



Crisis Management during the floods 2002 & 2013

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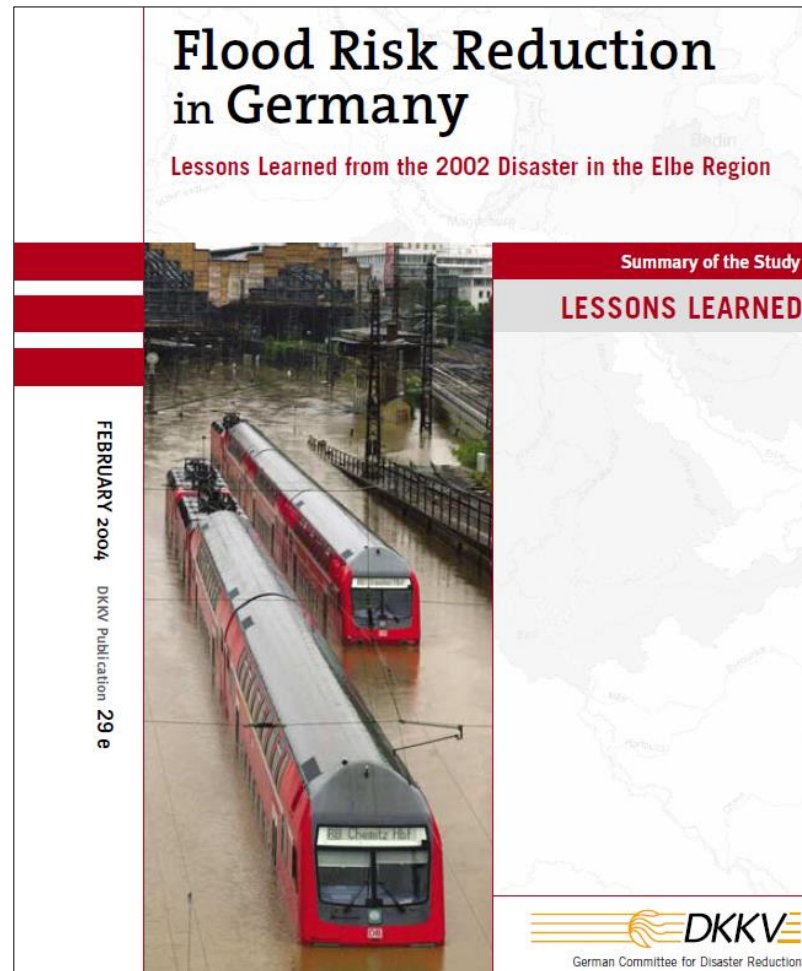
4th Dutch-German-French workshop

FROM FLOOD FORECASTS TO EFFECTIVE EMERGENCY RESPONSE MEASURES

Magdeburg

29.09.2021

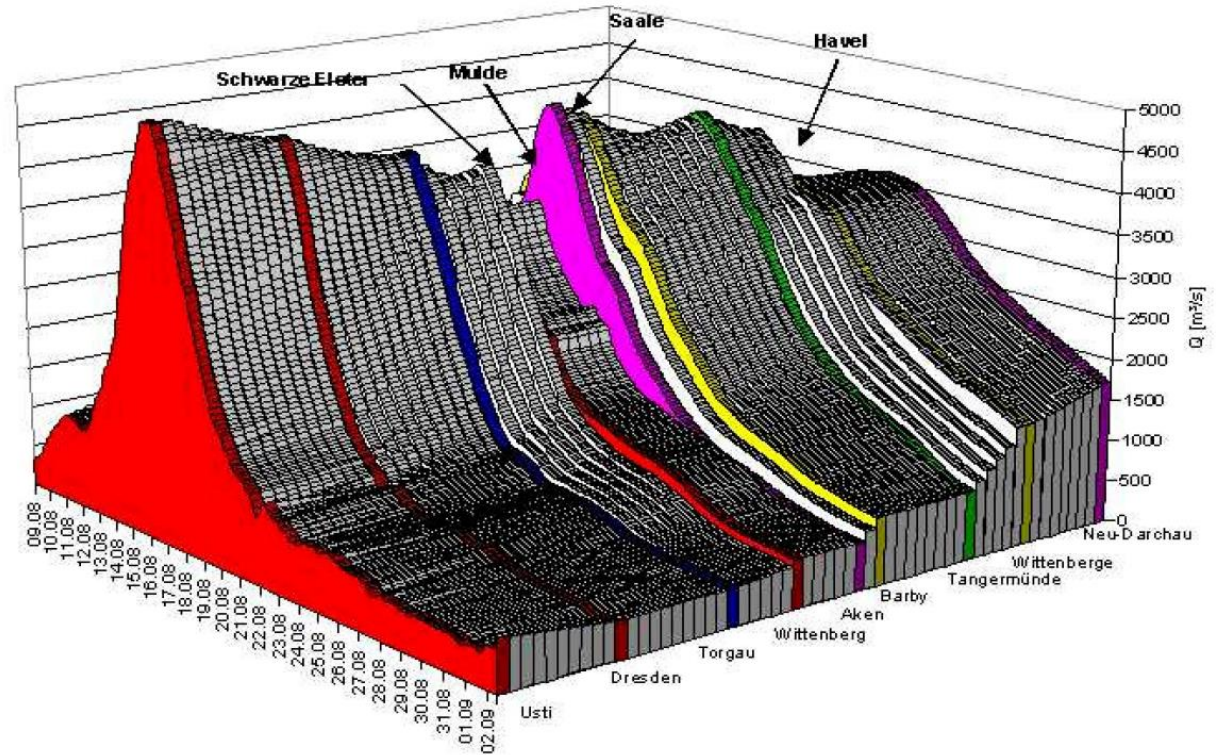
Flood 2002



Flood 2002

Wave runoff

Elbe river



Flood 2002

Damages



August 14, 2000



August 20, 2002

Flood 2002

Damages



Flood 2002

Damages



Dyke failure Dessau-Waldersee



Dyke restoration near Axien (Elbe)

- Transport facilities
- Public buildings
- Commercial companies in agriculture
- Water management systems

Sum of damage in Saxony-Anhalt

approx. 2,0 billion €

Flood 2002

Damages



Dyke breach along the Mulde (Goitzsche)

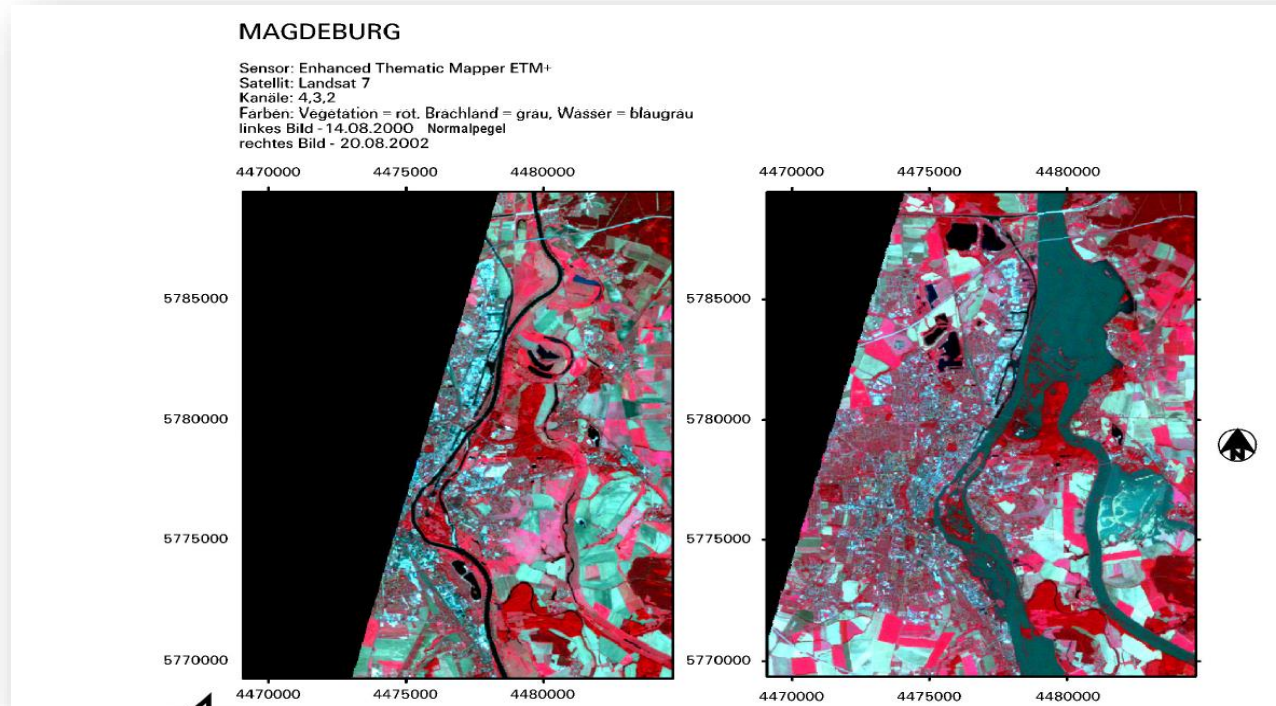
310 dyke failures

- 17 dyke breaches
- 53 dyke slots
- Slides of embankment

Sum of damage > 200 Mio. €

Flood 2002

Documentation

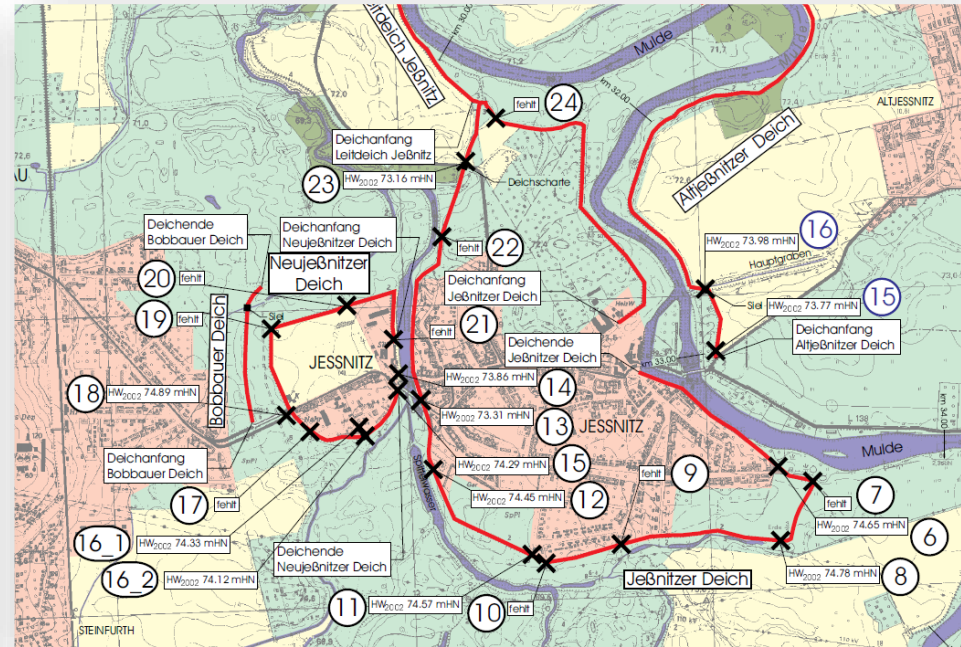


Flood 2002

Documentation



Aerial photos Mulde (Goitzsche) – only as printed paper !!!!



Terrestrial measurement of maximum water levels

Flood 2002

Documentation



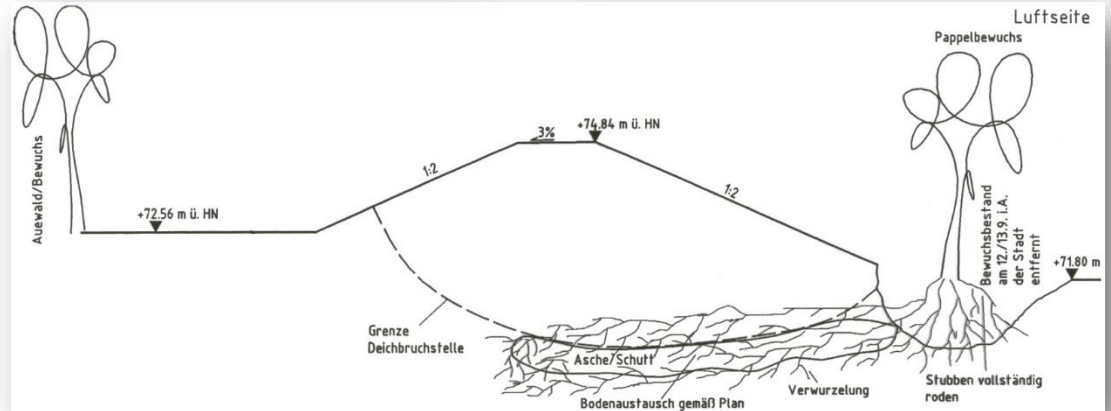
During the flood



After the flood

Flood 2002

Flood damages
often caused by roots



Flood 2002

Flood damage repair



Baustellenberatung zur Sanierung der Quallmdeiche am rechten Elbedeich zwischen Wulkau und Sandau, Deich-km 72,63 bis 74,12 mit Verstärkung der Landseitigen Deichböschung des Hauptdeiches wegen akuter Standsicherheitsmängel auf ca. 400m als Sofortmaßnahme 2003 (Foto: M. C. Hahn)



Anhebung der Berme und Wiederherstellung des Deichverteidigungsweges vom Reetz - Wische - Deich bis zum Garbeabschlussdeich, 1. BA Elbedeich-km 52,40 - 54,00; 24.09.2003, Foto 149

Flood 2002

Flood damage repair 2003

- 130 km dykes were restored (DIN19712)
- along 17,7 km with special solutions (retaining walls, ...)
- 60 km dyke defense paths (new or restored)
- Restoration of 67 water management systems (weirs, ...)
- Restoration of 24 km bank demolitions



Flood protection concept until 2010

Design of better basic datasets

- Creation of a digital terrain model
- Dyke documentation & dyke register
- Development of technical principles for the establishment of flood areas
- Surveying dykes and bodies of water
- Development of flood protection plans

Hochwasserschutzkonzeption
des
Landes Sachsen-Anhalt
bis 2010
(Stand: 26. März 2003)



Sachsen-Anhalt

Ministerium für Landwirtschaft und Umwelt

Flood protection concept until 2010

Flood protection concept – realisation

- Since 2002 more than 450 Mio. € were used for the realisation of flood protection measures and the restoration of damages
- Almost 511 km of 1,312 km of dykes under the responsibility of the country have been restored (approx. 50%)



Flood protection concept until 2020

From flood protection to flood risk management

Integrated approach

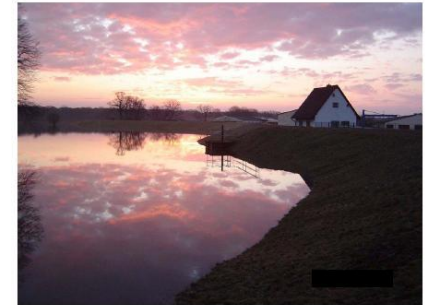
- Flood protection measures (dykes DIN 19712)
- Retention areas
- Polder systems
- Flood risk management plans



Hochwasserschutzkonzeption des Landes Sachsen-Anhalt

bis 2020

(Entwurf Stand 20.10.2010)

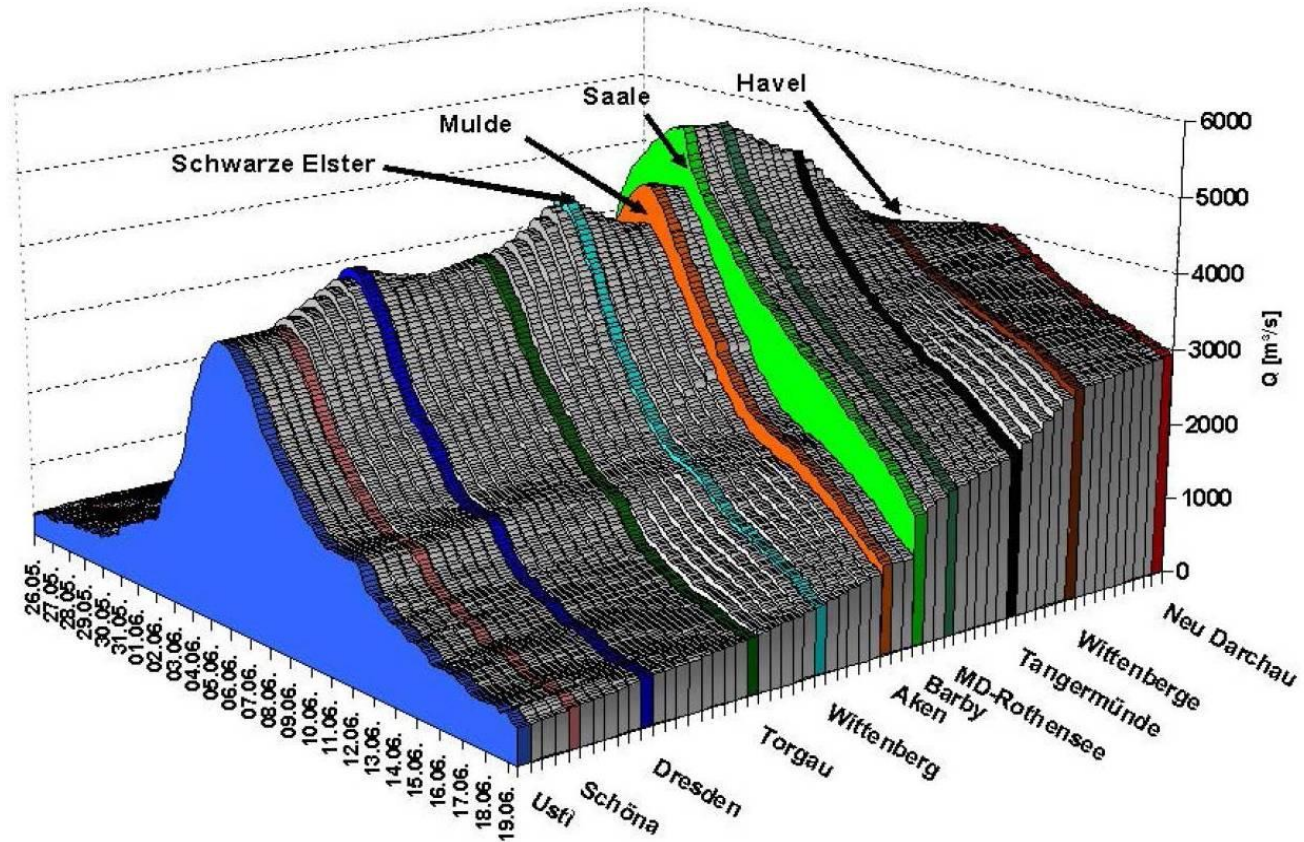



SACHSEN-ANHALT
Ministerium für
Landwirtschaft und Umwelt

Flood 2013

Wave runoff

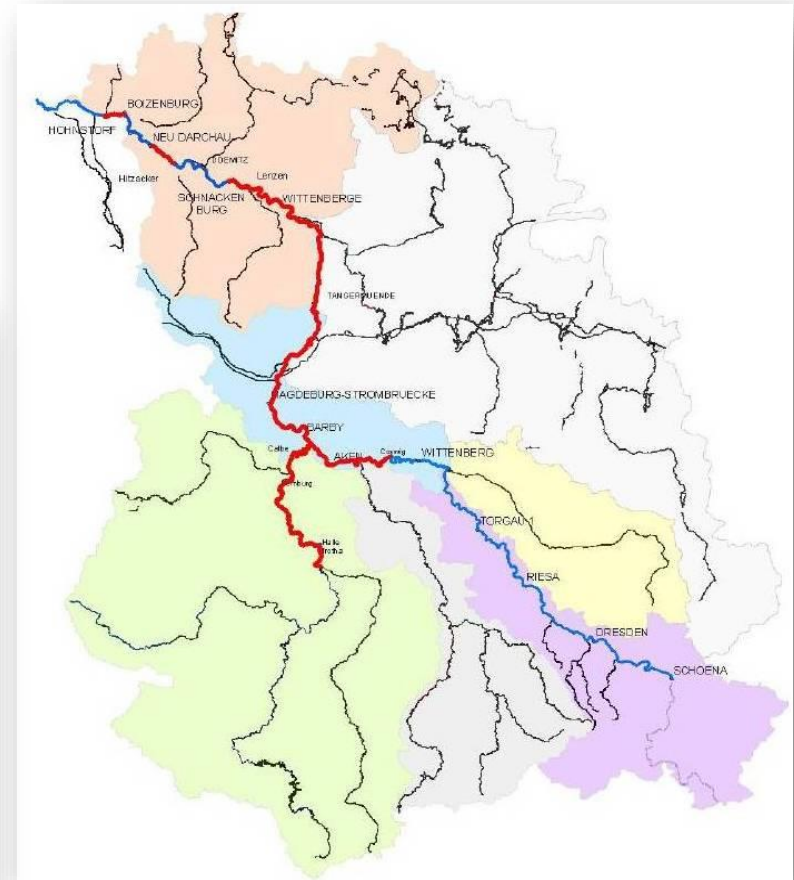
Elbe river



Flood 2013

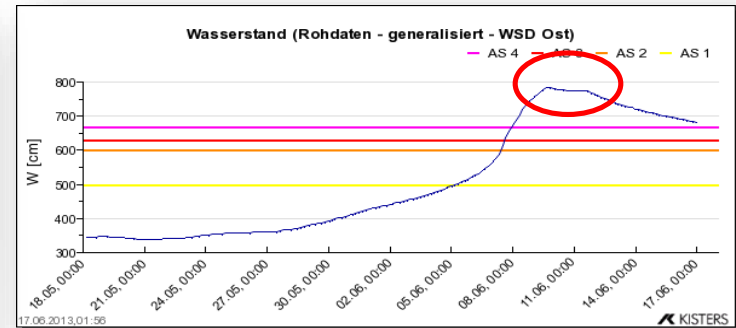
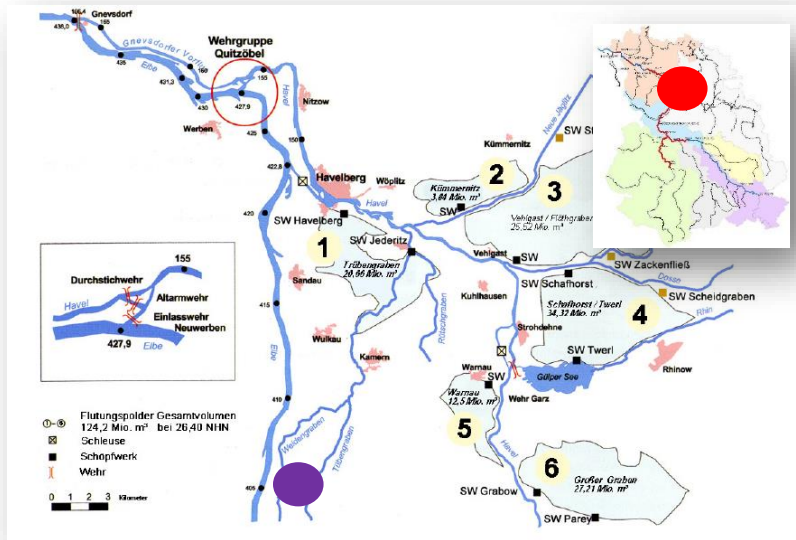
New maximum water levels

(red colored)



Flood 2013

Usage of the „Havel polder system“ impacted by the dyke breach Fischbeck



- Lowering of the peak up to 30 - 40 cm (Wittenberge)

Flood 2013

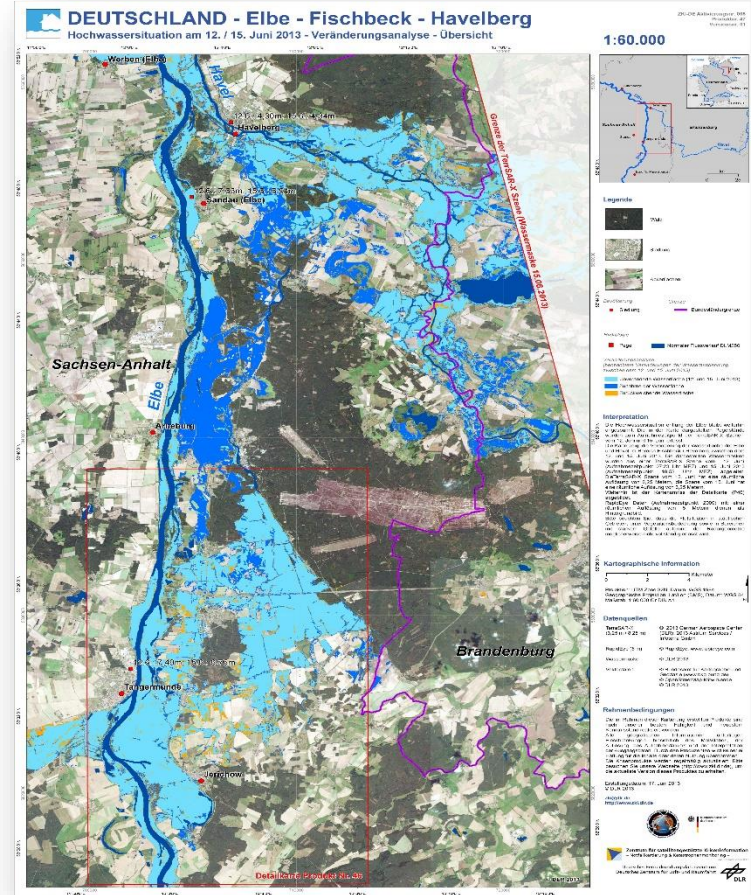
Dyke breach Fischbeck (Elbe/ Havel) – flooding of 150 km²



Flood 2013

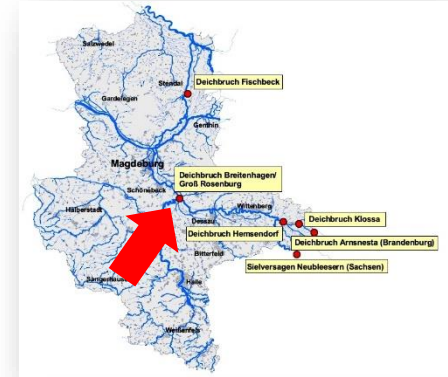
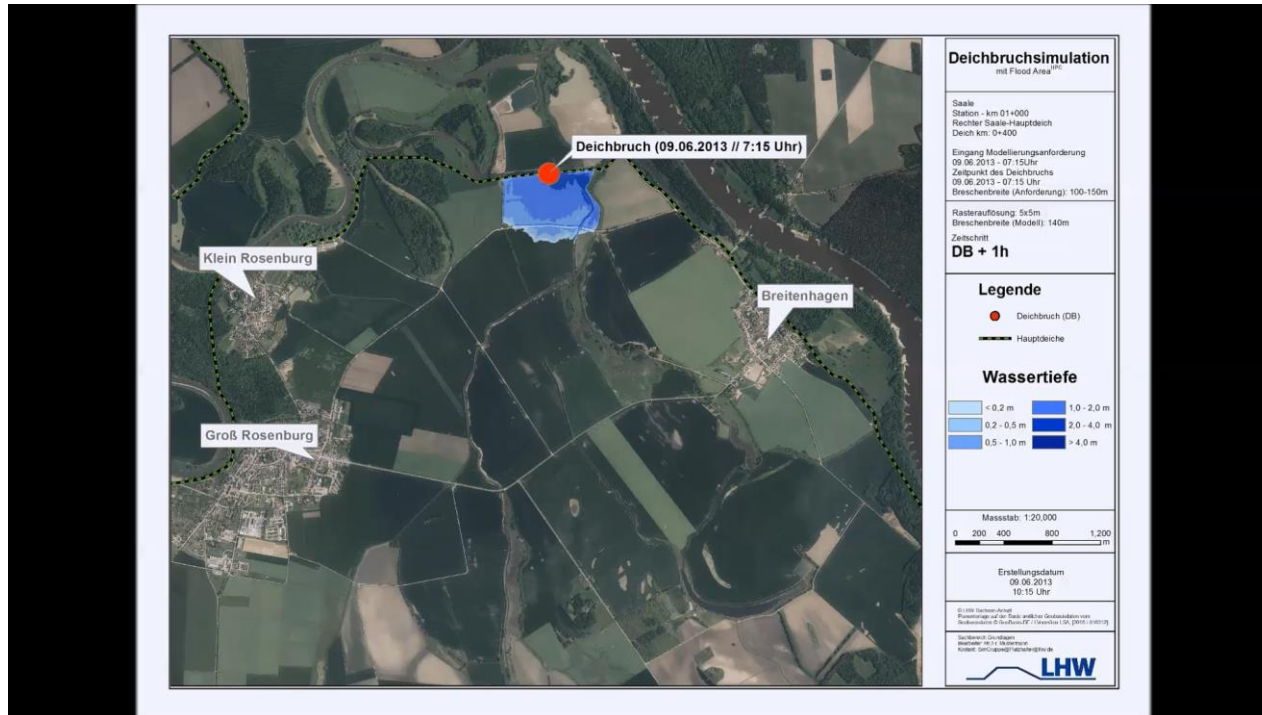
Dyke breach Fischbeck (Elbe/ Havel)

- Daily observations flights
- Usage of satellite maps



Flood 2013

Dyke breach Breitenhagen (Elbe/ Saale) – flooding of 85 km²



Flood 2013

Great floodings in the urban areas of Magdeburg, Halle & Zeitz



Flood 2013

Damages

Sum of damage approx. 2,7 billion €

- All realised measure after 2002 were successful with no damages.
- New maximum water levels led to great damages and showed the limits of the flood protection level.



Floods 2002 & 2013

Experiences

- **Communication**
- Trust in flood forecasting
- Usage of GIS & model data
- Pragmatic solutions for closing of dyke breaches
- Social media



Floods 2002 & 2013

Experiences

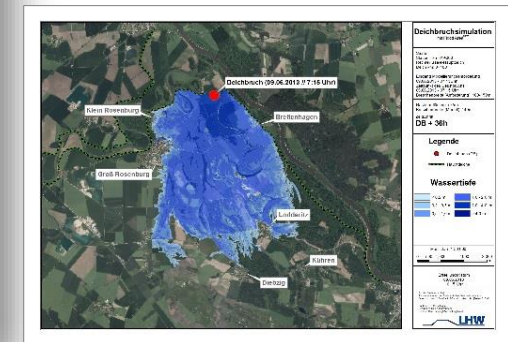
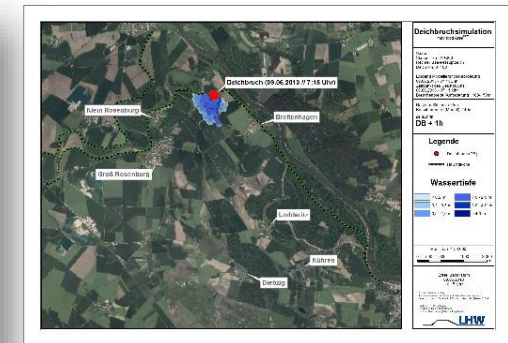
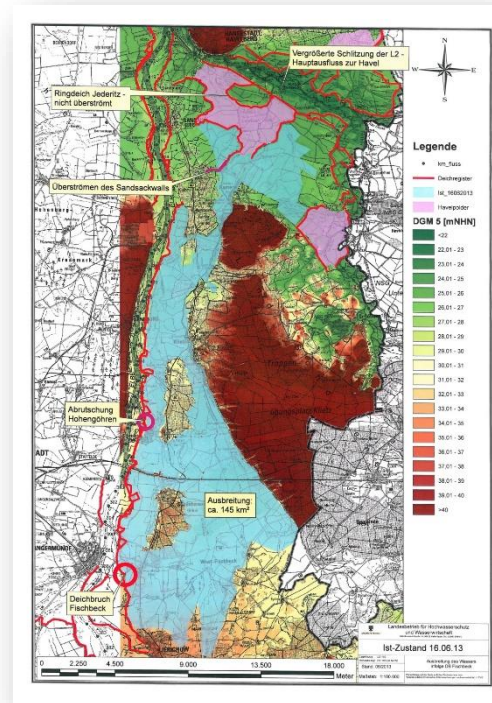
- Communication
- **Trust in flood forecasting**
- Usage of GIS & model data
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Floods 2002 & 2013

Experiences

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Floods 2002 & 2013

Experiences

- Communication
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Floods 2002 & 2013

Experiences

- Communication
- Trust in flood forecasting
- Usage of GIS & model data
- Pragmatic solutions for closing of dyke breaches
- **Social media**

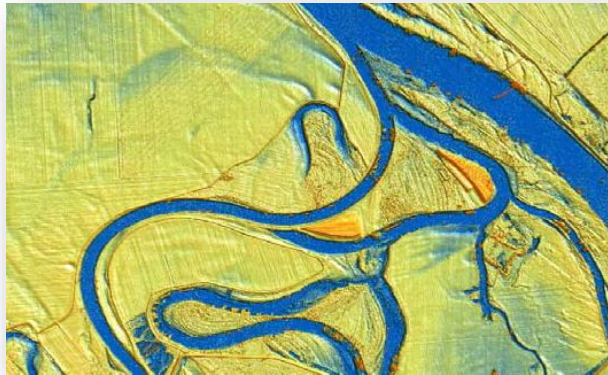


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Conclusion

What we need

- Data, plans and concepts – Flood Risk Management



Conclusion

What we need

- Long-term financing



Conclusion

What we need

- Dykes, which are controllable and defensible - Dyke defense paths !!!

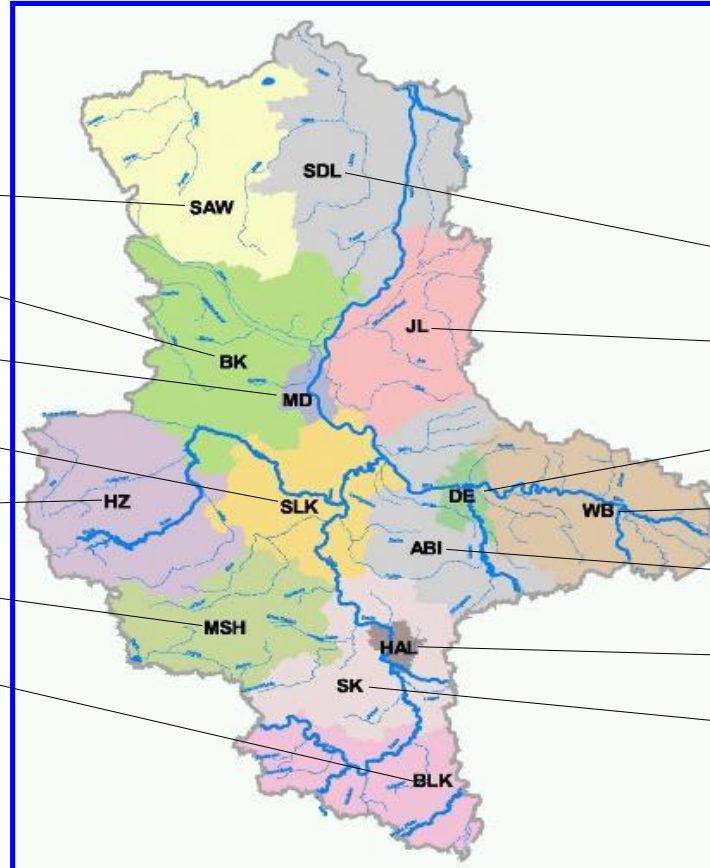


Conclusion

What we reached

1.854.986 €
29.710.196 €
49.195.780 €
157.705.836 €
26.189.242 €
29.425.286 €
39.393.007 €

Stand: 16.04.2021



Summe aller Fonds

(GAK/SGAK/AH/EAGFL/ELER/EFRE/EFF/WRRL/AH-2013/
USP/ASP/NHWSP/WP)

01.01.2002 - 31.03.2021

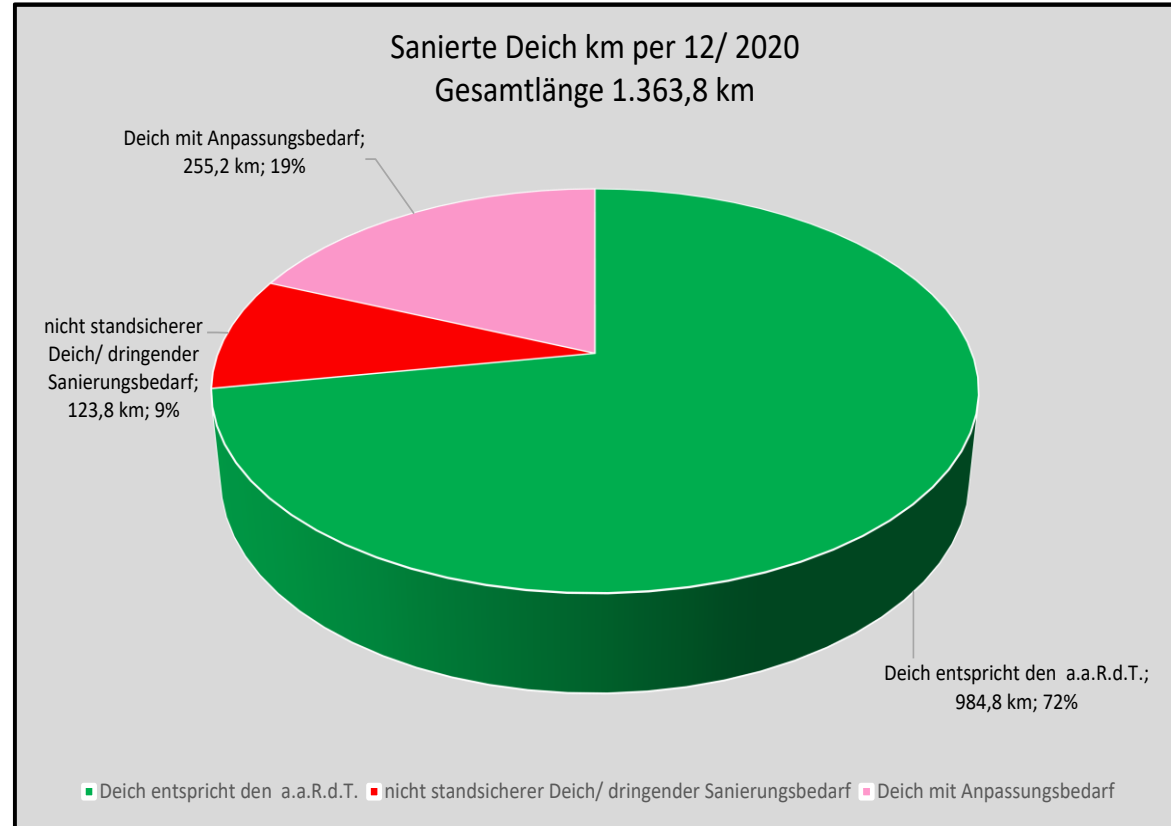
IST: 1.213.310.977 €*

320.120.551 €
99.255.582 €
90.525.081 €
185.589.047 €
132.551.638 €
1.686.417 €
38.378.041 €

* davon sind 11.730.287 €
gebietsübergreifende Maßnahmen

Conclusion

What we reached



Conclusion

What we need

- Robust and stable data and information connections



Conclusion

What we need

- Staff & Knowledge



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**Vielen Dank !!!
Bedankt!!!**