



ILMATIETEEN LAITOS
METEOROLOGISKA INSTITUTET
FINNISH METEOROLOGICAL INSTITUTE

Emission and Dispersion of the Ragweed Pollen in Europe: First Results and Evaluation of the SILAM Model

Marje Prank¹, Mikhail Sofiev¹, Daniel Chapman²

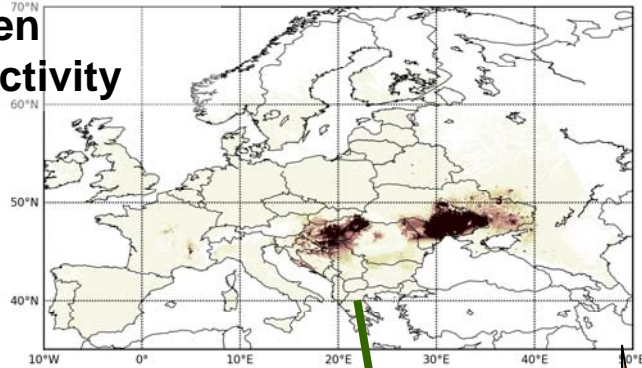
¹ Finnish Meteorological Institute, Helsinki, Finland

**² NERC Centre for Ecology and Hydrology, Bush Estate, Penicuik, EH26
0QB, UK**

FMI SILAM-BIRCH / OLIVE / GRASS / RAGWEED-POLLEN forecasting system

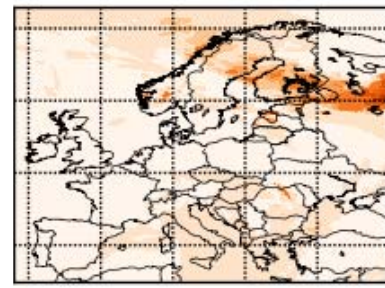


Vegetation map
+ pollen
productivity

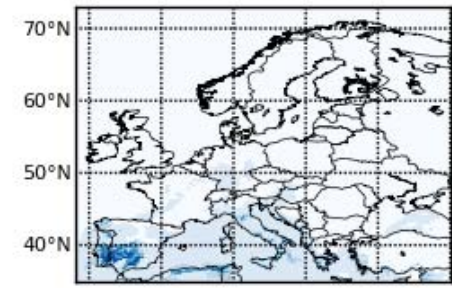


Pollen concentration [# / m³]

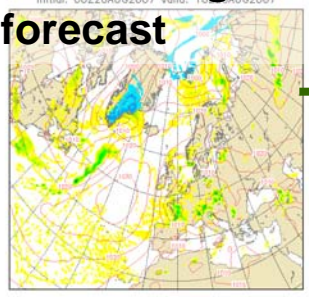
Birch 2011 05 14 12:00



Olive 2011 05 14 12:00

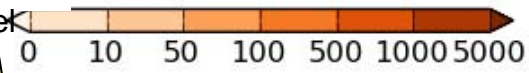


Meteorological
forecast

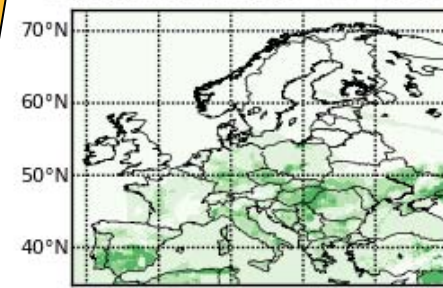


Dispersion model

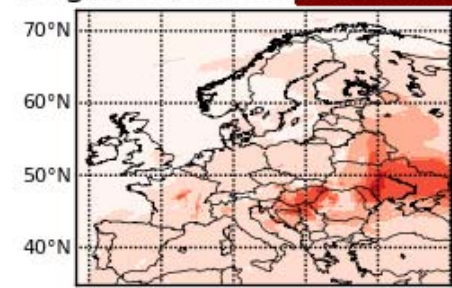
SILAM
release
transport
sinks



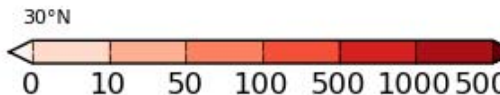
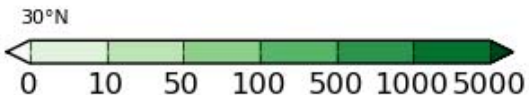
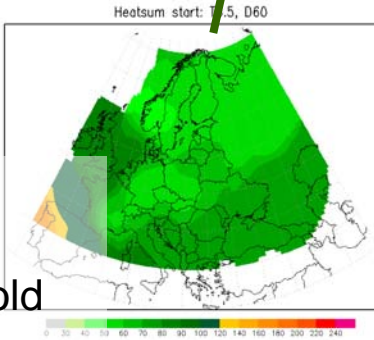
Grass 2011 05 14 12:00



Ragweed 2011 08 28 12:00



Flowering
intensity
Multi-threshold
model





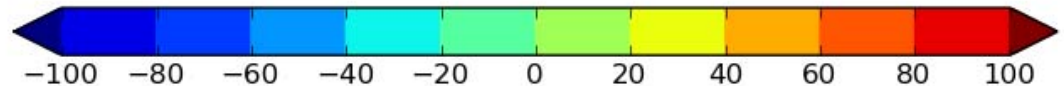
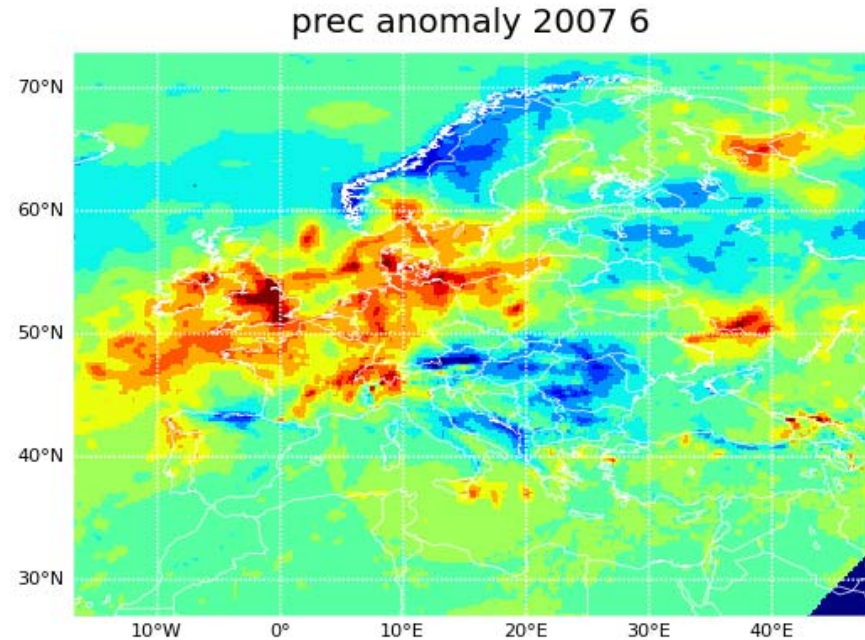
Emission parameterization for ragweed

- **Multi-threshold model for season start/end**
 - Bio-days (heat sum + length of day, Deen et al, 1998)
 - Normal distribution around the peak of season
 - Low temperature to end the season
 - Dry soil to end the season
- **Ragweed map**
 - Ecological model of NERC Centre for Ecology and Hydrology , UK (Climate suitability, seed import from infected areas, suitable land use (disturbed soil), etc.) (Chapman et al, this meeting)
- **Amount of pollen emitted**
 - Proportional to habitat quality (eco-model)
 - Corrected with pollen observations of European Aeroallergen Network (EAN)
 - Function of heatsum and soil moisture during the growth period (to be implemented)

Model performance



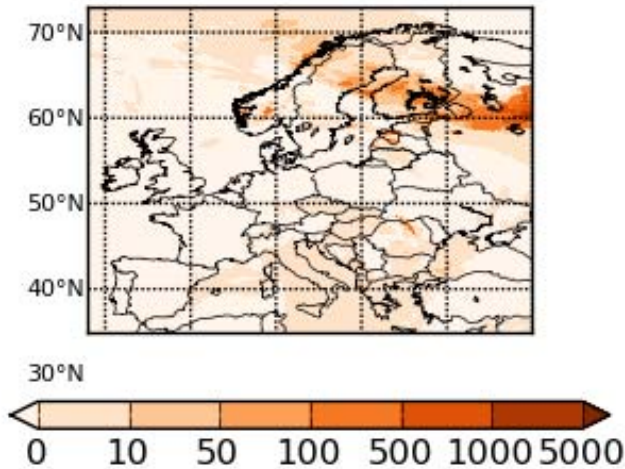
- Inter-annual variability of emission still to be parameterized
 - 2007 very low year
 - Hot and dry june, july



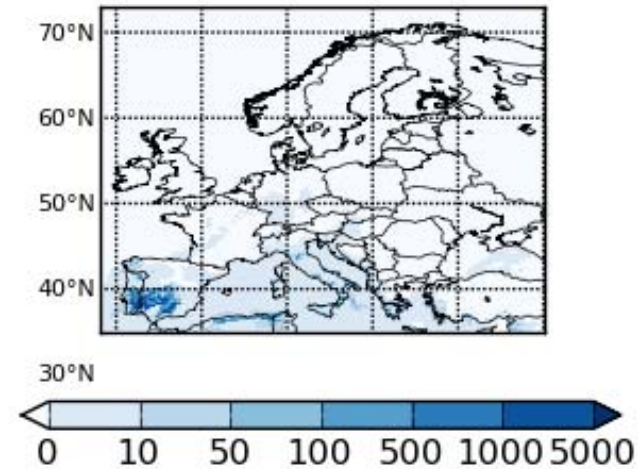
Thank You !



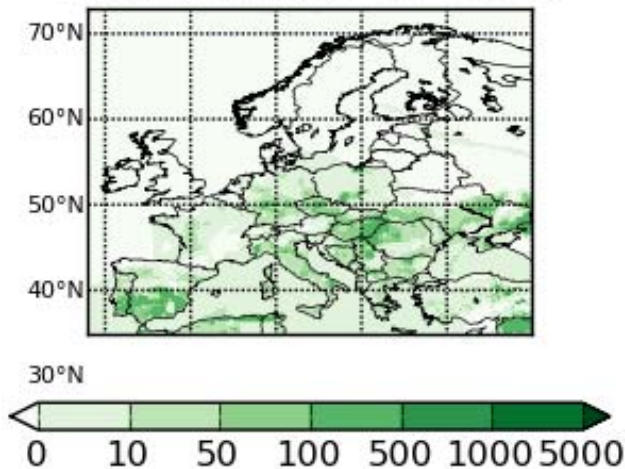
Birch 2011 05 14 12:00



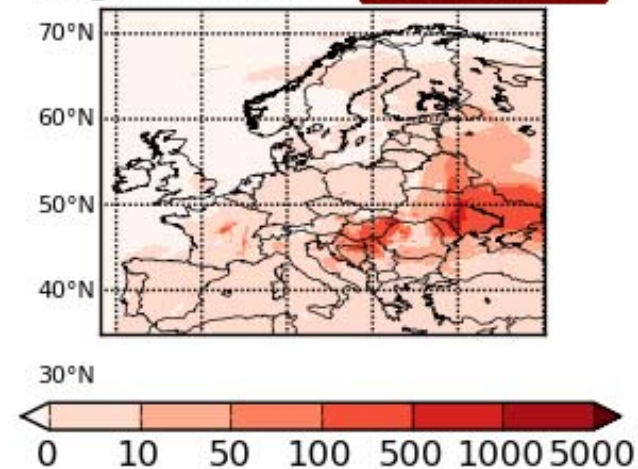
Olive 2011 05 14 12:00



Grass 2011 05 14 12:00



Ragweed 2011 08 28 12:00



The work has been performed within the project “Assessing and controlling the spread and the effects of common ragweed in Europe”.

Observational data of European Aeroallergen Network EAN are kindly appreciated