

# Modern Geodetic Space Techniques for Global Change Monitoring

Status and news of DAAD Thematic Network

Nico Sneeuw

Jianqing Cai

Institute of Geodesy

University of Stuttgart

*Close session of Second Workshop of DAAD Thematic Network*

*03 August 2018, Stuttgart*

# Agenda

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- DAAD Thematic Network Program
  - General Information
  - Model and construction
  - Project characteristics
- Status and Activities (in 2017 and 2018)
- News and Continuous Development



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***DAAD Thematic  
Network Program***

# General information (1)

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## Program line B: Thematic Networks (TN)

Projekt ID: 57173947

### Project Leader

- Prof. Dr.-Ing. Nico Sneeuw, University of Stuttgart

### Project Coordinator

- Dr.-Ing. Jianqing Cai, University of Stuttgart

### Partners

- Wuhan University (WHU), Wuhan, China
- Tongji University (TJU), Shanghai, China
- University of Luxembourg (ULUX), Luxembourg
- Chinese Academy of Surveying and Mapping (CASM), Beijing, China
- Deutsches Geodätisches Forschungsinstitut (DGFI), Technical University Munich, Germany

# General information (2)

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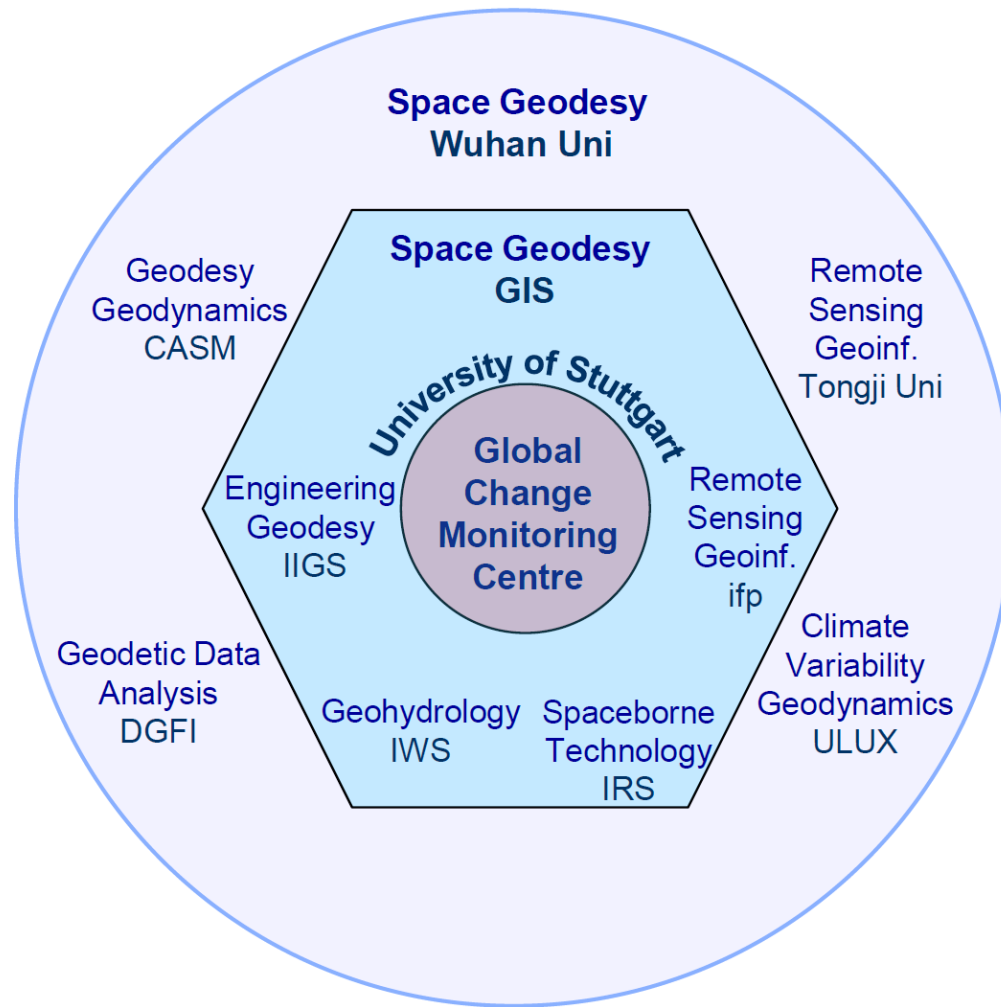
## Co-PIs from Partner institutions:

- Prof. Dr. Jiancheng Li, School of Geodesy and Geomatics, WHU
- Prof. Dr. Xiaohua Tong, College of Surveying and Geoinformatics, TJU
- Prof. Dr. Hanjiang Wen, CASM, Beijing
- Prof. Dr.-Ing. Florian Seitz, DGFI, TUM
- Prof. Tonie van Dam, Geophysics Laboratory, ULUX

## Proposers and Co-PIs from University of Stuttgart:

- Prof. Dr.-Ing. Nico Sneeuw, PI, Institute of Geodesy
- Prof. Dr.-Ing. Volker Schwieger, Institute of Engineering Geodesy
- Prof. Dr.-Ing. Uwe Sörgel, Institute for Photogrammetry
- Prof. Dr.-Ing. Thomas Hobiger, Institute of Navigation
- Prof. Dr.-Ing. András Bárdossy, Institute for Modelling Hydraulic and Environmental Systems
- Prof. Dr.-Ing. Stefanos Fasoulas, Institute of Space Systems

# Model and construction: Network



Establishment of a multilateral and multidisciplinary Thematic Network

*Modern Geodetic Space Techniques for Global Change Monitoring*

# Project characteristics

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- Overall DAAD-funded budget ca. 1 M€
- Considerable matching funds from Wuhan University
- Project lifetime: 2015–2018
- DAAD: No funding of research positions
- Funding for exchange of
  - Teaching personnel
  - Young researchers (PhD, PostDoc)
  - Students (BSc, MSc)
  - University officials
- Note: funding for two-way (!) exchange

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# *Status and activities*



# Activities in 2017

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- Second Network Meeting in Stuttgart with 10 representatives from Wuhan University and Tongji University
- Second group of **2** outgoing students for study and research visit to University of Luxemburg and Wuhan university
- Joint researches at University of Stuttgart during longer stay of **7 visiting professors** from CASM, WHU and Tongji University
- DAAD TN Uni-Stuttgart Delegation visit to China, April 2017
- First Summer School in Yichang, China, July 2017
- Participation of the Geodetic Week/INTERGEO in Berlin
- Longer visits of university personnel (2) including representatives from European partners to China
- Prepared and submitted the extension proposal for subsequent funding (2019-2020) within the DAAD Thematic Network Program

# DAAD TN Summer School in Yichang, China



DAAD TN Summer School, 24. - 28.07.2017 in Yichang, China



# DAAD TN Summer School in Yichang, China



DAAD TN Summer School, 24. - 28.07.2017 in Yichang, China

# Joint publications and Projects

## Publications:

1. Chang X, Yu K, Li J and Li Y (2017): Estimating snow density for a snow-covered CORS station field by GNSS-IR, submitted to IEEE Transactions on Geoscience and Remote Sensing.
2. Chao N and Wang Z (2017): Characterized Flood Potential in the Yangtze River Basin from GRACE Gravity Observation, Hydrological Model, and In-Situ Hydrological Station, Journal of Hydrologic Engineering, Vol. 22 (9): 05017016, doi: 10.1061/(ASCE)HE.1943-5584.0001547
3. Gao Z, Ge M, Shen W, Li Y, Chen Q, Zhang H, and Niu X (2017): Evaluation on the impact of IMU grades on BDS + GPS PPP/INS tightly coupled integration, Advances in Space Research, Vol.60, 1283-1299, doi:10.1016/j.asr.2017.06.022
4. Gao Z, Ge M, Shen W, Niu X (2017): Ionospheric and receiver DCB-constrained multi-GNSS single-frequency PPP integrated with MEMS inertial measurements, Journal of Geodesy, 2017(8). Doi: 10.1007/s00190-017-1029-7
5. Gao Z, Shen W, Zhang H (2016): Application of Helmert Variance Component Based Adaptive Kalman Filter in Multi-GNSS PPP/INS Tightly Coupled Integration. Remote Sensing. 2016. 8(7).
6. Gu H, Li H, Li Y, Liu Z, Blaschke T and Soergel U (2017): An Object-Based Semantic Classification Method for High Resolution Remote Sensing Imagery Using Ontology. Remote Sensing 2017, 9(4), 329, doi: 10.3390/rs9040329
7. Jiang W, Yuan P, Chen H, Cai J, Li J, Chao N and Sneeuw N (2017): Annual variations of monsoon and drought detected by GPS: A case study in Yunnan, China, Scientific Reports 7 (1), Article Number 5874, doi:10.1038/s41598-017-06095-1, published online 19 July 2017
8. Jin Y, Jin T, Li J, Cai Z, Chao N, Xu X (2017): The spatiotemporal influence of ENSO on terrestrial water storage change in the Yangtze River basin, submitted to Water (Journal)
9. Ke B (2017): Optimal Gaussian low pass filtering radius selection for determination the offshore sea surface height with Jason-2 data. GEOMATICS AND INFORMATION SCIENCE OF WUHAN University, accepted
10. Ke B, Zhang L, Wang W et. al. (2017): Method of Construction Gravity Anomaly in Coastal Region of China Using Cryosat-2 Altimetric and Shipborne Data. Journal of Tongji University, Vol. 45(10): 1531-1538, doi: 10.11908/j.issn.0253-374x.2017.10.016

11. Lin Y, Ji H, Sneeuw N and Ye Q (2017): Optimization of ELM Classification Model for Remote Sensing Image Based on Artificial Fish-swarm Algorithm, *Journal of Agricultural Mechanization*, Vol. 48(10), 156-164, doi:10.6041/j.issn.1000-1298.2017.10.019
12. Lin Y, Li W, Yu J and Wu C (2017): Quantitative Analysis of Ecological Sensitivity of Tourism Scenic Spots Based on Remote Sensing Image - A Case Study of Chaohu Lake Scenic Spot, *Journal of Tongji University*, accepted
13. Lin Y, Ye Z Cai J and Sneeuw N (2017): Spatio-temporal analysis at the Dongtan Wetland with machine vision based on sequence of remote sensing data, *Landscape and Urban Planning*, accepted
14. Liu H (2017): Study of Determining the GOCE Satellite Gravity Field Based on Torus Approach, *Acta Geodaetica et Cartographica Sinica*, accepted
15. Shen Z, Shen W B, Zhang S (2016): Formulation of geopotential difference determination using optical-atomic clocks onboard satellites and on ground based on Doppler cancellation system, *Geophysical Journal International*, 2016, 206(2): 1162-1168, doi: 10.1093/gji/ggw198
16. Shen Z, Shen W B, Zhang S (2017): Determination of Gravitational Potential at Ground Using Optical-Atomic Clocks on Board Satellites and on Ground Stations and Relevant Simulation Experiments[J]. *Surveys in Geophysics*, 2017, 38(4):757-780, doi:10.1007/s10712-017-9414-6
17. Wang B, Li J, Liu C and Yu J (2017): Generalized total least squares prediction algorithm for universal 3D similarity transformation. *Advances in Space Research*, 2017, 59(3): 815-823, doi:10.1016/j.asr.2016.09.018
18. Wen H, Huang Z, Wang Y, Liu H, and Zhu G (2016): Independent Component Analysis of Water Storage Changes Interpretation over Tibetan Plateau and Its Surrounding Areas, *Acta Geodaetica et Cartographica Sinica*, 2016, 45(1): 9-15. doi:10.11947/j.AGCS.2016.20140447
19. Xu G, Xu C, and Wen Y (2017): Sentinel-1 observation of the 2017 Sansefid earthquake, northeastern Iran: rupture of a blind reverse-slip fault near the Eastern Kopeh Dagh, submitted to *Tectonophysics*.
20. Xu X, Jiang W, ZHANG Xiao-Min (2017): Analyze the Ability of Recovering the Global Gravity Field of a New Satellite Gravimetry System. *Chinese Journal of Geophysics*, accepted.
21. Xu X, Zhao Y, Reubelt T, Tnezer, R. (2017): A GOCE only gravity model GOSG01S and the validation of GOCE related satellite gravity models. *Geodesy and Geodynamics*, 2017, 8(4):260-272, doi: 10.1016/j.geog.2017.03.013
22. Zhong S, Xu C, and Yi L (2017): Focal mechanism of three moderate -magnitude earthquakes in central Italy in 2016 obtained by near-field high-rate GPS and broadband seismometer waveforms, submitted to *GPS Solutions*.
23. Zou X, Jin T, Zhu G (2016): Research on the MASCON method for the determination of local surface mass flux with Satellite-Satellite Tracking technique. *Chinese Journal of Geophysics* 2016, 59(12), 4623-4632, doi: 10.6038/cjg20161223



# Joint Projects with Wuhan University

## Joint Projects:

### Wuhan University:

1. NSFC Project (Grant No.41774019) “Key Technologies Research on Surface Mass Transport in the Earth system based on  $\mu\text{m}$  Level GEO/GNSS-LEO High-Low Satellite-to-Satellite Tracking”(01/2018-12/2021), Project leader: Prof. Dr. Zhengtao WANG, School of Geodesy and Geomatics (SGG), Wuhan University, China. Project participants from University of Stuttgart: Dr. Jianqing Cai and other Professors and researchers together with graduates.
2. DAAD Project-related Personnel Exchange with China (PPP-China) Project (Project-ID: 57317774) “Automatic multi-sensor early warning system at the Three Gorges Dam” (2017-2018), a joint project between School of Geodesy and Geomatics (SGG), Wuhan University and Institute of Engineering Geodesy (IIGS), University of Stuttgart, approved in 12.2016 by DAAD and CSC.
3. ESA (European Space Agency) and MOST (Ministry of Science and Technology of China) Dragon 4 Cooperation program “Monitoring Lake Level Variations over the Qinghai-Tibet Plateau by Consistent Multi-Satellite Altimetry”(2016-2020), a joint research project with SGG, Wuhan University
4. MOE (Chinese Ministry of Education) International Cooperative Joint Research Laboratory Program “Joint International Research Laboratory of Modern Geodesy and Geodynamics”, a joint Application by Wuhan University submitted on 11.07.2017 to MOE, European institutions of our Thematic Network been involved as cooperative partners in the joint laboratory

# Joint Projects with Tongji University and CASM

## Tongji University:

5. NSFC (National Natural Science Foundation of China) Project (Grant No. 41771449) “Research on Water Volume Variation Estimation for Large Lake and Spatio-temporal Analysis Using Multisource Satellite Data”(01/2018-12/2021), Project leader: Prof. Dr. Yi LIN, College of Surveying and Geo-informatics (CSG), Tongji University, China. Project participants from University of Stuttgart: Prof. Dr. Nico Sneeuw, Dr. Jianqing Cai and other researchers together with graduates.
6. DFG-NSFC Project (Joint Sino-German Research Program 2017) “Theoretical and algorithmic developments to improve the Precise Point Positioning (PPP) regarding consistency, systematic bias and convergence speed with Multi-frequency and Multi-GNSS ” (Submitted on April 6, 2017 at the DFG, in the assessment process), a joint project with CSG, Tongji University, China.

## CASM (Chinese Academy of Surveying and Mapping):

7. MOST National International Science and Technology Cooperation Base Program “National International Cooperation Research Center for Geodesy and Geoinformation” (2016-2020), University of Stuttgart is integrated to this program
8. SAFEA (State Administration of Foreign Experts Affairs, China) Project (Grant No. SN20170464002) “High accurate ubiquitous positioning technology for urban indoor and outdoor environments”(07/2016-12/2020), a joint project with CASM, China

# Activities in 2018

## University of Stuttgart and Partner Institutions:

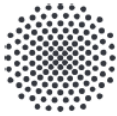
- Exchange and coordination visit (Prof. Sneeuw, Dr. Cai and other colleagues) to China in March/May 2018
- Recommendation/selection of the **10 candidates** (students and PhD Students or junior researchers) for study and research visits to China in 2018
  - The candidates **can be from all disciplines related to our thematic network**
- Joint organization the Workshop in July 2018, Luxemburg
- Longer visits of university personnel (**6**) including representatives from European partners to China
- Chinese partner Institutions (CASM, WHU and Tongji):
  - Selection of the **6** (1+3+2) candidates for study and research visits (until 6 months) to US in 2018
  - Organization of **12** (3+5+4) participants to Network Meeting
  - Organization of **12** (3+5+4) participants to Workshop



# Second Workshop of DAAD TN in Luxembourg

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- Workshop for an exchange on the state of research for projects within the Thematic Network in Stuttgart with representatives of all partner institutions and interested students
- **30** Participants: professors and graduate students of partner Institutions from China (17), Germany (9) and Luxembourg (4)
- **30 (29+1) oral presentations** on five different topics:
  - Satellite Altimetry
  - Positioning, Navigation and Reference Systems
  - Satellite Gravimetry and Enabling Technologies
  - Remote Sensing and Photogrammetry
  - Applications for Global Change Monitoring
- **24.-28. July, 2018, Luxembourg**



UNIVERSITÉ DU  
LUXEMBOURG

## Second Workshop of DAAD Thematic Network “Modern Geodetic Space Techniques for Global Change Monitoring” 24–28 July 2018

### Meeting venue

University of Luxembourg, Campus Kirchberg  
6 Rue Richard Coudenhove-Kalergi, L-1359 Luxembourg

**Tuesday, July 24<sup>th</sup> 2018, Locations: BC1-B13, Campus Kirchberg**

<b>9:00–17:00</b>	Arrival and Registration
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**Wednesday, July 25<sup>th</sup> 2018, Location: BC1-B13, Campus Kirchberg**

<b>9:30–10:30</b>	<p><b>Welcome and introduction</b>  <b>Greeting from University of Luxembourg</b>  <b>Greeting from University of Stuttgart</b>  <b>Status and news of DAAD TN Program</b>  <i>Nico Sneeuw and Jianqing Cai</i></p>
<b>10:30–12:30</b>	<p><b>Satellite Altimetry, Gravimetry &amp; Enabling technologies</b>  <i>Chair: Tonie van Dam</i></p> <p>Validation of the EGSIM GRACE gravity fields using GNSS and OBP records  <i>Qiang Chen, L. Poropat, M. Weigelt, H. Dobsław, Tonie van Dam (UL)</i></p> <p>Determination of potential using precise clocks  <i>Wenbin Shen (WHU)</i></p> <p>Ocean Tide Alias Spectrum Estimation for Satellite Gravity Missions  <i>Wei Liu, N. Sneeuw (US-GIS)</i></p> <p>Analysis of waveforms in the satellite altimetry by using neural networks  <i>Dennis Mattes (US-GIS)</i></p>
<b>12:30–13:30</b>	Lunch break
<b>13:30–15:00</b>	<p><b>Positioning, Navigation &amp; Reference Systems</b>  <i>Chairs: Weiping Jiang and Jianqing Cai</i></p> <p>Challenges and Opportunities of GNSS Continuously operating Reference Station Network  <i>Weiping Jiang (WHU)</i></p> <p>Origins of Seasonal Signal in GPS Position Time Series Based on Short-baselines  <i>Kaihua Wang, Weiping Jiang, Xiangdong An, Hua Chen (WHU)</i></p> <p>Ionosphere Parameter Optimization Using GNSS Data Ingestion during Geomagnetic Storm in China  <i>Ling Han (Tongji)</i></p>

<b>15:00–15:30</b>	Coffee break
<b>15:30–17:00</b>	<p><b>Precise Point Positioning and its application in Geoscience</b>  <i>Fei Guo (WHU)</i></p> <p>Monitoring of Rock Fall at the Yangtze River with Low Cost GNSS receiver  <i>Li Zhang (US-IIGS)</i></p> <p>Converted Total Least Squares (CTLS) and Gauss-Helmert Model with applications to 3-D coordinate transformations  <i>Jianqing Cai, D. Dong, N. Sneeuw and Y. Yao (US-GIS)</i></p>
<b>18:00</b>	Joint dinner

**Thursday, July 26<sup>th</sup> 2018, Location: BC1-B13, Campus Kirchberg**

<b>9:30–11:00</b>	<p><b>Remote Sensing and Photogrammetry</b>  <i>Chair: Nico Sneeuw</i></p> <p>Monitoring land subsidence over large area with time series InSAR technique  <i>Hongan Wu (CASM)</i></p> <p>Tunnel Monitoring and Disease Screening Based on Mobile Laser  <i>Jin Bao (Tongji)</i></p> <p>Effect of Antenna Pointing Errors on Spotlight SAR Imaging Considering the Target Location  <i>Xin Zhang (Tongji)</i></p>
<b>11:00–11:30</b>	Coffee break
<b>11:30–12:30</b>	<p><b>The Application of ELM based on Gaussian Kernel in Image Classification</b>  <i>Weijie Li, Yi Lin (Tongji)</i></p> <p>The optimal regularization and its application in Extreme Learning Machine for regression and multiclass classification  <i>Kun Qian, J. Cai, N. Sneeuw and Y. Lin (US-GIS &amp; Tongji)</i></p>
<b>12:30–13:30</b>	Lunch break
<b>13:30–15:00</b>	<p><b>Applications for Global Change Monitoring</b>  <i>Chairs: Olivier Francis and Yi Lin</i></p> <p>New applications of GNSS  <i>Sajad Tabibi, Tonie van Dam and Olivier Francis (UL)</i></p> <p>Estimation of Water Volume Variations for large-scale Lake Based on Multi-source Satellite Data  <i>Jie Yu, Yi Lin (Tongji)</i></p> <p>Can we tell what is going on in the Yellowstone National Park combining absolute gravity and GPS observations?  <i>Olivier Francis and Tonie van Dam (UL)</i></p>
<b>15:00–15:30</b>	Coffee break
<b>15:30–17:00</b>	<p><b>Spatio-temporal influence of ENSO on terrestrial water storage change in the Yangtze River basin</b>  <i>Taoyong Jin (WHU)</i></p>

	Complex Singular Spectrum Analysis of Earth Orientation Time Series <i>Yang Li (US-GIS)</i>
	Can GRACE observe the total drainable water storage of a river basin? A first estimate over the Amazon basin <i>Nico Sneeuw, M. J. Tourian, J. T. Reager (US-GIS)</i>

**Friday, July 27<sup>th</sup> 2018, Location: BC1-B13, Campus Kirchberg**

<b>09:00–11:00</b>	<b>Gravity field modelling and Height Systems</b> <i>Chairs: Hanjiang Wen and Nico Sneeuw</i>  The change of terrestrial water storage in north China observed by GRACE <i>Hanjiang Wen (CASM)</i>  The determination of earth's gravity field model by torus approach with GOCE data <i>Huanling Liu (CASM)</i>  Static gravity field modeling using the GOCE hl-SST data in individual accelerometer mode” <i>Xiancai Zou (WHU)</i>  An ultra-high gravity field model based on the GOCE data, Altimetry data and EGM2008 derived gravity anomalies <i>Xinyu Xu (WHU)</i>
11:00–11:30	Coffee break
<b>11:30–13:00</b>	Solving Earth Gravity Field from GOCE Data by Tensor Spherical Harmonic Analysis <i>Yongqi Zhao, Xinyu Xu (WHU)</i>  Mass Balance Computation in the Space Domain Using GRACE Data <i>Jinyuan Wang (US-GIS)</i>  Implementation of the Sea-Level Equation <i>Laura Balangé (US-GIS)</i>
13:00–14:00	Lunch break

**Saturday, July 28<sup>th</sup> 2018, Location: Vianden Castle**

<b>10:00–17:00</b>	<b>Social Event: Excursion to Vianden Castel</b>
	Departure

**Instruction for oral presentations:**

- A Workshop notebook will be used for all presentations. Please, copy your presentation (PowerPoint or PDF) on USB stick and upload it in time before the session starts;
- The following software will be available: Adobe Acrobat Reader, Microsoft PowerPoint;
- The time slots for presentations are: presentation: 25 min + 5 min for Q&A.

**DAAD**

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**Contact:**

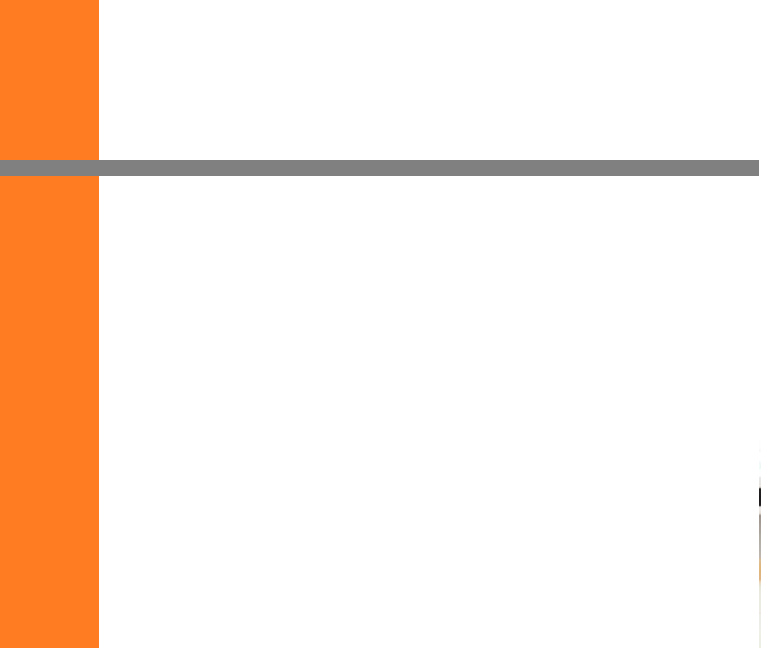
Dr.-Ing. Jianqing Cai  
Coordinator  
Phone: 0049-711-685-83391  
Email: cai@gis.uni-stuttgart.de

**Local organisation:**

Dr.-Ing. Qiang Chen  
Université du Luxembourg  
Phone: 00352 46 66 44 5163  
Email: qiang.chen@uni.lu









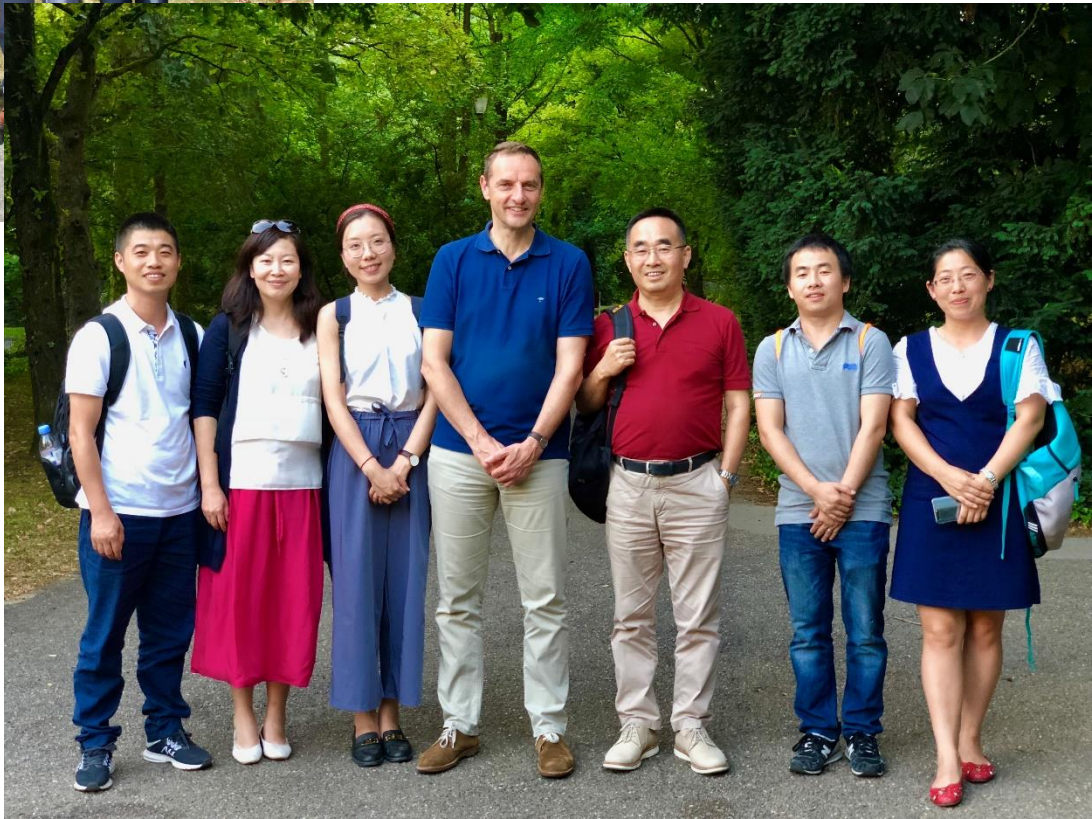
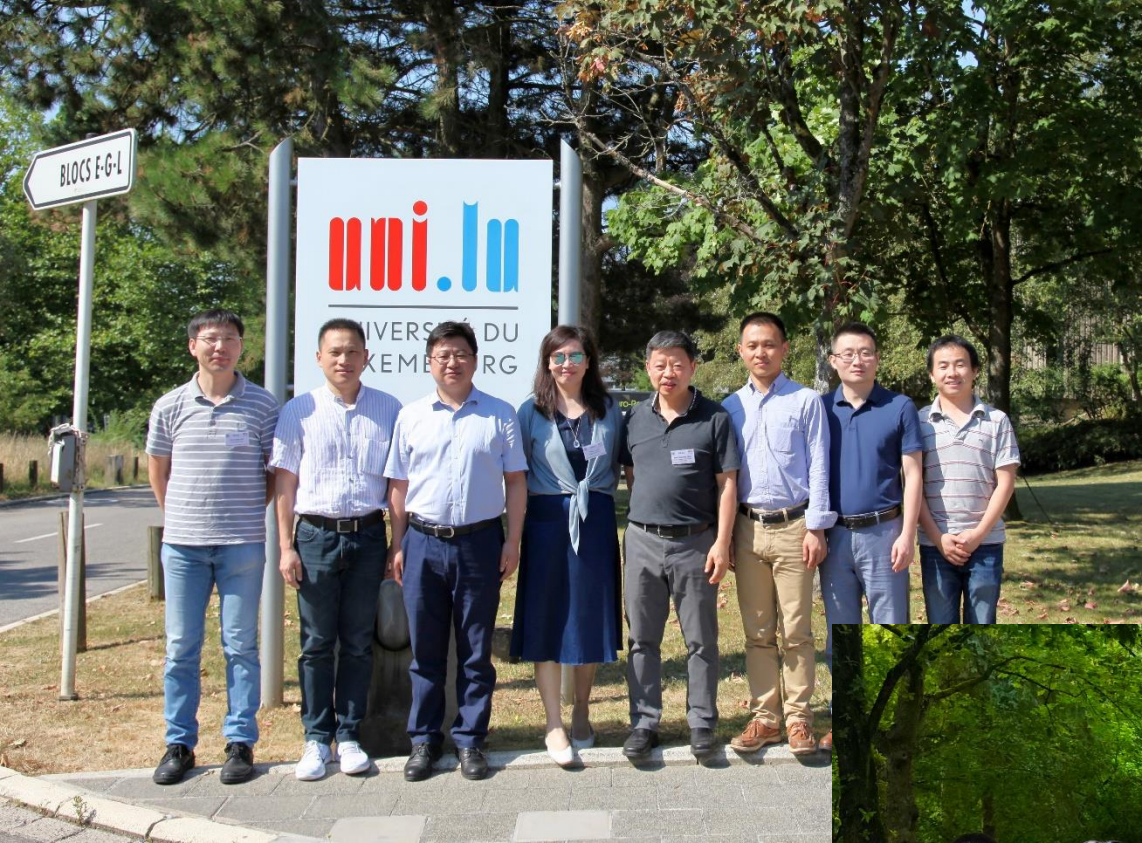


















# New Campus Belval





## Social Event: Excursion to Vianden Castel







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# *News and Continuous Development of the Thematic Network*

*very positively evaluated and recommended  
by DAAD advisory committee (02.2018)*

# DAAD Funding Internationalization Programme „Strategic Partnerships and Thematic Networks“

- First call in 2012: 117 applications, 21 winners, 11 extended!  
Second call in 2014: 89 applications, 28 winners, 14 will be extended
- Each has a project budget of up to 125.000 € p.a. for two years (2019-2020)
- Sponsored by the Federal Ministry of Education and Research (BMBF)



# DAAD Programme Strategic Partnerships and Thematic Networks subsequent funding (2019–2020)

DAAD

Deutscher Akademischer Austauschdienst  
German Academic Exchange Service

Referat P13

DAAD • Postfach 200404 • D-53134 Bonn

Universität Stuttgart  
Herrn  
Prof. Dr.-Ing. Nico Sneeuw  
Institut  
Geschw.-Scholl-Str. 24D  
70174 Stuttgart

Ansprechpartnerin: Birte Wehnsen  
Telefon: +49 (228) 882-8791  
Fax: +49 (228) 882-98791  
Unser Zeichen: 57421148

**28.02.2018**

**Thematische Netzwerke ab 19  
Ihr Antrag auf Förderung für das Projekt: „Modern Geodetic Space  
Techniques for Global Change Monitoring“ vom 01.12.2017**



# DAAD Programme Strategic Partnerships and Thematic Networks subsequent funding (2019–2020)

Sehr geehrter Herr Professor Sneeuw,

die zuständige Auswahlkommission des DAAD, die aus ehrenamtlich tätigen Hochschullehrern und Hochschullehrerinnen besteht, hat sich ausführlich mit Ihrem Antrag auf Förderung im oben genannten Programm befasst und ihn eingehend nach den in der Ausschreibung genannten Kriterien geprüft.

Wir freuen uns, Ihnen mitteilen zu können, dass Ihr Antrag von der Auswahlkommission als förderungswürdig eingestuft wurde.

Bitte beachten Sie, dass wir in Ihrem Finanzierungsplan ggf. einige Kürzungen und/oder Korrekturen vornehmen müssen. Hierzu setzen wir uns in den nächsten Tagen mit Ihnen in Verbindung.

Hinweis: Die Kommission empfiehlt, das Ziel des Double Degrees auf MA-Ebene weiter zu verfolgen.

Der Zuwendungsvertrag inklusive eines Begleitschreibens und aller relevanten Anlagen wird Ihnen über das DAAD-Portal zugesandt.

Für Rückfragen stehen wir Ihnen gerne zur Verfügung.

Mit freundlichen Grüßen

Birgit Siebe-Herbig  
Referatsleitung

*Dieses Schreiben wurde maschinell erstellt und ist ohne Unterschrift gültig.*

# DAAD Programme Strategic Partnerships and Thematic Networks subsequent funding (2019–2020)

DAAD

Deutscher Akademischer Austauschdienst  
German Academic Exchange Service

## Zuwendungsvertrag

zwischen

dem Deutschen Akademischen Austauschdienst (DAAD) e.V., Kennedyallee 50, 53175 Bonn,  
vertreten durch die Generalsekretärin, diese vertreten durch Birgit Siebe-Herbig

**- Zuwendungsgeber-**

und

Universität Stuttgart, vertreten durch den Rektor der Hochschule, Herrn PROF. DR.-ING. Wolfram  
Ressel, Keplerstraße 7, 70174 Stuttgart, diese vertreten durch den/die Unterzeichnende/n

Anrede

Titel

Name

Vorname

Funktion

**- Zuwendungsempfänger-**

### 1. Höhe der Zuwendung

Der DAAD bewilligt dem Zuwendungsempfänger aus Mitteln des Bundesministeriums für  
Bildung und Forschung eine nicht rückzahlbare Zuwendung zur Projektförderung in Höhe  
von

bis zu **249.866,00** Euro

(in Buchstaben: zweihundertneunundvierzigtausendachthundertsechundsechzig Euro).

Die Zuwendung verteilt sich auf die jeweiligen Haushaltsjahre wie folgt:

2019	125.000,00 Euro
2020	124.866,00 Euro

# DAAD Programme Strategic Partnerships and Thematic Networks subsequent funding (2019–2020)

## DAAD grant announcements on 28.02.2018 Project ID. 57421148

### Continuous Development of the Thematic Network *Modern Geodetic Space Techniques for Global Change Monitoring*

#### Partner universities and academies

Wuhan University Wuhan, China	School of Geodesy and Geomatics	WHU
Tongji University Shanghai, China	College of Surveying and Geoinformatics	TJU
Technical University Munich Germany	Deutsches Geodätisches Forschungsinstitut	DGFI
University of Luxembourg Luxembourg	Research Unit in Engineering Science (RUES) Faculté des Sciences, de la Technologie et de la Communication	ULUX
Chinese Academy of Surveying and Mapping, Beijing, China	Institute of Geodesy and Geodynamics	CASM

# Letter of Support from WHU for the extension proposal of subsequent funding (2019-2020)



武汉大学

Wuhan University · Wuhan · 430072 · P. R. China

Prof. Dr.-Ing. Nico Sneeuw  
Institute of Geodesy  
University of Stuttgart  
Geschwister-Scholl-Str. 24D  
D-70 174 Stuttgart  
Germany

November 24, 2017

Dear Professor Sneeuw,

Since 2015, the DAAD Thematic Network “Modern Geodetic Space Techniques for Global Change Monitoring” project has been successfully carried out with the valuable contribution and cooperative efforts of all the network participants. As one of the main partners, we are pleased to fully support your new proposal for subsequent funding within the Strategic Partnerships and Thematic Networks Programme from DAAD (2019-2020).

Pursuant to the Memorandum of Understanding (MoU) between University of Stuttgart and Wuhan University, our University, especially the School of Geodesy and Geomatics (SGG) will contribute in kind by offering the research and educational infrastructure, the tuition fee waiver and co-supervision in terms of student exchange, and the conventional level of guidance and service to the guest partners (students, lecturers and scientists). These include counseling for educational programs, timely invitation letters for visa applications, support in finding accommodation and administrative paperwork.

## Letter of Support from WHU for the extension proposal of subsequent funding (2019-2020)

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Furthermore, we will be able to provide matching funds with respect to our subsequent Thematic Network program upon approval of this new proposal. This matching funding is taken from the existing budget of the international development of the National Key Discipline Geodesy in SGG from the Chinese Ministry of Education (MoE) and the Chinese Natural Science Foundation China (NSFC), together with the forthcoming “Joint International Research Laboratory of Modern Geodesy and Geodynamics” which is being reviewed by MoE. Such matching funds would be used in support of the travel allowance of SGG colleagues and graduate students to Stuttgart and the expense in participating the workshops and summer schools.

I do hope we will have more deep collaboration and achieve excellent results with our best efforts in the frame of the new phase of DAAD Thematic Network. Best of luck with your grant application.

Yours Sincerely,



Prof. Dr. Jiancheng Li  
Vice President of Wuhan University,  
299 Bayi Road, Wuhan 430072, China



# Letter of Support from Tongji for the extension proposal of subsequent funding (2019-2020)

## Letter of Support

Dear Professor Sneeuw,

We really satisfied our successful cooperation in the frame of the DAAD Thematic Network “Modern Geodetic Space Techniques for Global Change Monitoring” project since 2015. As one of the partners, we fully support your new proposal for subsequent funding within the Strategic Partnerships and Thematic Networks Programme from DAAD (2019-2020).

Our College of Surveying and Geo-Informatics will continuously contribute by offering the research and educational infrastructure, the tuition fee waiver and co-supervision in terms of student exchange, and the conventional level of guidance and service to the guest partners (students, lecturers and scientists). These include counseling for educational programs, timely invitation letters for visa applications, support in finding accommodation and administrative paperwork.

Furthermore, we would like to provide matching funds with respect to our subsequent Thematic Network program upon approval of this new proposal. This matching funding is come from the existing budget of the internationalization of our college and the projects from the Chinese Natural Science Foundation China (NSFC). Such matching funds will support the travel allowance of our colleagues and graduate students to Stuttgart and the expense in participating the workshops and summer schools.

I believe that the new proposal will facilitate the continuous implement of our thematic network and promote new opportunities for the cooperation between us.

Looking forward to collaborating with you on this work.

Yours Sincerely,

Prof. Dr. Xiaohua Tong  
Dean of College of Surveying and Geo-Informatics, Tongji University  
1239 Siping Road, Shanghai 200092, China



# Letter of Support from CASM for the extension proposal of subsequent funding (2019-2020)



中国测绘科学研究院

Chinese Academy of Surveying and Mapping

28 Lian hua chi West Road

Beijing 100830

P.R.China

北京市海淀区莲花池西路28号

Tel:+86-10-63880803

Fax:+86-10-63880804

<http://www.casm.ac.cn>

Prof. Dr.-Ing. Nico Sneeuw  
Institute of Geodesy  
University of Stuttgart  
Geschwister-Scholl-Str. 24D  
D-70 174 Stuttgart  
Germany

November 27, 2017

## Letter of Support

Dear Professor Sneeuw,

As we have exchanged and mentioned, in the frame of the DAAD Thematic Network “Modern Geodetic Space Techniques for Global Change Monitoring” project, many results have been successfully achieved through cooperative efforts of all the network participants. As one of the main partners, we fully support your new proposal for subsequent funding within the Strategic Partnerships and Thematic Networks Programme from DAAD (2019-2020).

## Letter of Support from CASM for the extension proposal of subsequent funding (2019-2020)


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According to the Memorandum of Understanding (MoU) between Chinese Academy of Surveying and Mapping (CASM) and University of Stuttgart, our Academy will provide the continuous contribution by offering the research infrastructure, co-supervision of exchange student, the conventional level of guidance and service to the partner guests (students and researcher) and support in finding accommodation in Beijing.

In addition, we will be able to provide substantial matching funds with respect to the subsequent Thematic Network program upon approval of this new proposal. This is taken from the existing budget of the international cooperation within CASM “National International Cooperation Research Center for Surveying, Mapping and Geoinformation”, which is one of National International Science and Technology Cooperation Base Program from Ministry of Science and Technology of the People's Republic of China (MOST). These matching funds will be used in support of the travel allowance of CASM colleagues and graduate students to Stuttgart and the expense in participating the workshops and summer schools.

We really appreciate your enthusiasm in preparing and submitting the new proposal. Moreover, we are sure that we will have more deep long-term collaboration and get excellent achievements with the best efforts from all the partners in new phase of DAAD Thematic Network.

Yours Sincerely,

  
WU Lan  
Vice President, Chinese Academy of Surveying and Mapping



## **Objectives for the subsequent funding period**

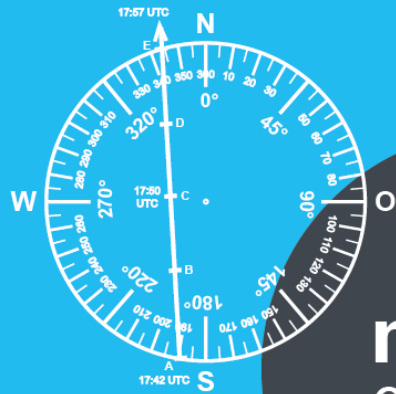
- **an enhancement of the objectives of the establishment and continuous development of the Thematic Network**
- **Assurance of smooth transition into the post-funding period**
- **will keep all the three Chinese institutions from Wuhan, Shanghai and Beijing as partners of the Thematic Network in the post-funding phase.**

# DAAD Programme Strategic Partnerships and Thematic Networks subsequent funding (2019–2020)

<b>Proposed measures</b>	<b>2019</b>	<b>2020</b>
<b><u>Network meetings, short visits (up to 14 days) of university personnel</u></b>		
10 participants of foreign partner institutions per meeting to US		7.476
Exchange and coordination visits of US Professors or coordinator to partner countries with 1- member per year	1.500	1.500
<b><u>Workshops / summer schools</u></b>		
4 foreign graduates and 1 junior researchers of foreign partner institutions to <u>summer school</u> to US	6.000	
4 German students, graduates and 1 junior researchers per <u>workshop</u> to partner institutions		6.500
<b><u>Longer visits of university personnel (14 days to six months)</u></b>		
2 (2019) and 3 (2020) German professors and researchers per year at partner institutions	6.900	12.690
<u>3 Chinese partner professors</u> and researchers per year at US	8.550	14.550
<b><u>Study and research visits for students, graduates and junior researchers (up to six months)</u></b>		
<u>3 German scholarship</u> holders per year to partner Institutions	21.900	21.900
<u>3 scholarship holders</u> of partner Institutions per year to US	9.750	9.750



Universität Stuttgart  
Fakultät 6  
Luft- und Raumfahrttechnik und Geodäsie



**news**  
01 — 2018

### Verlängerung der Förderung des Thematischen Netzwerks „Modern Geodetic Space Techniques for Global Change Monitoring“ für weitere 2 Jahre

DAAD verlängert die Förderung des Thematischen Netzwerks zwischen der Universität Stuttgart und 5 Partnerinstituten aus Deutschland, China und Luxemburg

Bis zu 250.000 Euro jährlich können Hochschulen aus einem DAAD-Programm erhalten, um ihr internationales Profil zu stärken. Im Jahr 2015 bewarben sich 28 Hochschulen mit ihren internationalen Partnern. Die Universität Stuttgart konnte sich mit ihrem Projekt zu „Modern Geodetic Space Techniques for Global Change Monitoring“ durchsetzen und erhielt eine Erstförderung (2015-2018). Auch im letzten Jahr der Regelförderzeit schöpft das Thematische Netzwerk immer weiter großes Potential für die Wissenschaft und die Internationalisierung. Eine Förderverlängerung wird nach intensiver Bewerbung nur 50% aller Projekte zugestanden. Diese Anschlussförderung konnten sich die Universität Stuttgart und ihre Partner für die nächsten zwei Jahre (2019-2020) sichern. Die Referatsleitung des DAAD betonte die Förderwürdigkeit dieses Thematischen Netzwerks, wodurch diesem nun jährlich 125.000 Euro zur Verfügung stehen.

Als eines der zentralen Programmziele des Thematischen Netzwerks steht die Unterstützung der Internationalisierungsstrategie der Universität Stuttgart, um die Qualität von Lehre und Forschung stetig zu verbessern. Hierzu gehört der Wissensaustausch innerhalb der fünf beteiligten Institute der Universität Stuttgart (Geodätisches Institut, Institut für Ingenieurgeodäsie, Institut für Photogrammetrie, Institut für Raumfahrtssysteme und Institut für Wasser- und Umweltsystemmodellierung) sowie der Ausbau der internationalen Kooperation mit den 5 kontinuierlich bestehenden Partnerinstituten (Wuhan University, China; Tongji University, China; Chinese Academy of Surveying and Mapping, China; Universität Luxemburg, TU München, sowie der Universität Stuttgart).

Der DAAD begrüßt den starken Wissensaustausch im Thematischen Netzwerk auf allen wissenschaftlichen Ebenen sehr. Nicht nur Professoren und Forscher aller Partnerinstitute begeben sich hier auf längere Studien- und Forschungsaufenthalte an den jeweiligen Partnerinstitutionen, sondern auch die PhD-, Master- und Bachelorstudierenden.

DAAD\_TN\_Delegation\_CASM\_Peking\_04\_2017



Die Vereinigung aller Ebenen in einem gemeinsamen Workshop oder in einer sehr erfolgreichen Summer School wurde bereits durch das Thematische Netzwerk ermöglicht. Diese blühende Kooperation brachte bis dato eine große Anzahl an gemeinsamen Forschungsprojekten (6) und Publikationen (23) hervor. Die Förderverlängerung ist nicht nur dem Erfolg des bisherigen Projektverlaufs oder der Erreichung der geplanten Ziele geschuldet, sondern verdankt wir auch der Unterstützung durch die Leitungsebenen aller Partnerinstitutionen des Netzwerks.

„Ziel der Anschlussförderung ist ein reibungsloser Übergang in die Nachförderungsphase unseres Thematischen Netzwerkprojekts und die Unterstützung der nachhaltigen Verankerung dessen, was in der ersten Förderphase erreicht wurde“ (nach DAAD). Unter diesem Leitgedanken wird das Thematische Netzwerk seine Programmziele der vorgehenden Phasen weiter fortsetzen. Die erfolgreichen Maßnahmen der letzten Periode wurden zur Erreichung der Ziele neu gesteckt: zum einen ein Netzwerktreffen in Stuttgart, zum anderen das Großereignis Summer School, welches für 2019 in Stuttgart geplant ist und ein Workshop in 2020 an einer der Partnerinstitutionen in China. Außerdem werden natürlich weiterhin Austauschmöglichkeiten in beide Richtungen gefördert. Insgesamt sechs Studierenden der Universität Stuttgart kann die Chance gegeben werden, in 2019 und 2020 für einen Forschungs- oder Studienaufenthalt an eine der Partnerinstitutionen zu gehen (Bewerbungen hierzu werden laufend angenommen). Im Gegenzug werden 6 Studierende der Partnerinstitutionen in 2019 und 2020 an der Universität Stuttgart forschen und studieren.

Alle Pläne und Vorbereitungen für die Anschlussförderung sind also bereits im Gang, die nächsten gemeinsamen Forschungsprojekte geplant und die Vorbereitungen für den kommenden Workshop in Luxemburg im Juli 2018 am Laufen. Weitere Informationen rund um den Austausch, Forschungsaufenthalte und aktuelle Ergebnisse des Thematischen Netzwerks sind auf der Website <http://themnet.gis.uni-stuttgart.de> zu finden.

**Projektleiter:** Prof. Dr.-Ing. Nico Sneeuw

**Projektkoordinator:** Dr.-Ing Jianqing Cai  
Geodätisches Institut

Tel.: 0711 685-83390 / -83391

Email: [sneeuw@gis.uni-stuttgart.de](mailto:sneeuw@gis.uni-stuttgart.de), [cai@gis.uni-stuttgart.de](mailto:cai@gis.uni-stuttgart.de)

DAAD\_TN\_Workshop\_Stgt\_07\_2018





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Thank you for your attention!

Cai@gis.uni-stuttgart.de  
Sneeuw@gis.uni-stuttgart.de