

TRIMmaps: creating maps from monitoring data and casual observations

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EBCC

European Bird Census Council



every bird counts



Sovon

EBCC Spatial Modelling Group (SMOG):
*knowledge network on spatial
modelling*

Facilitate creation of maps



TRIM*maps*

TRIM*maps*

- Facilitate production of maps from monitoring data and casual observations
- R-programme
- Open source / freeware



Statistics TRIM*maps*

- Combination of
 - Regression type statistics
 - Spatial interpolation of residuals
- Uses TRIM-input (data-files) or -output (F1-files) and a number of other formats

What do you need to run
TRIM*maps*?

Observations

- Counts
 - Presence-absence
 - Presence-only
 - Local trend data
-
- CSV-file
 - TRIM F1- or dat-files



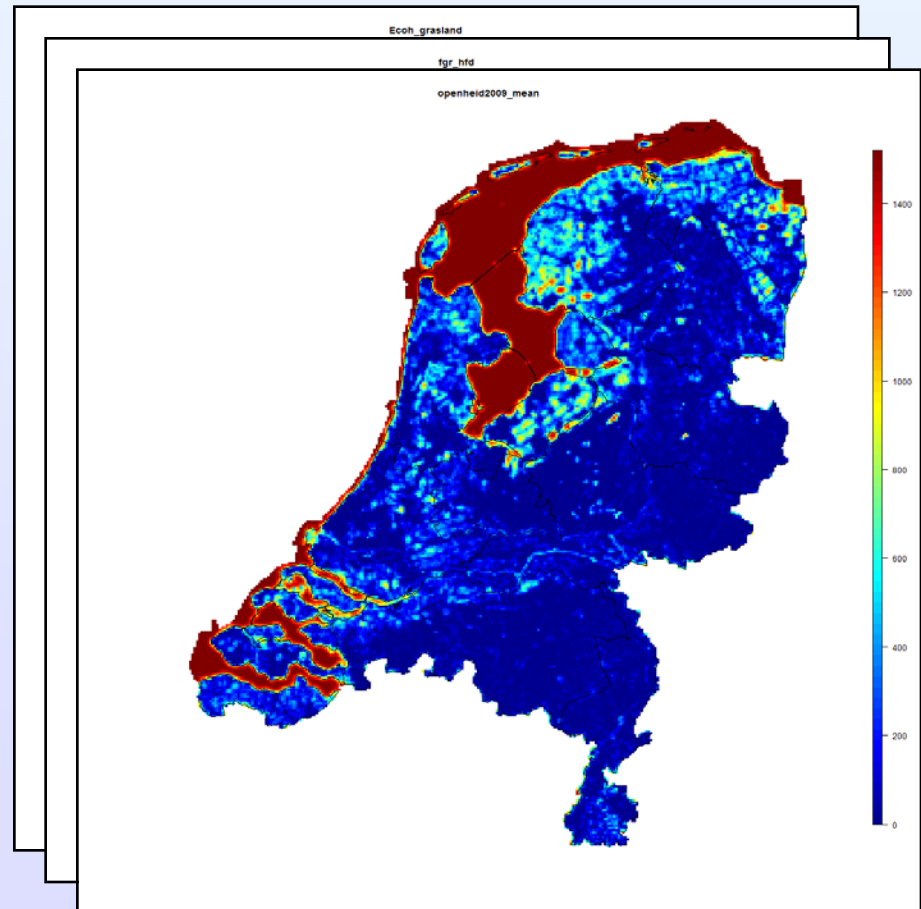
Site/location info

- X- and Y-coordinates
- Optional: environmental covariates



Environmental maps

- Raster maps



And some basic R-knowlegde

We even made a small course for you 😊



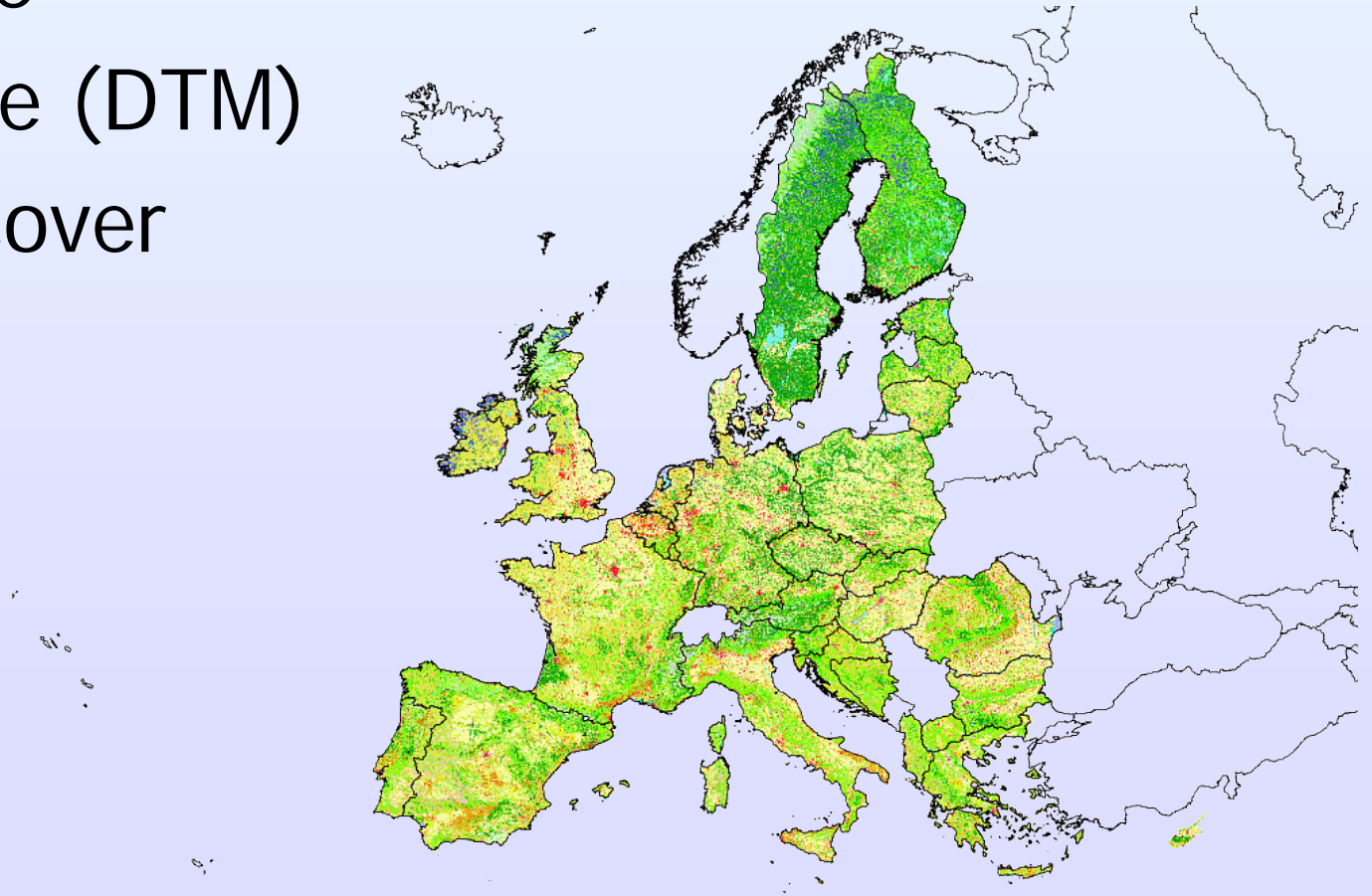
Running TRIM*maps*

Zeroes

- Add zeroes for TRIM F1- or dat-files
- Generate zeroes with Maxent

Overlay with environmental data sets

- Climate
- Altitude (DTM)
- Land cover
- ...



Regression models

- GLM
- GAM
- MARS
- Mixed models
- **Boosted Regression Trees**
- **Random Forests**
- ..

Interpolation of residuals

*Include observed local deviations
from regression model*

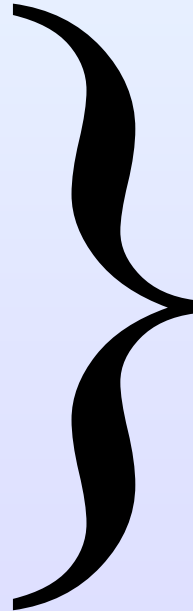


Better maps

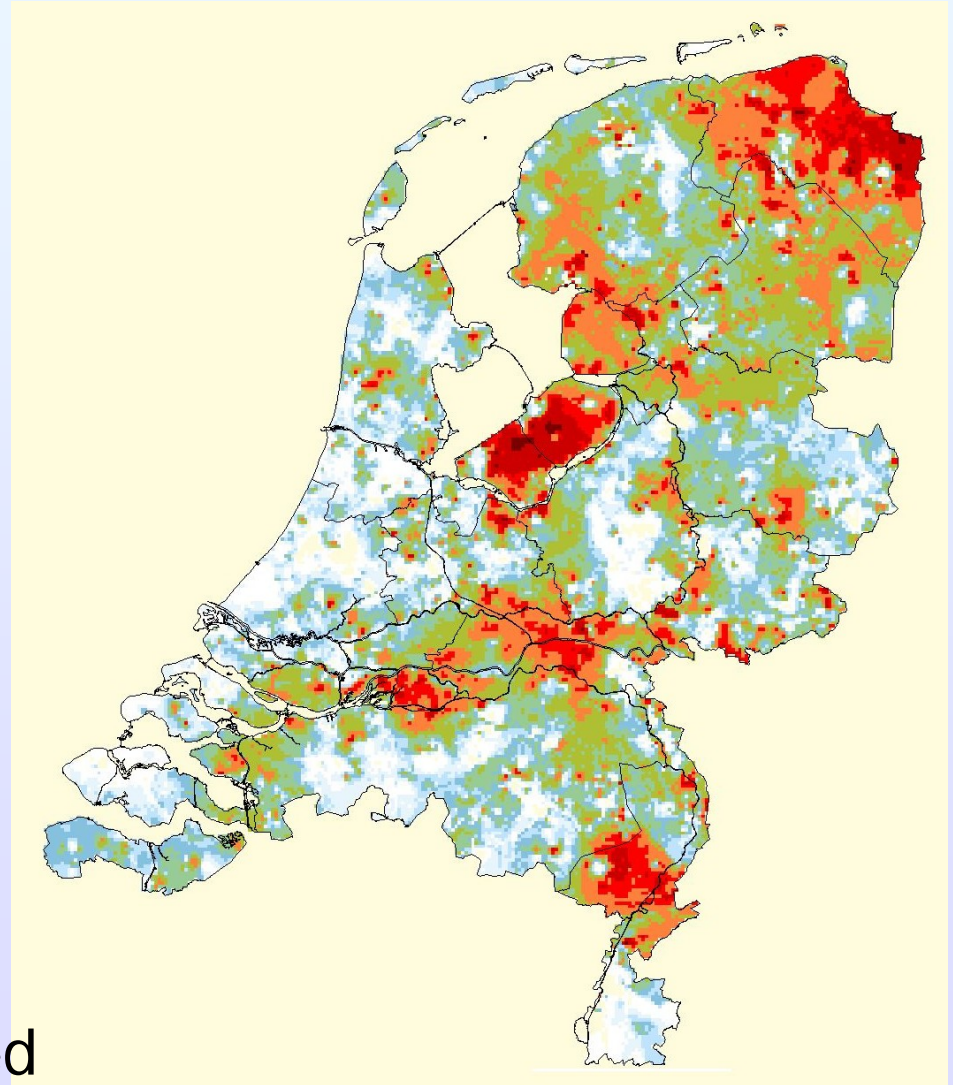
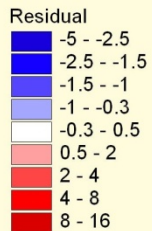
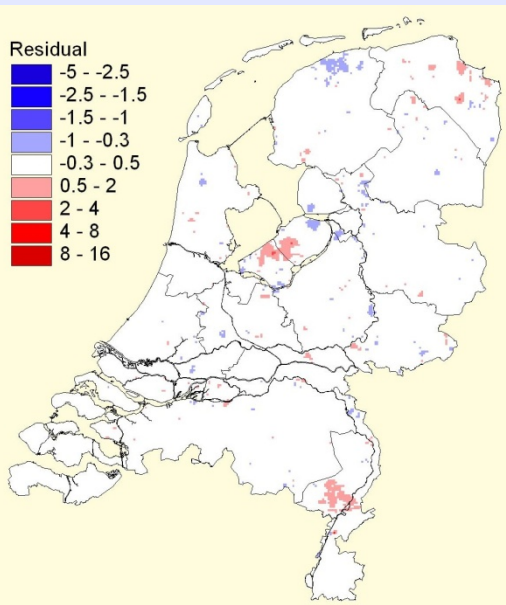
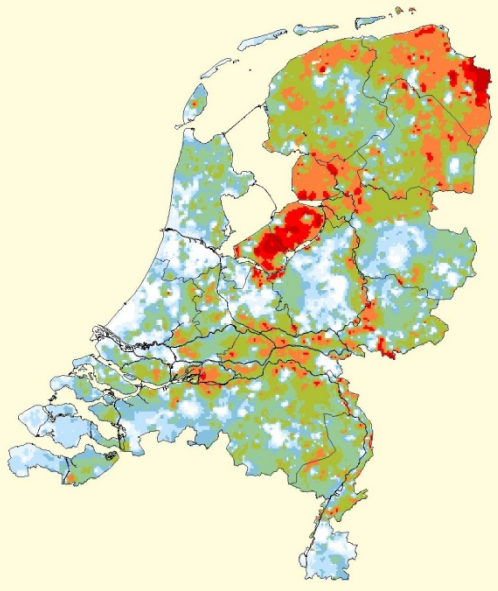
- Inversed Distance Weighting (IDW)
- Kriging

Combined map

regression
model



interpolated
residuals



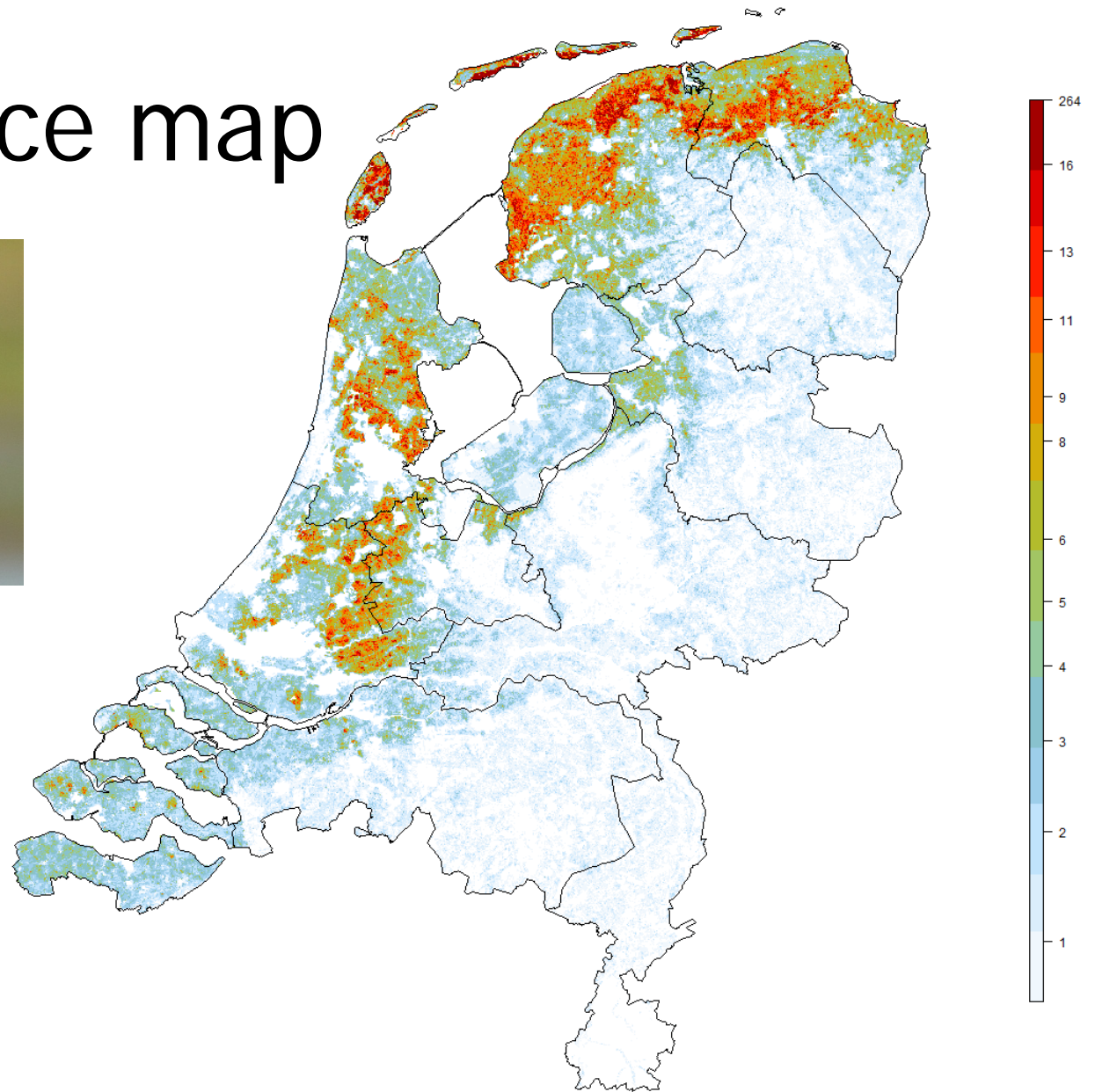
Output

- Maps
 - Observations
 - Predictions regression
 - Residuals
 - Combined map
- Regression models
- Model validations
- Shape-files, ASCII-grids and geoTIFF with predictions

Abundance map



Oystercatcher

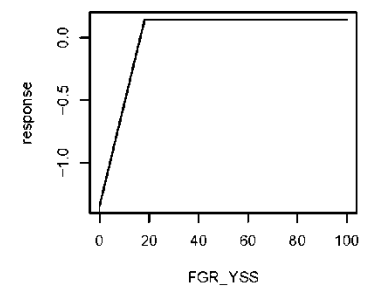
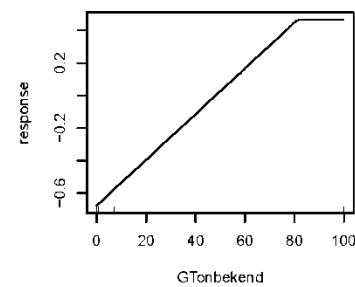
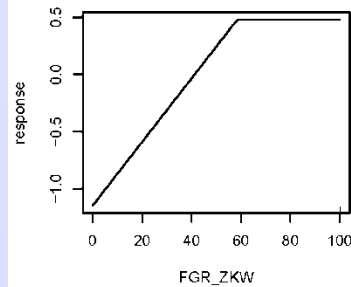
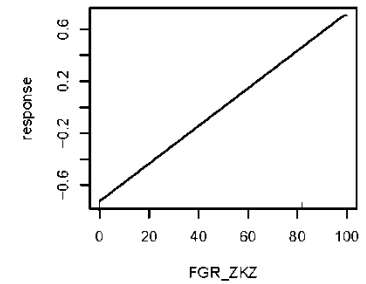
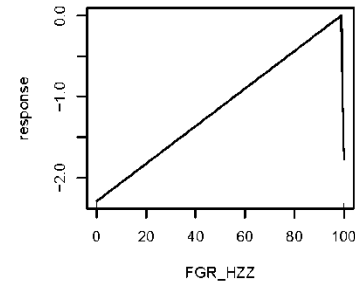
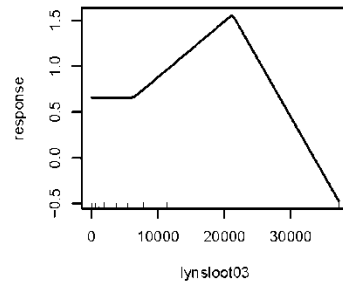
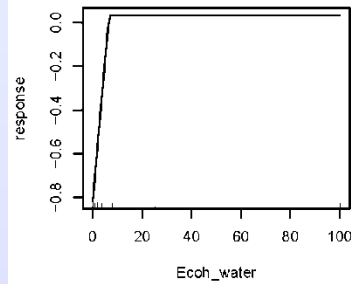
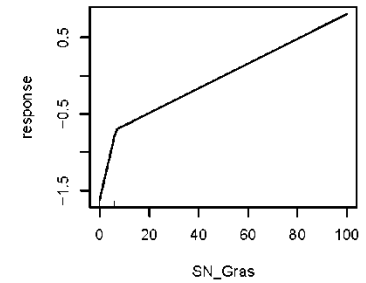
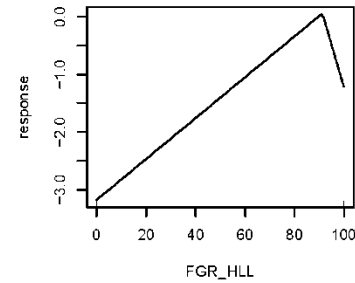
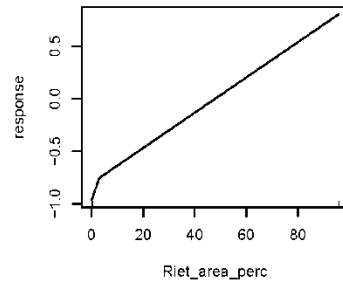
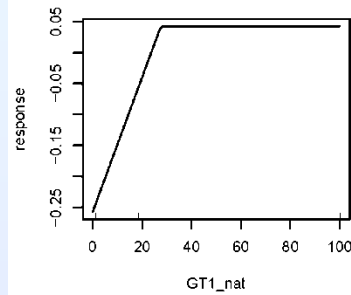


Variable contributions

Covariate	Relative importance %
Grassland	35.4
Water	11.7
Built-up areas	11.1
Heathland	9.3
Openness	7.8
Clay soil	6.4
Roads	4.3
Sandy soil	3.8
Arable land	2.8

Response curves

observed - page 1



Model quality

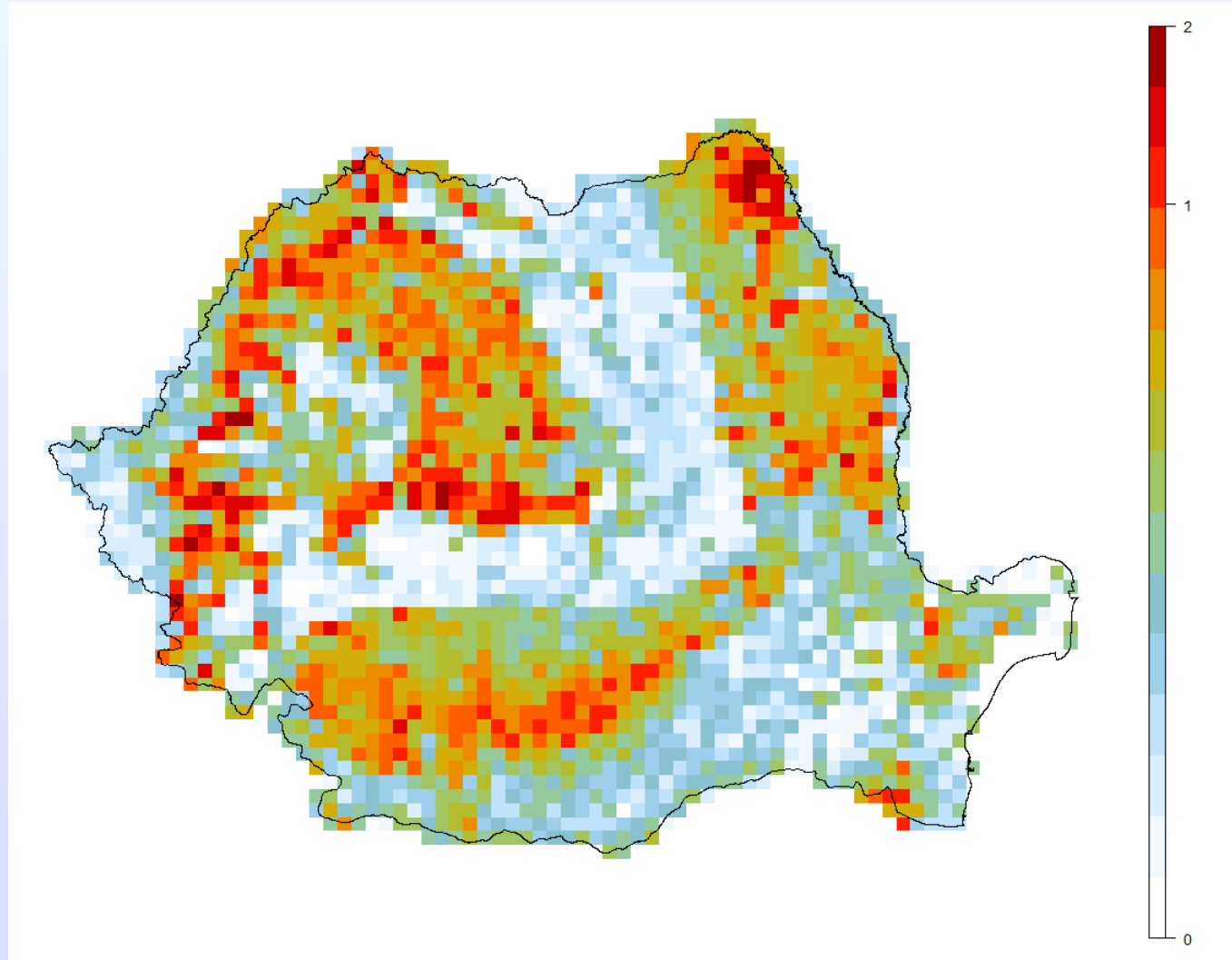
- Cross-validation
- QQ-plots, etc

Important remarks

- Bird observed \neq Birds present !
- Assumes minor influence of differences in detection probabilities between habitats
- Next steps: account for imperfect detection

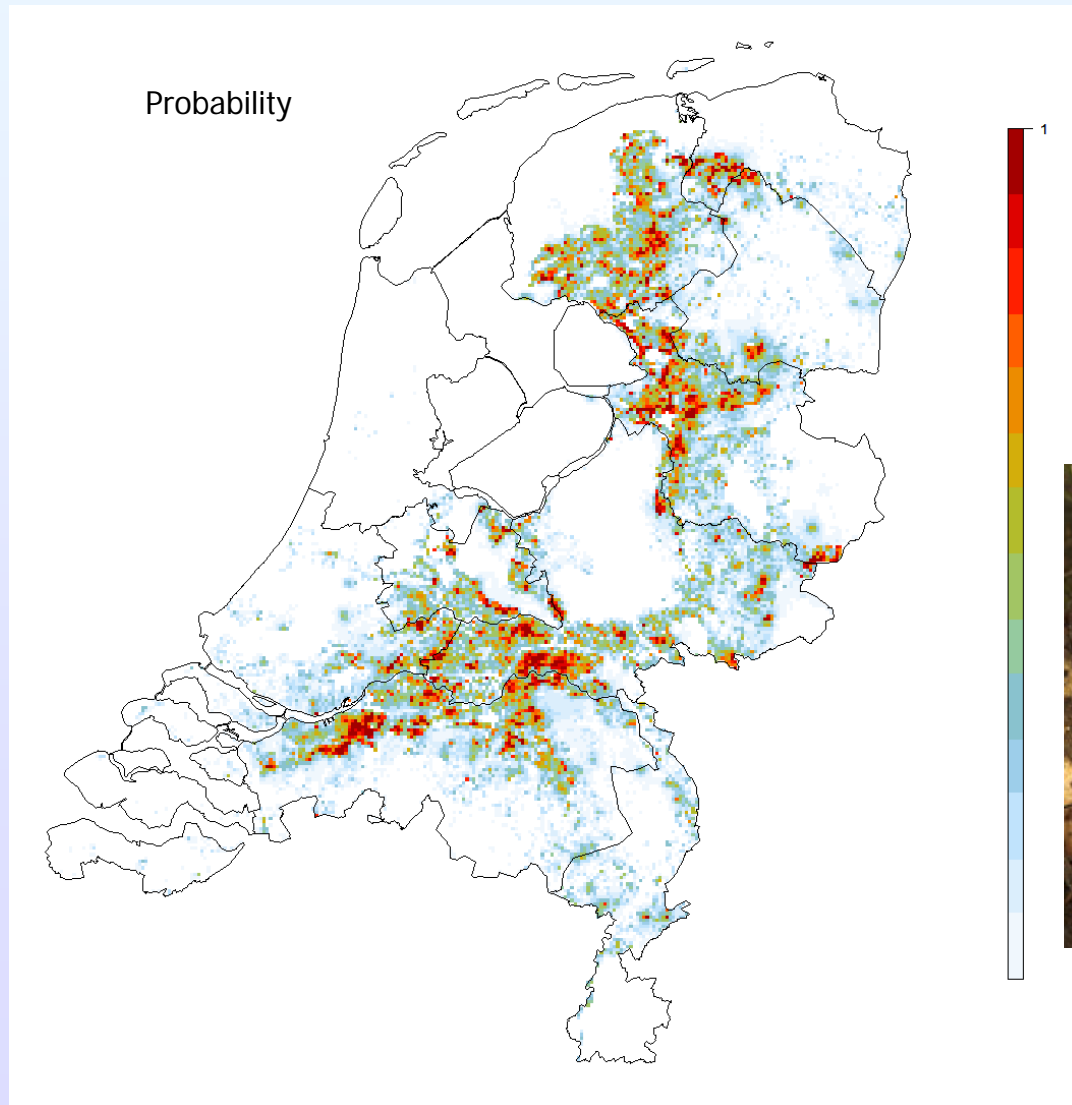
Applications of TRIMmaps

Red-backed Shrike (example 1)



Courtesy of Cristi Domsa, SOR

Probability map based on casual observations

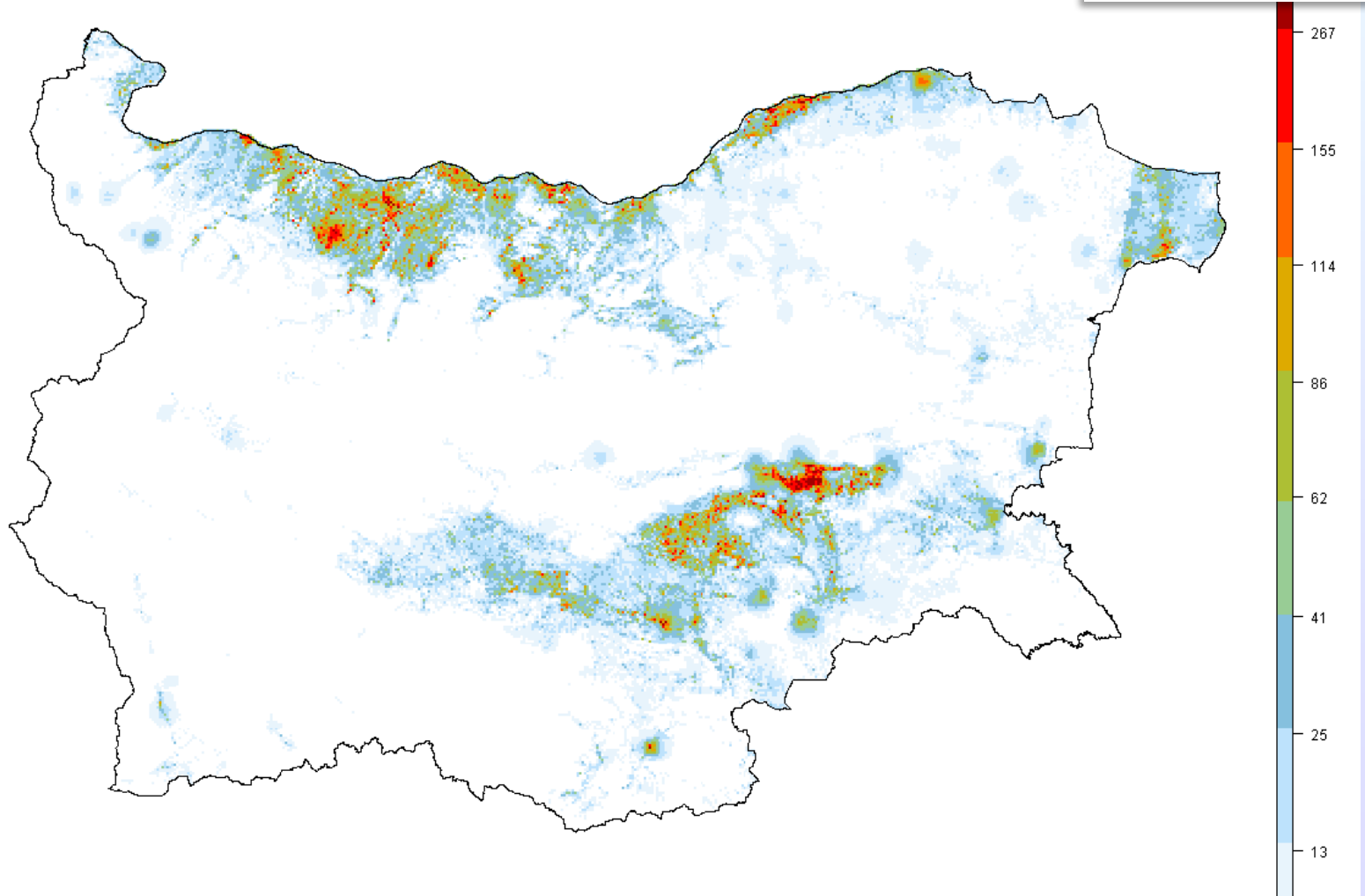


Weatherfish
Misgurnus fossilis



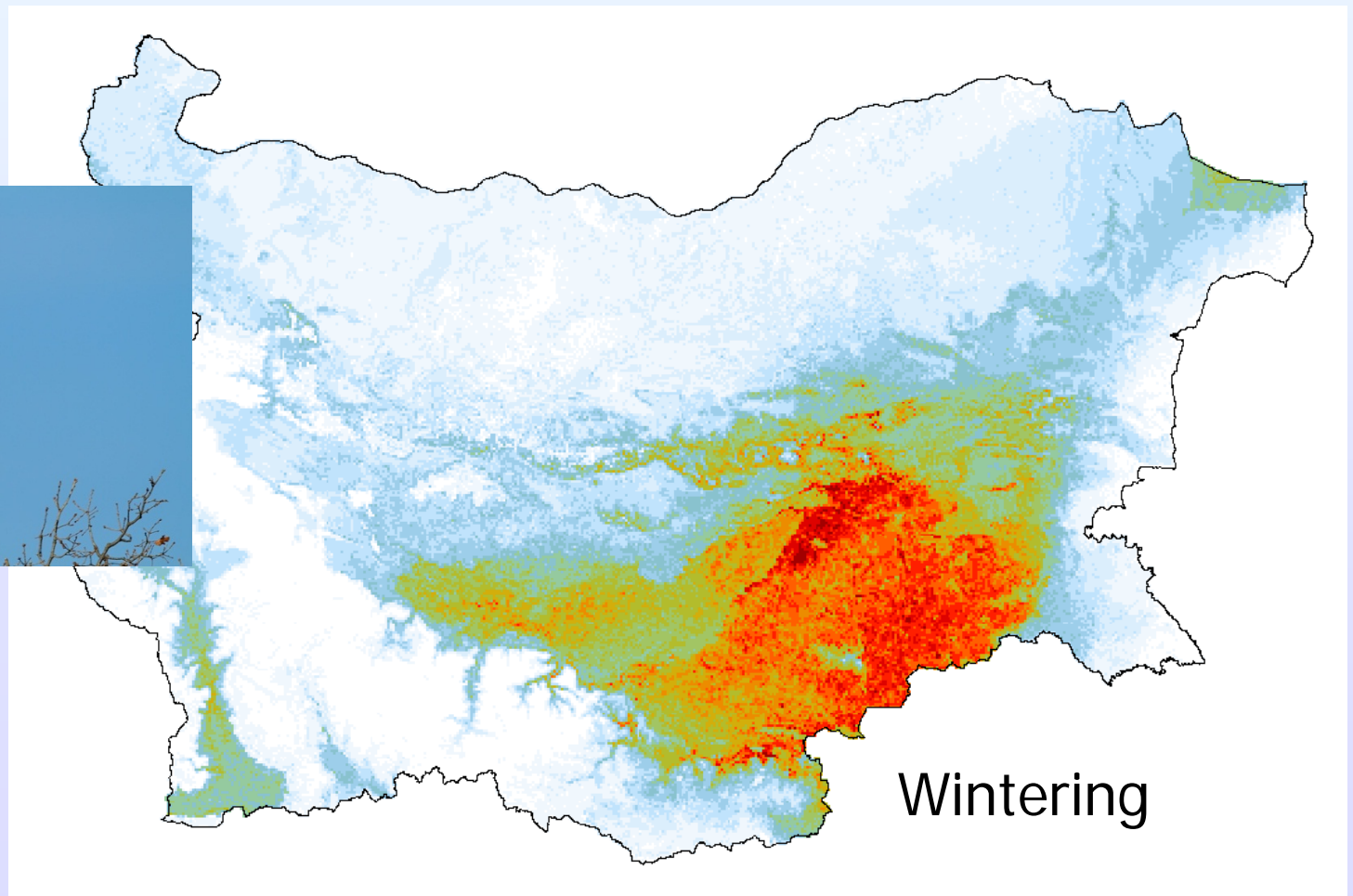
Combining monitoring data and casual observations

Roller Bulgaria



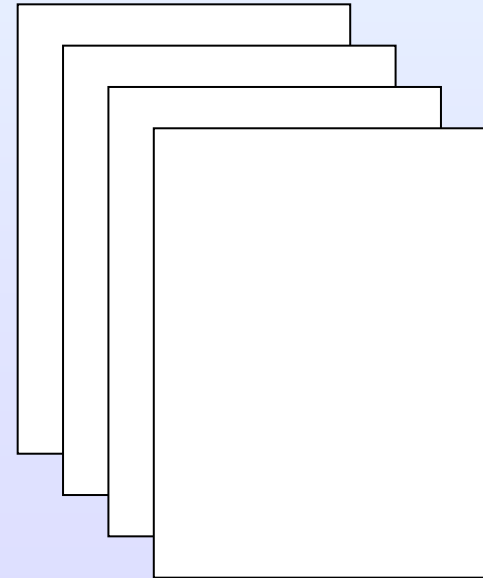
Example 2, courtesy of BSPB

Imperial eagle

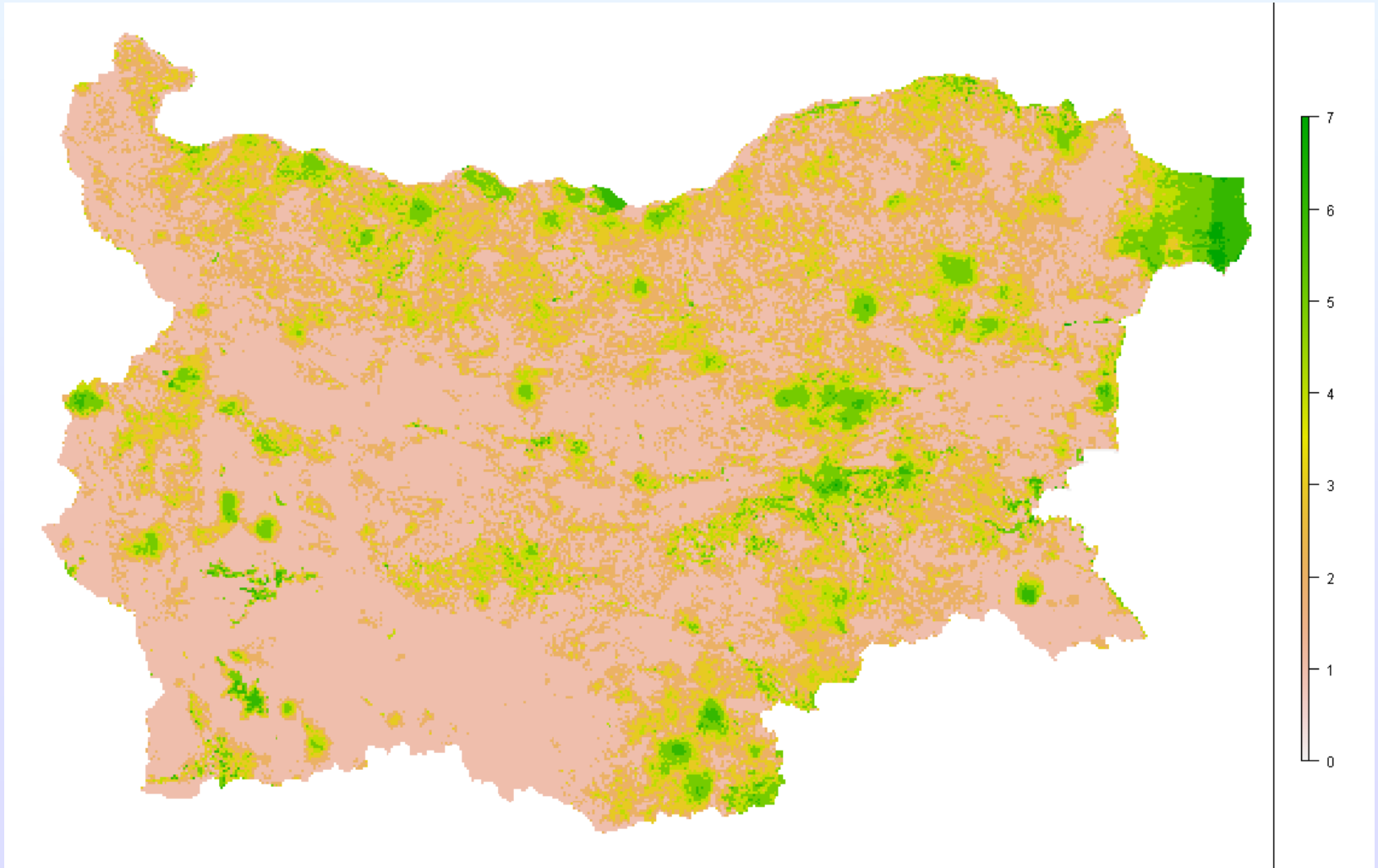


Wind farm riskmaps

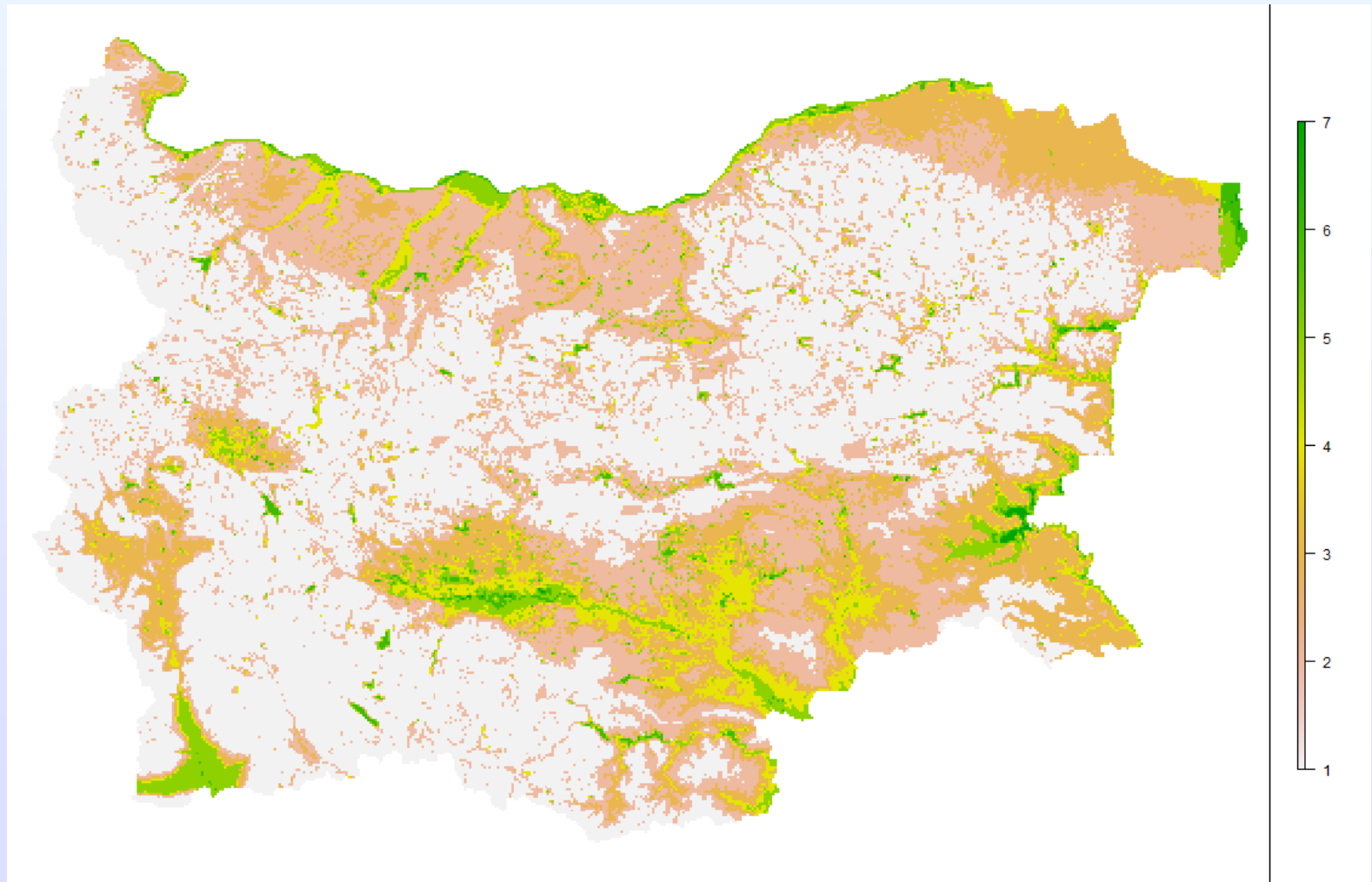
- Abundance maps for
 - Breeding birds
 - Wintering birds
 - Migrating birds



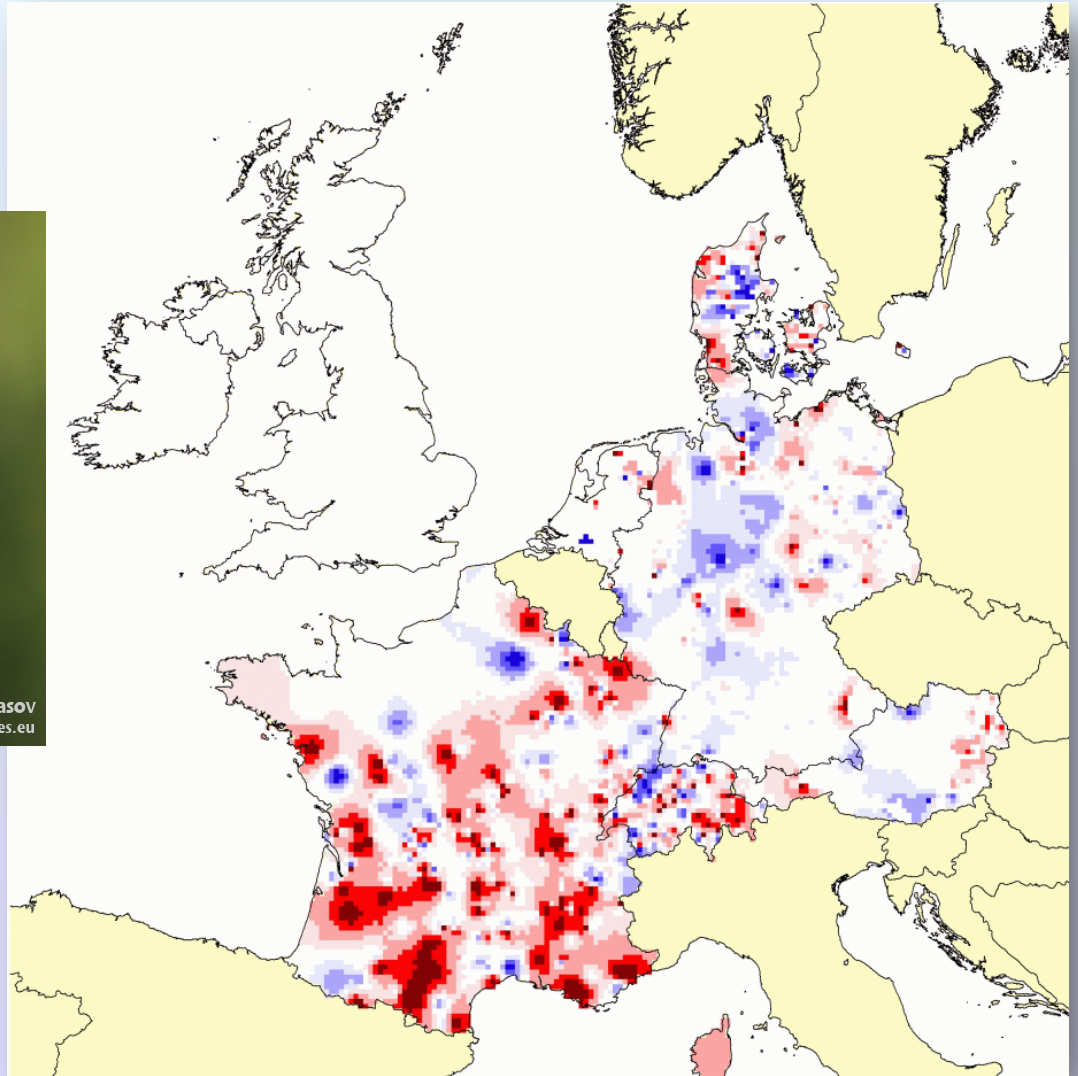
Riskmap breeding birds



Riskmap wintering birds



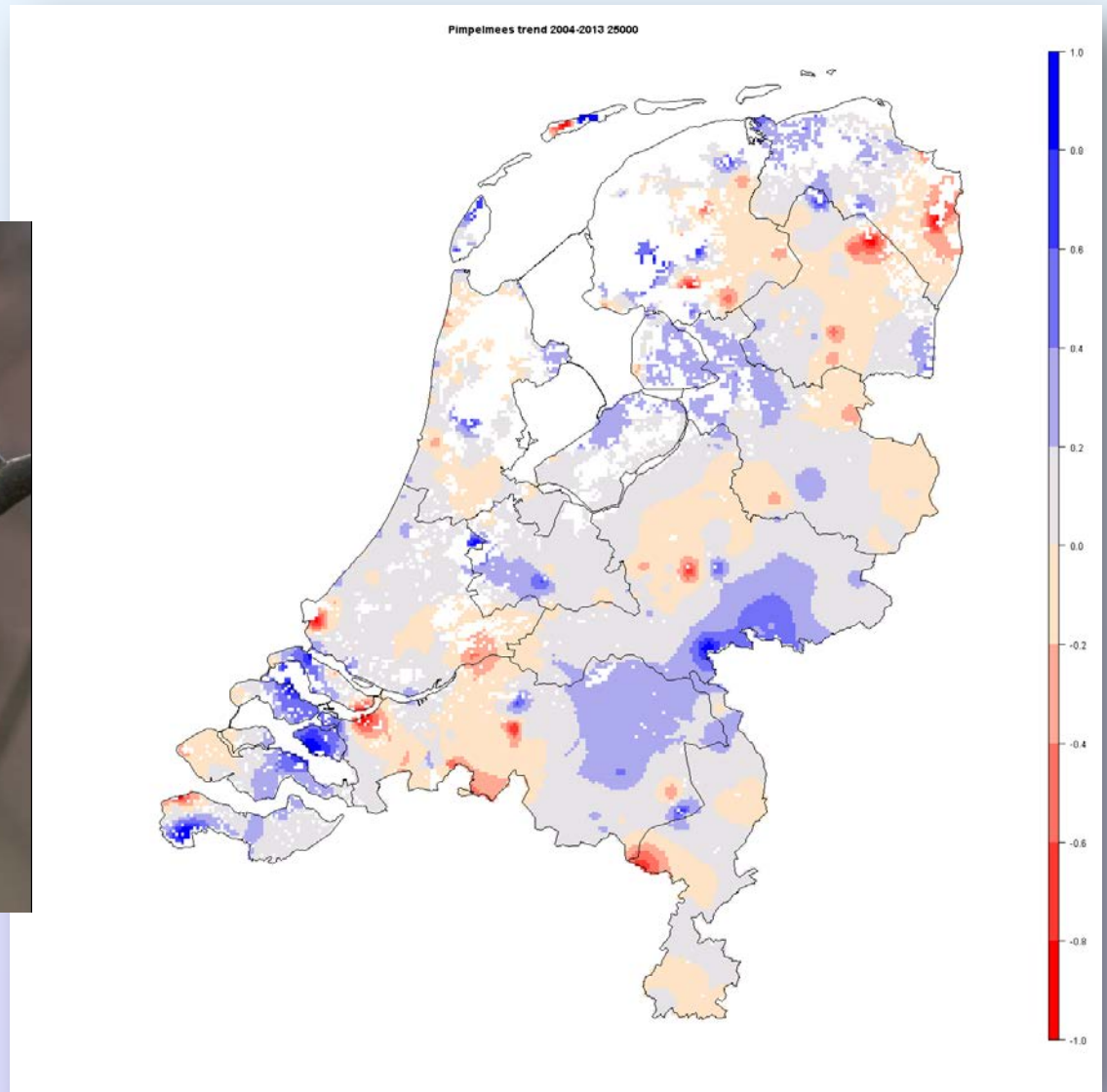
Spatial trends



Spatial trends



Saxifraga - Luc Hoogenstein
www.freenatureimages.eu



Inferring territory density maps from point counts: Dutch farmland birds

- 5 min point counts
- All observations mapped
- Automated clustering to territories
- Distance function per species
- Real density maps

Observations Yellow wagtail

Klaar met deze soort

Topografie

FL55
Gele Kwikstaart

3 stippen ingevoerd.

www.avimap.org



55 FL55 2011

Gele Kwikstaart 3 territoria



Territory map

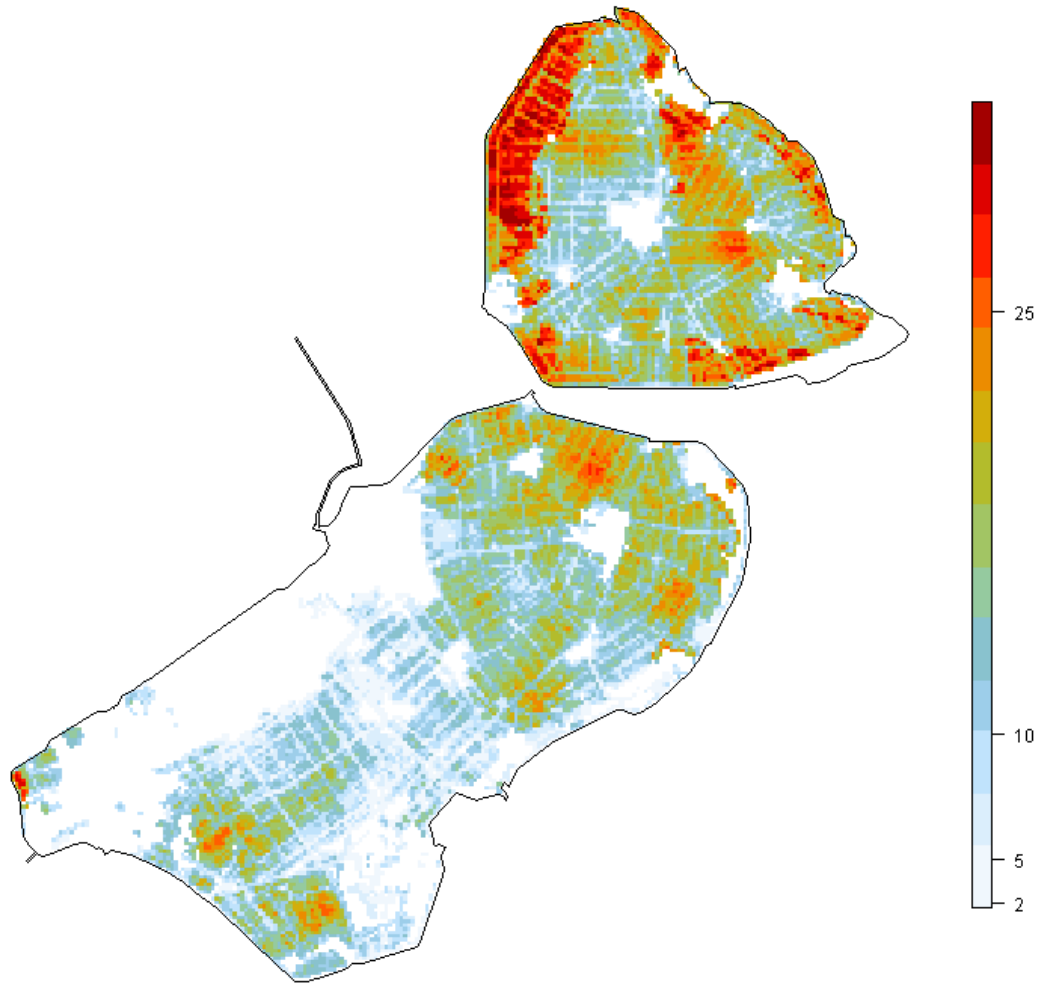
Yellow wagtail

created with automated clustering

www.avimap.org



Density map Yellow wagtail



Comparison with other R-packages

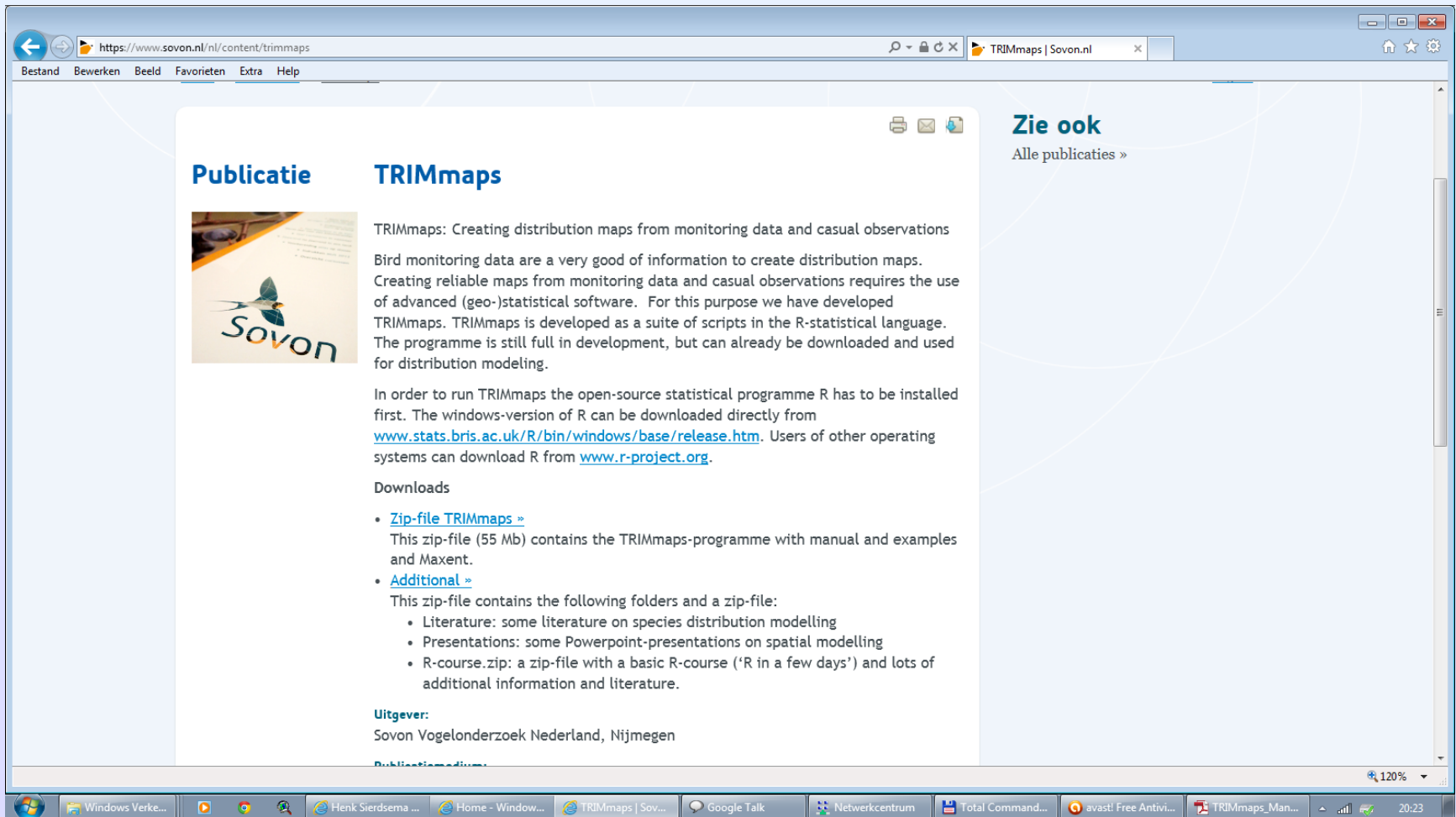
- BIOMOD: presence(-absence) modelling
- Dismo: also count data

Comparison with other R-packages

- Site-specific covariates
 - like buffer around point or transect
 - downscaling larger grids
- Account for spatial correlation in residuals
- Use TRIM-files for input


Download TRIMmaps

www.sovon.nl/nl/content/trimmaps



The screenshot shows a web browser window with the URL <https://www.sovon.nl/nl/content/trimmaps>. The page is titled "Publicatie TRIMmaps". On the left, there is a small image of a bird in flight with the word "Sovon" below it. The main text describes TRIMmaps as a software for creating distribution maps from monitoring data and casual observations. It mentions that the software is developed in R and is still in development. A "Downloads" section lists two items: "Zip-file TRIMmaps" (55 Mb) and "Additional" (a zip-file with literature, presentations, and an R-course). The publisher is listed as "Sovon Vogelonderzoek Nederland, Nijmegen". On the right side, there is a section titled "Zie ook" (See also) with a link to "Alle publicaties" (All publications). The browser's taskbar at the bottom shows several open applications, including "Windows Verke...", "Henk Sierdema...", "Home - Window...", "TRIMmaps | Sov...", "Google Talk", "Netwerkcentrum", "Total Command...", "avast! Free Antivi...", and "TRIMmaps_Man...". The system clock shows 20:23.

Publicatie **TRIMmaps**



TRIMmaps: Creating distribution maps from monitoring data and casual observations

Bird monitoring data are a very good of information to create distribution maps. Creating reliable maps from monitoring data and casual observations requires the use of advanced (geo-)statistical software. For this purpose we have developed TRIMmaps. TRIMmaps is developed as a suite of scripts in the R-statistical language. The programme is still full in development, but can already be downloaded and used for distribution modeling.

In order to run TRIMmaps the open-source statistical programme R has to be installed first. The windows-version of R can be downloaded directly from www.stats.bris.ac.uk/R/bin/windows/base/release.htm. Users of other operating systems can download R from www.r-project.org.

Downloads

- [Zip-file TRIMmaps »](#)
This zip-file (55 Mb) contains the TRIMmaps-programme with manual and examples and Maxent.
- [Additional »](#)
This zip-file contains the following folders and a zip-file:
 - Literature: some literature on species distribution modelling
 - Presentations: some Powerpoint-presentations on spatial modelling
 - R-course.zip: a zip-file with a basic R-course ('R in a few days') and lots of additional information and literature.

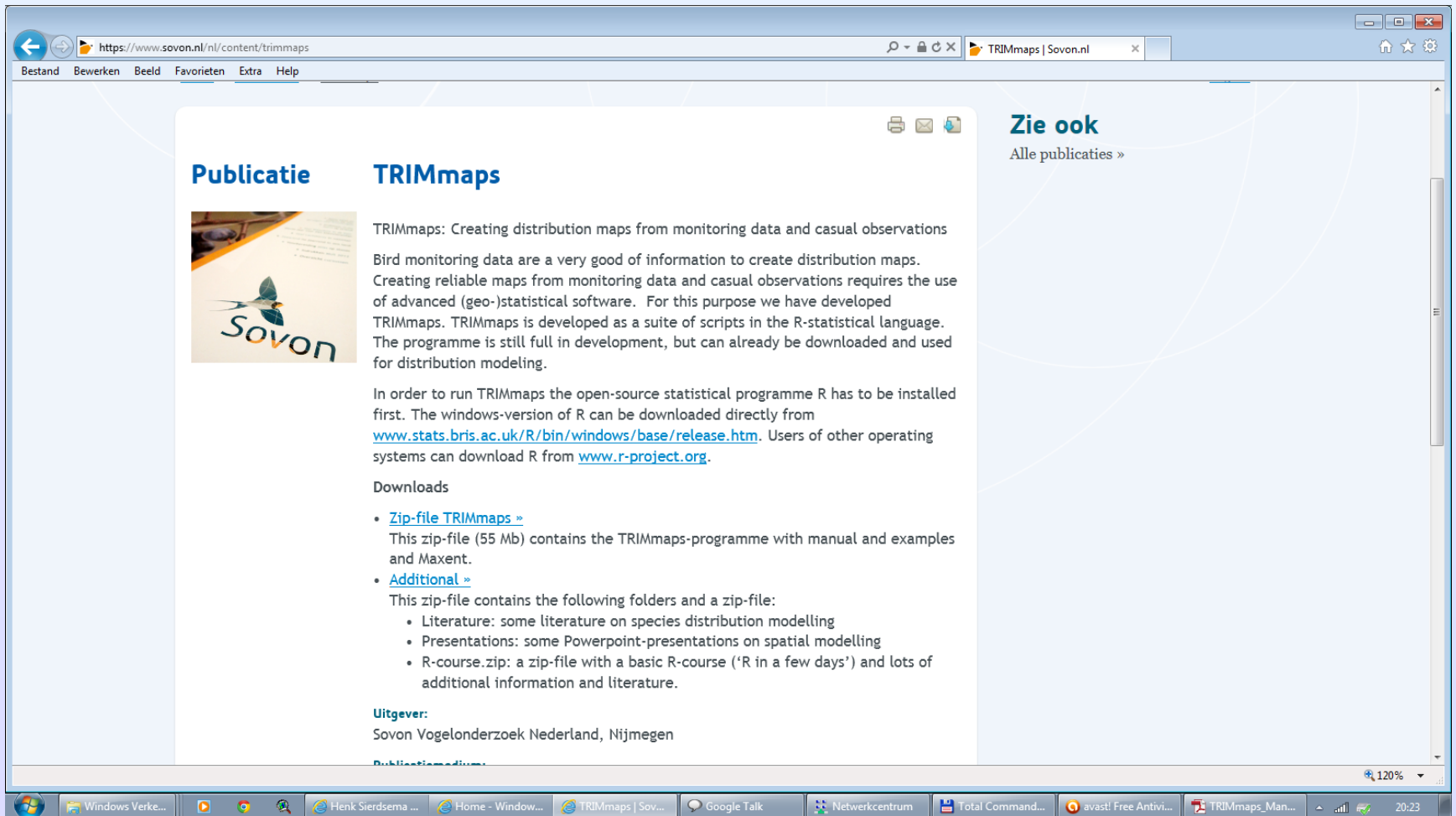
Uitgever:
Sovon Vogelonderzoek Nederland, Nijmegen

Publicatiemedium:

Zie ook
[Alle publicaties »](#)


Download TRIMmaps

or simply google 'trimmaps'



The screenshot shows a web browser window with the URL <https://www.sovon.nl/nl/content/trimmaps>. The browser's address bar and tabs are visible at the top. The website content is in Dutch and features a sidebar with a 'Publicatie' (Publication) section. The main content area is titled 'TRIMmaps' and describes the software's purpose: creating distribution maps from monitoring data and casual observations. It mentions that the software is developed in R and provides instructions on how to download and use it. A 'Downloads' section lists a zip-file (55 Mb) and additional resources like literature, presentations, and an R-course. The publisher is identified as 'Sovon Vogelonderzoek Nederland, Nijmegen'. The browser's taskbar at the bottom shows various open applications and the system clock.

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Uitgever:
Sovon Vogelonderzoek Nederland, Nijmegen

Publicatiemedium:

Zie ook
Alle publicaties »

Installing TRIMmaps

- Install R
- Install 64-bits Java manually!
- Run 'install_TRIMmaps.r'
- Check dependent packages with `firstLibraryStart()`
- That's it!

Thank you for your attention...

And we are happy to help
you with the use of TRIMmaps!

henk.sierdsema@sovon.nl

