Discipline Information

The following dates are in (dd/mm/yyyy) format.

Code: GSA5802 - 3 Type: POS
Name: Paleoclimatic and Paleoceanographic changes during Cenozoic in the Earth
Concentration area: Geoquímica dos Processos Exógenos (44142)

Approval dates:
CCP: 29/11/2013 CPG: 06/12/2013 CoPGr:
Activation date: 06/12/2013 Inactivation date:

Workload:
Total: 90 h Theory: 3 h Practice: 3 h Study: 3 h
Credits: 6 Duration: 10 weeks

Professors:
2083953 - Sonia Maria Barros de Oliveira - 06/12/2013 until today
2148176 - Francisco William da Cruz Júnior - 06/12/2013 until today
2245911 - Cristiano Mazur Chiessi - 06/12/2013 until today

Content:

1 – The climate system in modern times - Incoming Solar irradiation in the atmosphere - heat transference in the atmosphere and oceans, the role of criosphere on climate - The biosphere and the short-term carbon cycle. The long-term carbon cycle and the role of plate tectonics and weathering processes. - Climate interactions and feedbacks 2 – Association of modern climatic and oceonographic features - General patterns of atmospheric and oceanic circulation in South America - The South American Monsoon System . Basic concepts, climate variability, influence of atmospheric-oceanic processes, interaction with intertropical convergence zone, moisture transport, teleconnection patterns 3 – Studies based on paleoclimatic, paleoenvironmental and paleoceonographic proxy records - Marine Records: Proxy of sea surface temperature, salinity, ice-volume, primary productivity, terriginous imput and oceanic circulation. - Continental Records: Proxy of paleo-precipitation, temperature, paleovegetation, ice expansion and paleoenvironment in general. - Ice-Cores: proxy of atmospheric temperature, greenhouse gases, atmospheric circulation and precipitation. 4.0 - Climate during Cenozoic Climate Dynamics during Tertiary Climatic Dynamics during Quaternary - Climate changes on orbital scales . The changes in insolation and glacial/interglacial cycles . Insolation control on monsoon activity - Climate changes on millenial scales: the role of oceanic forcing - Reconstruction of oceanic circulation based on paleo-oceanographic parameters during the events - . Reconstruction of oceanic circulation during “Dansgaard-Oescheger” e “Heinrich”based on paleocenographic parameters. The impact of ocean on climate over continents on millennial to interannual time scales - Implication of paleoclimate reconstruction on the Global Warming Hypothesis

Bibliography:

Battarbee R.W., Binney H.A. (eds.) 2008. Natural Climate Variability and Global Warming: a Holocene Perspective. Wiley-Blackwell, Chichester, 288 pp. Bradley R.S. 1999. Paleoclimatology – reconstructing climates of the Quaternary. 2nd edition. 613 pp. Academic Press, San Diego ISBN 0-12-124010. Clark I., Fritz P., 1997. Environmental Isotopes in Hydrology. Lewis, Boca Raton, Fl.. Ruddiman, W.F. 2006. Earth's Climate: Past and Future. 2nd edition. ISBN-13: 9780716784906. 388pp. Editora MPS. Elderfield, H. (ed.) 2006. The Oceans and Marine Geochemistry. Treatise on Geochemistry Series, Volume 6. 646 pp. Amsterdam: Elsevier. Vimeaux, F.; Sylvestre,F.; Khodry, M. (eds.) 2008. Past Climate Variability from the Last Glacial Maximum to the Holocene in South America and Surrounding Regions: Developments in Paleoenvironmental Research, Springer-Verlag.