http:/www.geomet.uni-koeln.de

Welcome to the Institute

University of Cologne

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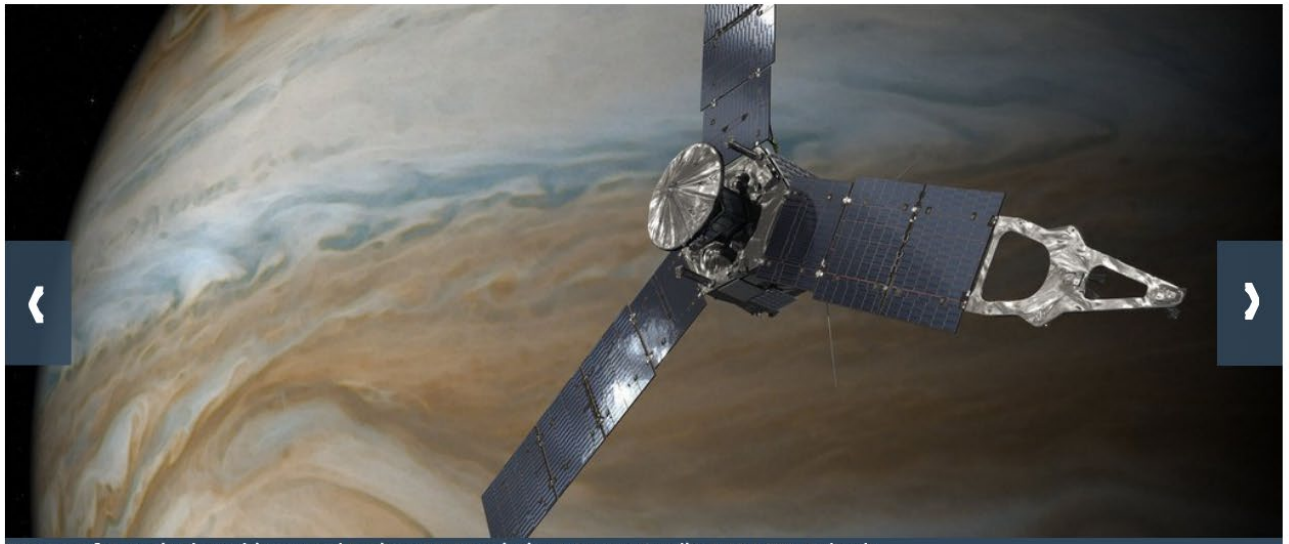
Deutsch

Faculty of Mathematics and Natural Sciences

Institut für Geophysik und Meteorologie

Institute | Teaching | Studieninteressierte | Research | Outreach | Weather & Climate | Media | Department | Students council



Spacecraft Juno in the orbit around Jupiter (NASA mission), Image Credit: NASA/JPL-Caltech

Events

09 OCT — Start of lectures

09 OCT — Induction session for the newly enrolled students of the B. Sc. course "Geophysik und Meteorologie"
at 10:00 in the lecture hall 4.001

09 OCT — Induction session for the newly enrolled students of the M. Sc. course "Physics of the Earth and Atmosphere"
at 13:00 in the small seminar room 3.137

16 OCT — KPA-Ringvorlesung WS 23/24: Moderne Erdsystemwissenschaften - komplex, digital, interdisziplinär
at 16:00 Uhr in the Geo-/Bio-lecture hall (Zülpicher Str. 49a), "Der Kick-Off des Systems Erde: warum und wann wurde die Erde bewohnbar?" from Prof. Dr. Carsten Münker (Institute of Geology und Mineralogy, University of Cologne)

Welcome to the Institute of Geophysics and Meteorology

The Institute of Geophysics and Meteorology focuses on research fields ranging from applied geophysical exploration to the

Services | Websites

Summer term 2023

Winter term 2023/24

Universität zu Köln

Professorships in Cologne

Prof.‘in Susanne Crewell

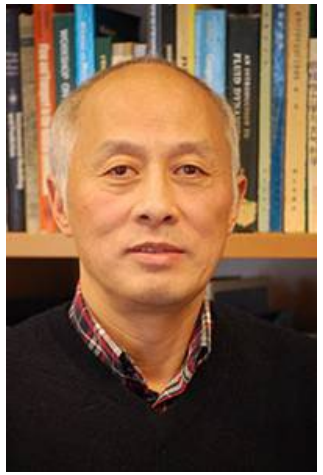
Prof.‘in Nikki Vercauteren

Prof. Ulrich Löhnert

Institut für Geophysik und Meteorologie
3. Stock, Pohligstr. 3

Prof. Roel Neggers

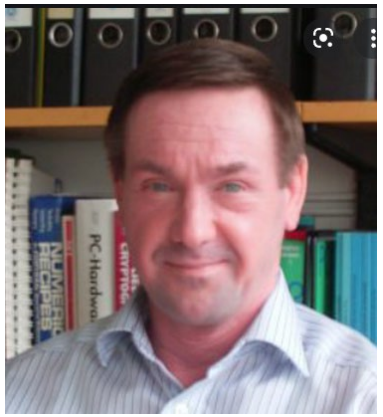
Prof. Joachim Saur



Prof. Yaping Shao

Prof. Bülent Tezkan

Dr. Frank Steffany
Consultation
Meteorology



Dr. Lex Wennmacher
Consultation
Geophysics

Universität zu Köln

Master „Physics of the Earth and Atmosphere“

Institute of Geophysics and Meteorology, University of Cologne

- Offered since winter term 2009/2010
- Reaccreditation (WS2022/23)
- Duration of regular course: 4 semesters
- strongly research oriented, cooperation with the University of Bonn

- **Information Session on Reaccreditation 2 pm – CIP-room (Tuesday, October 10)**
- **Friday, 2 pm – Meteo Seminar!**

1. Part: Lectures and excercises

- compulsary modules
- subject-specific compulsory modules
- elective modules

2. Part: Research (3 & 4 semester)

- Literature seminar
- Project work
- Master thesis

Students 9 October 2023

- 50 students in total
- 18 / 32 geophysics / meteorology
- 30 females (60 %)
- 13 international (26 %)

Universität zu Köln

Master „Physics of the Earth and Atmosphere“

Communication

- Institute web site for news and information
  https://geomet.uni-koeln.de/studium/master-program

- Registration in KLIPS https://klips2.uni-koeln.de/
- Ilias: course material https://www.ilias.uni-koeln.de/
- Consultation for specific geophysics (Wennmacher) and meteorology (Steffany) questions
- Examination Office (geo-pruefungsamt@uni-koeln.de)

Master „Physics of the Earth and Atmosphere“

- The first part contains **11 modules**, each having 6 credit points.
  The elective area covers 24 credit points.
- Two focus areas: Geophysics or Meteorology.
  Change of focus is possible in the 1. semester.
- Five modules need to be taken in the selected focus area
  → at least four of them need to be core modules
- Of course more modules from the focus area can be selected as part of the elective modules

PROPOSED PLAN OF STUDY OF THE MASTER OF SCIENCE: M.SC. PHYSICS OF THE EARTH AND ATMOSPHERE

Begin of study: winter term

1st term	2nd term	3rd term	4th term
Prognostic Modelling*	Inverse Modelling*	Literature Seminar and current Research Questions	Master Thesis
Compulsory Module 1 of Main Focus	Compulsory Module 4 of Main Focus	Project Work	
Compulsory Module 2 of Main Focus	Compulsory Module 5 of Main Focus		
Compulsory Module 3 of Main Focus	Elective Module 2		
Elective Module 1	Elective Module 3	Elective Module 4	

*Prognostic Modelling & Inverse Modelling: annually alternating between Bonn and Cologne

Box height = 3 Credit Points (ECTS) and weight = ECTS/120

MASTER COMPULSORY MODULE:

winter term

Geophysics

- **GEOEEM:** Direct Current and Electro-magnetic Exploration Methods
- **GEOSEIS:** Seismology
- **GEOSOSYS** Geophysics of the solar system

Meteorology

- **METCLOUD:** Clouds and Precipitation
- **METADM:** Atmospheric Dynamics and Modeling
- **METRAD:** Radiation

summer term

Geophysics

- **GEOAFC:** Advanced Geo-physical Field Course
- **GEOSPACE:** Space Physics

Meteorology

- **METABL:** Atmospheric Boundary Layer
- **METCLIMATE:** Physical Climatology

More information for each module in module handbook

Universität zu Köln

Modules of the focus areas

Schwerpunktmodule Geophysics	Schwerpunktmodule Meteorology
Direct Current and Electromagnetic Exploration Methods (GEOEEM) (Kernmodul)	Atmospheric Boundary Layer (METABL) (Kernmodul)
Advanced Geophysical Field Course (GEOAFC/GEOAFC+) (Kernmodul)	Clouds and Precipitation (METCLOUD) (Kernmodul)
Geophysics of the Solar System (GEOSOSYS) (Kernmodul)	Physical Climatology (METCLIMATE) (Kernmodul)
Space Physics (GEOSPACE / GEOSPACE+) (Kernmodul)	Atmospheric Dynamics and Modelling (METADM) (Kernmodul)
Seismology (GEOSEIS)	Atmospheric Radiation (METRAD) (Kernmodul))
Wave based Methods in Hydrogeophysics (GEOHYD)	Energy Meteorology (METEN)
Geomagnetism and Space Weather (GEOMAG)	Advanced Remote Sensing (METRS)
Planetary Atmospheres (GEOPLATM)	Atmospheric Chemistry (METCHEM)
	Polar Meteorology (METPOL)
	Future Challenges in Meteorology (METFUT)
	Challenging Research Topics (METTOP)

and additional modules from Bonn

Kernmodul
=
core module

Master „Physics of the Earth and Atmosphere“

Compulsory course for main focus

Geophysics

- **GEOEEM**
  Direct Current and Electromagnetic Exploration Methods
- GEOAFC
  Advanced Geophysical Field Course
- **GEOSOSYS**
  Geophysics of the solar system
- GEOSPACE
  Space Physics:

Bold case means winter term

Meteorology

- METABL
  Atmospheric Boundary Layer
- **METCLOUD**
  Clouds and Precipitation
- METCLIMATE
  Physical Climatology
- **METADM**
  Atmospheric Dynamics and Modeling
- **METRAD**
  Radiation
- METPHA Physics oft he Atmosphere
  (for students with little meteorological background, only with permission of the examination committee):

Master „Physics of the Earth and Atmosphere“

Elective modules

- Can be selected freely from the module handbook (from other topics and list below)
- Need approval (via examination office) – several modules including those from partner program in Bonn have already been preapproved, e.g. in physics, math
- Only one module from geosciences, chemistry, biology, didactics can be selected
- Only one elective module offered by another faculty can be selected

Elective modules meteorology:

- METRS Advanced Remote Sensing (Summer term)
- METCHEM Atmospheric Chemistry (Winter term)
- METEN Energy Meteorology (WT-block course)
- METTOP Challenging Meteorological Topics
- METPOL Polar Meteorology (Winter term)
- METFUT Future Challenges of Meteorology

Master „Physics of the Earth and Atmosphere“

Research oriented part

BMD seminar features talks by bachelor, master, doctoral students. Participation is strongly recommended in order to choose working group and research theme for master thesis.

- **Literature seminar (9 CP):**
  The subject is selected in agreement with the advisor, if the topic of the master thesis is close to the Bachelor ‘s thesis.
  20 minute presentation in a working group seminar, max 10 min questions and answers (Q&A) and written elaboration

- **Project Work (15 CP):**
  Preparation of the Master ‘s thesis, e.g. feasibility study.
  Completed by a talk (30 min), with Q&A (max 15 min). Nor grading.

- **Master ‘s thesis (30 CP)**:
  Duration 6 months, terminated by a colloquium (30 min), with Q&A (max 15 min).

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Prospectus Winter term 2023/24

Course Nr.	Course
14904.2011	PM, Prognostic Modelling - A. Hense, S. Kollet
14904.2051	GEOEEM, Direct Current and Electromagnetic Exploration Methods - B. Tezkan, P. Yogeshwar
14904.2071	GEOSEIS, Seismology
14904.2081	GEOSOSYS, Geophysics of the Solar System - J. Saur
14904.2271	GEOMAG, Geomagnetism and Space Weather - A. Grayver
14904.2111	METCLOUD, Clouds and Precipitation - S. Crewell, S. Schnitt
14904.2131	METADM, Atmospheric Dynamics and Modelling - N. Vercauteren, F. Gucci
14904.2141	METRAD, Atmospheric Radiation – U. Löhnert
14904.2151	METPHA, Physics of the Atmosphere - F. Steffany
14904.2161	METCHEM, Atmospheric Chemistry - A. Tsimpidi
14904.2221	METPOL, Polar Meteorology - K. Ebell, R. Neggers, V. Schemann
14904.2241	GEOSRT,Planetary Gravity Fields from Spacecraft Radio Tracking - M.Pätzold.
14904.2031	LITSEM, Literature Seminar and Current Research Questions
14904.2041	PWORK, Project Work (BMD)
14904.2202	MASTER, Master Colloquium (BMD)

Important: please register for all courses
Otherwise it might be impossibl to particioate in examination

https://geomet.uni-koeln.de/en/studium/ws-2023-24

Master „Physics of the Earth and Atmosphere“

Seminars

Hybrid, large lecture room 4th floor

Tuesdays, 12:00

Thursdays, 3.136 9:15

BMD, Bachelor-, Master- und Doktorandenseminar

Vst.-Art	Tag	Zeit	Raum
Seminar	Dienstag Donnerstag	12:00 - 13:30 09:15 - 10:45	4.001 4.001

Ungeachtet der derzeit hohen Covid-19-Inzidenz soll die Lehre im Sommersemester weitgehend in Präsenz stattfinden, flankiert von digitalen Elementen.

Despite the currently high Covid-19 incidence, the teaching in the summer semester is planned to take place largely in attendance, flanked by digital elements.

Universität zu Köln

International mobility

- Possibilities for a semester or research stay abroad, e.g. ERASMUS+
- ERASMUS agreements of our institute with the University of l‘Aquila, University of Trento and University of Innsbruck

→ for more information see:
https://geomet.uni-koeln.de/studium/international-mobility

Department wide information meeting on international mobility (in German)
7 Nov 2023, 17:45
Geo/Bio lecture hall

Contact at the Institute for Geophysics and Meteorology
Dr. Kerstin Ebell
kerstin.ebell@uni-koeln.de

Universität zu Köln

University of Bonn offers

Studienverlaufsplan Master "Physik der Erde und Atmosphäre" Universität Bonn

120 LP	Pflicht für beide Schwerpunkte	Pflicht für den Schwerpunkt Meteorologie	Pflicht für den Schwerpunkt Geophysik	Spezialisierung Wahlpflicht: zu wählen sind 4 Module mit insgesamt 24 LP (2. und 4. Zeile: zugelassene Module des MSc PEA der Universität zu Köln)									Freier Wahlpflichtbereich
1./2. Sem.	pea700	pea710	pea720	pea731	pea732	pea733					pea734	pea735	pea740
Module des WiSe	Prognostische Modellierung	Dynamik der Atmosphäre	Physik poröser Medien	Statistische Datenanalyse in den Geowissen-Schaften	Klima-dynamik	Radar-polarimetrie					Tektono-physik	Elektrische Bildgebung	Module aus MSc. Geologie, MSc. Geochemie/Petrologie, MSc. Mathematics, MSc. Physics, MSc. Geodetic Engineering oder Spezialisierungs-module PEA (Bonn oder Köln) und zusätzliche wechselnde Angebote in PEA
				2+2 SWS 6 LP	2+2 SWS 6 LP	2+2 SWS 6 LP					2+2 SWS 6 LP	2+2 SWS 6 LP	
				METCHEM	METCLOUD	METRAD	METTOP	METADM	METPHA	GEOEEM	GEOSOSYS	GEOSEIS	
				Atmospheric Chemistry	Clouds and Precipitation	Atmospheric Radiation	Polar Meteorology	Atmospheric Dynamics and Modelling	Physics of the Atmosphere	Direct Current and Electro-magnetic Exploration Methods	Geophysics of the Solar System	Seismology	
	2+2 SWS 6 LP	2+2 SWS 6 LP	2+2 SWS 6 LP	2+2 SWS 6 LP	3+2 SWS 6 LP	2+2 SWS 6 LP	2+2 SWS 6 LP	2+2 SWS 6 LP	3+2 SWS 6 LP	3+2 SWS 6 LP	2+2 SWS 6 LP	2+2 SWS 6 LP	
2./1. Sem.	pea800	pea810	pea820	pea831	pea832							pea833	
Module des SoSe	Inverse Modellierung	Allgemeine Hydrodynamik	Geodynamik	Spezielle Themen aus der Theore-tischen Synoptik	Land-oberflächen-prozesse							Hydro-geophysik	
				2+2 SWS 6 LP	2+2 SWS 6 LP							2+4 SWS 6 LP	
				METCLIMATE	METRS	METABL	METFUT			GEOHYD	GEOSPACE	GEOAFC	
				Physical Climatology	Advanced Remote Sensing	Atmospheric Boundary Layer	Future Challenges of Meteorology			Wave-based methods in Hydro-geophysics	Space Physics	Advanced Geophysical Field Course	
	2+2 SWS 6 LP	2+2 SWS 6 LP	2+2 SWS 6 LP	2+2 SWS 6 LP	2+2 SWS 6 LP	3+2 SWS 6 LP	2+3 SWS 6 LP			2+3 SWS 6 LP	3+2 SWS 6 LP	2+2 SWS 6 LP	12 LP
	Allgemeine Pflicht												
3. Sem.	pea950							pea960					
	Entwicklung von Spezialkompetenzen							Methoden, Forschungsorientierung und Projektplanung					
	15 LP							15 LP					
4. Sem.	pea970												
	Masterarbeit												
	30 LP												

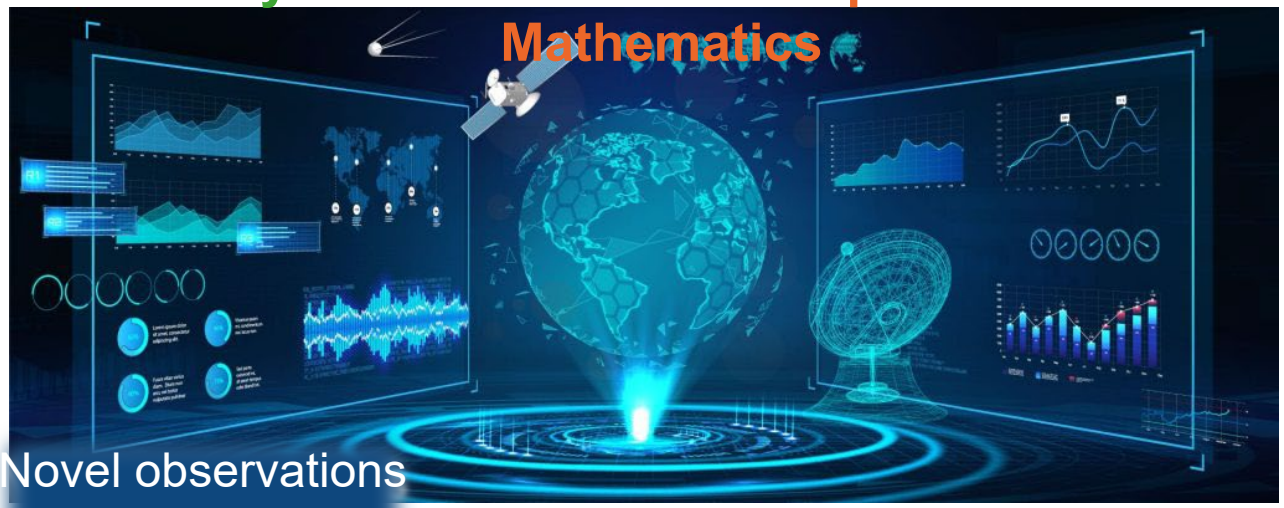
https://www.ifgeo.uni-bonn.de/lemetgeo

What is CESOC?

A cooperation in research and teaching to

- bundle and pass on expertise (especially to students)
- Tackle challenges of global environmental changes

Earth System Sciences & Computer Science & Mathematics



Novel observations & observational techniques

New algorithmic & AI/ML methods

Earth system monitoring & modelling

Collaboration partners

Become a CESOC member!

Weekly CESOC seminar series "My Research" (online)

CESOC Colloquia with international external guest speakers (hybrid)

Networking with experts from the collaboration partners → **Events and Workshops and Trainings**

And much more to come…

More information on: **cesoc.net**
Or write to: **info@cesoc.net**