



# EO2HEAVEN

## Earth Observation and ENVironmental modelling for the mitigation of HEAlth risks

Overview of the EO2HEAVEN contribution to MDG Health  
2<sup>nd</sup> GEOSS Science and Technology Stakeholder Workshop,  
Bonn, August 29, 2012

Kym Watson (Fraunhofer IOSB)

FP7 244100, 2/2010 – 1/2013 (ext. to 5/2013 planned)

# Concept

EO2HEAVEN will develop a better understanding of the complex relationships between **environmental factors**, **population exposure**, and **health impacts**





# Multi-Disciplinary Approach



- Health
- Epidemiology
- Microbiology
- Geo-informatics, ICT
- Modelling and Statistics

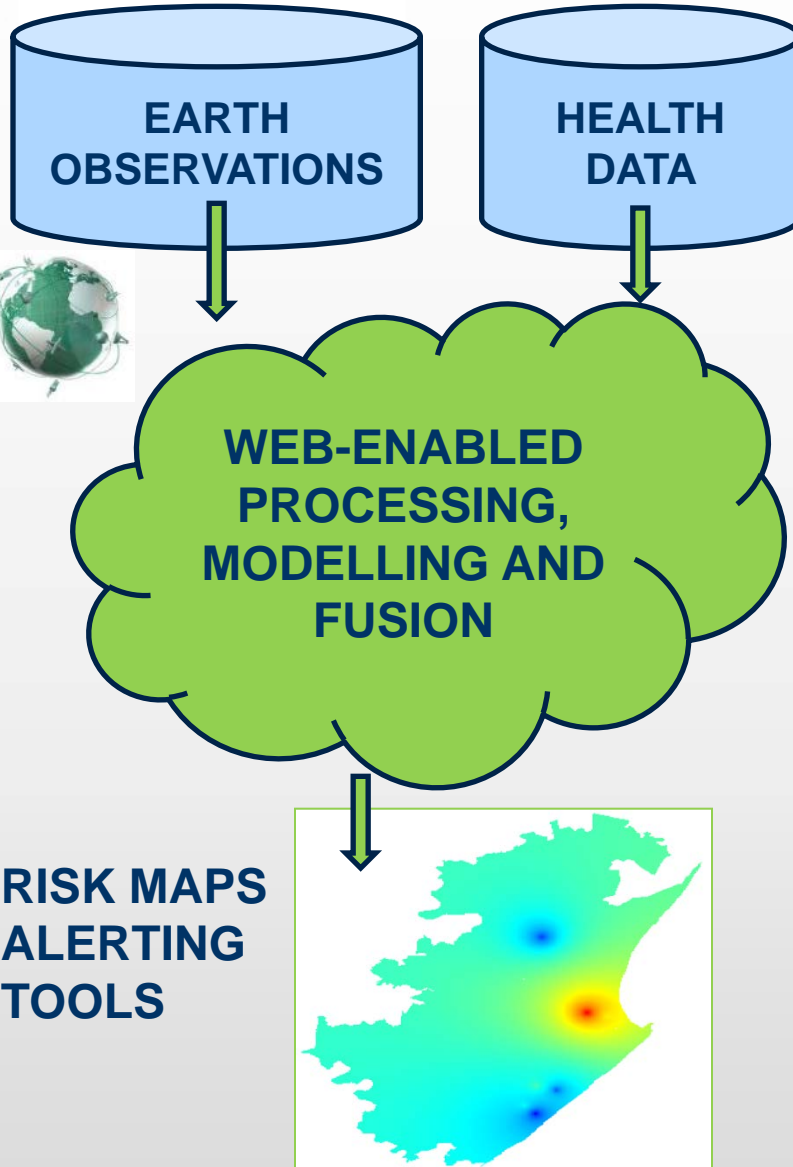


Makerere University College  
of Health Sciences



Royal Tropical Institute





## Air Quality and/or Aeroallergens

Image: UKZN



Durban,  
Saxony

## Water borne disease cholera

Image: S. Woodborne, CSIR



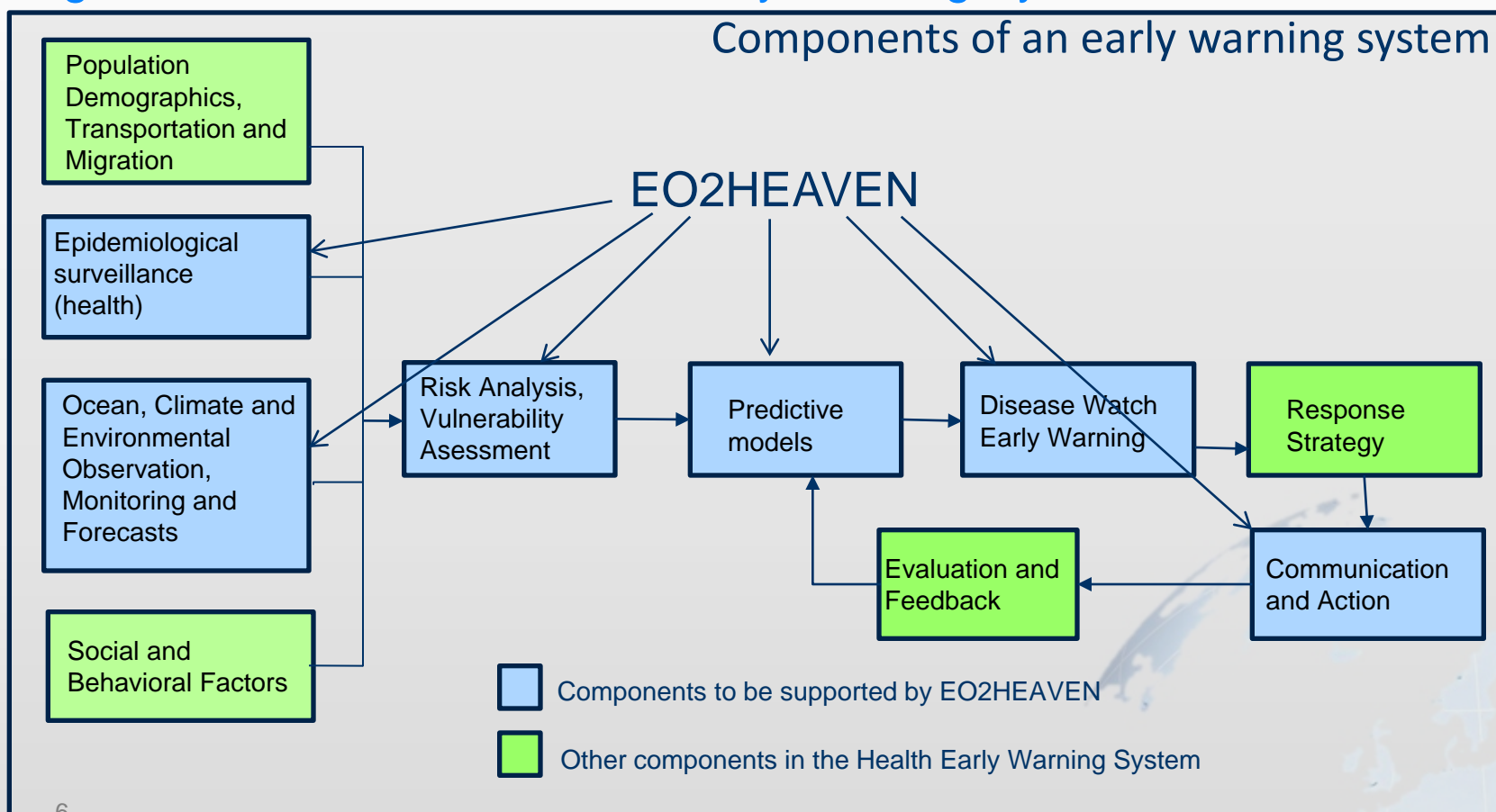
Uganda

# EO<sup>2</sup>HEAVEN Contributions to GEO Workplan 2012-2015

- HE 01 Tools and Information for Health Decision Making
  - C1 Air-borne Diseases, Air Quality and Aeroallergens
  - C2 Water-borne Diseases, Water Quality and Risk
- EO<sup>2</sup>HEAVEN leads the AIP 5 threads (in IN 05 GEOSS Design and Interoperability)
  - *SBA Health: AQ and Waterborne* thread
  - *Mobile clients*
- Participates in Health & Environment CoP



EO2HEAVEN is developing components of a **Health Risk Information System**,  
e.g. for use in the WHO GIMS Early Warning System



# Spatial Information Infrastructure



# S&T Innovation, Research Challenges

- Interoperability and linking with other data sources
  - mobile clients, repositories, ...
- Fusion of EO and in-situ data
- Relations environment – microbiology - epidemiology
- Development of health risk indices for decision support
- Extendibility of modeling to other contexts
- Controlled access to data and services
  - esp. health related



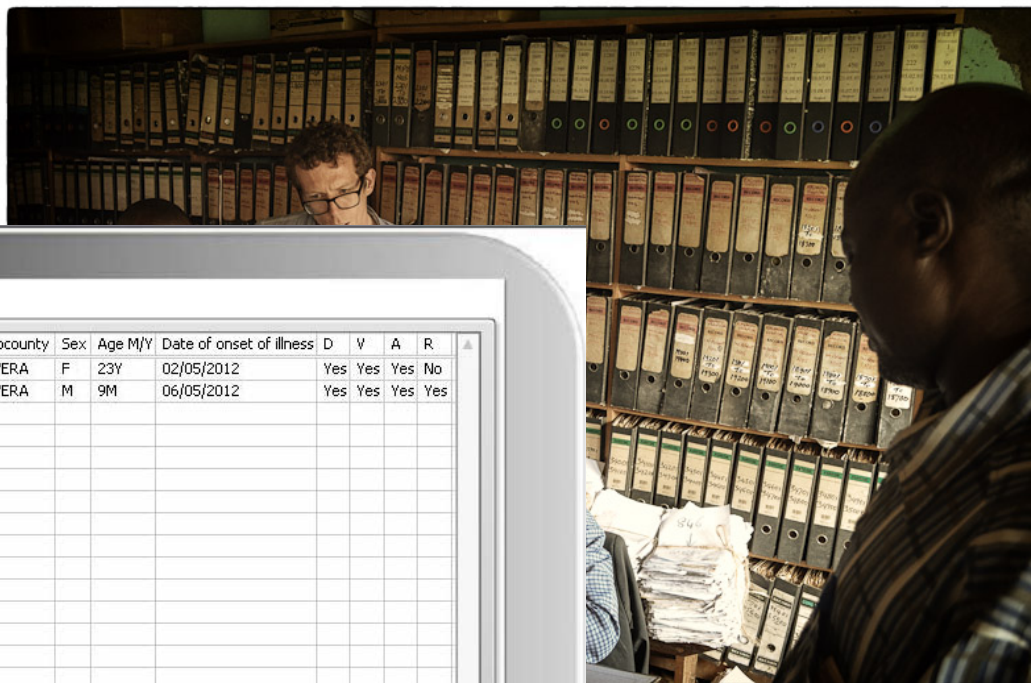
# Making the results sustainable

- Capacity building with stakeholders
- Best practices
  - Management of health & environment data
  - Microbiological sampling
- Software Components as open source
- SII Specifications openly available through OGC
- Collaboration with organisations in GEO Health & Environment CoP

# Recording cholera cases in Uganda

COMMUNICABLE DISEASE SURVEILLANCE FORM  
UNIT: BWERA HOSPITAL DISEASE: CHOLERA

DATE	VILLAGE	SUB COUNTY	SEX	AGE	DATE ON SET OF
270 10/12/2012	Karamoja	Mpigi	F	90	09/12/12
271 10/12/2012	Karamoja	Isonjo	F	35	09/12/12
272 11/12/2012	Karamoja	Nyagolondo	F	23	11/12/12
273 11/12/2012	Karamoja	Karamoja	F	60	10/12/12
274 11/12/2012	Karamoja	Isonjo	M	17	11/12/12
275 11/12/2012	Karamoja	Karamoja	F	20	11/12/12
276 11/12/2012	Karamoja	Nyagolondo	F	30	11/12/12
277 11/12/2012	Karamoja	Nyagolondo	M	22	11/12/12
278 11/12/2012	Karamoja	Mpigi	F	49	11/12/12
279 11/12/2012	Karamoja	Mpigi	F	15	12/12/12
280 12/12/2012	Karamoja	Nyagolondo	F	30	12/12/12
281 12/12/2012	Karamoja	Isonjo	F	12	12/12/12



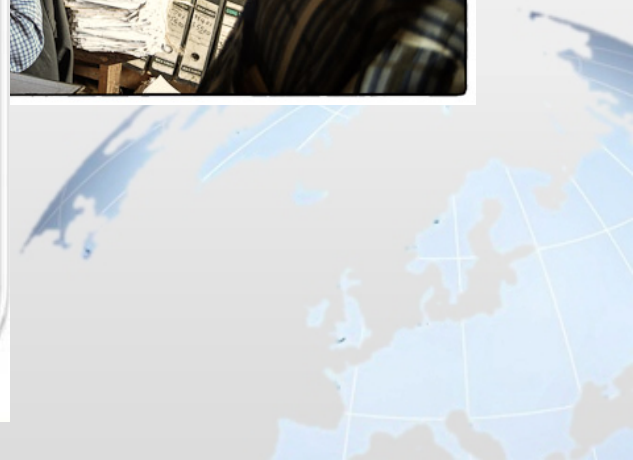
Mobile Application for Cholera Case Reporting

ID	Date	Family Name	Given Name	Village	Subcounty	Sex	Age M/Y	Date of onset of illness	D	V	A	R
001	11/05/2012	ABC	Rosa	IRUGHE	BWERA	F	23Y	02/05/2012	Yes	Yes	Yes	No
002	11/05/2012	XYZ	John	KYOGHA SOUTH	BWERA	M	9M	06/05/2012	Yes	Yes	Yes	Yes

Exit Application    Stationname: BWERA HOSPITAL

Print weekly report    Print HMIS 033b form    Analytics    Export to csv    New Patient    Update Patient    Settings

Tablet computer



# Supporting MDGs

- Gain knowledge of relationship between
  - Health (respiratory and cardiovascular diseases, cholera)
  - Environment & climate: air and water (supply, sanitation), microbiology
- Capacity building and education

## Outlook:

Clearly requires multidisciplinary approaches and presents challenge of multi-criteria decision making on actions in face of conflicting interests.

Need for systematic development of use cases and requirements with stakeholder involvement

# Thank you for your attention

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