

**The Summary Report of the 12<sup>th</sup> International Geoid School**  
**(June 6 – 10, 2016, Ulaanbaatar, Mongolia)**

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For International Services for Geoid ( ISG )

Ulaanbaatar  
June 28, 2016

The International Association of Geodesy (IAG) and the International Service for the Geoid (ISG) is decided in June, 2015 in Prague during IUGG meeting to organize the next 12<sup>th</sup> International Geoid School in Ulaanbaatar, Mongolia in June, 2016.

For preparation of this Geoid School we established the Local Organizing Committee ( LOC ) consists representatives from the Mongolian University of Science and Technology (MUST) and MonMap Engineering Services Co., Ltd as a local hosting organizations and the Mongolian Association of Geodesy, Photogrammetry and Cartography ( MAGPC ), The Administration of Land Affairs, Geodesy and Cartography ( ALAGAC ) and the Ministry of Construction and Urban Development ( MCUD ) as a local supporting organizations.

Also we set up the designated web site for this Geoid School: [www.monmap.mn/geoidschool2016/](http://www.monmap.mn/geoidschool2016/) in February, 2016 then start advertising through Internet and since February to June we get over 300 access. We have registered over 100 online registration form submissions and many of participants from the developing countries not able to attend due to lack of budget and travel support.

The 12<sup>th</sup> International Geoid School held in Ulaanbaatar, Mongolia in June 6 -10. 2016 and the campus 5 (the student training class room with 30 computer terminals) of the Geodesy Department of MUST was selected the main venue of this Geoid School. Attachment 1.

The program of the Geoid School is designed by the teachers of the IAG and ISG and five teachers ( Attachment 3 ) are invited from Canada, Denmark, Italy and USA to give the lecturers and practical exercises during 4 full day's sessions and last day was as summary session and wrapping up (handover the certificate as training completion). Attachment 2.

The total number participants of this Geoid school was 30 consists 15 is foreign and 15 domestic and total 9 countries participated as Bhutan, China, India, Latvia, Mongolia, Philippines, Poland, Russia and Sri Lanka. Attachment 3.

There was organized by LOC sightseeing tour for the Geoid school participants just before and after the School. Also made a group photo of the Geoid School participants and social activities such as ice breaker dinner etc. Attachment 4.

## Attachment 1. Geoid School Venue Location in Ulaanbaatar, Mongolia

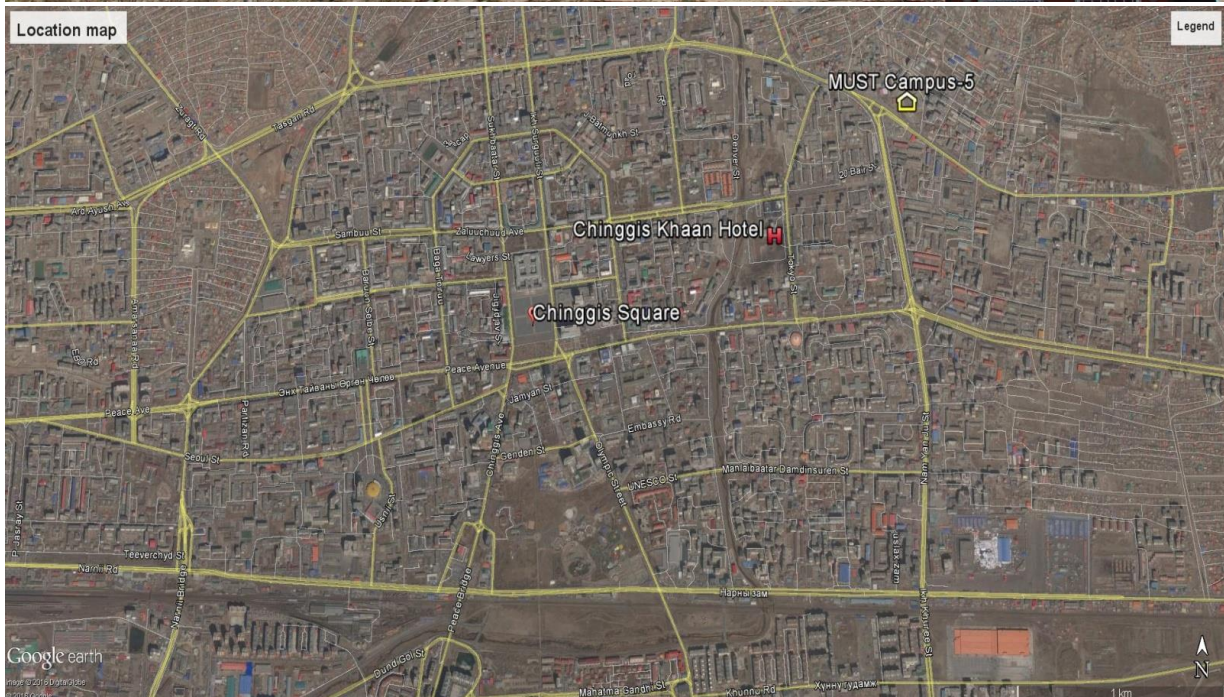
June 6, Monday, Campus 5, 1st floor, The Geodesy Department of Mongolian University of Science and Technology (MUST) Ulaanbaatar, MONGOLIA

N: 47° 55' 39"

08:00 AM – Registration

E: 106° 56' 35"

09:00 AM – Lecture



## **Attachment 2. The Program of 12<sup>th</sup> International Geoid School ( June 6 - 10, 2016 , Ulaanbaatar, Mongolia )**

Campus 5

Mongolian University of Science and Technology ( MUST )

**Sunday, June 5 - Arrival**

Afternoon – The sightseeing tour

**Monday, June 6 –Registration and Opening session**

**08:00 AM – 09:00 AM – Registration at the Geodesy Department,1<sup>st</sup> floor, theCampus 5 Building, MUST**

**MORNING SESSION: LECTURE 1: GENERAL THEORY ON GRAVITY FIELD BY PROF. FERNANDO SANZO**

09:00 AM-10:30 AM – Lecture 1 (A)

10:30 AM-11:00 AM – Tea break

11:00 AM-12:30 PM – Lecture 1 (B)

12:30 PM-01:30 PM – Lunch

**AFTERNOON SESSION – LECTURE 2: THE HEIGHT DATUM UNIFICATION BY PROF. MICHAEL SIDERS**

01:30 PM-03:00 PM – Lecture 2 (A)

03:00 PM-03:30 PM – Tea break

03:30 PM-05:00 PM – Lecture 2 (B)

**Tuesday, June 7 - Sessions**

**MORNING SESSION – LECTURE 3: TERRAIN EFFECT COMPUTATION AND REMOVE/RESTORE BY PROF. RENE FORSBERG**

09:00 AM-10:30 AM – Lecture 3 (A)

10:30 AM-11:00 AM – Tea break

11:00 AM-12:30 PM – Lecture 3 (B)

12:30 PM-01:30 PM – Lunch

**AFTERNOON SESSION – PRACTICAL EXERCISES 1: TERRAIN EFFECT COMPUTATION AND REMOVE/RESTORE BY PROF. RENE FORSBERG**

01:30 PM-03:00 PM – Practical exercises 4 (A)

03:00 PM-03:30 PM – Tea break

03:30 PM-05:00 PM – Practical exercises 4 (B)

**06:30 PM – ICE BREAKER DINNER**

**Wednesday, June 8 - Sessions**

**MORNING SESSION – LECTURE 4: RESIDUAL GEOID ESTIMATION BY PROF. RICCARDO BARZAGHI**

09:00 AM-10:30 AM – Lecture 5 (A)

10:30 AM-11:00 AM – Tea break

11:00 AM-12:30 PM – Lecture 5 (B)

12:30 PM-01:30 PM – Lunch

## **AFTERNOON SESSION – PRACTICAL EXERCISES 2: RESIDUAL GEOID ESTIMATION BY PROF. RICCARDO BARZAGHI**

01:30 PM-03:00 PM – Practical exercises 6 (A)

03:00 PM-03:30 PM – Tea break

03:30 PM-05:00 PM – Practical exercises 6 (B)

### **Thursday, June 9 - Sessions**

## **MORNING SESSION – LECTURE 5: GLOBAL GEOPOTENTIAL MODELS BY DR. SIMON HOLMES**

09:00 AM-10:30 AM – Lecture 7 (A)

10:30 AM-11:00 AM – Tea break

11:00 AM-12:30 PM – Lecture 7 (B)

12:30 PM-01:30 PM – Lunch

## **AFTERNOON SESSION – PRACTICAL EXERCISES 3: GLOBAL GEOPOTENTIAL MODELS BY DR. SIMON HOLMES**

01:30 PM-03:00 PM – Practical exercises 8 (A)

03:00 PM-03:30 PM – Tea break

03:30 PM-05:00 PM – Practical exercises 8 (B)

### **Friday, June 10 - Summary session**

**The GhinggisKhaan hotel , 5<sup>th</sup> Floor, The II Khaad room**

## **MORNING SESSION – PRESENTATIONS AND CASE STUDIES**

09:00 AM – 10:30 AM – From Terrestrial to Airborne Gravimetry: One Small Leap for Spherical Harmonic Models by Dr. Simon Holmes

10:30 AM – 11:00 AM – Coffee break

11:00 AM – 11:45 AM – Presentation on the case study: The Geoid of Mongolia by Prof. R. Forsberg, S. Kenyon, M.Saandar and D. Munkhtsetseg

11:45 AM- 12:00 PM – Estimation of the Vertical Transformation between the MONGEOID2012 and Mongolian Baltic Sea Level Datum using ArcGIS: Preliminary version by K.M Kelly and M. Saandar

12:00 PM- 01:00 PM – Q&A AND FINAL DISCUSSIONS. The certificate of training and wrapping up

#### **Note:**

1. The paper: Estimation of the Vertical Transformation between MONGEOID 2012 and Mongolian Baltic Sea Level datum using ArcGIS: Preliminary Results by K.M Kelly and M. Saandar is attached and its presentation is cancelled.
2. The paper: The computation QGeoid of Latvia with DFHRS ( DFHBF ) program by Mrs. K. Morozova, Prof. Janis Balodis, Dr.sc.ing. Janis Kaminskis, Prof.Dr-ing. Reiner Jaeger, Dr, sc,ing Gunars Silabriedis is attached and its presentation is cancelled.

### **Saturday, June 11 – Departure**



### Attachment 3. The list of participants

#### Teachers

#	Name	Organization	E-mail
1	Prof. Fernando Sanso	Politecnico, Milano, Italy	<a href="mailto:fernando.sanso@polimi.it">fernando.sanso@polimi.it</a>
2	Prof. Michael Sideris	University of Calgary, Canada	<a href="mailto:sideris@ucalgary.ca">sideris@ucalgary.ca</a>
3	Prof. Rene Forsberg	National Space Institute, Technical University of Denmark	<a href="mailto:rf@space.dtu.dk">rf@space.dtu.dk</a>
4	Prof. Riccardo Barzaghi	Politecnico, Milano, Italy	<a href="mailto:riccardo.barzaghi@polimi.it">riccardo.barzaghi@polimi.it</a>
5	Dr. Simon Holmes	SGT Inc. USA	<a href="mailto:sholmes@sgt-inc.com">sholmes@sgt-inc.com</a>

#### Foreign participants

1	Ugyen Dorji	National Land Commission, Bhutan	<a href="mailto:udorji@nlcs.gov.bt">udorji@nlcs.gov.bt</a>
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15	Rajiv Kumar Srivastava	Geodetic & research Branch, Survey of India, India	<a href="mailto:rajiv0601@gmail.com">rajiv0601@gmail.com</a>

#### Domestic participants

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#### **Local organizing committee (LOC)**

1	Dr.M.Saandar	Chairman of Local Organizing Committee (LOC) MonMap Engineering Services Co.,Ltd Mongolia	<a href="mailto:msaandar@monmap.mn">msaandar@monmap.mn</a>
2	Dr.D.Oyuntsetseg	Mongolian University of Science Technology (MUST)	<a href="mailto:daoyunaa@yahoo.com">daoyunaa@yahoo.com</a>
3	Other members	MCUD, ALAGAC, MAGCP	

#### Attachment 4. Photo



*Photo 1. Opening session by Dr. Saandar and Prof. Fernando Sanso*



*Photo 2. Training sessions*





*Photo 3. Group photo*



*Photo 4. Ice breaker dinner*



*Photo 5. Summary session and handover the certificate*