



WROCLAW UNIVERSITY  
OF ENVIRONMENTAL  
AND LIFE SCIENCES



TECHNISCHE  
UNIVERSITÄT  
DRESDEN

Imperial College  
London



TECHNISCHE  
UNIVERSITÄT  
WIEN

---

# INCREaSE Kick-Off

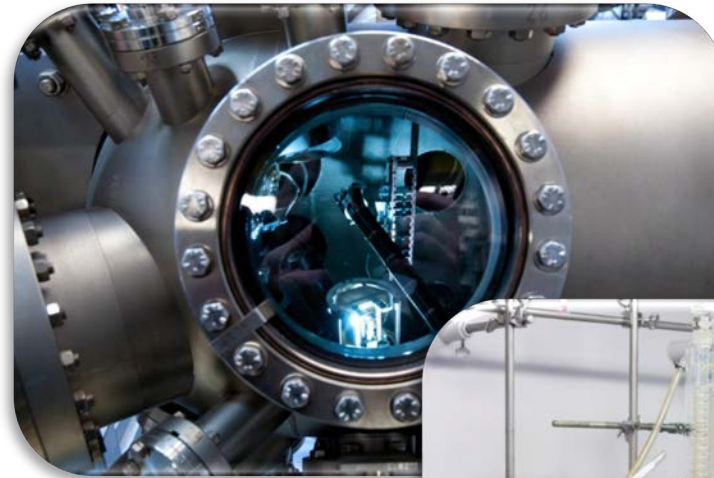
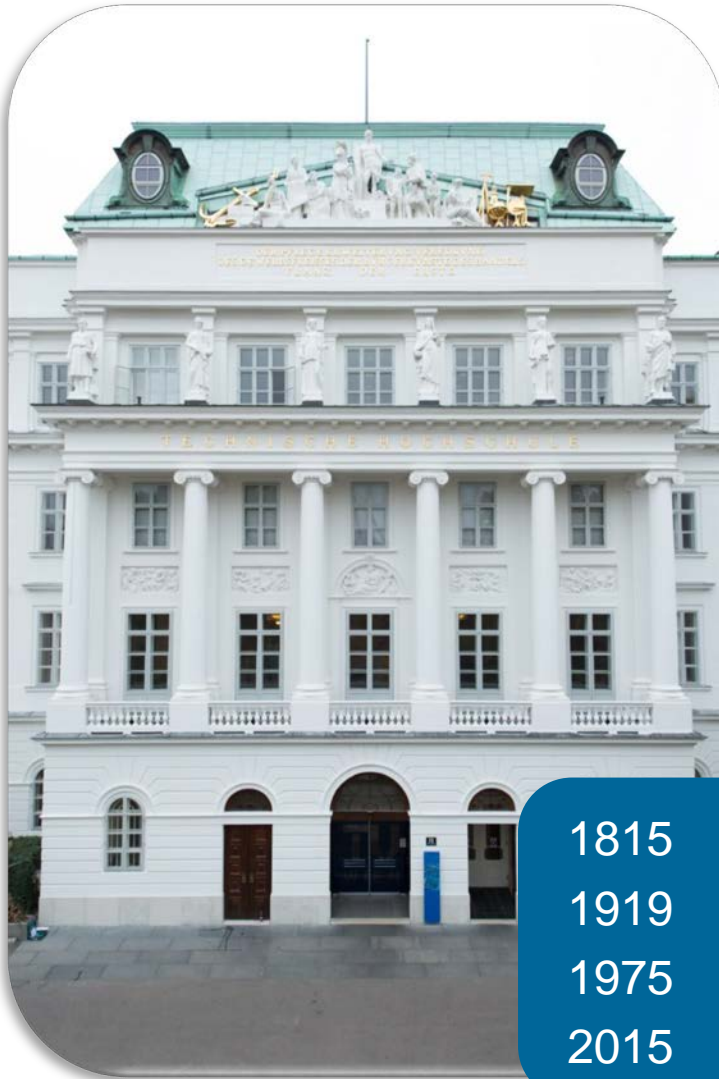
## Wroclaw, 27 March 2019

# TU Wien

Johannes Böhm



TU Wien  
Department of Geodesy and Geoinformation  
Research Division Higher Geodesy



- 1815 Founded as „k. k. Polytechnisches Institut“
- 1919 Admission for women
- 1975 Renamed to „Technische Universität“ (TU)
- 2015 200-year-anniversary

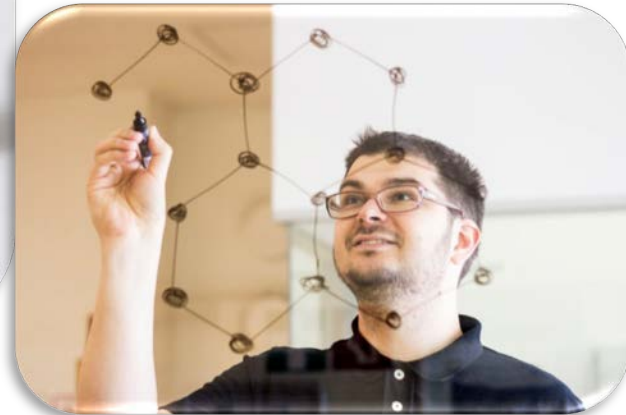
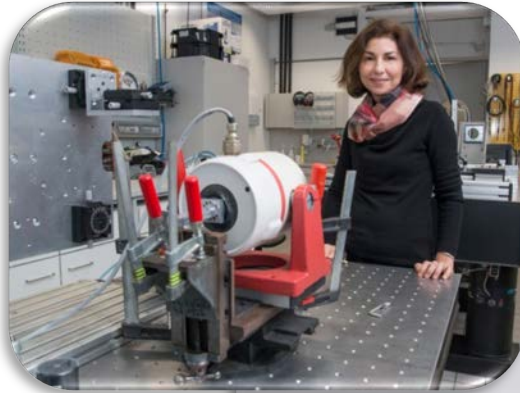
# TU Wien Alumni

---



- Christian Doppler (Doppler effect)
- Joseph Loschmidt (Loschmidt constant)
- Otto Wagner (architect)
- Richard Zsigmondy (Nobel Prizewinner for Chemistry )
- Viktor Kaplan (Kaplan turbine)
- Josef and Johann Strauß
- ...

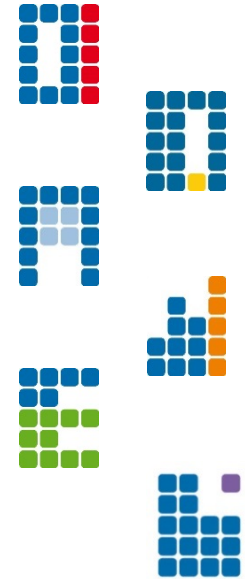
# Research at TU Wien – From Basic Research to Applications



# Five Research Focus Points

---

- Computational Science and Engineering
- Quantum Physics and Quantum Technologies
- Materials and Matter
- Information and Communication Technologies
- Energy and Environment
- *Additional Fields of Research*



# Cooperation Overview 1/2

---

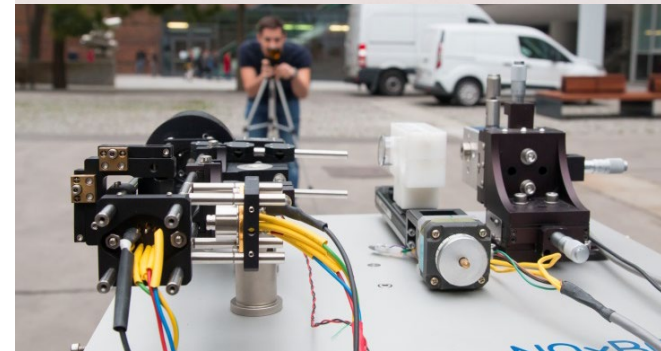
- On campus
  - Cooperation & research centres connecting faculties
  - TU doctoral programmes
- With Austrian universities
  - TU Austria (Graz University of Techn., University of Leoben)
  - Vienna Scientific Cluster



Pictures: © [1] Lois Lammerhuber, [2] [www.solardecathlon.at](http://www.solardecathlon.at)

# Cooperation Overview 2/2

- Bi- und multilateral
  - Christian Doppler-Labors
  - FWF doctoral programmes
  - National research networks FWF
  - Special research fields FWF
  - COMET programmes of the FFG
  - Laura Bassi Center
  - Ludwig Boltzmann Institute
- Economy



FWF = Austrian Science Fund; FFG = Austrian Research Promotion Agency  
Picture: [1] © TU Wien | Matthias Heisler

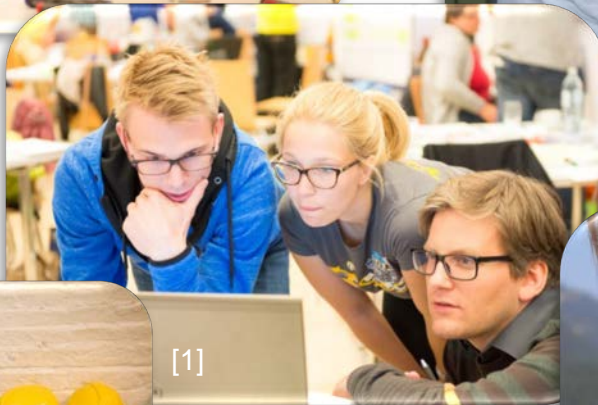
# Infrastructure

---

- X-ray Center (XRC)
- Analytical Instrumentation Center (AIC)
- NMR-Spectroscopy Center
- TRIGA Mark-II (Reactor)
- Center for Micro- and Nanostructures (ZMNS)
- VSC - Vienna Scientific Cluster, High Performance Computing
- USTEM - Center for Electron Microscopy
- Low Temperature Facilities



# Teaching at TU Wien - Imparting Competence



Pictures: [1] © TU Austria | Matthias Heisler

# Teaching at TU Wien

---

- As of 2016, 28918 students
  - 28.4 percent female
- Since October 1, 2006, the study programmes have been taught as bachelor and master programmes, according to the Bologna process
- TU Wien offers 18 bachelor-, 31 master- and 3 doctoral programmes
- 2653 alumni of first and second degree in 2016

# Students 1/2

---

Programme	absolute
Architecture	6,005
Biomedical Engineering	385
Civil Engineering	2,423
Computational Logic	6
Economics – Mechanical Engineering	1,997
Electrical Engineering	2,780
Individual Studies	26
Informatics	5,277

## Students 2/2

---

Programme	absolute
Material Science	98
Mechanical Engineering	2,262
Process Engineering	677
Regional Planning	1,269
<b>Surveying and Geoinformation</b>	354
Teacher Trainings	166
Technical Chemistry	1,594
Technical Mathematics	1,451
Technical Physics	1,511

# Mobility

---

- TU Wien has bilateral agreements with more than 70 universities around the world.



Picture Flags: © Dieter Haug | Pixelio.de

# International Cooperations and Mobility

---

## Membership in **international associations:**

- **EUA** (European University Association)
- **SEFI** (European Society for Engineering Education)
- **CESAER** (Conference of European Schools for Advanced Engineering Education)
- **IACEE** (International Association for Continuing Engineering Education)
- **TIME** (Top Industrial Managers for Europe)
- **GE3** (Global Education for European Engineers and Entrepreneurs)

## Membership in **academic networks:**

- **ASEA-Uninet** (Southeast Asia)
- **Eurasia-Pacific Uninet** (China, Central Asia, Russia)
- **ATHENS** (Advanced Technology Higher Education Network)
- **4 x TU** (TU Bratislava, TU Budapest, TU Prague, TU Wien)
- **Technical Universities of European Capitals**

# International Cooperations and Mobility

---

## Membership in international subject-specific academic networks:

- **EUPEN** (European Physics Education Network)
- **ECTN** (European Chemistry Thematic Network)
- **LE:NOTRE** (Thematic Network in Landscape Architecture)

## Mobility and scholarship programmes:

- ERASMUS (Mobility of students and teaching staff: EEA-countries, 250 bilateral agreements )
- ERASMUS Mundus (Mobility of students, graduate students, teaching staff: Russia)

- **Joint Study** (Mobility of students: USA, CAN, Australia, Latin America, Russia, Southeast Asia)
- **CEEPUS** (Mobility of students and teaching staff: East and Southeast Europe)

## International Study Programmes:

- European Masters Programme in **Computational Logic** (Erasmus Mundus)
- **Double-, Joint-Degrees:** Ecoles Centrales, INSA Lyon, Universidad Politécnica de Madrid, Politecnico di Milano, UACG Sofia, Tongji University, Shanghai
- **Master Programmes taught in English:** Biomedical Engineering, Building Science and Technology
- **TUW-Summer University**

# Facts and Figures

---

- Finances
  - 351 Mio. € turnover
  - 262 Mio. € balance sheet total
- Rooms
  - 12,000 rooms
  - 296,000 m<sup>2</sup> total area
- Staff
  - 3,823 scientific staff, *thereof 158 professors*
  - 1,182 non-scientific staff
  - 5,002 total staff



# Organisation



# Faculties

---

- Architecture and Planning
- Civil Engineering
- Electrical Engineering and Information Technology
- Informatics
- Mechanical and Industrial Engineering
- **Mathematics and Geoinformation**
- Physics
- Technical Chemistry

# Faculty of Mathematics and Geoinformation

---

- Institute of Analysis and Scientific Computing
- Institute of Discrete Mathematics and Geometry
- Institute of Statistics and Mathematical Methods in Economics
- **Department of Geodesy and Geoinformation**

# Department of Geodesy and Geoinformation

---

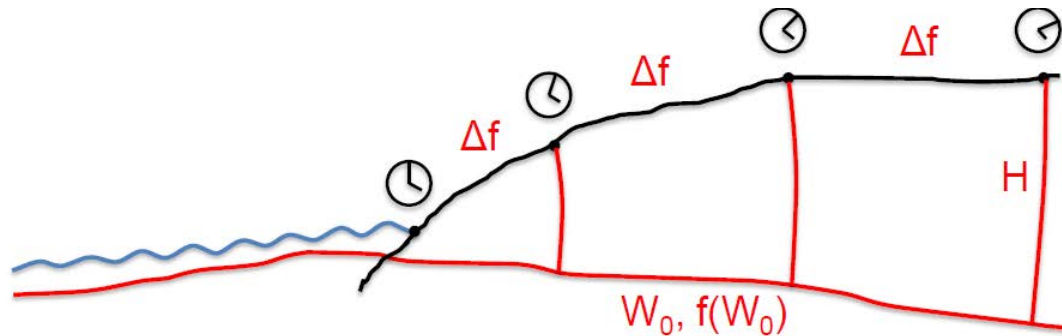
- Remote Sensing (**Wolfgang Wagner**, Wouter Dorigo)
- Geoinformation (Ioannis Giannopoulos)
- Geophysics (Adrian Flores-Orosco)
- **Higher Geodesy** (Johannes Böhm)
- Engineering Geodesy (Hans Neuner)
- Cartography (Georg Gartner)
- Photogrammetry (Norbert Pfeifer)

# Research Division Higher Geodesy



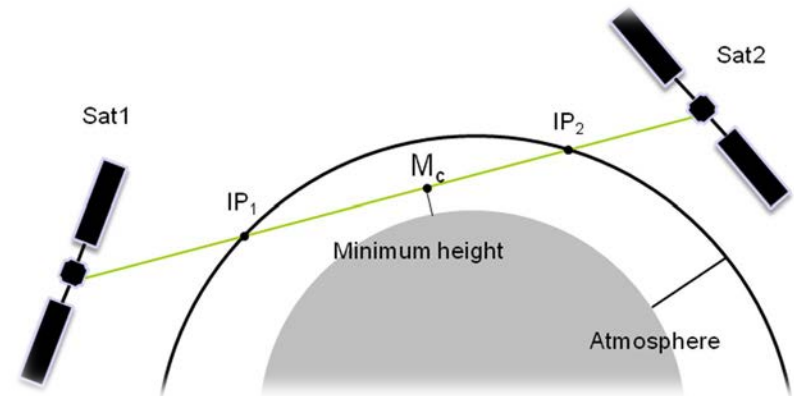
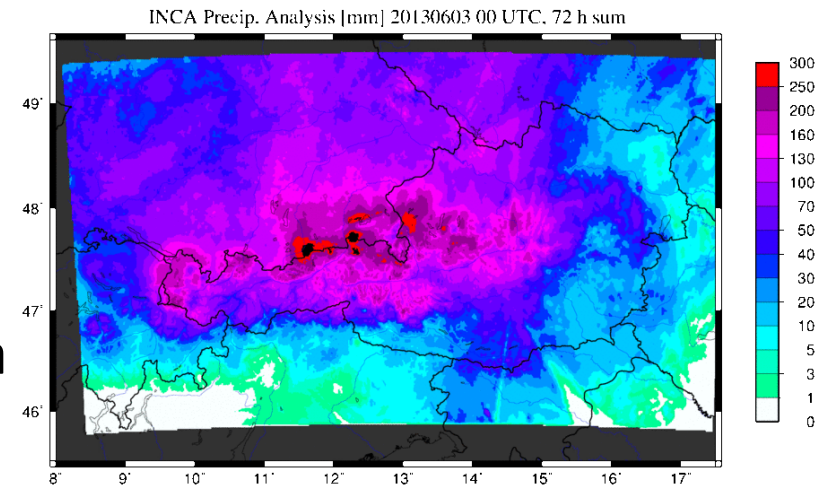
# Research Division Higher Geodesy

- Satellite Geodesy (Robert Weber)
- Very Long Baseline Interferometry (VLBI)
- New Technologies (Clocks, Ringlaser, ..)

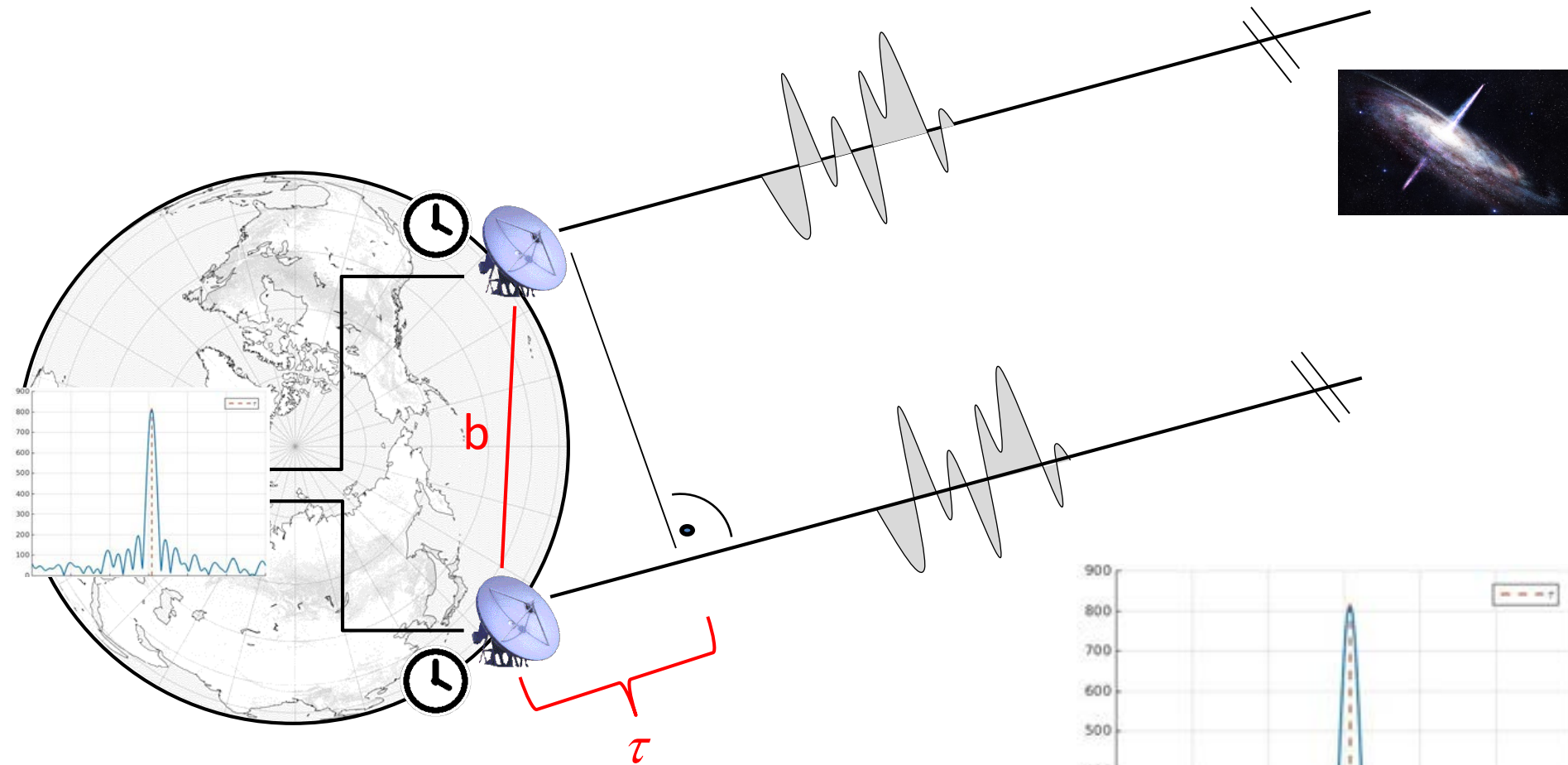


# Satellite Geodesy

- Atmospheric Studies
  - tomography
  - ionosphere models
  - see presentation Natalia Hanna
- Vienna Mapping Functions etc.
  - see presentations Daniel Landskron, Janina Boisits
- Earth rotation studies
- ...



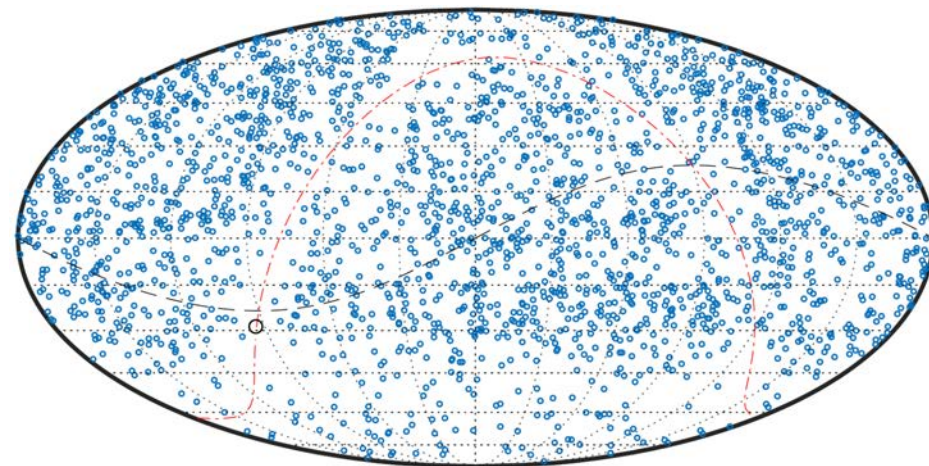
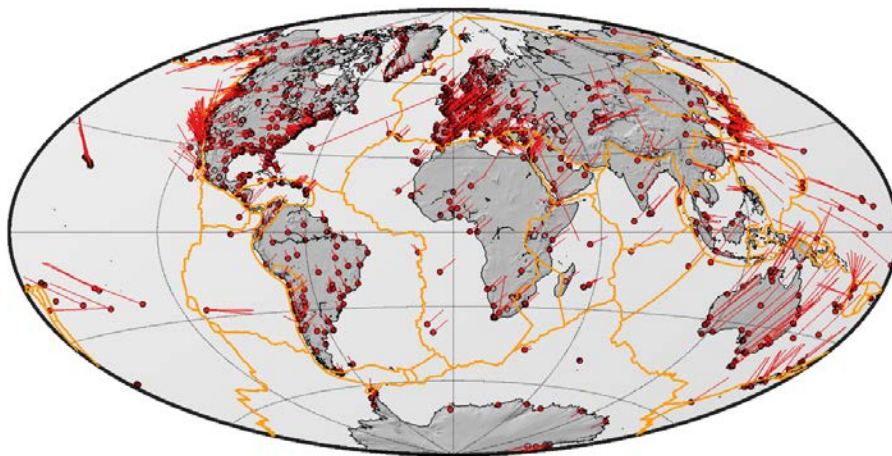
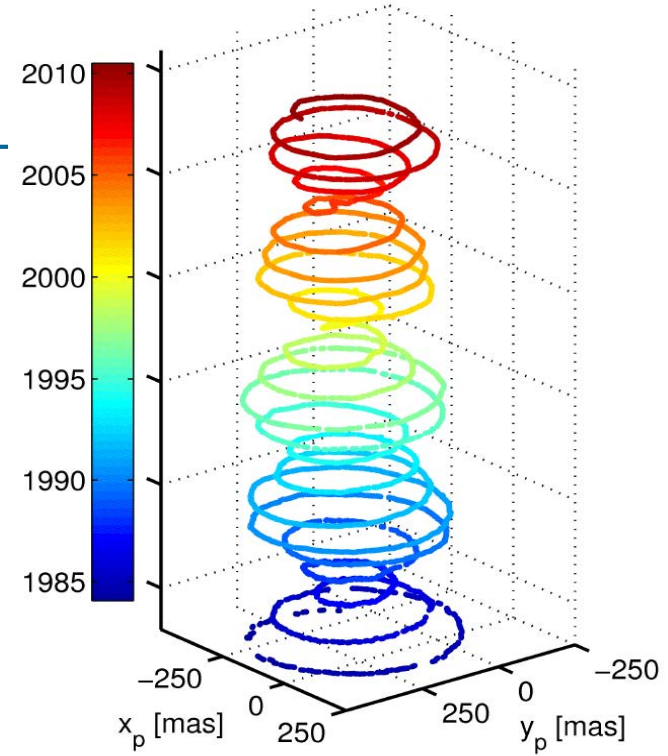
# Very Long Baseline Interferometry



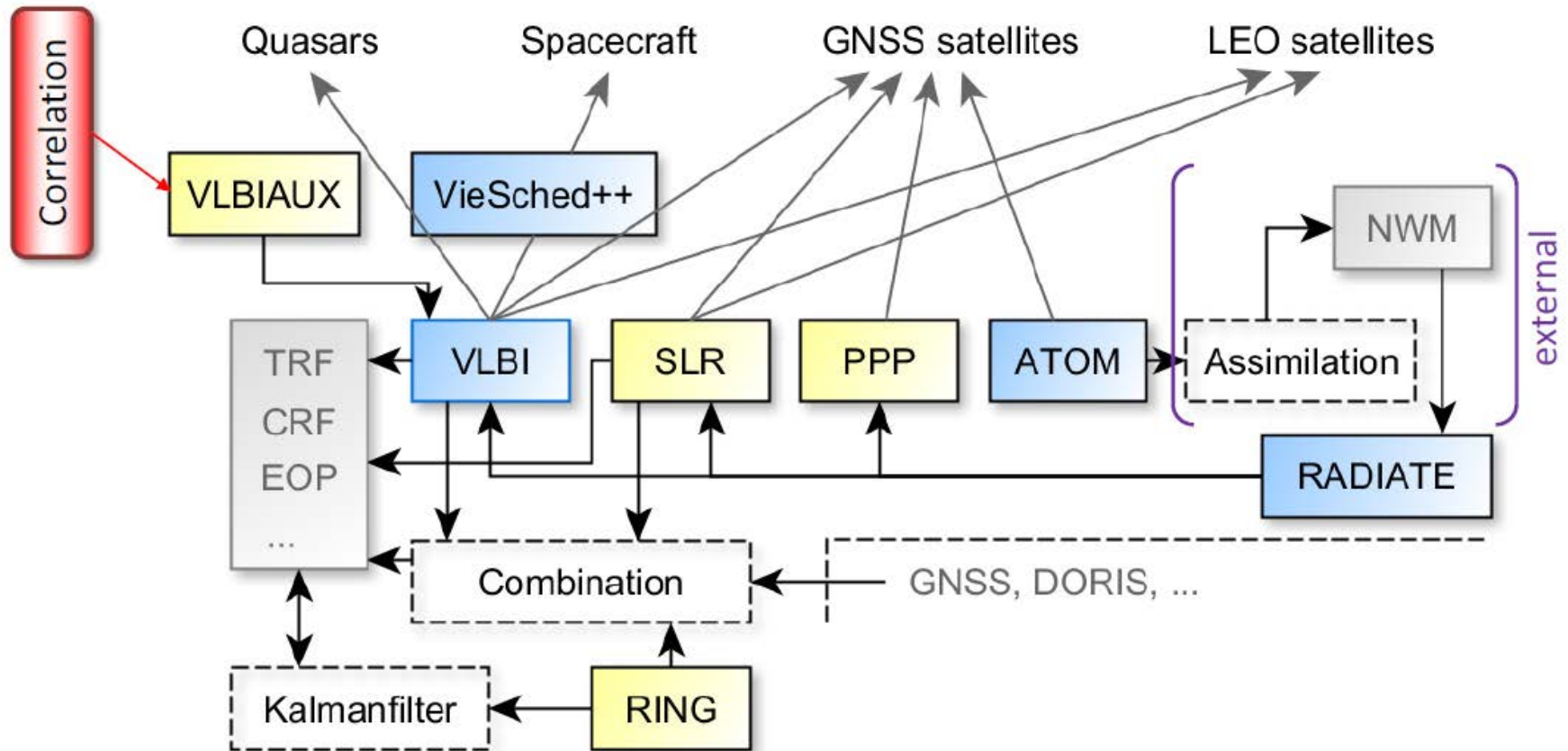


# Very Long Baseline Interferometry

- Terrestrial Reference Frames
- Celestial Reference Frames
- Earth Orientation Parameters
- ...



# Vienna VLBI and Satellite Software (VieVS)



<https://github.com/TUW-VieVS>



TU Wien  
Department of Geodesy and Geoinformation  
Research Division Higher Geodesy



WROCLAW UNIVERSITY  
OF ENVIRONMENTAL  
AND LIFE SCIENCES



TECHNISCHE  
UNIVERSITÄT  
DRESDEN

Imperial College  
London



TECHNISCHE  
UNIVERSITÄT  
WIEN

---

INCREaSE Kick-Off  
Wroclaw, 27 March 2019

**Thanks for your attention!**

Johannes Böhm



TU Wien  
Department of Geodesy and Geoinformation  
Research Division Higher Geodesy