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After the Disaster – Cadastral Processes to Re-establish Legal Security

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Overview

- Motivation
- Addressed Disasters
- Austrian Cadastral Procedures
- Response Requirements
- Procedural Responses
- Conclusions

Motivation (1)

- Events remind us from time to time that the earth is not stable



Source: Imst District Surveyor's Office



Source: blogs.agu.org

Motivation (2)

- Disasters cause
 - Destroyed infrastructure
 - Devastated private property
 - Unrecognizable parcel boundaries
- Recovery from disaster has (Alexander, 2010)
 - A political aspect
 - A technical aspect
 - A legal aspect

This is the cadastral focus

Addressed Disasters

- Austria is landlocked (no tsunamis)
- Large part of country is covered by mountains
- Main disasters
 - Floods
 - Mass movements
 - Earthquakes

Floods

- Regular risk in mountainous regions
- Strong flooding can become mudflow
 - potential to change landscape
- High economic damage (UBA, 2015)
 - Flood in 2002: 3.2 Bill €
 - Flood in 2013: 870 Mill €

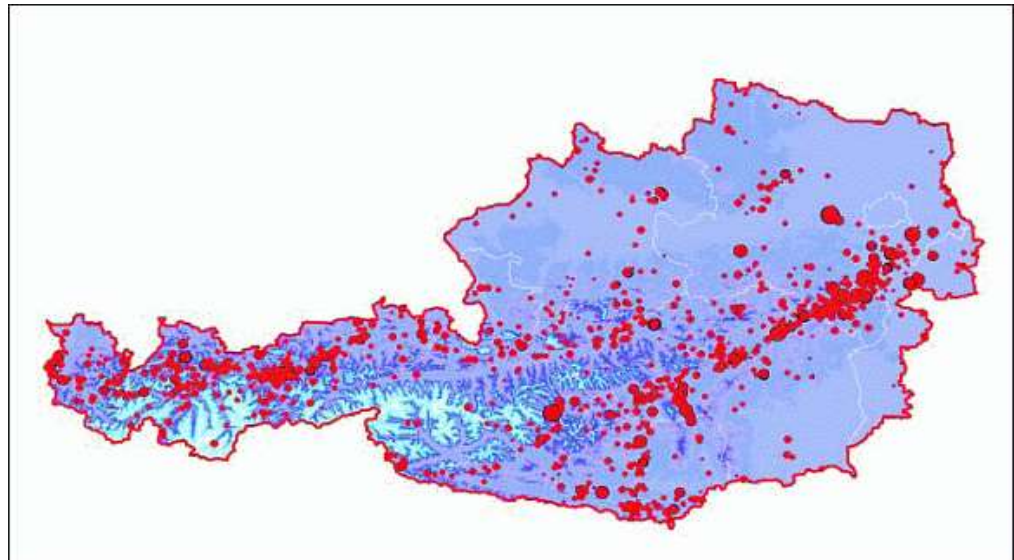
Mass Movements

- Stimulated by natural processes
 - heavy rain, earthquakes, instability,...
- Either continuous or spontaneous
- Spontaneous
 - Boundaries before and after are static
- Continuous
 - constantly change shape and position of the affected parcels



Earthquakes

- Approx. 600 registered earthquakes / year in Austria
- Heavy damage every 75-100 years (Suda & Rudolf-Miklau, 2012)



Epicentres between 1900 and 2011 (© ZAMG, Geophysics)

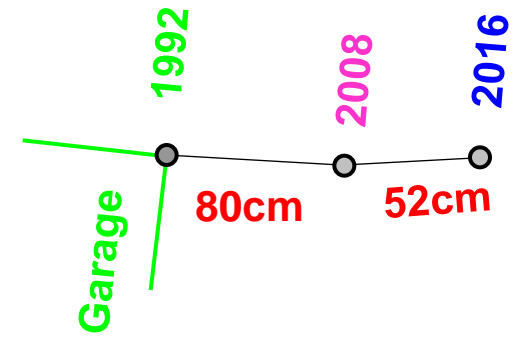
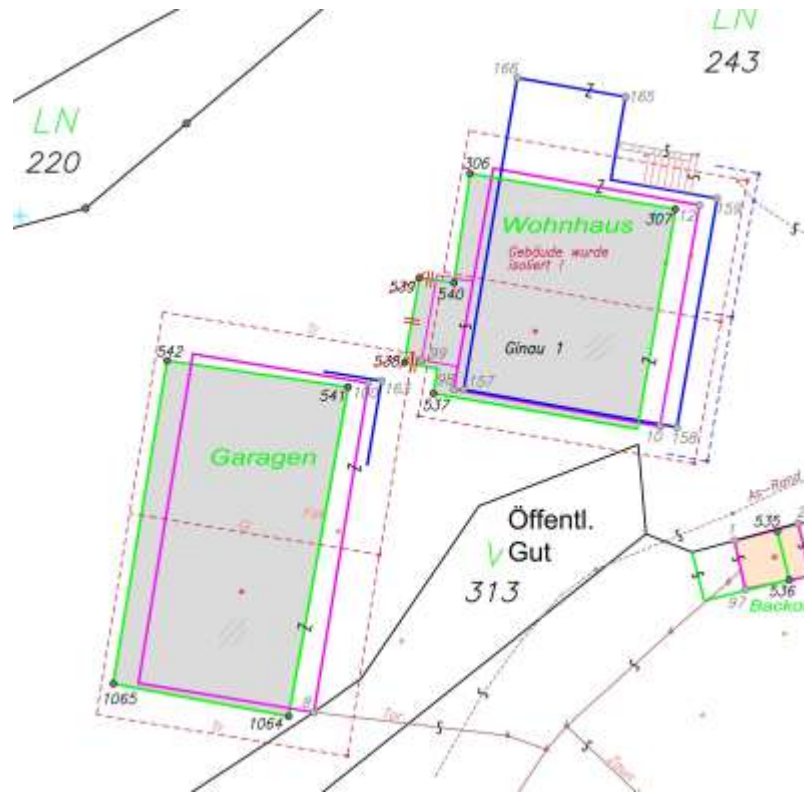
Continuous movement



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- a severe problem for land owners and cadastral systems
- constantly change shape and position of the affected parcels

Continuous movement



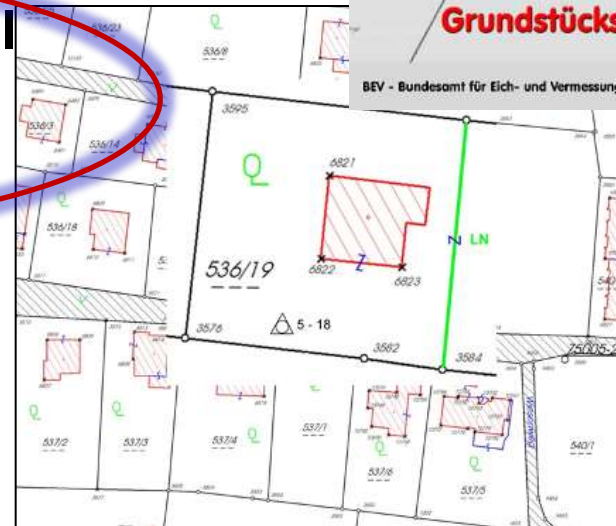
Continuous movement and Cadastre

- Legal framework for the Cadastre since Dec. 2016 (!)
- How to deal with coordinate (= legal) Cadastre
- Clear procedure
- Technical framework
 - GNSS- measurement is obligatory
 - Additional measurements

Quality of the Austrian Cadastre

- Property tax Cadastre
 - ~ 60 % coordinates, graphical boundaries,..
- Legal (coordinate) Cadastre
 - Coordinate based
 - signature by owners and surveying
 - Property boundary is legally binding

– **16 % of all parcels in “legal Cadastre” (coordinate Cadastre)**



Relevant Cadastral Procedures

- Possibilities to solve boundary problems
- Coordinate (legal) cadastre: ➔ **stake out boundaries**
- Property Tax-cadastre ➔ **redefine boundaries**
 - Licensed surveyor + owner;
 - Coordinates, (old) surveying documents,
- Re- generation of cadastre
 - Legal process, creating legal (coordinate) Cadastre
- Land readjustment
 - for agricultural areas
- Coordinate-frame: physical control points + ETRS-coordinates

Conclusions

- technical and legal possibilities and difficulties in the reestablishment of cadastral correctness and legal security
 - time to legally binding solution is essential for land owners
- technical problems can be solved by storing coordinates in the ITRS
- Land readjustment based on land value before the disaster would allow this

