



Institut für Geographie

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## Hauptseminar PG Climate Change: Atmosphere, Oceans, Cryosphere

Prof. Dr. Thomas Mölg

Studiengänge/Study Programs: BA/BSc/LAGY/LAR/LAGH <u>ECTS</u>: 5 (2 SWS) <u>Teilnehmerzahl/Participants</u>: max. 20 <u>Seminartermin/Times & Location</u>: see UNIVIS <u>Verbindliche Vorbesprechung/Pre-Meeting</u>: erste reguläre Sitzung

/first regular session

Climate change on long and short time scales has affected the livelihood on Earth throughout history. This seminar will discuss recent changes in the major components of the climate, and aims to deepen the understanding of how the climate functions as a system. The focus will be on current topics that concern the atmosphere; the hydrosphere (e.g., oceans); the cryosphere (e.g., ice sheets, glaciers, sea ice); and their interplay from the general perspectives on the physical basis of climate change, the role of climate variability, and the benefit from modeling climate and future pathways. To do so, we will scrutinize recent and brand new studies published in international journals. For participation, good basic knowledge in climatology and the willingness to read selected research articles in English is necessary. Depending on the participants, the course will be held in German or English; the seminar paper can be written in German or English in any case. During the seminar, active participation is expected.

	ervations of Climate Changes from	n AR4 (points to AR5)
Near Surface Rising global average near surface lemperature (Chapter 2.4). Increasing surface humidity (Chapter	te	/arming of sea surface mperatures (Chapter 2.4).
Warming throughout much of the worlds ocean (Chapter 3.2). Increasing rates of global mean sea level rise (Chapter 3.7). Changes in ocean salinity (Chapter 3.3). Acidification of the oceans (Chapter 3.8).	More frequent warm days and nights. Fewer cold days and nights (Chapter 2.6). Reductions in the number of frost days (Chapter 2.6). Decreasing snow cover in most regions (Chapter 4.5). Degrading permafrost in areal extent and thickness (Chapter 4.6). Large scale precipitation changes (Chapter 2.5). Increase in the number of heavy precipitation events (Chapter 2.6).	Shrinking annual average Arctic sea ice extent (Chapter 4.2). Widespread glacier etreat (Chapter 4.3). Changes in ice sheets in Greenland and Antarctica (Chapter 4.4).
Ocean	Land	Ice