
THE STATUS OF THE NATIONAL BUILDING CODE OF TRINIDAD & TOBAGO

By

Myron W. Chin, PhD, CEng, FIStructE,
FICE, FAPETT

SUMMARY OF PRESENTATION

- INTRODUCTORY REMARKS
- BRIEF HISTORY OF TT NATIONAL BUILDING CODE AND CUBiC PROJECT
- RECENT DEVELOPMENTS IN NATIONAL AND MODEL BUILDING CODES ETC - OECS, ACS, CCTBSC
- PRESENT STATUS AND PROSPECTS FOR CUBiC AND TT NATIONAL BUILDING CODE
- RESULTS OF SURVEY -IBC-2000
- CONCLUDING REMARKS

INTRODUCTORY REMARKS

- The entire Caribbean Basin is prone to socio-natural and manmade disasters
- ECLAC estimates that the disaster impact is over 1.5 billion dollars/year
- A number of national, regional (ODPM, CDERA, APRM, ACS) and international organizations (PAHO, OAS) are currently working in this area.

Caribbean Natural Hazards

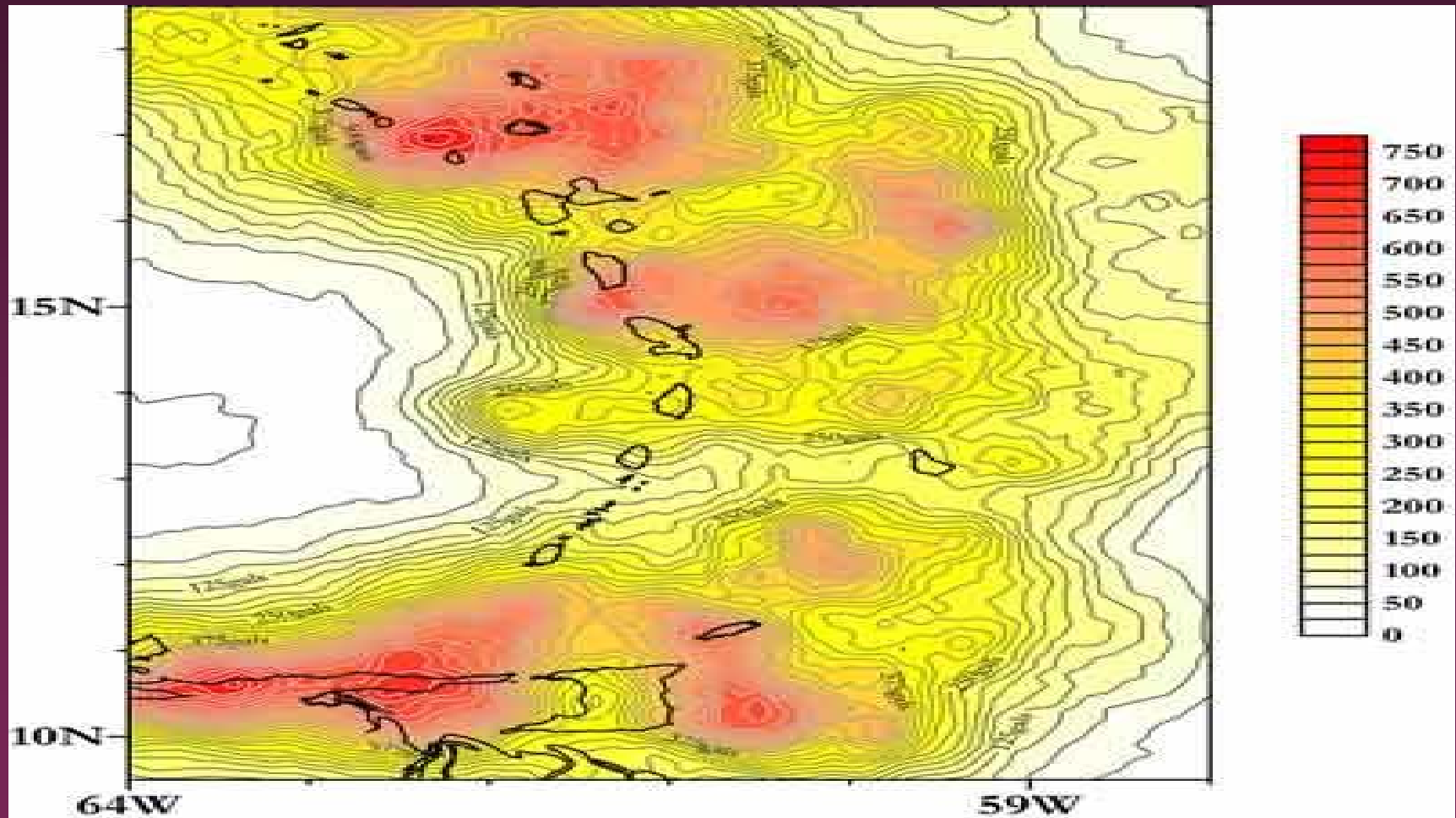
Geological:

- Earthquakes
- Volcanic activity
- Tsunamis
- Landslides

Meteorological:

- Hurricanes
- Storm surge and wave action
- Torrential rains

EARTHQUAKE HAZARD MAP FOR THE CARIBBEAN -SRU



Spectral acceleration at 0.2 second period.
2% probability in any 50-year period
Contour interval 50 gals

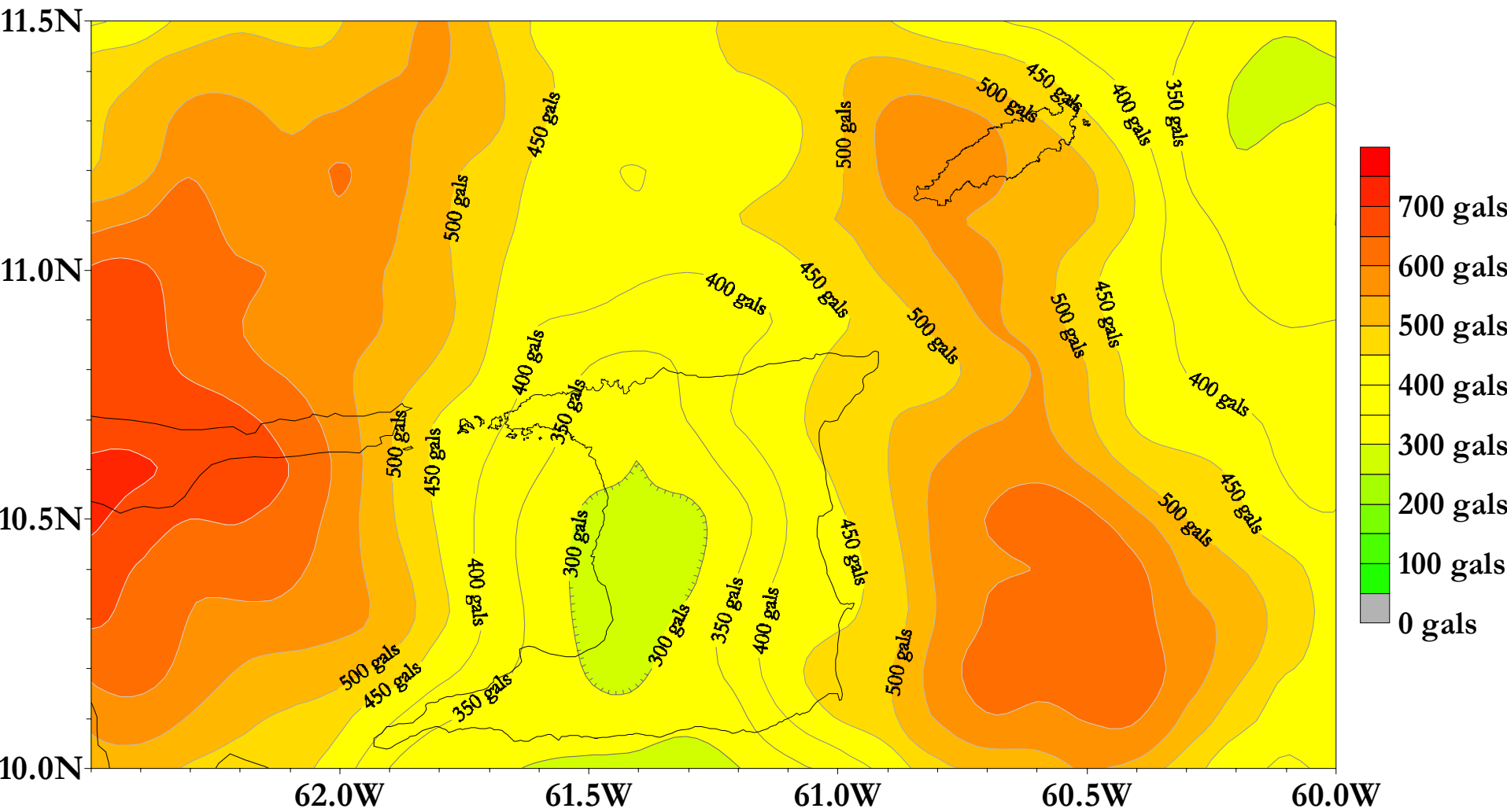


Figure 9: Spectral acceleration at 0.2 seconds period. Ground acceleration with 2% probability of exceedance in any 50-year period. Units are gals.



TOBAGO EARTHQUAKE

22 APRIL 1997 – MAGNITUDE 6.1



TOBAGO EARTHQUAKE

22 APRIL 1997 MAG. 6.1



Standards and Codes

- **CUBiC** and IBC 2000 and national codes
 - Barbados - **<http://www.oas.org/pgdm>**
 - Belize
 - Guyana
 - Jamaica
 - St. Kitts and Nevis
 - Turks and Caicos Islands
 - Trinidad & Tobago - **www.boett.org**
 - OECS Code (9 states)
- **Bahamas- SFBC**
- **Cayman - SBCCI**
- **ACS Model Codes for Wind –ASCE-7 -02 and Earthquakes – EC8**
- **CCTBSC Project**

BRIEF HISTORY OF CUBiC

- USAID Grant of US\$216,000 in 1982 and CDB Grant of US\$60,000
- Project executed by Quartet of Chin, Adams, Gibbs and Wason
- Methodologies adopted in the Project
- Results of the Project

CONTENTS OF CUBiC

- Part 1 Administration and Enforcement of the Code
- Part 2 Structural Design Requirements
- Part 3 Occupancy, Fire Safety and Public Health Requirements
- Part 4 Services, Equipment and Systems
(Not Included in Present CUBiC)
- Part 5 Small Buildings and Prefabricated Construction

CONTENTS

Part 2 Structural Design Requirements

Section 1 Dead Load and Gravity Live Load

Section 2 Wind Load

Section 3 Earthquake Load

Section 4 Block Masonry

Section 5 Foundations

(Not Included in Present CUBiC)

Section 6 Reinforced and Prestressed
Concrete

Section 7 Structural Steel

Section 8 Structural Timber

CUBiC -SECTION 3 - EARTHQUAKE LOAD

- SHORT TERM CONSULTANT PRINCIPIA MECHANICA OF LONDON, UK APPOINTED IN NOV. 1983
- REVIEWED SEAOC, UBC, ATC AND NEW ZEALAND CODES
- CUBiC BASED ESSENTIALLY ON SEAOC BUT WITH APPROPRIATE SECTIONS FROM UBC, ATC AND NEW ZEALAND CODES.

RECENT DEVELOPMENTS IN NATIONAL CODES IN THE CARIBBEAN

- Since the development of CUBiC, a number of National and Model Building Codes have been produced such as the OECS Code, Barbados Code, IBC 2000 and ACS Model Codes for Wind and Earthquakes.
- CCTBSC gives an excellent summary of present status of Codes and Standards.
- TTBS issued on 2005-10-12 a draft of the Small Building Code for Public Comment which was based on CUBiC, IBC 2000 and IRC – Final Draft 1998. Closing date for comments was 2005-11-18 and hopefully it will be made into a National Standard in early 2006.

PRESENT STATUS OF CUBiC

CDMP/OAS contracted the CUBiC group to present a concept proposal with Terms of Reference (TORs) and a work-plan and budget for the activity for submission to the Technical Cooperation Unit at the CDB and to the Unit of Sustainable Development and Environment of the OAS. This was initially submitted by CCEO to the Caribbean Development Bank (CDB) in April 1999 and a final revised proposal was re-submitted to CDB in November 1999. Details of the proposal can be found on the Board of Engineering of Trinidad and Tobago's website <http://www.boett.org> . Since then, despite numerous efforts to get CDB to consider the proposal, it is yet to consider it.

CHOICE OF IBC-2000 AS BASE CODE FOR REVISED CUBiC

- The results of a questionnaire survey carried out amongst practising engineers in the region and their own investigation of the merits of the standards examined, showed that the base code/standard to be used in CUBiC 2000 should be the proposed International Building Code 2000 (IBC-2000) which was developed by the International Code Council (ICC) as a cooperative effort to bring national uniformity to building codes in the USA. The ICC was established in 1994 as a nonprofit organization dedicated to developing a single set of comprehensive and coordinated national model construction codes. The founders of the ICC are the three model code agencies in the United States viz:-
- Building Officials and Code Administrators International Inc (BOCA) which produces the BOCA National Building Code (BNBC)
- International Conference of Building Officials (ICBO) which produces the Uniform Building Code (UBC)
- Southern Building Code Congress International (SBCCI) which produces the Standard Building Code (SBC)

PROJECT TEAM

- ACS Secretariat (Natural Disasters Directorate)

- Team of 7 Consultants:
 - 2 from Costa Rica (UCR)
 - 1 from Cuba (CUJAE)
 - 2 from Trinidad and Tobago (UWI)
 - 2 from Italy

ACS PROJECT

- The Project Team working on this project was composed by:
- Dr. Myron CHIN, Team Leader, *Trinidad and Tobago*
- Prof. Gian Michele CALVI, *Italy*
- Prof. Ezio FACCIOLI, *Italy*
- Prof. Jorge GUTIÉRREZ, *Costa Rica*
- Prof. Dr. Carlos LLANES BURÓN, *Cuba*
- Prof. Guillermo SANTANA, *Costa Rica*
- Prof. Winston SUITE, *Trinidad and Tobago*

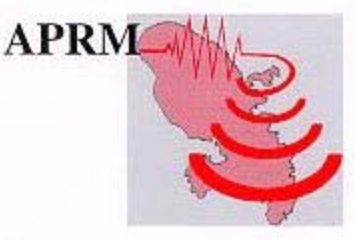
PROJECT OUTPUTS



1200 CD-ROMS

- Evaluation of ACS Member Countries' Codes and Recommendations for Codes' Improvement/Updating
- Model Code for Earthquakes based on EC8
- Model Code for Wind Loads based on
- ASCE 7-02
- General Recommendations for Ensuring Safer Building

<http://www.acs-aec.org>



**CONSENSUS CONFERENCE
ON TECHNICAL BUILDING
STANDARDS IN THE
CARIBBEAN (CCTBSC)
held from 18-19 MARCH 2004 in
MARTINIQUE.**

RECOMMENDATIONS OF TECHNICAL VALIDATION COMMITTEE FOR UPGRADING THE REGIONAL BUILDING CODE

- In November 2003, the Council of the CARICOM Regional Organisation for Standards and Quality (CROSQ) agreed to develop a CARICOM/Regional Building Code.
- The CROSQ Council appointed the Bureau of Standards, Jamaica as the Secretariat for this exercise. The process of developing the Regional Building Code will be guided by several principles as obtain in the standardization process in the region.
- Existing national, regional and international codes will be considered in the development.
- Stakeholder interests will be involved through working committees in the drafting and redrafting process.
- CROSQ will ensure the active flow of information and comments between stakeholder interests in developing the CARICOM draft Building Code. The process will therefore include representative associations of professionals at national and regional levels, e.g. Masterbuilders of Jamaica, CCEO, support or funding agencies, the CARICOM secretariat.

RECOMMENDATIONS OF THE TECHNICAL VALIDATION COMMITTEE FOR UPGRADING THE REGIONAL BUILDING CODE (CUBiC) (Cont'ed)

- Particular attention will be paid to harmonization of specifications and regulatory processes across jurisdictions within the English-speaking, Francophone, Spanish-speaking and Dutch territories, member and associated States of CARICOM.
- Consideration in respect of differences: These may be addressed through the zoning of the region geographically (to include climatic and geological zones) and geopolitically.
- At all stages in the development of the Regional Building Code, decisions will be made on the basis of technical soundness and the impact on trade and economic development. This would be of special interest in the case of small buildings, where cost considerations are to be an essential balance in respect of technical soundness.
-

LATEST ON CUBiC

AS OF 2005-11-30

- Dear Dr. Myron Chin,
- A proposal was submitted to the Caribbean Development Bank (CDB) for funding the development of a Jamaica Building Code by the Jamaica building Code Steering Committee. The focus for Jamaica is the development of a legally enforceable Building Code by adoption of the American International Building Codes (I-Codes). There is no immediate drive to develop CUBiC any further, at least not at the local level.
- It is anticipated that once Jamaica completes development of its Building Code, the final document will serve as a template for the development of a CARICOM Building Code through CROSQ.
- There is no knowledge of any submission to the Caribbean Development Bank (CDB) for funding of CUBiC; I am therefore unable to provide you with requested details on funding.
- Yours Sincerely
- Phillip Shay
- Manager
- Metrology & Testing Division
- Bureau of Standards Jamaica

SUGGESTED PROPOSALS FOR CUBiC-2006

- COMPLETION OF CUBiC-2006 based on IBC 2003
- CCEO/CARICOM should seek funding from regional and international agencies such as CDB, ACS, OAS and USAID to complete and update CUBiC.
- CONTINUING EDUCATION COURSES - CCEO/CARICOM should mount an on-going series of Courses on CUBiC such as the one done by Eng. Tony Gibbs in St. Kitts on Multi-hazard Building Design Course as part of the Post-Georges Disaster Mitigation Project details of which can be found at:-
<http://www.oas.org/pgdm/>

SOME EARTHQUAKE REVISIONS FOR CUBiC

- EARTHQUAKE LOADS - NEED TO PUT IN MAPS SHOWING SPECTRAL RESPONSE ACCELERATIONS
- SEISMIC ENGINEERING COMMITTEE OF APETT (SECA) IS WORKING WITH SRU TO PRODUCE SUCH MAPS

SUGGESTED PROPOSALS FOR CUBiC -2006

- ASSESSMENT EXERCISES AND RESEARCH - CCEO in close collaboration with UWI and CDMRC should undertake a series of assessment and research activities in order to keep CUBiC up-to-date.
- A MECHANISM MUST BE ESTABLISHED TO KEEP CUBiC updated on a regular basis as per IBC.

CONCLUDING REMARKS

- The development of CUBiC-2006 is highly appropriate and cost-effective and a request for funding was submitted to CDB since November 1999 for US\$295,000 but to date no funds have been obtained to undertake the revision and updating of CUBiC. From the email response from JBS it seems that the Jamaica Building Code will form the basis of a template for an updated CUBiC. As such the proposed National Building Code for T&T should make use of the Jamaican output.
- Urgent funding is however still needed to finalize the earthquake hazard maps for the region and to carry out Assessment exercises on the updated CUBiC.
- The adoption and enforcement of an updated and revised CUBiC-2006 based on IBC 2003 will undoubtedly result in safer building structures in the Caribbean.
- CCEO/APETT/JIE should also mount on-going CEE courses on the use of CUBiC-2006 for engineers, builders, contractors and allied professionals throughout the Caribbean.

THE END

- **THANK YOU**
- **ANY QUESTIONS??**