GeoX PROGRESS

SUMMER SCHOOL NATURAL HAZARDS

Session C: Hydro-meteorological extreme events
Bdg. H, Room V3

Monday, Sep 24, 2012

11:15 - 12:45
Large river floods / flood hydraulics, part 1/2
Heiko Apel & Sergiy Vorogoshyn, GFZ

- Basics of flood risk assessment
- Extreme value statistics and non-stationarity
- Climate variability, flood hazard and climate change

14:00 - 15:30
Large river floods / flood hydraulics, part 2/2
Heiko Apel & Sergiy Vorogoshyn, GFZ

- 1D/2D hydraulic modeling
- Breach mechanisms of fluvial dikes
- Probabilistic flood hazard assessment and polder simulation

16:00 - 17:30
Extreme rainfall and flash floods, part 1/2
Maik Heistermann, UP

- Extreme rainfall events
- Rainfall monitoring
- Rainfall forecasting

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Tuesday, Sep 25, 2012

09:00 - 10:30
Extreme rainfall and flash floods, part 2/2
Maik Heistermann, UP

- What is a flash flood?
- Flash flood forecasting
- Limits of predictability

11:00 - 12:30
Hydro-meterological extremes under climate change, part 1/2
Axel Bronstert, UP

- The Climate System
- Development of Climate Models
- Results obtained from Climate Models
- Regional Climate Scenarios Models
- Observed trends in river discharge linked to climatic trends

14:00 - 15:30
Hydro-meterological extremes under climate change, part 2/2
Axel Bronstert, UP

- Requirements of climate models
- Requirements of hydrological models
- Case studies
- Conclusions and Outlook

16:00 - 17:30
Extreme mass transport events and landslides, 1/2
Jan Blöthe & Henry Munack, UP

- Definition and types of mass movements and landslides
- Landslides - preparatory factors and triggers
- Landslides - magnitude and extreme events (size & speed)
- Some vest-pocket knowledge of slope (in-)stability

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Session C: Hydro-meteorological extreme events
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Wednesday, Sep 26, 2012

09:00 - 10:30
Extreme mass transport events and landslides, part 2/2
Jan Blöthe & Henry Munack, UP

- A short introduction to the sediment cascade
- The variability of sediment yield and erosion rates over time
- "Extreme events" in mass transport (magnitude)
- Underlying processes and recurrence intervals (frequency)
- Why do we care? Implications of extreme events - hazard potential and hazard coupling, the global carbon cycle, and the geomorphic footprint.

11:00 - 12:30
Vulnerability to floods, part 1/2
Annegret Thieken, UP

- The concept of risk / definitions of hazard and risk
- Definitions of vulnerability
- Source - pathway - receptor – consequences
- Consequences: Different types of flood damage
- Flood damage estimation: stage-damage curves

14:00 - 15:30
Vulnerability to floods, part 2/2
Annegret Thieken, UP

- Risk management cycle and risk governance
- Measures to reduce vulnerability and risk
- Cost-benefit analysis and calculation of expected annual damage
- World risk index
- Applications/excercises

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