

RAPSODI

Risk Assessment and design of Prevention Structures fOr enhanced tsunami Disaster resilience

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CONCERT-Japan Resilience Against Disasters

NGI-PARI Kick-off meeting @ NGI 8.10.2013



Agenda

Thursday 24 October	09:45	Arrival Nakamura, Oslo Airport	
	11:25	Arrival Yalciner and Kanoglu, Oslo Airport	
	19:20	Arrival of Strusinska and Kortenhaus, Oslo Airport	
	14:45	Nakamura arrives at NGI	
	15:00	PARI-NGI annual MoU meeting	
	16:30	Leave NGI	
	18:00	Joint dinner Egon Ullevaal	
	20:30	Social arrangement at NGI	
Friday 25 October	09:00	Arrival at NGI	
	09:00	Welcome and presentation of NGI	About NGI
	09:30	Intro about RAPSODI and related projects	FAQs, homepage, related projects
	10:30	Consortium agreement; project coordination and management	
	11:00	PARI contributions	Summary of October 8 meeting; work performed, further plans
	11:45	Lunch	
	12:45	TU-BS contributions	Work performed, further plans
	13:15	METU contributions	Work performed, further plans
	13:45	NGI contributions	Work performed, further plans
	14:15	Discussion on coming work, next meetings, exchange	
	15:00	AOB, Concluding remarks	
	15:30	Strusinska, Kortenhaus, Yalciner leave NGI	
	18:00	Joint dinner Grilleriet "Folketeaterpassasjen" 22835600	
	18:05	Departure Strusinska and Kortenhaus, Oslo Airport	
	18:15	Departure Yalciner, Oslo Airport	
Saturday 26 October	16:40	Departure Prof. Nakamura, Oslo Airport	
	Noon/evening	Departure Kanoglu	



The background / FAQs

- [CONCERT-Japan](#) is an international [ERA-NET](#) program with the objective of enhancing the cooperation of European countries with Japan in various areas of science and technology.
 - An ERA-NET is a formalized program-to-program cooperation between European national programs in selected thematic areas. The ERA-NET Scheme is an instrument under the EU Framework Program for Research and Innovation.
- In 2012, CONCERT-Japan announced a Research and Innovation Joint Call within two scientific areas:
 1. Efficient Energy Storage and Distribution
 2. Resilience against Disasters
- NGI, PARI, TU-BS and METU (Turkey) were successfully awarded funding for RAPSODI

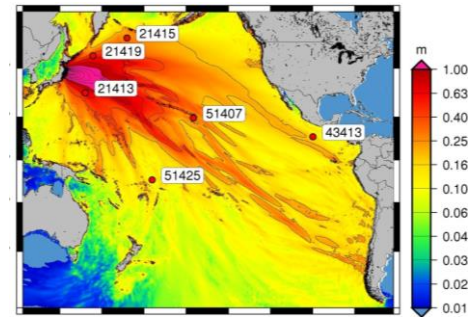
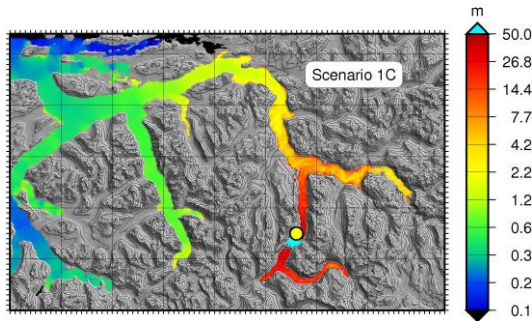


The background / FAQs

- The work is supported by funding received from the CONCERT-Japan Joint Call
- The CONCERT-Japan programme is funded through the 7th EU Framework Programme for Research and Technological Development (FP7) and runs from January 2011 to December 2013.
- The core consortium of CONCERT-Japan consists of 13 organizations from 9 countries
 - Turkey (coordinator), Germany, France, Hungary, Italy, Spain, Switzerland, Norway and Japan. In addition, several observers are involved in some parts of the project
- In total 96 proposals (16 with Norwegian partners), 9 selected for funding; only 2 projects with Norwegian partners (one on energy storage, one on resilience 😊)

Partners

- NGI – Norwegian Geotechnical Institute, Norway



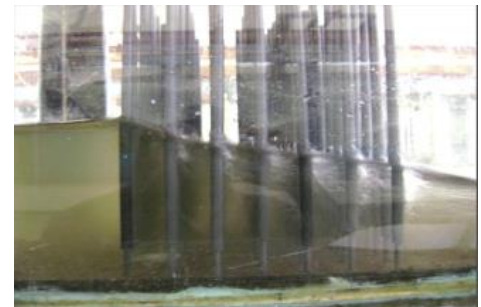
- PARI – Port and Airport Research Institute, Japan



- MoU between NGI and PARI on Natural Hazards

Partners

- METU – Middle East Technical University, Turkey
- TU-BS – TU Braunschweig, Leichtweiss – Institute for Hydraulic Engineering and Water Resources
- Long term collaborations between all partners
 - Previous and coming EU projects



Complementary background

- *All partners do physical and numerical tsunami modelling*
- *All partners have experience with coastal management and mitigation structures*
- *PARI has data and expertise on fatalities and damages caused by tsunami impact*
- *NGI has experience within vulnerability and risk assessment; a GIS model for tsunami risk assessment;*
 - *Suggestions for further development based on analyses of the 2011 Tohoku tsunami*
- *METU has expertise on mitigation strategies, socio economic impact analysis, structural and social resilience*
- *TU-BS has laboratory facilities and expertise on coastal engineering, flood risk, and structural behaviour*



Main objectives

1. Establish a new method for quantitative tsunami risk assessment
2. Design of novel mitigation measures
3. Cooperation and exchange of knowledge

<http://www.ngi.no/en/Project-pages/RAPSODI/>



Tsunami risk assessment

Today's quantitative models for tsunami risk assessment have clear limitations, in particular for the vulnerability

Idea:

- Combine information on tsunami vulnerability
 - mortality rates and damages as function of tsunami flow depth and current velocities, buildings and other infrastructure, population capabilities and exposure, mitigation structures, etc.
- with existing models for tsunami risk assessment

Mitigation measures

- Perform detailed laboratory analysis of tsunami impacts
 - Buildings, structures, coastal protection
- Loads and functionality
 - Various foundation and design of tsunami protection structures



Ohtsuchi Area
Courtesy: T. Arikawa

Cooperation and exchange

- Complementary expertise
 - Learn from each other
 - Produce results that we could not achieve alone
- Japan: Earthquake tsunamis, inundation, mitigation
- Europe: Landslide tsunamis, generation and propagation, coastal engineering, vulnerability and risk assessment
 - *Suggestions for further development based on analyses of the 2011 Tohoku tsunami*
- Networking:
 - Smaller meetings, workshops, research visits, exchange, larger dissemination seminar



Related projects 1

EU 7FP ASTARTE

Assessment, **S**Tategy **A**nd **R**isk reduction for **T**sunamis in **E**urope

- 22 European partners (NGI+METU)
- 4 Non-European partners (PARI, ERI, NOAA, USC)
- 10 WPs
 - ...Long-term recurrence, Sources and generation mechanisms (NGI), Numerical modelling, Coastal impact, Detection, Warning, From hazard to risk, Tsunami resilient societies, ...
- Project co-ordinator: Prof. M.A. Baptista, IPMA, Portugal
- Kick-off meeting in Lisbon 7-8 November 2013



Related projects 2

- Tsunami building damage and fragility functions

URBAN WAVES

AIM: To develop tools and guidance for the assessment of coastal urban infrastructure and defences to tsunami preceded (or not) by earthquakes

Multi-disciplinary experimental and numerical (different scales and codes) research approach supplemented by field observations

- J. Macabuag / Prof. Rossetto: Building engineers @ EPICentre, UCL

www.epicentreonline.com



UCL Sign-in

Industry Partners Sign-in

RAPSODI home page

<http://www.ngi.no/en/Project-pages/RAPSODI/>

Need for extranet?



Consortium Agreement (CA)

- First version rejected (based on RCN template)
- Next version based on EU DESCA template
- Distributed for partners' comments week 42
- To be signed, but first:
 - Correct reference document in § 1.2 (TU-BS & NGI)
 - Access rights / Background material in Annexes 1 & 2
 - Third party (Annexes 3 and 5)

Consortium agreement

- Needed to obtain funding from our national funding org.
- Based on the EU-DESCA template
- We have tried to simplify by:
 - Adapting definitions and terms to our project proposal
 - Rewriting text referring to EC-GA articles
 - Omitting reference to contract with EC (as we have our own national contracts), but retaining text on required reporting to EU
 - Omitting paragraph on budgeting (presumably not needed when all parties cover their own costs)
 - Omitting Management Support Team and EEAB (External Expert Advisory Board)
 - Reducing the requirements for GA (**Steering Committee**) meetings
- To avoid introduction of possible errors in text and cross-references, we have also retained much of the text as is even though it might seem a bit redundant

Reporting

CA 6.2: The members shall submit progress reports to the General Assembly every six months. Each Member is further responsible for reporting to their own national funding organizations.

Dissemination

CA 8.3.3: All publications or any other *dissemination* relating to *Foreground* prepared within the funded project must bear the **CONCERT-Japan logo**, the **internet address** <http://www.concertjapan.eu> and the following sentence: “**This work was supported by funding received from the CONCERT-Japan Joint Call on Efficient Energy Storage and Distribution/Resilience against Disasters.**” Published outputs (such as results, event agendas and reports) have to be **submitted to the Joint Call Secretariat and the CONCERT-Japan coordinator.**



Project coordination and management

- *Steering committee (SC)*
 - *In proposal and CA*
 - *Consisting of **one representative from each of the four partners** to oversee the project wrt*
 - *objectives, activities, quality, timely deliverable, dissemination*
- *Networking: (Last point!?)*
 - *Smaller meetings, workshops, research visits, exchange, larger dissemination seminar*



Cooperation and exchange

- Larger dissemination seminar
 - EU Secretariat wants a joint workshop for the five CONCERT–Japan Disaster Resilience projects early 2015
 - NGI has suggested Japan
 - Awaiting response from the other Japanese project managers. As desired by the EU secretariat, the planning is recently put on hold owing to a possible prolongation of the CONCERT-Japan project. More information is expected in September
 - Idea: Arrange this in connection with the World Conference on Disaster Risk Reduction to be held in Japan 14-18 March 2015
<http://www.un.org/apps/news/story.asp?NewsID=44980>
<https://www.wsaa.asn.au/NewsAndMedia/WSAAUpdate/Pages/World-Conference-on-Disaster-Risk-Reduction-2015.aspx>
 - EU Secretariat waiting; possible one year prolongation of the CONCERT-Japan project?

Cooperation and exchange

- Smaller meeting events/workshops
 - 2013 Norway (early) and Turkey; PARI to TU-BS?
 - 2014 Germany and Japan
 - Electronic meetings, international tsunami conferences
 - Plan can be flexible and adapted to scientific needs, but must fulfil what is needed for the annual reporting
- Other opportunities:
 - Skype (August 22nd 2013)
 - EGU 27 April 2 – 2 May 2014, Vienna
<http://www.egu2014.eu/>
 - IAEG 15-19 Sep 2014, Torino (CH)
<http://www.iaeg2014.com/>
 - AGU 2013? 2014?
 - Others!?



Extract of MoM from PARI-NGI October 8 RAPSODI meeting

- PARI will summarize existing knowledge tsunami defence structures and foundations (**WP1; D1, D3, D8**)
 - Focus on impact loads and failure modes
 - Input to matrix for different types of structures and buildings
- Numerical studies of impact loads on tsunami defence structures with varying characteristics of incident wave (**WP2; D5&D6**)
- PARI will suggest a location where data exist so that NGI+PARI together can improve the GIS tsunami vulnerability and risk model
- Interest to see the unstable rock slopes along the fjords in western Norway



Main objectives again (from the proposal)

1. Assess vulnerability
 - Structural, socio-economic, ecological
 - Compare tsunami mitigation strategies in Japan and Europe
2. Update numerical models
 - Currents and fluxes around structures and in complex areas
 - Validation from 2011 event
 - Used for design of prevention structures and for risk assessment
3. Laboratory analyses of tsunami impact for various design
 - Loads
 - Functionality, test new measures, matrix for different types of structures with their potential failure modes
4. Quantitative assessment of vulnerability and risk (GIS)
5. Exchange experience, knowledge, results, staff; dissemination

NGI Reports → Publications

- 2 reports on local risk assessment
- 1 report on 2011 Tohoku tsunami
 - Numerical modelling
 - Suggestions for improvement of NGI tsunami risk model
- Publication to be submitted (NHES?)
 - RAPSODI deliverable