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German Committee for Disaster Reduction

within the International Strategy for Distaster Reduction (ISDR)

Friedemann Wenzel

Early Warning in the urban context – needs and requirements

EMI

Earthquakes and Megacities Initiative

CEDIM

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Topics

- Examples of urban disasters
- Specifics of Early Warning in the urban context
- Approach to EW in cities
- New paradigm

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July/August 2003

Heat wave in Europe

- 10 days with temperatures in excess of 40 C
- 14.850 death (mostly elderly) in France
- 40.000 death in Europe
- Aggravated in cities with elevated temperatures
- Associated with power failures (2006 US, 2009 Melbourne)

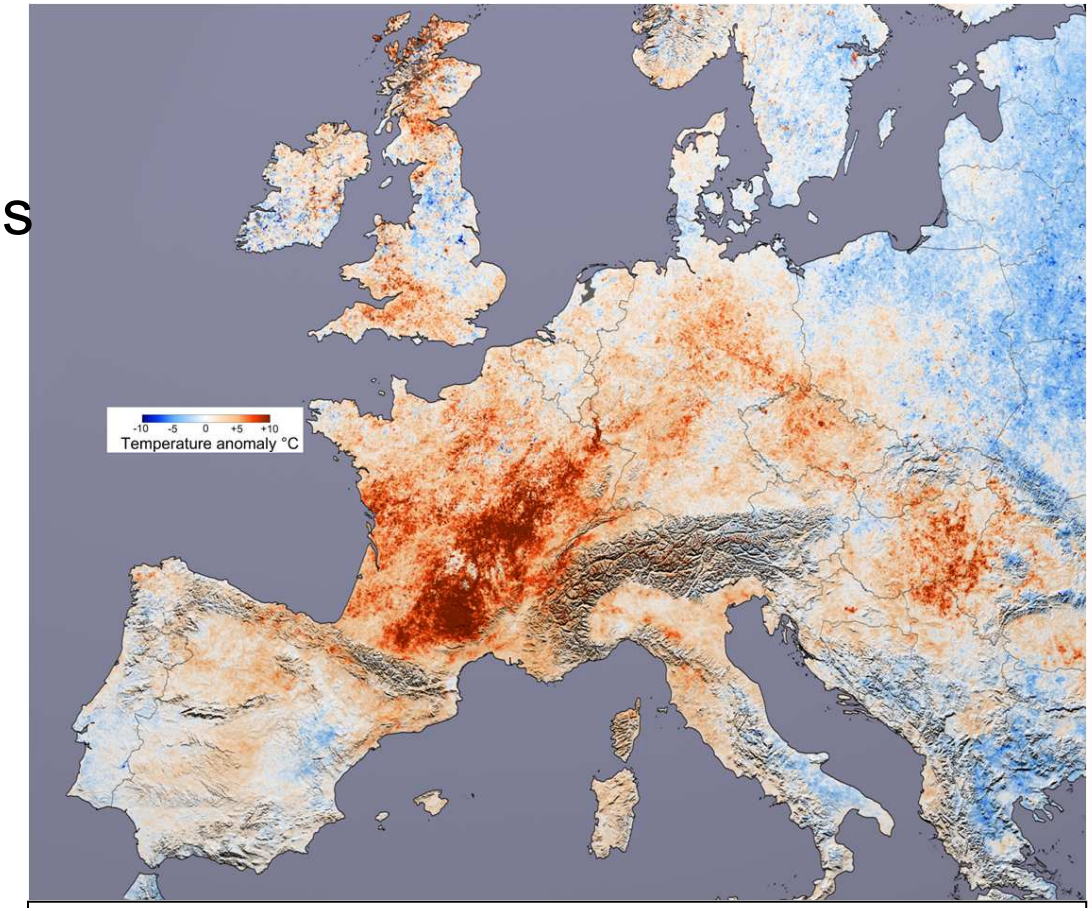

Image:R. Stöckli, R. Simmon and D. Herring, NASA Earth Observatory

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September 9, 2009
Flashfloods after 2 days of heavy rain in and around Istanbul

- 31 killed, 70 Mio. Euros loss
- Problems: lack of warning, settlements in flash flood areas

Photograph: Ibrahim Usta/AP

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March 11, 2011 Tohoku M9 earthquake

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March 11, 2011

Tohoku M9 earthquake and tsunami strike eastern coast of Honshu

- Heavy losses in Sendai city
- Early Warning in Japan
- Well prepared
- Still claimed many victims

Problems: Lack of electricity shortly after the earthquake
Many protection walls too low
Not enough time to escape
Elderly people

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Specifics in cities

- High dependency on lifelines and city services
- Some hazards are aggravated in cities
  - Heat waves (5 degrees warmer in large cities)
  - Urban floods affect sewage system, transport, debris
- High potential for losses due to disasters (high concentration of population and values)
- Emergency services available (although not always organized for large-scale disasters)
- Medical services available (although not always sufficient)
- Social networks work (frequently)

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Tasks for planning for Early Warning

- Identification of high risk areas.
- Identification of key agencies which play an active role in the routine operation of vulnerable system within the city.
- Identification of measures to be included in emergency plans related to emission of warnings, as well as anticipated response issues.
- Utilization of social networks and face book and twitter for communication.
- Identify role of private sector in securing lifeline functionality

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Approach to Early Warning

•Start from a city risk profile and identify specific hazards (for instance heat wave)

•Identify chance (frequency) and severity (implications)!

•What are the lead times for improving preparedness for relevant systems?

•These needs should drive the requirements for Early Warning. Scientist and engineers should then identify what kind of information can be provided with what level of accuracy or cannot be provided.

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Approach to Early Warning

Identify chance (frequency) and severity (implications):

- How many people seriously affected?
- Which groups suffer most (elderly)?
- What systems are key for keeping impact low (water supply, power supply, medical services)?
- What is the additional stress on these systems (more water needed, more hospital capacity, more medical help, …)?

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Approach to Early Warning

What are the lead times for improving preparedness for relevant systems?

- How long does it take to re-route power and water?
- How long does it take to mobilize better medical service?
- How long does it take to assure better care for target groups?
- How long does it take to advice people on proper conduct during crisis?
- How long does it take to evacuate people under crisis conditions?

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Change Approach to Early Warning

These needs and conditions should drive the design of Early Warning Systems. Scientist and engineers should then identify what kind of information can be provided with what level of accuracy.

Make the last mile to the first mile!

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Thank You!

For more information visit

www.dkkv.org
www.emi-megacities.org
www.cedim.de

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Challenges for various stakeholders

Major's office: Organize processes: Working groups across administrative boundaries, involve central state level, provide authority to the development of Early Warning Systems, utilize city partnerships for knowledge sharing

City Emergency Management: Organize training of stakeholders, implement EW in emergency management structure, plans and exercises

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Challenges for various stakeholders

City Services: Provide realistic scenarios for services, their capacities, their response under stress, requested times for build-ups and capacity enhancement.

Private Sector: Provide incentives for implementation.

Science/Engineering: Develop and up-date the city risk profile, hazard and risk assessment, given the requested lead time for action (provided by other stakeholders), what can be provided by science? What kind of methodology/technology has to be implemented? Costs? Certainty of information?