COST ACTION FP 0703

Echoes: Expected Climate cHange and Options for European Silviculture

Country Report: Major points

LITHUANIA

22-24 January 2009, Florence - Italy

Lithuanian Forest Research Institute

Baltic.Forestry@mi.lt
v.stakenas@mi.lt

Expected Climate cHange and Options for European Silviculture: an Outline of Lithuania

Who we are?

Lithuania is situated

on the eastern shore of the **Baltic Sea**

Geographic position:

Most Northerly point: **Lat N. 56° 27'**

Most Southerly point: **Lat N. 53° 54'**

Most Westerly point: **Long E. 20° 56'**

Most Easterly point: **Long E. 26° 51'**

Area (km^2): 65,200.00

Land boundaries: *total:* **1,613 km**

Border countries:

= Latvia on the north **588 km**

= Belarus on the east and south **653.5 km,**

= Poland (**103.7 km)**, and

= the Kaliningrad region of Russia **(267.8 km)** on the southwest.

CLIMATE: transitional, between **maritime** and **continenta**l;

- The annual mean temperature varies from **7.2℃** on the Baltic coast to **5.4℃** in the east.
- The mean temperature for July, the warmest month, varies between **16.0℃** and **17.5℃**, and for January, the coldest month, between **-3.0**℃ and **-6.8℃**.
- Westerly and south-westerly winds prevail.

= because of often-wet forest soils and shallow root system of forest stands, the frequency of storm damages to forests is still rather high.

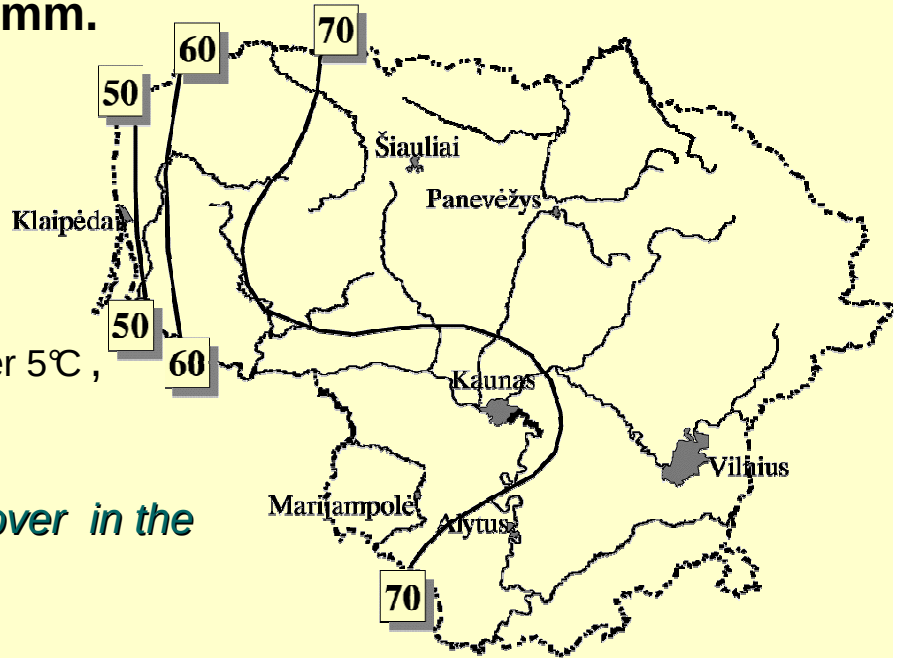
- According to the mean annual precipitation and humidity evaporation, Lithuania lies in the redundant humidity subzone.
- The mean annual precipitation is 660 mm, but varies substantially throughout the country from **550 mm** to **over 900 mm.**
- The snow cover is very variable,

= normally only a few cm in the western part of the country

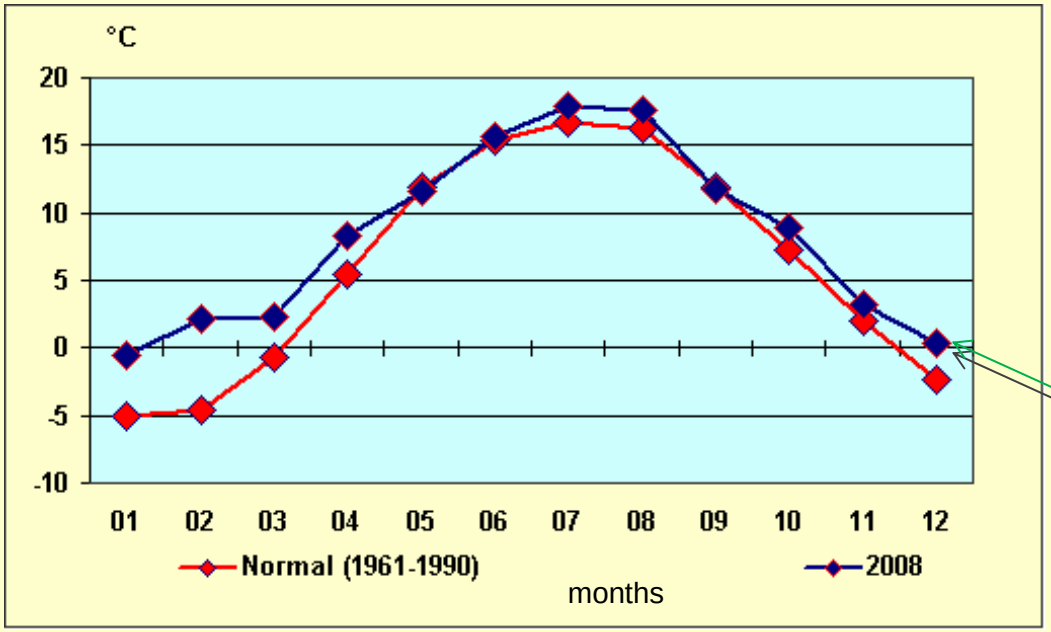
= and 20 cm in the northeast.

The **annual vegetation period,**

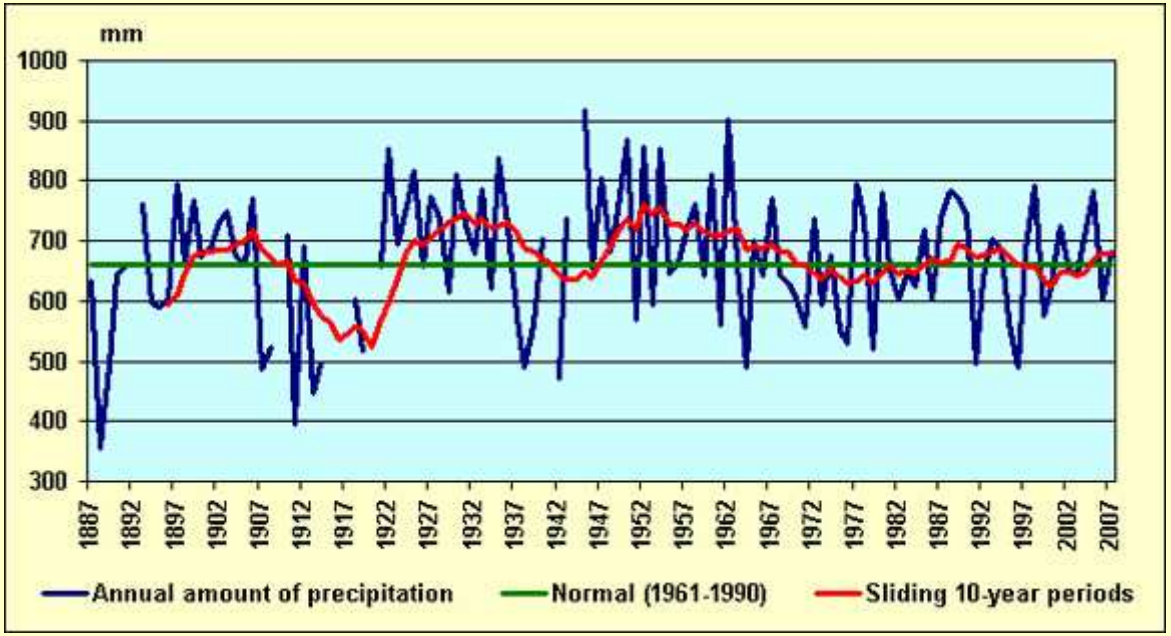
defined as the time with average daily temperatures over 5℃, usually **is 135 to 150 days long.**



Predicted number of days with snow cover in the middle of XXI century

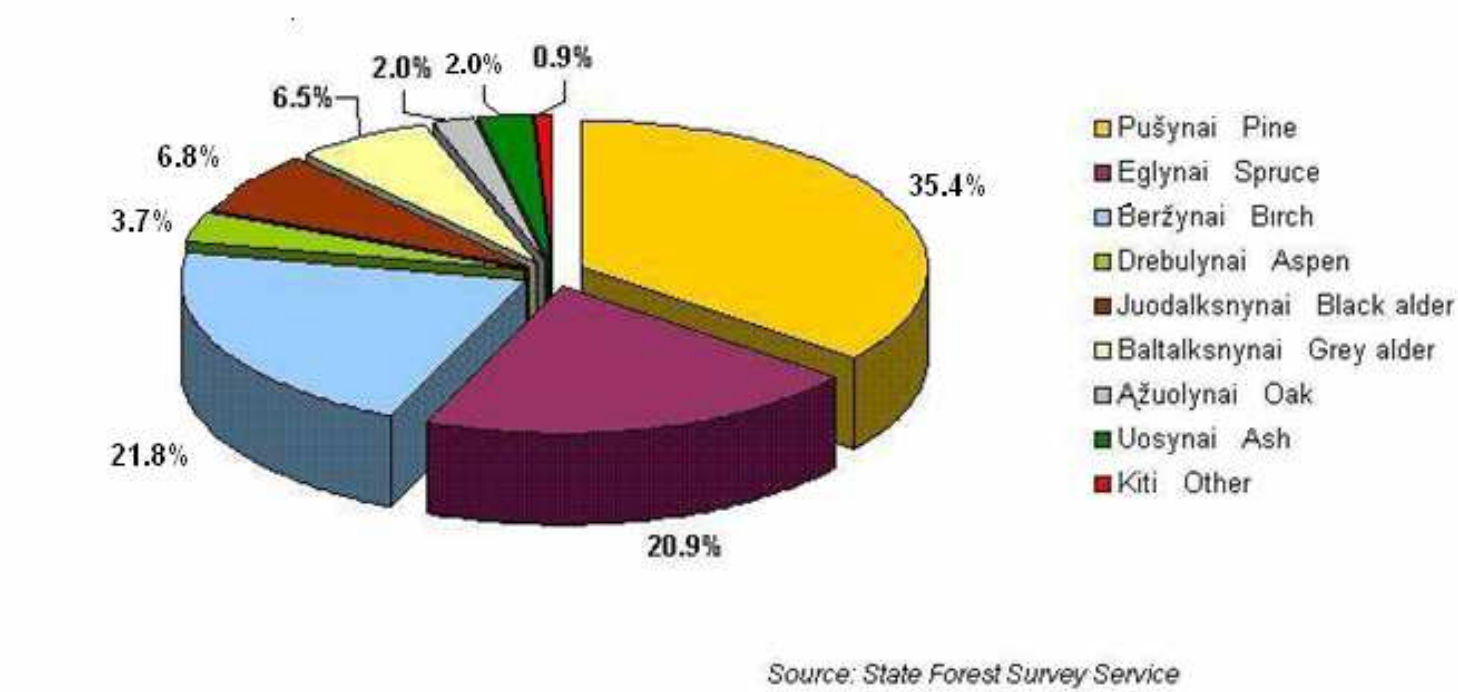


Changes in the air temperatures from 1961 to <u>2008</u>
(*Source: Lithuanian Hidrometeorological Service 2008)*



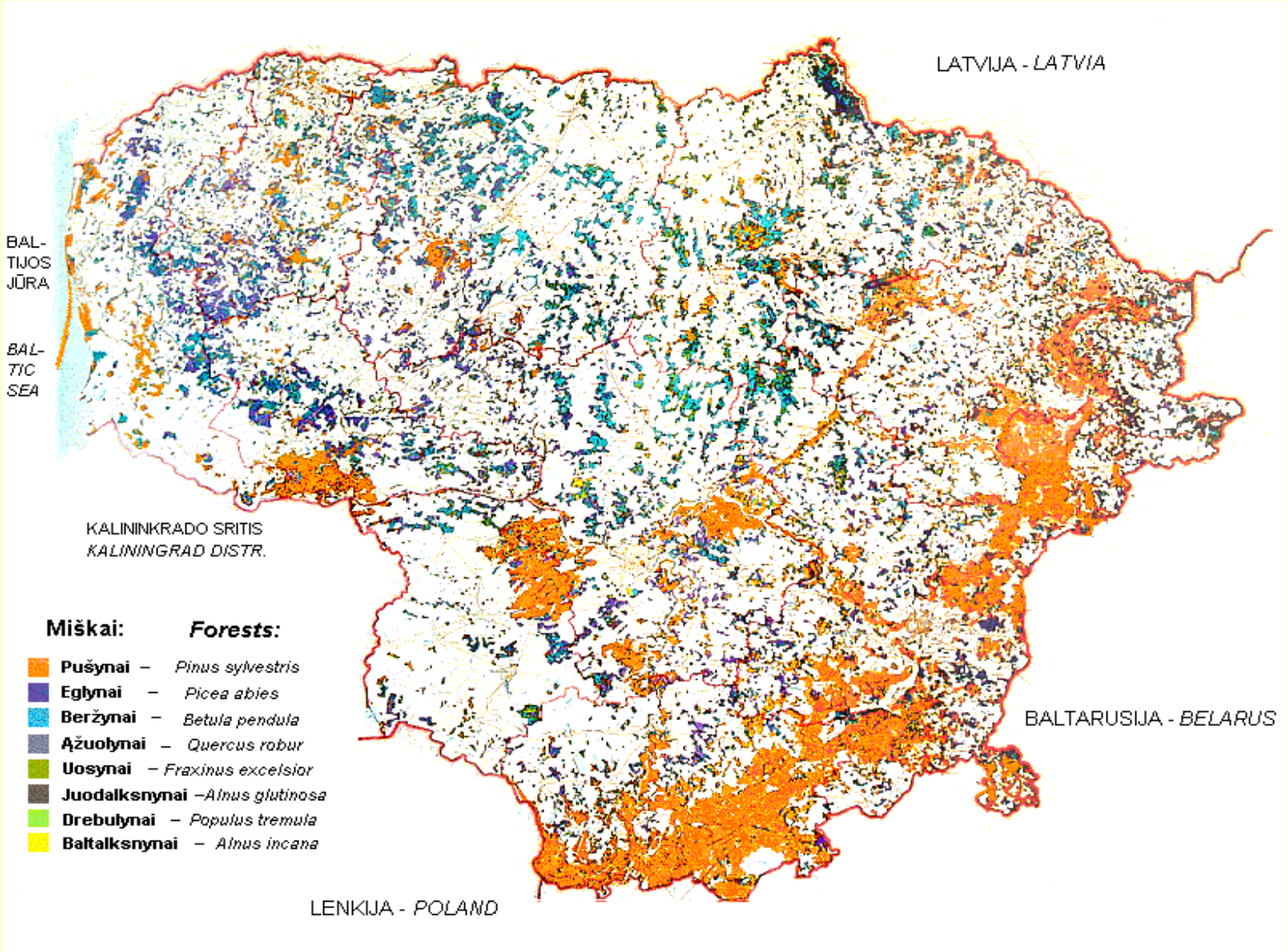
Changes in the precipitation from 1887 to 2007
(*Source: Lithuanian Hidrometeorological Service 2008)*

FORESTS: belongs to both the boreal and temperate biogeographic regions, with mixed-forest biome



Forest stands area by dominant tree species:

occupying 1,151,900 ha, coniferous stands prevail, covering 56.5% of the forest area. Soft-broadleaves (birch, alder and aspen - 800,200 ha; 39.2%.



Lithuanian Forests: the total forestland area is 2,142,900 ha, covering **32.8%** of the country's territory.

I. Impacts

I.1. Observed impacts:

= rising of summer and winter temperatures;
= changes in snow factor significance;
= changes in precipitation regime;
= increase in storminess, droughtiness and other extreme events;
= tendency of change in an animal and plant species distribution

January 2009 in Lithuania…

I.2. Expected impacts:

= tendency of an increase in the forest increment;
= increase in water deficiency;
= increase in an invasion of the non-native species including pests and pathogens;
= changes in the species composition (*plant, animal, fungi*)
= increase in forest-based bioenergy demand;
= decrease in the winterkill risk;
= changes in tree physiology and stability;
= decrease in the duration of non-vegetative period; *etc.*

I.3. Impact monitoring

= IPC Forest monitoring *(Lithuanian Forest Research Institute, Lithuanian University of Agriculture)*

I.4. Impact management

= national policy and strategy in the field of disaster risk reduction (*EU Climate Change Policy*)
= *see Mitigation*

II. Adaptation

II.1. Vulnerability of forests and forestry

= increase in nutrient leaching and imbalance in a forest soils;
= lowering of ground water level in the second part of warm season;
= better conditions for pest winter survival and increase in their population growth rate;
= better weather conditions for disease spread;
= vulnerability of native species (*e.g*. *Quercus rubra*, *Picea abies* Karst., *Fraxinus excelsior*);
= invasion of new species (*e.g.* pests & phytopathogenic fungi , oomycetes *etc.*) ;
= increased risk of spring and autumn frosts (weather changeability);
= increased fire risk; increased forest damage as a result of storminess;
= increase reoccurrence of droughts; *etc.*

II.2. General adaptation strategy or policy

= National Climate Change Policy in the framework of EU Climate Change Policy, implementing the Kyoto Protocol mechanisms, United Nations Framework Convention on Climate Change

II.3. Forest adaptation measures

= reduction of vulnerability; system of fire/pests/pathogens monitoring and analysis;
= increase in afforestation, forest regeneration; plantation forestry;
= accomplishing of forest protection, harvesting, management, tree breeding, selection;

II.4. Research studies on forest adaptation

= research on forest gene conservation & tree breeding, optimization of breeding strategies, forest tree polymorphism, Forest Monitoring (Level I, II); Artificial Drought Experiment, forest biota interaction & adaptation *(Lithuanian Forest Research Institute)*

II. Mitigation

III.1. Carbon accounts

= implemented (*State Forest Survey Service; data MPCFE_FAO_UNECE)*

III.2. Forestry as a source of bioenergy

= increase in forest bioenergy use (*felling residues, short-rotation and energy plantations)*;

III.3. Processes, instruments and strategies:

= **increase** in the area of mature stands (*from 294,000 to 361,000 ha, and mature growing stock has increased from 73.7 to 94.0 million m³);*

= increase in the total growing stock volume (*from 371.7 mill.m³ in 2001 to 421.6 mill.m³ in 2008);*

= **increase** in the gross annual increment (*from 6.1 m³/ha in 2001 to 6.7 m³/ha in 2008)*

= **increase** in the forest stand area (*from 1,927,800 ha in 2001 to 2,040,000 ha in 2008);*

= **increase** in afforestation of the infertile agricultural lands;

= **development** of the plantation forestry

III.4. Research studies on mitigation

= FP5 WOOD-EN-MEN (*recycling of wood ash, compensating wood ash fertilizing*); fast-growing tree breeding *in vitro;* plantation forestry investigations (*developing and testing the methods for fast genetic improvement for short rotation and energy plantations on abandoned land, DNA marked based techniques to improve efficiency of breeding, etc.)*


Thank you for your kind attention