# Research, collections and citizen science

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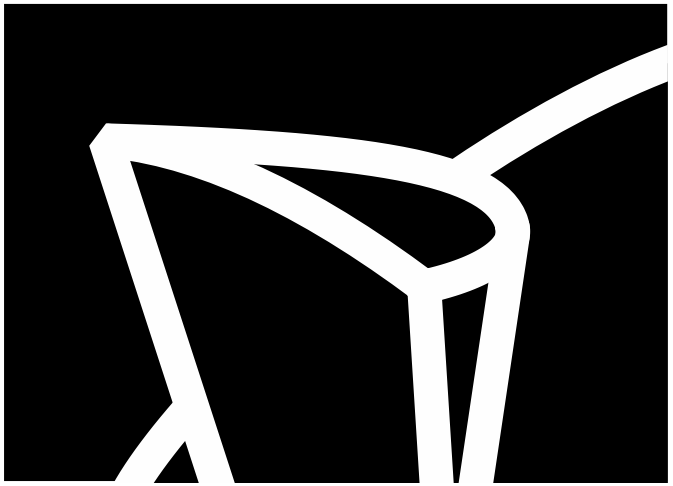


# Citizen science

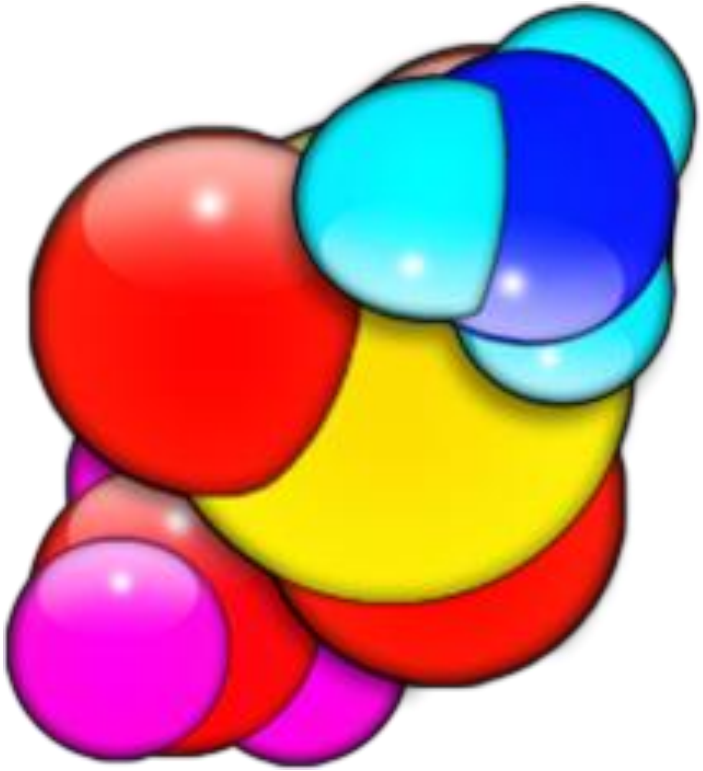
- Research **activity** advanced **in part or in whole** by nonprofessionals

- Broad range of possibilities and examples…

# simple to complex

- simplest (‘crowd sourcing’):

**SETI@Home**



**Folding@Home**

# simple to complex

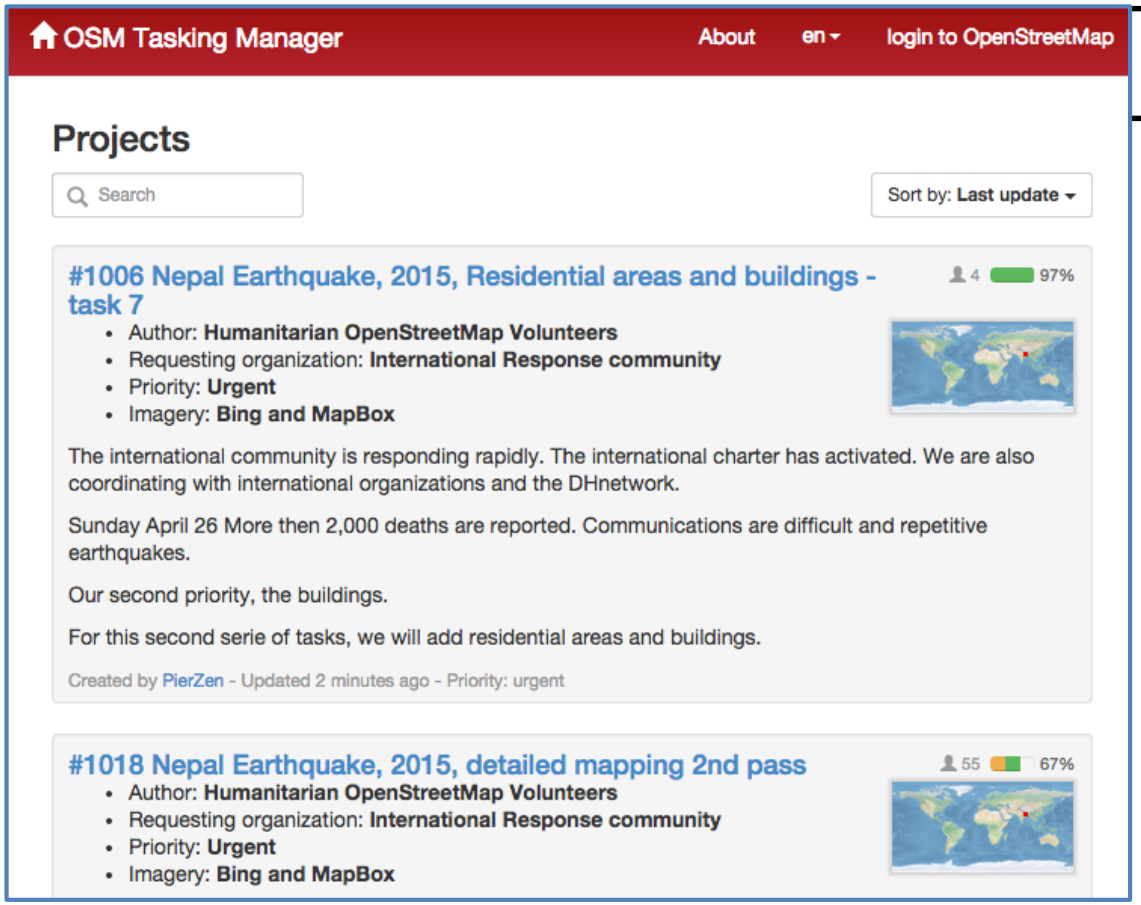
- more involved, mental engagement:

Galaxy Zoo

eBird

# simple to complex

- engagement in question, participation in observations (and analyses):




**OpenStreetMap**

**‘Community Science’**

# Why do it?

- Science (?)
  - advancing the field (**incremental**)
    - capturing and/or standardizing relevant data - human "OCR"
  - answering open questions (**transformational**)
    - assembling and analyzing a 'designed' dataset

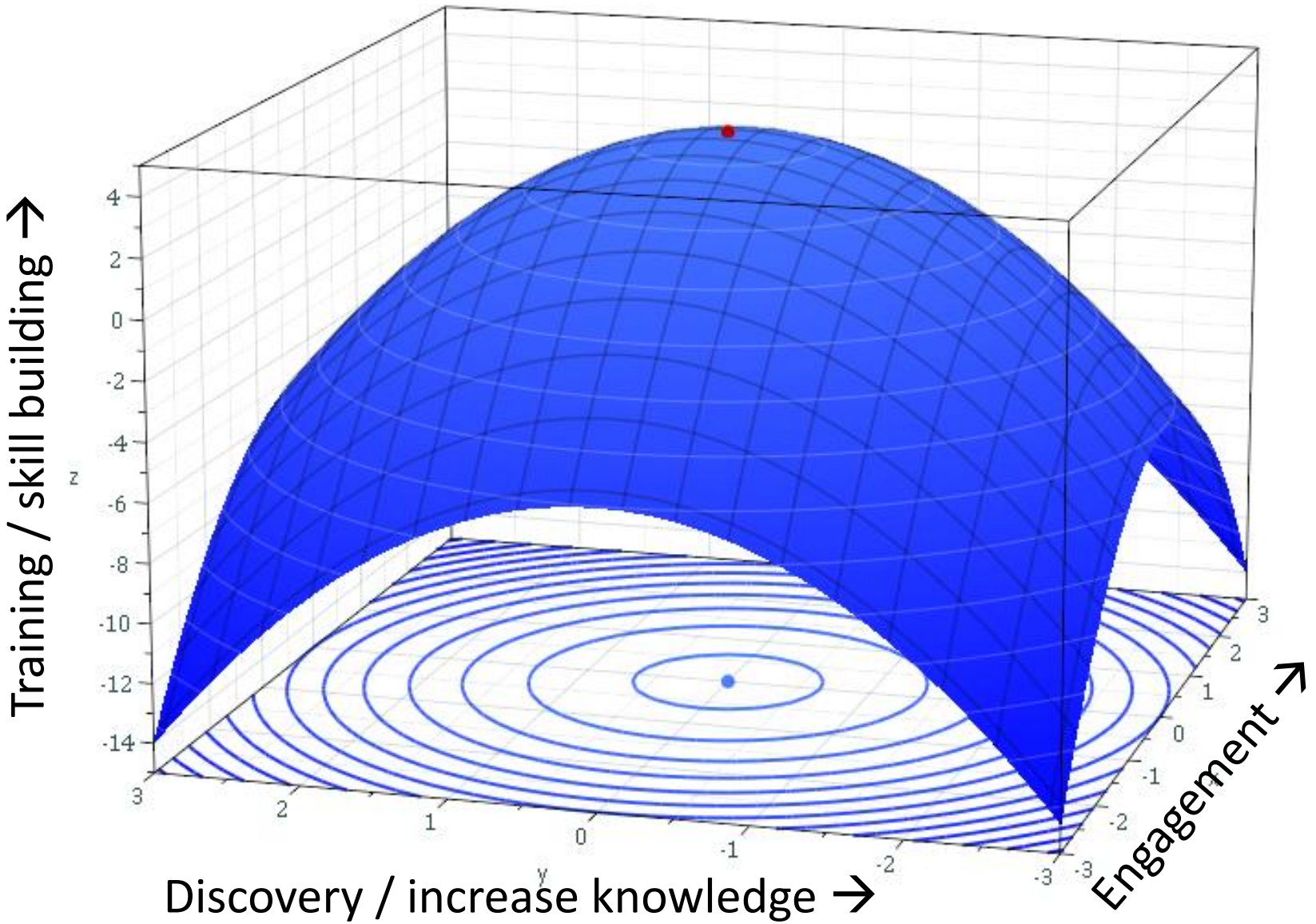
# Why do it?

- Engagement
  - Foster interest in biodiversity - BioBlitz
  - Improve understanding of ‘science’ and the research enterprise
  - Development

# Why do it?

- Capacity building / training
  - build public knowledge
  - training in specialized skills – school science projects, research experience opportunities

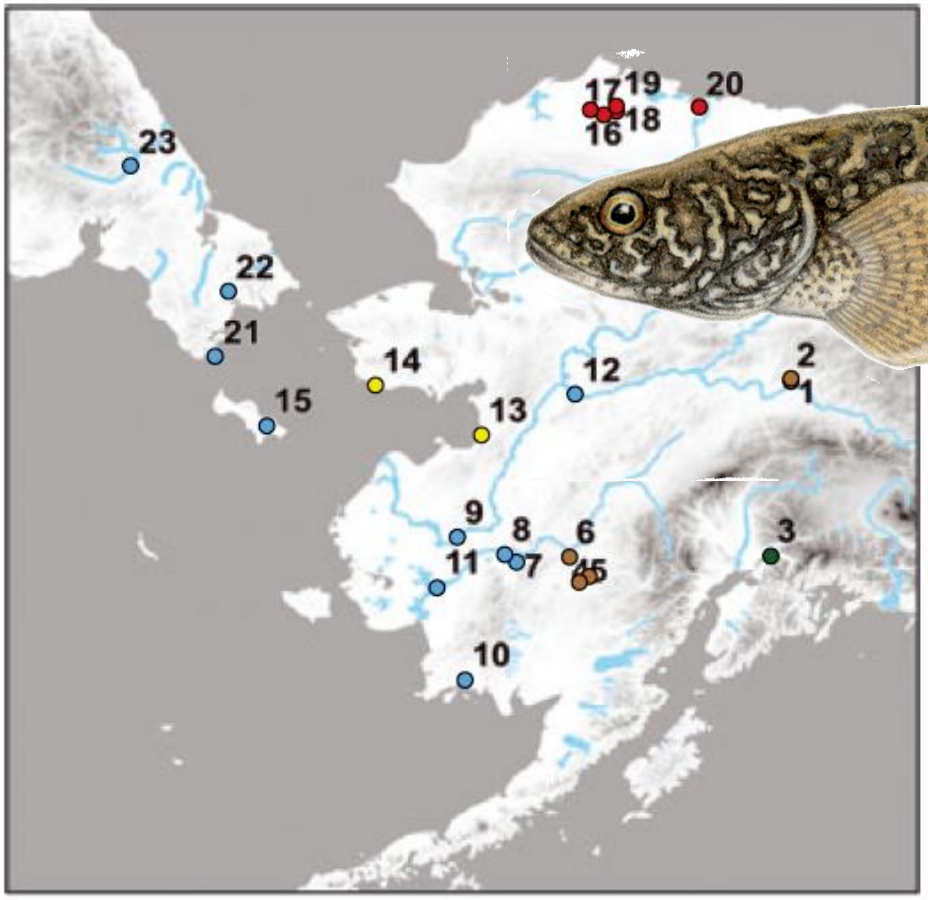
# The optimization



# Identifying, weighting the true goal(s)

- Determine true investment
  - Recruitment
  - Training
  - Support
- Establish useful output metrics
  - Knowledge
  - Resources
  - Capacity
  - Broader community participation, investement

# biogeography – phylogeography



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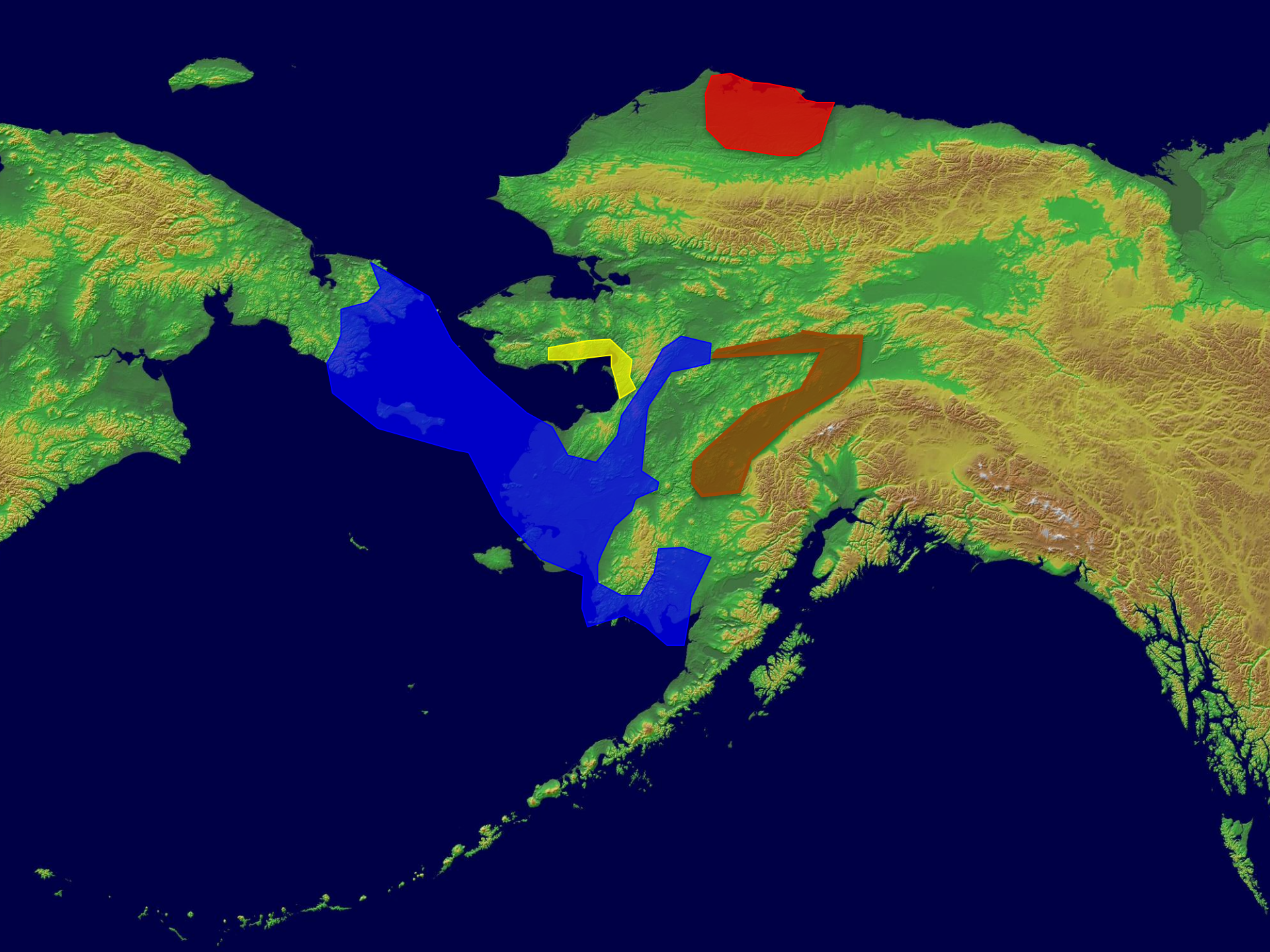
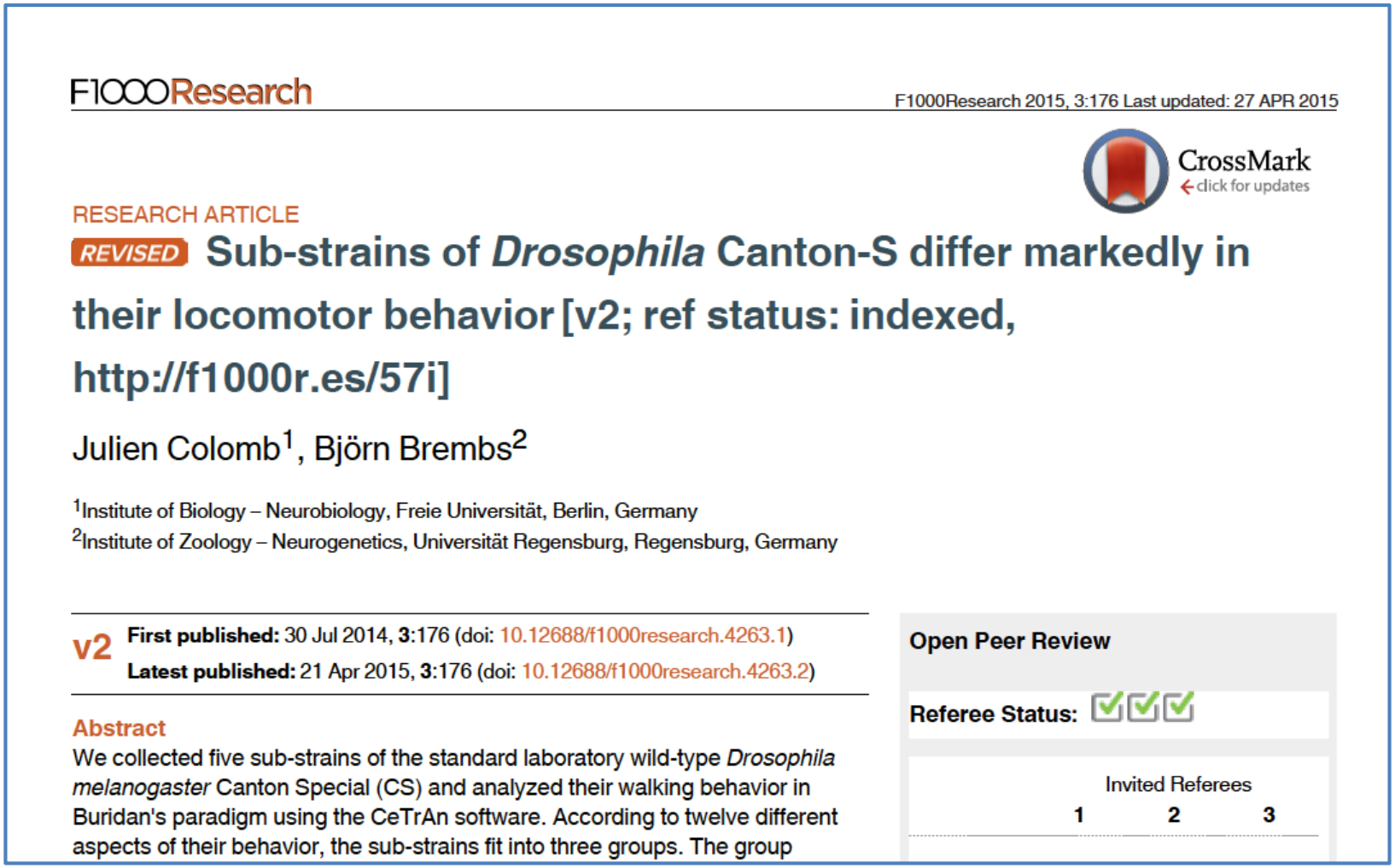
- Specialized training
- Engagement
- Incremental knowledge



# Living figures….



F1000Research

F1000Research 2015, 3:176 Last updated: 27 APR 2015

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RESEARCH ARTICLE

## REVISED Sub-strains of *Drosophila* Canton-S differ markedly in their locomotor behavior [v2; ref status: indexed, http://f1000r.es/57i]

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v2 **First published:** 30 Jul 2014, **3**:176 (doi: 10.12688/f1000research.4263.1)
**Latest published:** 21 Apr 2015, **3**:176 (doi: 10.12688/f1000research.4263.2)

**Abstract**

We collected five sub-strains of the standard laboratory wild-type *Drosophila melanogaster* Canton Special (CS) and analyzed their walking behavior in Buridan's paradigm using the CeTrAn software. According to twelve different aspects of their behavior, the sub-strains fit into three groups. The group

**Open Peer Review**

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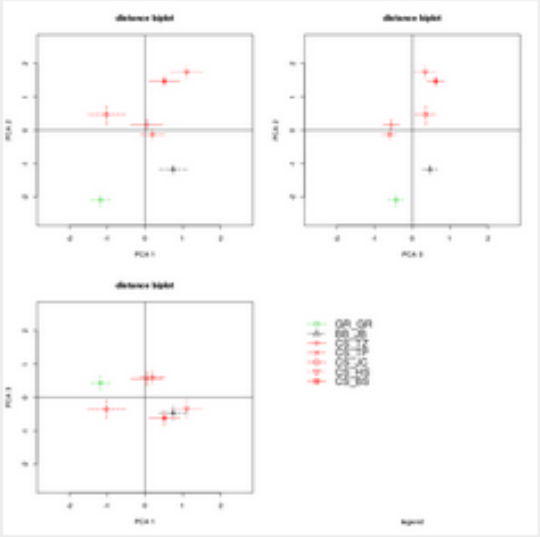

**Figure 4. Updating principal component analysis of Canton S strains.**

Results from the PCA obtained using the same analysis as for Figure 2, but with data uploaded from different laboratories. The version of this figure on the *F1000Research* site is 'living'; it will automatically re-plot as and when new data for other Canton S strains are submitted, and users can visualize previous versions of this figure. The conclusions of this article only relate to the data available at the time of publication. The prefixes in the key are the initials of the data contributor (except CS_ strains, which were tested by Julien Colomb); full names and affiliations can be found in the figure legend of the article on the *F1000Research* site. The suffixes denote the initials of the principal investigators from where each sub-strain was sourced. The BB_JB (Jose Botella) strain was ordered from the Bloomington stock center (stock #1) approx. seven years ago. BB_JB falls within the range of variability seen so

...

**GR_GR**: Added on 22 Apr 2015 by Gregg Roman, Stefani Garcia and Miguel de la Flor at Department of Biology and Biochemistry, University of Houston, TX, USA. DOI: 10.5256/f1000research.4263.d46290 | Download data | Cite data

**BB_JB**: Added on 21 Apr 2015 by Björn Brembs at Institute of Zoology – Neurogenetics, Universität Regensburg, Germany. DOI: 10.5256/f1000research.4263.d46234 | Download data | Cite data

**CS_TZ**: Added on 30 Jul 2014 by Julien Colomb at Institute of Biology – Neurobiology, Freie Universität, Berlin, Germany. DOI: 10.5256/f1000research.4263.d46232 | Download data | Cite data

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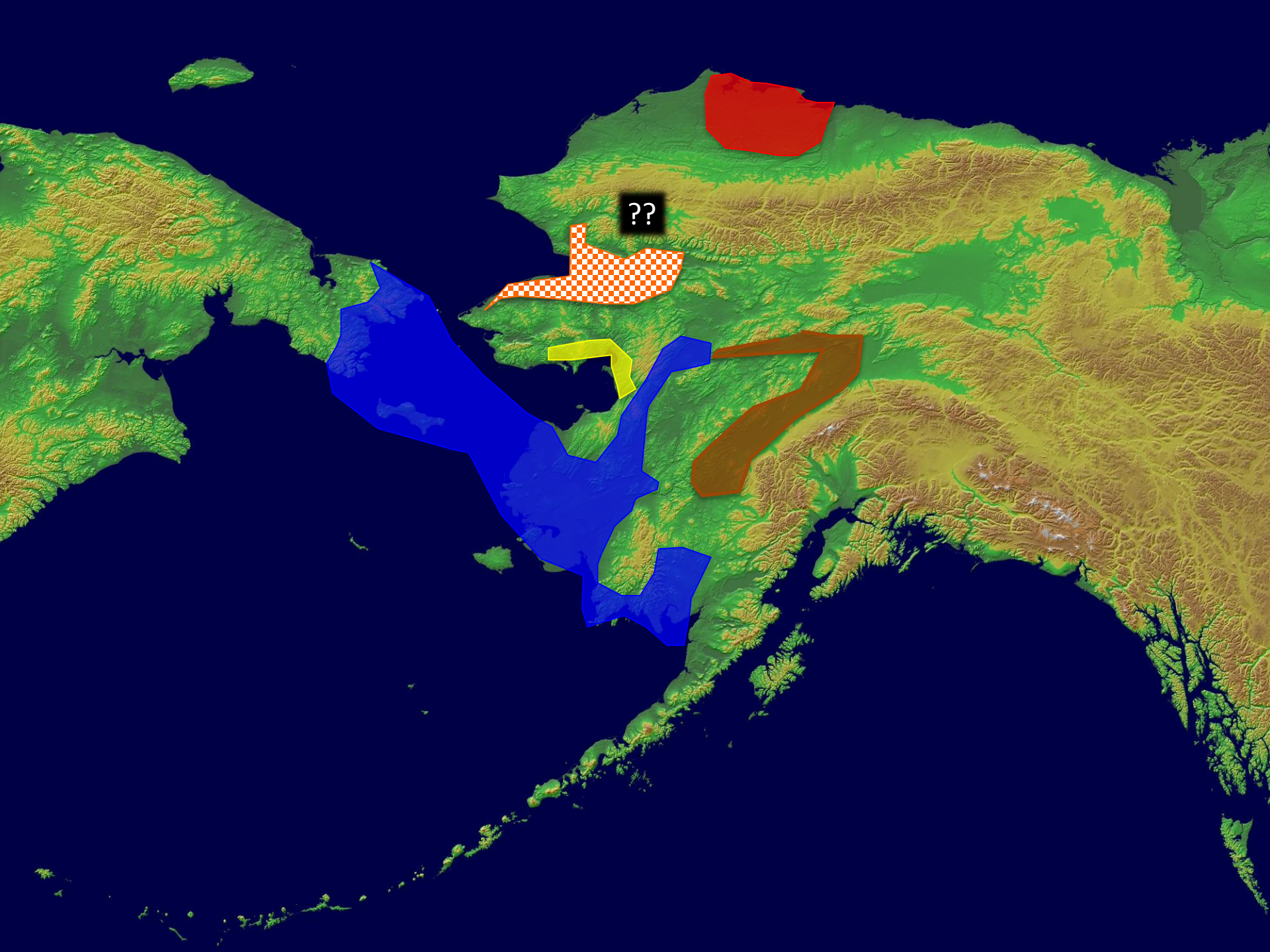
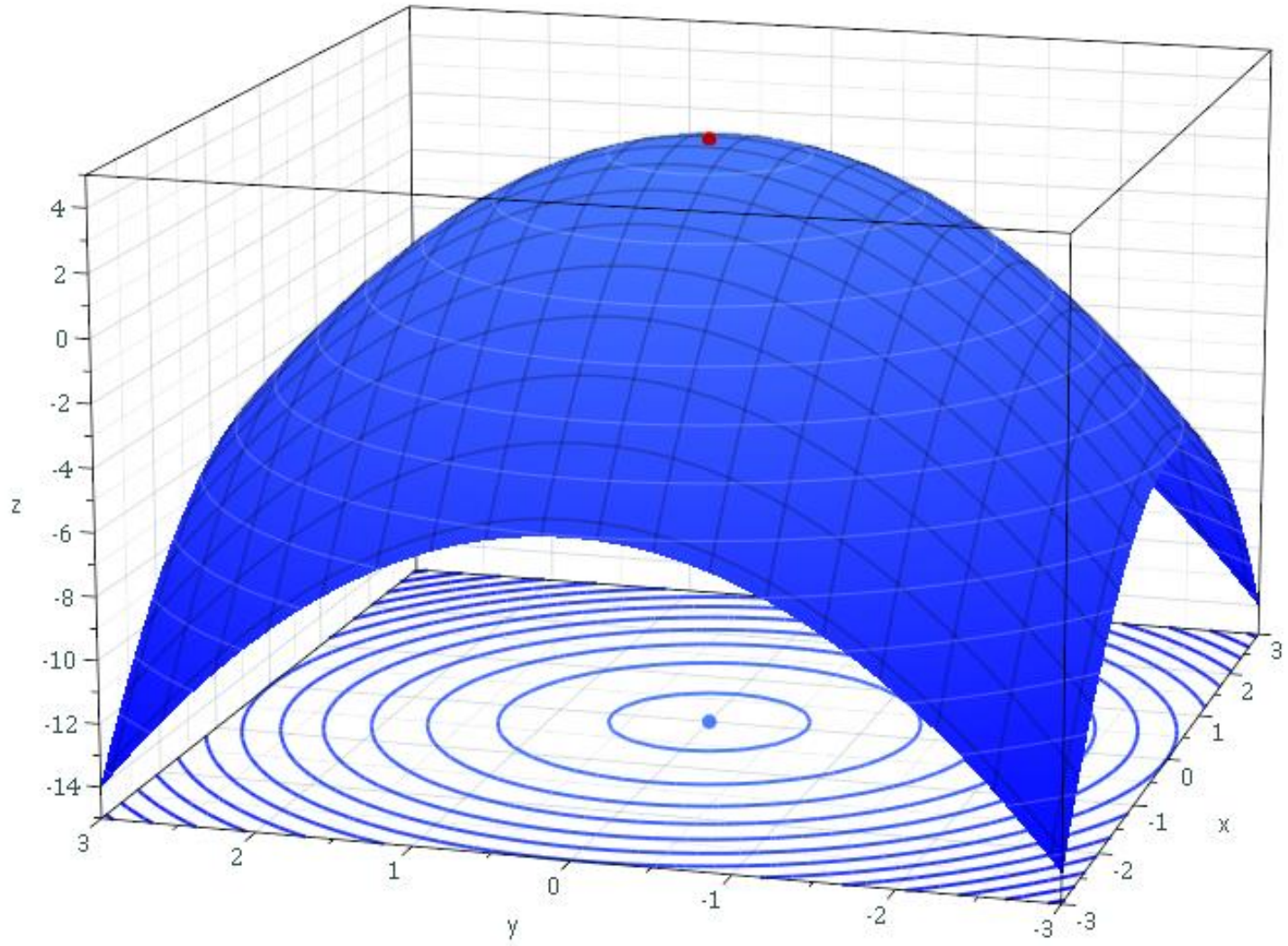
# “right” investment, “right” expectations