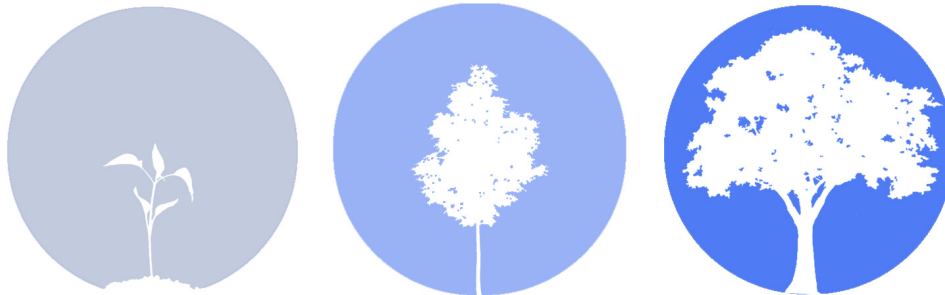# EMPOWERING
BIODIVERSITY RESEARCH

Report

May 21 2015

Introduction

There is a world of tools, standards and data out there, ready for you to use. Biodiversity Informatics deals with the application of informatics techniques to biodiversity information for improved management, presentation, discovery, exploration and analysis of scientific data. Combined with open data sources on the Internet, this is a powerful new approach in doing research. During this conference, organised by the Belgian Biodiversity Platform and several key institutes, we would like to take you on a trip to the world of biodiversity informatics & open data. After this conference a series of related workshops will be organized.

Narrative

On May 21st 2015, some 140 participants (biodiversity researchers, policy-makers and other stakeholders) gathered in the Palace of the Academies, in the centre of Brussels for the **"Empowering Biodiversity Research"** conference. This conference was organized by the Belgian Biodiversity Platform and several key institutes and universities in the field of Biodiversity Informatics, with the aim to inform on ongoing Biodiversity Informatics initiatives in Belgium and reinforce further collaboration amongst actors. Three keynotes kicked off the meeting.

During the first keynote, an introduction to the Belgian Biodiversity Informatics landscape was given by Hilde Eggermont, the scientific coordinator of the Belgian Biodiversity Platform. After that, Vince Smith of the Natural History Museum in London impressed us with a talk on the Future of Biodiversity Informatics, not only illustrating the current power of Biodiversity Informatics but also its future potential. Finally, the third keynote by Pieter Colpaert on the Controversy within publishing Open Data on the web was very convincing on the benefits of Open (biodiversity) Data.
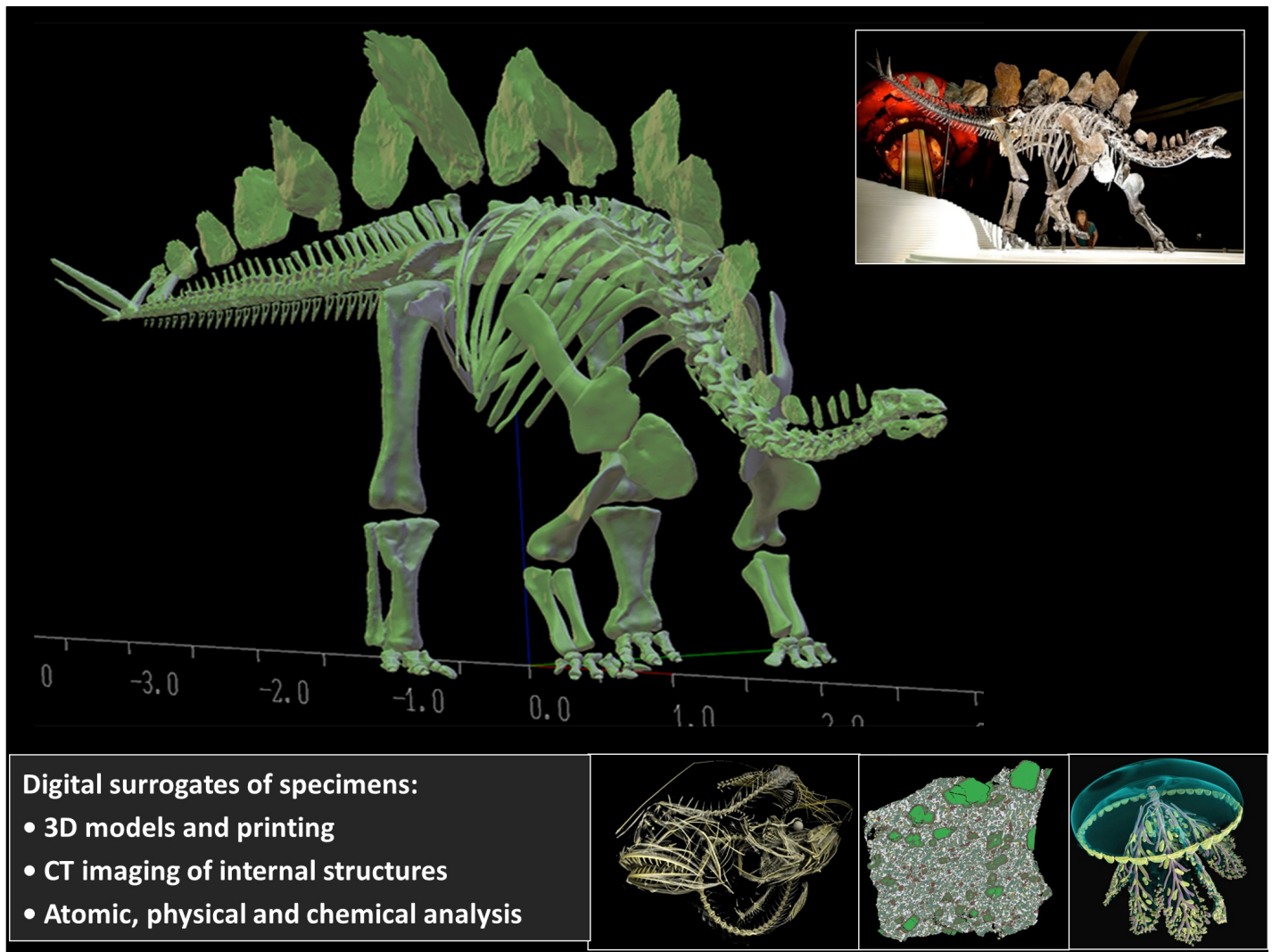
Digital surrogates of specimens:
- 3D models and printing
- CT imaging of internal structures
- Atomic, physical and chemical analysis
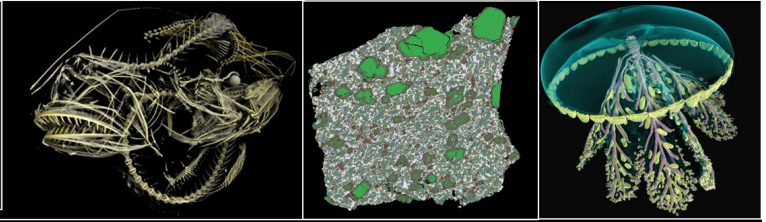
After a small panel discussion with the keynote speakers, the audience prepared for the Biodiversity Informatics Fair, set up as some kind of a market place where several key Biodiversity Informatics initiatives were presented. The poster session organized during this fair was also well appreciated by the attendees. Very impressive during the fair was the Belgian Lifewatch stand and the stand of the Botanic garden Meise, even decorated with living plants. Together with other stands from the Africamuseum, RBINS, Avia-Gis, the Platform and the Belgian Open Knowledge foundation, they gave a pretty good picture of ongoing Biodiversity Informatics initiatives in Belgium. Similarly, initiatives like CETAF, Synthesis, GBIF, TDWG and many others were all put in the spotlights.

In the subsequent plenary session, there was time for a series of lightning talks during which selected Biodiversity Initiatives were presented in a quick, insightful, and clear manner. After a nice lunch in the Atrium of the Palace of the Academies, surrounded by Posters and informative market stands, the participants returned to the plenary for an information session on the post conference workshops which will be organized by the different partners on selected topics. Last but not least, there were five Belgian Biodiversity Informatics showcases: i.e. on Bird tracking, remote sensing, the Lifewatch taxonomic backbone, Antarctic biodiversity and legacy literature which all gave very insightful views on the power of Biodiversity Informatics! To conclude, we really enjoyed this fun-filled and informative day in the Palace of the Academies and sincerely hope that it helped to empower biodiversity research in Belgium. Clearly, this is just the start! We would also like to thank our partners for co-organizing this conference. Without their support, organizing this great day would not have been possible. Registration for the workshops and all the presentations are available on the conference website www.biodiversity.be/conference2015.

Scientific Advisory Committee & cooperation

The Empowering Biodiversity Research conference was organized in cooperation with most of the Belgian key players in the Biodiversity Informatics field. The members of the "scientific advisory committee" the so called SAC are listed below.

Institute| Name| --------|----- | Research Institute for Nature and Forest |Peter Desmet Botanic Garden Meise| Henry Engledow Royal Museum of Central Africa |Patricia Mergen Université catholique de Louvain |Julien Radoux Botanic Garden Meise| Quentin Groom Université Libre de Bruxelles| Bruno Danis Flanders Marine Institute| Stefanie de Keyser Flanders Marine Institute |Klaas Deneudt Royal Belgian Institute for Natural Sciences |Aaike De Wever Royal Belgian Institute for Natural Sciences| Anton Van De Putte Belgian Biodiversity Platform |Hilde Eggermont Belspo |Aline Van der Werf Belgian Biodiversity Platform |André Heughebaert Gembloux Agro Bio-tech| Jessica Delangre

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Program

Time |Topic |Speaker |Affiliation -------|------|-------|-------| 09:00 (30m)| Registration & poster setup & coffee 09:30 (10m)| Introduction & welcome |Aline Van Der Werf |Belspo |Keynotes (moderator: Aaike De Wever) | 09:40 (25m)| Keynote 1: The Belgian Biodiversity Informatics landscape |Hilde Eggermont| Belgian Biodiversity Platform 10:05 (35m)| Keynote 2: The future of Biodiversity Informatics |Vince Smith |Natural History Museum, London 10:40 (20m)| Coffee break + poster setup | 11:00 (30m)| Keynote 3: The controversy within publishing data on the open Web |Pieter Colpaert |Open Knowledge Belgium 11:30 (20m)| Discussion | Lightning talks (moderator Quentin Groom)| 11:50 (40m) |6 Lightning talks| |Detection of invasive plant species and assessment of their impact on ecosystem properties through remote sensing - the DIARS project (Ruben Van De Kerchove; VITO) |BeBoL: the Belgian network for DNA barcoding (Nathalie Smitz; RMCA) |A soundscape study using wildlife acoustic indicators (Juliette Florentin; UMONS) |INBOVEG, a treasury of vegetation relevés (Els De Bie; INBO) |Use of open access data to describe Southern Ocean Asteroidea biogeography (Camille Moreaux; ULB) |Combining remote sensing and ancillary data to improve species distribution models (Jessica Delangre; Ulg)| 12:30 |Lunch + Biodiversity Fair & Posters | Afternoon|

Time |Topic |Speaker |Affiliation -------|------|-------|-------| 14:00 (20m)| Information session on workshops |Quentin Groom |Botanic garden Meise Showcases (moderator: Patricia mergen) | 14:20 (20m) | Showcase 1: Fly, my pretties, fly! Exploring, visualizing and publishing bird tracking data. |Peter Desmet |INBO 14:40 (20m)|Showcase 2: Putting rare animal occurrences into context with remote sensing time series from Lifewatch. |Julien Radoux|UcL 15:00 (20m) |Showcase 3: Services and databases for species taxonomy, distribution and traits in the framework of a Taxonomic Backbone for LifeWatch |Klaas Deneudt |VLIZ 15:20 (20m)| Coffee break + Biodiversity Fair & Posters 15:40 (20m)| Showcase 4:Exploring Antarctic biodiversity data |Anton Van de Putte |RBINS 16:00 (20m)| Showcase 5: Putting life back into biodiversity literature| Quentin Groom |Botanic garden Meise 16:20 (10m) |Closing 16:30 (60m) | Networking event + Biodiversity Fair

Facts and Figures

Venue: Palace of the Academies **Rooms:** Auditorium Albert II and The Atrium **Actual participants:*** 141 **Number of market stands:** 9

Financial

Foreseen:

|Price (€ EURO) |INBO |Belspo -----|-----| Venue |2.000 | 2.000 |--- Travel & Hotel Keynote speaker| 500 |--| 500 Catering (welcome, coffee, lunch) |2500| --|2500 Biodiversity Market |1000|--| 1000 Networking Event| 1000 |1000|-- Minsc |1000|-- | 1.000 Total |7500|3000 | 4500

Actual:

|Price (€ EURO) |INBO |Belspo -----|-----| Venue |2.000 | 2.000 |--- Travel & Hotel Keynote speaker| 402 |--| 402 Catering (welcome, coffee,lunch, networking event) |4087| --|4087 Biodiversity Market |616,43|--| 616,43 Networking Event| 0 |0|-- Minsc |52| 52 | -- Total |7157|2052 | 5105
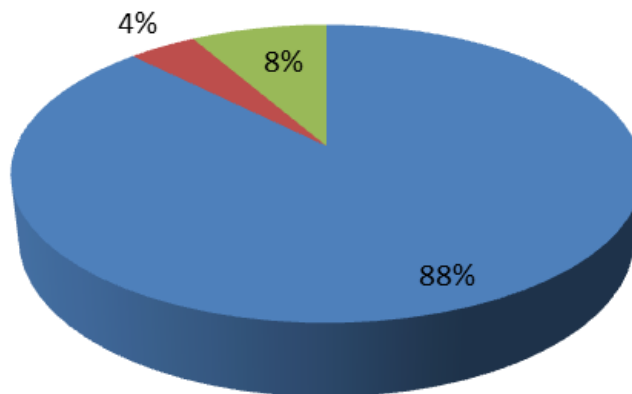
Evaluation

Informative quality and appropriateness of the keynote speakers' presentations
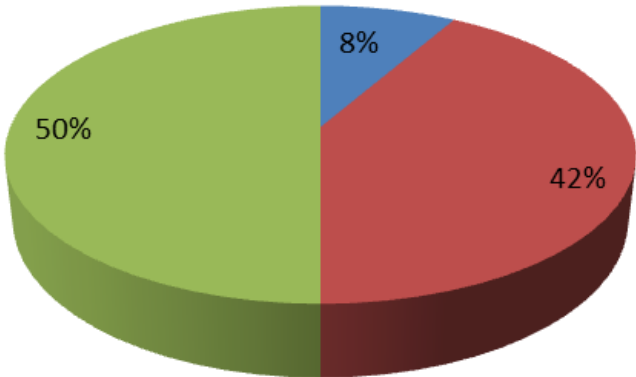
- Acceptable
- Exellent
- Rather good

4%

29%

67%
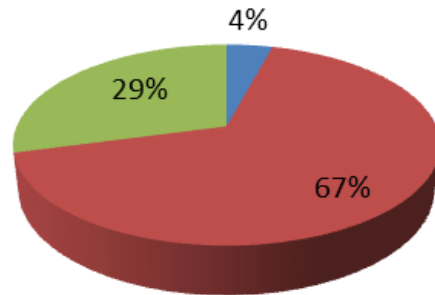
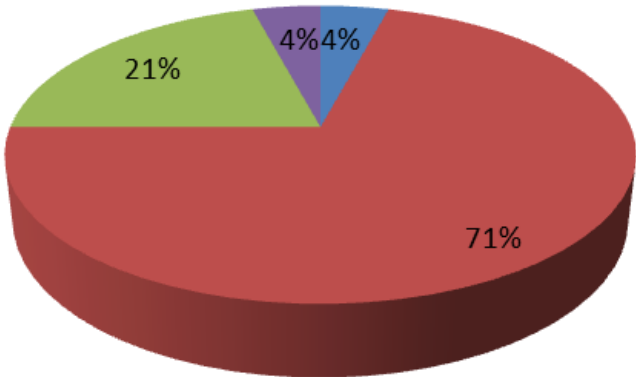## Registration desk efficiency

- Exellent
- Poor
- Rather good

4%

8%

88%

Food & Drinks

Acceptable ■ Exellent ■ Rather good ■

8%

42%

50%

The venue

Acceptable ■ Exellent ■ Rather good ■ (blank) ■

4%4%

21%

71%

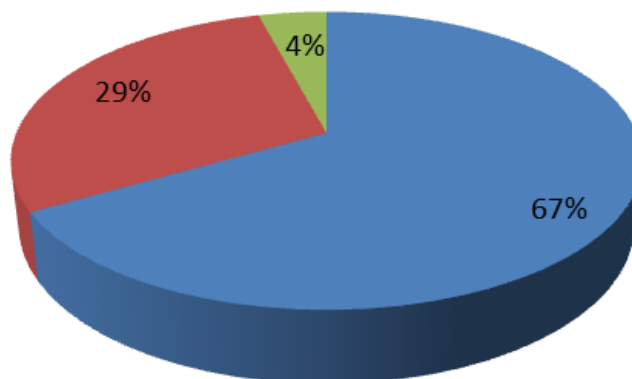## Quality of the plenary sessions
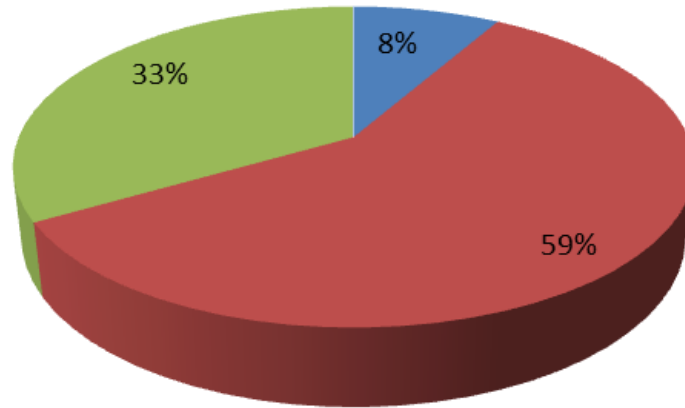
■ Exellent ■ Rather good

46%

54%
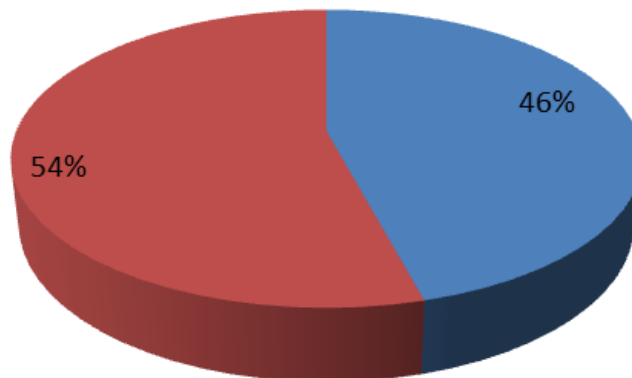
Programm & proceedings of the day

■ Exellent ■ Rather good ■ (blank)

4%

29%

67%

Communication on the post conference activities

■ Acceptable ■ Exellent ■ Rather good

8%
33%
59%

Overall, the conference was evaluated very positive and find to be worthwhile. One point made in an evaluation was that the "showcases" had to be more interactive. And more explanatory. If there is a next Belgian Biodiversity Informatics conference we should keep this in mind.

Conference Follow up.

We will not publish any proceedings of the conference. The goal of the conference is to get scientists together in Belgium in the field of Biodiversity informatics. In 3-5 years, when all the presented projects have nice results, the platform cold eventually organize a follow up conference.

After conference workshops.

Later this year, a series of workshops will be organized related to the conference theme and under the conference logo. The workshops are primarily organized by the institutions who host the workshops.

Data Carpentry Workshop Data Carpentry is a is a non-profit organization whose members teach researchers basic software skills. They are a sister organization to the well known Software Carpentry. In many fields a lack of data and computer processing time is not the greatest limitation to generating results. A bigger problem is efficiently handling all these data and applying powerful statistical techniques. The goal of this course is to make researchers more effective and productive. The syllabus is for scientists with little to no prior knowledge of programming, shell scripting, or command line tools.

Some of the skills that are taught are...

How to use spreadsheet programs (such as Excel) more effectively and what are they not good for. Getting data out of spreadsheets and into more powerful tools using R or Python. Using databases, including managing and querying data in SQL. Workflows and automating repetitive tasks, in particular using the command line shell and shell scripts. Practicalities:

Organizer: Botanic Garden Meise Duration: Two days Participants: max 30 Venue: BELSPO Date: 2nd-3rd November 2015.Price: to be determined

Contact: Quentin Groom

Data Cleaning and Data Publication workshop GBIF or the Global Biodiversity Information Facility is an international open data infrastructure, funded by governments. It allows anyone, anywhere to access biodiversity data about all types of life on Earth, shared across national boundaries via the Internet.

During this hands-on workshop we will dig into the process of data cleaning by using OpenRefine and the publication of biodiversity data on the GBIF network. We will familiarize with the GBIF network and the Darwin Core standard, a standard used by GBIF for sharing biodiversity data. We will standardize our biodiversity data and learn to use the Integrated Publishing Toolkit (IPT) to map and create Darwin Core-Archives and publish

our data online. We will also have a look at the recent developed ideas on publishing sample based data through the IPT. Off course we will spend some time on why we should publish under CC0 (Creative commons Open data waiver) and the importance of metadata in biodiversity datasets.

Some of the skills that are taught are...

How to use the Integrated Publishing Toolkit Basic OpenRefine skills Standardizing your data to the Darwin Core standard Basic metadata Work with Darwin Core -Archives How to use the GBIF portal Practicalities:

Organizer: Belgian Biodiversity Platform, INBO, RBINS & RMCA Duration: One day Participants: max 15 Venue: Belspo, Brussels Date: November 09 (2015) Price: 10€

Use this form to register

Contact: Dimitri Brosens

Data Paper workshop A data paper is a searchable metadata document, describing a particular dataset or a group of datasets, published in the form of a peer-reviewed article in a scholarly journal. The primary purpose of a data paper is to describe data and the circumstances of their collection, rather than to report hypotheses and conclusions. A datapaper is a mean of bringing credit and recognition to all those involved in data publication and to alert the scientific community to the existence of biodiversity datasets and the value they can bring to particular research projects and as a mechanism for quality assessment and control of data accessible through GBIF and other networks.

During this hands-on workshop we will continue the work we did on the data publication and extend the metadata in a scholary publication which later can be submitted to scientific Journals like Zookeys, Phytokeys, Biodiversity Data Journal or Nature Scientific Data. .

Some of the skills that are taught are...

Writing a data paper Use of the Pensoft writing tool The use of Github, google.doc for datapapers Practicalities:

Organizer: Belgian Biodiversity Platform & INBO Duration: One day Participants: max 15 Venue: Belspo, Brussels Date: November 13 (2015) Price: 10€

Note: It is advised that you followed the Data Publication and Cleaning workshop, or already published data on the GBIF network when you participate to this workshop

Use this form to register

Contact: Dimitri Brosens

GIS and WebGIS Workshop Lifewatch is the European Infrastructure for biodiversity research. Belgium is contributing to Lifewatch through several in kind projects. One of those projects consists in building rich geographic database based on remote sensing and GIS analysis. Getting a grip on large geographic datasets is indeed a time consuming task for building valuable ecological models. The goal of this course is to learn how to manipulate the Lifewatch geographic datasets with open source GIS and WebGIS software.

Some of the skills that are taught are...

Introduction to QGIS How to extract information from vector and raster datasets Building a simple suitability map based on Lifewatch dataset Using spatial queries to identify observation outliers Displaying data on the Web with CartoDB Practicalities:

Organizers: Université catholique de Louvain & INBO Duration: Three days Participants: max 25 Venue: Louvain-la-Neuve Date:September 14-15-16 (2015) Price: to be determined €

Use this form to register

Contact: Julien Radoux

Data analysis workshop Biodiversity data preparation and analysis using LifeWatch virtual labs and web services LifeWatch is building an European infrastructure (http://lifewatch.eu) to support biodiversity research and ecosystem studies. Within the envisaged e-infrastructure of LifeWatch, data exchange and data analysis are largely based on the use of web services. Building on the LifeWatch Taxonomic Backbone (http://lifewatch.be/en/taxonomic_backbone), a growing number of these web services is being set up. Workflows or Virtual Labs are being developed making use of these services to automate recurring data preparation and analysis tasks. The goal of this course is to get researchers introduced with the advantages of using web services, get acquainted with existing Virtual Labs and workflows and build their own workflows on top of the available services.

Some of the skills that are taught are...

Retrieving and working with web services (REST, OGC WMS/WFS, Biodiversity catalogue, GeoNetwork, etc.) Biodiversity data standardization and quality control (taxon matching, geographic quality control, etc.) Building analysis workflows in R, Taverna, LifeWatch e-lab (http://lifewatch.be/en/e-lab), etc. Organizers: VLIZ-Flanders Marine Institute Duration: one and a half - two days Venue: Oostende Date: November 26-27 (2015) Price: free

Use this form to register

Contact: Klaas Deneudt

Species Distribution modelling workshop Correlative distribution models are useful tools for a variety of biological applications including the identification of biodiversity hotspots, the design of ecological networks, the monitoring of animal and vegetal populations, the selection of suitable sites for species reintroductions or habitat restoration, the management of invasive species and the prediction of climate change impacts. In this workshop, the whole process of species distribution modelling will be reviewed, from data preparation to model evaluation. Several modelling algorithms will be tested and compared, using the BIOMOD package implemented in R.

Some of the skills that are taught are...

Species distribution modelling R The use of the BIOMOD package in R Organisers: Dirk Maes (INBO), Jessica Delangre (Ulg), Julien Radoux (UcL), Marc Dufrêne(Ulg) Duration: 3 days Venue: Louvain-la-Neuve Data: September 21- 23 (2015) Price: free

Use this form to register

Contact: Jessica Delangre