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KLIMATA MAIŅAS IETEKME UZ LATVIJAS ŪDEŅU VIDI

WP3:
Climate Change Impact on Freshwater Ecosystems and Biological Diversity

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The aim:
to assess climate change possible impact to inland surface freshwaters of Latvia

Main research directions: climate-biodiversity, climate change indicators, and climate – fluxes - biota.

Tasks and results for 3rd period (2007):

1. Peparing of long-term climate, hydrochemical and biological data rows
2. Field investigations in long-term investigations objects
3. Studies of organic carbon flow and drift of benthic organisms

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Long-term data of typologically different freshwaters:

- **Lotic system - the River Salaca (the main salmon river of Latvia, outflow from the lake, rhitral and potamal stretches, territory with low anthropogenic load).**
- **Lentic systems – the Lake Engures (lagoon lake), 3 bog lakes with atmospheric feeding (Islienas, Siksalas, Tolkovas) in Teici Nature Reserve.**

Hydrochemical, bacteriological, algological and benthic invertebrate samples were collected, macrophyte cover and cenoses structure as well as fish data were analysed.

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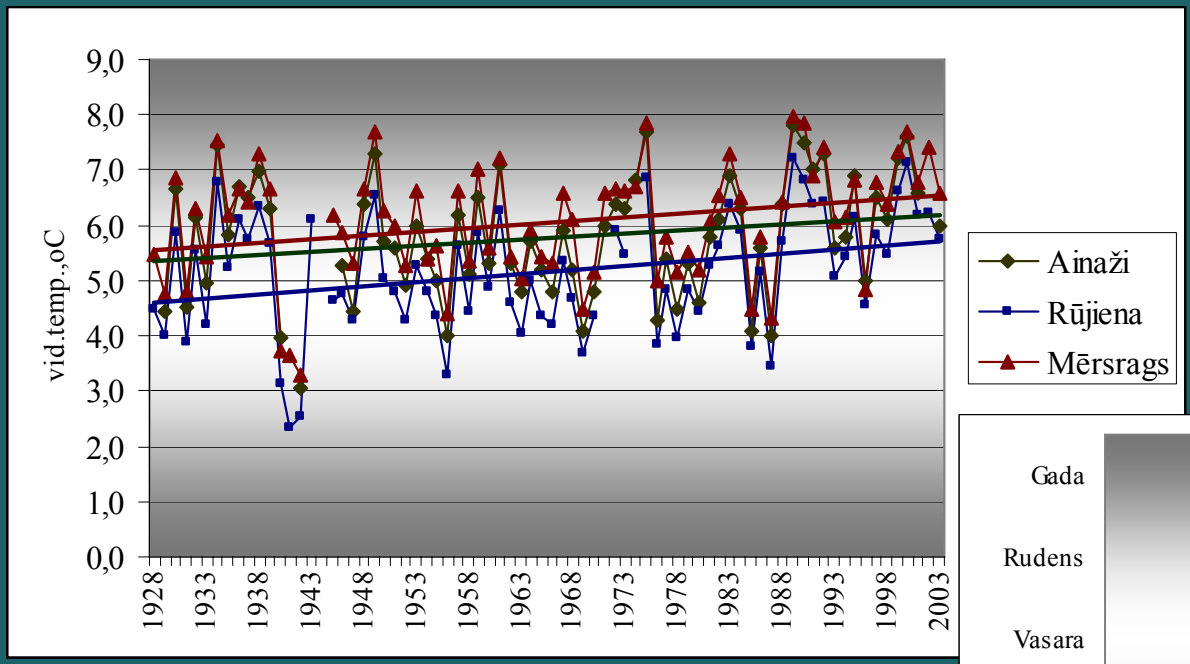
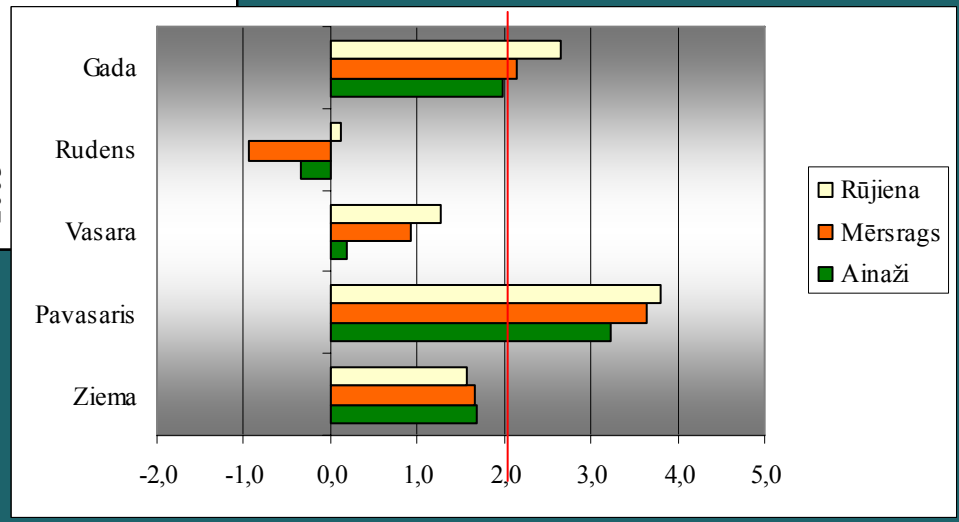
Mean annual air temperature (1928 – 2003) in Rūjienas, Ainažu (the Salaca basin) and Mērsrags (the Lake Engures basin) meteorological stations





Mann - Kendall test values of seasonal temperature for 1928 - 2003

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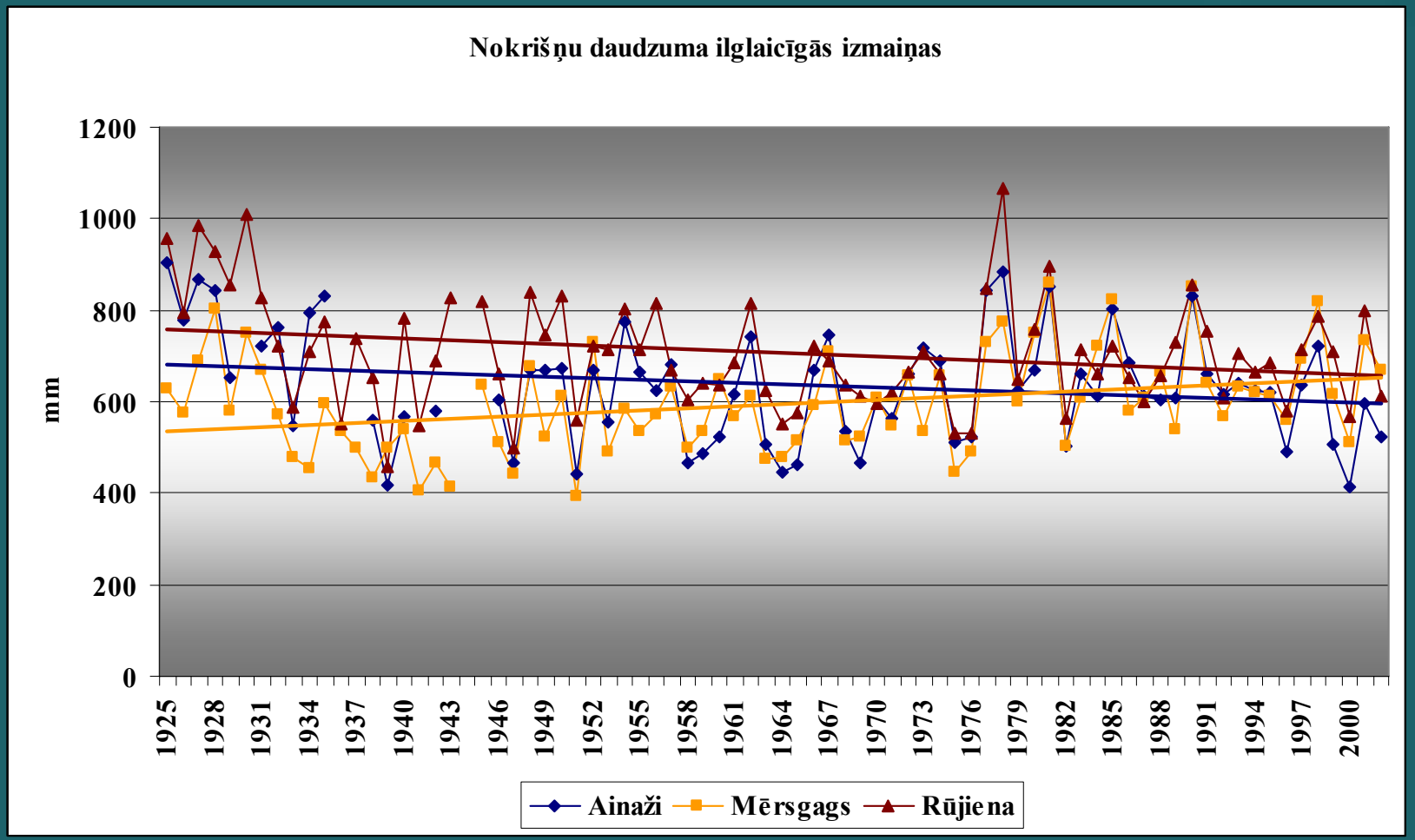
Long-term precipitation changes (1925 -2003) in Rūjienas, Ainažu (the Salaca basin) and Mērsrags (the Lake Engures basin) meteorological stations



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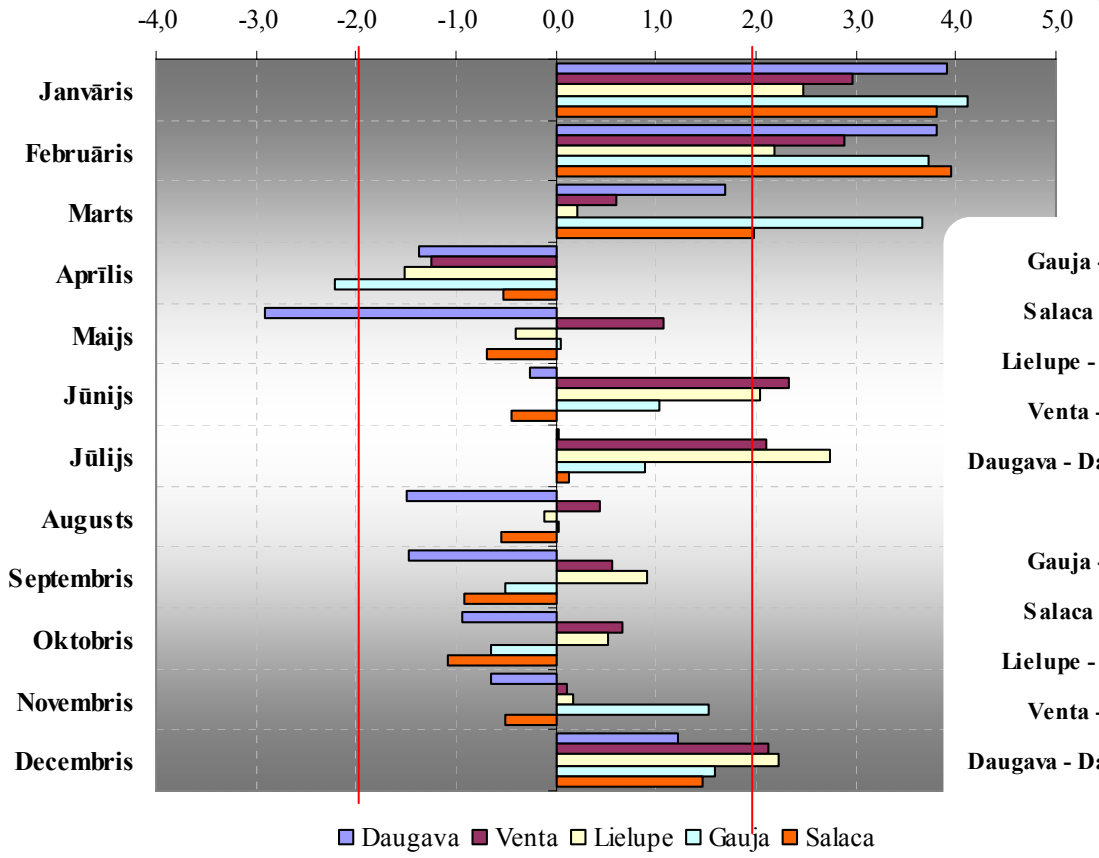
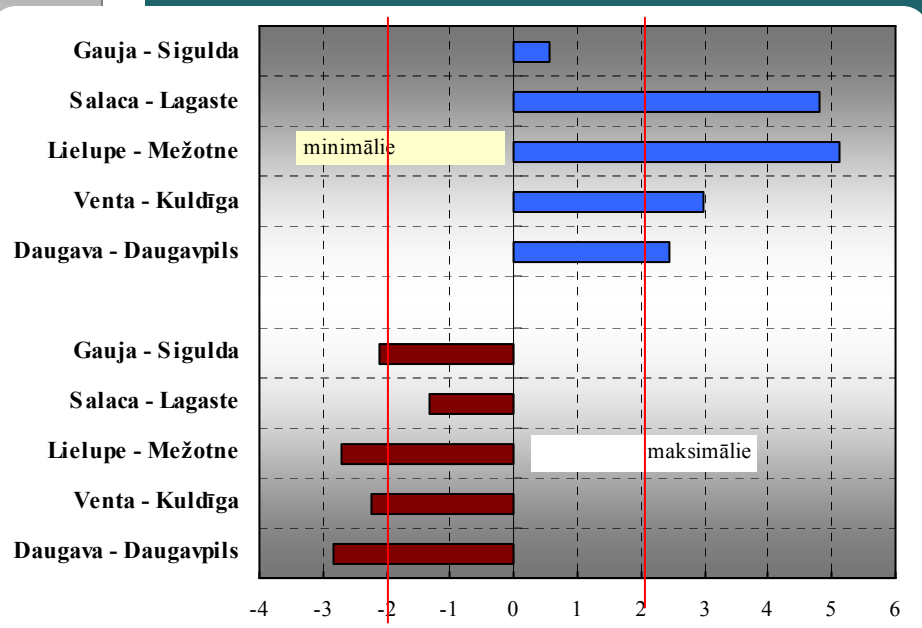
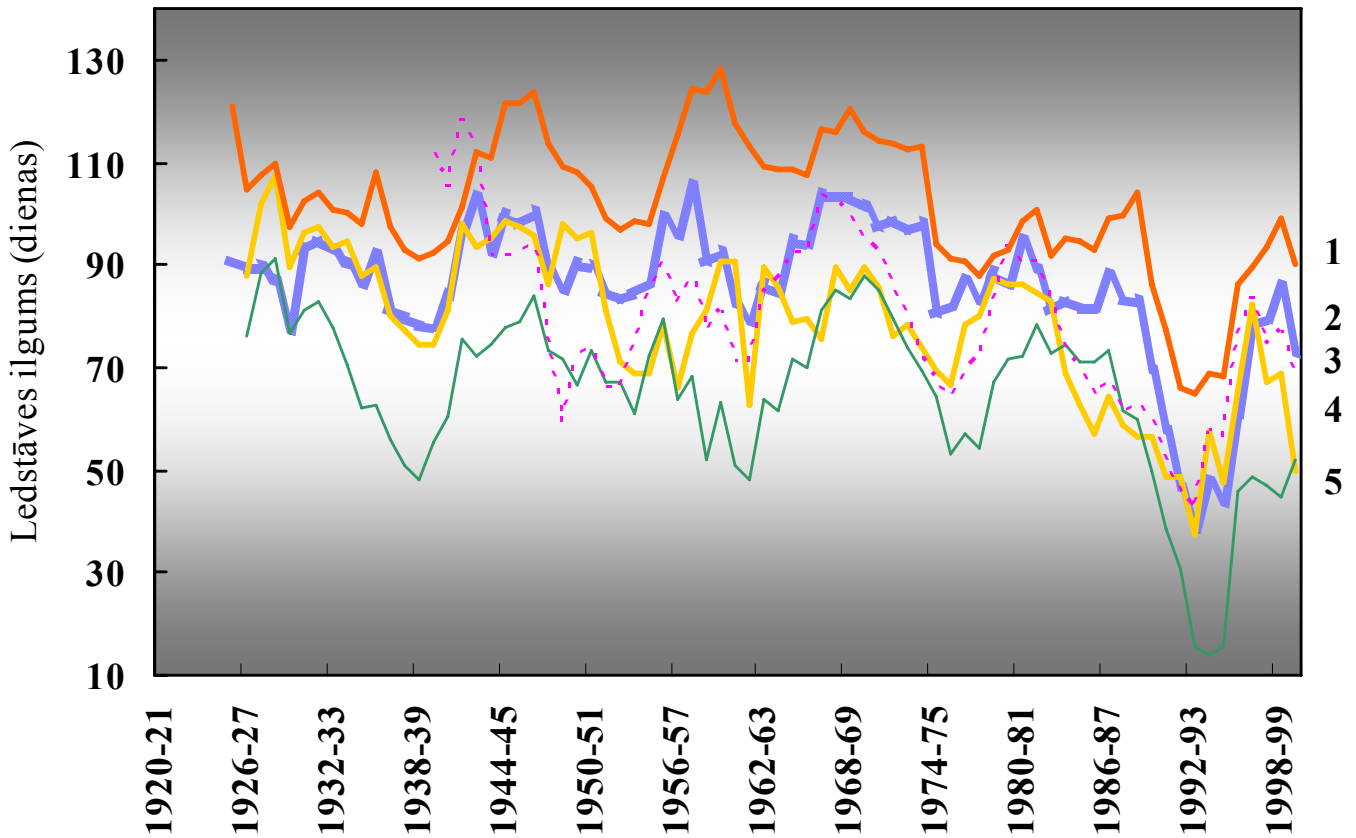
Changes in river (the Venta, the Salaca, the Lielupe, the Gauja) discharge (1905 - 2004) (Mann – Kendall test)

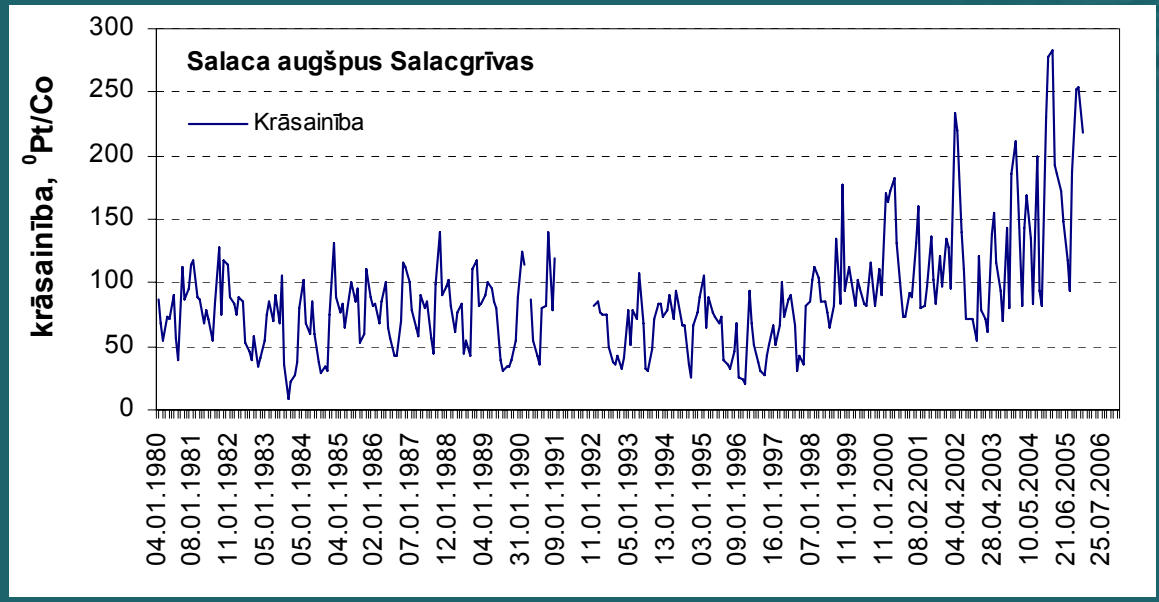


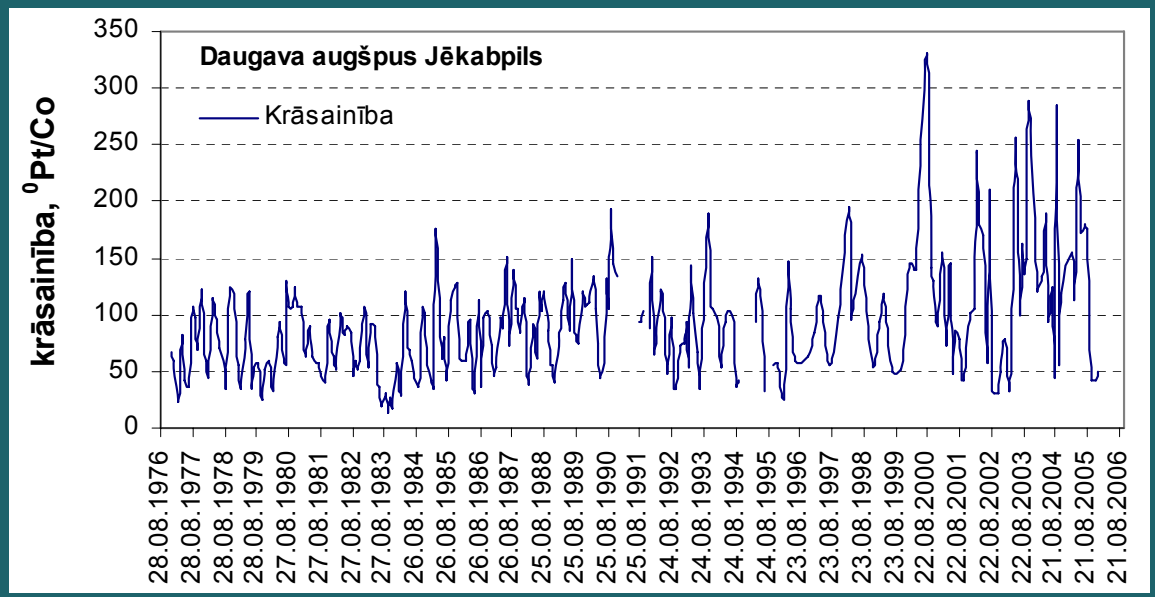
Changes in monthly minimal and maximal discharge (Mann –Kendall test) (1904 - 2004)



Changes in ice cover period (1- the Daugava; 2- the Lielupe; 3- the Gauja; 4- the Salaca; 5- the Venta







Changes in water colour in the Salaca and in the Daugava

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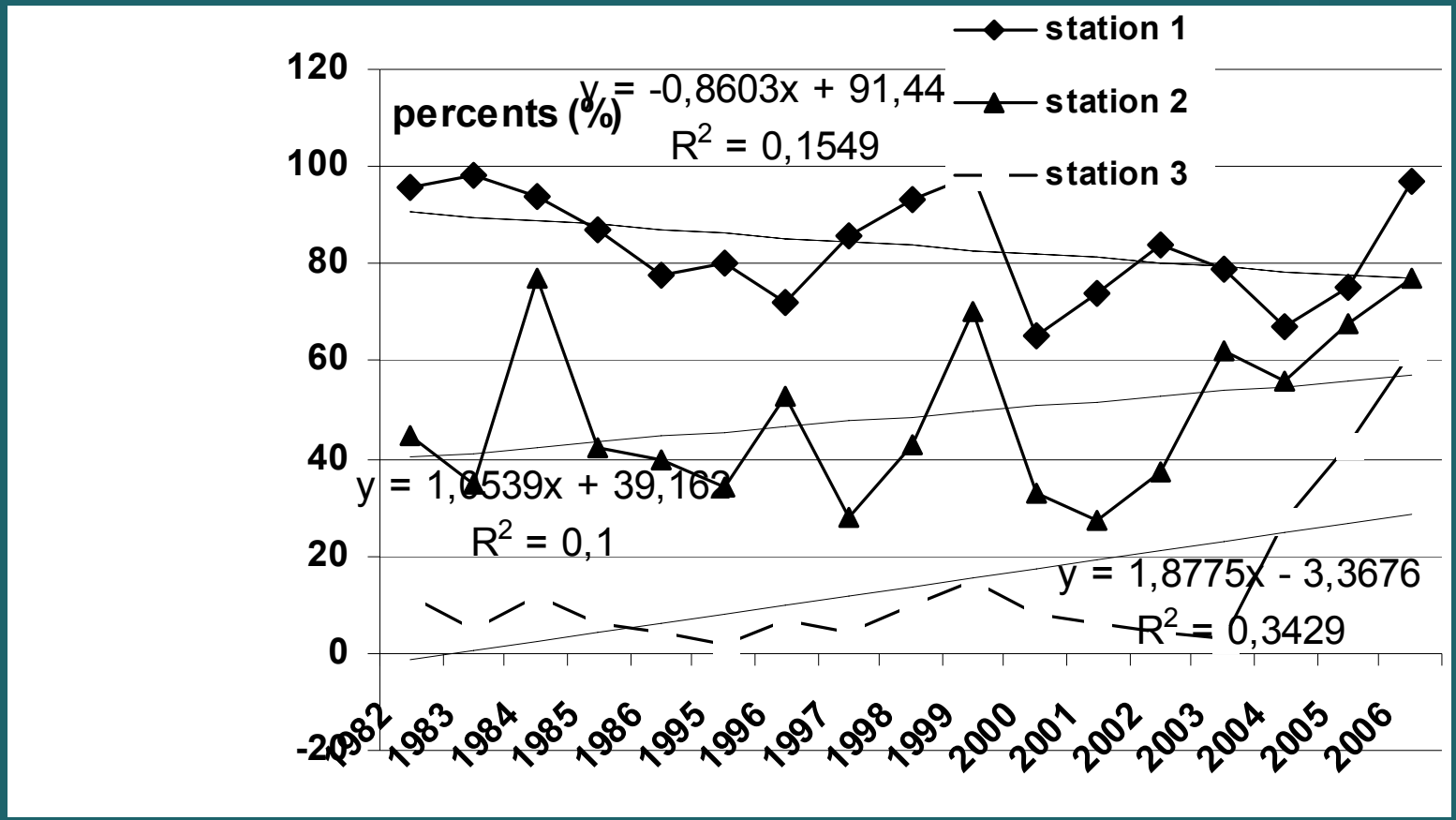
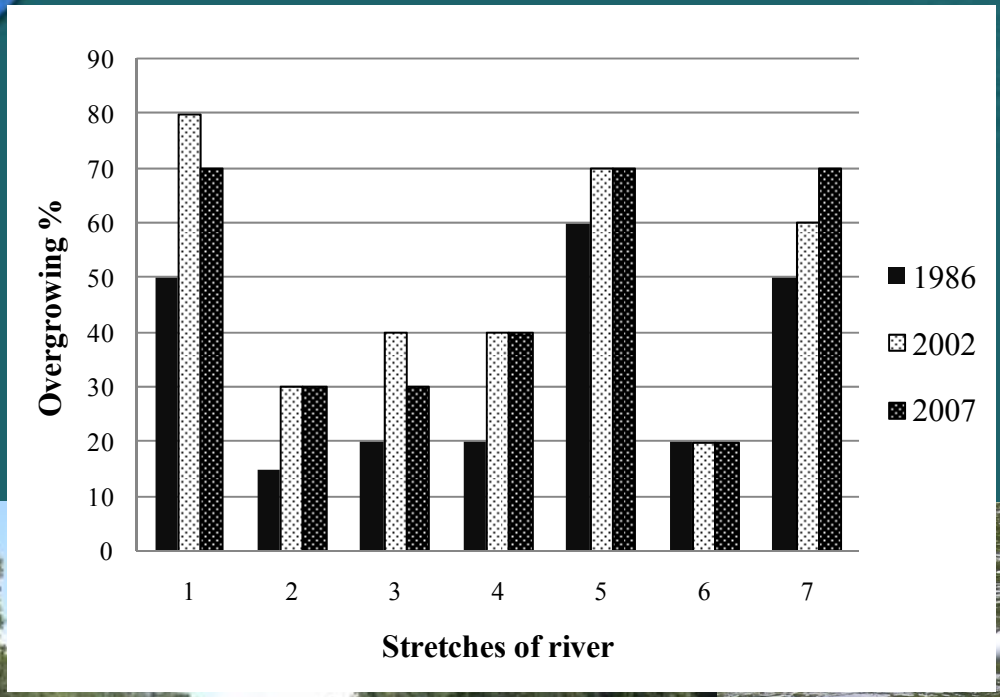
Fluctuation of cyanobacteria biomass (% of total biomass) in the Salaca

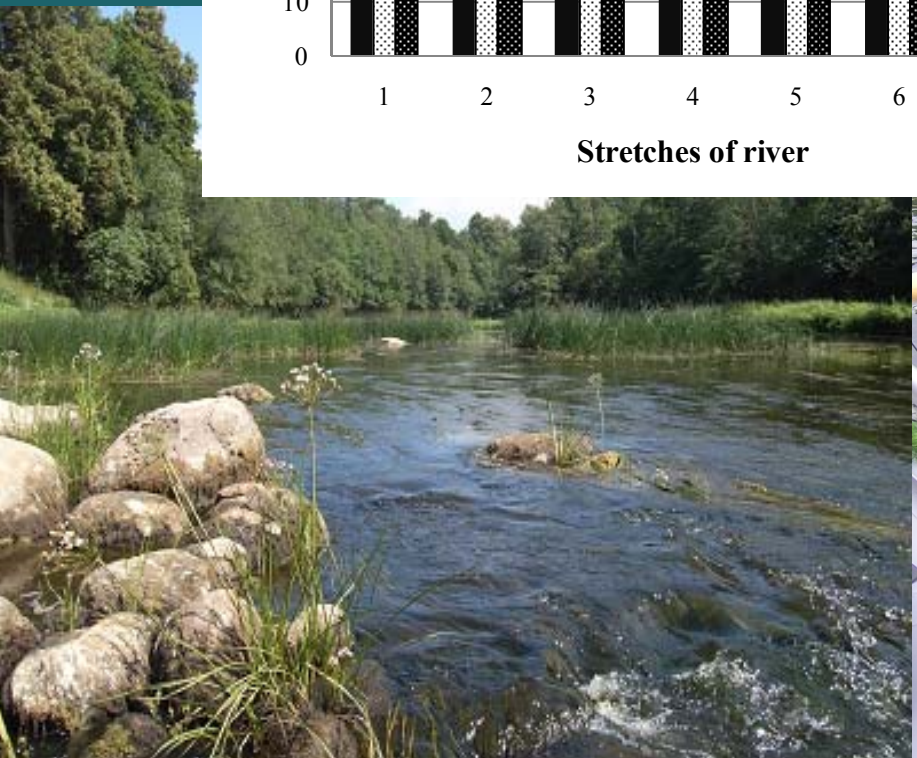


1- outlet , 2 – below Mazsalaca (middle part), 3 – lower part


Spatterdocks, elodeas,
sweet flags etc. in the
Salaca, 2007



Changes in overgrowth (%) of aquatic vegetation in the Salaca



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Investigations of benthic drift

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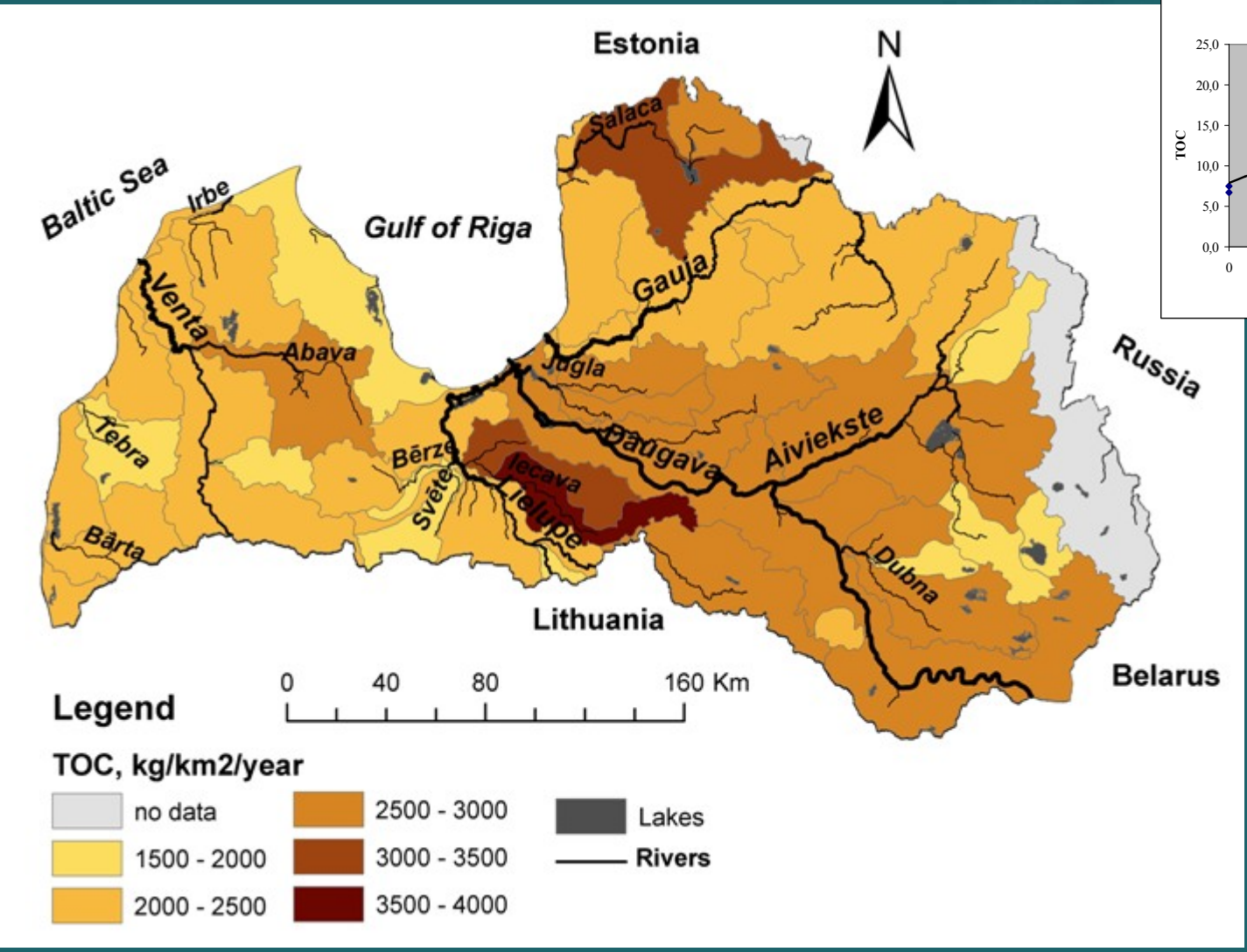
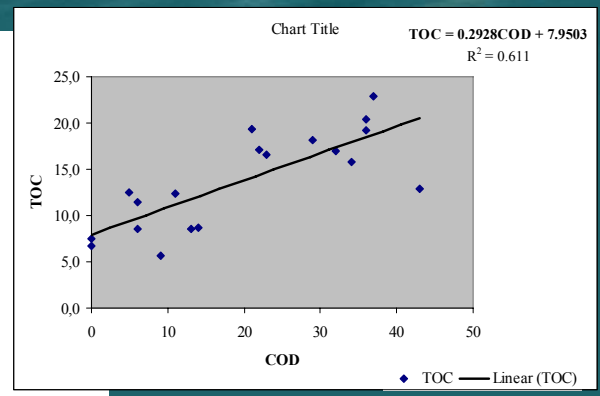
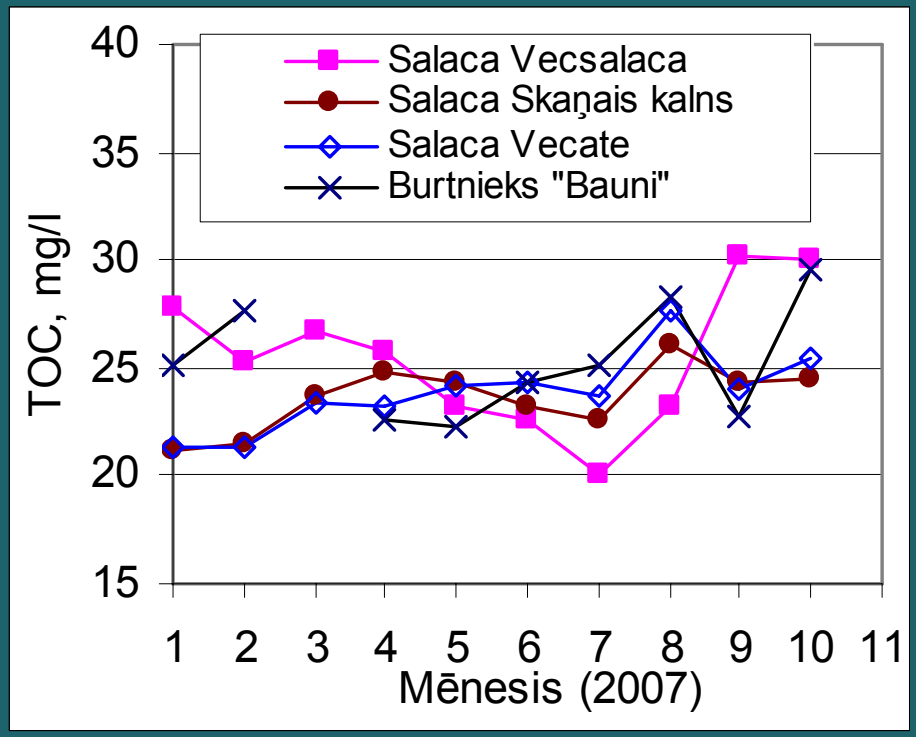
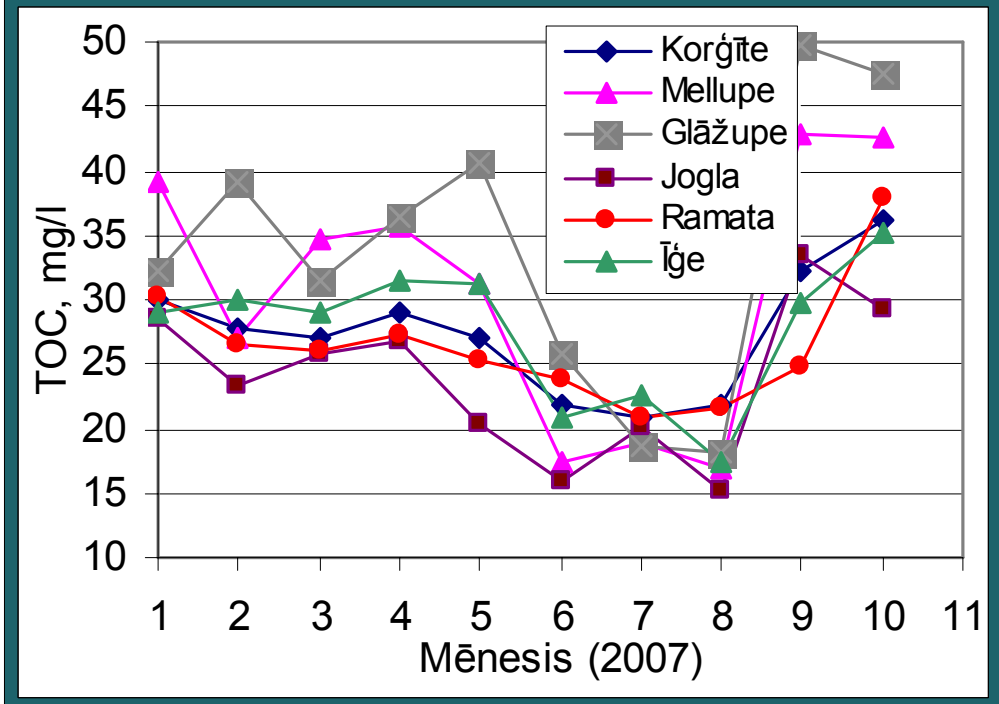
TOC (kg/km^2/year) in the territory of Latvia





Concentrations of TOC in the Salaca and its basin streams





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Reports in conferences (20)

- LU 65. zinātniskā konference, Rīga, 2007.g. februāris
- European Vegetation Survey, Roma, Italy, 2007, March 22 -26
- 4th International Conference „Research and conservation of biological diversity in Baltic Region", University of Daugavpils, 2007, April 25-27
- The 3rd International ASTRA and KALME conference "Climate change and waters", Riga, 2007, May 10-11
- 5th Symposium for European freshwater sciences, Palermo, Italy, 2007, July 8-13,
- ASTRA Workshop, Kokkola, Finland, 2007, September 26-28 Seminārs par adaptāciju klimata pārmaiņām. LR Vides ministrija, 2007.gada 2. novembrī
- ASLO Aquatic Sciences meeting, Santaphe, Newmexic, USA, 2007, February 04-09

Partcipation in exhibition "Dārzs. Flora. 2007" : climate change impact to freshwater flora and invertebrates

2 dissertations

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Publications on climate change impacts to freshwaters (19)

Articles in reviewed editions:

1. Briede, A. (2007) Long-term variability of precipitationin the territory of Latvia. In: Kļaviņš M. (ed.) Climate Change in Latvia, LU, pp. 35 – 44.
2. Briede A., Lizuma L. (2007) Long-term variability of precipitation in the territory of Latvia. In: Kļaviņš M. (ed.) Climate Change in Latvia. Pp.35-44
3. Briede, I. (2007) Zivju lipīgās un nelipīgās slimības. Latvijas zivsaimniecības gadagrāmata 2007. lpp.137 – 143.
4. Druvietis, I., A. Briede, L. Grīnberga, E. Parele,V. Rodinovs, G. Spriņģe. (2007) Long term assessment of hydroecocystem of the River Salaca, North Vidzeme biosphere reserve, Latvia. In: Kļaviņš M. (ed.) Climate Change in Latvia, LU, pp. 173 – 185.
5. Grišule G., Briede A. (2007) Phenological time series in Latvia as climate change indicators. In: Kļaviņš M. (ed.) Climate Change in Latvia. Pp.144-153
6. Kļaviņš, M., A. Briede, V. Rodinovs (2007) Ice regime of rivers in Latvia in relation to climate variability and North Atlantic Oscillation. In: Kļaviņš M. (ed.) Climate Change in Latvia, LU, pp. 58 – 72.

7. Kļaviņš M., Rodinovs V., Draveniece A. (2007) Large-scale atmospheric circulation processes as the driving force in the climatic turning points and regime shifts in the Baltic Region. In: Kļaviņš M. (ed.) Climate Change in Latvia. Pp.45-57
8. Lizuma L., Kļaviņš M., Briede A., Rodinovs V. (2007) Long-term changes of air temperatures in Latvia. In: Kļaviņš M. (ed.) Climate Change in Latvia. Pp.11-20
9. Spriņģe, G., M. Kļaviņš, J. Birzaks, A. Briede, I. Druvietis, L. Eglīte, L. Grīnberga, A. Skuja (2007) Climate change and its impacts in inland surface waters. In: Kļaviņš M. (ed.) Climate Change in Latvia, LU, pp. 123 – 144.
10. Spriņģe, G., A. Briede, I. Druvietis, E. Parele, V. Rodinovs (2007) Changes of the hydroecosystem of lagoon lake Engure, Latvia. In: Kļaviņš M. (ed.) Climate Change in Latvia, LU, pp. 193 – 209.

Kirjušina, M., I. Briede, M. G. Bondad-Reantaso (2007) Rokasgrāmata par dažām svarīgākajām Latvijas zivju vīrusu, parazītu un baktēriju ierosinātām slimībām. NDC/LZRA/FAO. Rīga, Latvija. 70 lpp.

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Tasks for 2008:

- Analysis of extreme climate characteristics
- Sampling and processing, supplementing of data basis, interpretation of data in connection with climate change, use of modelling (TOC)
- Cartographic summary on changes in spread and occurence of fish species and ecological groups
- Analysis of ecological needs of aquaculture and ilness risk analysis of different ecological fish groups