

**Norwegian
Hydrological
Council**

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Climate and Land Surface Processes**

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The Water Cycle Extremes in Cold Climate: A Case Study of Latvia

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Content

Actuality

Methodology

Results

Actuality

- At the beginning of 21th century the extremes event occur more often. The cause of hydrological extremes is climate change and change of land use as well as management of catchment area. In Latvia several droughts and flood events occur with increasing frequency.

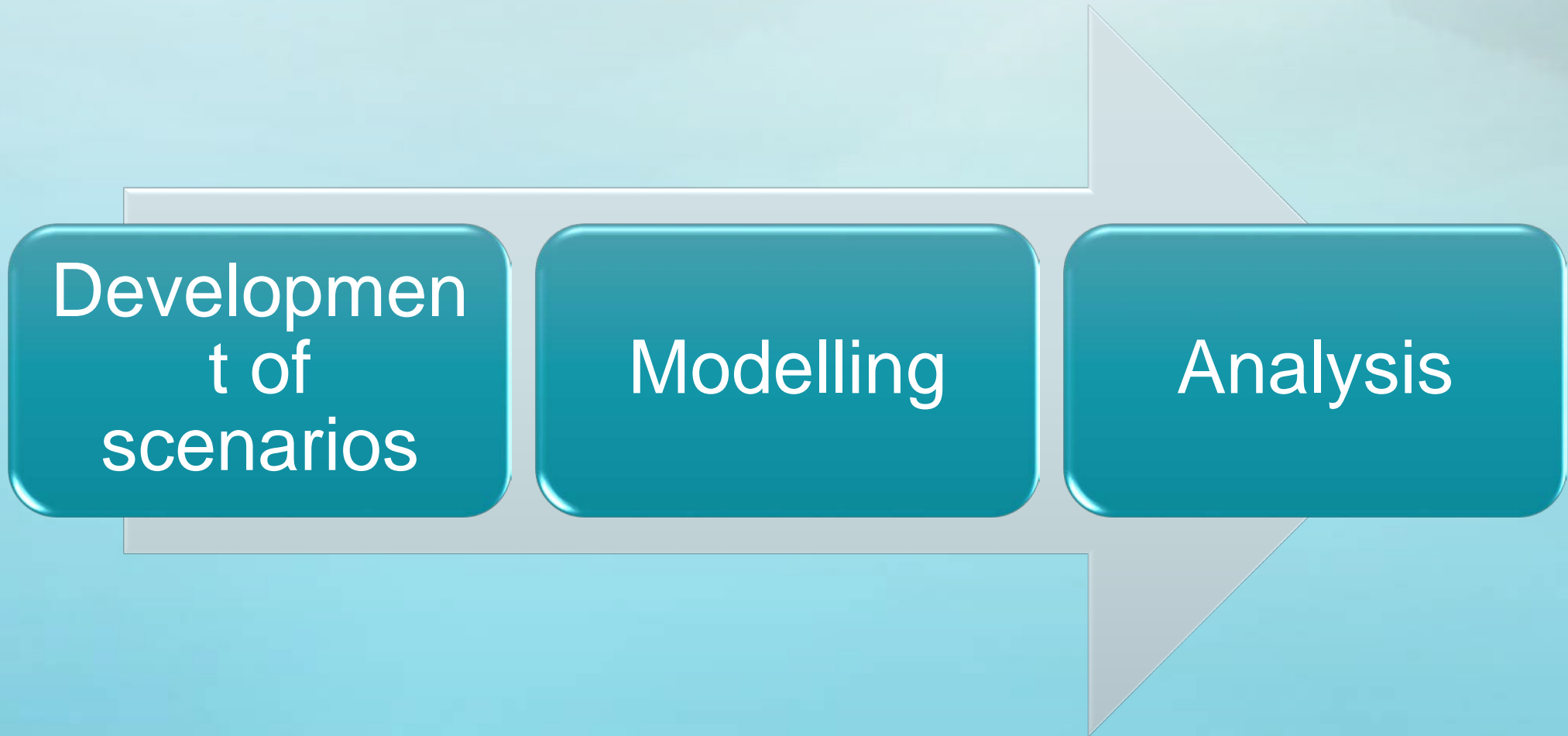


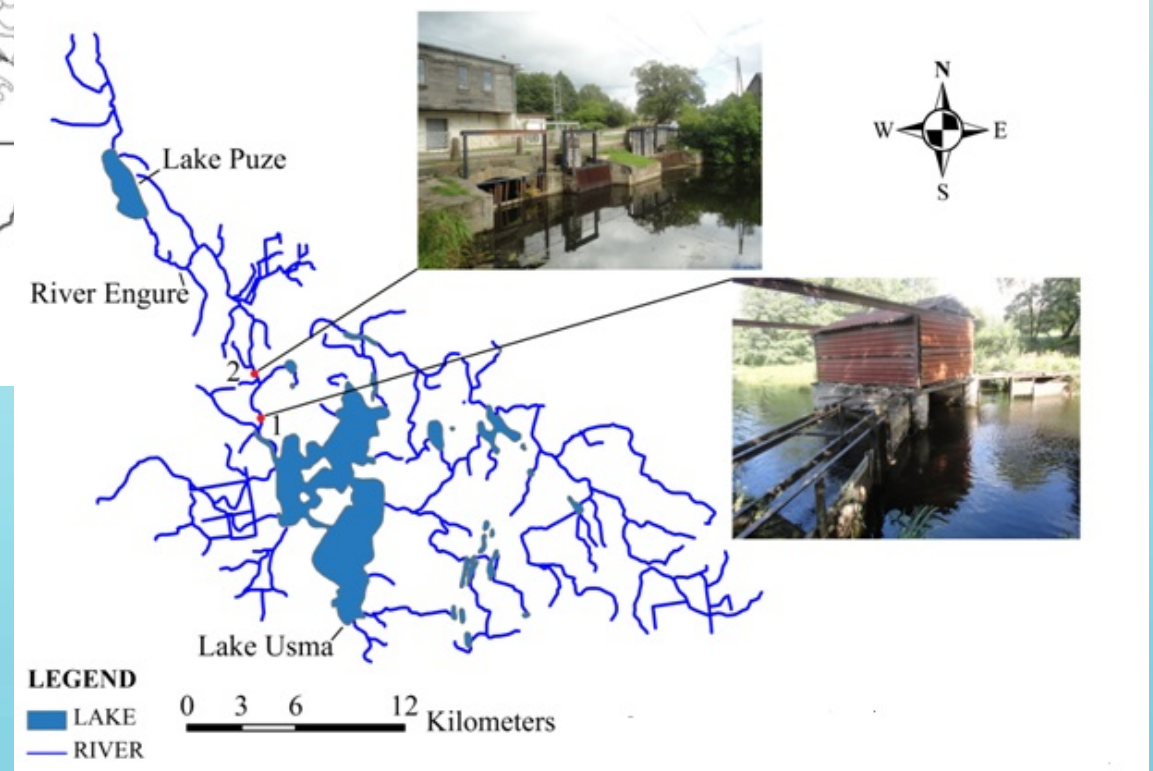
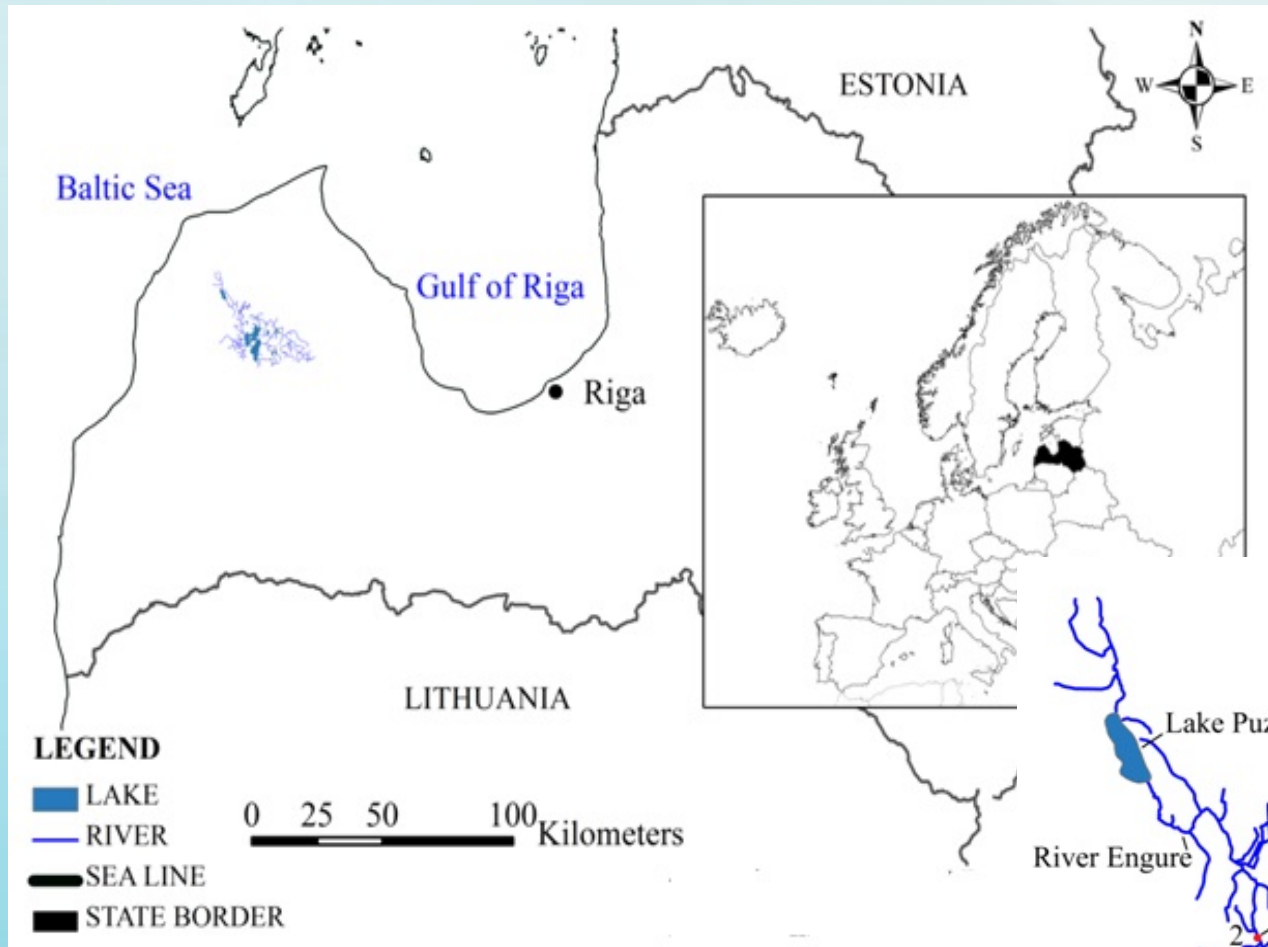


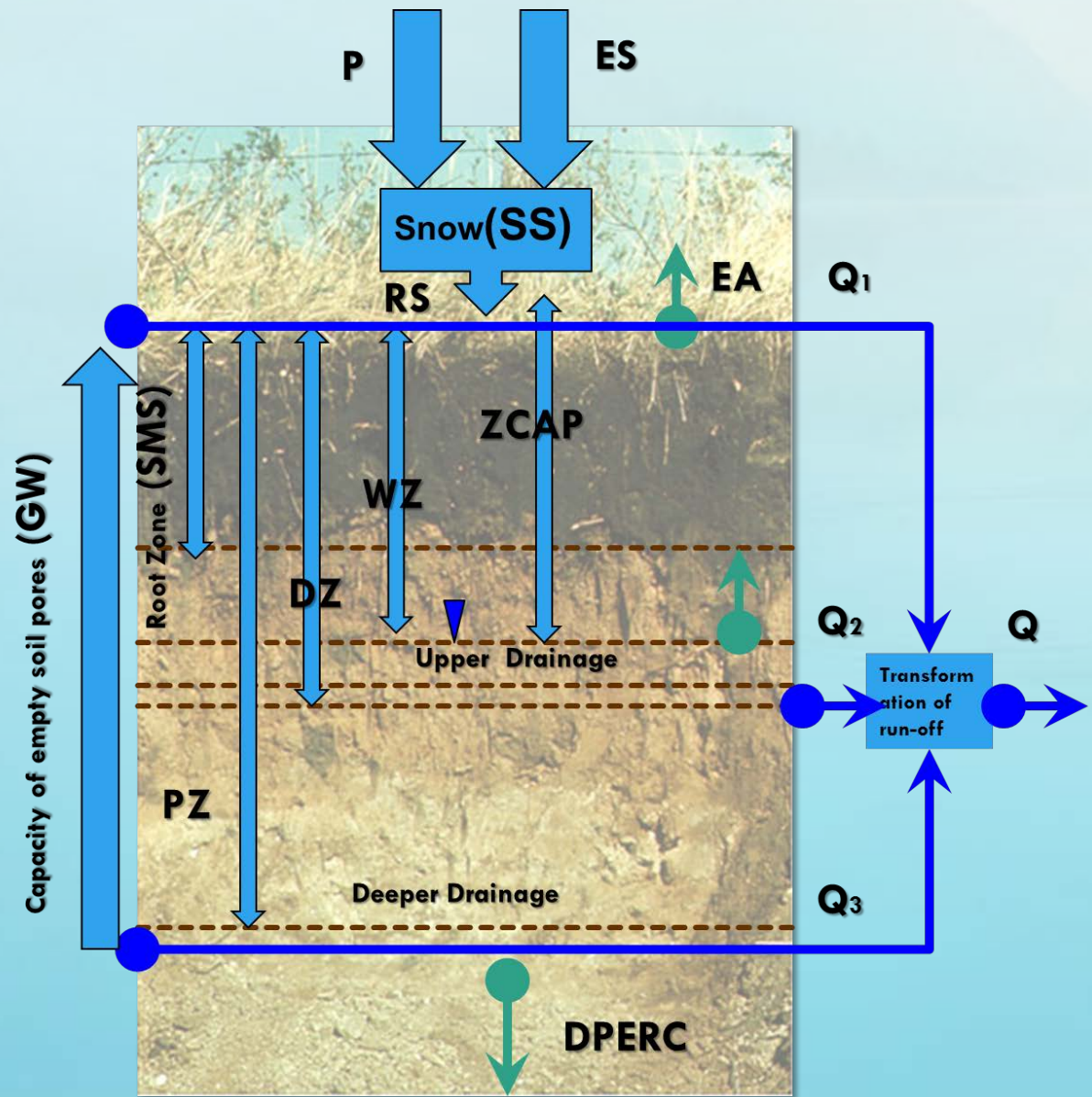
Aim

The aim of this study is to evaluate simultaneous and sequential occurrence of droughts and floods and the interaction of land use change and catchment area management practice.

Methodology



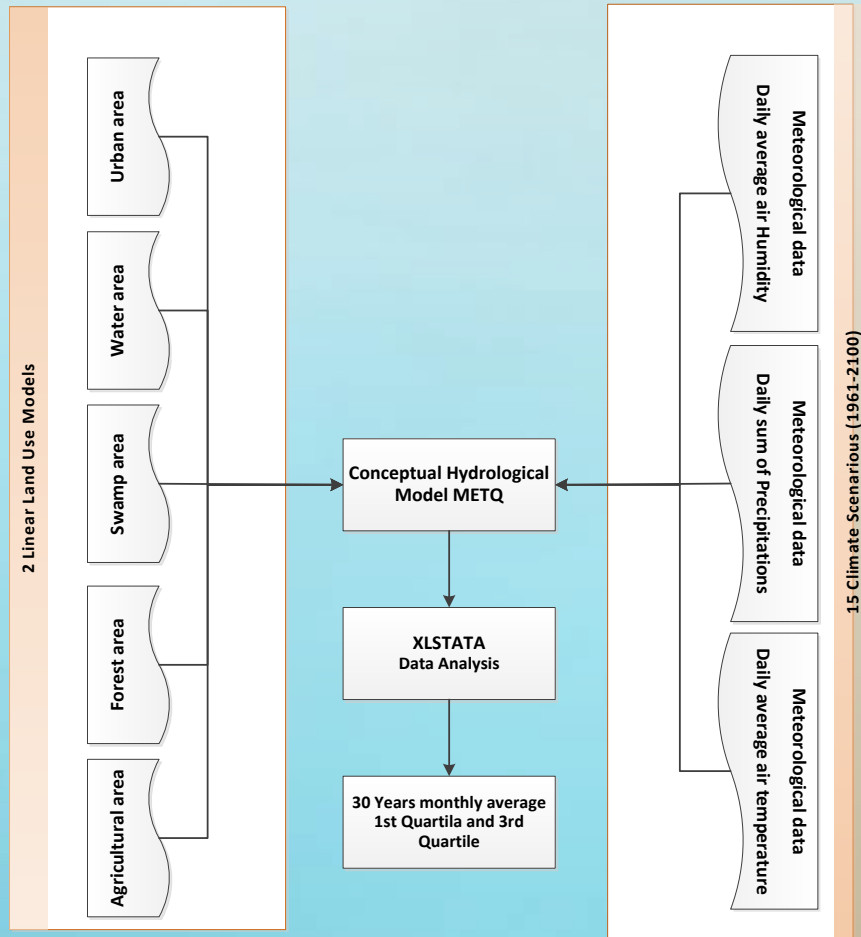




MODELLING

CONCEPTUAL HYDROLOGICAL
MODEL METQ

Modelling approach



- **LAND USE SCENARIOUS**

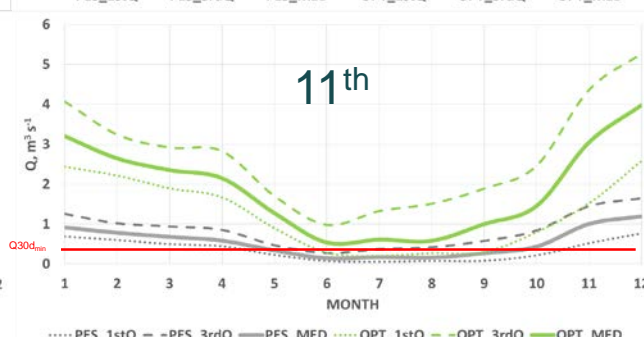
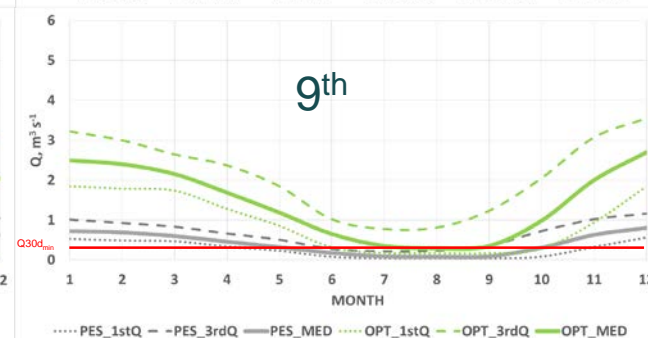
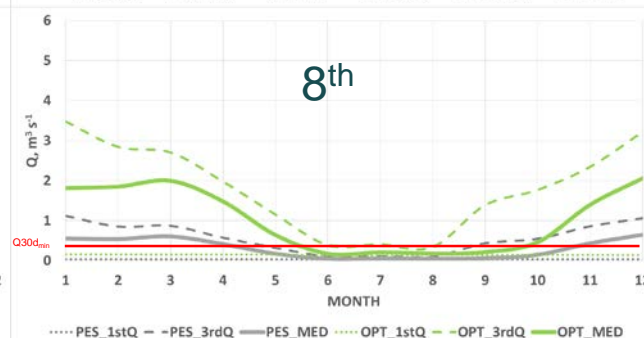
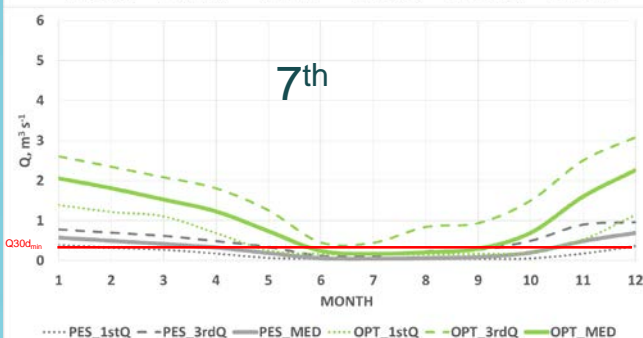
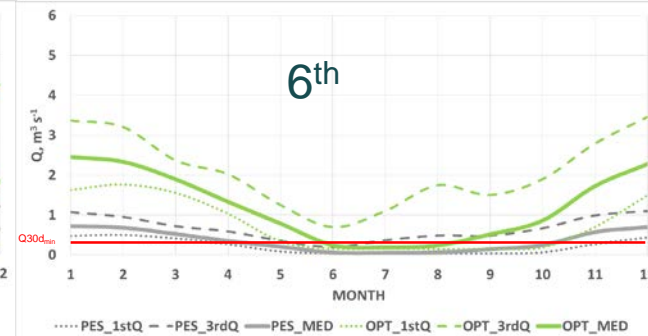
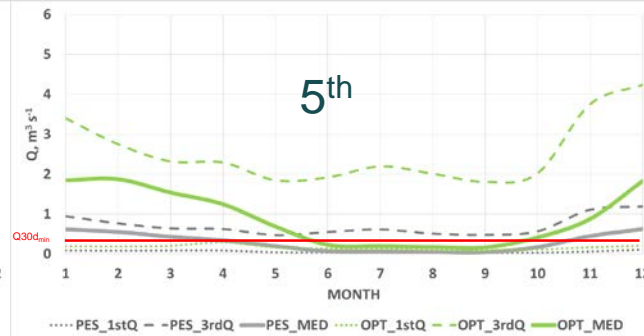
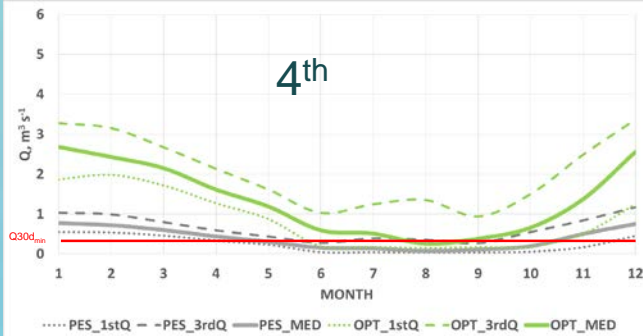
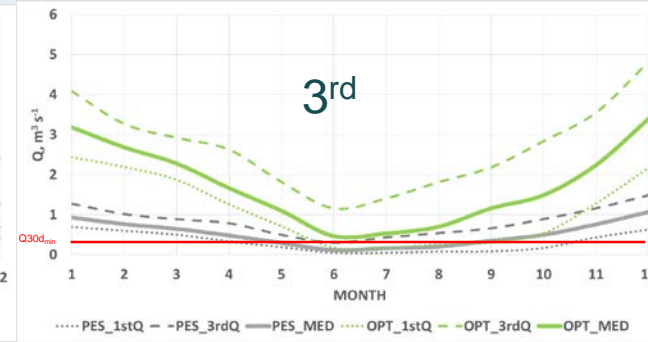
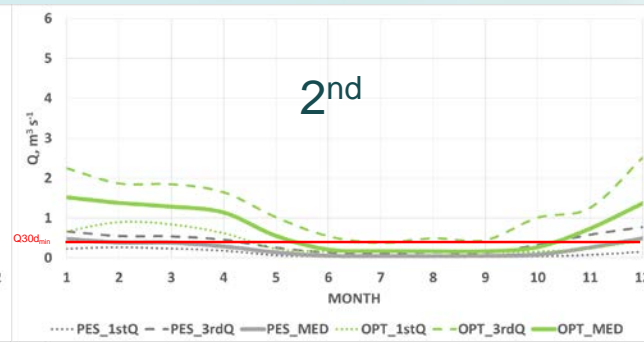
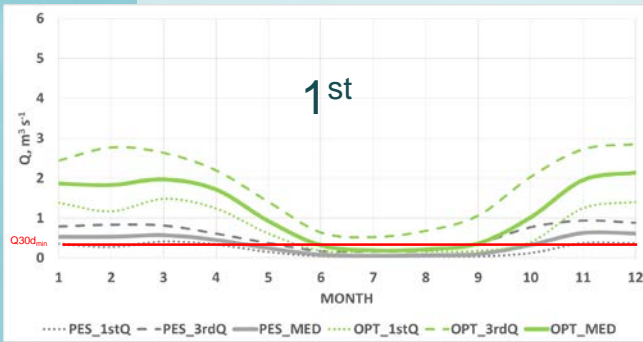
- **OPT** - INCREASE AGRICULTURAL PRODUCTION AND URBANISATION
- **PES** - INCREASE FOREST AREA AND DECREASE OF AGRICULTURAL LAND

RESULTS

30 year
monthly data
analysis

Time scale
2070-2100

Q30d_{min} – by
legislation of
Latvia



CONCLUSIONS

- The amplitude of extremes of hydrological cycle is with increasing tendency, flood extremes increase and minimal run-off decrease;
- The existing legislative framework in Latvia is based on reference climate 1960-1991 and last years the increasing infrastructure damage cases related with extreme hydrological events;
- The existing land drainage system were build for reference period and there is need for adoption strategy in case of droughts frequency.



Thank you!

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