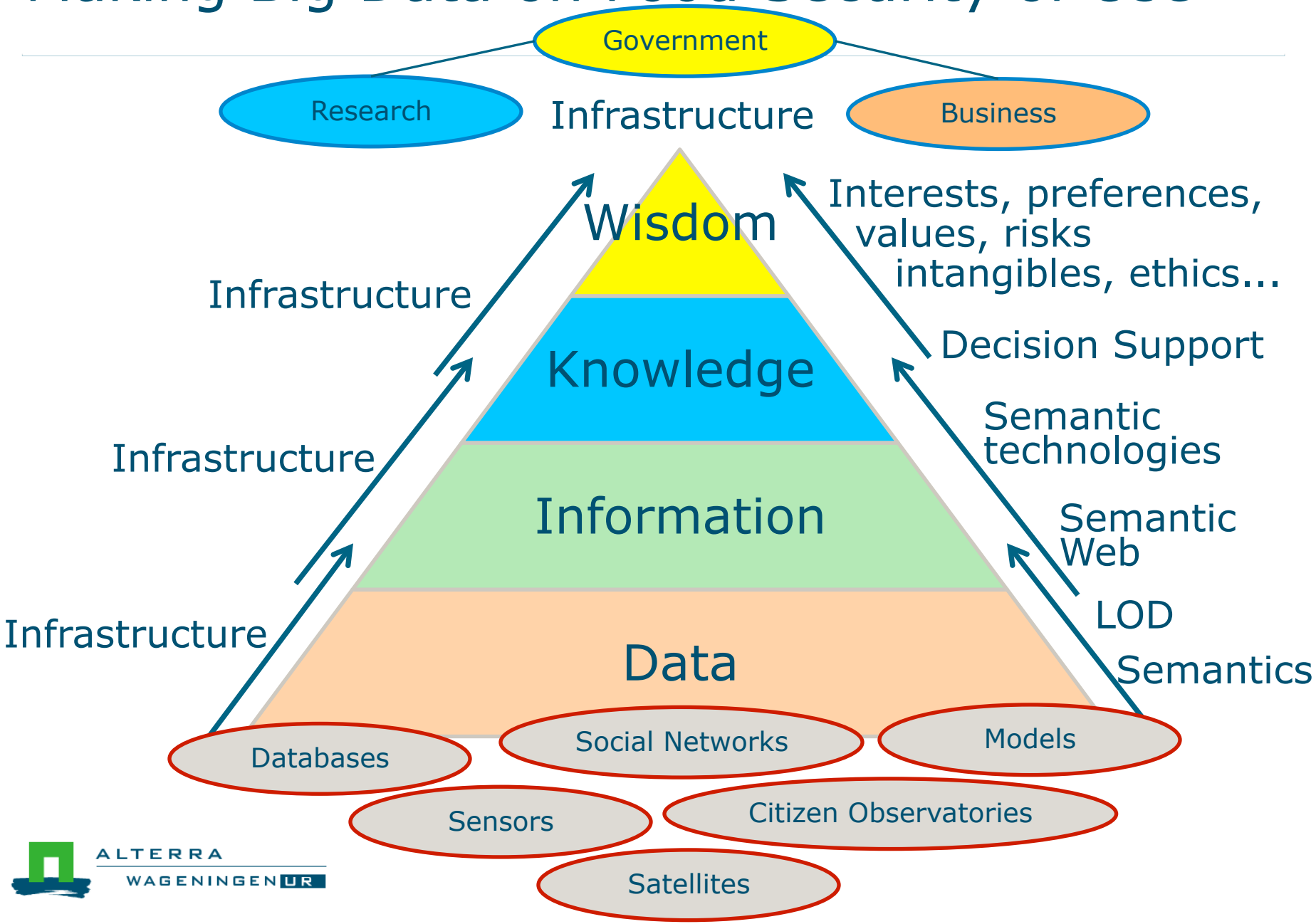
AREAS OF CONCERN - EXTREME WEATHER EVENTS



Crop	Yield t/ha				
	2012	MARS 2013 forecasts	Avg 5yrs	%13/12	%13/5yrs
TOTAL CEREALS	4.87	5.32	5.07	+9.1	+5.0
Total Wheat	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
Total Barley	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

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Making Big Data on Food Security of Use

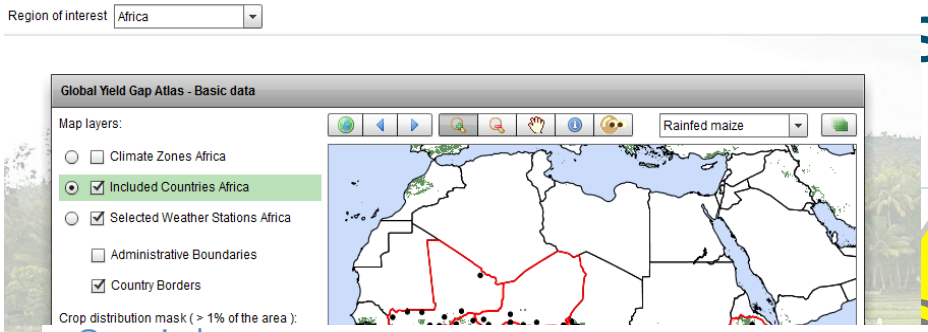


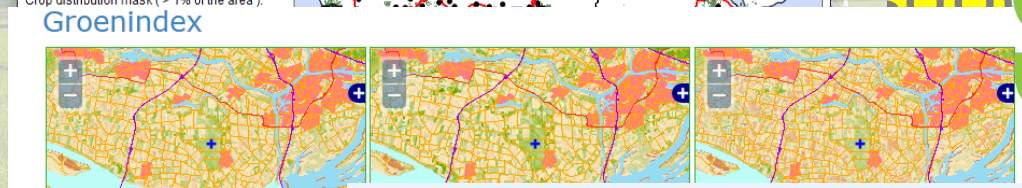
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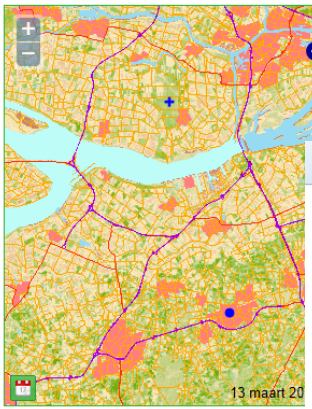
But: we also need access to this Big Data

- 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

s from Wageningen

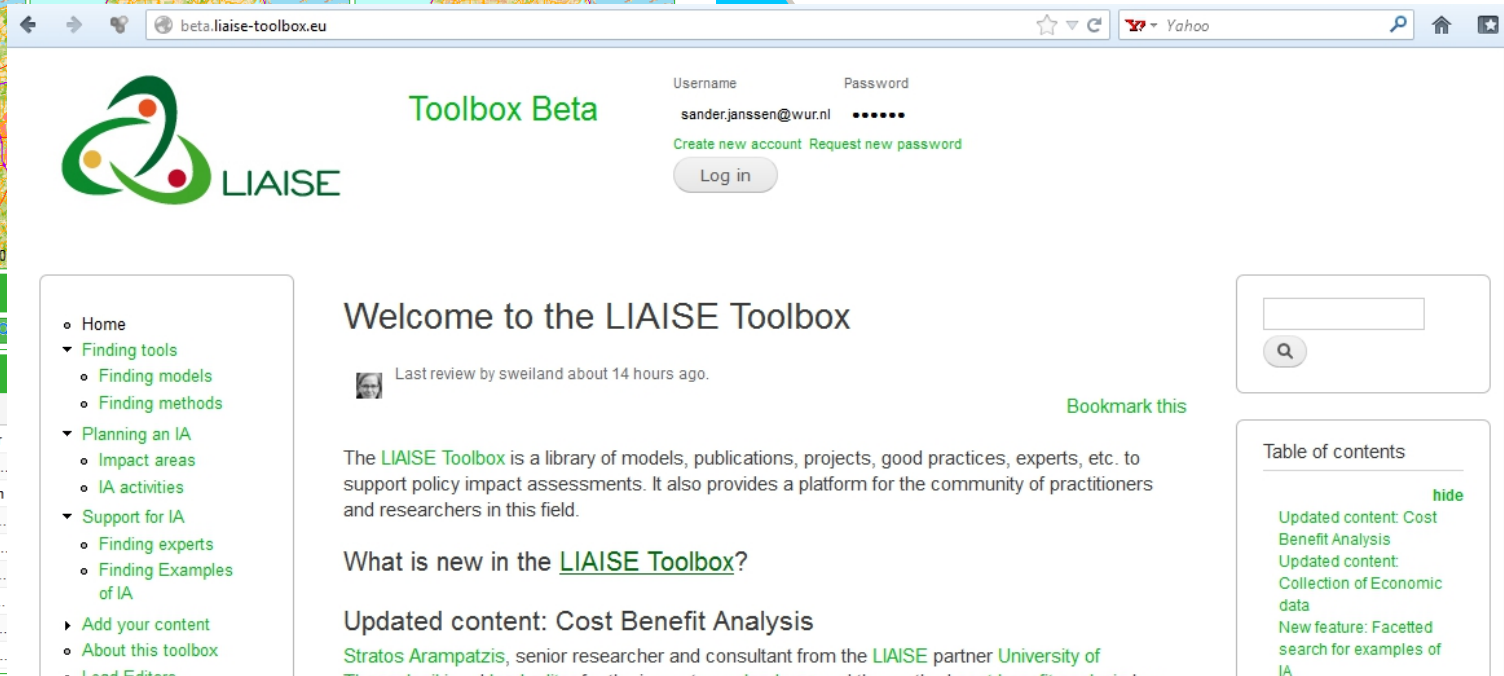








SemaGrow



Key Messages

- 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 evolvement 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

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