

Citizen Science & Sustainable Development

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The Citizen Science Center Zurich aims at enabling
RESEARCHERS and CITIZENS

to create and conduct research collaborations (Citizen Science projects)
that produce EXCELLENT SCIENCE while supporting the UN SDGs.



**University of
Zurich**^{UZH}

ETH zürich

Types of CS Projects

VOLUNTEER COMPUTING

Computer owners donate their spare computing resources (processing power, storage and Internet connection) to one or more research projects.

(time and CPU intensive simulations)

VOLUNTEER THINKING

Volunteers carry out tasks (typically on a web interface) that are usually unsuitable or extremely difficult for computers

(image analysis, pattern recognition, text transcription)

VOLUNTEER SENSING

Volunteers as “sensors”, willing to provide data in a passive way or collect data in an active way

(photos, samples, annotations)

Models of participation



Citizen Engagement

CONTRIBUTORY

Projects designed by scientists and for which citizens primarily contribute data

COLLABORATIVE

Projects designed by scientists and for which citizens contribute data but also help to refine project design, analyze data, and/or disseminate findings

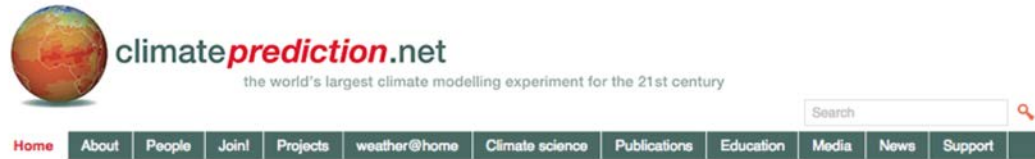
CO-CREATED


Projects designed by scientists and citizens working together and for which at least some of the public participants are actively involved in most or all aspects of the research process

Volunteer Computing Examples

World Community Grid - help scientists solve the world's biggest problems in health and sustainability

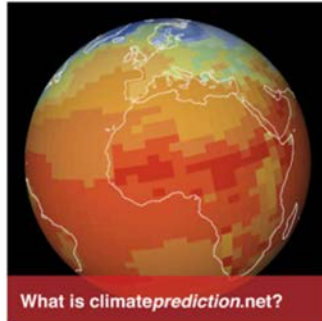
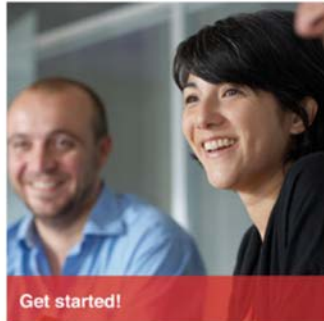
Climateprediction.net – the world's largest climate modelling experiment to help answer questions about how climate change is affecting our world, now and in the future



Research | About | News | Community | My Contribution 

Let your computer daydream science


Learn More



Mapping new territory inside our bodies

Tasks Returned Today: 160,848

Trillions of bacteria inside our bodies may play a large role in the development of diseases such as Type 1 diabetes. How? Help researchers find out in this comprehensive study of the human microbiome. [Learn More](#)



Latest News

Meet the CPDN team at the University of Oxford's Curiosity Carnival on 29 September

CPDN scientists in Nairobi for final

Welcome to the world's largest climate modelling experiment

Climateprediction.net is a volunteer computing, climate modelling project.

Your device could help...


...identify more effective HIV/AIDS treatments.

Researchers are searching for new antiviral drugs to control the progression of HIV, prevent the onset of and prolong life.



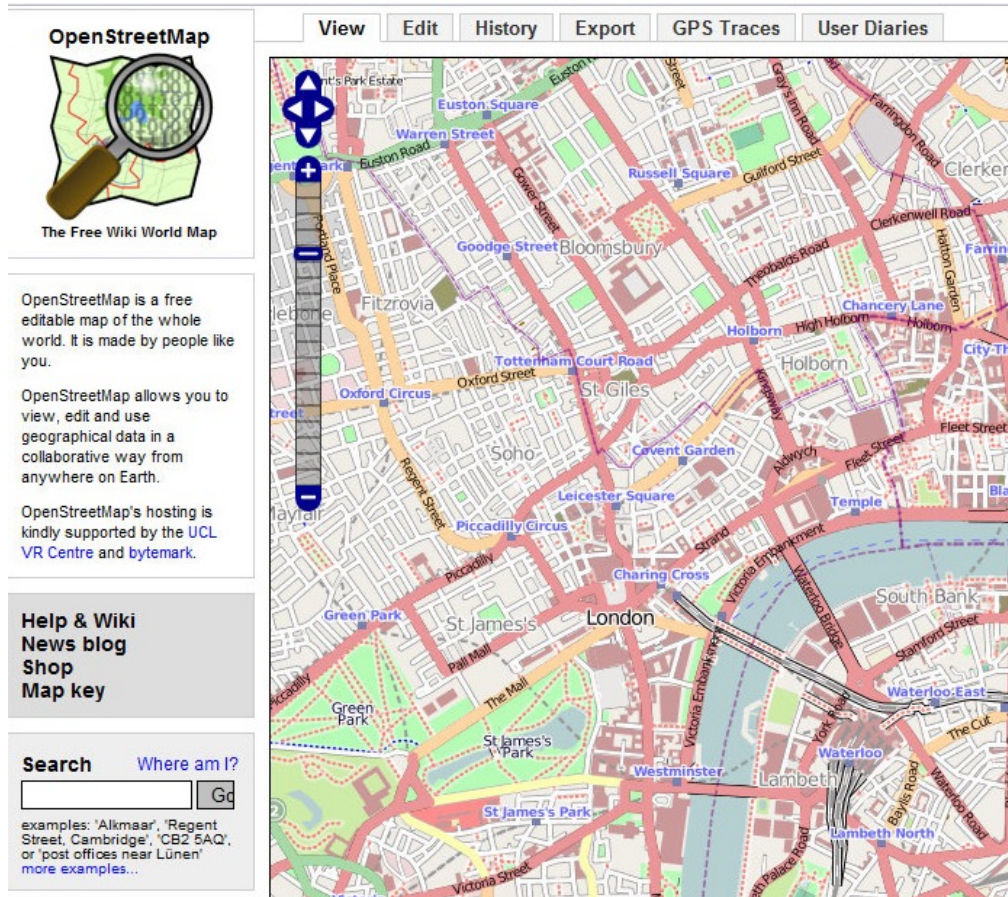
With the power of World Community Grid, researchers have...

...discovered how nanotechnology could help provide clean water to millions.



Volunteer Thinking: OSM

OpenStreetMap open map built by volunteer mappers that contribute and maintain open data about roads, trails, cafés, railway stations, and much more, all over the world.



The screenshot shows the OpenStreetMap website interface. At the top, there are navigation tabs: View, Edit, History, Export, GPS Traces, and User Diaries. Below the tabs is a map of London, showing various streets and landmarks. On the left side, there is a sidebar with the following content:

- OpenStreetMap** logo and the text "The Free Wiki World Map".
- A paragraph: "OpenStreetMap is a free editable map of the whole world. It is made by people like you."
- A paragraph: "OpenStreetMap allows you to view, edit and use geographical data in a collaborative way from anywhere on Earth."
- A paragraph: "OpenStreetMap's hosting is kindly supported by the UCL VR Centre and bytemark."
- A section titled "Help & Wiki" with links for "News blog", "Shop", and "Map key".
- A search bar with the text "Search Where am I?" and a "Go" button. Below the search bar, there are examples: "examples: 'Alkmaar', 'Regent Street, Cambridge', 'CB2 5AQ', or 'post offices near Lünen' more examples...".

HOT – Humanitarian OpenStreetMap Team coordinates the simultaneous digitization efforts of thousands of volunteers worldwide after disasters



[Get Involved](#) [Projects](#) [News](#) [About](#) [Partnerships](#) [Donate](#) [Contact](#)

HOT Activates for Multiple Disasters: Hurricane Irma and Maria, Mexico Earthquakes and Bangladesh Floods

This week has seen disasters and destruction on an unprecedented scale, and the HOT Community has activated to respond. Details on the projects, and how you can get involved are below.

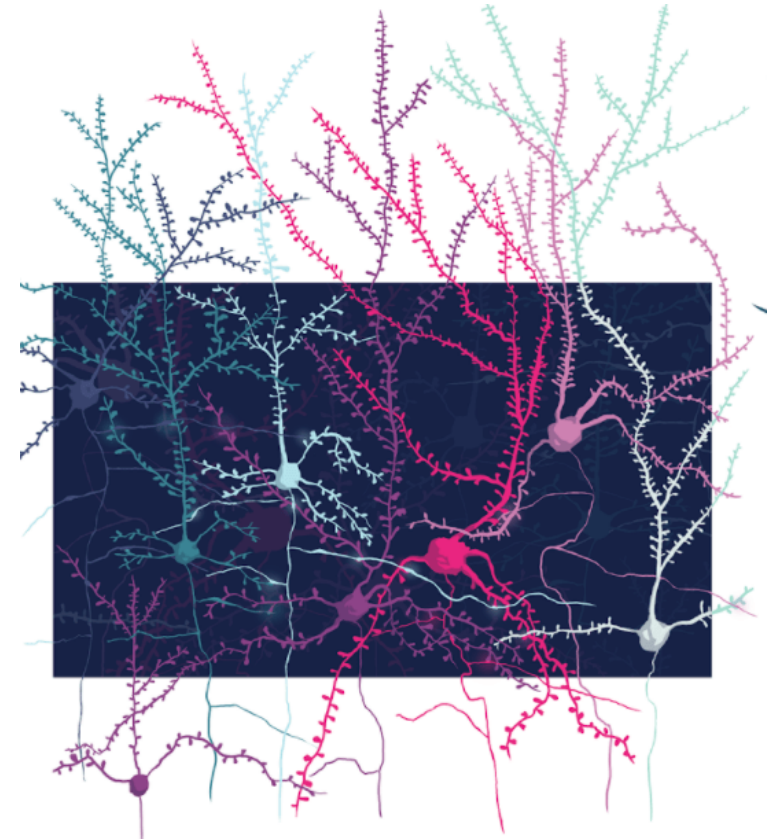
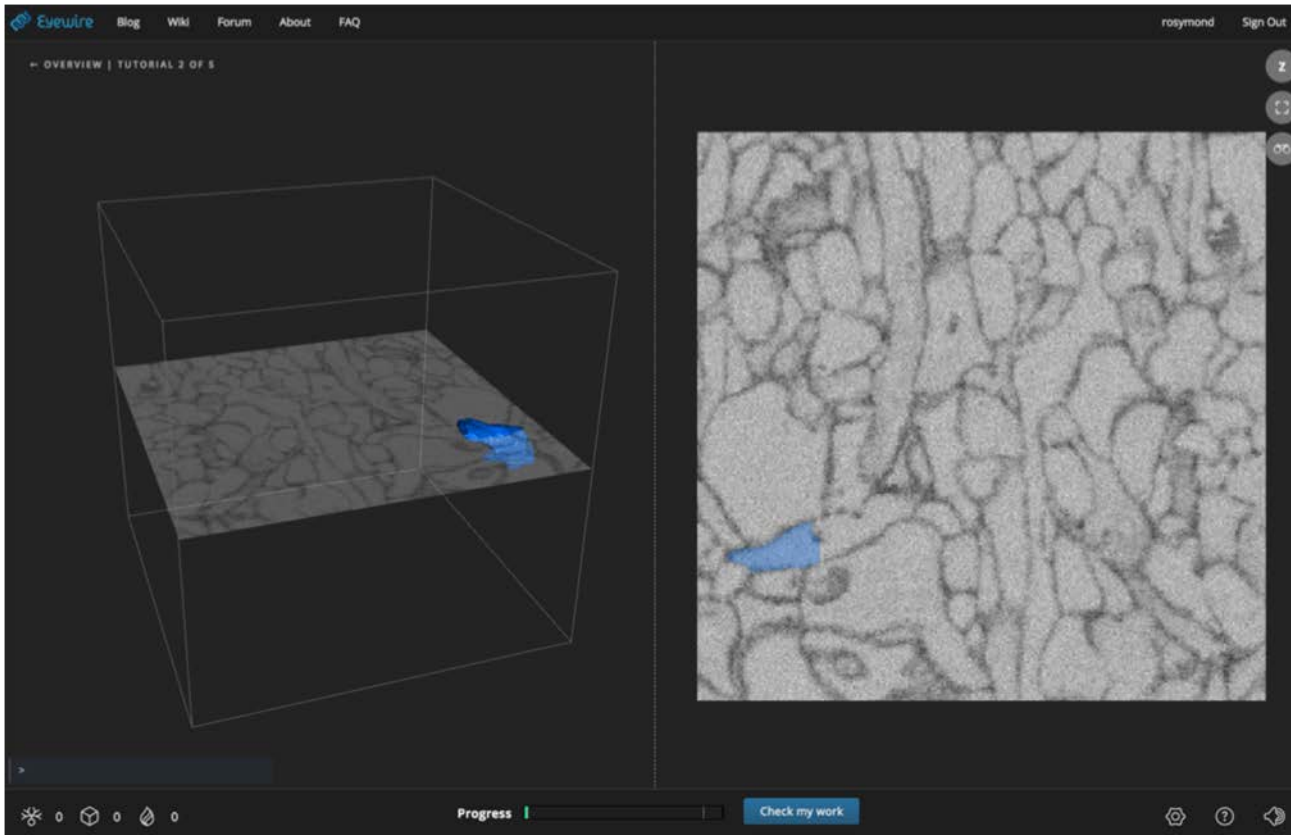
[Learn more](#)



Volunteer Thinking: Eyewire

Eyewire - Mapping the 3D structure of neurons and advancing the quest to understand human brain, starting with connections between retinal neurons.

Gamers solve 3D puzzles to map vast neuron branches, completing reconstructions of cells and ultimately, entire circuits.



Volunteer Thinking: Old Weather

Old Weather - Help climate scientists recover Arctic and worldwide weather observations recorded in ship's logs since the mid-19th century.



HOME ABOUT RESOURCES BLOG DISCUSS

Old Weather

Help scientists recover Arctic and worldwide weather observations recorded in ship's logs since the mid-19th century.

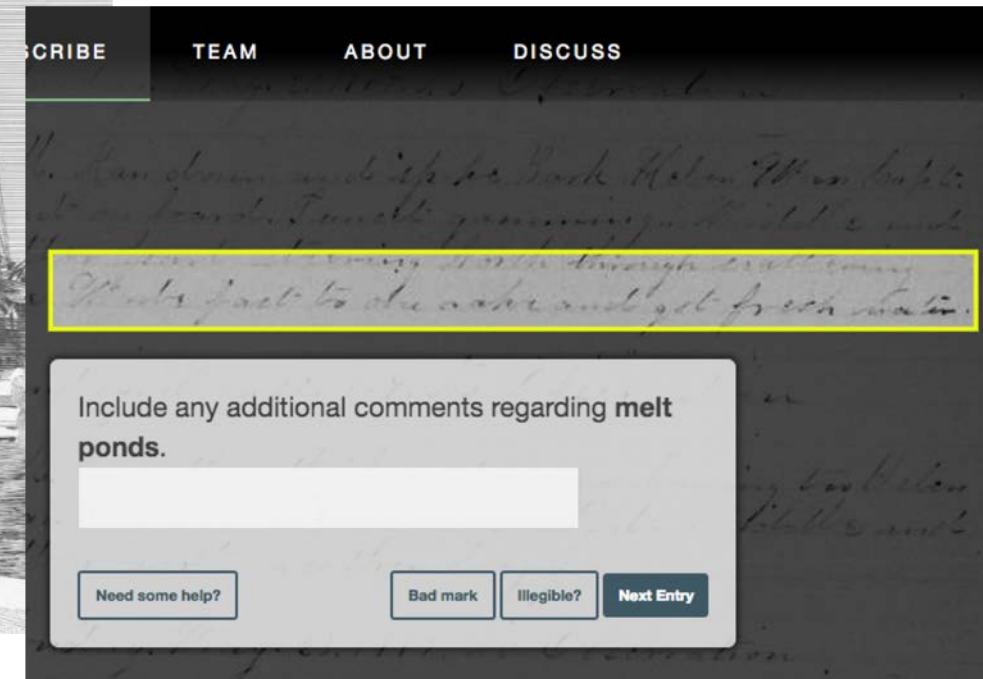
Choose a project and get started:

- Old Weather: Whaling** *Explore the Arctic of the past from the deck of a whaling ship*
- Old Weather: Arctic** *Rediscover the historic Arctic voyages of the U.S. Navy and Coast Guard*

Old Weather: Citizen S...
OLD WEATHER

Why Scientists Need You

In this video scientists explain why your contributions are vital, and what they're doing with your results behind the scenes.



SUBSCRIBE TEAM ABOUT DISCUSS

Handwritten text: *Wrote fast to the ash and got fresh water.*

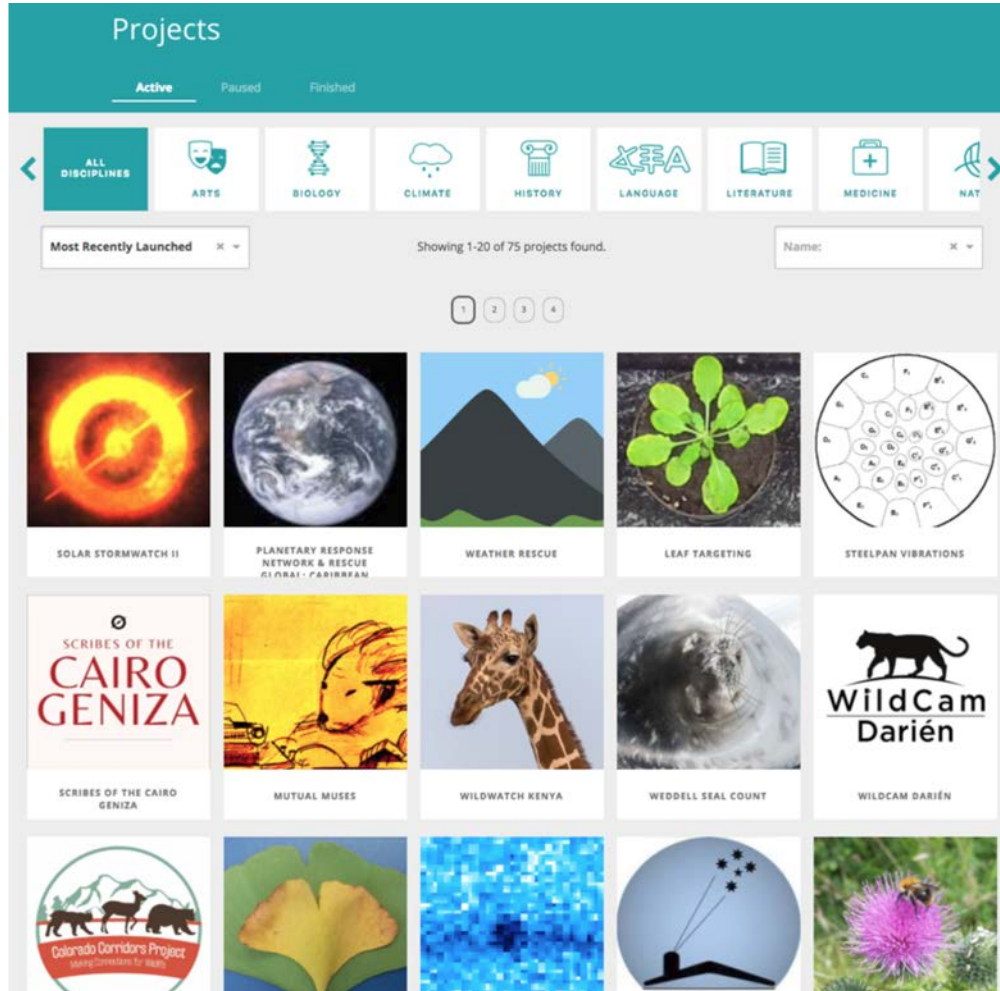
Include any additional comments regarding melt ponds.

Need some help? Bad mark Illegible? Next Entry

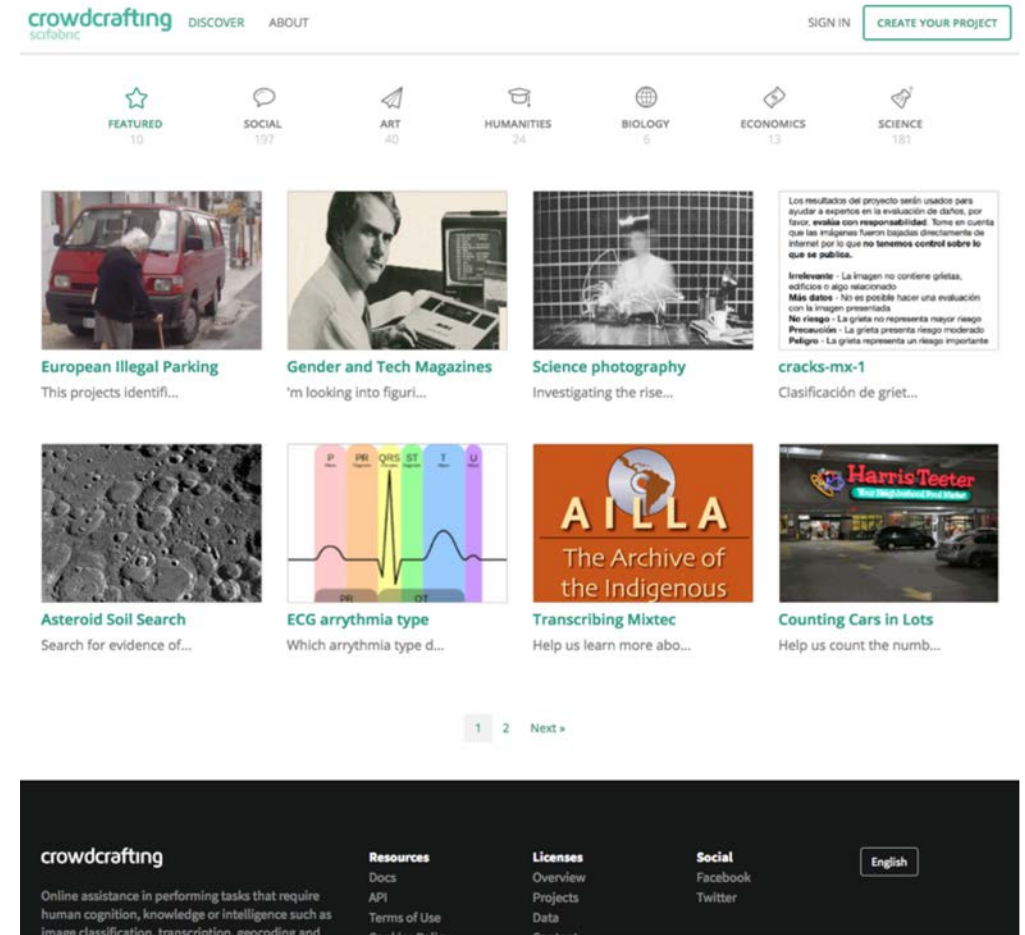
Volunteer Thinking: Portals

Zooniverse.org

Crowdcrafting.org



The screenshot shows the Zooniverse.org 'Projects' page. At the top, there are tabs for 'Active', 'Paused', and 'Finished'. Below this is a navigation bar with icons for various disciplines: ALL DISCIPLINES, ARTS, BIOLOGY, CLIMATE, HISTORY, LANGUAGE, LITERATURE, MEDICINE, and NAT. A search bar is present with the text 'Showing 1-20 of 75 projects found.' and a search input field. The main content area displays a grid of project cards, each with a representative image and a title. Visible projects include 'SOLAR STORMWATCH II', 'PLANETARY RESPONSE NETWORK & RESCUE', 'WEATHER RESCUE', 'LEAF TARGETING', 'STEELPAN VIBRATIONS', 'SCRIBES OF THE CAIRO GENIZA', 'MUTUAL MUSES', 'WILDWATCH KENYA', 'WEDDELL SEAL COUNT', and 'WILDCAM DARIÉN'.

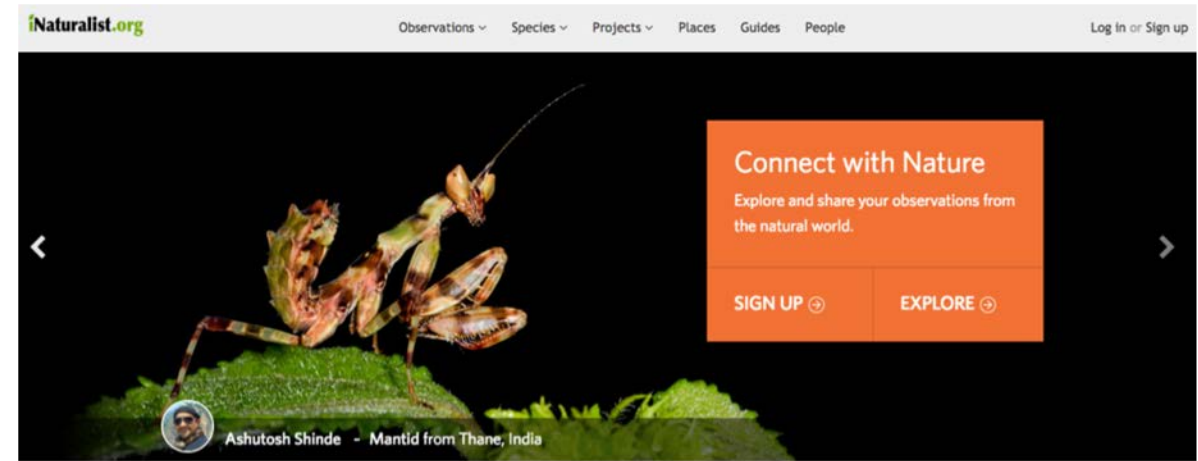
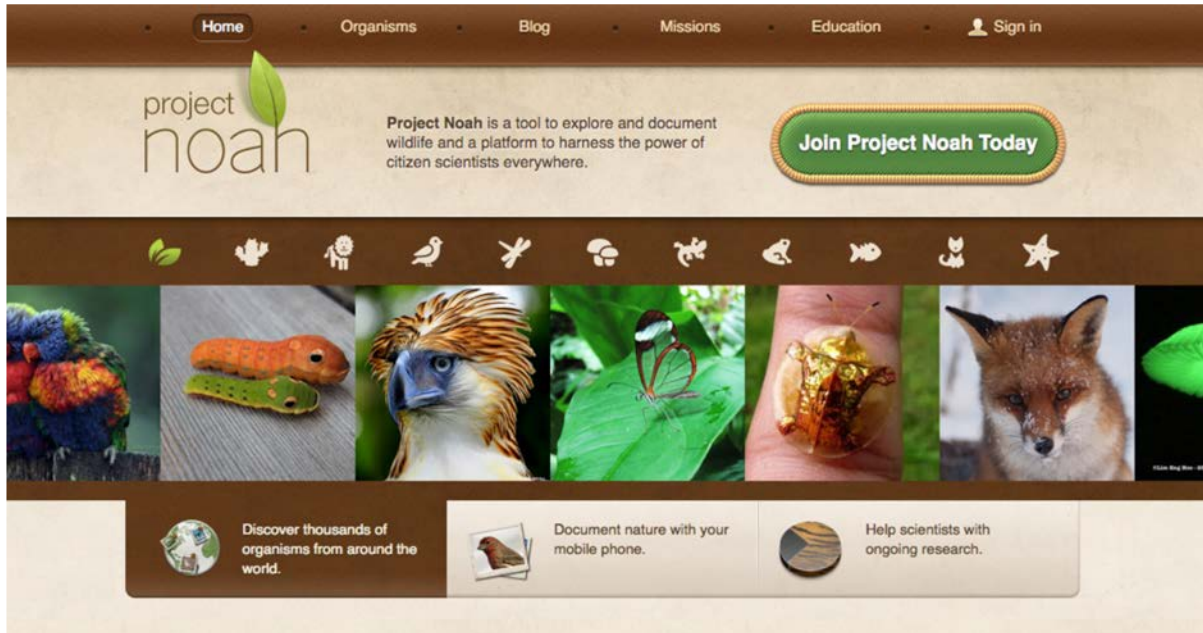


The screenshot shows the Crowdcrafting.org homepage. At the top, there is a navigation bar with 'DISCOVER' and 'ABOUT' links, and buttons for 'SIGN IN' and 'CREATE YOUR PROJECT'. Below the navigation bar is a horizontal menu with icons and counts for various categories: FEATURED (10), SOCIAL (197), ART (40), HUMANITIES (24), BIOLOGY (6), ECONOMICS (13), and SCIENCE (181). The main content area features a grid of project cards. Each card includes a representative image, a title, and a brief description. Visible projects include 'European Illegal Parking', 'Gender and Tech Magazines', 'Science photography', 'cracks-mx-1', 'Asteroid Soil Search', 'ECG arrhythmia type', 'Transcribing Mixtec', and 'Counting Cars in Lots'. A footer section contains the 'crowdcrafting' logo, a 'Resources' menu (Docs, API, Terms of Use, Cookies Policy), a 'Licenses' menu (Overview, Projects, Data, Contact), and a 'Social' menu (Facebook, Twitter) along with an 'English' button.

Volunteer Sensing: Project Noah / iNaturalist

Project Noah - a tool to explore and document wildlife. Discover thousands of organisms around the world, document nature with your mobile phone, help scientists with ongoing research.

iNaturalist - Contribute to Science. Share your findings with scientific data repositories like the Global Biodiversity Information Facility to help scientists find and use your data. All you have to do is observe.



How It Works



Volunteer Sensing + DIY: Public Lab

Public Lab – Open research on environment to the public. By doing so, communities facing environmental problems are able to advocate for the changes they want to see. Promotes hands-on, do-it-yourself solutions. Public Lab was founded in the wake of the **2010 BP oil disaster**.



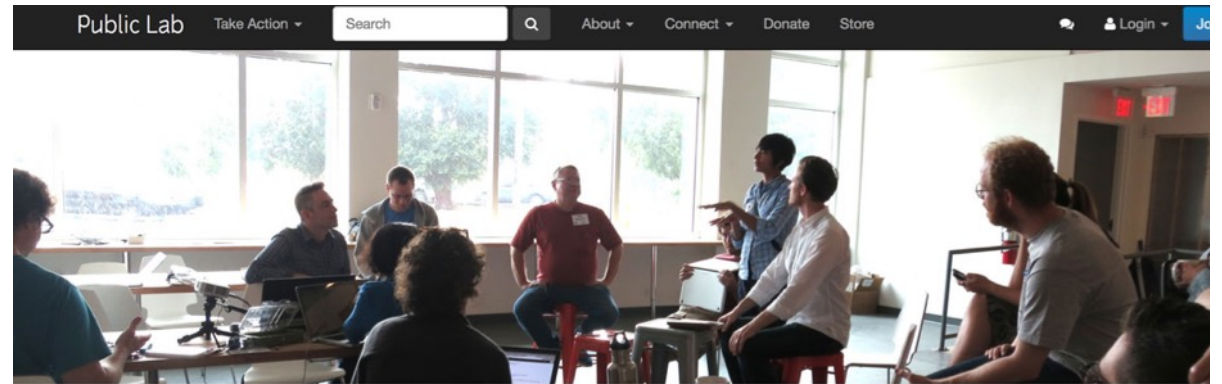
 Balloon & Kite Mapping



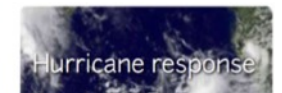
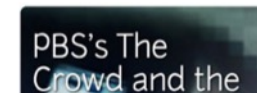
Water Sampling



Soil Sampling



Public Lab is a community where you can learn how to investigate environmental concerns. Using inexpensive DIY techniques, we seek to change how people see the world in environmental, social, and political terms. [Join now »](#)



Volunteer Sensing + DIY: Safecast

Safecast – formed in response of the devastating earthquake and tsunami in Japan on 2011 and quickly began monitoring, collecting, and openly sharing information on environmental radiation, collected with portable and open DIY Geiger detectors.



Quickly recognized in Japan and abroad as a reliable and unbiased source of environmental information that citizens can use when making decisions

Data quality

Potential concerns about data quality and accuracy – as collected and and/or analysed by non-professional.

Solutions:

- Statistics - Quantitative estimates of error by multiple independent interactions with the data
- providing training/close supervision
- cross-checking for consistency with existing literature or expert data
- cross-checking for consistency with their own observations
- quiz-style questionnaire at the end of surveys □
- simplifying the tasks asked of the public and/or adapting the research questions

Open data

“Open data and content can be freely **used, modified, and shared** by anyone for any purpose”

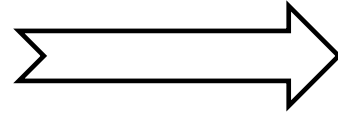
Open data is data that is:

- **Published in an open format** - An open format is one which is platform independent (ie. it is irrelevant what operating system your PC is running to use it; Windows, Mac or any other) and it is machine readable (ie. CSV, TXT)
- **Machine readable** – This means that the data, both in its format (CSV, TXT) and its structure, can be read by a computer without human aid. This means that the data is clearly structured in a logical way.
- **Published under an Open license** – in order for data to be of value to everyone it needs to have as few barriers to re-use as possible, ie. license that allows for free reuse.

Citizen Science

Astronomy, bird watching,
protein folding, particle
physics, etc.

RESEARCH

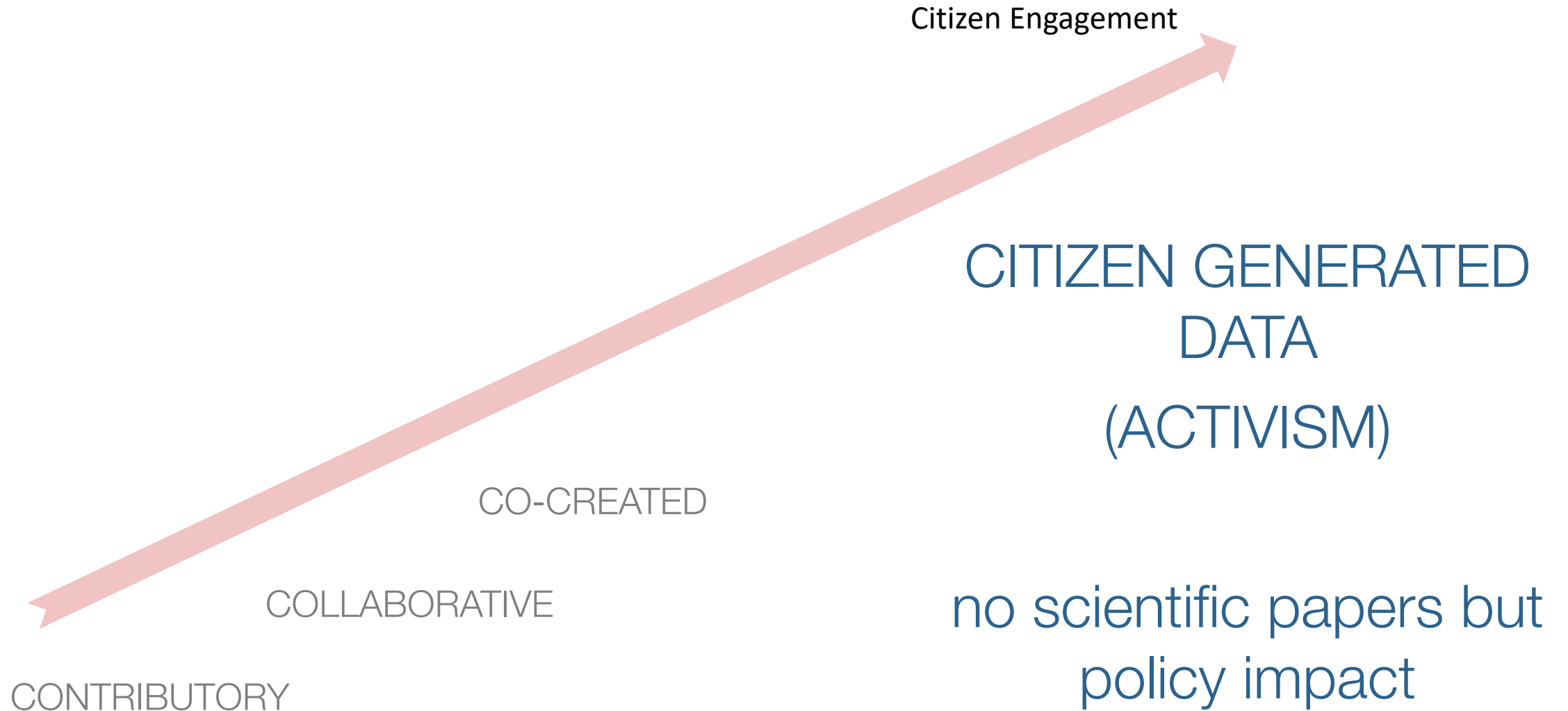


Crowdsourcing

Humanitarian mapping, trash
tracking, social mapping,
environmental sampling, etc.

SOCIAL ENGAGEMENT,
HUMANITARIAN ISSUES

Citizen Taking Over ...



Sustainable Development Goals



In September 2015, 193 world leaders have committed to 17 Sustainable Development Goals that - in the next 15 years - would **end extreme poverty**, **fight inequality and injustice**, and **fix climate change**.

Crowdsourcing Sustainable Development

Cowdsourcing + Open Data

=

independent verification mechanisms

to make stakeholders (governments, corporations, NGOs and international organisations) accountable

Citizens can monitor and verify progress towards SDGs at a local, regional, and even global level.



Goal 5 - SafeCity

Goal 5 - Achieve GENDER EQUALITY and empower all women and girls

SafeCity - Crowdmapping sexual violence in India

Mapping verbal and physical sexual violence in public spaces in India by providing an easy reporting tool that allows for anonymous reporting (geo-located)

IMPACT

- Empower women and girls to break their silence
- Make issue visible to force collective action
- Individuals - can make better choices regarding their own safety
- Communities - can mobilise around the issue + demand for better accountability from institutions
- Institutions - new dataset to work + better relationship with communities



ForestWatchers



A project created by Brazilian researchers to get help assessing deforestation in satellite images. The project is based on free (or donated) catalogues of high-resolution Earth imagery.

Goal 15

Protect, restore and promote sustainable use of terrestrial ECOSYSTEMS

Somali Drought



This project investigates what information about drought symptoms can be extracted from photos taken during field assessments. Images in this project come from FAO SWALIM on Flickr. (GeoTag-X)

Goal 13

Combat CLIMATE CHANGE and its impacts

Pecuniary interests



A project initiated by The Guardian in Australia to investigate the register of interests - political gifts and investments in New South Wales.

Goal 16

JUSTICE for all and build effective, accountable and inclusive institutions at all levels

Thank you!

citizenscience.ch
openseventeen.org