IGCP-640, S4SLIDE Significance of modern and ancient Subaqueous Slope landSLIDEs: current and future activities 2017/2018

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Background

The S4SLIDE project (IGCP-640) builds upon the extremely successful E-MARSHAL and IGCP-511 projects also known as the Submarine Mass Movements and Their Consequences project. S4SLIDE has a broader reach that seeks to incorporate learnings from lacustrine, coastal and subaerial landslides. As with its predecessors, the IGCP-640 project focuses on facilitating the interaction of scientists, engineers, industry and government representatives, and other parties interested in subaqueous mass movements and their geohazard potential. More information about IGCP-640 scope and activities can be obtained by visiting the S4SLIDE webpage and by following us in Twitter.

Project Webpage: <https://sites.google.com/a/utexas.edu/s4slide/home>
Twitter account: @S4SLIDE

Reporting on S4SLIDE Activities 2017-2018

8th International Symposium on Subaqueous Mass Movements and Their Consequences

The 8th International Symposium on Subaqueous Mass Movements and Their Consequences took place in Victoria, Canada on May 7th -9th, 2018 (Fig. 1). The conference was hosted by the Geological Survey of Canada and Ocean Networks Canada, the organizing

committee was led by Gwyn Lintern (Geological Survey of Canada – Institute of Ocean Sciences), Dave Mosher (University of New Hampshire), Martin Scherwath (Ocean Networks Canada), Cooper Stacey (Geological Survey of Canada – Institute of Ocean Sciences) and Phil Hill (Geological Survey of Canada – Institute of Ocean Sciences).

The main objective of this bi-annual event is to share the latest technical accomplishments and advancements in the topic of subaqueous landslides, to discuss as a community the nature of the main technical challenges in the realm of subaqueous landslides affecting lakes, coastal areas and the deep-sea, to define/discuss future directions and actions to address those challenges, to stimulate engagement of students and early career researchers from a wide range of technical, geographical and cultural backgrounds and to foster an environment of international cooperation conducive to the initiation of new projects and activities.

Close to 90 technical contributions were presented during the meeting covering a broad spectrum of subthemes that included: (1) subaqueous mass movements in lakes, fjords and coastal areas, (2) tectonics and mass movements, (3) mass transport deposits in modern and outcrop sedimentology, (4) failure dynamics from landslide geomorphology, (5) tsunami generation from slope failures, (6) prediction, engineering design and mitigation to reduce damage by submarine mass movements, (7) geotechnical aspects of mass movements, (8) instrumentation and methods for monitoring submarine mass movements, (9) multi-disciplinary case studies, (10) numerical and statistical analysis, (11) fluid flow and gas hydrates, (12) failure dynamics from landslide geomorphology, (13) submarine mass movement in margin construction

Figure 1. Participants 8th International Symposium on Subaqueous Mass Movements and Their Consequences – Victoria, Canada 2018 (Organized by the Geological Survey of Canada and Networks Canada).

Online First articles have been accepted for publication, edited and prepared for publication ahead of the printed issue. For further information about Online First and how to cite articles [click here](#).

SP477 Subaqueous Mass Movements and Their Consequences: Assessing Geohazards, Environmental Implications and Economic Significance of Subaqueous Landslides

Edited by D. G. Lintern, D. C. Mosher, L. G. Moscardelli, P. T. Bobrowsky, C. Campbell, J. D. Chaytor, J. J. Clague, A. Georgiopolou, P. Lajeunesse, A. Normandeau, D. J. W. Piper, M. Scherwath, C. Stacey and D. Turmel

Subaqueous landslides are a common slope process in the geological record. In addition to their geological significance, they pose a risk to offshore infrastructure and can trigger destructive tsunamis affecting coastal communities. This volume offers a multi-disciplinary approach to document better the still poorly understood frequency and dynamics of subaqueous landslides.

Figure 2. Thirty-nine peer-review contributions derived from the conference have been published as part of a Geological Society of London Special Publication 477 (Lintern et al., 2018). Several of this paper are open access and available online <http://sp.lyellcollection.org/online-first/477>.

Figure 3. Our mission is to also facilitate networking and knowledge sharing. Events such as the 8thISSMMTC are the perfect scenario to encourage cross-pollination of cultures and knowledge. Here graduate student Harya Nugraha talks with Craig Shipp about his PhD project during one of the poster session.

and economic significance and (14) tsunami generation from slope failures. Thirty-nine of these technical contributions have been published as part of a Geological Society of London Special Publication (SP477) (Lintern et al., 2018) (Fig. 2).

In addition to the oral and poster presentations (Figs. 3 and 4), pre- and post- conference activities were part of the program including a pre-conference field trip on the “Marine Geology and Landslides of the Central Salish Sea” (Figs. 5) that was organized by Peter Bobrowsky, David Mosher, David Huntley (Natural Resources of Canada), and Nick Roberts (Simon Fraser University) (Bobrowsky et al., 2018). A post-conference virtual field trip was led by Cooper Stacey (NRCan)

Figure 4. S4SLIDE Grantee Annie-Pier Trottier from Université Laval presenting her poster “Deglacial and postglacial paleoseismological archives in mass-movement deposits of lakes of south-central Quebec” during one of the poster sessions.

Figure 5. Participants of the pre-conference field trip on the “Marine Geology and Landslides of the Central Salish Sea”.

Figure 6. Following the symposium, a two-day short-course “Introduction to Geohazards Assessment: an industry perspective” was given by Drs. Craig Shipp (Shell Geohazards Group) and David Mosher (Natural Resources Canada). The course had 18 participants who received certificates of completion. Course material included types of marine geohazards relevant to industry and society as well as caveats of geophysical data and data interpretation through to drill monitoring. In the picture participants of the short-course on marine geohazard assessment.

Figure 7. Post-conference sea kayak trip to the Haro Strait with spectacular views of Quadra Sands at Island View Beach and James Island.

and Martin Scherwath (Ocean Networks Canada) that included tours to the Pacific Geoscience Centre and the Marine Technology Centre (Fig. 6). A post-conference sea kayak trip was led by Doug Vandine to the Haro Strait with spectacular views of Quadra Sands at Island View Beach and James Island (Figs. 7) and a post-conference course “Introduction to Geohazards Assessment: An Industry Perspective” that was taught by Craig Shipp (Shell International) and David Mosher (Natural Resources of Canada) was also offered. All these activities were of interest to students and early career researchers who had direct access to these landmark Canadian research institutions and to their scientists and technicians who are working on a wide range of topics. S4SLIDE (IGCP-640) offered 15 grants to students and early career researchers to help them cover expenses associated with the conference.

A Consistent Approach for the Morphometric Characterization of Subaqueous Landslides

As reported in our last note in Episodes, S4SLIDE started 2017 with a workshop that took place in London and that was organized by Dr. Mike Clare from the National Oceanography Center of Southampton and Dr. Christopher Jackson from Imperial College of London. As the result of this community effort, an approach was developed to collect consistent measurements of subaqueous landslide morphometrics to be used in the design of a broader, global open-source, peer-curved database. Examples from different settings illustrate how the approach can be applied, as well as the difficulties encountered when analyzing different landslides and data types. Standardizing data collection for subaqueous landslides should result in more accurate geohazard predictions and resource estimation (Clare et al., 2018). Details of this study were first published as part of an EarthArXiv preprint and then evolved into an open access contribution for the Geological Society of London special publication that is linked to the 8th International Symposium on Subaqueous Mass Movements and Their Consequences that took place in Victoria, Canada in 2018. Twenty-three authors from sixteen different institutions were part of this community effort that seeks to standardize the way we collect morphometric data. The next step involves building an open access database, a second workshop to discuss the practicalities of this endeavor is in the planning phase. This is intended to be a truly inclusive endeavor and all members of the community are invited to contribute and comment.

GSA Annual Meeting 22-25 October, 2017 – Washington, USA

Andrea Festa (Universita degli Studi di Torino), Kei Ogata (Vrije Universiteit Amsterdam) and Gian Andrea Pini (Universita degli Studi di Trieste) chaired a S4SLIDE sponsored session on “Polygenetic Melanges: A Glimpse on Tectono-Sedimentary Recycling in Convergent Margins” as part of the 2017 GSA Annual meeting in Washington, DC. Twelve oral presentations were part of this technical session that is evolving into a dedicated Tectonophysics special issue (Fig. 8).

Figure 8. S4SLIDE sponsored session on “Polygenetic Melanges: A Glimpse on Tectono-Sedimentary Recycling in Convergent Margins” as part of the 2017 GSA Annual meeting in Washington, DC.

Figure 9. *S4SLIDE* sponsored session was part of the 20th International Sedimentological Congress during August 13th – 17th, 2018 in Québec, Canada.

Organizing and Editorial Committee

Dr. Aggeliki Georgiopoulou (University College Dublin)
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Figure 10. *Organizing committee of the 9th International Symposium on Subaqueous Mass Movements and Their Consequences.*

20th International Sedimentological Congress, Québec August 2018

A S4SLIDE sponsored session was part of the 20th International Sedimentological Congress during August 13th – 17th, 2018 in Québec, Canada. The session “Effect of Mass Movement on the Sedimentological Environment” was chaired by Dominique Turmel (Université Laval, Québec, Canada), Lorena Moscardelli (Equinor), Roger Urgelles (Institut de Ciències del Mar, Barcelona, Spain) and Jacques Locat (Université Laval, Québec, Canada). Nine technical contributions were presented spanning a wide range of topics from 3D seismic evidence of diachronous shale mobilization in the Brazilian Equatorial margin to submarine landslide characterization and tsunamigenic potential within mixed carbonate-siliciclastic settings (Fig. 9).

Future S4SLIDE Activities

The 9th International Symposium on Subaqueous Mass Movements and Their Consequences will take place in Dublin, Ireland during the summer of 2020. Dr. Aggeliki Georgiopoulou from the University College Dublin will be leading this effort with the assistance of an outstanding team of geoscientists that are part of the organizing and editorial committees (Fig. 10).

An exciting preliminary program includes a pre-symposium workshop on the “Monitoring and Modelling of Subaqueous Mass Movements” organized by Dr. Mike Clare from the National Oceanography Centre, a pre-symposium fieldtrip “Bray to Greystones Cliff – Transect through Cambrian Turbidites and Slumps” organized by Aggeliki Georgiopoulou and Mike Long from University College Dublin (UCD), a post-symposium field trip to visit the Upper Carboniferous deepwater, slope and delta deposits around County Clare that will be organized by Peter Haughton and Lawrence Amy from UCD and by Anthea Lacchia from the Irish Centre for Research in Applied Geosciences (iCrag). Symposium organizers have also managed to secure industry contributions to help support the participation of researchers and students from developing countries and several S4SLIDE grants will be also offered.

This symposium is framed within the end of project S4SLIDE (2015-2020) and it promises to be a very good one! Stay tuned for upcoming announcements!

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