



IAG Commission 10 – N.A. Subcommittee

IAG Commission 10 Global and Regional Geodetic Networks Subcommission for North America

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Natural Resources
Canada

Ressources naturelles
Canada



Purpose

To provide international focus and cooperation for issues involving the horizontal, vertical, and three-dimensional geodetic control networks of North America, including Central America, the Caribbean and Greenland (Denmark).



Issues to be Addressed

- **Densification of ITRF** in North America and promotion of its use
- Maintenance & future evolution of **vertical datums**, incl. NAVD88 and IGLD
- Effects of **crustal motion**, incl. tectonic (west coast) and post-glacial rebound
- **Standards** for accuracy of geodetic positions
- **Outreach** (tech. transfer) to public



Membership

- One representative from each country
 - Canada: Mike Craymer (Commission 10 rep)
 - USA: Dennis Milbert (Commission 10 rep)
 - Greenland/Denmark: Per Knudsen
 - Caribbean: TBD
 - Mexico: TBD
 - Chairpersons from each Technical Working Group
- Interim Officers
 - President: Dennis Milbert
 - Secretary: Mike Craymer



Technical Working Groups

- Will address specific technical issues
- Current TWGs:
 - Reference Frame Transformations
 - North American Reference Frame (NAREF)
 - International Great Lakes Datum (IGLD)
- Other work by general Subcommittee:
 - Outreach & technology transfer through publications/
Web site, workshops/symposia, software tools



NAREF

- Purpose

- To densify the ITRF reference frame in North America
- Based on continuously operating GPS stations that are not part of IGS global network (mainly CORS)
- Following IGS “distributed processing” approach
 - Goal is to distribute some of the IGS work load
- To produce
 - weekly coordinate solutions & accuracy information
 - cumulative solutions of coordinates & velocities



NAREF (con't)

- Tasks

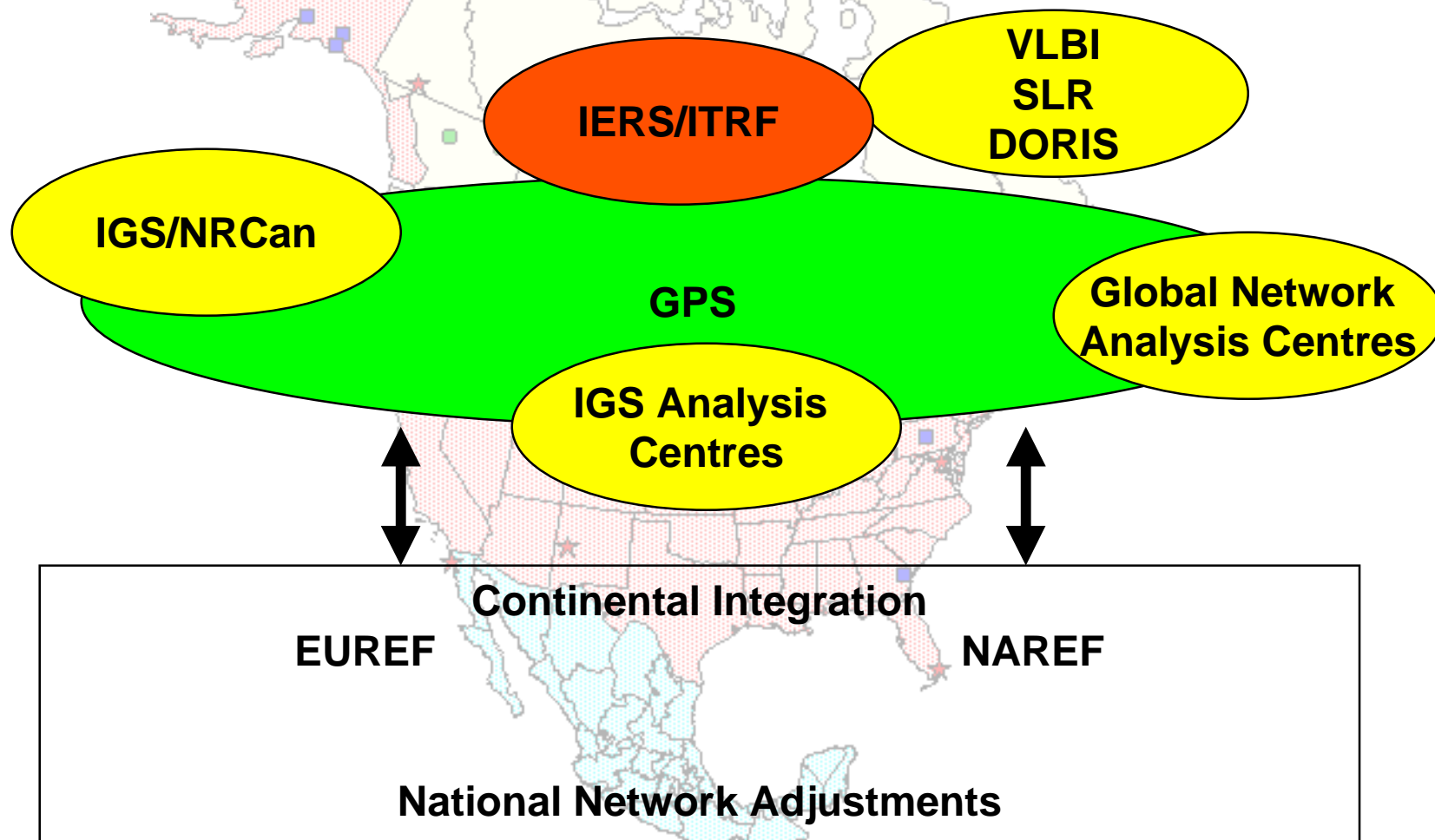
- Define standards for station selection & data processing
- Organize, collect, process, analyse and combine solutions from participating agencies
- Archive & disseminate weekly and cumulative solutions

- Committed Agencies

- NGS (processing & solution combinations)
- NRCan (processing & solution combinations)
- JPL (processing)
- Seeking more participants (PGC, BC?, ON? QC?)

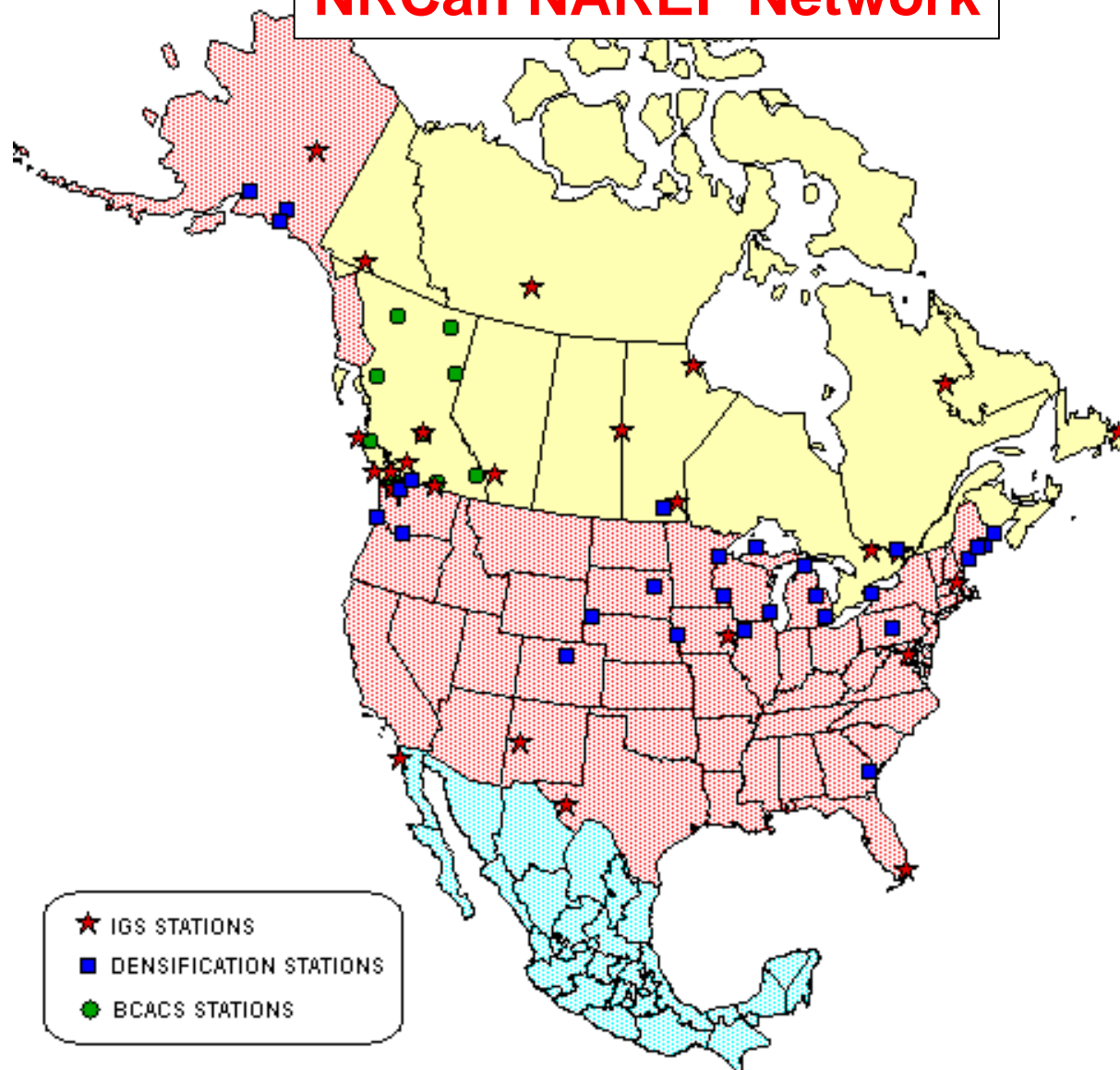


Integration to ITRF





NRCan NAREF Network





Reference Frame Transformations

- Purpose

- To determine consistent relationships between international, regional and national reference frames/datums
- To maintain (update) these relationships as needed

- Members

- IGS: Remi Ferland
- NRCan: Mike Craymer
- NGS: Richard Snay
- JPL: TBD



Transformations (con't)

- ITRF-NAD83
 - Defined NAD83 reference frame in terms of a transformation from ITRF96(1997.0)
 - In use since 1998; referred to as:
 - NAD83(CSRS[98]) in Canada
 - NAD83(NSRS) in US
 - Transformations from/to other ITRFs based on:
 - Incremental transformations between ITRFs
 - NUVEL-1A plate motion model (continuous)



Transformations (Con't)

- ITRF97

- ITRF96 & ITRF97 are compatible when averaged over all SLR, VLBI and GPS stations in the ITRF network
- IGS found a 1.5 cm offset in Z for their global set of 52 fundamental GPS stations
- TWG adopted IGS incremental transformation from ITRF97 to ITRF96 to maintain compatibility with IGS products (precise orbits, coordinates)
 - Included in new TRNOBS v2.5 (for GHOST and GeoLab)