GISday

Tangible 3D printouts from GIS-Data:
A work in progress report

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GFZ
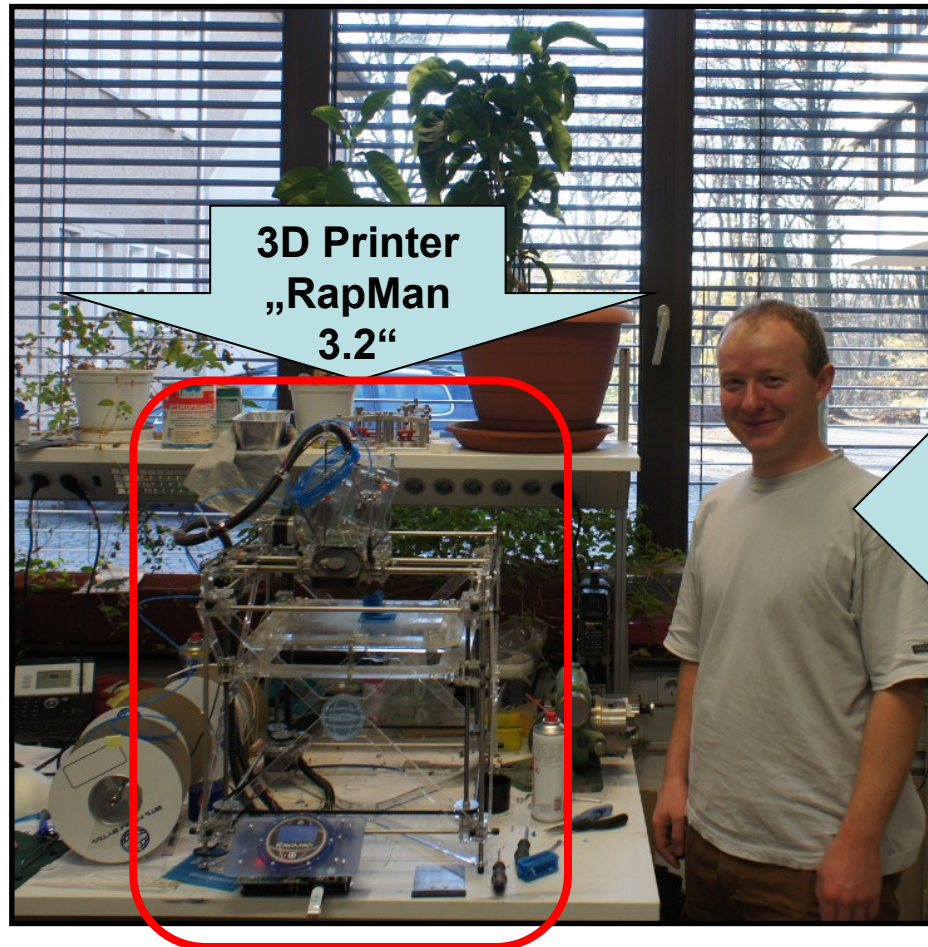Helmholtz Centre
POTSDAM

HELMHOLTZ
ASSOCIATION

Introduction

- We use GIS to
  - process environmental data to trigger decisions –**by decision makers**.
  - to derive 2D maps from our data for the web or print **to communicate**.
  - to derive volatile 3D visualisations using GIS or other tools – **to communicate.**

- Things get tricky
  - When the decision makers have to interact with the data.
  - Decision makers aren't GIS ninjas – and don't carebother to read the manual.
  - Volatile 3D images on 3D Screens like Geo Walls, Visio Labs etc. don't last for later reference.
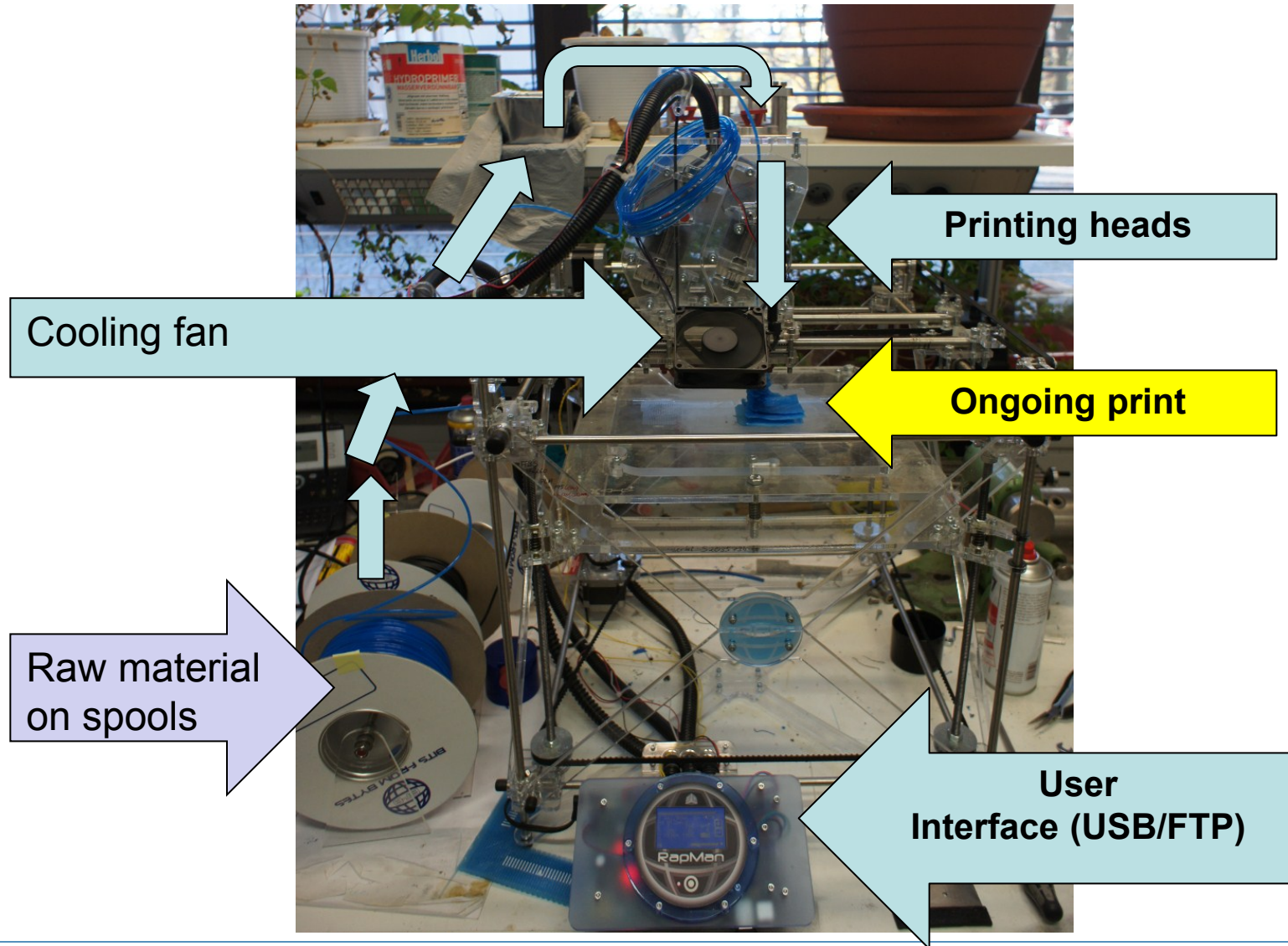
- Duh.

Skills + Tools + Standards:
The whole is larger than its parts

- GFZ **Section 1.1** is successfully operating a **3D printer** - mostly for rapid prototyping

- The Centre for GeoInformation Technology (**CeGIT**) is involved in R&D projects involving **GIS** and **complex data**:
  - TRIDEC-Project: Quality checking for „2D+Time" data stacks.
  - Upcoming projects: Visualizion of geological bodies in 3D.

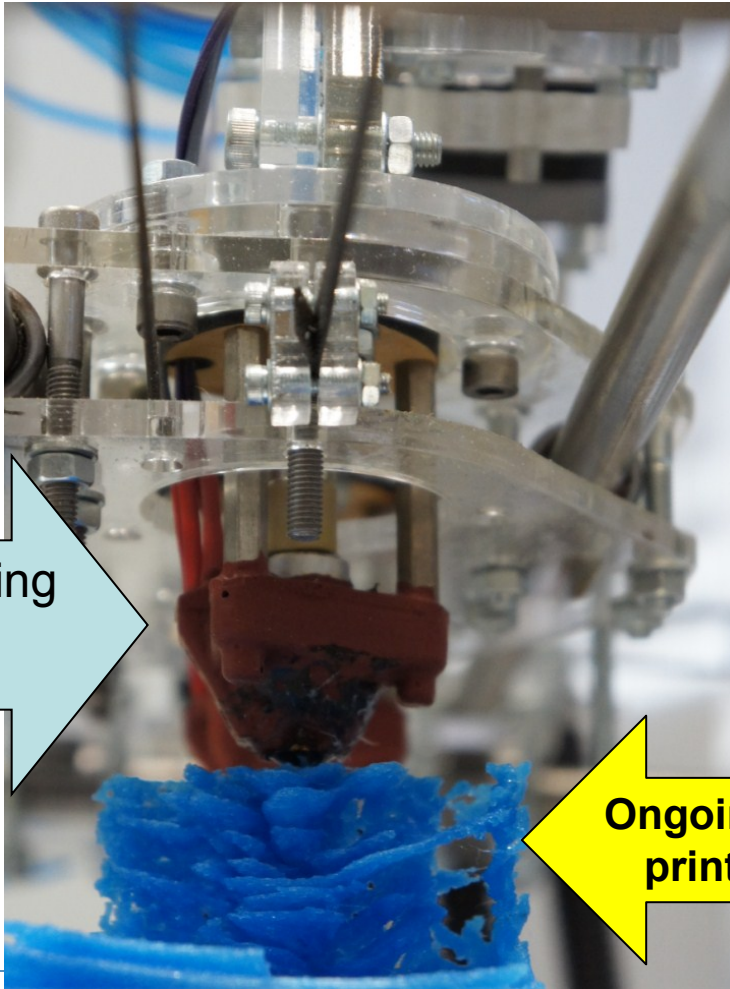- Common technological standards allow Section 1.1 and CeGIT to share their ressources.

3D Printing ?

3D Printer „RapMan 3.2"

Mr. Marcel Ludwig, GFZ Section 1.1

Hardware Details: RapMan2.3

Cooling fan

Printing heads

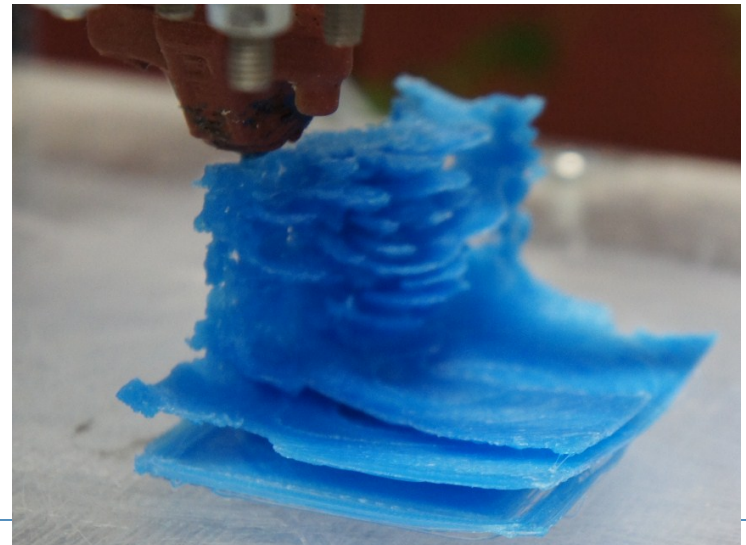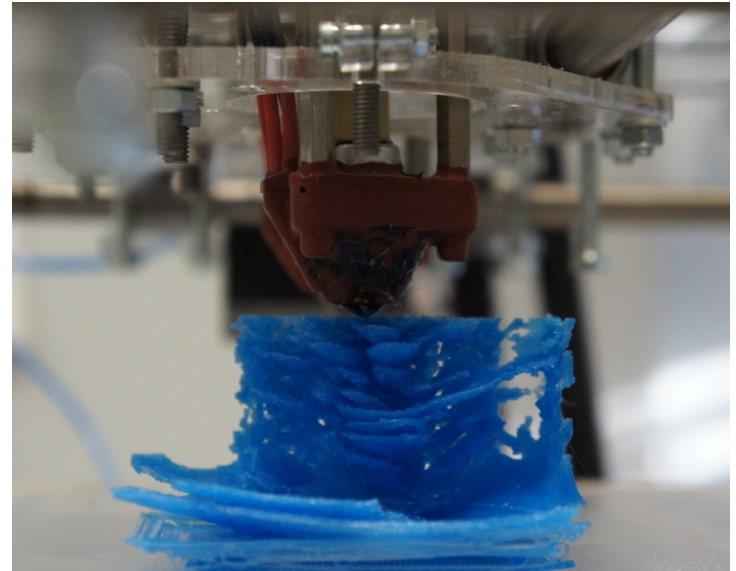Ongoing print

Raw material on spools

User Interface (USB/FTP)

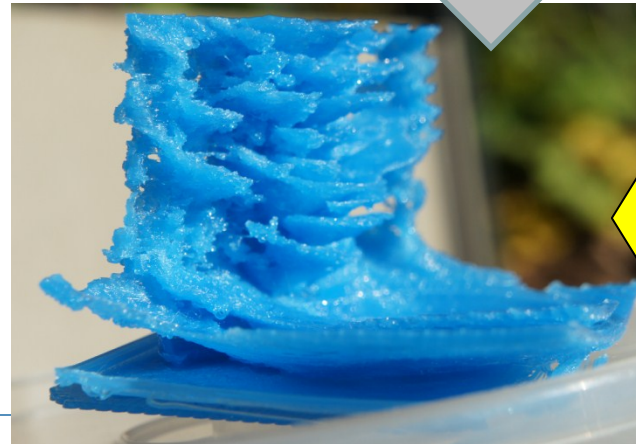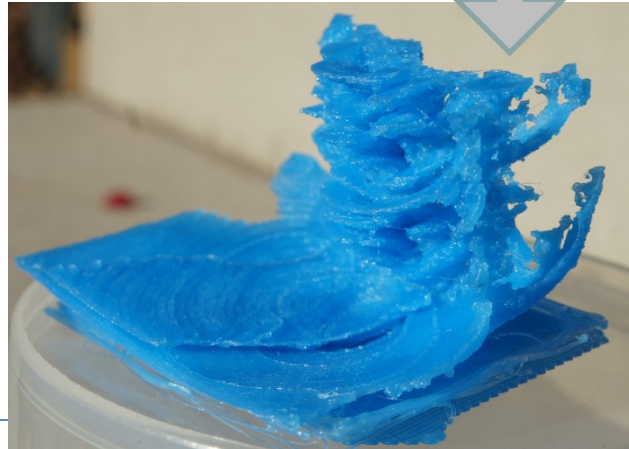**Max. print size: 27cm * 14,5cm * 15cm**
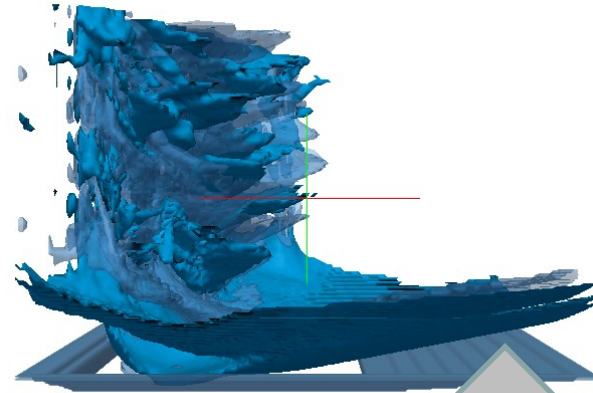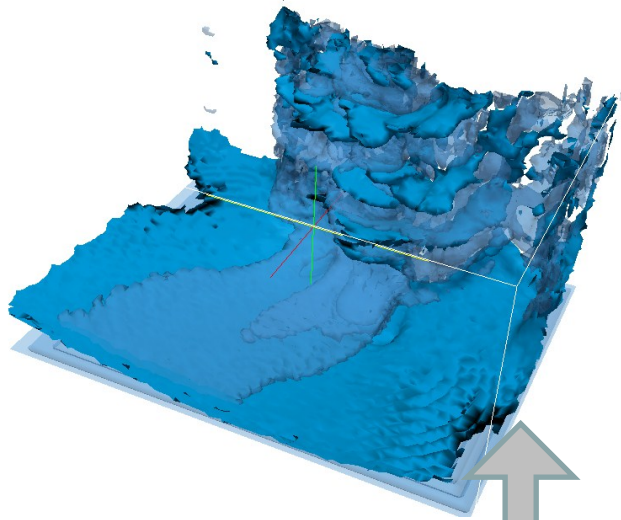
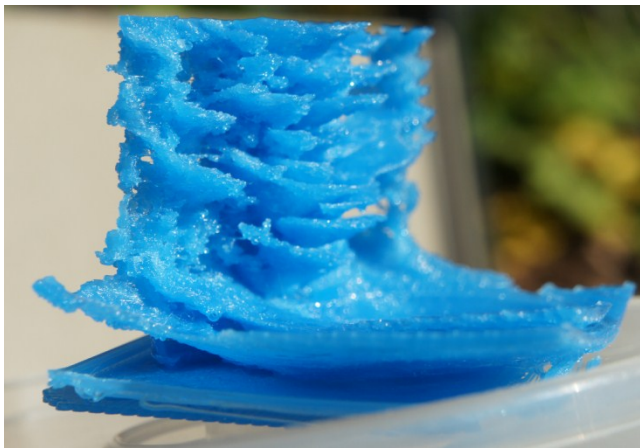# Live Printing

Printing head

Ongoing print

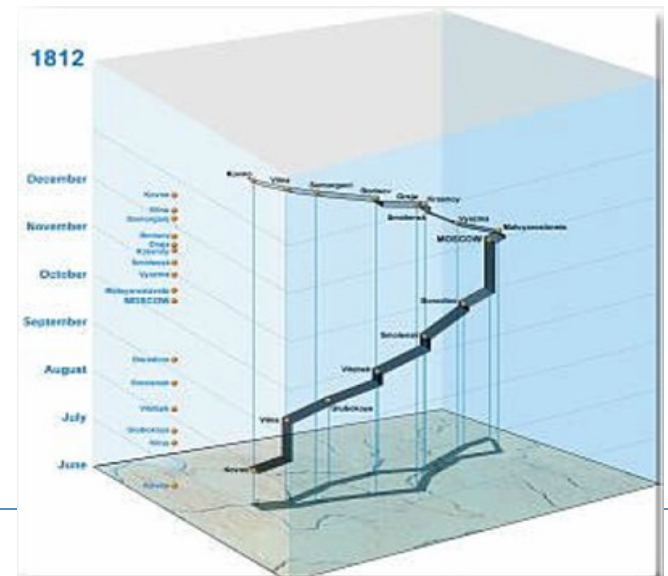# Current Data Flow − Loose coupled
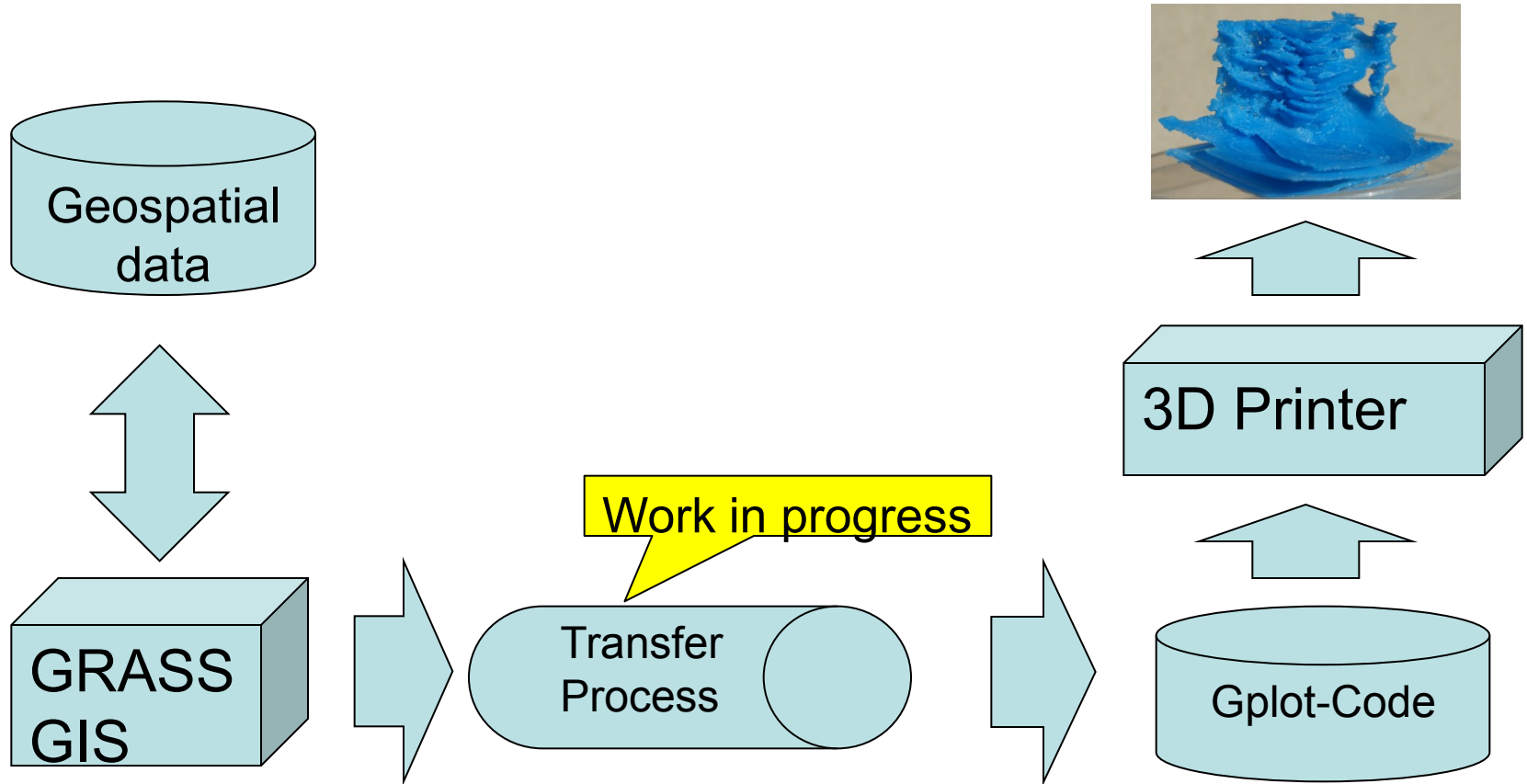
Model vs. Printout of a Tsunami Simulation (Tohoku 2011)

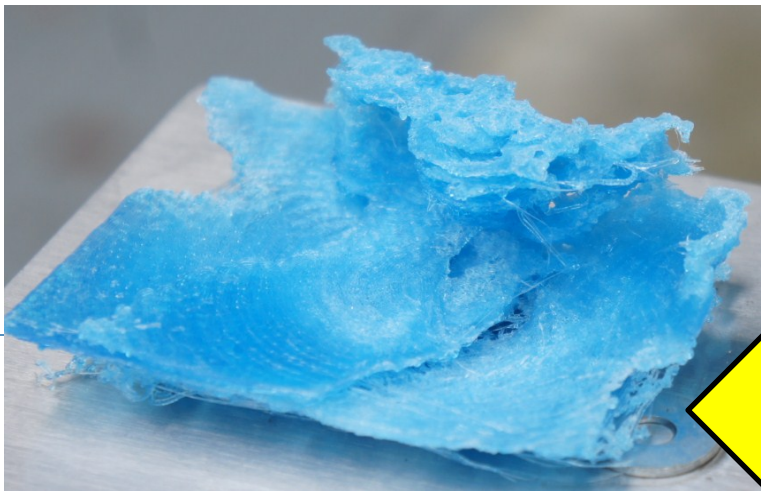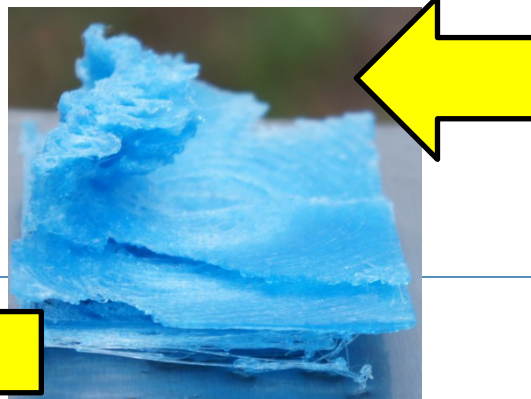**Printing time: 11 hours**
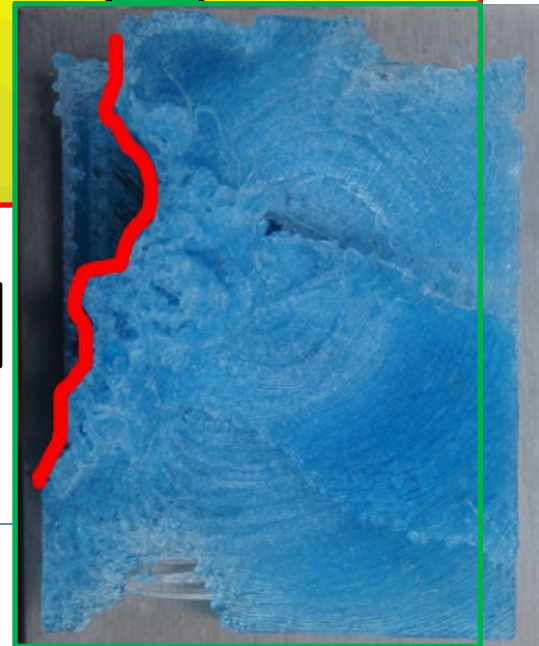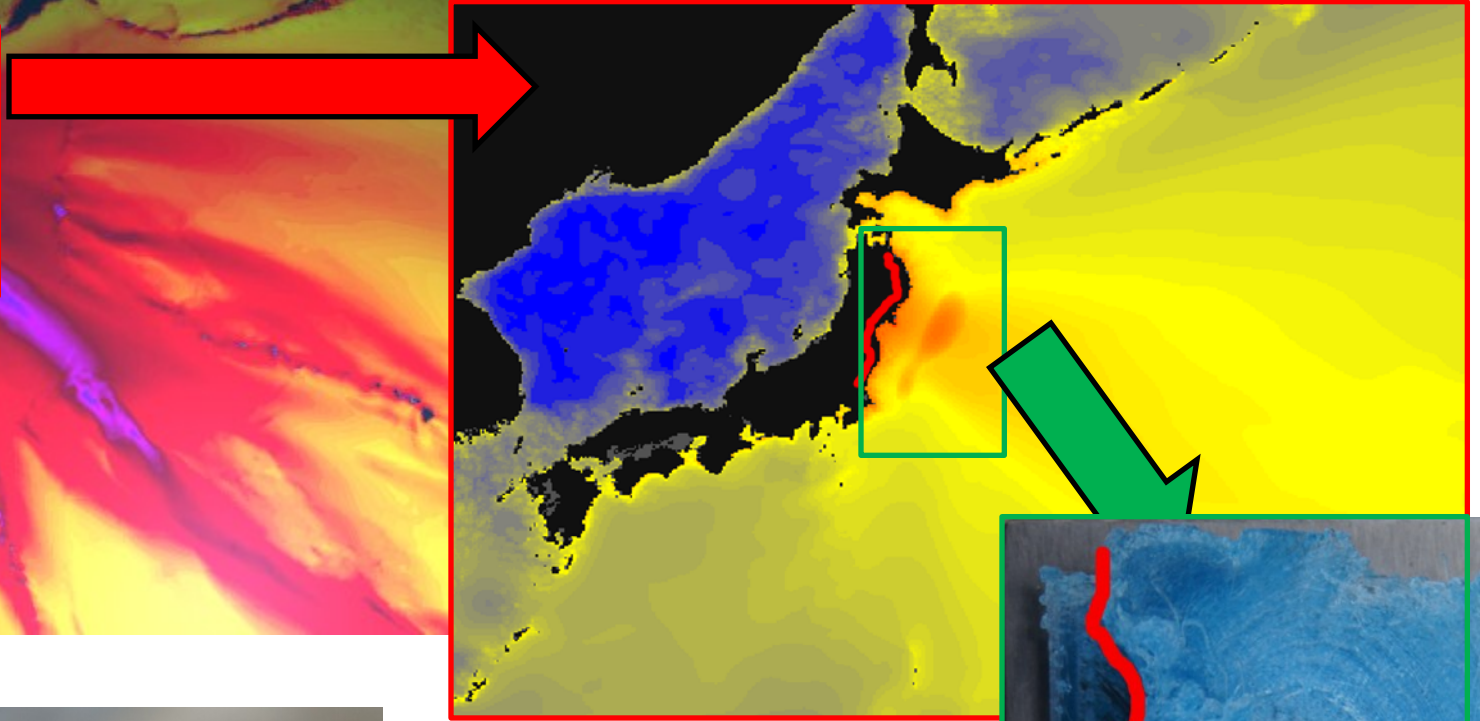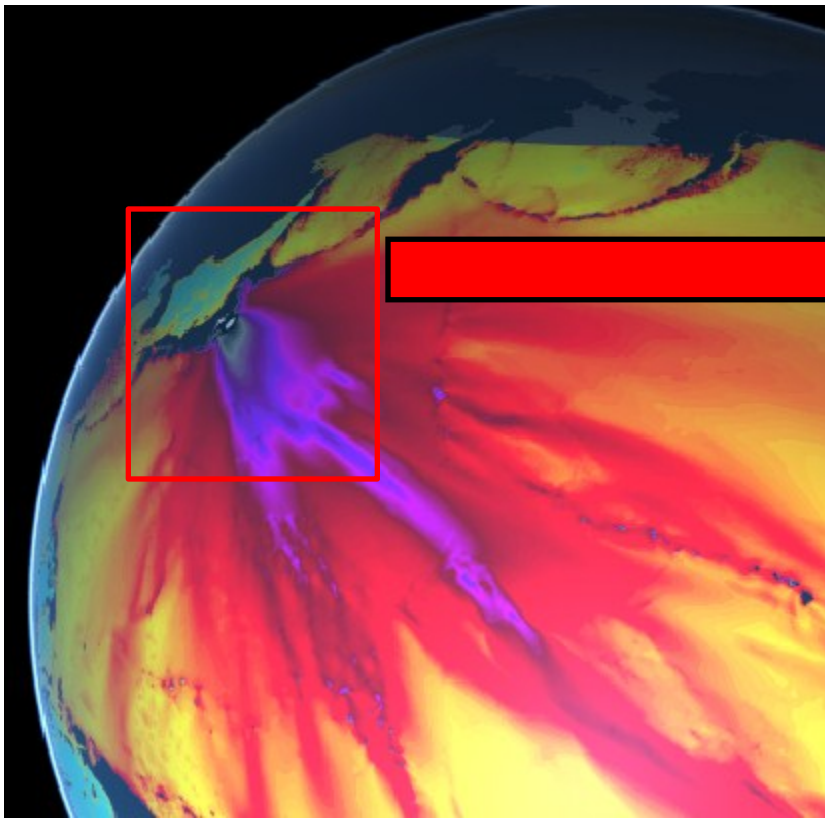
THAT is a Tsunami ?

- It's a **space-time cube** (STC) of a tsunami.

- A STC is a „stack of 2D maps".

- The maps show the same phenomenon at consecutive points in time.

- The „paper" is removed, „ink" stays.
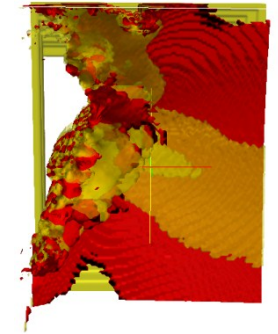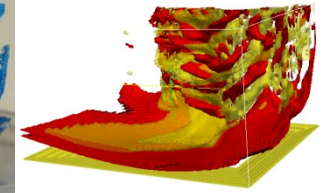
STC of a travel path

http://www.itc.nl/personal/kraak/1812/t-3D-napoleon-final.jpg

The Tohoku 2011 Tsunami

The road ahead

- **Complex 3D bodies**: **Achieved**

- **Multicolor 3D bodies**: *Pending*

- **2.5D Surfaces (Elevation models):** *In the works*

- **Hardening of the workflow:** *Ongoing*

- Mash-Up of different information layers in one print: 2013

Next Goal: Long Night of Science 2013

Thank you

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