

Global Tsunami Model

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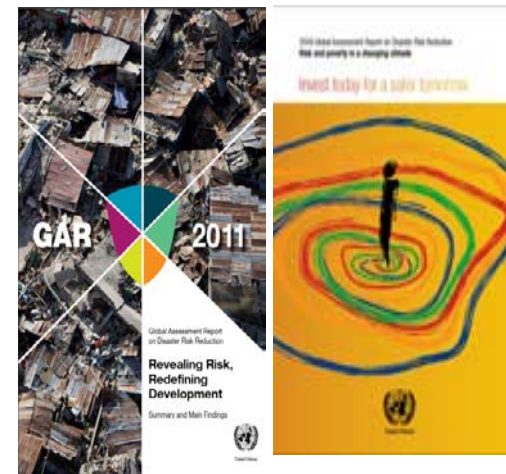
Background and motivation – why did we take this initiative?

- Multi-institutional work on hazard and risk for the UN-ISDR (Global Assessment Report, GAR)
- **Idea:** Need to gather scientific community for
 - *Collective effort for improved understanding of global tsunami hazard and risk*
 - Improve methods, develop guidelines and standards
 - Non-exclusive initiative ↔ open for the community
- *Initiative from the tsunami community itself*
 - Proposers: NGI, GA, INGV, USGS, IPMA, GFZ
 - No owners or funding at present
- GTM should ensure relevance towards stakeholders
 - Societal relevance
 - Ambition will – to a considerable extent – depend on success in attracting external funding

GAR

Global Assessment Report
on Disaster Risk Reduction

2015



Interested organizations: > 20

Researchers: > 70 researchers



- Norway
- Italy
- Spain
- USA
- Australia
- New Zealand
- Turkey
- France
- Japan
- Indonesia
- Germany
- Russia

Meetings and dissemination activities so far

– *IUGG Prague June 2015*

- Proposed in public GTM presentation
- Scoping meeting discussing the **science content**
- Discussions with IOC UNESCO TOWS group on tsunami hazard assessment and probability vs defining largest credible magnitudes

– *AGU December 2015 – OAKLAND (AECOMs office)*

- Discussing **organizational structure**
- Exchange knowledge and experience from GEM
- Establishment of workgroups

– UNISDR S&T conference January 2015 – GTM poster (NGI)

– OASIS Loss Modeling Framework – webex meeting April 2015 (NGI, INGV, CIMNE)

– EGU 2016

– SSA 2016(this meeting)

Overall objectives (1)

- Probabilistic tsunami hazard and risk (and related disciplines)
- Develop standards and guidelines
- Harmonize efforts and products
- Develop tsunami hazard and risk (and related) products
- Integrate datasets from other providers, or, compile databases where non-existent
- Methods verification (simulation tools, hazard and risk related tools)

Overall objectives (2)

- Provide reference hazard and risk data on regional and global scale based on standardized and benchmarked methodologies
 - Enable compatibility between regional and local scale hazard and risk products
- Utilize and harmonize projects outside GTM – examples:
 - TSUMAPS-NEAM regional hazard maps for the Mediterranean
 - Generic tools for interfacing models Tsunami API – GNS Science
- Run and facilitate own projects and activities – based on funding
- Facilitate integration of results and tools from related organizations such as GEM and GVM – and assign borderlines

Examples of current approaches to PTHA

AECOM, Geoscience Australia

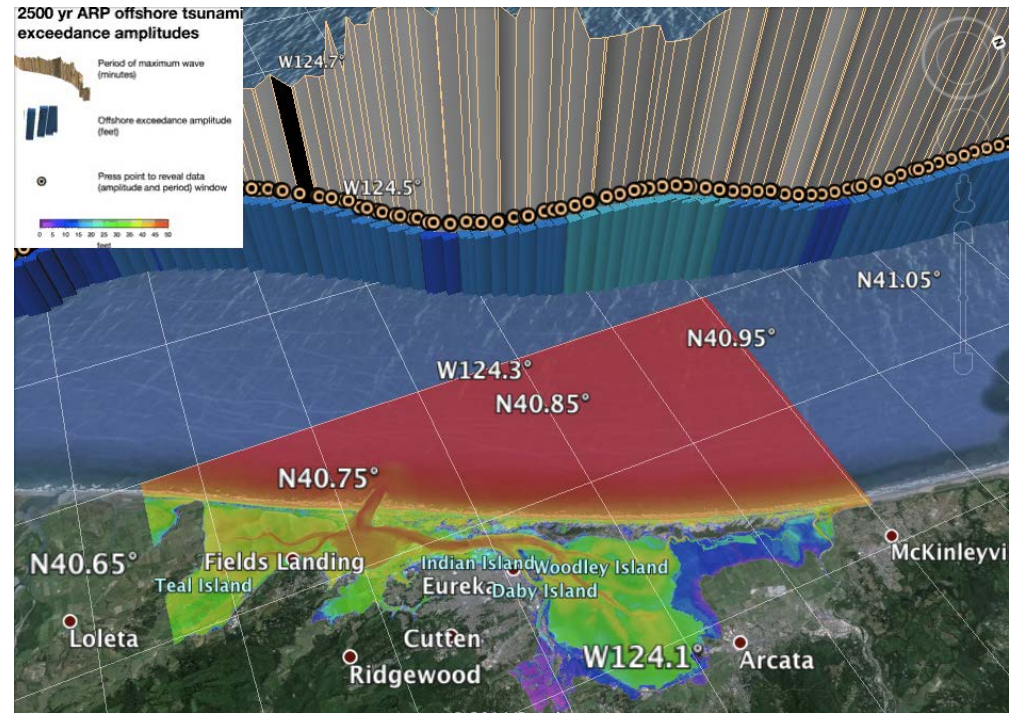
- Two step process (offshore -> disaggregation -> inundation)
- ASCE 7-16, State of California, Indonesia, Australia, GAR2015

University of Washington

- Scenario-based (direct inundation)
- Washington State
- Crescent City

GNS

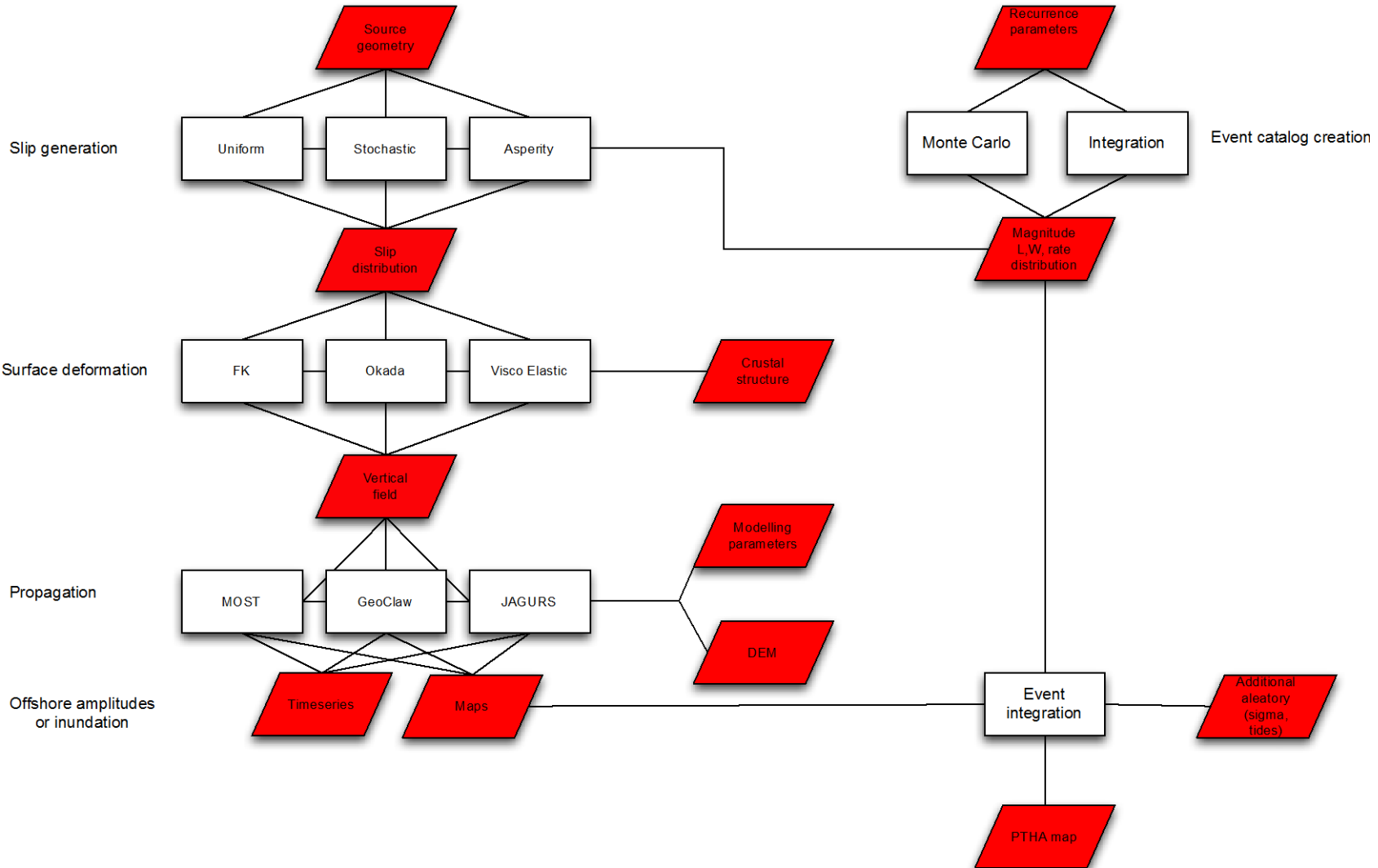
- Monte Carlo (direct inundation)
- New Zealand



Framework of methods and common interfaces

Tsunami computation

Source characterization



Relation with other initiatives

– Coordination with

- TSUMAPS-NEAM (tsunami hazard in the NE Atlantic and Mediterranean region)
- GEM (earthquake source models)
- GVM (volcano models)

– Related activities

- S4Slide (Submarine landslides)
- ICL (Landslides)
- ASCE 7-16 – Probabilistic Design Standards for Tsunami
- NTHMP – Validation of tsunami codes
- PEER Tsunami program – Development of aleatory variability
- SCEC Broadband platform – Stochastic source models
- Seismic Vulnerability and fragility
- Dissemination and geoethics (transparency – uncertainty communication)

Some simple tools available at present

- Simple GTM webpage set up by **UW**

www.globaltsunamimodel.org

- GitHub repository for files set up by **UW**

<https://github.com/GlobalTsunamiModel/GlobalTsunamiModel.github.io>

- GTM google group (including GEM and GVM) – set up by **AECOM**

<https://groups.google.com/forum/#!forum/globaltsunamimodel>

- Further suggestions by Randy LeVeque in the GTM googlegroup
- Some PTHA tools on github provided by **GA**

- **The above structures are preliminary** – and also allow us to explore possibilities
 - what do we need - prior to building more extensive and complete infrastructure

Focus on three basic activities

- **Committing partners** to the GTM, through a simple process
 - Acquiring signed Letters of Intent (LoI's) from own Institutions, enabling Point(s) of Contact for each Institution; Initial “loose” commitment toward GTM construction
- **Seeking for endorsement**
 - Main Contact established with UNISDR; other agreements ongoing
- joint **White Paper**, possibly on a top Journal showing
 - Commitment
 - Endorsement
 - GTM added value (standards, validation, tools, a unique broad community)

Near future

- Keep working in common (pilot) Projects, e.g. TSUMAPS-NEAM, allows defining explicit scope and focus areas where we need standards
- Refine verification practices/tools (e.g. weighting of alternative models through elicitation of experts; sanity checks; comparison with observations)
- Initiation of preparation of Terms of Reference (ToR)
- Follow up workshop with re-insurance industry

For a later phase (and related to ToR)

- Coordination, Scientific and advisory boards
 - Will depend on interaction with stakeholders
- Structure/Location of secretariat
- Management of joint funding
- Decisions on size and structure of membership fee
- Open source and IPR issues
- Engagement with national authorities

Interested?

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