G01: Gravity, Geoid and Height Systems

Conveners: Marc Véronneau[1], and Yan-Ming Wang[2]

Co-chairs: Joe Henton[3], and Georgia Fotopoulous[4]

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Session Description

In 2013, Canada moved to a geoid-based vertical datum with the adoption of the Canadian Geodetic Vertical Datum of 2013 (CGVD2013). The United States of America (USA) are presently working in establishing a geoid-based vertical datum by the year 2022, aligned with CGVD2013, to replace the North American Vertical Datum of 1988 (NAVD 88). Simultaneously, the Canadian and American hydrographic and geodetic agencies are coordinating their efforts to update the International Great Lakes Datum of 1985 (IGLD (1985)). These activities and communication with Mexico, Central America and Caribbean Islands will realize a unique height system for the North American continent. Satellite gravity missions, such as GRACE and GOCE, and the GRAV-D project are key factors in making it a reality. This session is open to all aspects related to gravity, geoid and heights systems. It includes, among others, theoretical and practical development of global and region geoid models, analysis of spatial and terrestrial gravity data, time series interpretation of absolute gravity and GRACE data, ratio investigation between gravity and height variation, and roadmaps towards Height systems unification, International Height Reference System and Global Absolute Gravity Reference System. In addition, presentations on the applications of gravity and height systems in engineering, hydrographic and oceanographic projects are welcome.

Primary Affiliation: Geodesy

G02: Current deformation of the Canadian Cordillera

Conveners: Yan Jiang[1], Joe Henton[2], Thomas James[3], Lucinda Leonard[4]

Co-chairs: Yan Jiang[1], Joe Henton[2] and Lucinda Leonard[4]

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Session Description

The Canadian Cordillera includes plate boundary zones in Western Canada and their associated inland deformation, extending from the US border to the Yukon and the Beaufort Sea. The region has a complex deformation history related to a series of subduction events and associated magmatism, possible subduction slab windows, and terrane collisions. Current deformation of the Canadian Cordillera is a result of a complex plate boundary zone that accommodates relative motions between the oceanic and continental plates. Plate boundary types range northward from subduction of the Juan de Fuca and Explorer oceanic plates at the Cascadia Subduction Zone, to oblique convergence at the southern Haida Gwaii margin transitioning to nearly pure strike slip further north, and to the Yakutat collision zone. Oblique convergence along much of the margin results in the motion of fore-arc blocks relative to stable North America. Lithospheric stresses are transmitted long distances across the Cordillera, so that seismicity is recorded far inland in the Mackenzie and Richardson Mountains of Yukon and offshore in the Beaufort Sea in the region of the Mackenzie Delta. Significant strain is transferred from the plate boundary to inland mountain ranges, causing crustal deformation in the back-arc. In addition, glacial isostatic adjustment (GIA), as a solid earth response to both past deglaciation and present-day ice mass change, is causing significant ongoing internal deformation within the Cordillera, modifying tectonic strain. New insights into current deformation within the Cordillera call for reevaluation of the seismic hazard in this region. We solicit observational and/or modeling studies that will constrain current deformation in the Canadian Cordillera and improve understanding of seismic hazard.

Primary Affiliation: Joint/Solid Earth/Geodesy

G03: General Geodesy

Conveners: Robert Kingdon[1], and Georgia Fotopoulos[2]

Co-chairs: Robert Kingdon[1], and Georgia Fotopoulos[2]

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Session Description
This General Geodesy session is open to all aspects of geodesy not covered in other geodesy-related sessions, particularly, but not exclusively, related to geometric aspects. It includes contributions related to the state-of-the-art in geodetic measurements involving ground and space techniques individually (e.g., GNSS, VLBI) or in combinations (towards GGOS), and interpretation and application of geodetic results into investigations towards Earth rotation and polar motion, precise orbit determination, analysis, and prediction of processes involving the oceans, atmosphere and internal processes in the solid Earth. Contributions related to three-dimensional georeferencing and GNSS/INS/imaging for navigation, mapping and GIS applications are welcome.

Primary Affiliation: Geodesy