

## **SC 2.4c: Gravity and Geoid in North and Central America**

Chair: Marc Véronneau (Canada)

Vice-Chair: David Avalos (Mexico)

### **Terms of Reference and Objectives**

The primary objective of this Sub-commission is the development of a regional gravity field and geoid model covering the region of North America and Central America by 2022 in order to achieve a common vertical datum. The region involved will encompass Iceland, Greenland, Canada, the U.S.A. (including Alaska and Hawaii), Mexico, countries forming Central America, the Caribbean Sea and the northern parts of South America. This model will serve as the official realization of the vertical datum for countries that want to adopt it.

The intention is to ensure that a suitable North American Geoid is developed to serve as a common datum for everyone in the region. All countries in the region would be served by having access to a common model for translating oceanographic effects to terrestrial datums for various scientific, commercial, engineering and disaster preparedness applications. Likewise, it shall serve as the basis for the forthcoming International Great Lakes Datum 2022 (IGLD 2020).

The achievement of a geoid model for North and Central America will be accomplished by coordinating activities among agencies and universities with interest in geoid theory, gravity, gravity collection, gravity field change, geophysical modelling, digital elevation models (DEM), digital density models (DDM), altimetry, dynamic ocean topography, levelling and vertical datums. Of particular interest will be relating geoid and ocean topography models to ocean topography and tidal benchmarks, taking advantage of the recent satellite altimetry and geopotential field products.

The determination of a geoid model for North and Central America is not limited to a single agency, which will collect all necessary data from all countries. The Sub-commission encourages theoretical diversity in the determination of a geoid model among the agencies. Each agency takes responsibility or works in collaboration with neighbouring countries in the development of a geoid model for their respective country with an overlap (as large as possible) over adjacent countries. Each solution will be compared, the discrepancies will be analyzed, and the conclusions will be used to improve on the next model.

### **Program of Activities**

The Sub-commission will support geoid activities in countries where geoid expertise is limited by encouraging more advanced members to contribute their own expertise and software. The Sub-commission will encourage training and education initiative of its delegates (e.g., IGeS geoid school, graduate studies and IPGH technical cooperation projects). Starting on 2011 the Sub-commission will organize regular meetings with representatives of Central American and Caribbean countries to promote an increase of expertise as well as to create a wide network of specialists.

The chair (or a delegate representative) of the Sub-commission will meet with the equivalent European and South American projects to discuss overlap regions and to work towards agreements to exchange data. The delegates of the Sub-commission will keep close contact with all related Study Groups of the IAG. The Sub-commission is open to all geodetic agencies and universities across North and Central America with an interest in the development of a geoid model for the region. The meetings of the Sub-commission 2.4c are open to everyone with interests in geodesy, geophysics, oceanography and other related topics.

The delegates will communicate primarily using e-mail. In addition, starting on November 9, 2015, Canada (CGS), USA (NGS) and Mexico (INEGI) will organize audio/video conferences every four weeks to discuss activity plans and present results. The sub-commission also plans to organize annual meetings if enough delegates can be present. Preferably, these meetings will be held during international conferences; Minutes of meetings will be prepared and sent to all delegates of the Sub-commission.

## **Delegates**

- Chair: Marc Véronneau (Canada)
- Vice-Chair: David Avalos (Mexico)
- Rene Forsberg (Denmark)
- Jianliang Huang (Canada)
- Dan Roman (USA)
- Laramie Potts (USA)
- Yan Min Wang (USA)
- Vinicio Robles (Guatemala)
- Carlos E. Figueroa (El Salvador)
- Anthony Watts (Cayman Islands)
- Oscar Meza (Honduras)
- Alvaro Alvarez (Costa Rica)
- Wilmer Medrano (Nicaragua)
- Christopher Ballesteros (Panama)