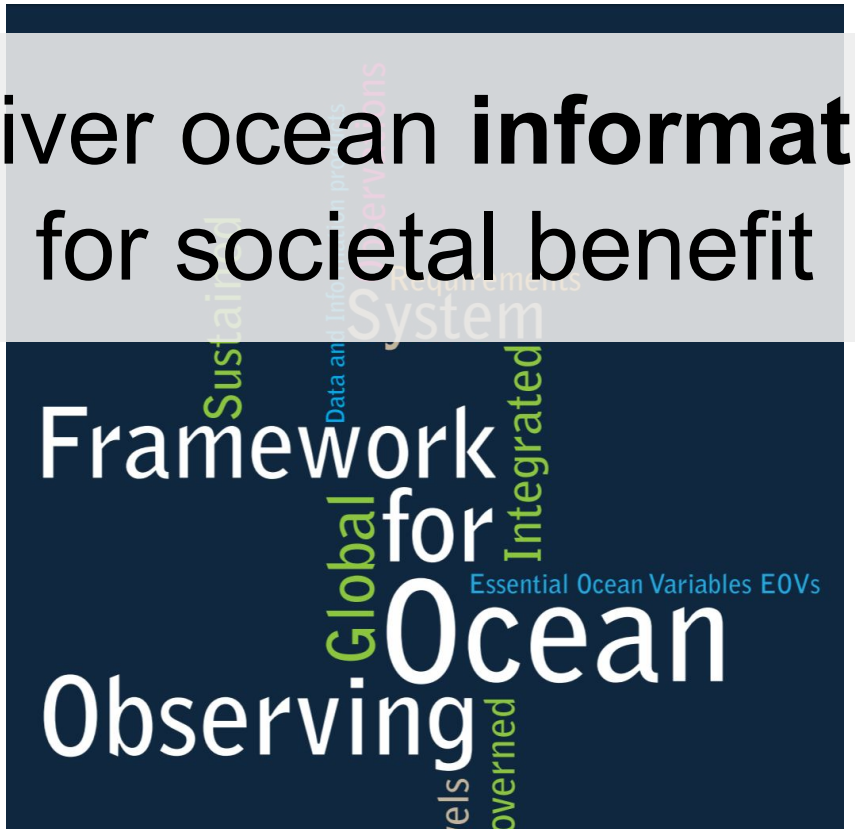
EGU 2017 | April 28, 2017 | Vienna, Austria

Machine actionable information about observed environments

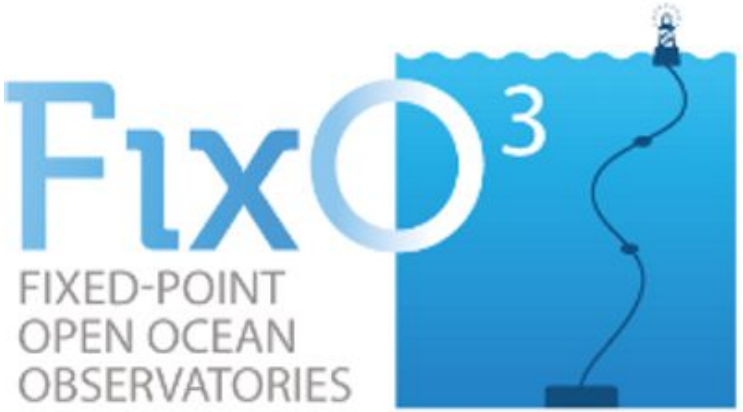
Markus Stocker, Stefano Nativi, Jay Pearlman

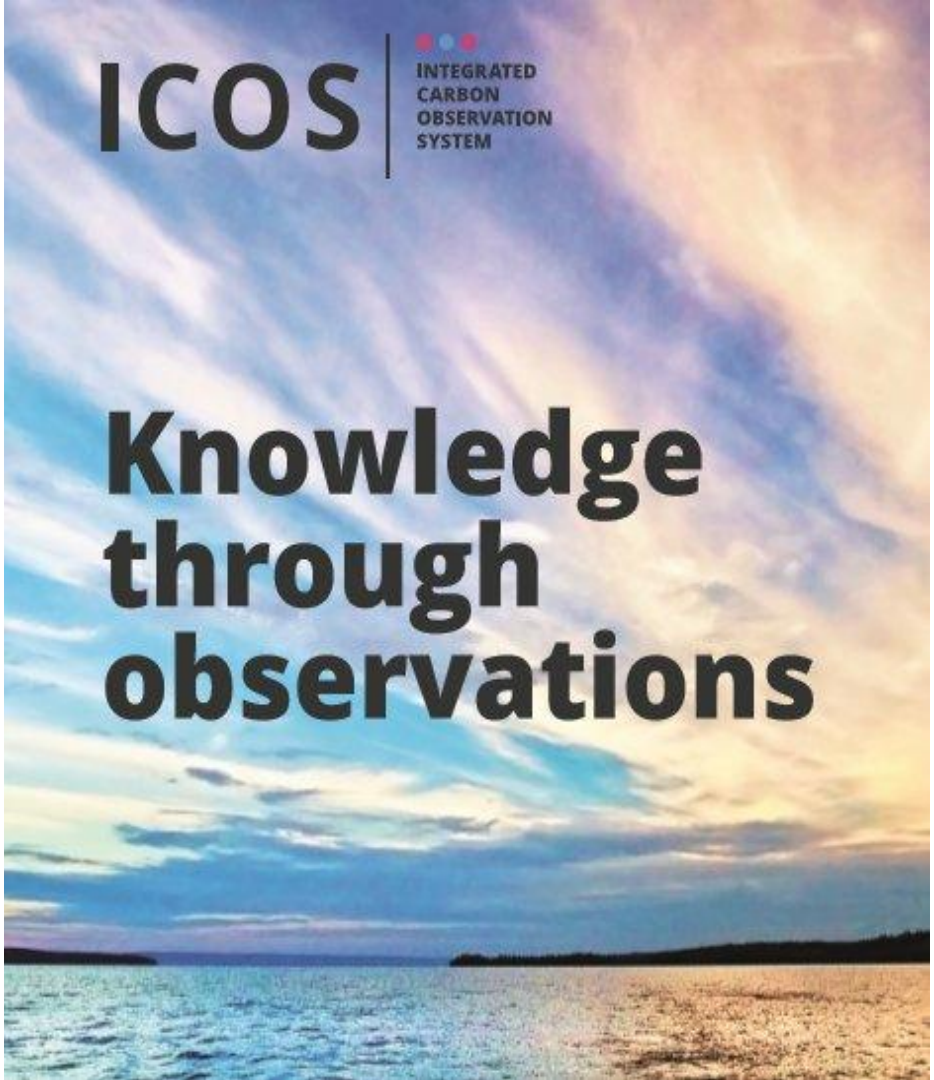
University of Bremen, Germany
National Research Council, Italy
J&F Enterprise, USA

Deliver ocean **information** for societal benefit



Provide access to **data** products as well as derived **information**



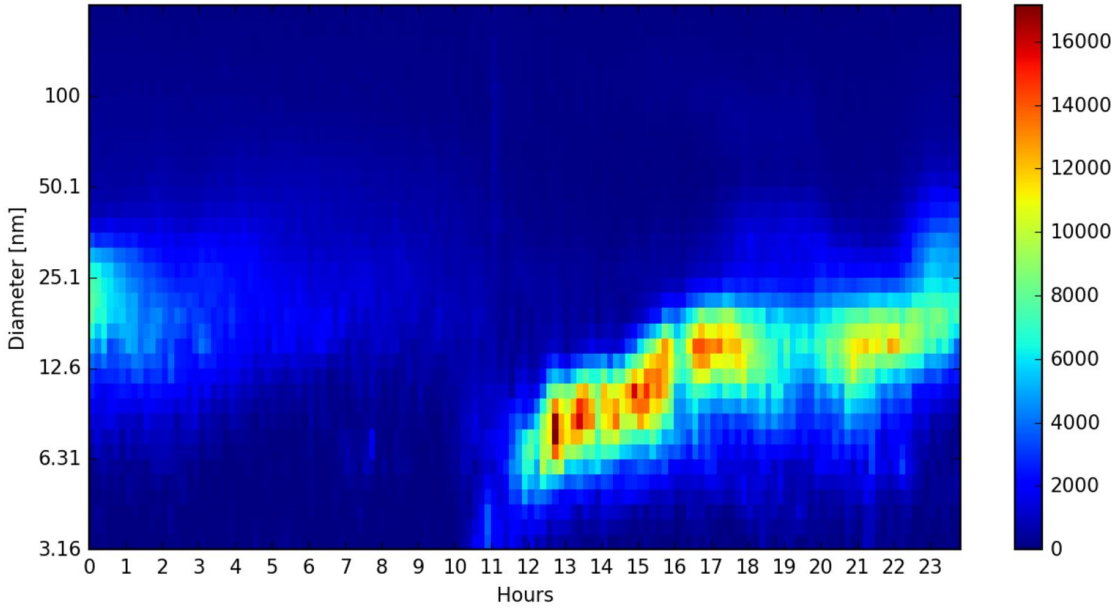

ICOS
INTEGRATED
CARBON
OBSERVATION
SYSTEM
Knowledge
through
observations

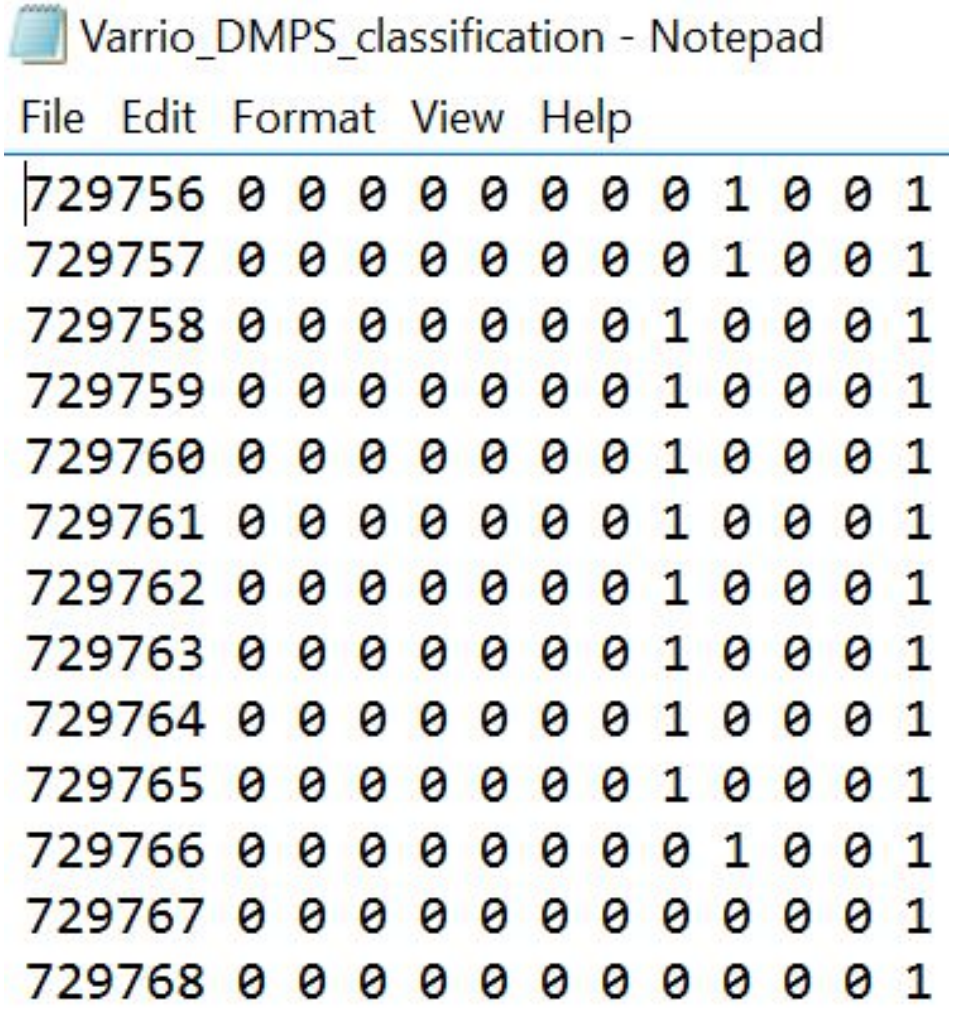
Turn raw **data** into **information** and allow the information to be transformed into **knowledge**

Research at Google

Monitor planet and generate precise, actionable **information** and **knowledge**

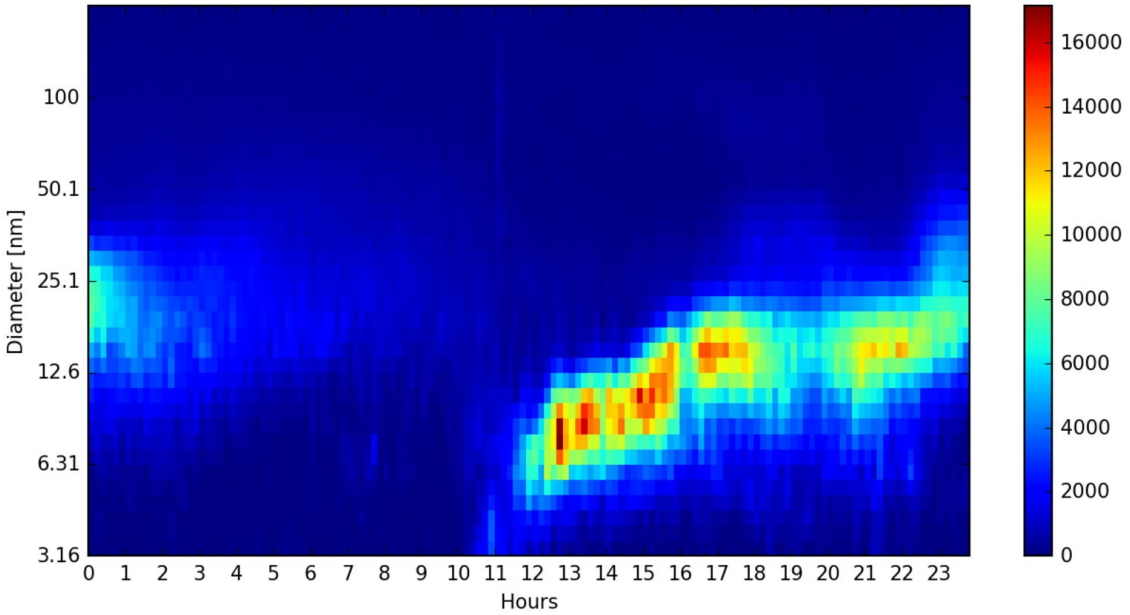
Rebecca Moore


Diameter [nm]
100
50.1
25.1
12.6
6.31
3.16
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
Hours
16000
14000
12000
10000
8000
6000
4000
2000
0


Varrio_DMPS_classification - Notepad
File Edit Format View Help
729756 0 0 0 0 0 0 0 0 1 0 0 1
729757 0 0 0 0 0 0 0 0 1 0 0 1
729758 0 0 0 0 0 0 0 1 0 0 0 1
729759 0 0 0 0 0 0 0 1 0 0 0 1
729760 0 0 0 0 0 0 0 1 0 0 0 1
729761 0 0 0 0 0 0 0 1 0 0 0 1
729762 0 0 0 0 0 0 0 1 0 0 0 1
729763 0 0 0 0 0 0 0 1 0 0 0 1
729764 0 0 0 0 0 0 0 1 0 0 0 1
729765 0 0 0 0 0 0 0 1 0 0 0 1
729766 0 0 0 0 0 0 0 0 1 0 0 1
729767 0 0 0 0 0 0 0 0 0 0 0 1
729768 0 0 0 0 0 0 0 0 0 0 0 1

```
from smear.datafetcher import fetchdata
from smear.dataplotter import plotdata

plotdata(fetchdata('2011-03-26'))
```



SmartSMEAR data from
https://avaa.tdata.fi/web/smart

```
from entity.event import Event
from entity.puijo import Puijo
from entity.hyytiaelae import Hyytiaelae
from kb.store import Store

e = Event(date='2011-03-26', place=Hyytiaelae())
e.at_time(beginning='12:00', end='17:00')

Store().add_event(e)
```

```
from processing.description import describe
from entity.hyytiaelae import Hyytiaelae
from kb.store import Store

event = Store().get_event(date='2011-03-26', place=Hyytiaelae())
describe(event, format='text')
```

A new particle formation event occurred at Hyytiälä (FI) [http://www.geonames.org/656888/hyytiaelae.html] on 2011-03-26 starting at 12:00 and ending at 17:00.

```
from processing.description import describe
from entity.hyytiaelae import Hyytiaelae
from kb.store import Store

event = Store().get_event(date='2011-03-26', place=Hyytiaelae())
describe(event, format='rdf')
```

```
<http://example.org/b68b60c3bb4c045ce499e8cac9f17278> a lode:Event ;
    lode:atPlace <http://sws.geonames.org/656888/> ;
    lode:atTime <http://example.org/7300430c330b7b65e38720c6b1dd98d9> ;
    lode:inSpace <http://example.org/7f885190eb43154e01c97f814b287a4b> .

<http://example.org/3ae7a8269fcb6c10204279216f62d0da> a time:Instant ;
    time:inXSDDateTime "2011-03-26T17:00:00+02:00"^^xsd:dateTime .

<http://example.org/7300430c330b7b65e38720c6b1dd98d9> a time:Interval ;
    time:hasBeginning <http://example.org/de389b5deb955280111280def6f92df4> ;
    time:hasEnd <http://example.org/3ae7a8269fcb6c10204279216f62d0da> .

<http://example.org/7f885190eb43154e01c97f814b287a4b> a sf:Point ;
    geosparql:asWKT "POINT (24.29077 61.84562)"^^geosparql:wktLiteral .

<http://example.org/de389b5deb955280111280def6f92df4> a time:Instant ;
    time:inXSDDateTime "2011-03-26T12:00:00+02:00"^^xsd:dateTime .

<http://sws.geonames.org/656888/> a dul:Place ;
    gn:countryCode "FI" ;
    gn:locationMap <http://www.geonames.org/656888/hyytiaelae.html> ;
    gn:name "Hyytiälä" .
```

RDA Working Group

- Following two BoFs, P8 Denver and P9 Barcelona
- Forming group of interested people
- Work toward WG Case Statement
- Want to join the effort?
- Email me at markus.stocker@gmail.com

Take aways

- Scientists interpret (observational) data
- The result is information about the observed environment
- However, meaning is typically lost when information is recorded
- Use semantic technologies to retain meaning