

# Showcases reuse of data

- Trend towards open access data
- The Library supports this: re-use is made easier
- Many pro's and con's
- We show cases of what could happen with your data when you share it

Tessa Pronk,  
Data- and informationspecialist,  
Utrecht University Library

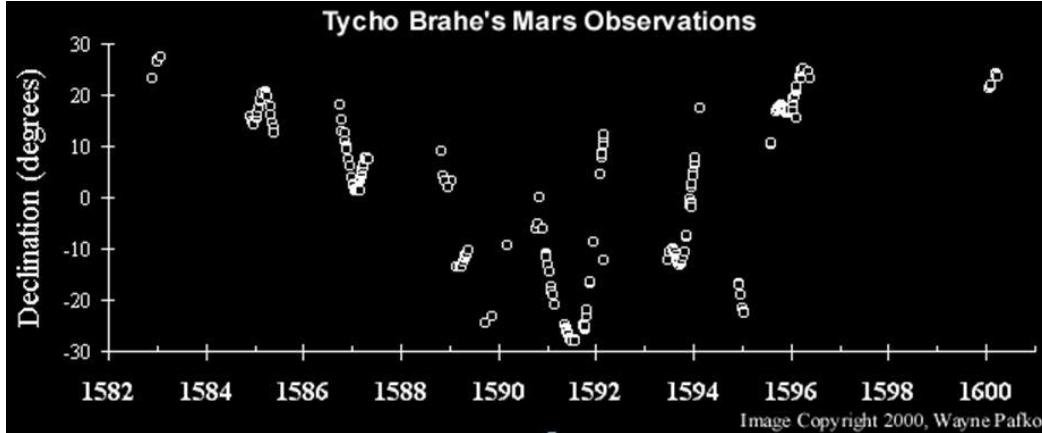
# Ways to share your data

- Sending a file to a colleague
- Online file sharing services with peers (DropBox, SharePoint, ...)
- Put your files on your (institutional) web page
- Submit your data to the journal, along with an associated publication
- Preserving the data in data centers or repositories
- Publish your data in a data journal

# Benefits of data sharing

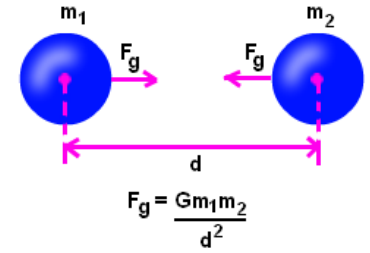
- Benefits for Society: Revolutionary findings
- Benefits for YOU: co-authorship
- Benefits for YOU: extra citations
- Benefits for YOU: increased impact in more scholarly domains
- Benefits for YOU: openness can give you new information back
- Benefits for fellow researchers: combine data for new insights
- Benefits for fellow researchers: reduce time for fact-finding
- Benefits for fellow researchers: reduce costs for data gathering

# Share your data: it could have a revolutionary impact on society



*Observationes Jovianae*  
1610

20. Jovis march. 12	○ **
30. marc'	** ○ *
2. Jov.	○ ** *
3. marc'	○ * *
3. Ho. s.	* ○ *
7. marc'	* ○ **
6. marc'	** ○ *
8. marc' H. 13.	* * * ○
10. marc'	* * * ○ *
11.	* * ○ *
12. H. 7. regg.	* ○ *
13. marc'	* * ○ *
14. Jovis.	* * * ○ *

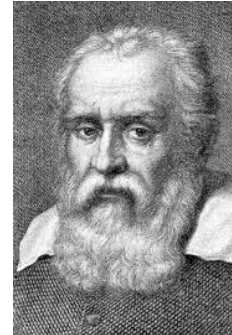


**1582–1600:** Tycho Brahe collects extensive data on the position of planet Mars.

**1605:** based on Brahe's data, Johannes Kepler infers three laws of planetary motion.

**1610:** Galileo publishes observations of the moons of Jupiter: earth may not be the center of the universe.

**1687:** Newton publishes the law of universal gravitation, based partly on above observations.



# Share data on invitation: gain co-authorship

“Our discovery sample comprised 17 cohorts of European ancestry from whom genome-wide SNPs and structural MRI data were collected”

560 VOLUME 44 | NUMBER 5 | MAY 2012 Nature Genetics

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# Share your data: get a citation benefit

- Piwowar and Vision (2013) collected citation information on 10,555 studies that described wet-lab methods related to microarray gene expression data collection either
  - With data deposited in GEO or ArrayExpress
  - Without data deposited there
- Correct for factors of known citation predictors

Citations were 9% higher for papers with available data, independent of other variables

Piwowar and Vision (2013): Data reuse and the open data citation advantage, PeerJ 1:e175; DOI 10.7717/peerj.175

EMBL-EBI  Services Research Training About us

 **ArrayExpress**   Examples: E-MEXP-31, cancer, p53, Geuvadis

Home Experiments Arrays Submit Help About ArrayExpress Feedback Login

ArrayExpress > Search results for "toxicogenomics"

## ArrayExpress results for *toxicogenomics*

[+ Show more data from EMBL-EBI](#)

Filter experiments

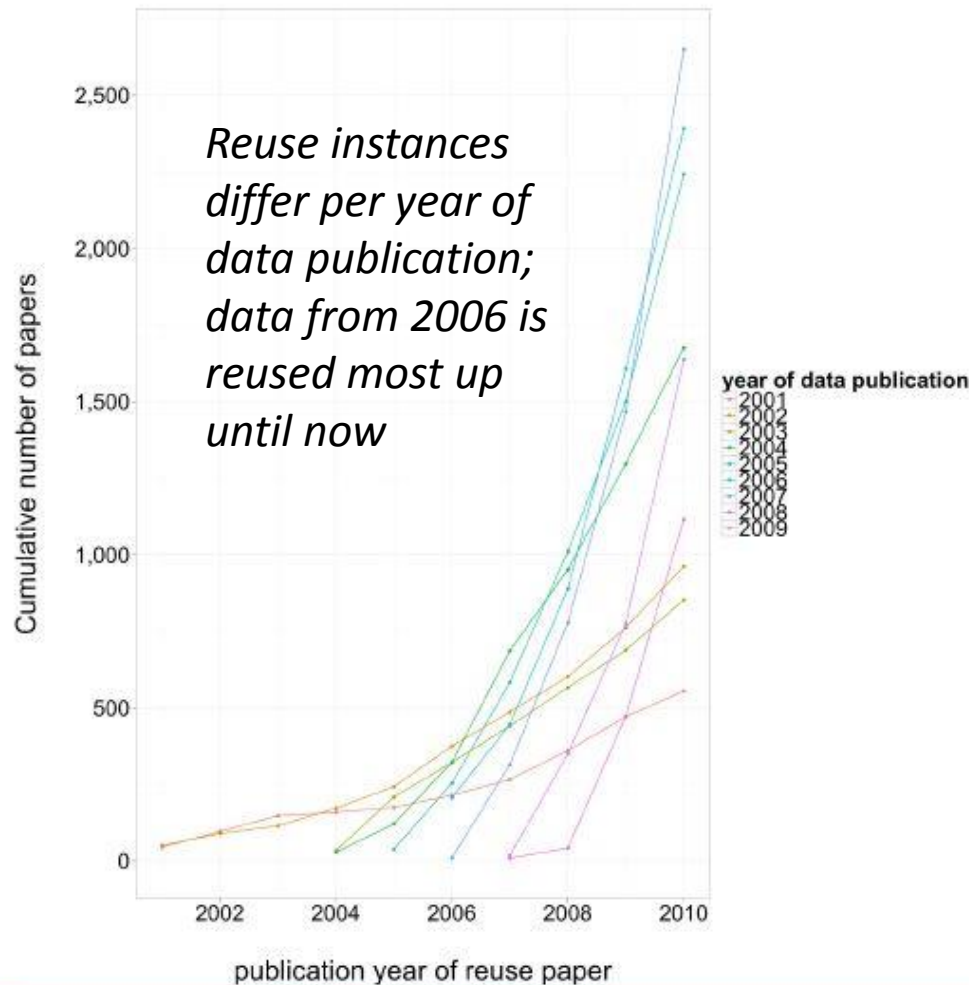
By organism:  By array:  By experiment type:

ArrayExpress data only

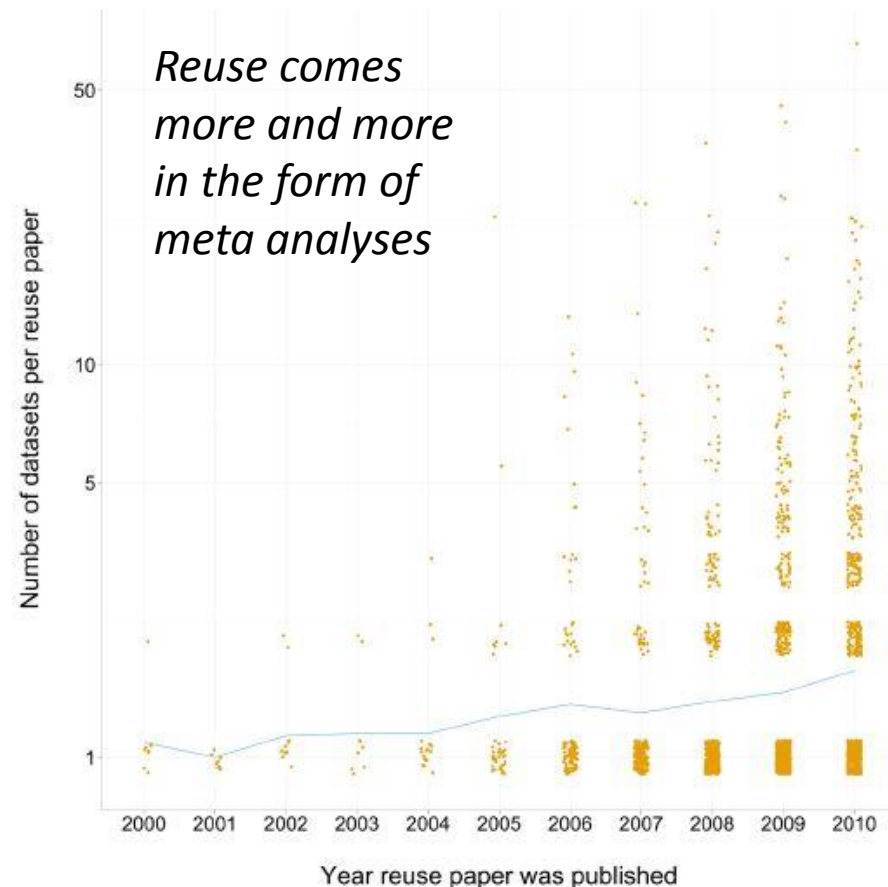
Page [1](#) [2](#) [3](#) Showing [1 - 25](#) of [71](#) experiments Page size [25](#) [50](#) [100](#) [250](#) [500](#)

Accession	Title	Type	Organism	Assays	Released	Processed	Raw	Atlas
<a href="#">E-GEOD-44603</a>	A global toxicogenomic analysis investigating the mechanistic differences between tobacco and marijuana smoke condensates in vitro	transcription profiling by array	Mus musculus	67	06/02/2014	<a href="#">↓</a>	<a href="#">🔗</a>	-
<a href="#">E-GEOD-54121</a>	A rat <b>toxicogenomics</b> study with Calcium Sensitizer EMD 82571 reveals a pleiotropic cause in teratogenicity	transcription profiling by array	Rattus norvegicus	34	16/01/2014	<a href="#">↓</a>	<a href="#">↓</a>	-
<a href="#">E-GEOD-49473</a>	A Genomics-Based Analysis of Relative Potencies of Dioxin-Like Compounds in Primary Rat Hepatocytes	transcription profiling by array	Rattus norvegicus	115	01/01/2014	<a href="#">↓</a>	<a href="#">🔗</a>	-

## An estimated 20% of datasets deposited (2003-2007) in GEO or ArrayExpress were reused at least once by others.



**Figure 5** Cumulative number of third-party reuse papers, by date of reuse paper publication. Separate lines are displayed for different dataset submission years.



**Figure 6** Scatterplot of year of publication of third-party reuse paper (with jitter) vs number of GEO datasets mentioned in the paper (log scale). The line connects the mean number of datasets attributed in reuse papers vs publication year.

# Share your data: get information back

Astronomy: Sloan Digital Sky Survey data used by citizens (crowd sourcing)

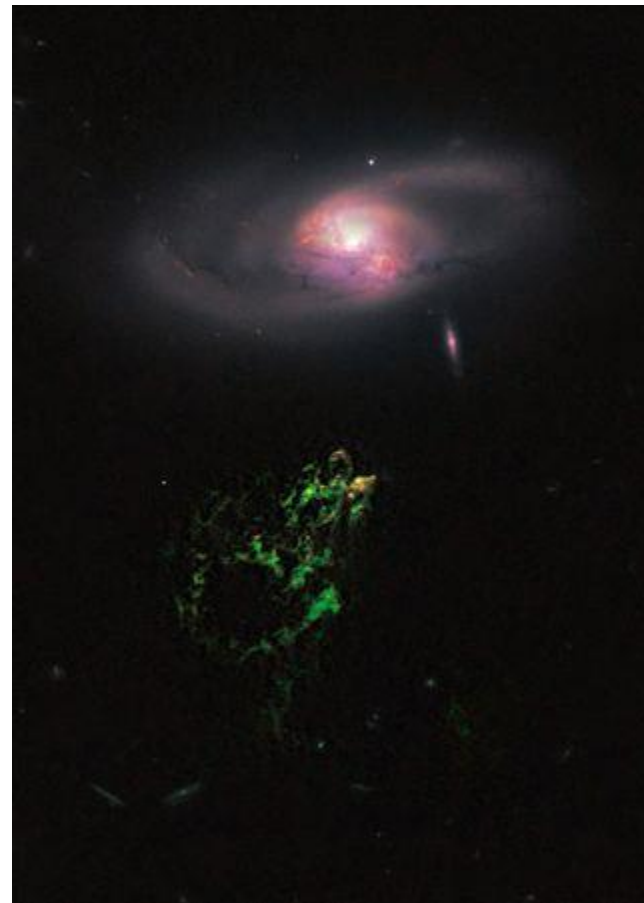
Beyond the community of several thousand professional astronomers, many thousand more of inquiring minds in the public will be able to troll the databases too.

A prototype for this is the Galaxy Zoo project where people do galaxy classification from the Sloan Digital Sky Survey.

In 2007 by Dutch high-school teacher Hanny van Arkel, while participating in the online [Galaxy Zoo](#) project discovered an uncanny green blob near an active galaxy. Called [Hanny's Voorwerp](#) ("Hanny's Object" in Dutch) it appears to have been caught in [a black hole beam and energized to glow in oxygen](#).

*<http://news.discovery.com>*

*Image credits: ESO, NSF, NASA*





# Share your data: get more impact and increase your reach

## Datasets might have a reach or impact across several scholarly domains

- Chao (2011) derived 6402 datasets from the 'Atmosphere' dataset collection at NASA's Global Change Master Directory (GCMD).
- Followed the citation of directly associated papers and their secondary papers, correcting for citing bias by H-index
- Administrated the scholarly domain of citing papers.

Approximately 59% of datasets had an H-index > '1'.

There was a diversification in scholarly domains in citations of secondary papers.

Chao (2011): ASIST 2011, October 9–13, 2011, New Orleans, LA, USA.

**Global Change Master Directory**  
Discover Earth science data and services

Home Search Learn about GCMD Portals Collaborate

Data Sets Services / Tools Ancillary Descriptions

Search By >> Science Keywords Instruments Platforms Locations Providers Projects Map/Date Free text

**AGRICULTURE** (1869)  
agricultural aquatic sciences, agricultural chemicals, agricultural engineering, agricultural plant science, animal commodities [show all...](#)

**ATMOSPHERE** (8030)  
aerosols, air quality, altitude, atmospheric chemistry, atmospheric electricity [show all...](#)

**BIOLOGICAL CLASSIFICATION** (4057)  
animals/invertebrates, animals/vertebrates, bacteria/archaea, fungi, plants [show all...](#)

**BIOSPHERE** (6943)  
aquatic ecosystems, ecological dynamics, terrestrial ecosystems, vegetation [show all...](#)

**CLIMATE INDICATORS** (356)  
atmospheric/ocean indicators, biospheric indicators, cryospheric indicators, land surface/agriculture indicators, paleoclimate indicators [show all...](#)

**CRYOSPHERE** (2774)  
frozen ground, glaciers/ice sheets, sea ice, snow/ice [show all...](#)

**HUMAN DIMENSIONS** (3718)  
boundaries, economic resources, environmental governance/management, environmental impacts, habitat conversion/fragmentation [show all...](#)

**LAND SURFACE** (6139)  
erosion/sedimentation, frozen ground, geomorphology, land temperature, land use/land cover [show all...](#)

**OCEANS** (6563)  
aquatic sciences, bathymetry/sea floor topography, coastal processes, marine environment monitoring, marine geophysics [show all...](#)

**PALEOCLIMATE** (1420)  
ice core records, land records, ocean/lake records, paleoclimate reconstructions [show all...](#)

**SOLID EARTH** (2655)  
earth gases/liquids, geochemistry, geodetics, geomagnetism, geomorphic landforms/processes [show all...](#)

**SPECTRAL/ENGINEERING** (2507)  
gamma ray, infrared wavelengths, lidar, microwave, platform characteristics [show all...](#)

**SUN-EARTH INTERACTIONS** (311)  
ionosphere/magnetosphere dynamics, solar activity, solar energetic particle flux, solar energetic particle properties [show all...](#)

**TERRESTRIAL HYDROSPHERE** (3341)  
glaciers/ice sheets, ground water, snow/ice, surface water, water quality/water chemistry [show all...](#)

# Share data: enable combining data for new insights

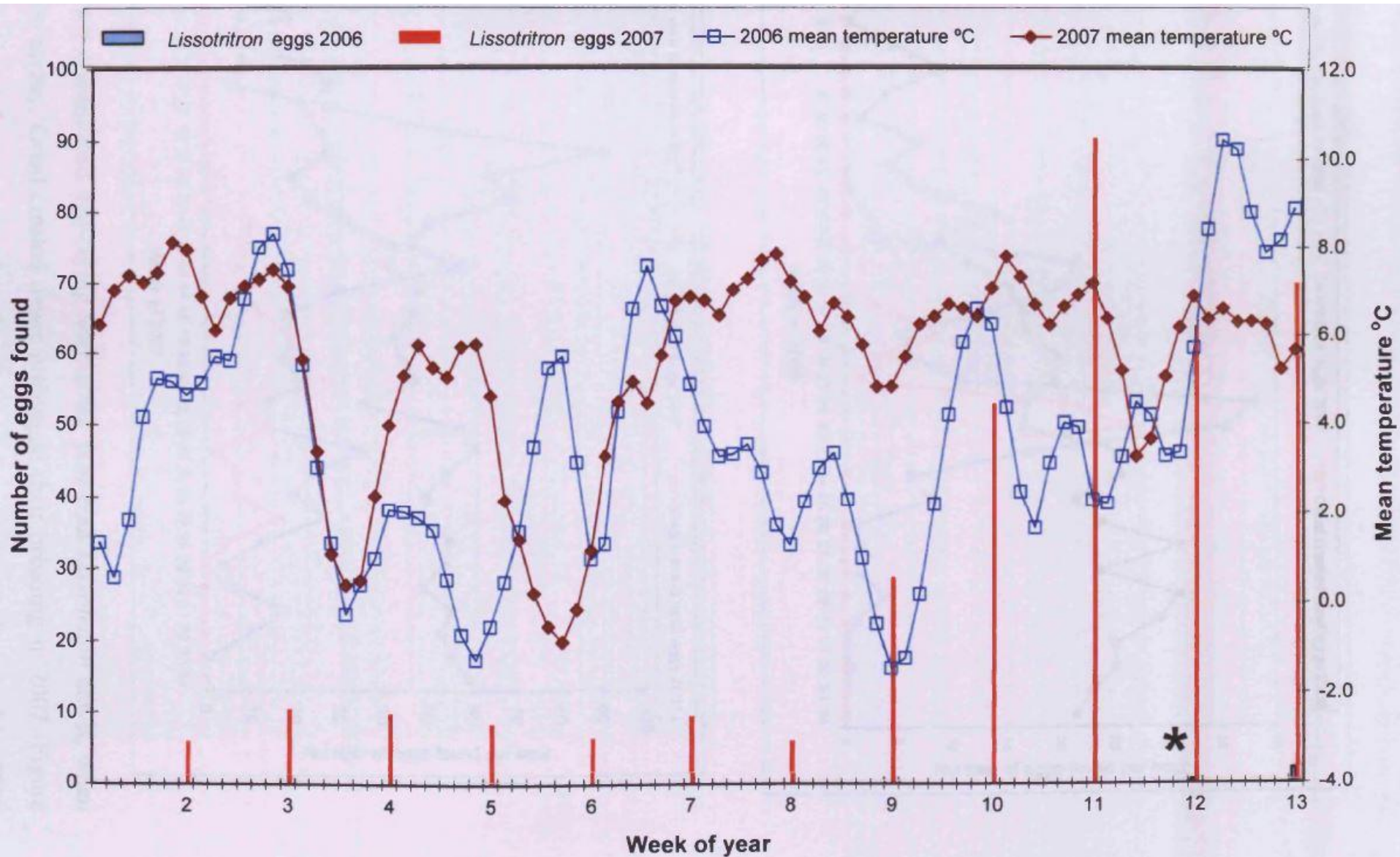
## BADC weather data for Biologist studying newts



A scientist studying amphibians Kerry Murton from Cardiff University's Llysdinam Field Centre has been investigating the **affect of climate change on the timing of events in the lifecycle of newts.**

Kerry is using data from the British Atmospheric Data Centre (BADC) to get the UK's Meteorological Office rainfall and temperature data for her local weather station which was established at Llysdinam, mid Wales, in 1988. The weather data will be matched to the records of newly metamorphosed juvenile newts.



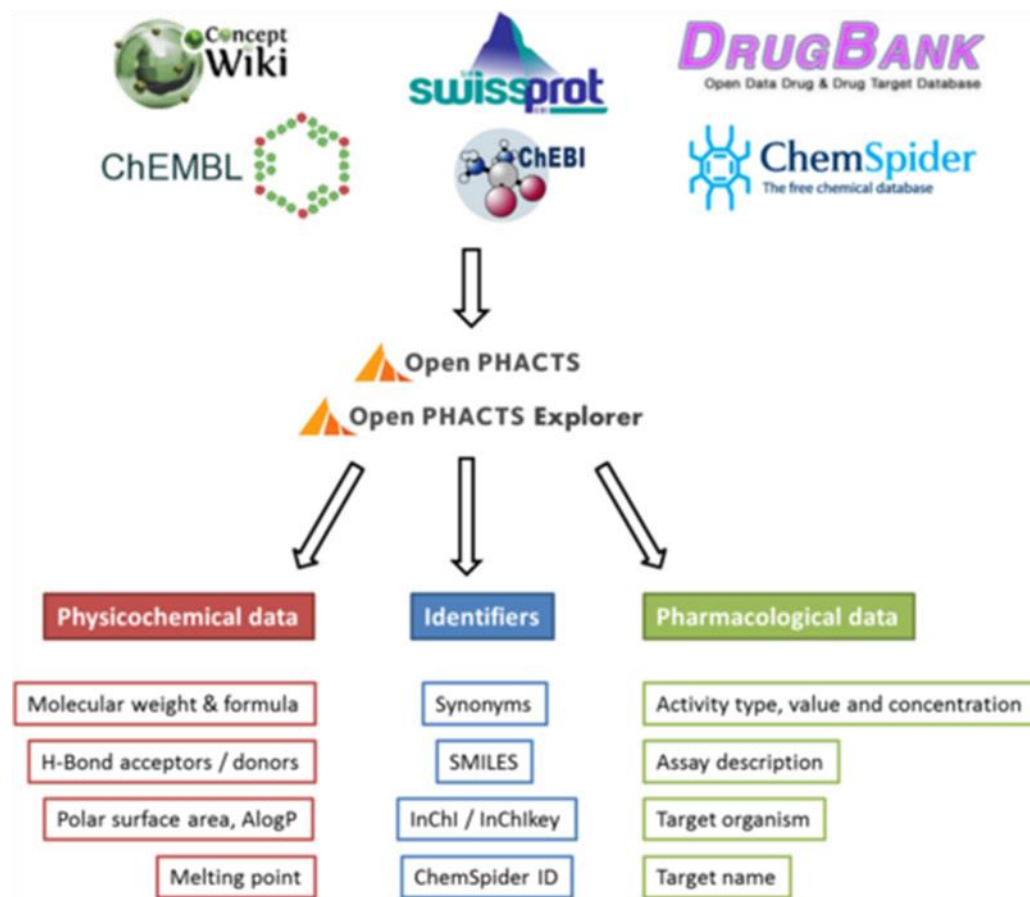


“It was likely the higher temperatures in late 2006 and early 2007 led to significantly earlier egg-laying by Lissotriton newts in 2007 breeding season.”

# Share data and enable your colleagues

Data is more and more available, but it is distributed.

Year	Molecular biology databases in NAR
2014	1552
2011	1330
2007	968



## Example question for pharmacologists:

Give all oxidoreductase inhibitors with an activity < 100nM in both human and mouse

Platform **draws together** and **generates links** between **variably-sourced data** so that industry, academia and small businesses can concentrate on drug discovery.

# Politicology

<http://politicalmashup.nl/>



PoliticalMashup

- **Goal** : Enabling digital searches of large amounts of political data: programs, newspapers, activities in the parliament, weblogs of politicians or politically interested persons → semantic searching
- **By** : Politicologists, historians, computer linguists.
- **Products** :
  - Format to code reports from parliament;
  - General ‘linked dataset’;
  - Tools to facilitate longitudinal studies of parliamentary data;
  - Case studies

Nederlandse dataprijs 2012

Digging into data prijs

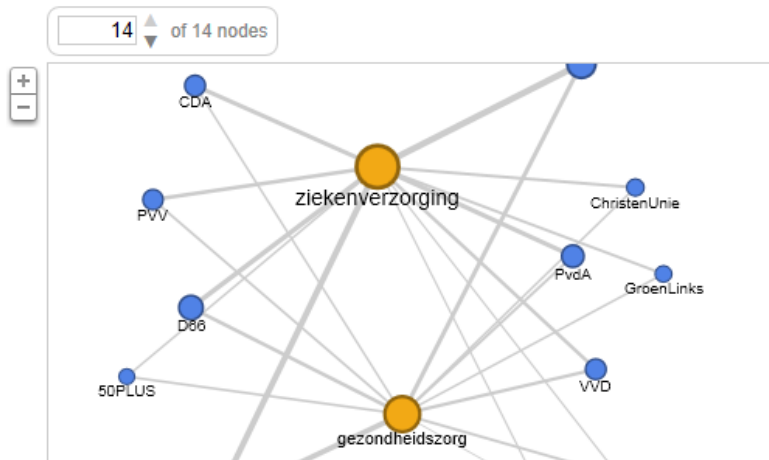
# Case 1 : Themes in de parlement

Plus Magazine wanted to know 'who says what' in the parliament on the subjects that are important for senior citizens. (parliamentary year 2012 – 2013)

## Resultaten

De ranglijstjes voor de **bewindslieden** en de **parlementariers**. (Worden openbaar gemaakt in December 2013).

In onderstaand netwerk laten we het verband tussen de partijen en 2 gezondheidstemas zien: hoe dikker een verbinding, hoe meer die partij met dat thema heeft. Ook de grootte van partij-knoop is proportioneel aan het aantal "hits" over de twee onderwerpen. De knoop zonder label bevat de kabinetsleden.



Data: from 4523 speeches 1000 were on relevant subjects. Texts are available for anyone to download and analyse.

# Case 2 : Typical vocabulary

Together with 'Vrij Nederland', PoliticalMashup determined for each member from the parliament of Rutte II the most characteristic words.

person\_verb\_lemma\_per\_speech

Imported at Tue Sep 17 08:07:16 PDT 2013 from person\_verb\_lemma\_per\_speech.csv.  
Attribution unknown - Edited on September 18, 2013

A screenshot of a data table with columns for speaker and wordcloud. The table is filtered to show only rows where the speaker contains 'teeven'. The first row shows a URL and a list of words with their associated scores.

#url	speaker	wordcloud
<a href="http://resolver.politicalmashup.nl/nl.m.023...view=html">http://resolver.politicalmashup.nl/nl.m.023...view=html</a>	teeven	denken:0.038 detineren:0.032 wisselen:0.028 constateren:0.024 spreken:0.020 sluiten:0.019 opleggen:0.018 plaatsen:0.016 verdenken:0.016 plegen:0.014 verblijven:0.013 delen:0.013 veroordelen:0.012 meewerken:0.012 verzoeken:0.011 informereren:0.011 kijken:0.008 merken:0.008 innemen:0.008 handhaven:0.008



# Share data: Share to the community

## Linguistics



The DOBES Archive (part of The Language Archive, Max Planck Institute for Psycholinguistics, Nijmegen)

“language documentation data from a great variety of languages from around the world that are in danger of becoming extinct”



# Utilization in education and community











Research Portal : overview of 'studies' on data, grammar, tools, and entry points for disciplines (anthropologists, language typologists, musicologists, etc. )

General Interest Portal :

- Information for journalists (press area)
- Teaching material (teachers' portal)
- Community Members' Portal



## Recording for the community

1 ela  pa kosu	2 edo  edo aberelalo	3 ighiva  ighia kolagha	4 aghava  aghava boglogha	5 ara  ara sougaha
6 poghoa  poghoa adakigha	7 poghoro  poghoro simagha	8 kui  kui kibagha	9 kuava  kuava sisigha	10 atale  atale migha

Illustrations: Jim Planet  
Layout: Claudia Wegener

## NWO teaching package

# BEDREIGDE TALEN



website liever beeldvullend? rechtermuisknop > show all

LES 1  
LES 2

WERKBLADEN  
DOCENT  
COLOFON





# Archeology

e-depot Nederlandse archeologie

# EDNA

## e-depot voor de Nederlandse archeologie

*Longterm preservation of digital archaeological information*

*Make your data safe and reliable, so others can build on your knowledge.*

Ga direct naar



*Deze grottschilderingen zijn na 30.000 jaar nog toegankelijk en leesbaar. In de huidige digitale archeologie ligt dat een stuk moeilijker. De digitale gegevens die we nu massaal vastleggen, zijn nu wel leesbaar, maar dit geldt ook nog op de lange termijn? Is een database over vijftien jaar nog te openen, wie weet dan nog wat de variabelen of codes betekenen of kunnen we de foto's nog zichtbaar maken op een beeldscherm?*

### EDNA

Het elektronisch depot voor de Nederlandse archeologie (EDNA) houdt zich bezig met deze vragen en beheert de digitale onderzoeksbestanden van de Nederlandse archeologen. Dit zijn bestanden met primaire archeologische gegevens van opgravingen, regionale verkenningen en materiaalstudies. Het e-depot zorgt voor de duurzame archivering en toegankelijkheid, zodat toekomstige onderzoekers de gegevens niet opnieuw hoeven te verzamelen of digitaliseren.



# ARIADNE

A research infrastructure  
for archaeology

[www.ariadne-infrastructure.eu](http://www.ariadne-infrastructure.eu)

Thanks to:

Fieke Schoots (Leiden University Library)

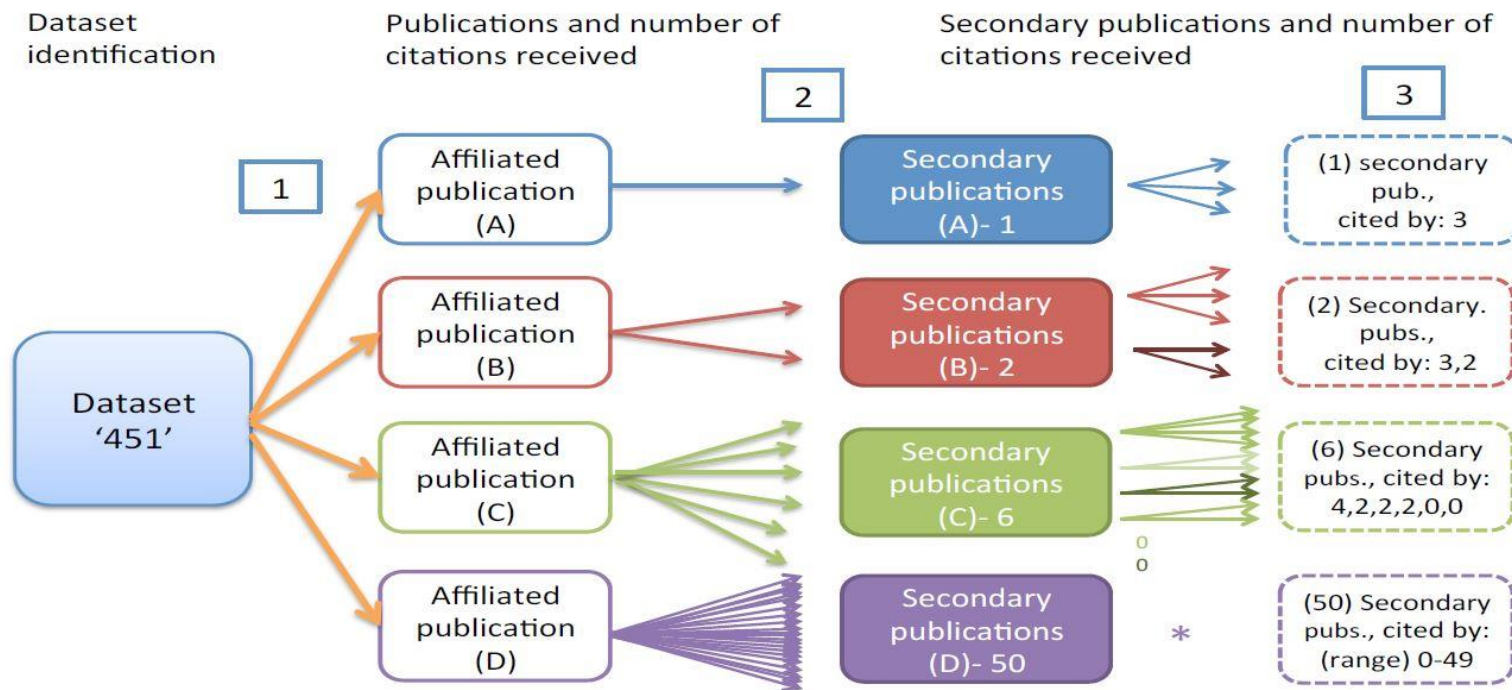
Jeroen Rombouts (TU Delft University Library)

Ellen Verbakel (TU Delft University Library)

Paulien Wiersma (Utrecht University Library)

# Measuring impact of a dataset through its associated publications

Via corresponding subject area based on categories (established by Scopus) Chao (2011) noticed a diversification of subjects of impact, when excluding the top 10 journals. This expansion suggests that the earth science datasets have a reach or impact across several scholarly domains.



1 Please refer to 'Methods' for description

\* due to space constraints, the number of times each of the 50 secondary publications was cited is not shown.

Figure 1. Overview of the data collection process through example dataset 451