Note prior to the second meeting on the possible Global Tsunami Model 13.12.2015 – Oakland

(prepared by NGI, with input from Geoscience Australia, INGV, GFZ-Potzdam)

Dear all,

This note is meant to provide some pieces of information prior to the upcoming GTM meeting. Please do also cf. the agenda.

Desired outcome of the second meeting:

- **Decision on organisational model:**
  Board structure, location and circulation of secretariat
- **Composition of ~3-5 working groups (WGs) that may cover among others:**
  organisation, WG member(s), dissemination and contact with end-users, scientific issues (methodologies), datasets, funding, repository and web page, timeline for WG recommendations
- **Objectives and aims of the GTM**
  Scientific objectives and next steps (in preferential order, action points with schedule/responsible), see below
- **Define place for web-page and data repository**
- **Funding strategy and possible funding sources** (see below)
- **Decision on need for a white paper** document elaborating the purpose of GTM
- **Decision on GTM endorsement mechanism** (a GTM "stamp") of external / related projects, **expression or letter of interest** from the participants
- **Collaboration / interaction with established networks,** ambition in short and long term, integration of regional projects
- **Interaction and communication with end users and stakeholders,** how to disseminate the knowledge to the public, how to acquire relevant topics for new model developments
- **Discuss possible conflicting interests** (e.g. national vs private organisations, open source vs licensing)
- **Organising and effectuating centralized projects** (depending on funding)
- **Project and consortium risks,** conditions for partner engagements (possible show-stoppers for being involved in GTM)
- Time and location for **next meeting**

Scientific objectives:

Probabilistic tsunami hazard and risk analysis is at the base of the model. Products that should come out of GTM comprise both methodologies (model application areas, algorithms and codes, numerical tools and models, comparisons/validation, sensitivity, benchmarking, uncertainty, "best practice" recommendations and maps (including all datasets necessary to perform PTHA/PTRA such as DEM, source compilations, exposure, dataset requirements, etc.). Both types of products should optimally be developed as much as possible in a harmonized way. Tools and maps that are developed can be open or licensed. From the community point of view, it would be advantageous to kick off with a focussed first project on tsunami hazard only. It may be based on the GAR, but should focus on critical aspects where the GAR was lacking, for instance on non-seismic sources and smaller earthquake sources that needs to be treated differently than subduction zone events, and on uncertainty estimation.

Moreover, if we want to focus on scientific methodological developments, we should perhaps select a limited target area where with high-quality data for hazard and risk calculations. Such test-area can

then be intensively used to develop (to benchmark, to compare) different methodologies as well as to play with datasets of different quality (in order to provide minimum requirements, for example). Later on, the knowledge and best practices (including algorithms, codes and dataset requirements) could be transferred elsewhere.

Yet, the interaction with stakeholders and funding sources is important in this respect, i.e. the focus should not only embrace what is in the community's own interest.

Outcomes of first meeting (from document posted on IOC UNESCO webpage): Develop, test, and apply standardized and open source tools for hazard and risk analysis. Develop guidelines and good practices, arrange training courses (capacity building). Integrate datasets from other providers. Become a term of reference for regional efforts (standards). Investigate background and needs of potential users, improve communication of tsunami hazard and risk. Validate the methods in order to improve our understanding of the risk drivers and uncertainties.

Funding opportunities

Although no coordinated efforts have been done so far, certain agencies have expressed interest to support. A coordinated and targeted effort towards possible funding agencies and stakeholders would be needed.

We should discuss:

- Different funding opportunities. Possibilities for support from national funding agencies such as research councils. In kind contributions from national agencies. External funding from private sponsors (insurance companies), "joint venture". Combining the two, possible conflicting interests, need for communicating objectives at an early stage.
- Different possible GTM partners and collaborators (governmental agencies, universities, national and private research institutes, private agencies, (re-)insurance companies). Present prerequisites for different partners to join. In terms of funding, it is likely that different organisations have very different needs.

Possible start-up projects and concrete scientific actions for 2016

What can be done at present, with ongoing projects and activities?

Compile PTHA/PTRA methodological portfolio for better understanding of status quo and formulation of realistic roadmap for next years? This will help us (1) to better understand the starting point of GTM, (2) to formulate realistic goals (depending on quality of datasets and computational resources we may expect now and in the near future), and (3) to build a roadmap for the next time period. Benefit from a recently funded EU (DG-ECHO) project "TSUMAPS"?

Building on the GAR – outline next generation hazard models and/or selection of a test site for methodological studies.

Critical fields that need to be strengthened in the short-term perspective:

- Compatibility between global, regional, and local hazard models – global reference maps
- Better PTHA methods for non-seismic sources (landslide, volcano).
- Treatment of (epistemic) uncertainties

Start dissemination:

- The GTM poster for UNISDR workshop (Geneva, January 2016)
- GTM white paper
- Possible workshop with stakeholders?