

3D Printing with Bio-based Materials

**Host: eSTEAM Camp at KHEPRW
Institute**

Partner: Impressive Prototypes LLC

Indianapolis, IN

June 13th, 2016

OPEN
SOURCE CIRCULAR
ECONOMY days

JUNE 9-13, 2016

Agenda (9 am to 10:30 am)

- Welcome and Introductions
- Open Source Circular Economy – what is it and why should you be interested in it?
- Plastic waste – it's a huge problem, what can be done about it?
- 3D printing – let's make sure it's a solution, not a new problem
- 3D printing – what is it and how does it work
- Is it the future of local, customized manufacturing?
- Examples of products made by Impressive Prototypes
- Open source 3D printers – what are they and what are their advantages
- Discussion

Indianapolis at OSCE Days 2016

OSCEdays is an open, distributed and globally connected event.

Experts, enthusiasts and innovators from across the globe work together in order to exchange ideas and solutions – prototyping systems, products and designs for an Open Source Circular Economy.

Motto:

Nature does not create waste, we do.

Nature operates in circles, we operate in lines.

Nature changes slowly, we go fast.

Circular economy brings human-made systems closer to ecosystems and that's a good thing.



Open Source Circular Economy – What is it?

Open Source

is a successful collaboration method for developing software, hardware and design. It is based on transparent (and often distributed) development, and the open sharing of files and solutions.

Open Source Circular Economy – What is it?

Circular Economy

is the concept of a truly sustainable economy that works without waste, saves resources and is in synergy with the biosphere. Rather than seeing emissions, byproducts, or damaged and unwanted goods as 'waste', in the circular economy they become raw material, nutrients for a new production cycle.

Open Source Circular Economy – What is it?

Open Source + Circular Economy

We believe that a sustainable, waste free,
circular economy needs transparency,
open access to information
and open source solutions.

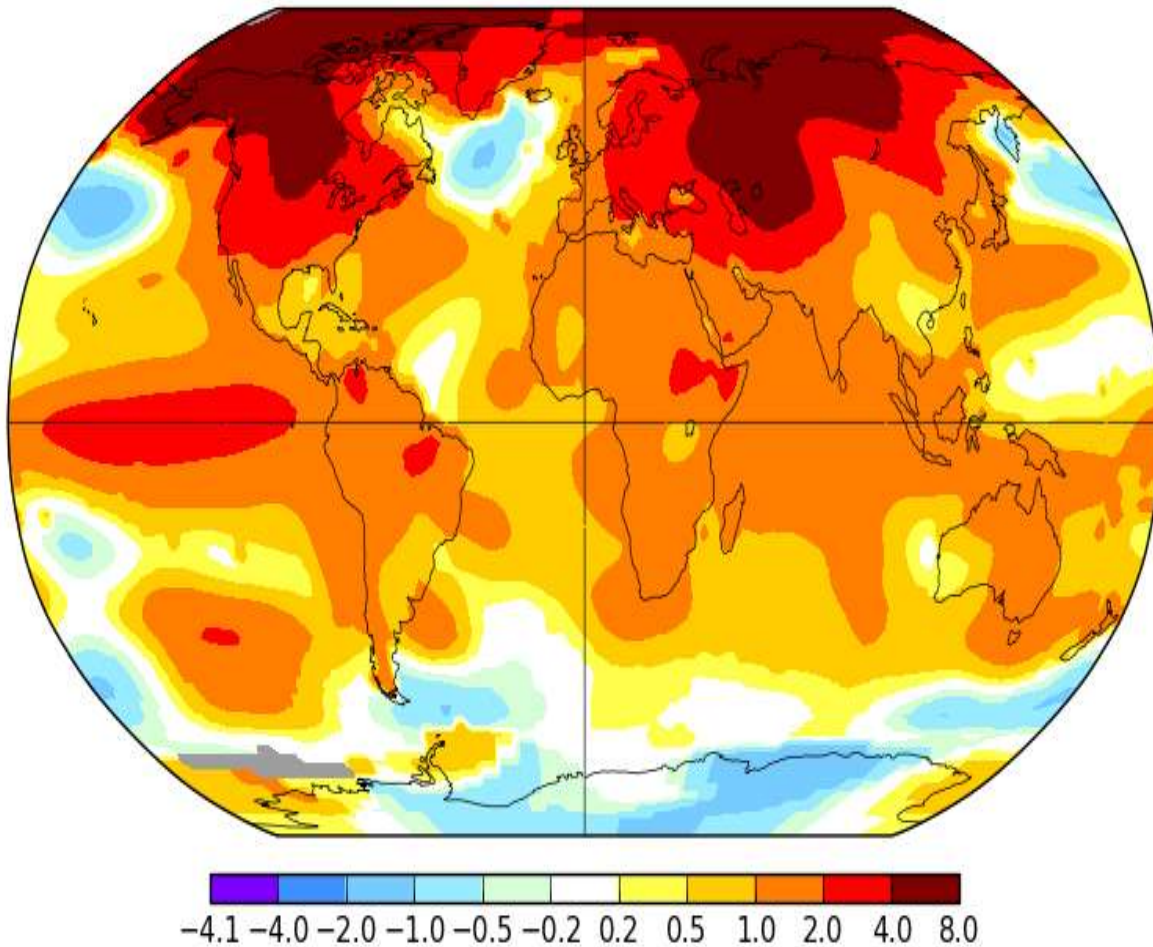
Open Source Circular Economy – What is it?



Lake ecosystem: Source: Georgia Department of Natural Resources

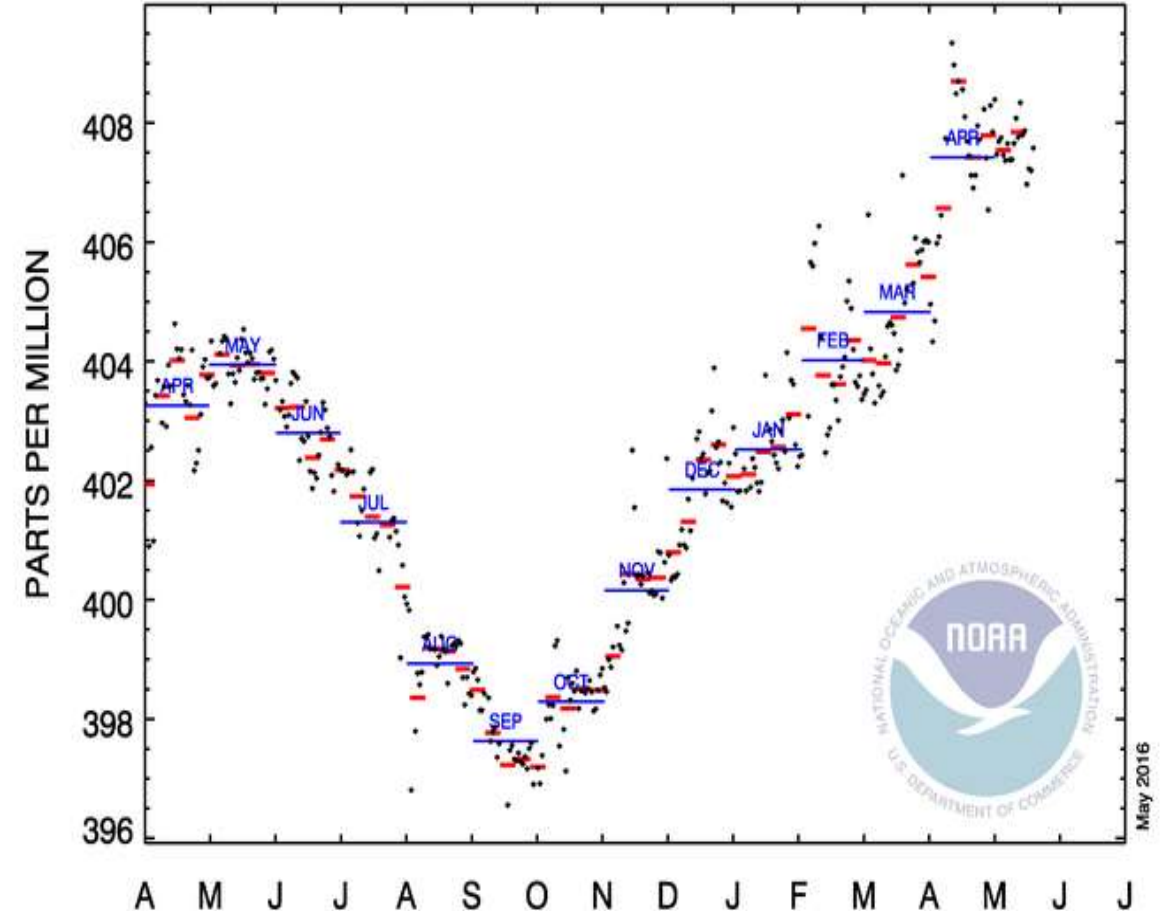
Open Source Circular Economy – Why should you care?

Jan-Mar 2016 L-OTI(°C) Anomaly vs 1951-1980 1.24



<http://data.giss.nasa.gov/gistemp/maps/>

One year of CO₂ daily and weekly means at Mauna Loa



<http://www.esrl.noaa.gov/gmd/ccgg/trends/weekly.html>

Plastic Waste – A Huge Problem



UC Berkeley <http://www.plasticdisclosure.org/>

Plastic Waste – A Huge Problem



Mouth of the Los Angeles River, Long Beach, California.
Photo source: [©© Bill McDonald, Algalita Foundation / Heal The Bay](#)



Photo: [©© tedxgp2 / Plastic pollution coalition](#)
<http://plastic-pollution.org/>

3D Printing – A Solution, Not A New Problem



Local Motors Strati - an electric-powered 3D-printed car from the Factory of the Future™.
<https://localmotors.com/3d-printed-car/>

3D Printing – A Solution, Not A New Problem

Thermoplastics = materials that soften when heated and harden when cooled

ABS (Acrylonitrile Butadiene Styrene) is an oil-based plastic **NOT GOOD**

PLA (Poly Lactic Acid) is made from organic material (cornstarch, sugarcane) **GOOD**

Bio-composite filament – plant or waste material combined with PLA **BEST**

3D Printing – A Solution, Not A New Problem



Entwined – Industrial hemp filament



Wound-up - Coffee waste filament

3DOM USA based in Fargo, North Dakota

<http://www.3domusa.com/>

3D Printing – A Solution, Not A New Problem

Do I need that thing?

If I need it, how should it be made?

Where? By whom?

Will it last? Will it be circular?

Will it end up in a landfill or ocean or somewhere where it will do damage?

What materials will be used? Should I invent a new material?

Should I pay or ask for a fair instead of lowest price?

If I make it, will I share with others its design, how it's made? Will it be open source?

Thank you! Let's work together to make Indy an OSCE hotspot

Join the Open Source Circular Economy Forum

<http://community.oscedays.org/>

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