



STATUS OF NWM, CC SCENARIOS AND SEASONAL  
WEATHER FORECAST USAGE IN  
AGROMETEOROLOGY IN SLOVENIA

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# Numerical weather models



- ⌘ national status of NWM in Slovenia (ALADIN)
- ⌘ first operational test of forecasts for the purpose of agrometeorology
- ⌘? perspective in joint groups (ongoing research)

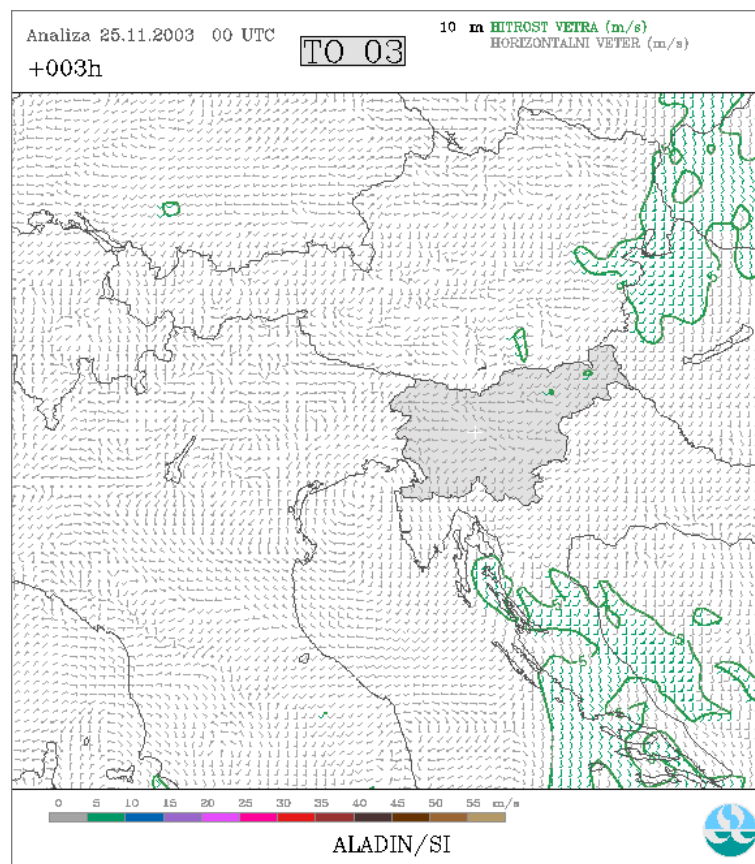
# NWM in Slovenia



- ⌘ Slovenia is a member of ALADIN community (LACE group)
- ⌘ ALADIN is a spectral LAM “in-phase” with global model ARPEGE/IFS (10 years old); LBC data distributed by Meteo-France
- ⌘ ALADIN/SI operational since 1997. Currently running on Intel-cluster (24 nodes)

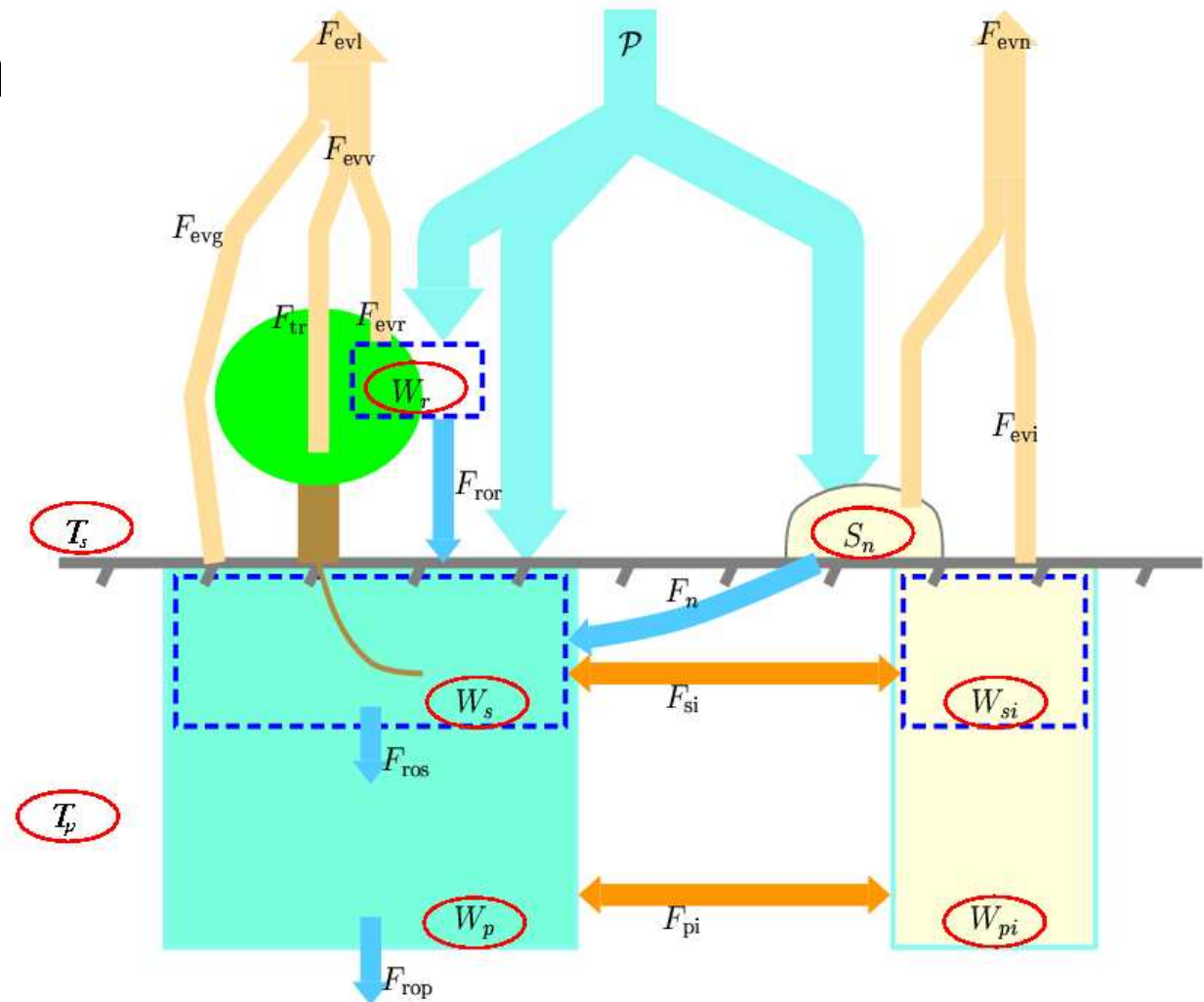
# NWM in Slovenia

⌘ Current resolution:  
11km.  
Experimenting with  
higher



# NWM – soil model

- ⌘ ISBA (Noilhan and Platon, 1989; Giard and Bazile, 2000)
- ⌘ 8 prognostic variables
- ⌘ Soil moisture assimilation?

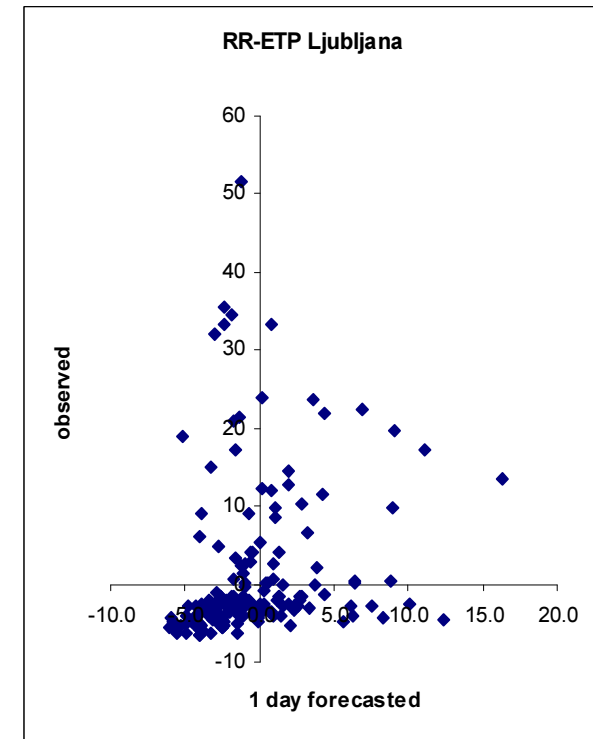
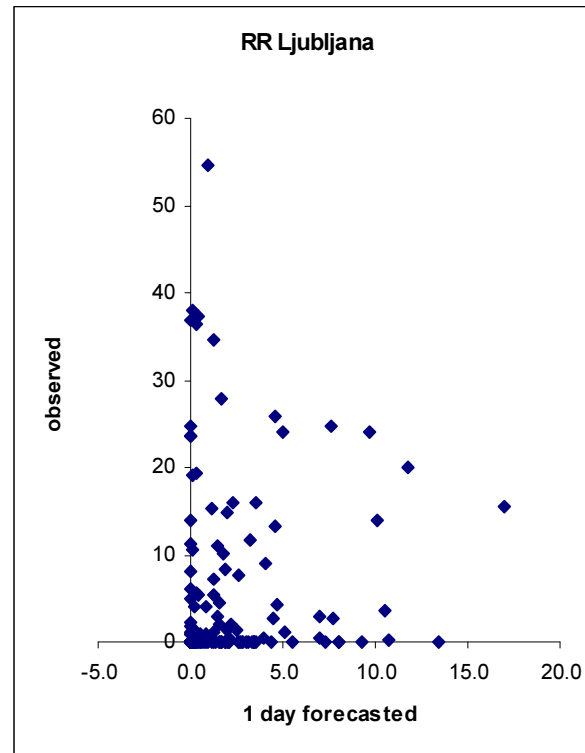
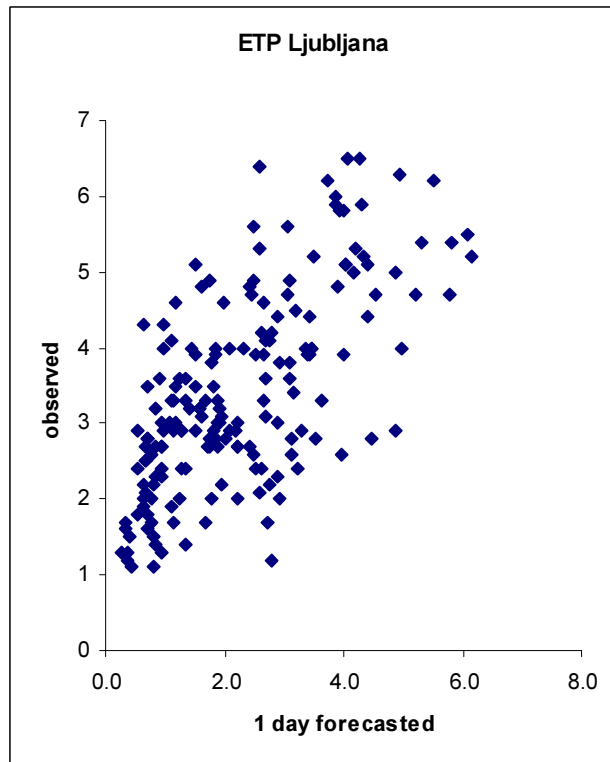


# **ALADIN outputs for agmet usage**

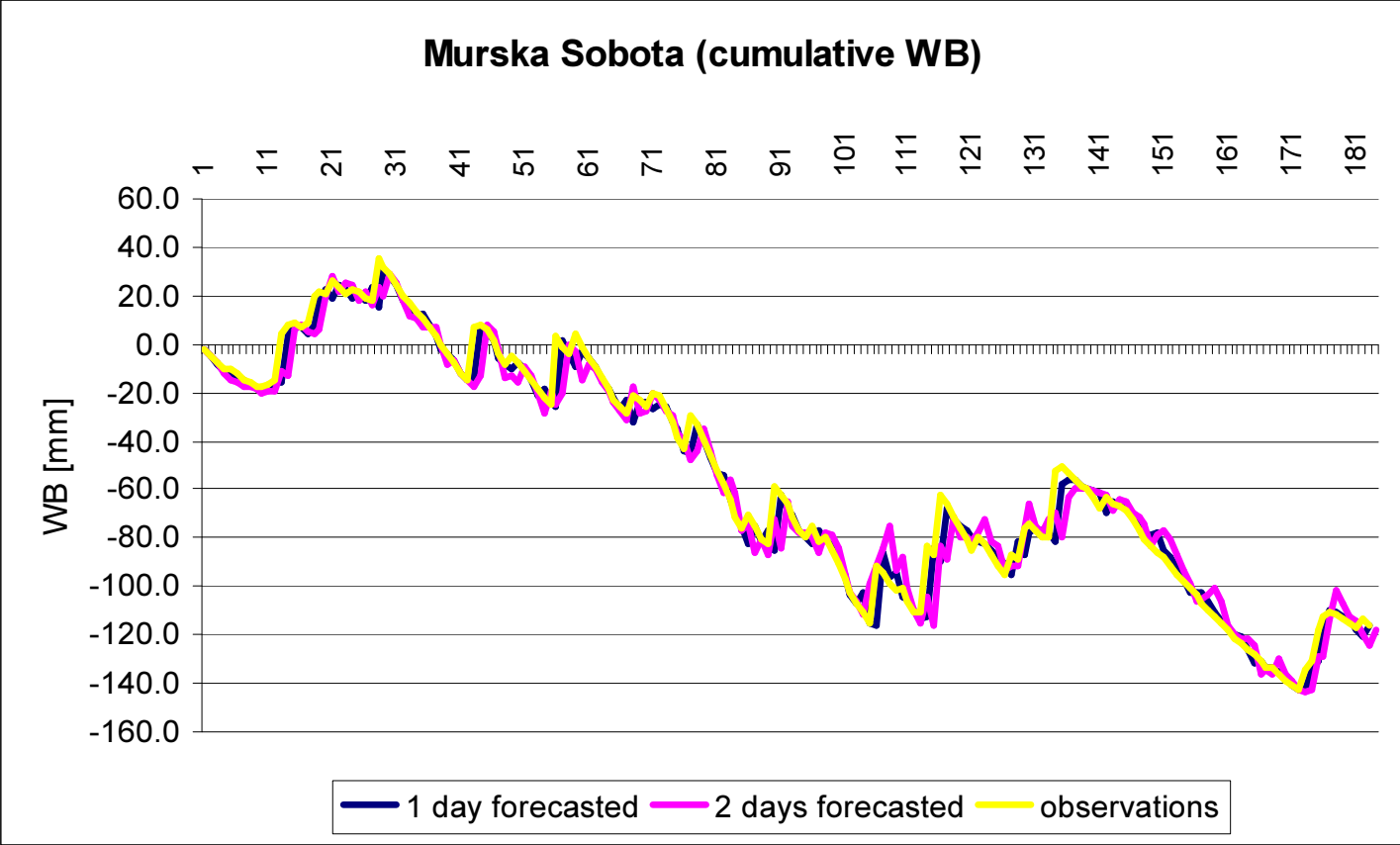
## WATER BALANCE

- ⌘ Validation of ALADIN 24- and 48-hours forecasts of water balance (WB) in the vegetation period 2002
- ⌘ Seasonal plot of observed and forecasted (24 and 48 hours ahead) WB
- ⌘ RMSE 24-hours less than 0.8 mm
- ⌘ RMSE 48-hours around 1.0 mm

# Validation of 24-hours forecast

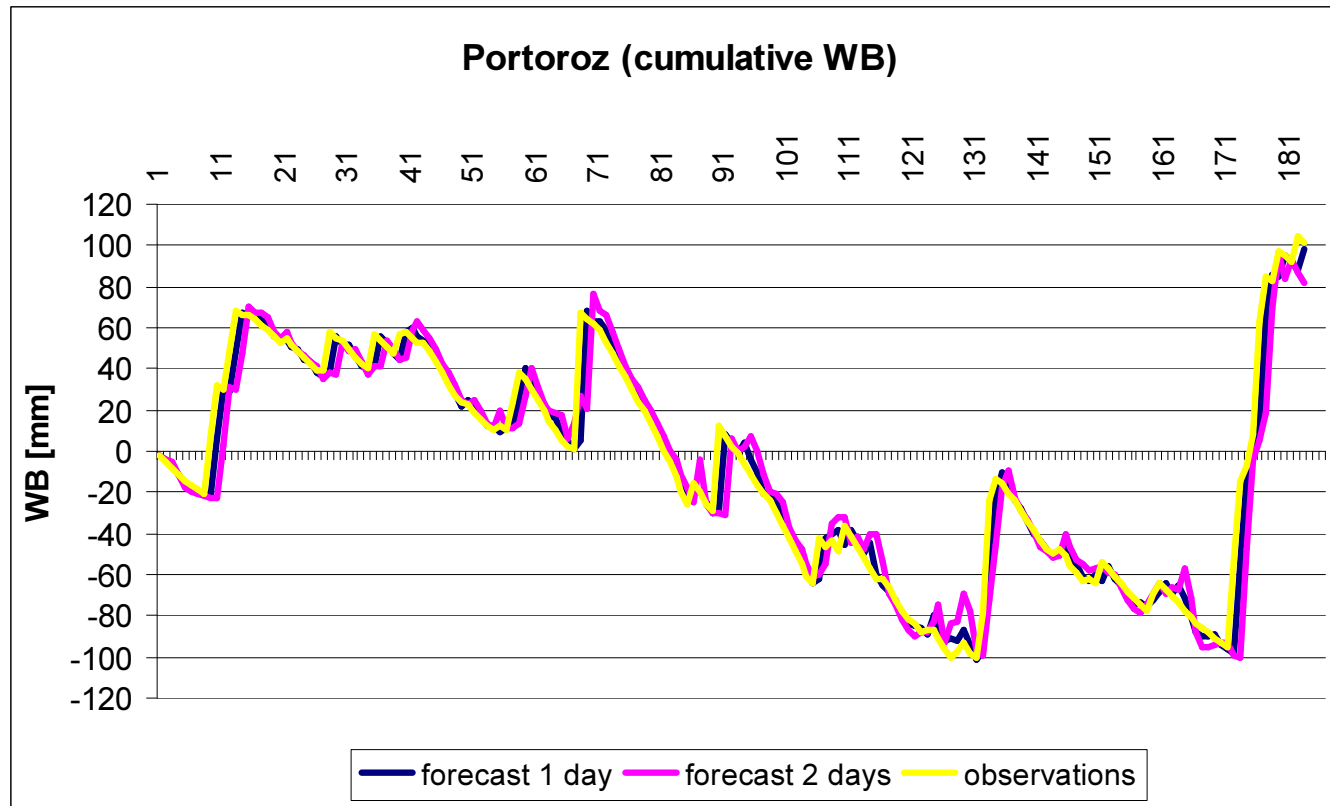


# Seasonal plot

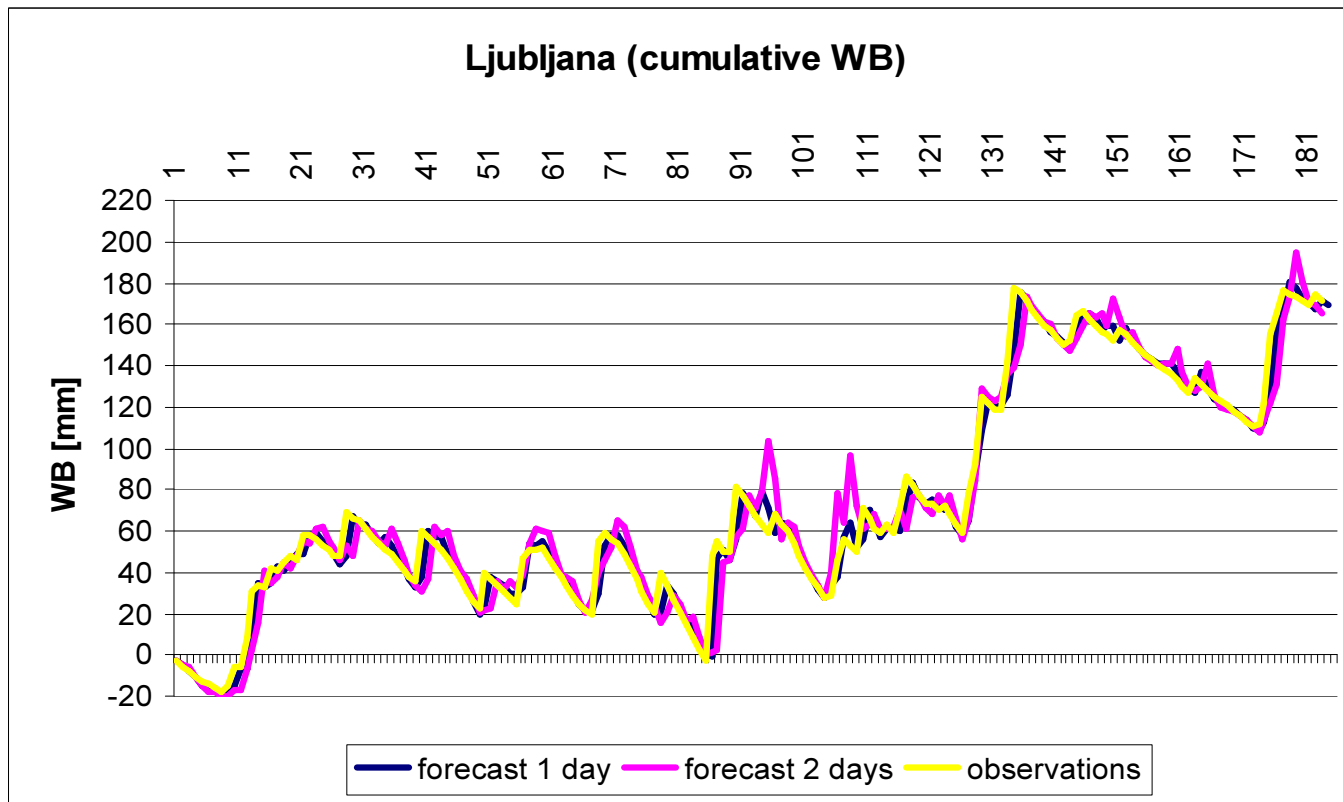




# Seasonal plot



# Seasonal plot



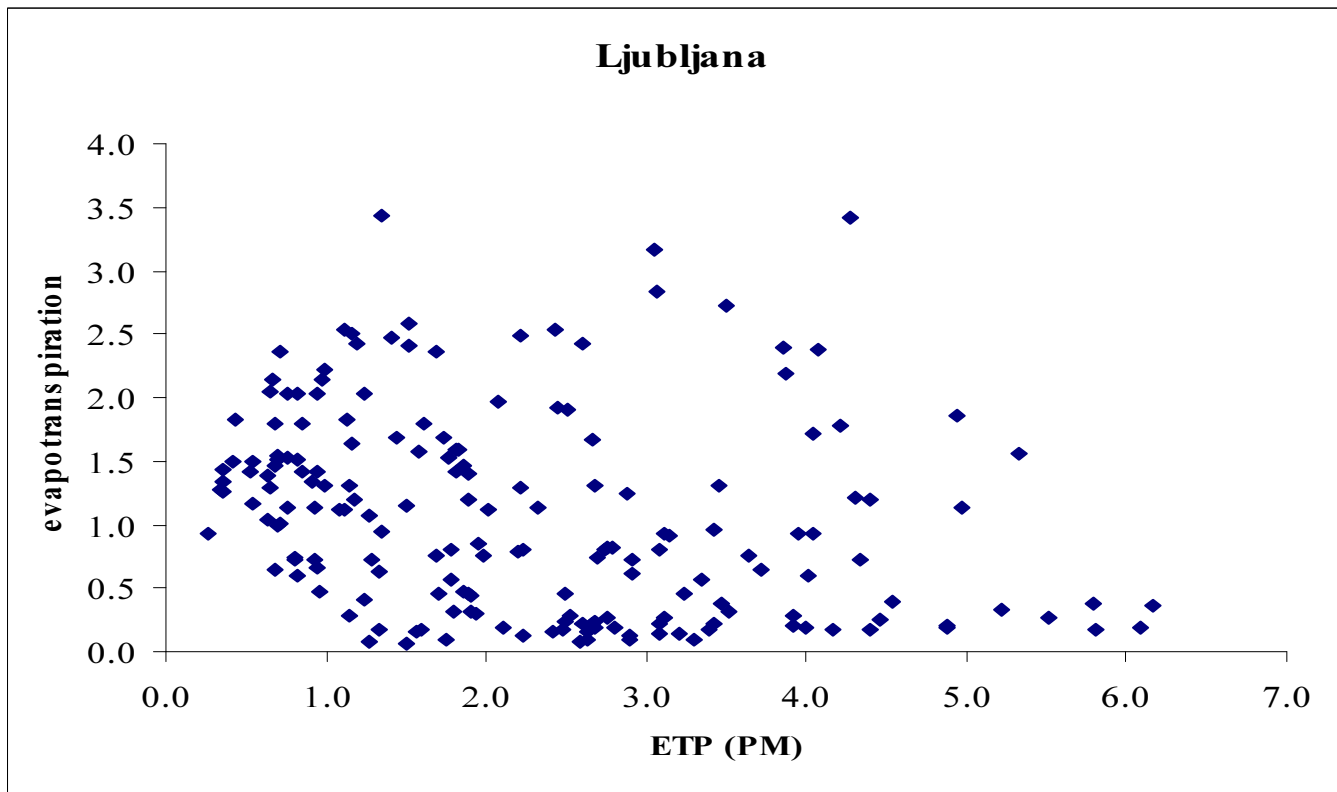
# ALADIN outputs for agmet usage



## ISBA FIELDS

- ⌘ evapotranspiration in the vegetation period 2002
- ⌘ Penman-Monteith calculation ETP via evapotranspiration modelled by ISBA
- ⌘ ISBA evapotranspiration is not a good estimation for reference evapotranspiration
- ⌘ constraints for direct application of ISBA

# ALADIN outputs for agmet usage



# Potential of the application



## TO DO:

### ⌘ Assimilation cycle

- ⌘ cooperation with NWP Dpt

- ⌘ “Remote-sensing” assimilation – a LHN project is set in the scope of COST-717

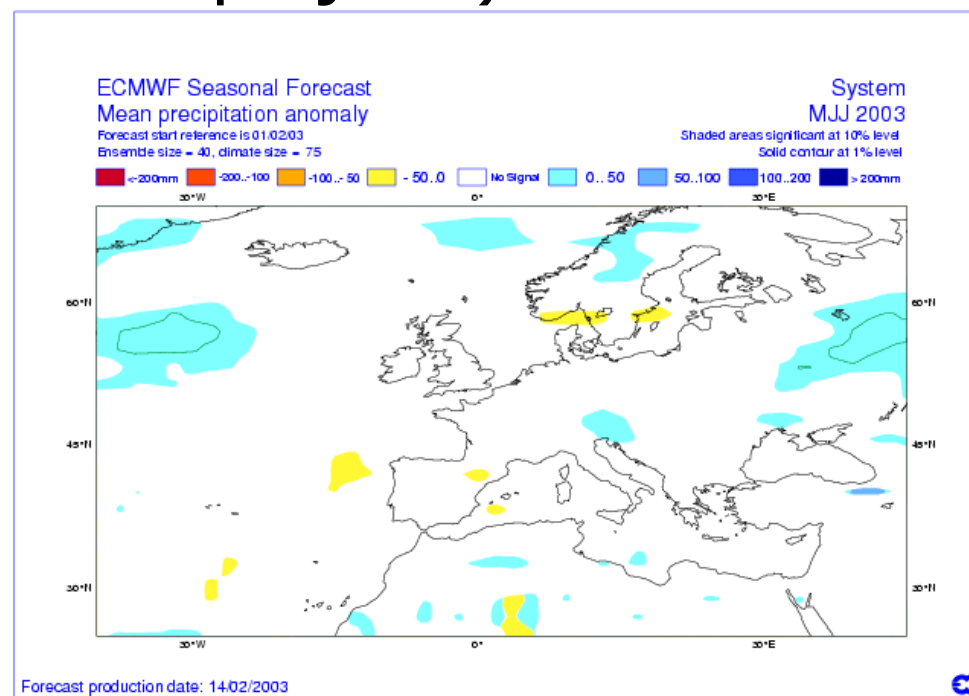
### ⌘ Soil moisture improvement (SAT?)

### ⌘ Pilot projects

### ⌘ Comparison to agmet data

# Seasonal climatic forecast

- ⌘ past experience (DEMETER project?)
- ⌘ still research needed (task teams)
- ⌘ questionable usage in practice in Europe (ex. Drought 2003 – no signal detected?)
- ⌘ constrains due to predictability

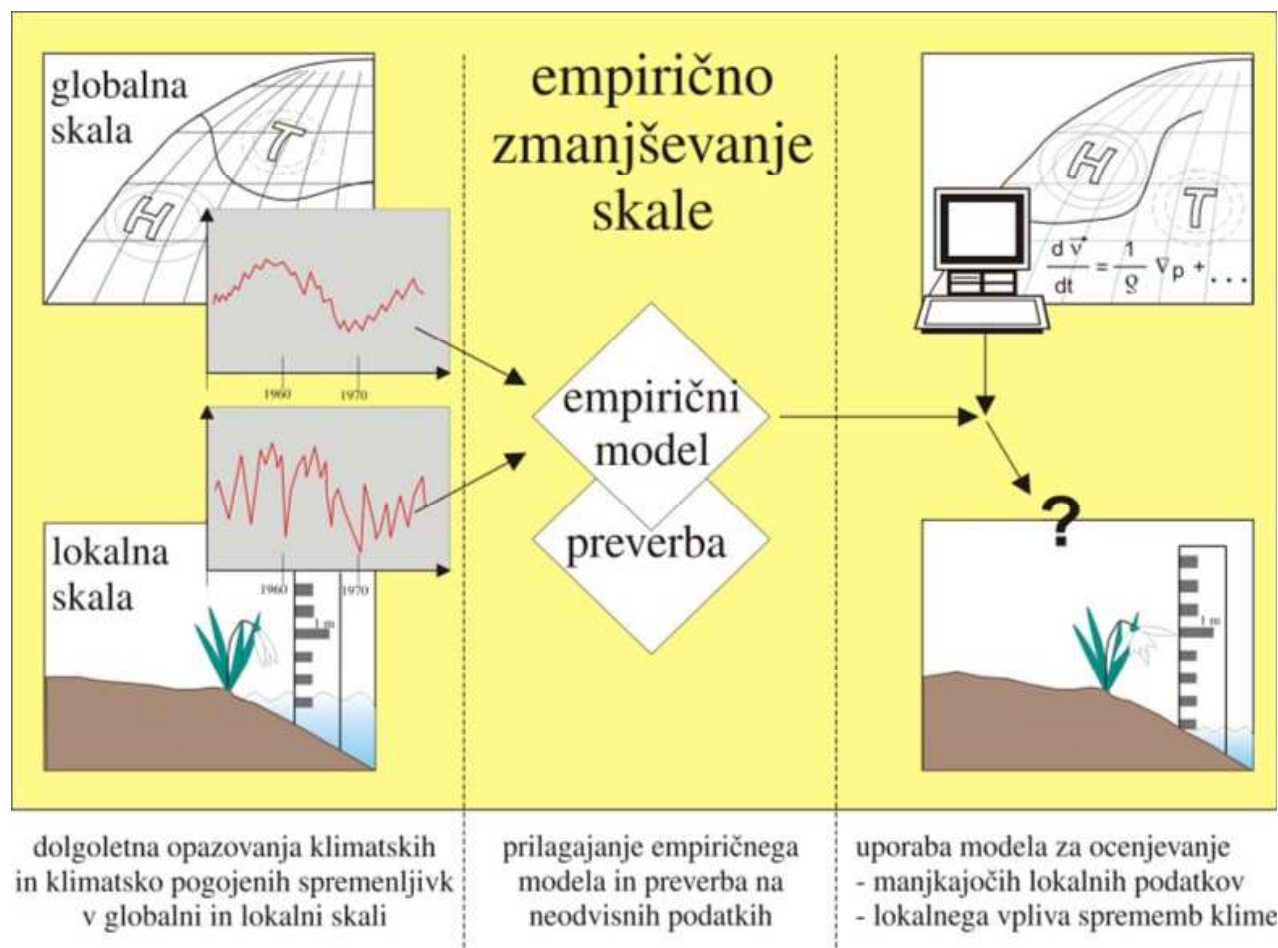


# Climate change scenarios



- ⌘ past climate variability
- ⌘ future CC scenarios on regional scale
- ⌘ the regional climate change scenarios results (daily data sets) as input for models
- ⌘ weather generators implemented on CC
- ⌘ regional CC adaptations
- ⌘ established new GCM results for Slovenia in 2003
- ⌘ evaluation of CC impacts on agriculture in progress (National Communication under the UN Convention on CC)

# Climate change scenarios

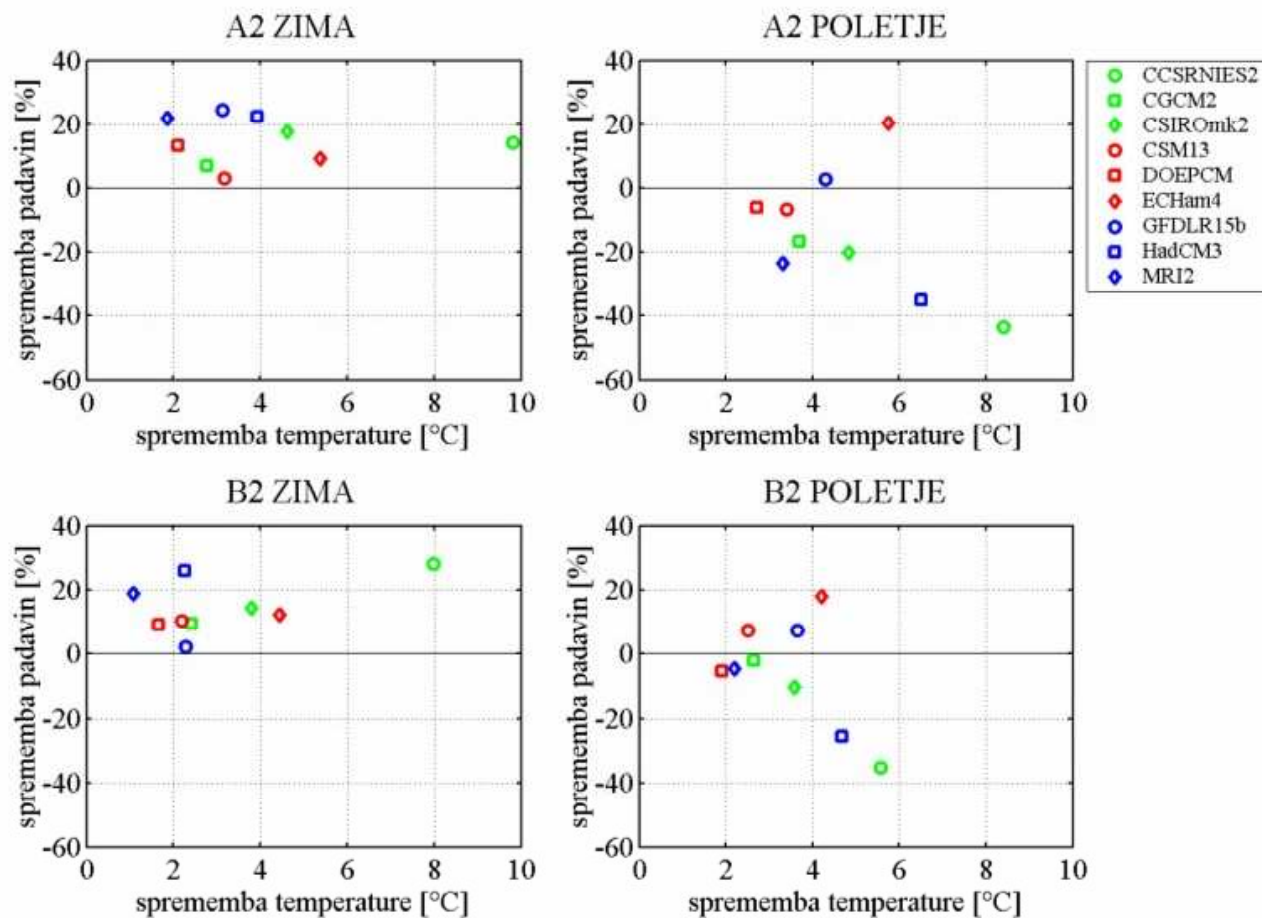




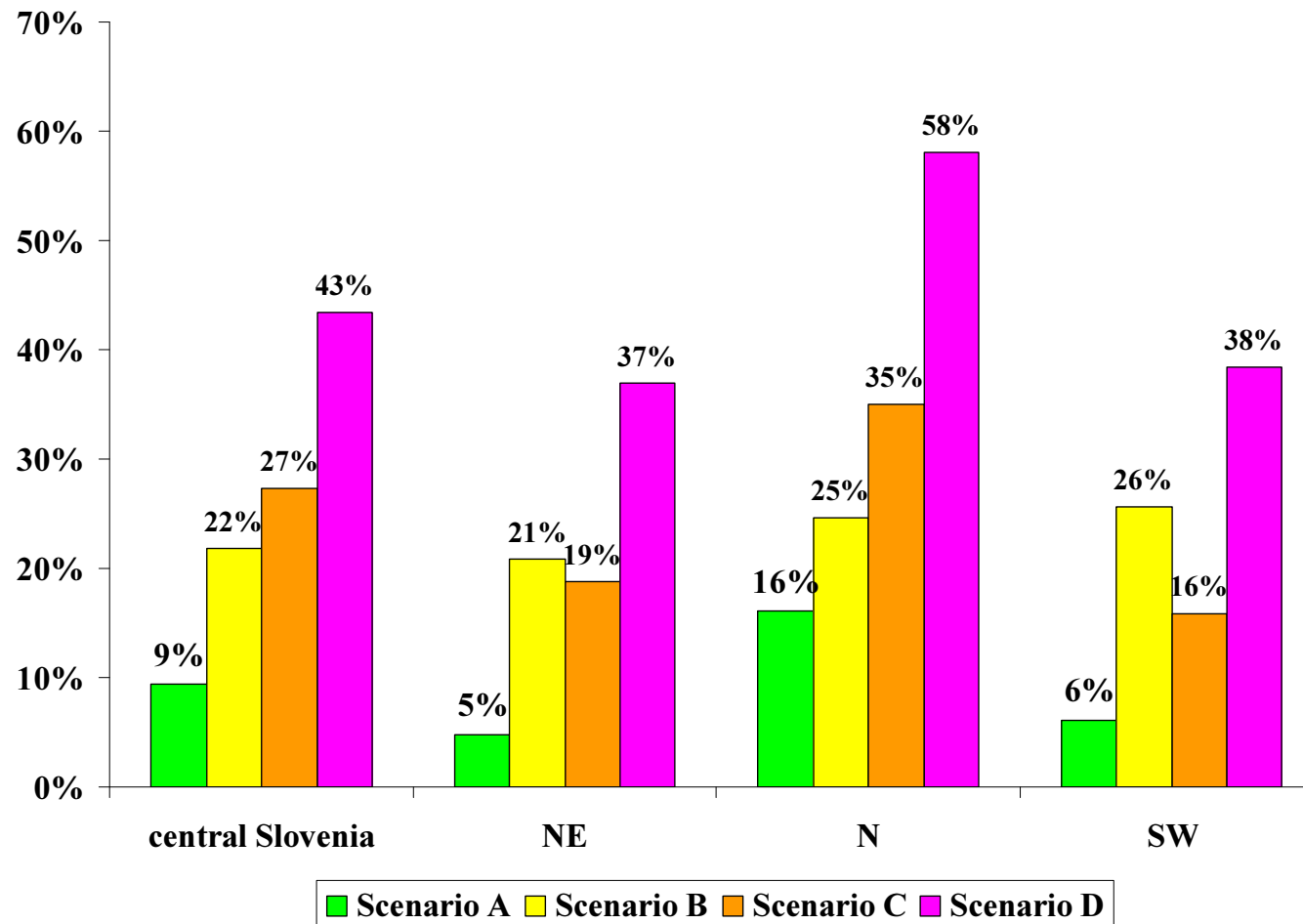
# Climate change scenarios for Slovenia

winter

summer



# Climate change scenarios applicability - water balance



**scenario A:**  
+ 1 °C & unchanged RR

**scenario B:**  
+ 3 °C & unchanged RR

**scenario C:**  
+ 1 °C & 20 % RR reduction

**scenario D:**  
+ 3 °C in 20 % RR reduction

# Plan of the activity



## COST report on the topic

- ⌘ CC, NWM

## Validation campaign

- ⌘ water balance (year 2002)
- ⌘ LW (LW measurement)

## Research proposal

- ⌘ STSM (Blaž Kurnik - Denmark): agrometeorological information system
- ⌘ STSM in Slovenia (visit at EARS - interested experts?)

## proposed titles:

- ⌘ "Applicability of ALADIN & ECMWF forecasts in irrigation scheduling in Slovenia"
- ⌘ "Applicability of intercepted water for LW estimations"