

COURSE OF DOCTORAL STUDIES

Course title	Field of science (branch) code	University / Faculty	Institute / Department
Climate of the Baltic Sea Region	Natural Sciences, (Physical Geography) N006	Vilnius University / Faculty of Chemistry and Geosciences	Institute of Geosciences / Department of Hydrology and Climatology
Study methods	Number of credits allocated	Study methods	Number of credits allocated
Lectures		Consultations	1
Individual	8	Seminars	1
Course annotation			
<p>The aim of the course is to study the peculiarities of the Baltic Sea region climate, its change and projections as well as changes in terrestrial and aquatic ecosystems caused by climate change.</p> <p>Content. Factors and processes shaping the climate of the Baltic Sea region: geographical location, solar radiation and energy balance, atmospheric circulation, local factors. Quantitative assessment of climate factors. Geographical distribution of mean air temperature, humidity, precipitation, recurrence of extreme weather phenomena, its seasonal and daily change. Climatic zoning of the Baltic Sea region. Climate change in the Baltic Sea region and its causes in the Holocene. Direct and indirect indicators of past climates. Climate change during the period of instrumental meteorological observations. The development of the Baltic Sea and its impact on the regional climate. Changes in water level, salinity, glaciation and coastal erosion in the Baltic Sea. Climate-driven changes in terrestrial and aquatic ecosystems. Projections of climatic and hydrological indicators of the Baltic Sea region (according to global and regional climate models). Climate change adaptation strategy.</p>			
Required readings			
The BACC II Author Team. 2015. Second Assessment of Climate Change for the Baltic Sea Basin. Springer. 501 p.			
Assessment of Climate Change for the Baltic Sea Basin. 2008. Editors: H.-J. Bolle, M. Menenti, I. Rasool. 474 p.			
Baltex Phase I. 1993-2002. State of the Art Report. 2005. Editors: D. Jacob, A. Omstedt. International BALTEX Secretariat Publication (181 psl.).			
Baltic Sea Region-wide climate change adaptation strategy. Baltic Sea Region Programme 2007–2013. http://www.baltadapt.eu/			
Bates, B.C., Z.W. Kundzewicz, S. Wu and J.P. Palutikof, eds. 2008. Climate Change and Water. Technical Paper of the Intergovernmental Panel on Climate Change, IPCC Secretariat, Geneva. http://www.ipcc.ch/			
Consulting lecturers name, surname	Degree	The most important works in the field of science (branch) have been published during the last 5 years	
Arūnas Bukantis	Dr. (HP)	<p>Šarauskienė, D., Akstinas, V., Kriaučiūnienė, J., Jakimavičius, D., Bukantis, A., Kažys, J., Povilaitis, A., Ložys, L., Kesminas, V., Virbickas, T., Pliūraitė, V. 2017. Projection of Lithuanian river runoff, temperature and their extremes under climate change. <i>Hydrology Research</i>, 49(2): 344-362.</p> <p>Stonevičius, E., Rimkus, E., Kažys, J., Bukantis, A., Kriaučiūnienė, J., Akstinas, V., Jakimavičius, D., Povilaitis, A., Ložys, L., Kesminas, V., Virbickas, T., Pliūraitė, V. 2018. Recent aridity trends and future projections in the Nemunas River basin. <i>Climate Research</i>, 75(2): 143–154.</p> <p>Povilaitis, A., Widén-Nilsson, E., Šarauskienė, D., Kriaučiūnienė, J., Jakimavičius, D., Bukantis, A., Kažys, J., Ložys, L., Kesminas, V., Virbickas, T., Pliūraitė, V. 2018. Potential impact of climate change on nutrient loads in Lithuanian rivers. <i>Environmental engineering and management journal</i>, 17(9): 2229-2240.</p> <p>Kriaučiūnienė, J., Virbickas T., Šarauskienė, D., . Jakimavičius, D., Kažys, J., Bukantis, A., Kesminas, V., Povilaitis, A., Dainys, J., Akstinas, V., Jurgelėnaitė, A., Meilutytė-Lukauskienė, D., Tomkevičienė, A. 2019. Fish assemblages under climate change in Lithuanian rivers. <i>Science of The Total Environment</i>, 661, 563-574.</p> <p>Dainys, Justas, Jakubavičiūtė, Eglė, Gorfine, Harry, Pūtys, Žilvinas, Virbickas, Tomas, Jakimavičius, Darius, Šarauskienė, Diana, Meilutytė-Lukauskienė, Diana, Povilaitis, Arvydas, Bukantis, Arūnas, Kažys, Justas, and Ložys,</p>	

		Linas. 2019. Predicted Climate Change Effects on European Perch (<i>Perca Fluviatilis</i> L.) - A Case Study from the Curonian Lagoon, South-eastern Baltic. <i>Estuarine, Coastal and Shelf Science</i> 221 (2019): 83-89.
Egidijus Rimkus	Dr.	<p>Stonevičius, E., Rimkus, E., Štaras, A., Kažys, J., Valiuškevičius, G. 2017. Climate change impact on the Nemunas River basin hydrology in the 21st century. <i>Boreal Environment Research</i>, 22, 49–65.</p> <p>Rimkus, E. Stonevičius, E, Kilpys, J., Mačiulytė, V., Valiukas, D. 2017. Drought identification in the eastern Baltic region using NDVI. <i>Earth System Dynamics</i>, 8(3), 627-637.</p> <p>Jaagus, J., Briede, A., Rimkus, E., Sepp, M. 2018. Changes in precipitation regime in the Baltic countries in 1966–2015. <i>Theoretical and Applied Climatology</i>, 131 (1-2), 433-443.</p> <p>Stonevičius, E., Rimkus, E., Kažys, J., Bukantis, A., Kriauciūnienė, J., Akstinas, V., Jakimavičius, D., Povilaitis, A., Ložys, L., Kesminas, V., Virbickas, T., Pliūraitė, V. 2018. Recent aridity trends and future projections in the Nemunas River basin. <i>Climate Research</i>, 75, 143-154.</p> <p>Stonevičius, E., Stankūnavičius, G., Rimkus, E. 2018. Continentality and Oceanity in the Mid and High Latitudes of the Northern Hemisphere and Their Links to Atmospheric Circulation, <i>Advances in Meteorology</i>, Article ID 5746191, 12.</p> <p>Rimkus, E., Briede, A., Jaagus, J., Stonevičius, E., Kilpys, J., Viru, B. 2018. Snow-cover regime in Lithuania, Latvia and Estonia and its relationship to climatic and geographical factors in 1961–2015, <i>Boreal Environment Research</i>, 2, 193-208.</p> <p>Rimkus, E., Edvardsson, J., Kažys, J., Pukiene, R., Lukosiunaite, S., Linkeviciene, R., Stoffel, M., Corona, C. 2019. Scots pine radial growth response to climate and future projections at peat and mineral soils in the boreo-nemoral zone. <i>Theoretical and Applied Climatology</i>, 136 (1-2), 639–650.</p> <p>Kilpys, J., Pipiraitė-Januškienė, S., Rimkus E. 2020. Snow climatology in Lithuania based on the cloud-free moderate resolution imaging spectroradiometer snow cover product, <i>International Journal of Climatology</i>, 40(10), 4690-4706.</p> <p>Rimkus, E., Mačiulytė, V., Stonevičius, E., Valiukas, D. 2020. A revised agricultural drought index in Lithuania, <i>Agricultural and food sciences</i> 29 (4), 359–371.</p>
Approved by the Doctoral Committee for Physical Geography (N006) on 9th of March 2021, protocol no. (4.20 E) 610000-KT-24		
Committee Chairman assoc. prof. dr. D. Pupienis		