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M. A. Rújula\*, J. G. Fernández\*,  
S. Watelet\*, A. Barth\* & J.-M. Beckers\*



\*GHER-University of Liège

\*Balearic Islands Coastal Ocean  
Observing and Forecasting System

# *Software citation & process traceability*

# Persistent identifiers everywhere

Ocean Observation

Science/expertise

# Persistent identifiers everywhere

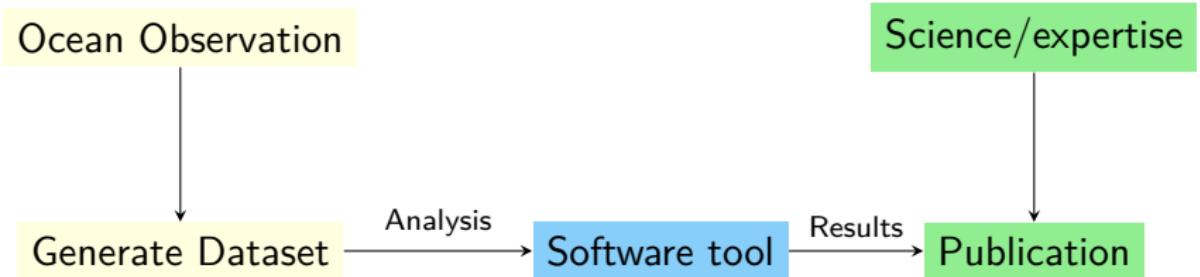
Ocean Observation

Science/expertise

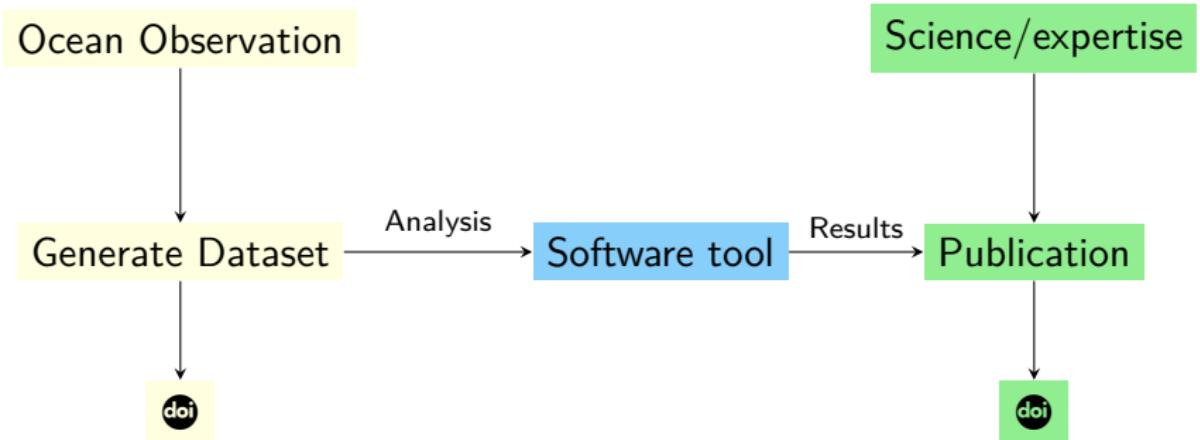


Generate Dataset

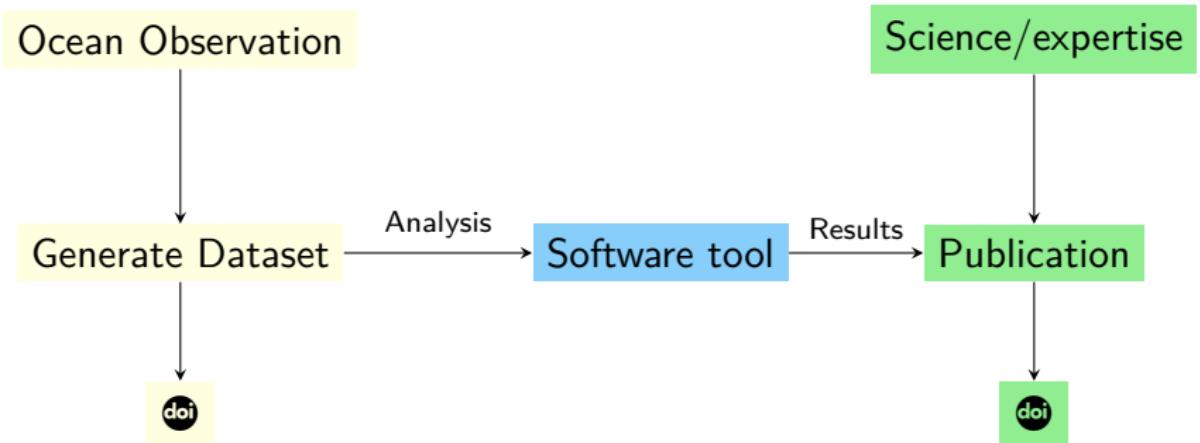
# Persistent identifiers everywhere



# Persistent identifiers everywhere



# Persistent identifiers everywhere



How can we ensure the readers/users  
can **reproduce** the results?

Persistent identifiers:  
what about

*software tools?*

# Context: who has done what, and how?



Source: [Academicons](#)

# Context: who has done what, and how?

Let's work with ORCID and MarinID  
(see previous ODIP workshops)



Source: [Academicons](#)

# Data set identification and citation

See previous ODIP workshops + links to other initiatives

Research Data Alliance Data Citation working group

THOR project

Pangaea

**PANGAEA.**  
Data Publisher for Earth & Environmental Science

SEARCH SUBMIT ABOUT CONTACT

*Citation:*

García Sotillo, Marcos; García-Ladona, Emilio; Orfila, Alejandro; Rodríguez-Rubio, Pablo; Contí Sampol, Daniel; Padorno, Elena; Capó, Esther; los Santo, Francisco Javier (2016): The MEDESS-GIB drifters database. doi:10.1594/PANGAEA.853701,

*Supplement to:* García Sotillo, Marcos; García-Ladona, Emilio; Orfila, Alejandro; Rodríguez-Rubio, Pablo; Maraver, José Cristobal; Contí, Daniel; Padorno, Elena; Jiménez, José Antonio; Capó, Este; Pérez, Fernando; Sayol, Juan Manuel; de los Santos, Francisco Javier; Amo, Arancha; Rietz, Ana; Troupin, Charles; Tintore, Joaquín; Alvarez-Fanju, Enrique (2016): The MEDESS-GIB database: tracking the Atlantic water inflow, *Earth System Science Data*, 8(1), 141-149, doi:10.5194/essd-8-141-2016



Always quote above citation when using data! You can download the citation in several formats below.

RIS Citation BibTeX Citation Text Citation Facebook Twitter Google+ Show Map Google Earth

*Abstract:*

On September 9th 2014, an intensive drifter deployment was carried out in the Strait of Gibraltar. In the frame of the EU MED Program MEDESS-4MS, the MEDESS-GIB experiment consisted of the deployment of 35 satellite tracked drifters, mostly of CODE-type, equipped with temperature sensor sampling at a rate of 30 minutes. Drifters were distributed along and on both sides of the Strait of Gibraltar. The MEDESS-GIB deployment plan was designed as to ensure quasi-synoptic spatial coverage. To this end, 4 boats covering an area of about 680 NM<sup>2</sup> in 6 hours were coordinated. As far as authors know, this experiment is the most important exercise in the area in terms of number of drifters released. Collected satellite-tracked data along drifter trajectories have been quality controlled and processed to build the here presented MEDESS-GIB data set.

*Coverage:*

Median Latitude: 36.201364 \* Median Longitude: -2.514722 \* South-bound Latitude: 28.415600 \* West-bound Longitude: -23.914800 \* North-bound Latitude: 44.582800 \* East-bound Longitude: 31.093800

# Data sets in peer-reviewed journals

## Earth System Science Data

- "reuse of high-quality data of benefit to Earth system sciences"
- 30 articles in 2017 (as of July 24th)



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- Current Contents/PCCB
- Scopus
- ADS
- CLOCKSS

**Earth Syst. Sci. Data, 6, 141–149, 2016**  
doi:10.5194/essd-6-141-2016  
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**The MEDESS-GIB database: tracking the Atlantic water inflow**

Marcos García-Sotillo<sup>1</sup>, Emilio García-Ladona<sup>2</sup>, Alejandro Orfila<sup>3</sup>, Pablo Rodríguez-Rubio<sup>4</sup>, José Cristóbal Maraver<sup>5</sup>, Daniel Contí<sup>3</sup>, Elena Padorno<sup>1</sup>, José Antonio Jiménez<sup>2</sup>, Este Capó<sup>2</sup>, Fernando Pérez<sup>2</sup>, Juan Manuel Sayo<sup>2</sup>, Francisco Javier de los Santos<sup>1</sup>, Arancha Amo<sup>1</sup>, Ana Rietz<sup>2</sup>, Charles Troupin<sup>2</sup>, Joaquín Tintore<sup>3,6</sup>, and Enrique Álvarez-Fanjul<sup>1</sup>  
<sup>1</sup>Puertos del Estado, 28041 Madrid, Spain  
<sup>2</sup>ICM-CSIC, 08003 Barcelona, Spain  
<sup>3</sup>IMEDEA (CSIC-UIB), 07190 Esporles, Spain  
<sup>4</sup>Autónoma Portuaria Bahía de Algeciras, 11207 Algeciras, Spain  
<sup>5</sup>SASEMAR, 28011 Madrid, Spain  
<sup>6</sup>SOCIB, 07121 Palma de Mallorca, Spain

Received: 02 Jul 2015 – Discussion started: 04 Nov 2015  
Revised: 03 Mar 2016 – Accepted: 08 Mar 2016 – Published: 29 Mar 2016

**Abstract.** On 9 September 2014, an intensive drifter deployment was carried out in the Strait of Gibraltar. In the frame of the MEDESS-4M Project (EU MED Program), the MEDESS-GIB experiment consisted of the deployment of 35 satellite tracked drifters, mostly of CODE-type, equipped with temperature sensor sampling at a rate of 30 min. Drifters were distributed along and on both sides of the Strait of Gibraltar. The MEDESS-GIB deployment plan was designed as to ensure quasi-synoptic spatial coverage. To this end, four boats covering an area of about 680 km<sup>2</sup> in 6 h were coordinated. As far as these authors know, this experiment is the most important exercise in the area in terms of number of drifters released. Collected satellite-tracked data along drifter trajectories have been quality controlled and processed to build the presented MEDESS-GIB database. This paper reports the MEDESS-GIB data set that comprises drifter trajectories, derived surface currents and in situ SST measurements collected along the buoys tracks. This series of data is available through the PANGAEA (Data Publisher for Earth and Environmental Science) repository, with the following doi:10.1594/PANGAEA.853701. Likewise, the MEDESS-GIB data will be incorporated as part of the Copernicus Marine historical products. The MEDESS-GIB data set provides a complete Lagrangian view of the surface inflow of Atlantic waters through the Strait of Gibraltar and thus, very useful data for further studies on the surface circulation patterns in the Alboran Sea, and their links with one of the most energetic Mediterranean Sea flows: the Algerian Current.

Volume 8, issue 1  
29 Mar 2016

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The Innovative Open-Access Publisher

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Search  Author

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**Short summary**  
An intensive drifter deployment was carried out in the Strait of Gibraltar: 35 satellite...  
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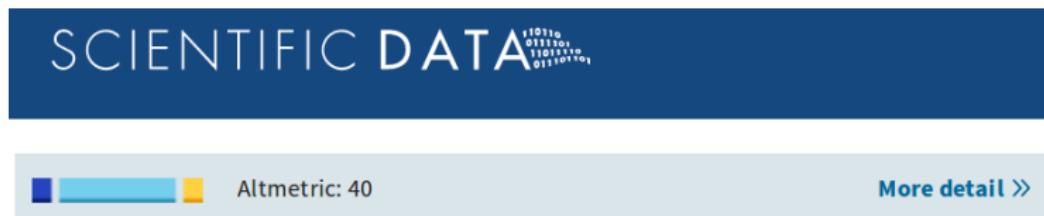
**Citation**  
▪ BibTeX  
▪ EndNote

**Share**  
        

# Data sets in peer-reviewed journals

## Scientific Data

- ▶ "promote wider data sharing and reuse, and to credit those that share"
- ▶ 127 publications in 2017 as of September 4 (all disciplines)



SCIENTIFIC DATA

Altmetric: 40

[More detail >](#)

Data Descriptor | [OPEN](#)

## RiceAtlas, a spatial database of global rice calendars and production

Alice G. Laborte ✉, Mary Anne Gutierrez, Jane Girly Balanza, Kazuki Saito, Sander J. Zwart, Mirco Boschetti, M.V.R. Murty, Lorena Villano, Jorrel Khalil Aunario, Russell Reinke, Jawoo Koo, Robert J. Hijmans & Andrew Nelson

# How to go from data to products?

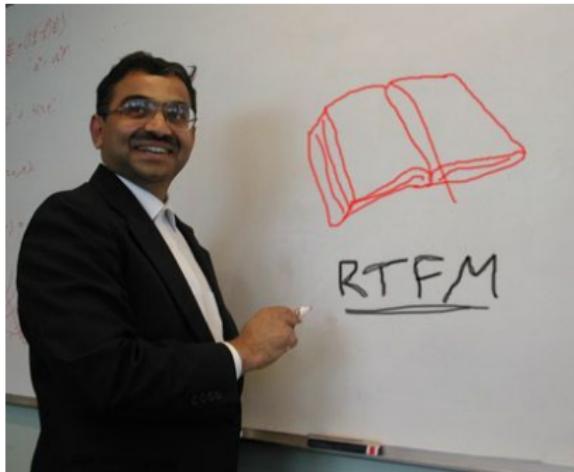
# How to go from data to products?

- ▶ Read the publication?



# How to go from data to products?

- ▶ Read the publication?
- ▶ Read the manual?



# How to go from data to products?

- ▶ Read the publication?
- ▶ Read the manual?
- ▶ Get and re-use code referenced in publication

## 8 Code and data availability

The version of FESOM2.0 used to carry out simulations reported here can be accessed from <https://swrepo1.awi.de/svn/awi-fvom> after registration. The updated versions will be available through the same link in future. For convenience, the configuration used, together with the meshes, is archived at doi:[10.5281/zenodo.161319](https://doi.org/10.5281/zenodo.161319). Mesh partitioning in FESOM is based on a METIS Version 5.1.0 package developed at the Department of Computer Science & Engineering at the University of Minnesota (<http://glaros.dtc.umn.edu/gkhome/views/metis>). METIS and pARMS (Li et al., 2003) present separate libraries which are freely available subject to their licenses. FESOM1.4 is available at <https://swrepo1.awi.de/projects/fesom/> (requires registration). The Polar Science Center Hydrographic Climatology (Steele et al., 2001) used to initialize runs of CORE-II atmospheric forcing data (Large and Yeager, 2009) is freely available online. The simulation results can be obtained from the authors on request.

# Products and results

## **Results:**

numerical model outputs (re-analysis, forecasts)  
climatologies build from in situ data  
aggregated datasets

## **Goals:**

proper citation in publications  
control of different versions of the same product

# Products and results

## Example: SeaDataNet Product Catalog ([Sextant](#)) Mediterranean Sea: Temperature and Salinity Climatology V1.1

Mediterranean Sea - Temperature and Salinity Climatology V1.1

PRODUCT IDENTIFICATION

Title: Mediterranean Sea - Temperature and Salinity Climatology V1.1  
SEADATANET\_MedSea\_climatology\_V1.1\_public

External shortname:

Abstract: Mediterranean Sea Climatology computed from the SeaDataNet V1.1 aggregated dataset . The version used for the DIVA software is the 4.6.9. The period covers 1900-2013. For data access please register at <http://www.marine-id.org>

Descriptive keywords:

Feature type: Surface  
Sea areas: Mediterranean Region, Mediterranean Sea  
Ocean discovery parameters: Temperature of the water column, Salinity of the water column, ITS-90 water temperature, Water body salinity  
Ocean chemistry variable:  
Usage license: SeaDataNet licence

SPATIO-TEMPORAL EXTENT

Geographical extent:

Geographic bounding box:



- ▶ Internal permanent shortname: 90ae7a06-8b08-4afe-83dd-ca92bc99f5c0
- ▶ DOI: [10.12770/90ae7a06-8b08-4afe-83dd-ca92bc99f5c0](https://doi.org/10.12770/90ae7a06-8b08-4afe-83dd-ca92bc99f5c0)

# Products and results

## Mediterranean Sea - Temperature and Salinity Climatology V1.1

Date(s)	2015-11-30 (Creation)
Custodian(s):	IFREMER / IDM/SISMER
Originator(s):	Istituto Nazionale di Geofisica e Vulcanologia – INGV, Sede di Bologna
Credit	Seadatanet
Version	1.1
DOI	10.12770/90ae7a06-8b08-4afe-83dd-ca92bc99f5c0
Abstract	Mediterranean Sea Climatology computed from the SeaDataNet V1.1 aggregated dataset . The version used for the DIVA software is the 4.6.9. The period covers 1900-2013. For data access please register at <a href="http://www.marine-id.org">http://www.marine-id.org</a>
Keywords	Oceanographic geographical features, Temperature of the water column, Salinity of the water column, ITS-90 water temperature, Water body salinity, Mediterranean Region, Mediterranean Sea
Lineage	The data used as input for this product have been extracted from the SeadataNet Download Service:
Utilisation	
Temporal Extent	
Data	<p style="border: 2px solid red; padding: 10px; text-align: center;"><b>DIVA software is the 4.6.9.</b></p> <p style="text-align: center;">/SDN_2015-11_TS_Med_Sea_Climatology_v1.1.zip</p>

Can we go further and have:

*"The version used for the DIVA software is the 4.6.9,  
doi: 10.5281/zenodo.836727" ?*

# Software tools and methods: Journals

## Geoscientific Model Development

- ▶ *"description, development, and evaluation of numerical models of the Earth system and its components"*
- ▶ *"geoscientific model descriptions, from statistical models to box models to GCMs"*
- ▶ *"Inclusion of Code and/or data availability sections is mandatory for all papers"*

Geosci. Model Dev., 7, 225–241, 2014  
<https://doi.org/10.5194/gmd-7-225-2014>  
© Author(s) 2014. This work is distributed under the Creative Commons Attribution 3.0 License.

Volume 7, issue 1



Article

Peer review

Metrics

Related articles

Methods for assessment of models

29 Jan 2014

### divand-1.0: n-dimensional variational data analysis for ocean observations

A. Barth<sup>1,\*</sup>, J.-M. Beckers<sup>1</sup>, C. Troupin<sup>2</sup>, A. Alvera-Azcárate<sup>3</sup>, and L. Vandenbulcke<sup>3,4</sup>

<sup>1</sup>GHER, University of Liège, Liège, Belgium

<sup>2</sup>IMEDEA, Esporles, Illes Balears, Spain

<sup>3</sup>seamod.ro/Jaloo srl, Sat Valenii, Com. Salatruca, Jud. Arges, Romania

<sup>4</sup>CIMAR, University of Porto, Porto, Portugal

\*Invited contribution by A. Barth, recipient of the EGU Arne Richter Award for Outstanding Young Scientists 2010.

Received: 07 Jun 2013 – Discussion started: 23 Jul 2013

Revised: 18 Oct 2013 – Accepted: 12 Dec 2013 – Published: 29 Jan 2014

doi:[10.5194/gmd-7-225-2014](https://doi.org/10.5194/gmd-7-225-2014)

# Software tools and methods: Journals

## Earth Science Informatics

- ▶ “(...) cutting-edge, and provocative scientific work in the area of Earth Science Informatics (...)"
- ▶ “(...) all aspects of computer applications to the acquisition, storage, processing, interchange, and visualization of data”
- ▶ *Sub-disciplines: Ontology, Simulation and Modeling, Information Systems Applications*

[Earth Science Informatics](#)  
└ November 2016, Volume 9, [Issue 4](#), pp 525–534

### Information infrastructure for Australia's Integrated Marine Observing System

[Authors](#) [Authors and affiliations](#)

Marton G. Hidas  , Roger Proctor, Natalia Atkins, Julian Atkinson, Laurent Besnard, Peter Blain, Philip Bohm, Jon Burgess, Kim Finney, Dan Fruehauf, Guillaume Galibert, Xavier Hoenner, Jacqui Hope, Craig Jones, Sebastien Mancini, [show 4 more](#)

[Open Access](#) | Methodology Article  
First Online: 25 May 2016

1821

Shares Downloads

doi:[10.1007/s12145-016-0266-2](https://doi.org/10.1007/s12145-016-0266-2)

# Software tools and methods: Journals

## Methods in Oceanography

- ▶ "original research on new methods in all aspects of oceanographic research"
- ▶ "significant advances in the development of new methods for the interpretation of either existing or future data"



### Methods in Oceanography

Volume 17, December 2016, Pages 50-82



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Review

### Potential for an underwater glider component as part of the Global Ocean Observing System

T. Liblik<sup>a, b</sup>, J. Karstensen<sup>a</sup>, P. Testor<sup>c</sup>, P. Alenius<sup>d</sup>, D. Hayes<sup>e</sup>, S. Ruiz<sup>f</sup>, K.J. Heywood<sup>g</sup>, S. Pouliquen<sup>h</sup>, L. Mortier<sup>c</sup>, E. Mauri<sup>i</sup>

[Show more](#)

<https://doi.org/10.1016/j.mio.2016.05.001>

[Get rights and content](#)

doi:[10.1016/j.mio.2016.05.001](https://doi.org/10.1016/j.mio.2016.05.001)

discontinued as of 2017

# Software tools and methods: Research platforms

Definition: online infrastructures whose objective is to persistently store and archive digital artifacts relevant to research:

- ▶ articles
- ▶ data
- ▶ images
- ▶ code
- ▶ ...

# Software tools and methods: Research platforms

**Figshare:** "improve the organization of users' research"

- ▶ file upload, collaborative spaces, DOI attribution, ...
- ▶ on the platform: figures, datasets, media (including video), papers (including pre-prints), posters, code, and filesets.

## CNR-ISMAR in situ observations network

12.10.2016, 11:04 by [Stefano Menegon](#), Pierluigi Penna, Mauro Bastianini, Giuseppe Stanghellini, Francesco Riminucci, [Alessandro Sarretta](#)

298 views | 37 downloads | 0 citations

Presentation "CNR-ISMAR in situ observations network: new approaches for an interactive, high performance, interoperable system" given at the IMDIS 2016, International Conference on Marine Data and Information Systems - Gdansk (Poland) - October 11-13, 2016.

### CATEGORIES

\* [Oceanography](#)

### KEYWORD(S)

[in-situ observations](#)

[interoperability](#)

[sensors](#)

[observational network](#)

[https:](https://doi.org/10.6084/m9.figshare.4001448)

[//figshare.com/articles/CNR-ISMAR\\_in\\_situ\\_observations\\_network/4001448](https://doi.org/10.6084/m9.figshare.4001448)

# Software tools and methods: Research platforms

## DSpace

- ▶ has to be installed on a server manager by the search institution
- ▶ Sandbox: <http://demo.dspace.org/>

According to the Registry of Open Access Repositories (ROAR)

1759 institutions or companies as users

1374 repositories dedicated to Institutional or  
Departmental Research

32 repositories dedicated to Research Data

3 dedicated to Open and Linked Data

## Software tools and methods: Research platforms

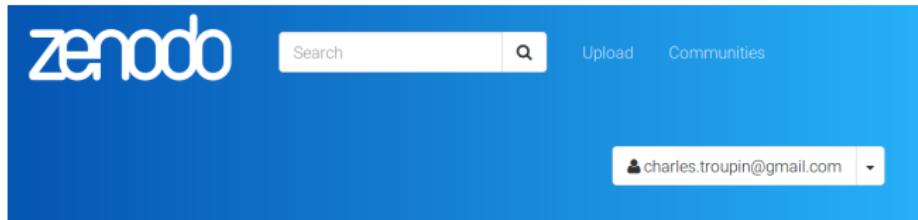
Comprehensive Knowledge Archive Network (CKAN):  
can be considered as a tool for making open data websites

- ▶ streamline publishing, sharing, finding and using data
- ▶ used by numerous governments, organisations and communities around the world
- ▶ has to be installed on a server manager by the search institution

# Software tools and methods: Research platforms

[Zenodo](#): research data repository  
funded by the European Commission

- ▶ ingest all research outputs and any file format
- ▶ DOIs assigned to have uniquely citable files
- ▶ integrated into reporting lines for research via OpenAIRE.



## Recent uploads

September 1, 2017 (v20)

Software

Open Access

View

### matplotlib/matplotlib v2.1.0rc1

Michael Droettboom; Thomas A Caswell; John Hunter; Eric Firing; Jens Hedegaard Nielsen; Nelle Varoquaux; Benjamin Root; Elliott Sales de Andrade; Phil Elson; Darren Dale; Jae-Joon Lee; Jouni K. Seppänen; Antony Lee; Ryan May; Damon McDougall; David Stansby; Andrew Straw; Paul Hobson; Tony S Yu; Eric Ma; Christoph Gohlke; Steven Silvester; Charlie Moad; Adrien F. Vincent; Jan Schulz; Peter Würtz; Federico Ariza; Cimarron; Thomas Hisch; Nikita Kniazev

matplotlib: plotting with Python

# Comparison

Tool	CKAN	DSpace	Figshare	Zenodo
Open Source Licence	Yes ckan/ckan Afferro GNU GPL v3.0	Yes DSpace/DSpace – BSD	No –	Yes zenodo/zenodo GPL-2.0
1st released	November 2011	November 2002	January 2011	May 2013
Main technology	Python	Java	–	Python
Deployment	Local	Local	Cloud	Cloud
Integration with DOI	No	No	Yes	Yes
Integration with ID	Yes	Not direct	Yes	Login

# Comparison

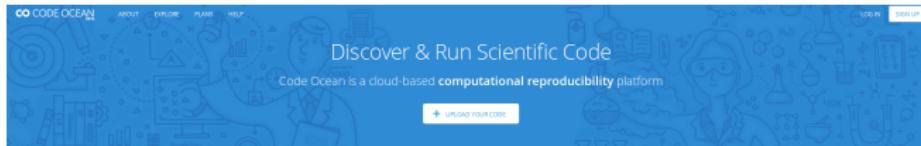
Tool	CKAN	DSpace	Figshare	Zenodo
Open Source Licence	Yes ckan/ckan Afferro GNU GPL v3.0	Yes DSpace/DSpace – BSD	No –	Yes zenodo/zenodo GPL-2.0
1st released	November 2011	November 2002	January 2011	May 2013
Main technology	Python	Java	–	Python
Deployment	Local	Local	Cloud	Cloud
Integration with ORCID	No	No	Yes	Yes
Integration with DOI	Yes	Not direct	Yes	Login

Choice for further tests: Zenodo

- 1 Free and open software
- 2 Cloud service, i.e. no installation
- 3 Coupling with GitHub
- 4 Login via ORCID

# Computational reproducibility platform

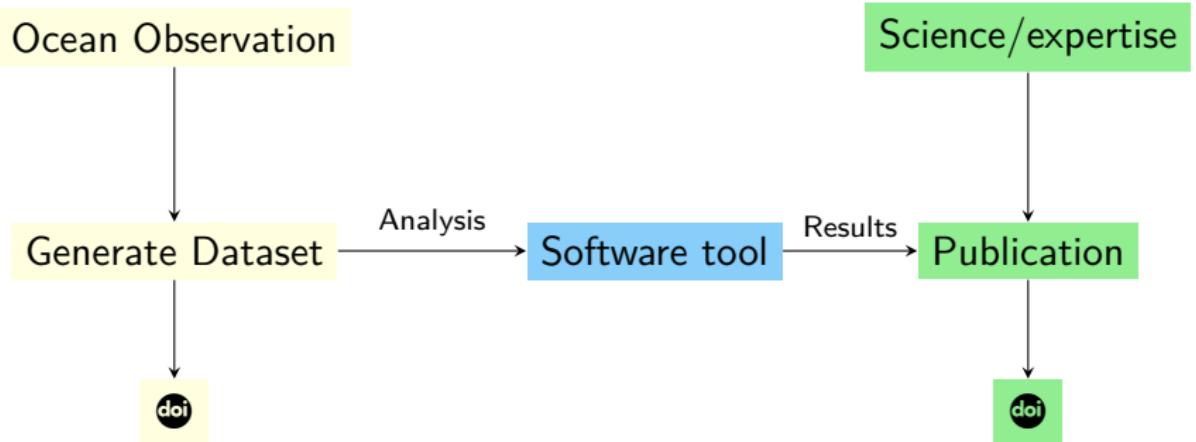
[Code Ocean](#): easy way to share, discover and run code published in academic journals and conferences

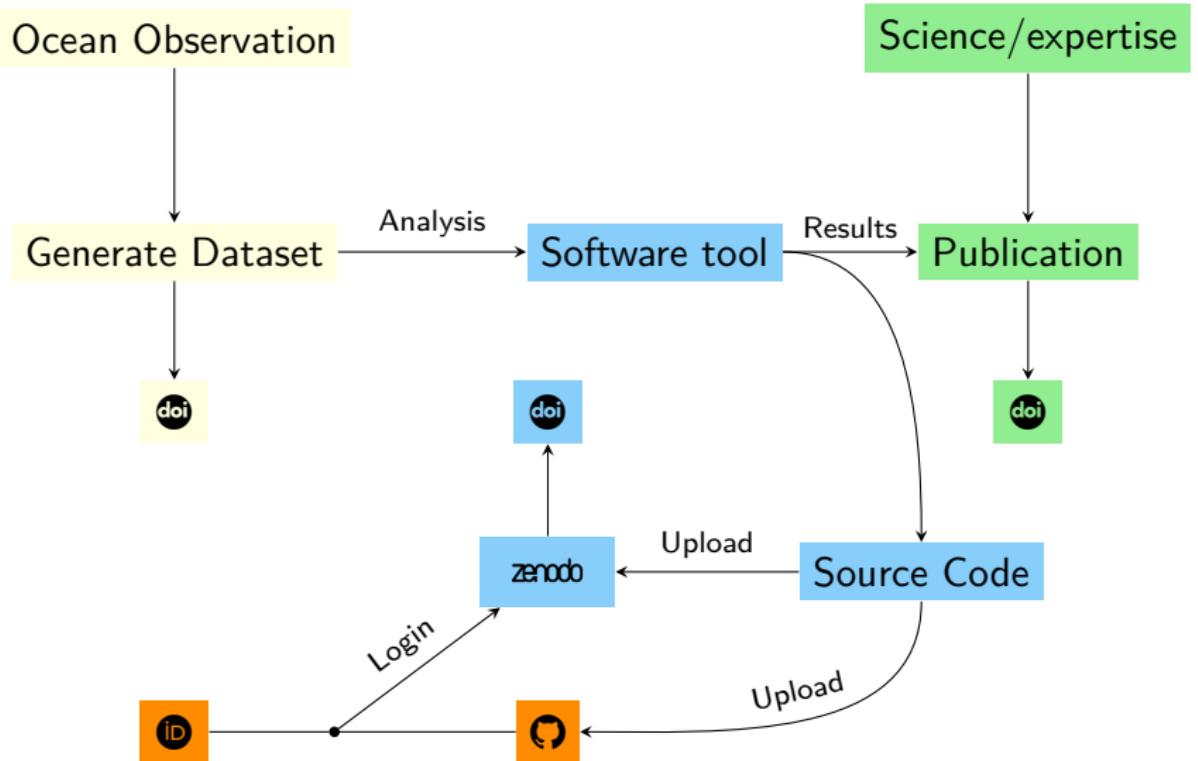


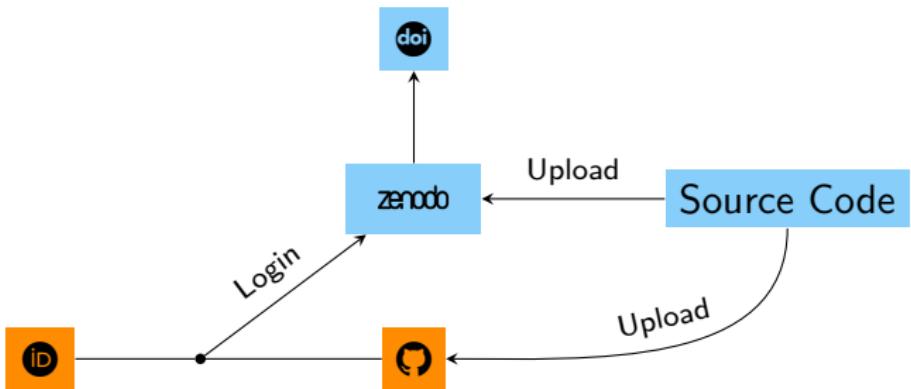
This screenshot shows the search results page on Code Ocean. The top navigation bar includes 'CODE OCEAN', 'EXPLORE', 'HELP', and buttons for '+ UPLOAD YOUR CODE', 'LOG IN', and 'SIGN UP'. A search bar is centered above a grid of algorithm cards. The cards are categorized by field: COMPUTING SCIENCE, BIOINFORMATICS, EARTH SCIENCES, and ENGINEERING. Each card contains a thumbnail image, the algorithm name, and a brief description. For example, the first card in COMPUTING SCIENCE is titled 'Perceptual Information Loss due to Impaired Speech...' and shows a diagram of speech code and linguistic message. The second card in BIOINFORMATICS is '16GT: a fast and sensitive variant caller using a...' and includes a graph of variant rates. The third card in EARTH SCIENCES is 'code for "Coral calcifying fluid aragonite saturation states..."' and features a scatter plot. The fourth card in ENGINEERING is 'Location-aided mm-wave channel estimation for...' and shows a signal processing diagram.

# *Motivations:*

Reproducibility & Traceability







# Goals

Reproducibility: **IF** same experiment  
identical parameters  
same dataset  
same model  
**THEN** same results

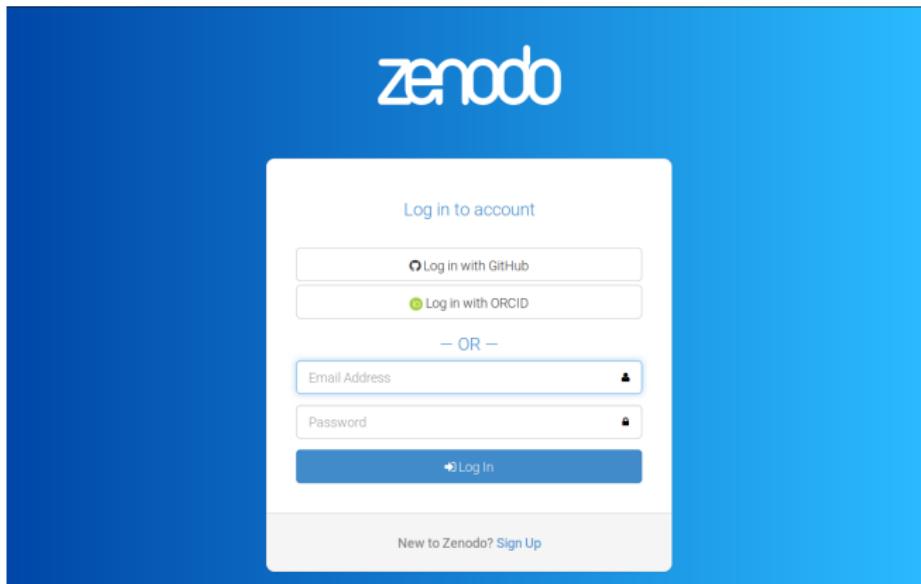
Traceability: all the elements used in the analysis/experiment:  
accessible  
properly described  
uniquely identified

# *A closer look*

to Zenodo

# Login: 3 options

- 1 Use  account
- 2 Use  account
- 3 Create new  (Sign Up)



# Main page: linked accounts

zenodo

Search   Upload Communities  croupin@sociob.es 

Home / Account / Linked accounts

**Settings**

-  Profile
-  Change password
-  **Linked accounts**
-  Applications
-  Shared links
-  GitHub

**Linked accounts**

Tired of entering password for Zenodo every time you sign in? Set up single sign-on with one or more of the services below:

 GitHub   
Software collaboration platform, with one-click software preservation in Zenodo. 

 ORCID   
Connecting Research and Researchers. 

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Publication type

Basic information required ▾

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 Pre-reserve DOI

In particular: Software

(ok for stable code)

# Upload: add metadata

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Reserve DOI 

**Publication date \***  Required. Format: YYYY-MM-DD. In case your upload was already published elsewhere, please use the date of first publication.

**Title \***  Required.

**Authors \***

Sylvain Watelet	GHER, University of Liège	 
Charles Troupin	GHER, University of Liège	 
Jean-Marie Beckers	GHER, University of Liège	 
Alexander Barth	GHER, University of Liège	 
Mohamed Ouberdous	GHER, University of Liège	 

# Upload: add metadata

**Digital Object Identifier**

10.5281/zenodo.836727

Optional. Did your publisher already assign a DOI to your upload? If not, leave the field empty and we will register a new DOI for you. A DOI allows others to easily and unambiguously cite your upload. Please note that it is NOT possible to edit a Zenodo DOI once it has been registered by us, while it is always possible to edit a custom DOI.

 Reserve DOI **Publication date \***

2017-07-31

Required. Format: YYYY-MM-DD. In case your upload was already published elsewhere, please use the date of first publication.

**Title \***

gher-ulg/DIVA; v4.7.1

Required.

**Authors \***

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Alexander Barth

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ORCID (eg. 0000-0002-1825-0097)



Optional.

Mohamed Ouberdoos

GHER, University of Liège

ORCID (eg. 0000-0002-1825-0097)



Optional.

# Upload metadata: licence

License required 

**Access right \***

 Open Access  
  Embargoed Access  
  Restricted Access  
  Closed Access

Required. Open access uploads have considerably higher visibility on Zenodo.

**License \***

GNU Affero General Public License v3

GNU Free Documentation License 1.3 with no cover texts and no invariant sections  
GNU General Public License 2.0  
GNU General Public License 3.0  
GNU Lesser General Public License 2.1

Not necessarily Open!

# Upload metadata: funding!

Funding recommended 

Zenodo is integrated into reporting lines for research funded by the European Commission via OpenAIRE (<http://www.openaire.eu>). Specify grants which have funded your research, and we will let your funding agency know!

 Grants 

SeaData

**SeaDataCloud - Further developing the pan-European infrastructure for mar**

**SeaDataNet II: Pan-European infrastructure for ocean and marine data mana**

delay before it is available in OpenAIRE.

[+ Add another grant](#)

Common strategy for SeaDataCloud, ODIP, ...tools?

# Upload metadata: funding!

The screenshot shows the Zenodo homepage. At the top, there is a banner for OpenAIRE featuring a blue logo and the text "OpenAIRE". Below the banner, the Zenodo logo is prominently displayed with the tagline "Research. Shared." A red message "New Version Relaunched (Sept 12)." and a link "Find out what's new!" are visible. The page is divided into several sections: "RESEARCHERS" and "DATA PROVIDERS" on the right, and a central area with a white background containing text about OpenAIRE and Horizon2020.

**OpenAIRE**

Participate Search Monitor Support Open Access

zenodo  
Research. Shared.

New Version Relaunched (Sept 12).  
Find out what's new!

**RESEARCHERS**

Why Open Access. How to comply. What services to use.

**DATA PROVIDERS**

How to make your content more visible. What to do to increase quality. How to join.

**Strengthening Science:  
How Effective is  
Horizon2020 So Far?**

OpenAIRE has been used as a source for data to measure the 'impact' of Horizon2020 so far. Open Access is a vital part of that... The EC has released an interim set of working documents to measure the impact and effectiveness of the Horizon2020 Work Programme. Although it is still in the early days, the Work Programme is proving so far a success in terms of relevance, efficiency, and coherence.

Common strategy for SeaDataCloud, ODIP, ...tools?

# Upload: finish

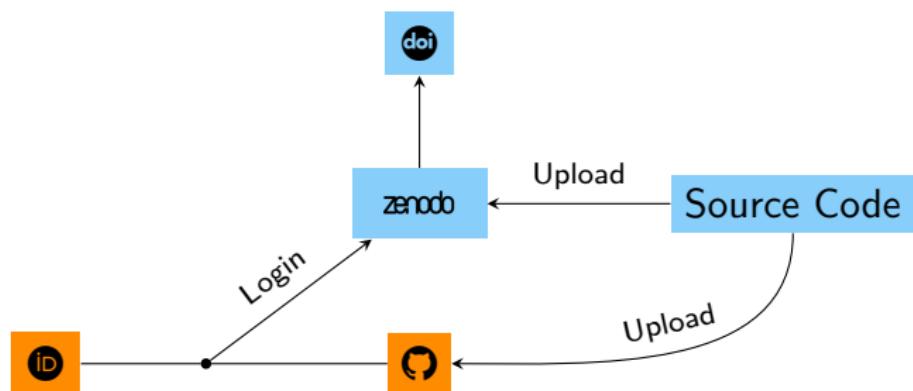
Related/alternate identifiers	recommended ➔
Contributors	optional ➔
References	optional ➔
Journal	optional ➔
Conference	optional ➔
Book/Report/Chapter	optional ➔
Thesis	optional ➔
Subjects	optional ➔
<a href="#">Discard changes</a>	<a href="#">Save</a> <a href="#">Publish</a>

# *Zenodo & Github*

working hand in hand

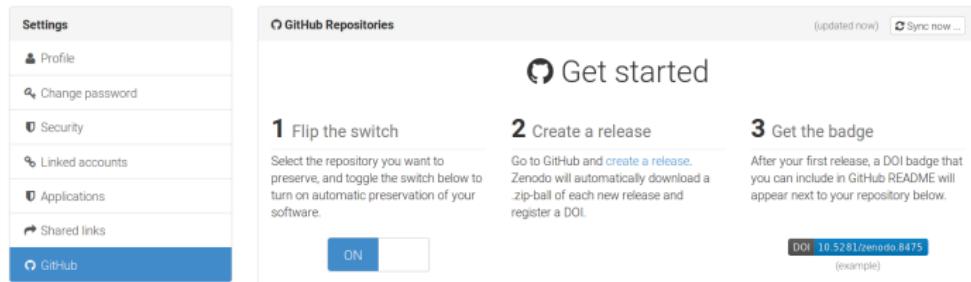
# Requirements

- 1  or  account
- 2 Source code



# Generating for software releases

In Zenodo: click on the GitHub tab



The screenshot shows the Zenodo user settings page with the GitHub tab selected. The main content area is titled "GitHub Repositories" and includes a "Get started" section with three steps: 1. Flip the switch, 2. Create a release, and 3. Get the badge. Step 1 has a toggle switch set to "ON". Step 3 shows a placeholder DOI badge: **DOI 10.5281/zenodo.8475** (example).

**Settings**

- Profile
- Change password
- Security
- Linked accounts
- Applications
- Shared links
- Github**

**Github Repositories** (updated now) Sync now ...

**Get started**

- 1 Flip the switch**  
Select the repository you want to preserve, and toggle the switch below to turn on automatic preservation of your software.  
**ON**
- 2 Create a release**  
Go to GitHub and [create a release](#). Zenodo will automatically download a .zip-ball of each new release and register a DOI.
- 3 Get the badge**  
After your first release, a DOI badge that you can include in GitHub README will appear next to your repository below.

**DOI 10.5281/zenodo.8475**  
(example)

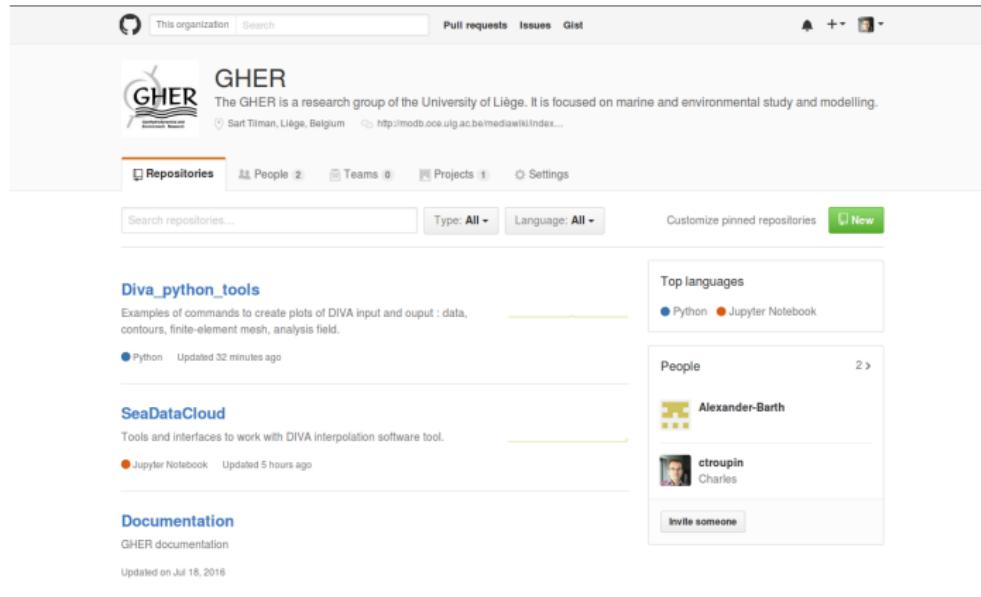
# Generating for software releases

In Zenodo: turn on the synchronisation  
for the selected  repositories

 <a href="#">ctroupin/python-oceans</a>	<input type="button" value="OFF"/>
 <a href="#">gher-ulg/Diva_python_tools</a>	<input checked="" type="button" value="ON"/>
 <a href="#">gher-ulg/Documentation</a>	<input type="button" value="OFF"/>
 <a href="#">gher-ulg/SeaDataCloud</a>	<input checked="" type="button" value="ON"/>
 <a href="#">socib/CMEMS-INSTAC-Dashboard</a>	<input type="button" value="OFF"/>
 <a href="#">socib/HFRadarReports</a>	<input type="button" value="OFF"/>

# Generating for software releases

Go on your  home page



The screenshot shows a GitHub organization page for "GHER". The header includes a search bar, navigation links for "Pull requests", "Issues", and "Gist", and a notification bell icon. Below the header, the organization's logo (a stylized globe with blue and green patterns) and name "GHER" are displayed, along with a brief description: "The GHER is a research group of the University of Liège. It is focused on marine and environmental study and modelling." and the location "Sart Tilman, Liège, Belgium". A link to their MediaWiki index is also provided.

The main content area features a navigation bar with tabs for "Repositories" (selected), "People", "Teams", "Projects", and "Settings". Below this is a search bar and filters for "Type: All" and "Language: All". A "Customize pinned repositories" button is visible.

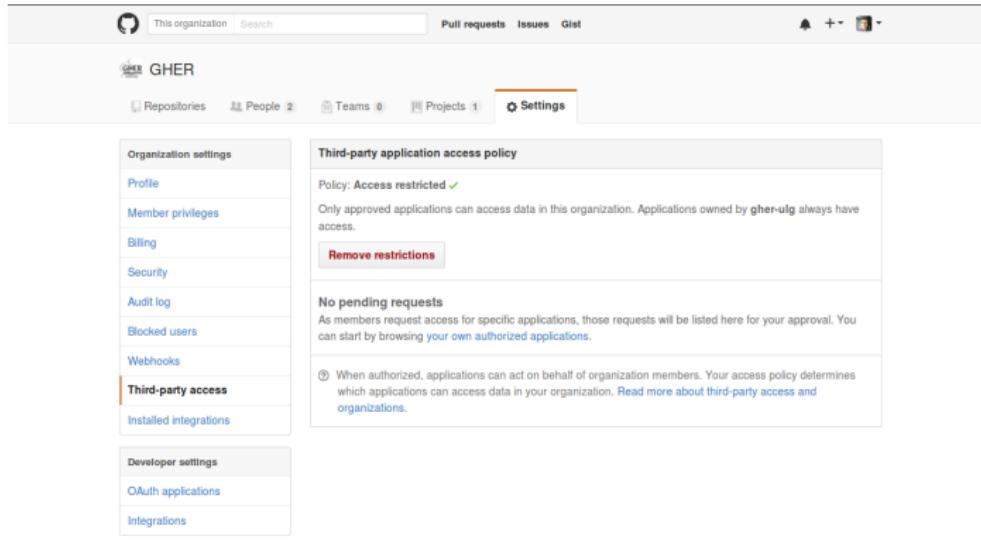
Three repository cards are listed:

- Diva\_python\_tools**: Examples of commands to create plots of DIVA input and output : data, contours, finite-element mesh, analysis field.  
● Python Updated 32 minutes ago
- SeaDataCloud**: Tools and interfaces to work with DIVA interpolation software tool.  
● Jupyter Notebook Updated 5 hours ago
- Documentation**: GHER documentation  
Updated on Jul 18, 2016

To the right, there is a sidebar titled "Top languages" showing Python and Jupyter Notebook, and a "People" section listing "Alexander-Barth" and "ctroupin Charles". An "Invite someone" button is also present.

# Generating for software releases

In settings: allow third-party access



The screenshot shows the GitHub organization settings page for 'GHER'. The left sidebar has a vertical navigation menu with the following items:

- Organization settings
- Profile
- Member privileges
- Billing
- Security
- Audit log
- Blocked users
- Webhooks
- Third-party access** (highlighted)
- Installed integrations

The main content area is titled "Third-party application access policy". It displays the following information:

Policy: Access restricted 

Only approved applications can access data in this organization. Applications owned by gher-ulg always have access.

[Remove restrictions](#)

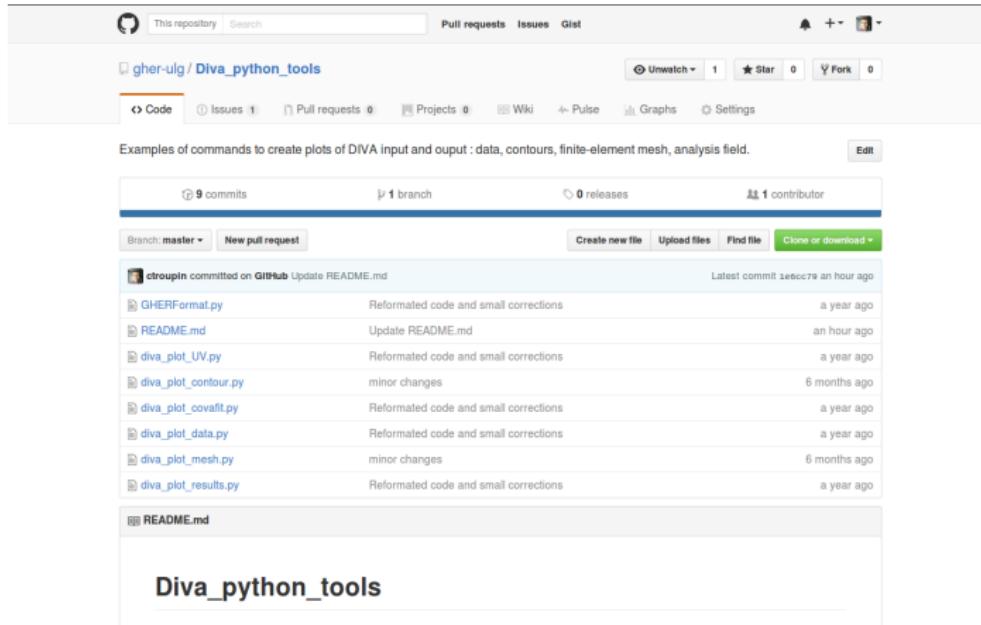
**No pending requests**

As members request access for specific applications, those requests will be listed here for your approval. You can start by browsing [your own authorized applications](#).

 When authorized, applications can act on behalf of organization members. Your access policy determines which applications can access data in your organization. [Read more about third-party access and organizations](#).

# Generating for software releases

Open the selected project repository



The screenshot shows a GitHub repository page for the project 'Diva\_python\_tools'. The repository has 9 commits, 1 branch, 0 releases, and 1 contributor. The latest commit was made an hour ago. The repository contains files like GHERFormat.py, README.md, diva\_plot\_UV.py, diva\_plot\_contour.py, diva\_plot\_covafit.py, diva\_plot\_data.py, diva\_plot\_mesh.py, and diva\_plot\_results.py. The README.md file is also present.

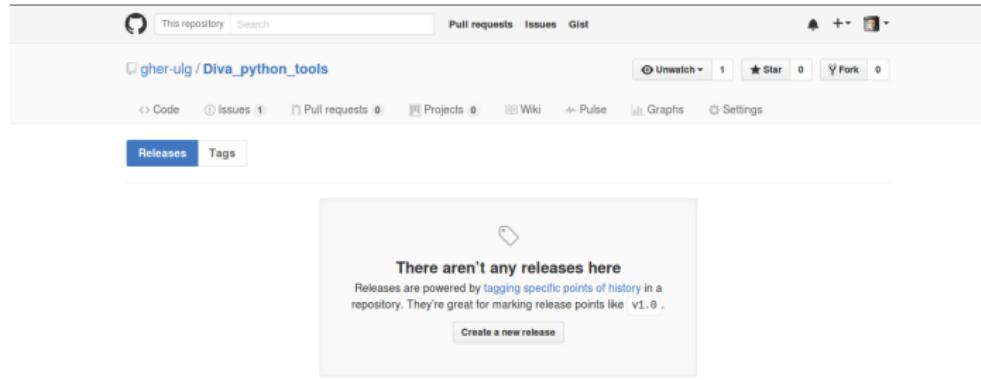
Examples of commands to create plots of DIVA input and output : data, contours, finite-element mesh, analysis field.

File	Description	Time Ago
GHERFormat.py	Reformatted code and small corrections	a year ago
README.md	Update README.md	an hour ago
diva_plot_UV.py	Reformatted code and small corrections	a year ago
diva_plot_contour.py	minor changes	6 months ago
diva_plot_covafit.py	Reformatted code and small corrections	a year ago
diva_plot_data.py	Reformatted code and small corrections	a year ago
diva_plot_mesh.py	minor changes	6 months ago
diva_plot_results.py	Reformatted code and small corrections	a year ago

Diva\_python\_tools

# Generating for software releases

Click on the *Release* button

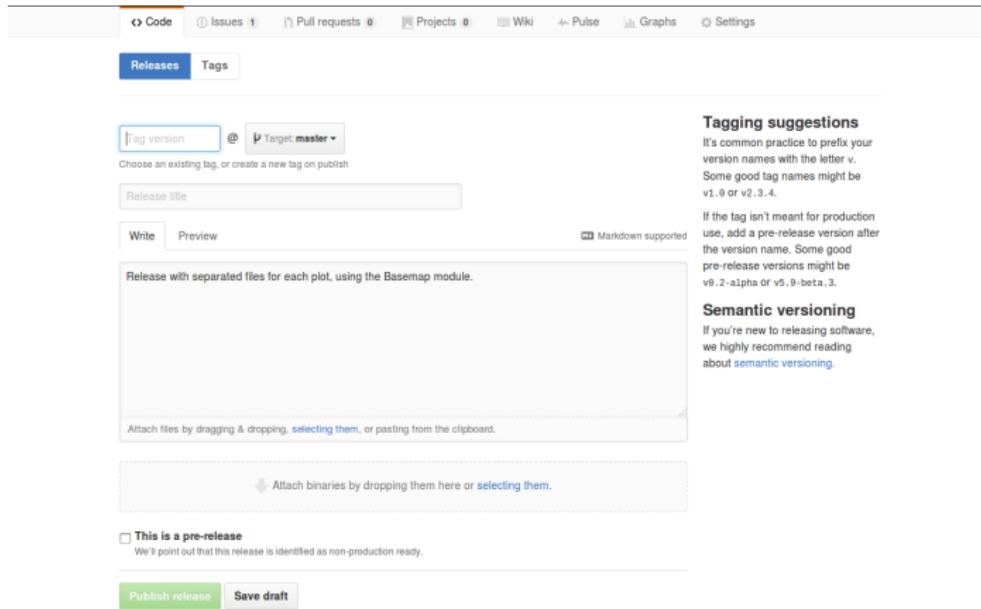


The screenshot shows a GitHub repository page for 'gher-ulg / Diva\_python\_tools'. The 'Releases' tab is active. A central message box displays the text: 'There aren't any releases here'. Below this, it says: 'Releases are powered by tagging specific points of history in a repository. They're great for marking release points like v1.0.' A 'Create a new release' button is visible at the bottom of the message box.



# Generating for software releases

Fill in the information and ...



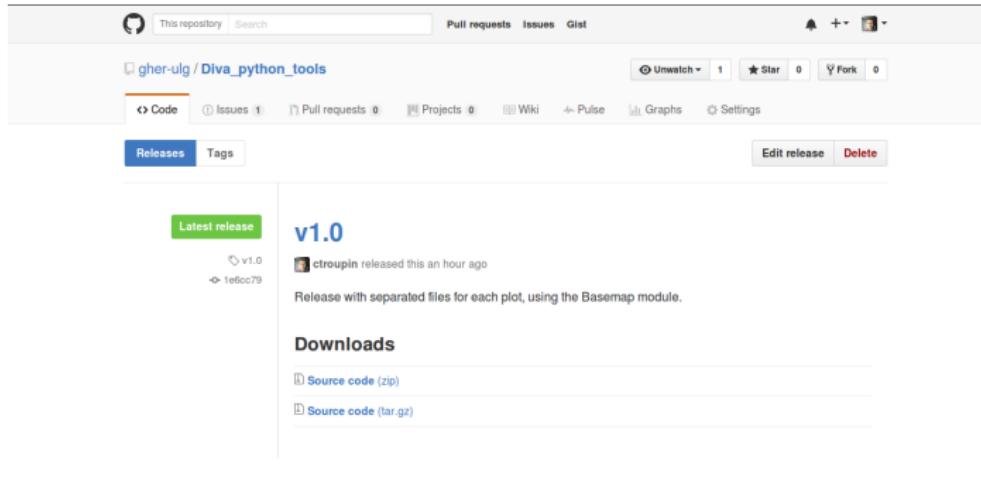
The screenshot shows the GitHub interface for creating a new release. At the top, there's a navigation bar with links for Code, Issues, Pull requests, Projects, Wiki, Pulse, Graphs, and Settings. Below that, a tab bar has 'Releases' selected, with 'Tags' as the other option.

The main form area includes:

- A field labeled "Tag version" with a dropdown menu showing "Target master".
- A note below it says "Choose an existing tag, or create a new tag on publish".
- A "Release title" input field.
- A "Write" button and a "Preview" button.
- A note indicating "Markdown supported".
- A text area containing the body of the release: "Release with separated files for each plot, using the Basemap module."
- A note below the body: "If the tag isn't meant for production use, add a pre-release version after the version name. Some good pre-release versions might be v0.2-alpha or v0.5-beta.3."
- A section titled "Tagging suggestions" with a note: "It's common practice to prefix your version names with the letter v. Some good tag names might be v1.0 or v2.3.4."
- A section titled "Semantic versioning" with a note: "If you're new to releasing software, we highly recommend reading about semantic versioning."
- A note at the bottom: "Attach files by dragging & dropping, [selecting them](#), or pasting from the clipboard."
- A note below the file attachment area: "Attach binaries by dropping them here or [selecting them](#).
- A checkbox labeled "This is a pre-release" with a note: "We'll point out that this release is identified as non-production ready."
- At the bottom, there are two buttons: "Publish release" (green) and "Save draft".

# Generating for software releases

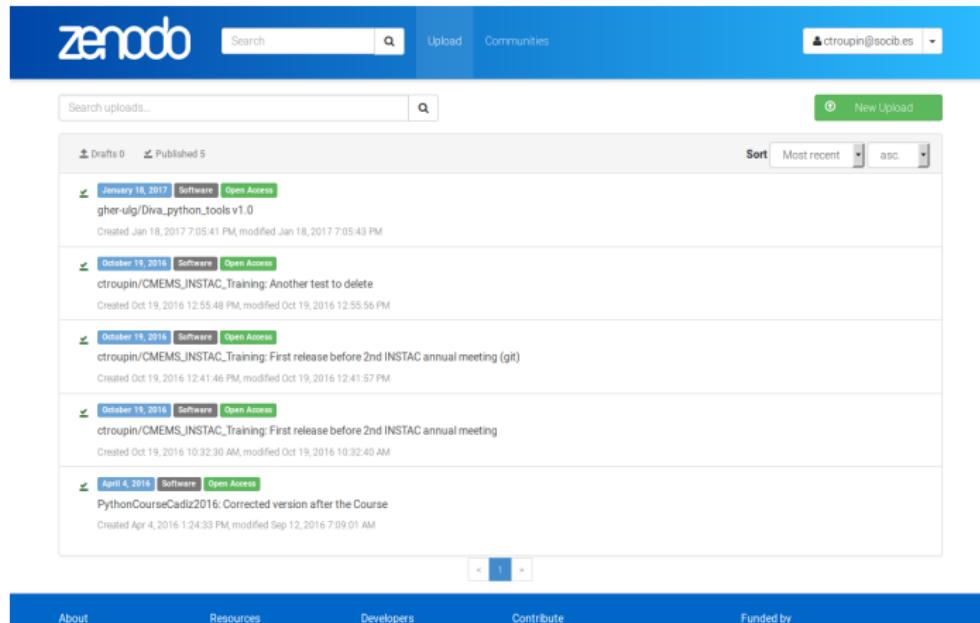
...make the release



The screenshot shows a GitHub repository page for 'gher-ulg / Diva\_python\_tools'. The top navigation bar includes links for 'Code', 'Issues' (1), 'Pull requests' (0), 'Projects' (0), 'Wiki', 'Pulse', 'Graphs', and 'Settings'. Below the navigation, there are tabs for 'Releases' (selected) and 'Tags'. A green button labeled 'Latest release' is visible. The main content area displays a release titled 'v1.0' by user 'ctroupin'. The release was made an hour ago and has a commit hash '1e6cc79'. The description states: 'Release with separated files for each plot, using the Basemap module.' Below the release, there is a section for 'Downloads' with links for 'Source code (zip)' and 'Source code (tar.gz)'. At the bottom of the page, there are links for 'Contact GitHub', 'API', 'Training', 'Shop', 'Blog', and 'About'.

# Generating for software releases

Check the project release on Zenodo and ...



The screenshot shows the Zenodo project page for a user named croupin. The page has a blue header with the Zenodo logo, a search bar, an upload button, and a communities link. A dropdown menu shows the email address croupin@soci.es. Below the header is a search bar and a 'New Upload' button. The main content area displays five software releases:

- January 18, 2017** Software Open Access  
gher-ulg/Diva\_python\_tools v1.0  
Created Jan 18, 2017 7:05:41 PM, modified Jan 18, 2017 7:05:43 PM
- October 19, 2016** Software Open Access  
croupin/CMEMS\_INSTAC\_Training: Another test to delete  
Created Oct 19, 2016 12:55:48 PM, modified Oct 19, 2016 12:55:56 PM
- October 19, 2016** Software Open Access  
croupin/CMEMS\_INSTAC\_Training: First release before 2nd INSTAC annual meeting (git)  
Created Oct 19, 2016 12:41:46 PM, modified Oct 19, 2016 12:41:57 PM
- October 19, 2016** Software Open Access  
croupin/CMEMS\_INSTAC\_Training: First release before 2nd INSTAC annual meeting  
Created Oct 19, 2016 10:32:30 AM, modified Oct 19, 2016 10:32:40 AM
- April 4, 2016** Software Open Access  
PythonCourseCadiz2016: Corrected version after the Course  
Created Apr 4, 2016 1:24:33 PM, modified Sep 12, 2016 7:09:01 AM

At the bottom, there are navigation buttons for the first, last, previous, and next pages.

About

Resources

Developers

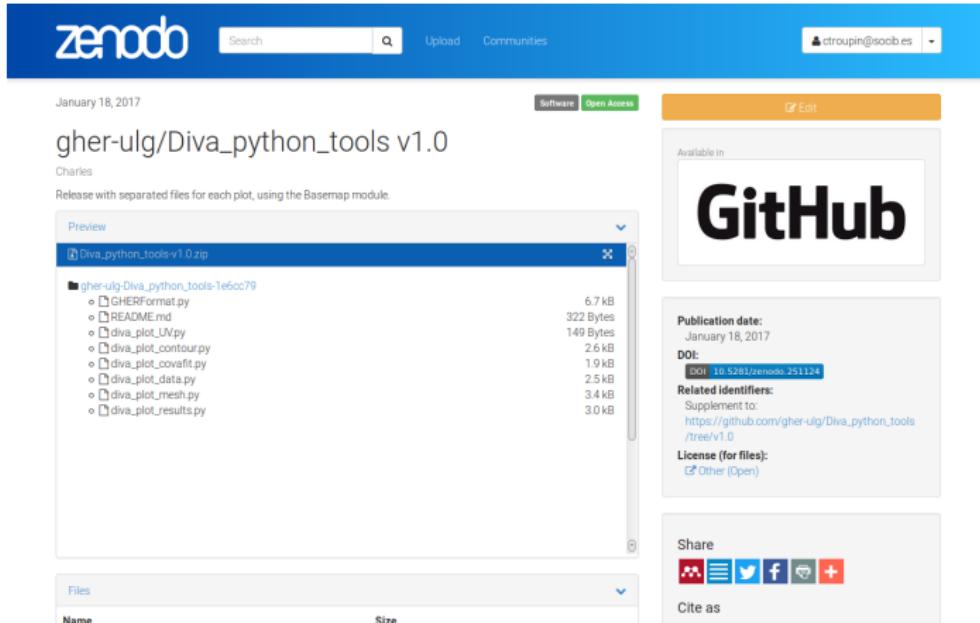
Contribute

Funded by

# Generating for software releases

...get the  badge

and celebrate



The screenshot shows the Zenodo software repository interface. At the top, there is a search bar, an upload button, and a communities section. A user profile for 'ctroupin@soob.es' is visible. The main content area displays a software entry for 'gher-ulg/Diva\_python\_tools v1.0'. The entry includes a preview of the contents, a file list, and a GitHub badge.

January 18, 2017

gher-ulg/Diva\_python\_tools v1.0

Charles

Release with separated files for each plot, using the Basemap module.

Preview

Diva\_python\_tools-v1.0.zip

gher-ulg-Diva\_python\_tools-1e6cc79

- GHERFormat.py 6.7 kB
- README.md 322 Bytes
- diva\_plot\_Uv.py 2.6 kB
- diva\_plot\_contour.py 1.9 kB
- diva\_plot\_covafit.py 2.5 kB
- diva\_plot\_data.py 3.4 kB
- diva\_plot\_mesh.py 3.0 kB
- diva\_plot\_results.py

Available In

**GitHub**

Publication date: January 18, 2017

DOI: [DOI 10.5281/zenodo.211124](https://doi.org/10.5281/zenodo.211124)

Related identifiers: [Supplement to: https://github.com/gher-ulg/Diva\\_python\\_tools/tree/v1.0](https://github.com/gher-ulg/Diva_python_tools/tree/v1.0)

License (for files): [Other \(Open\)](#)

Share

Cite as

Files

Name	Size
------	------

# *Use case 1*

get DOI for Diva releases

# Diva (simplified) development history

- 1990's: Variational Interpolation Method (Fortran 77)  
only 2D interpolations
- 2006 SeaDataNet, code refactory and set of bash scripts
- 2007  with ODV 
- 2008 code in Subversion , distribution through GHER  
web page
- 2009 new modules in Fortran 90  
for loops over depth and time
- 2012 new error calculation technique
- 2017 switch from  to **git**, distribution via 

# From SVN to Git and GitHub

## Easy way

- 1 Create a new repository with the latest release of the code
- 2 Lose all the history of the changes, the previous releases and developing branches



# From SVN to Git and GitHub

## **Hard/conservative way**

- 1 Git repository whose structure reflects that of SVN  
(trunk, branches, tags)
- 2 Use the `git-svn` bridge
- 3 End up with a new GitHub repos with all the history

## Use-case: Diva releases

- 1 Switch from SVN to GitHub (conserving the history)

### Resources:

- ▶ [https://git-scm.com/book/en/v2/  
Git-and-Other-Systems-Migrating-to-Git](https://git-scm.com/book/en/v2/Git-and-Other-Systems-Migrating-to-Git)
- ▶ <http://john.albin.net/git/convert-subversion-to-git>
- ▶ <https://www.atlassian.com/git/tutorials/migrating-overview>

# Use-case: Diva releases

- 1 Switch from SVN to GitHub (conserving the history)
- 2 Enable Diva repository on Zenodo



# Use-case: Diva releases

- 1 Switch from SVN to GitHub (conserving the history)
- 2 Enable Diva repository on Zenodo
- 3 Edit the different *tags* on GitHub to get DOI

The screenshot shows a GitHub release page for the tag 'diva-4.6.5'. At the top, there are tabs for 'Releases' and 'Tags', with 'Tags' being the active tab. To the right are 'Edit tag' and 'Delete' buttons. Below the tabs, the tag name 'diva-4.6.5' is shown with a copy icon and a commit count of '17d7517'. A note indicates that 'swatelet tagged this on Apr 14, 2014 · 132 commits to master since this tag'. The tag description is 'release 4.6.5'. Under the heading 'Downloads', there are links for 'Source code (zip)' and 'Source code (tar.gz)'. The entire interface is white with blue and grey accents.

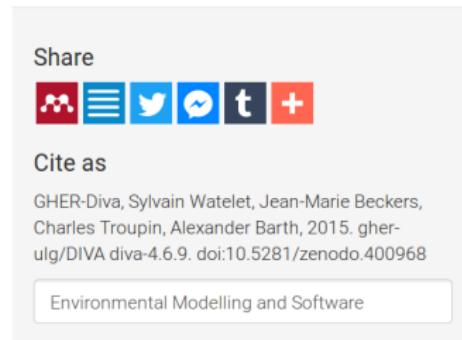
## Use-case: Diva releases

- 1 Switch from SVN to GitHub (conserving the history)
- 2 Enable Diva repository on Zenodo
- 3 Edit the different *tags* on GitHub to get DOI
- 4 Now we can have

*"The version used for the DIVA software is the 4.6.9,  
doi: [10.5281/zenodo.400968](https://doi.org/10.5281/zenodo.400968)*

# Use-case: Diva releases

- 1 Switch from SVN to GitHub (conserving the history)
- 2 Enable Diva repository on Zenodo
- 3 Edit the different *tags* on GitHub to get DOI
- 4 Now we can have  
*"The version used for the DIVA software is the 4.6.9,  
doi: [10.5281/zenodo.400968](https://doi.org/10.5281/zenodo.400968)"*
- 5 Bonus: "cite as" and social media



# *Use case //*

SOCIB Glider toolbox

# Glider toolbox (Matlab/Octave)



SOCIB Glider toolbox is a set of MATLAB/Octave scripts and functions to manage the data collected by our Glider fleet



NetCDF-CF compliant

# Objectives

- ▶ Publish results of our day by day work
- ▶ Track the utilization of our toolbox from research activities



# User Experience



A screenshot of a ZENODO publication record. The record includes fields for Publication date (July 31, 2017), DOI (10.5281/zenodo.136706), Keyword(s) (bioacoustics, physical oceanography, data preservation, NetCDF, Matlab, dataset, Glider, Bloom, Seaglider, SeaExplorer, SOCIB), and License (for files) (Creative Commons Attribution 4.0).

# Conclusions on Zenodo

- 1 Seamless integration with GitHub, login via ORCID
- 2 A big step toward reproducibility
- 3 A mature and user-friendly tool



*I don't mind your thinking slowly;  
I mind your publishing faster than you think*

W. Pauli