

Wintersemester / Winter Term 2013/14

BayCEER Kolloquium

 Vortragsreihe Ökologie und Umweltforschung
Lecture series in Ecology and Environmental Research
Donnerstag 19.12.2013, 17:00 Uhr, H6

Anschließend Postkolloquium mit Bier und Brezen im Foyer H6

Prof. Dr. Frank Sirocko

Climate and Sediment, University of Mainz

Paleoweather: About records of severe winters and flash floods

Historical freezing data of the river Rhine shows that the most severe winters in central Europe during the last 200 years have occurred closely associated to 11-year paced sunspot minima. This is unexpected because the total solar irradiation is a constant, but variations up to ± 300 percent have been observed in the ultraviolet spectrum of solar radiation, which cause changes in stratosphere temperatures and apparently change pressure fields over the North Atlantic; visible in the North Atlantic Oscillation Index (NAO), which has been in its negative mode during all extremely cold European winters. Accordingly, the cause of the last very cold winters can be explained. We will evaluate during the talk to what extent flash floods also follow the same relation.

The central European rivers apparently freeze during such winters. Today this is not of great importance, but frozen rivers must be regarded as highways of migration in times without modern infrastructure. The migration period, celtic migrations and even the neolithisation in Europe have all occurred during times of low solar intensity; and accordingly cold winters have a potential for evolution. Flash floods in contrast are a hazard to modern, historic and prehistoric civilization and we will use annually laminated Holocene sediment records to reconstruct their frequency and magnitude during the past and discuss to what extent they also show a relation to the NAO paleo-weather structure.

Understanding such complex mechanisms of SUN-EARTH Interaction has become important during the past years because the global warming trend of the 1980-2000 has slowed significantly down during a time when the sunspot numbers significantly decreased during the last 10 years, weather extremes however have increased during this time. This has led to the suggesting of a pending new "Little Ice Age", like the Dalton or even the Maunder Minimum from 1800-1820 and 1645-1715 AD. Persistent winter coldness has important effects on various ecosystems; even the plague, the most devastating disease of the last centuries followed a pronounced 11-year cycle. Is there a relation to the (paleo)weather also in the human dimension?

 Do. / Thu. 17 st
 Gebäude/Building
 GEO
 Hörsaal/Lecture hall
 H6

 Die Vortragsreihe
 ist eine
 interdisziplinäre
 Plattform zur
 Information und
 Diskussion für
 Studierende,
 Forschende und
 Lehrende

 Gäste
 sind herzlich
 willkommen

*The lecture series
 serves as an
 inter-disciplinary
 platform for
 students, junior
 and senior
 scientists.*
*Guests
 are cordially
 invited!*