



Lappeenranta Lemi Luumäki Savitaipale Taipalsaari

LAPPEENRANNAN SEUDUN

Ympäristötoimi

Air quality measurements in Lappeenranta

Sara Piutunen

Chief of environment protection

Lappeenranta Region's Environmental Office

Environment protection



Tasks

- Supervision
- Licencing/Permits
- Promote

2 levels

- State authority
- Municipal environmental authority

Based on Environmental Protection Act

Monitoring the state of Environment

Municipality: monitoring the state of the environment according to local conditions

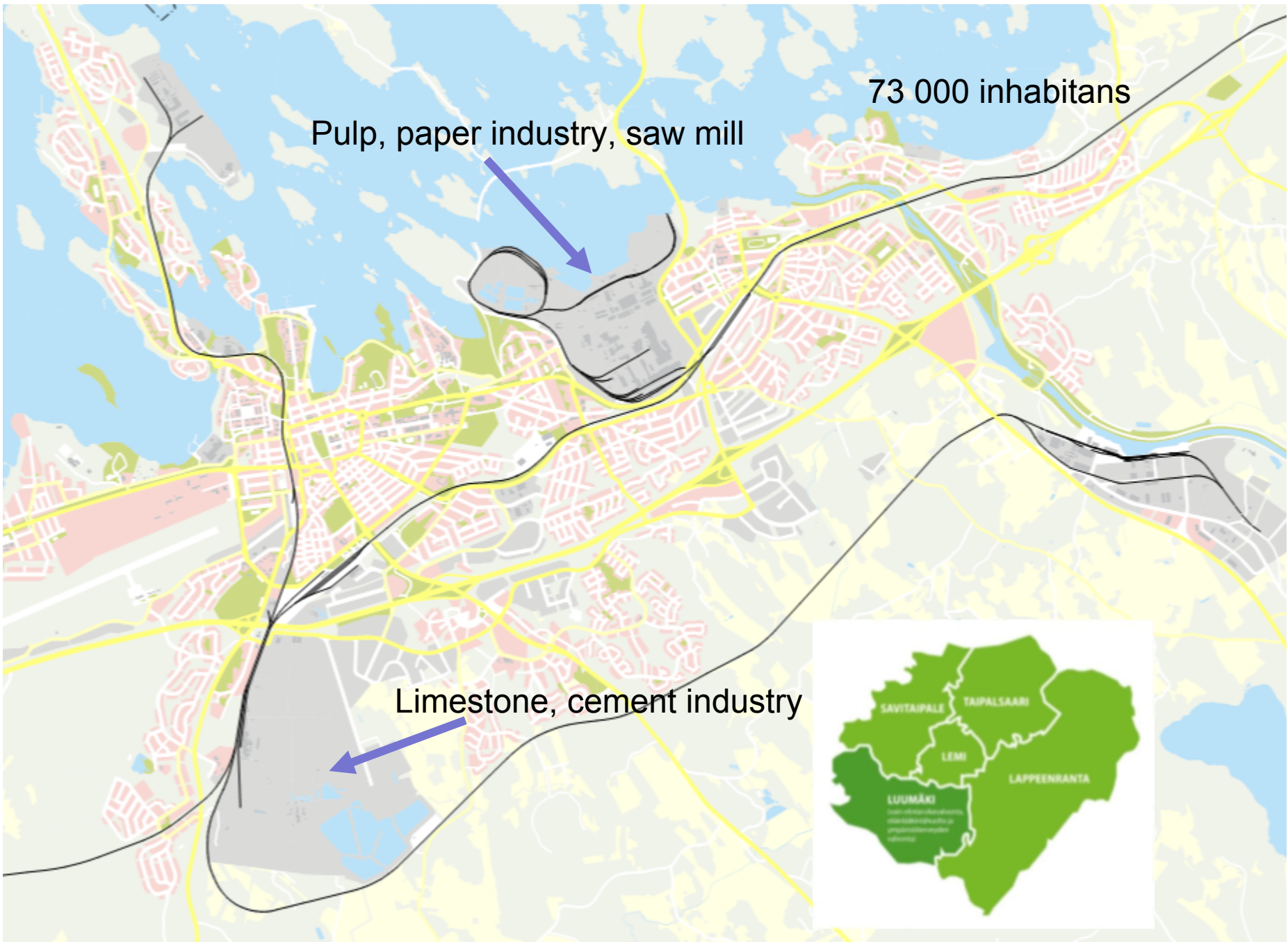


Air quality monitoring in Lappeenranta - why and what pollutants

73 000 inhabitants

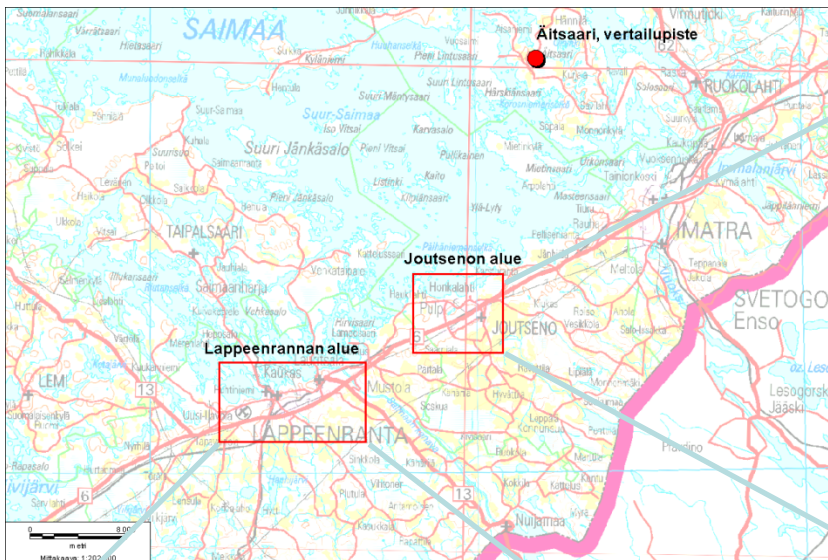
Pulp, paper industry, saw mill

Limestone, cement industry

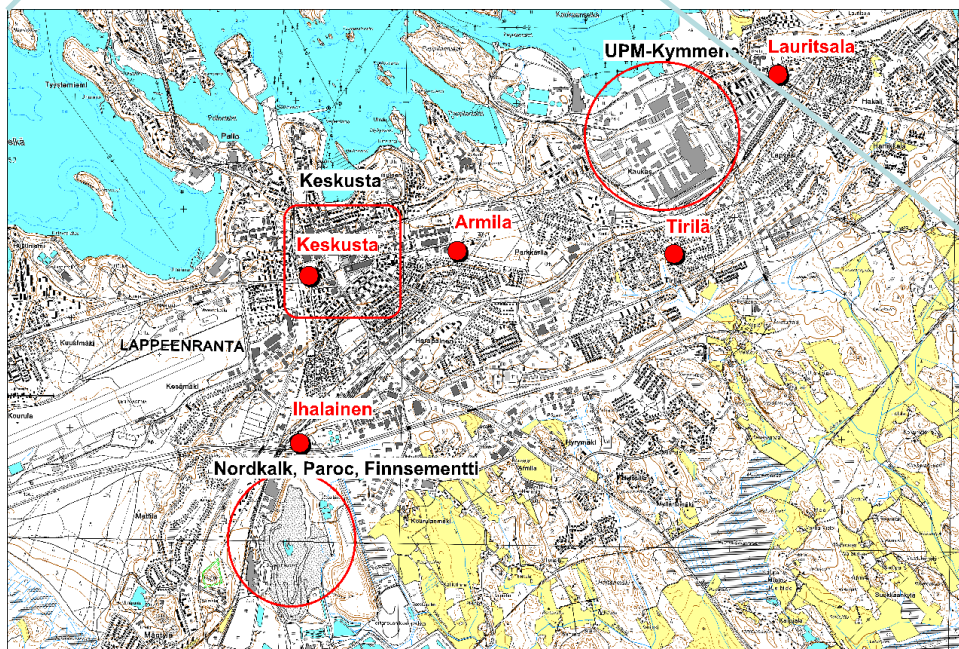


Air emissions

- **Industry**
 - TRS (Odorous sulphur compounds)
 - SO₂ (Sulphur dioxide)
 - NO_x (Nitrogen dioxide)
 - PM_{2,5} and PM₁₀ (Particulate matter – diameter < 10 µm and < 2,5 µm)
 - Deposition (sulphur)
- **Street dust**
- **Fireplaces, sauna stoves**
- **Carried out air pollutants (forest fires, Europe)**



Air quality network in South Karelia



- 6 continuous measuring stations in Lpr
- 3 deposition stations + 1 background
- 1 meteorological station

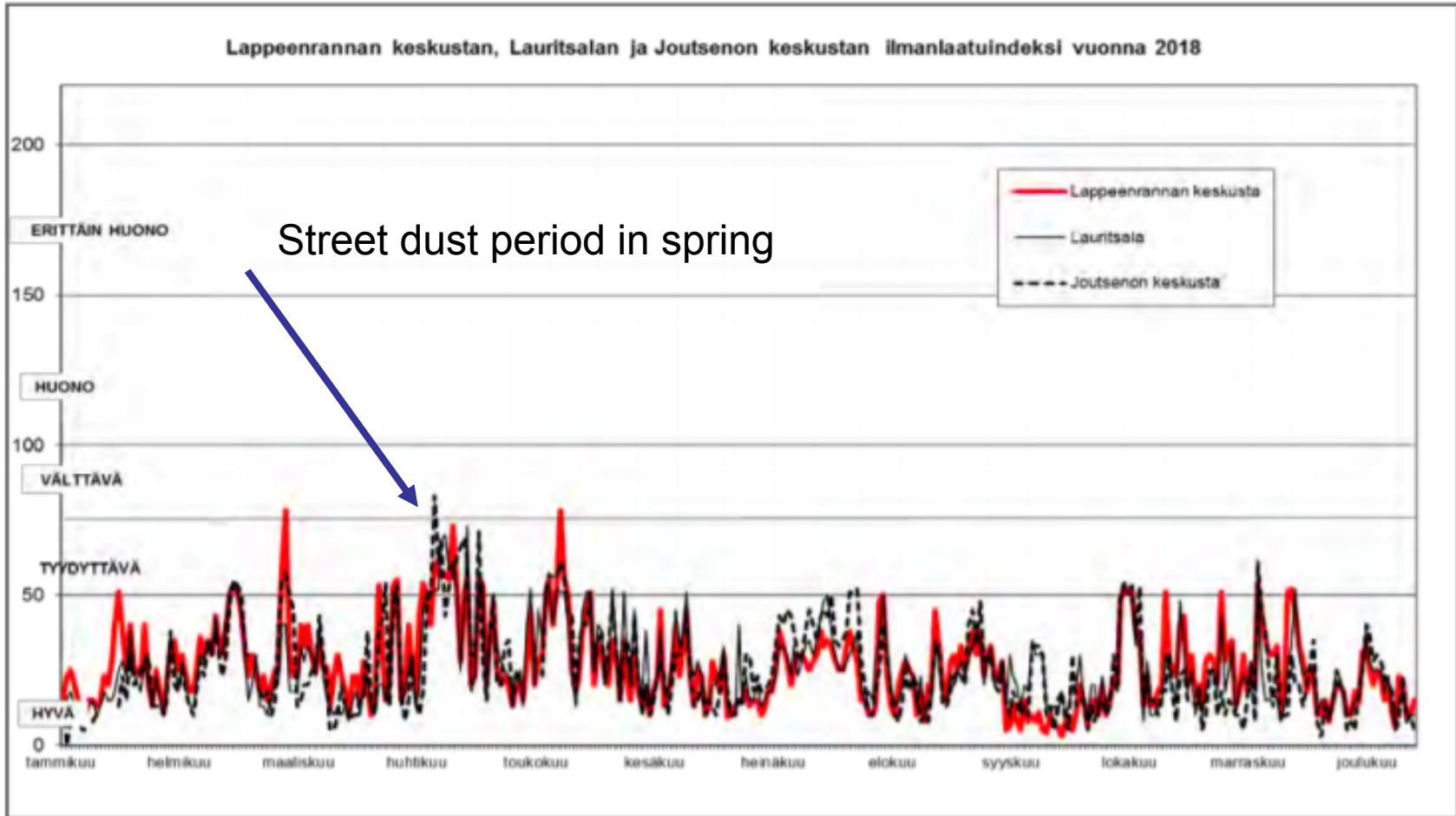
Air monitoring



The continuous online data

- Seen in the Finnish Meteorological's Institutes websites:
<https://ilmatieteenlaitos.fi/ilmanlaatu>
- Air quality index and hourly components
 - Compared air quality limit values

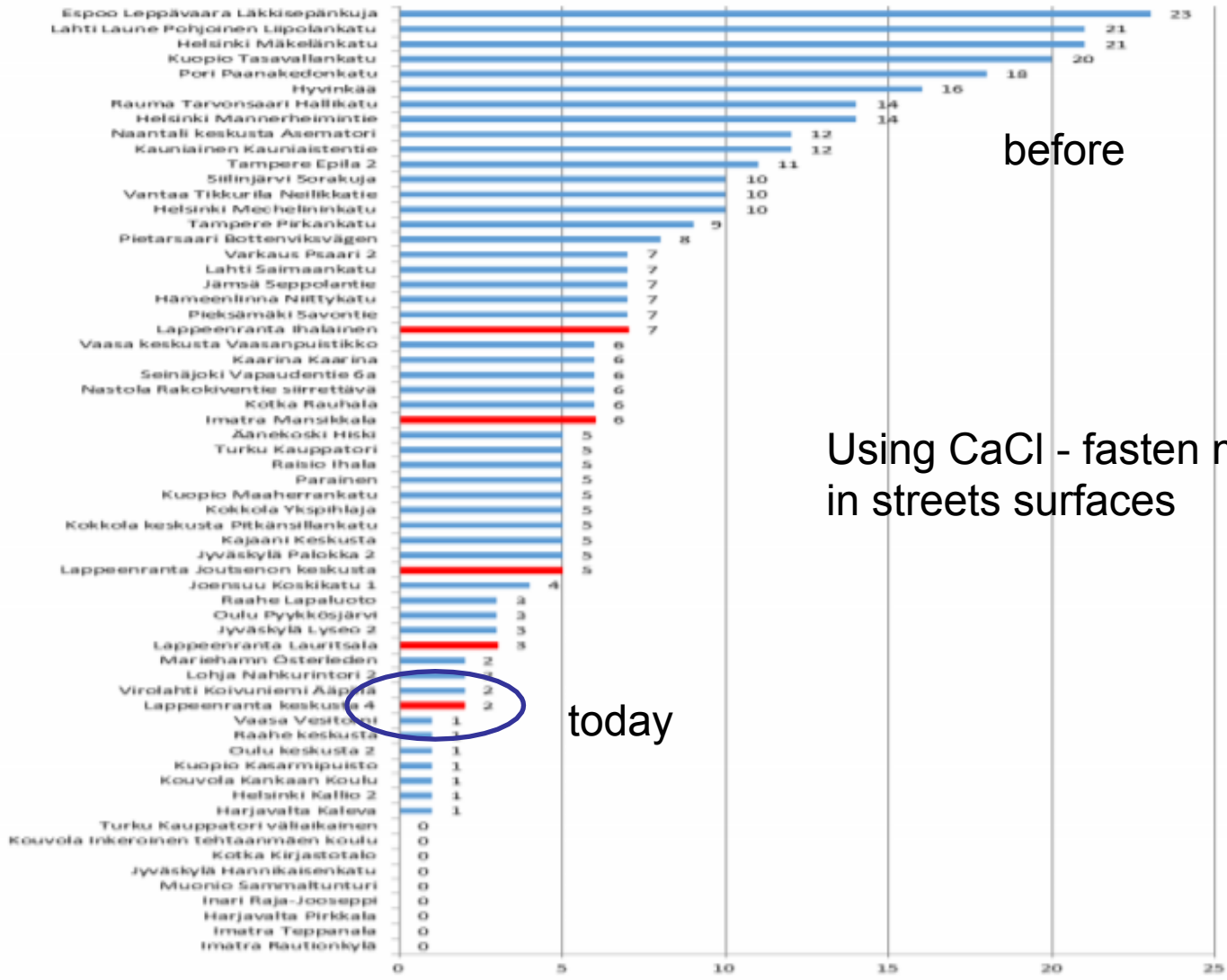
Air quality- index



Street dust



PM10-raja-arvon numeerisarvon 50 µg/m³ ylitysten lukumäärät (kpl) Suomessa 2018

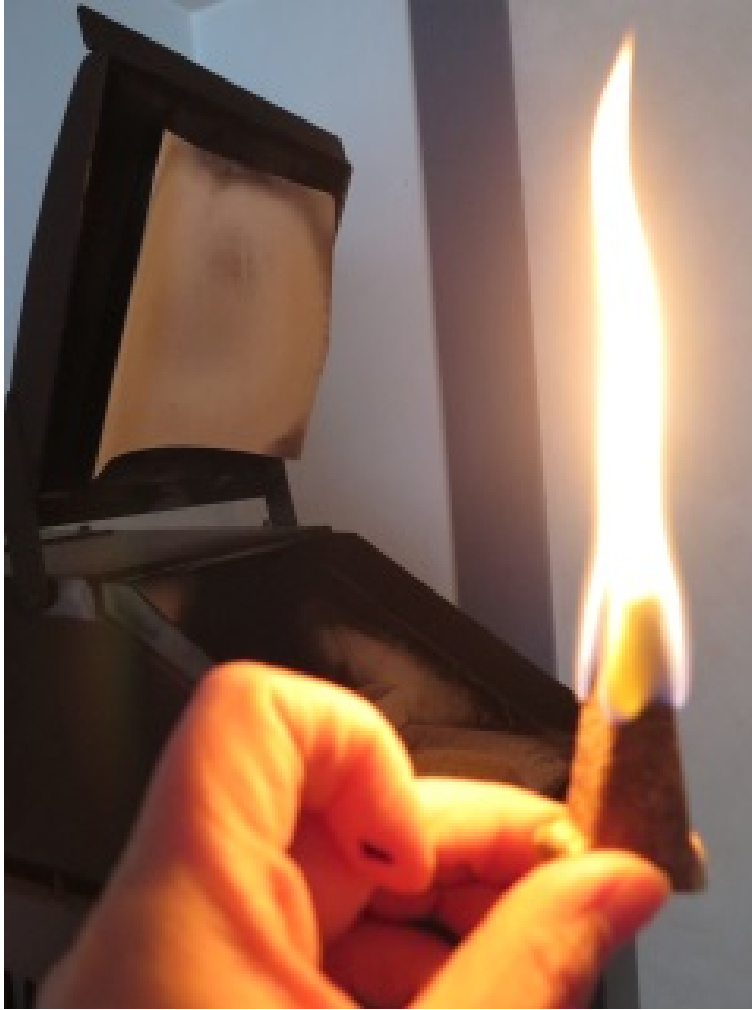


before

Using CaCl - fasten moisture in streets surfaces

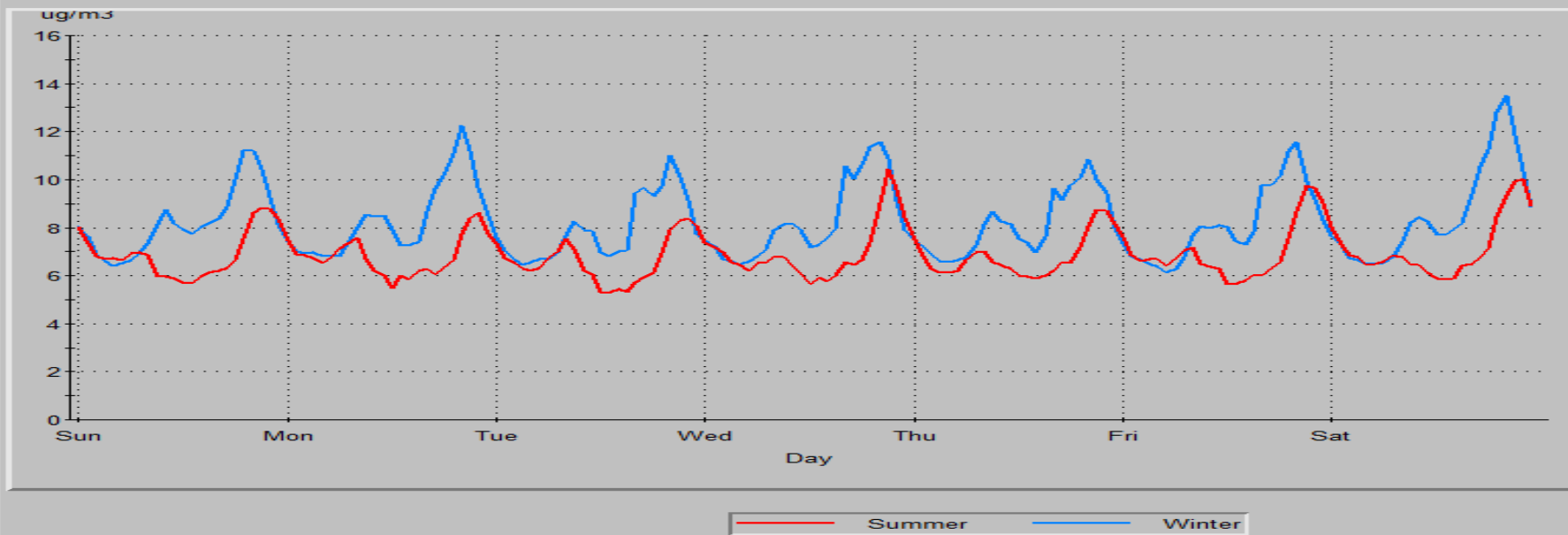
today



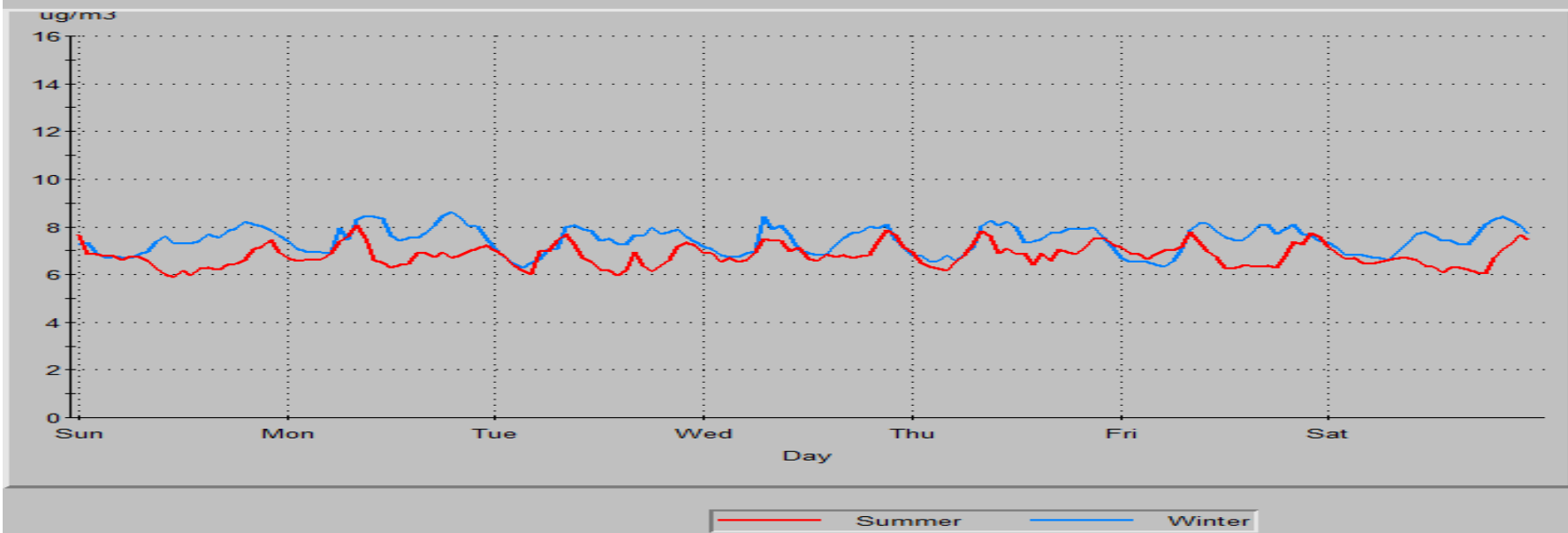


- **Black coal** – heating climate
- Health issues – **fine particles** – most detrimental air pollutant

PM2.5 Interval Graph Tirila Summer VS Winter 1.1.2012 - 31.12.2016

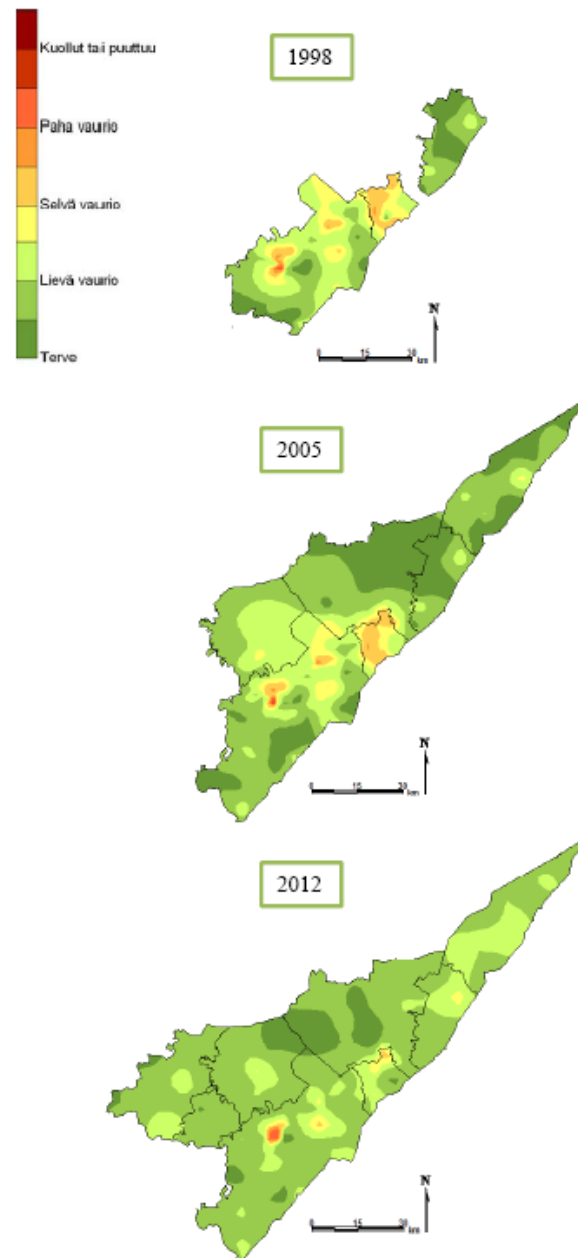


PM2.5 Interval Graph Lpr Keskusta Summer VS Winter 1.1.2012 - 31.12.2016



Bio-indicator researches:
lichens - damages, reduced foliage -
pinetrees



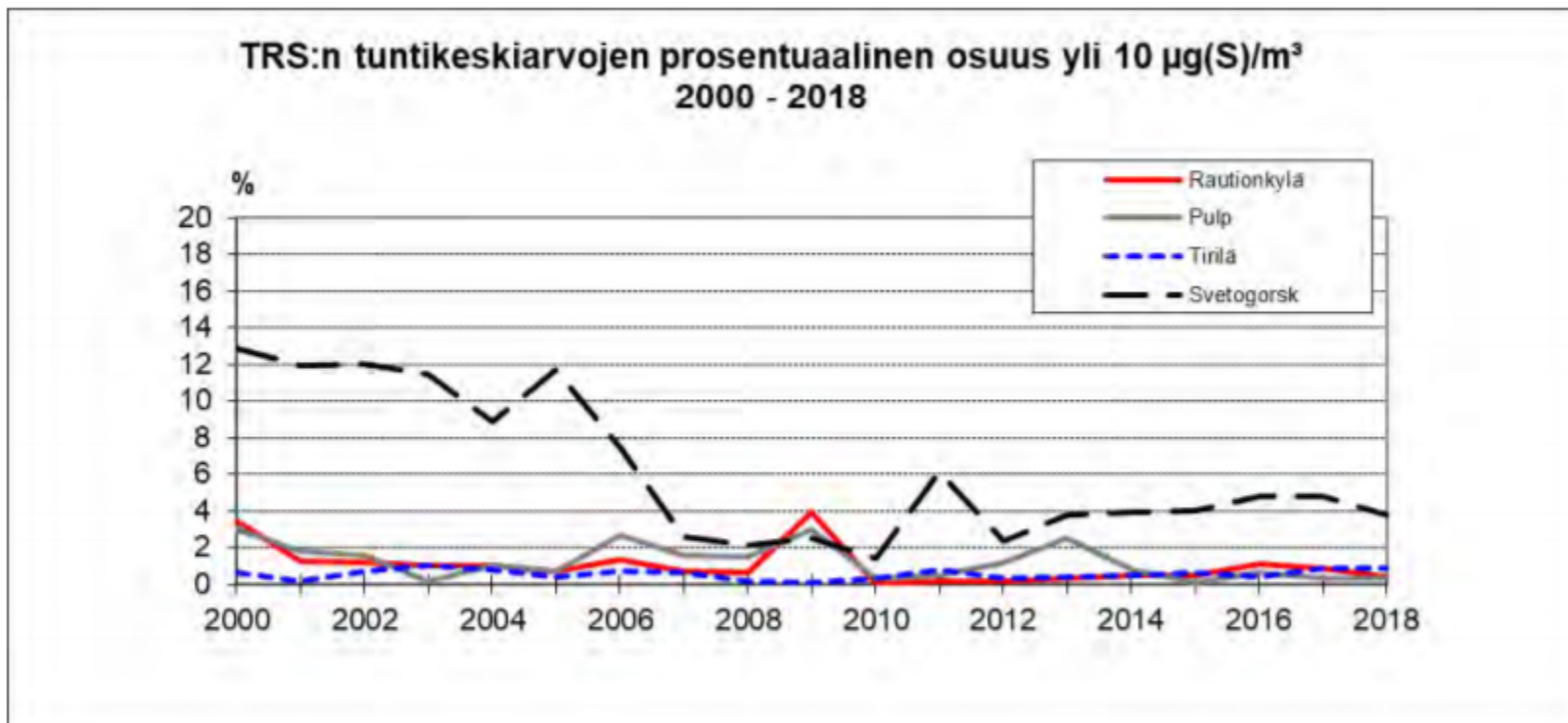


Kuva 52. Sormipaisukarpeen vaurioasteet tutkimusalueella vuosina 1998, 2005 ja 2012.

Emissions



*Kuva 4: Lappeenrannan tehtaiden TRS-, SO₂- ja NO_x- päästöt (t/a) vuosina 2007 - 2018
(Pylväsdiagrammien asteikko vasemmalla ja viivadiagrammien asteikko oikealla)*



Kuva 73: TRS:n yli 10 $\mu\text{g(S)}/\text{m}^3$ -tuntikeskiarvopitoisuuksien prosenttiosuudet vuodesta 2000 alkaen Rautionkylässä, Pulpilla, Tirilässä ja Svetogorskissa

How we are using the data of air quality measurements?

- Changing the cleaning habits - street dust in spring time: CaCl
- Knowledge to the industry and supervising authorities – how the cleaning processes works
- Contacts from the citizens – smell, dust – knowing helps
- Knowledge – citizens own behavior