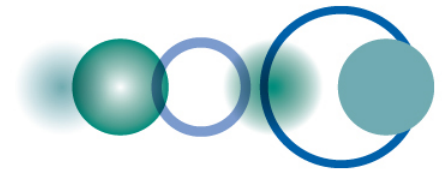


# Collaboration of WDS with GEOSS

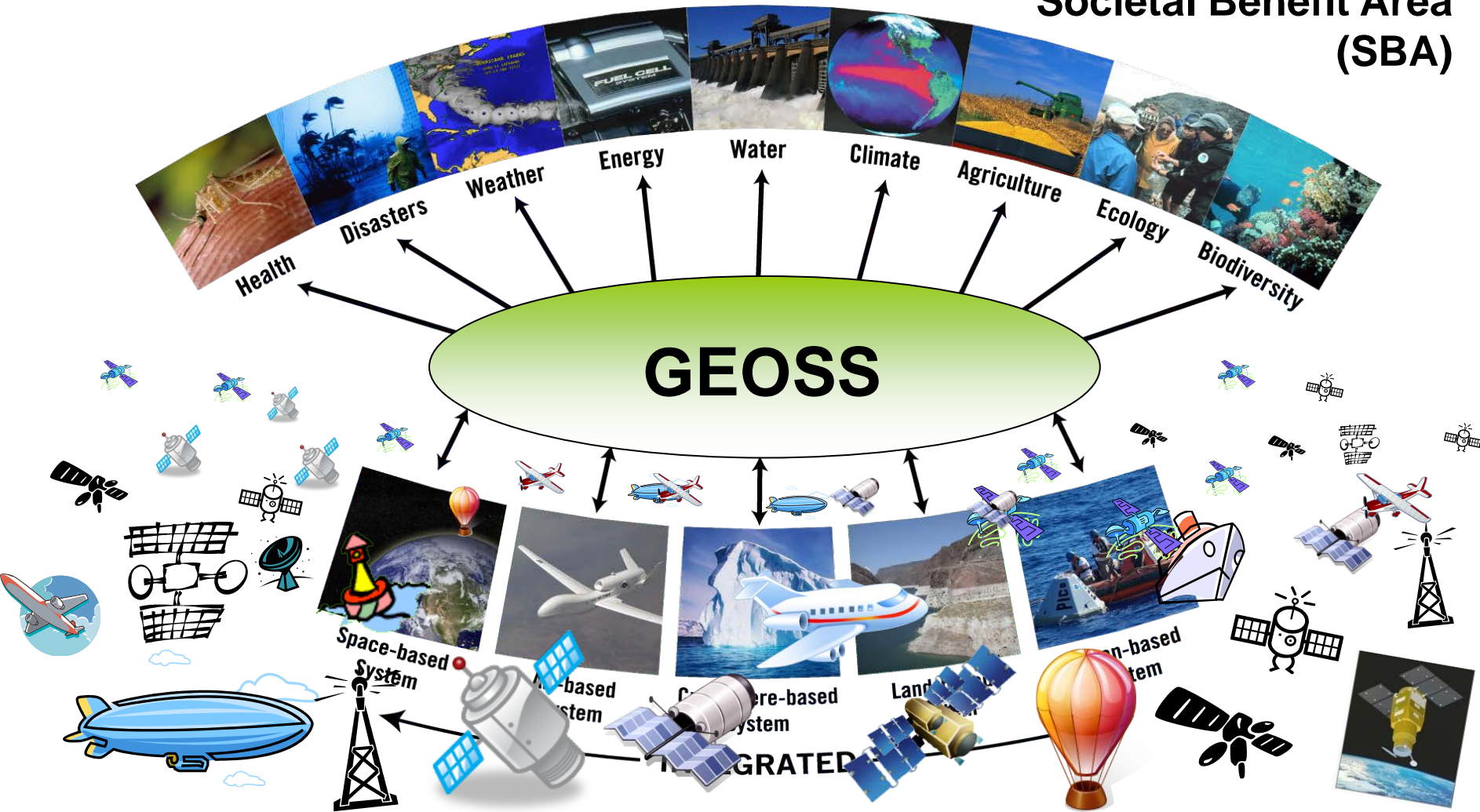
R. Shibasaki 柴崎亮介  
(WDS-SC and GEO IIB, Japan)  
[shiba@csis.u-tokyo.ac.jp](mailto:shiba@csis.u-tokyo.ac.jp)

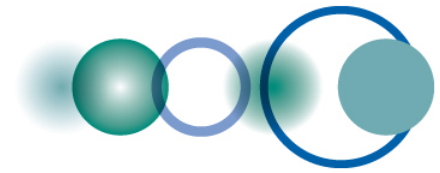




# Global Earth Observation System of Systems

**Societal Benefit Area  
(SBA)**





• **EOS I**

- July 31, 2003, Washington, D.C.
- 34 Countries and 20 International Organizations



**EOS I**

• **EOS II**

- April 25, 2004, Tokyo, Japan
- 47 Countries and 26 International Organizations



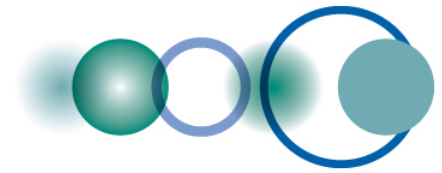
**EOS II**

• **EOS III**

- February 2005, Brussels
- Nearly 60 Countries, EC and over 40 International Organizations

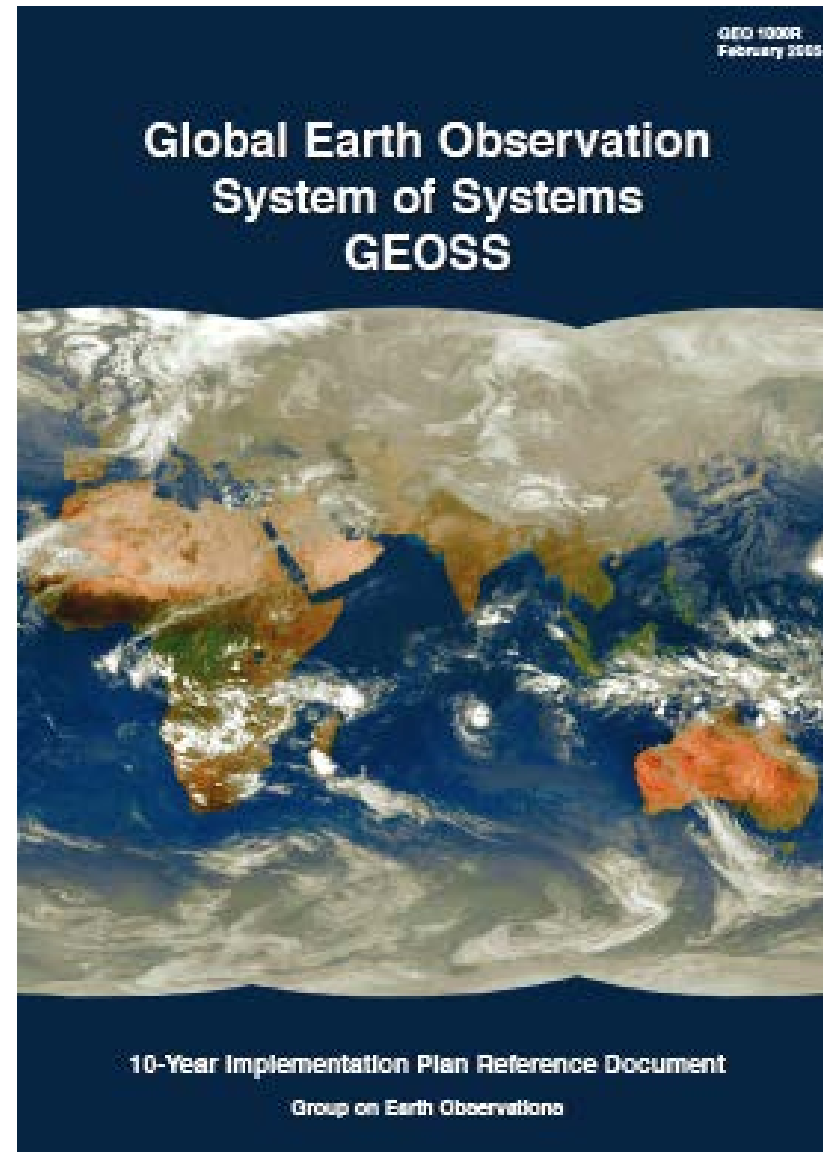


**EOS III**



## 2005

- **GEO formally established**
  - 84 Governments and the European Commission. (as of 2010, Oct)
  - 58 intergovernmental, international, and regional organizations
- **10-Year Implementation Plan Endorsed**
- **GEO Secretariat established in Geneva, located at WMO**





Voluntary  
international  
network



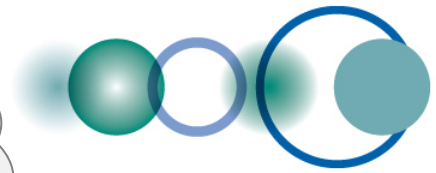
# Mission of GEO

- Improve and Coordinate Observation Systems
- Provide Easy & Open Data Access
- Foster Uses through Science and Applications

*for better-informed decision making  
in nine Societal Benefit Areas  
Health, Disasters, Weather, Energy, Water, Climate, Agriculture,  
Ecology and Biodiversity*



Voluntary  
international  
network



# Mission of GEO

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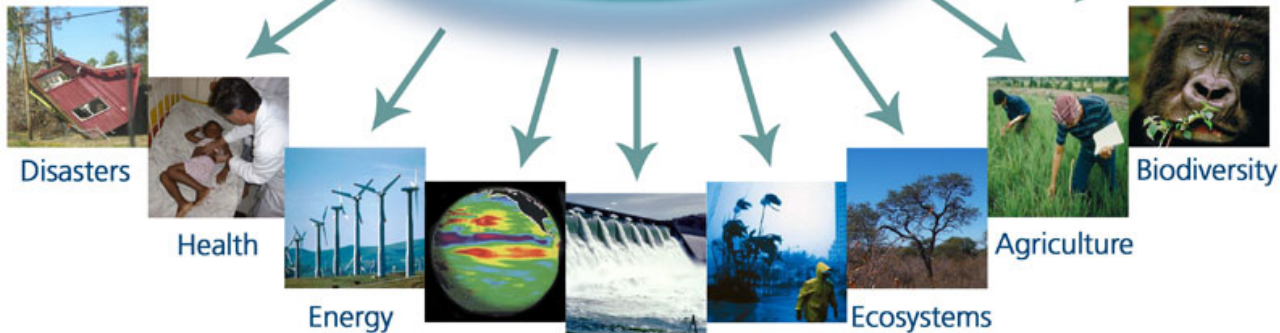


OBSERVING SYSTEMS



**GCI**

**GEOSS Common Infrastructure**



NINE SOCIETAL BENEFIT AREAS

**Users**



## GEOS Common Infrastructure (GCI)

Main GEO  
Web Site



Users

**Showcase  
to visualize  
contributed  
resources**

### Registries

- GEOSS Component and Service Registry
- GEOSS Standards and Interoperability Registry
- Best Practices Wiki
- User Requirements Registry

GEO Web Portal

GEOSS Clearinghouse

enabling  
transverse  
data search

Supporting  
metadata  
design and  
use

Access to the original  
resources

Metadata;  
Summary of contributed resources

**Contributed Resources**

- Websites/Portals
- Services
- Data and information





OBSERVING SYSTEMS



- How many data sets that meet requirements?
- How easily discovered and used?
- Operation is sustained?



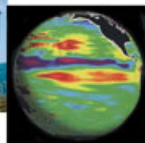
Disasters



Health



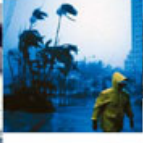
Energy



Climate



Water



Weather



Agriculture



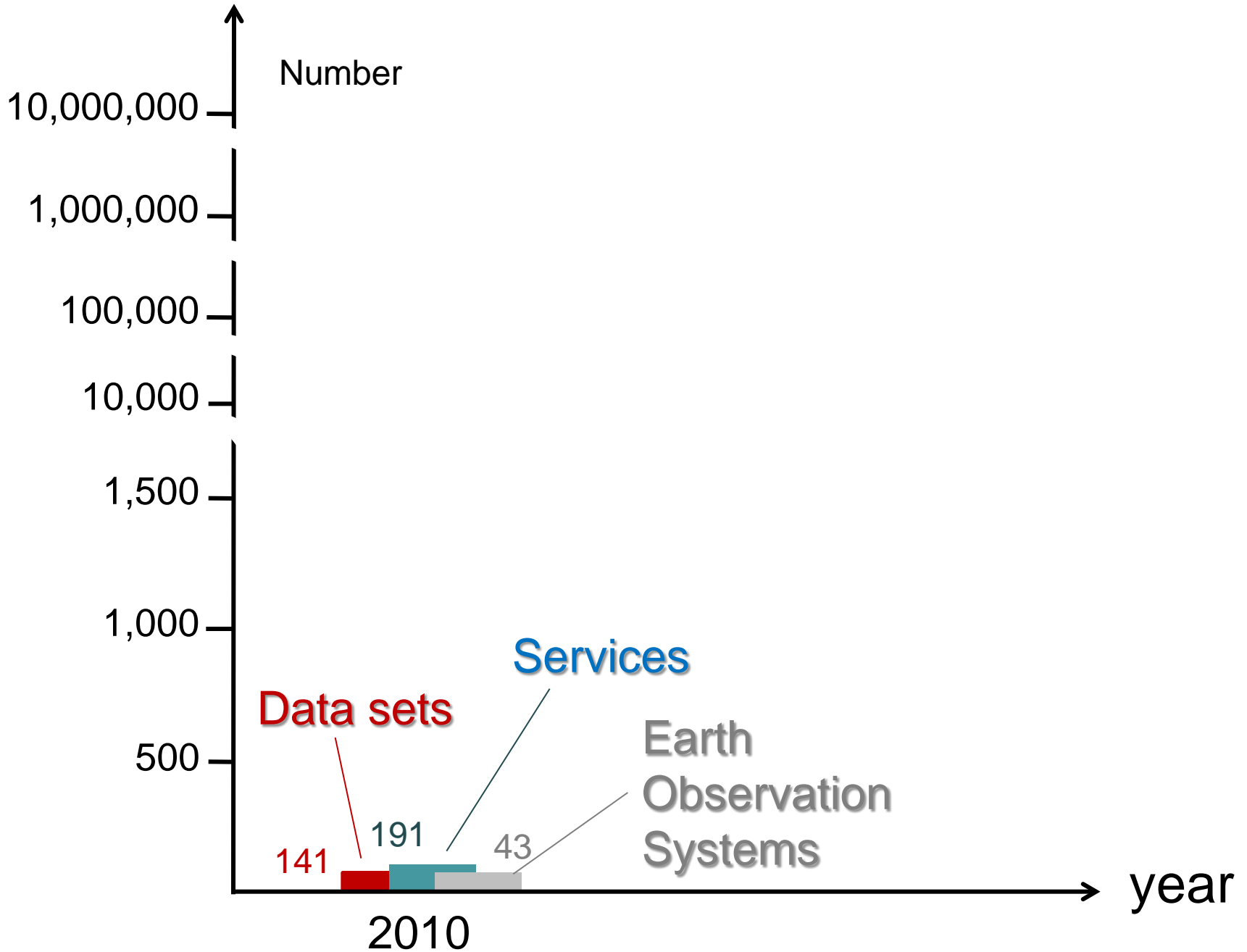
Biodiversity

NINE SOCIETAL BENEFITS

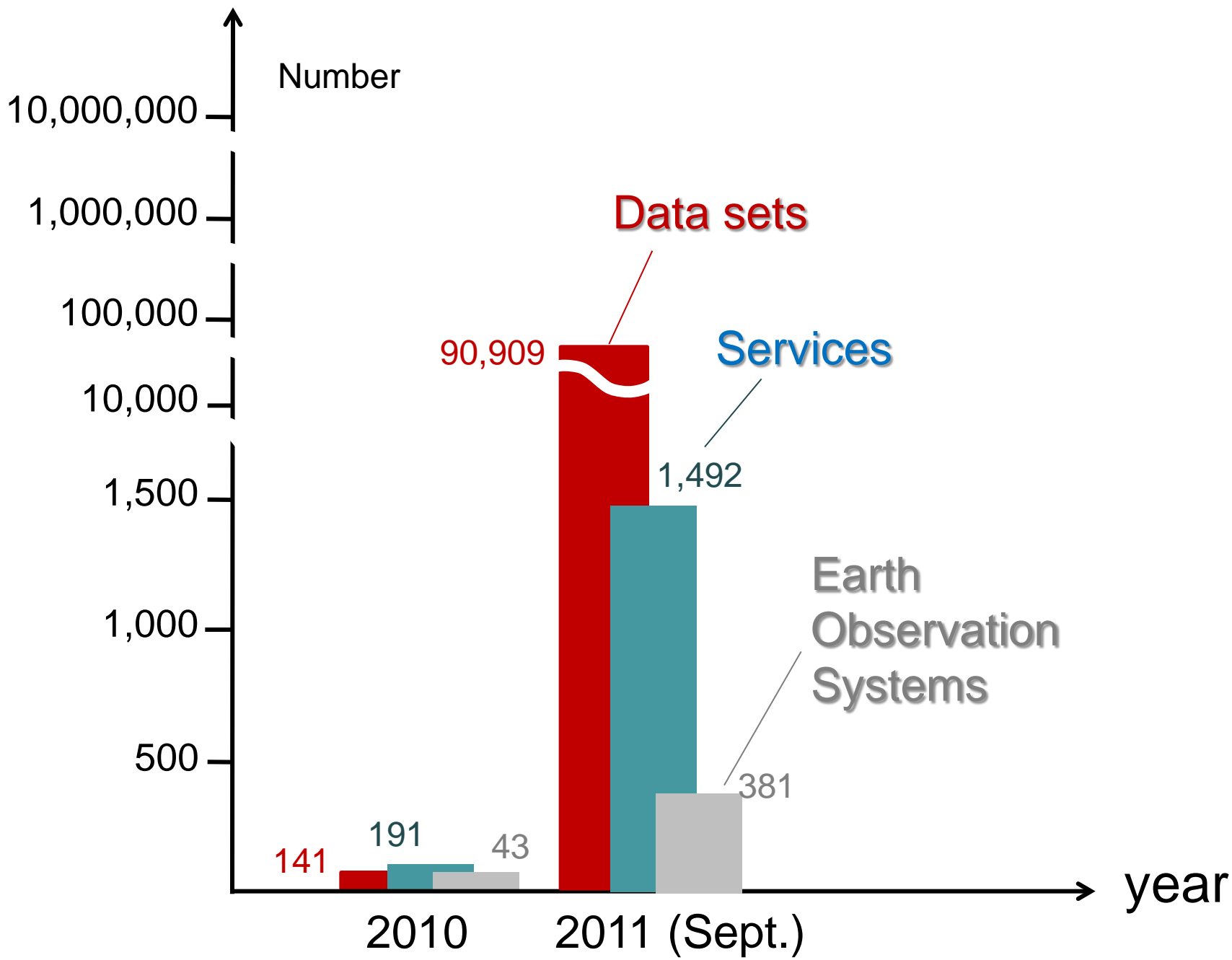
**Users**



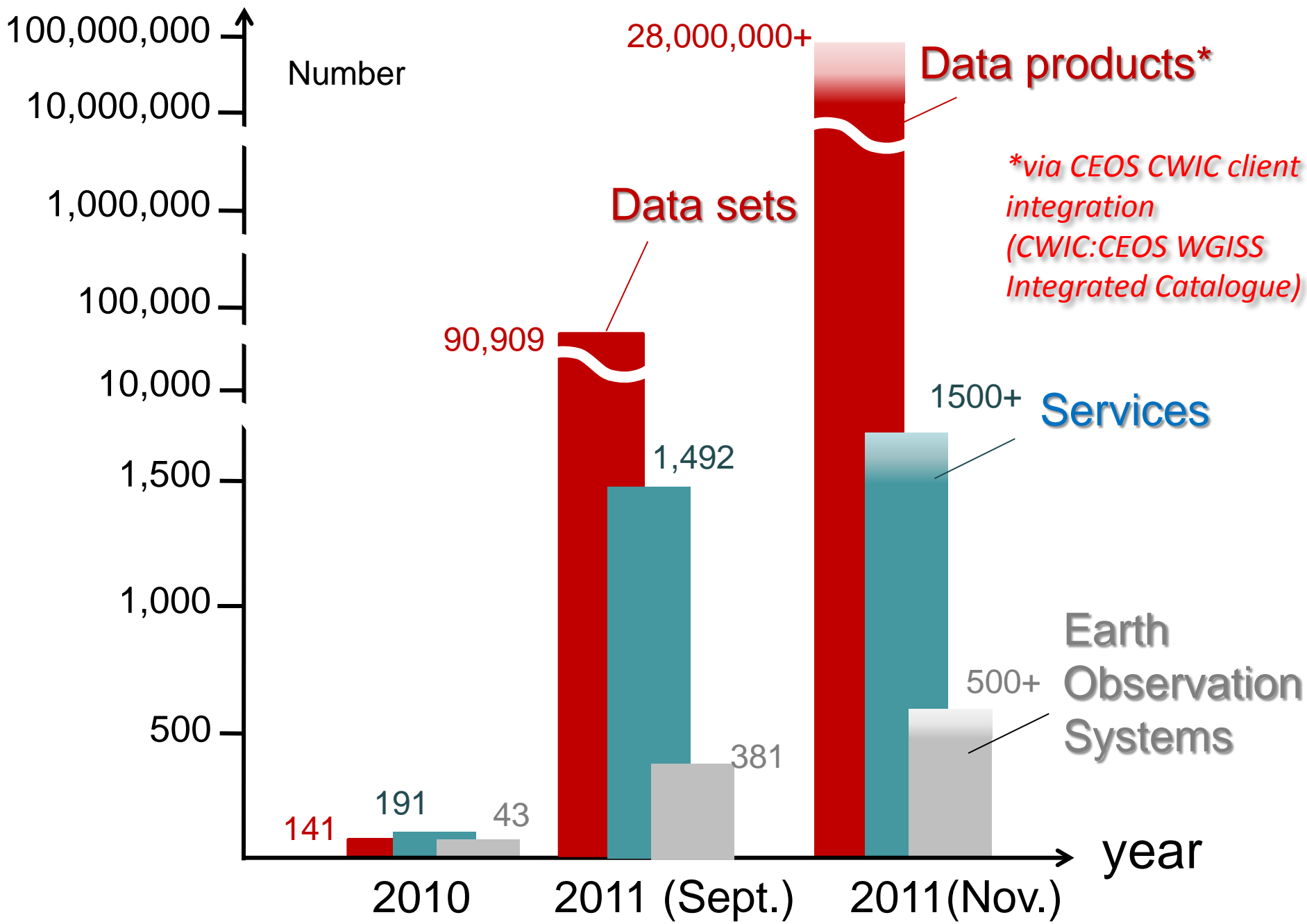
# Growth of Registered/Accessible Resources



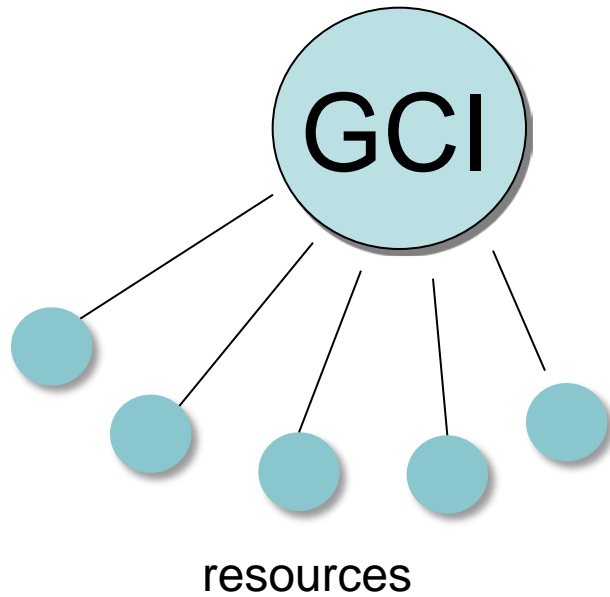
# Growth of Registered/Accessible Resources



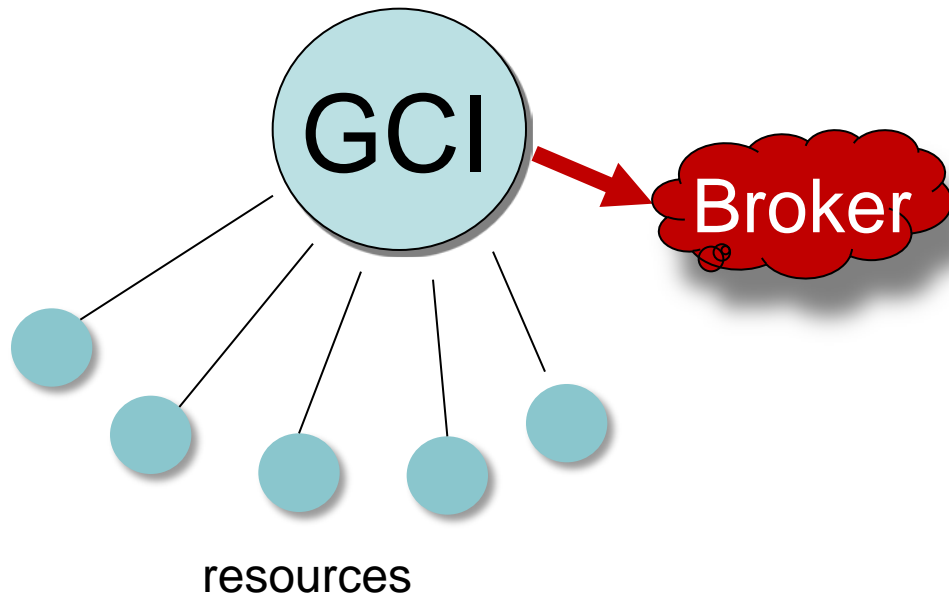
# Growth of Registered/Accessible Resources



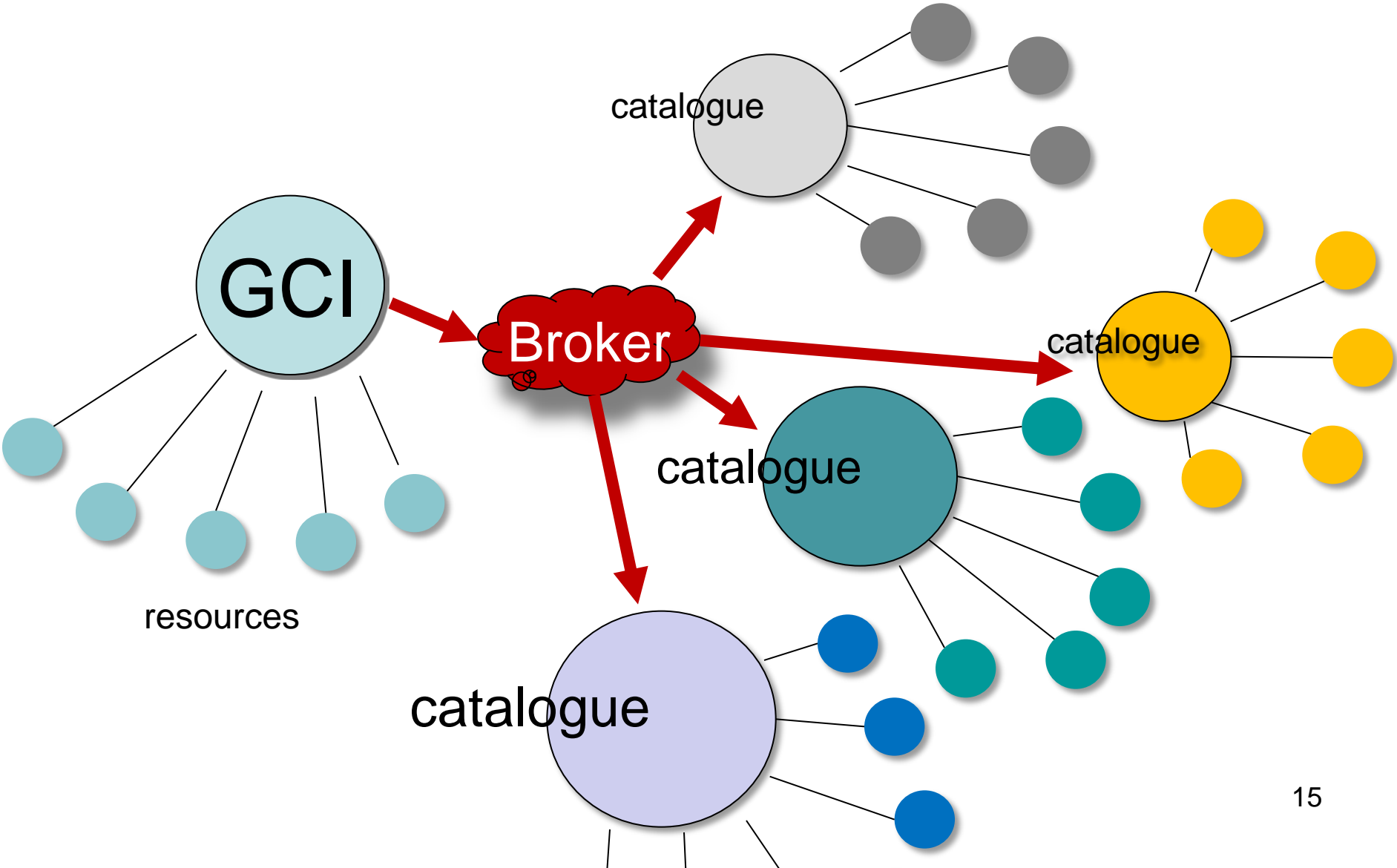
# Why have resources increased so rapidly?



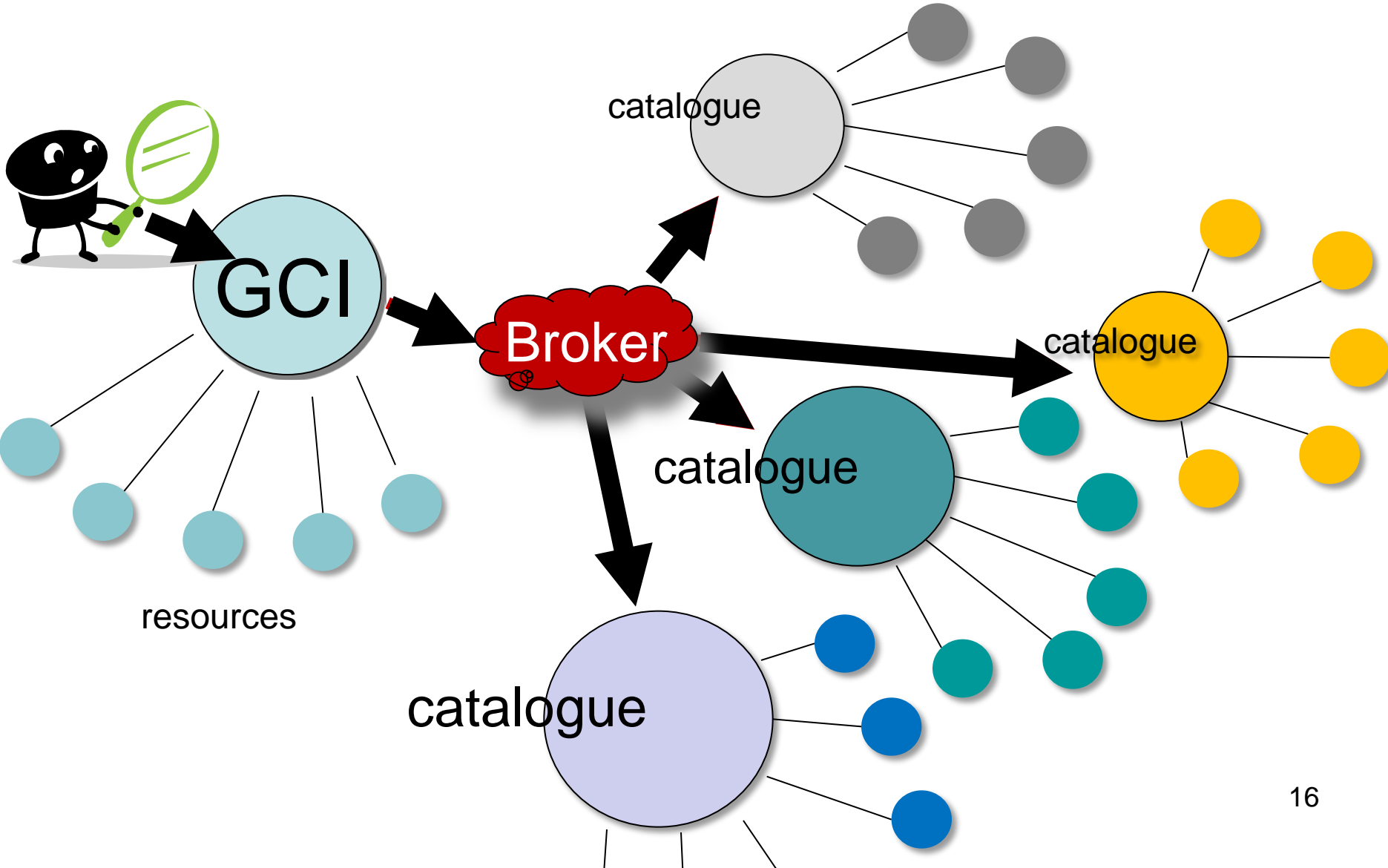
# Why have resources increased so rapidly?



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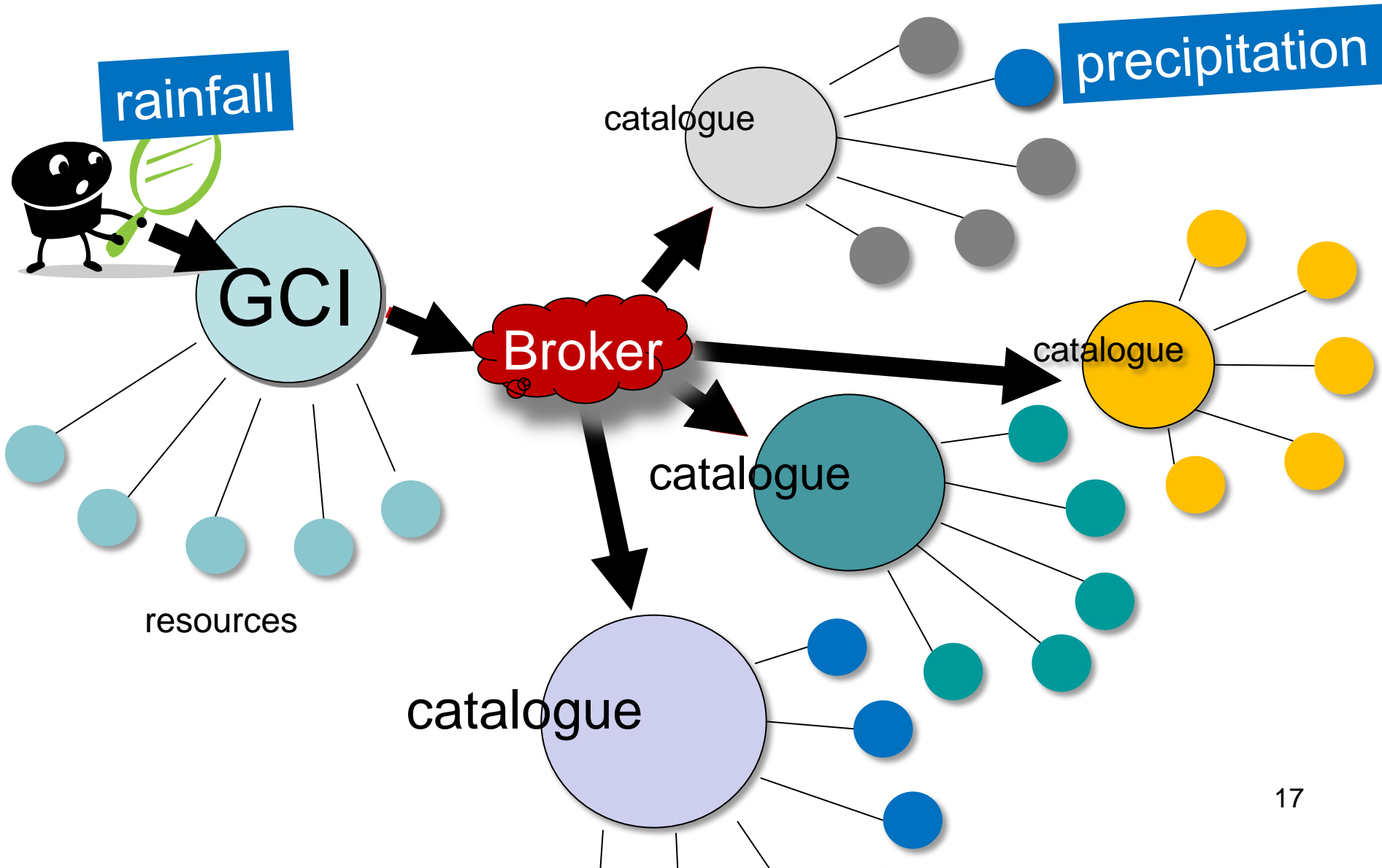


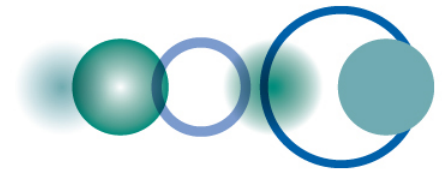
# Why have resources increased so rapidly?





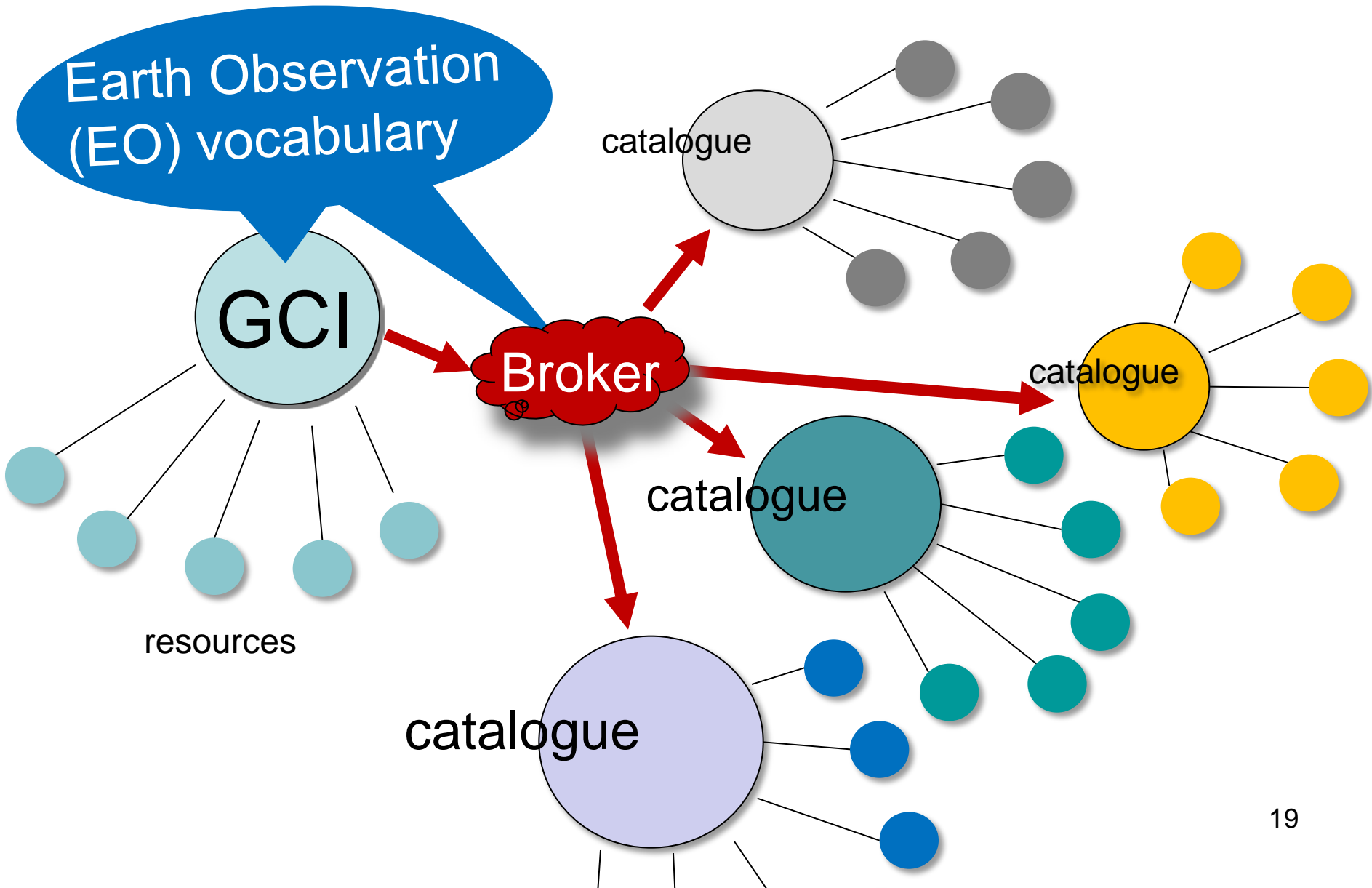
# Semantic Issue in Search





# Semantic Interoperability

# GEOSS Earth Observation Vocabulary



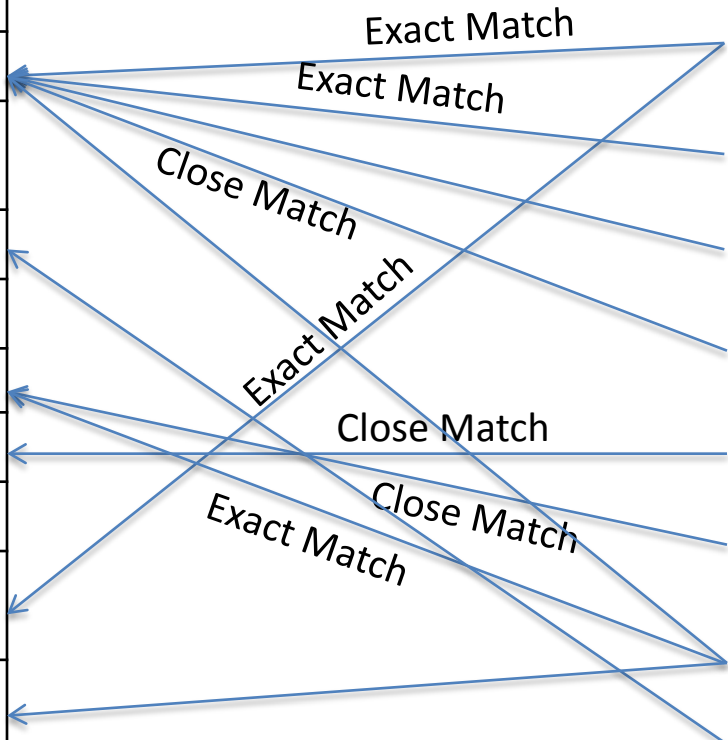
# Define and associate with EO Vocabulary and Existing Glossaries

Existing Vocabularies	
1	WMO Glossary
2	CEOS Missions, Instruments and Measurements(MIM) Database
3	CEOS Systems Engineering Office(SEO)
4	GEMET
5	INSPIRE Feature Concept Dictionary
6	SWEET
7	CUAHSI
8	CF Standard Names
9	GCMD
10	Eurovoc Thesaurus
11	International Glossary of Hydrology/UNESCO
12	Marine Metadata Interoperability

Applied to each catalogue

Common vocabulary

<b>Earth Observation Parameter</b>
Precipitation
Soil Moisture
Surface Air Temperature
Surface Wind Speed
Land Cover
Surface Humidity
Vegetation Cover
Surface Wind Direction



# Ontology Registry to Find Similar Technical Term

Input Keywords, "precipitation"

Data Index/Search

Technical Term Search

Links

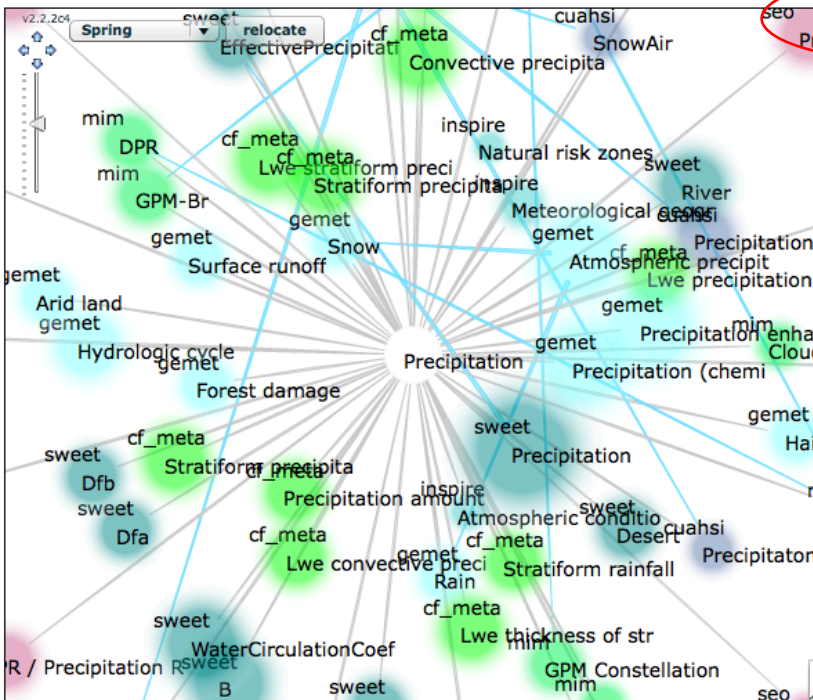
What's new

About us

Site map

WMO Glossary
  CEOS MIM Database
  CEOS SEO Database
  INSPIRE FCD
  GEMET
  SWEET
  CUAHSI
  CF Standard Names

Powered by

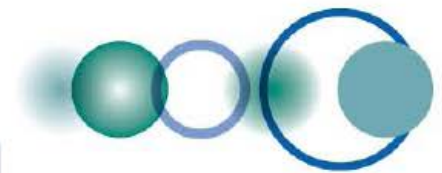


Precipitation hit 10  
search

61 found

<p><b>Precipitation (SWEET)</b> Meteorological Phenomena Drizzle Freezing Rain Gosling Blast Hail Rain Sleet Snowfall Storm Effective Precipitation</p>	14.04	<a href="#">relevant term</a>
<p><b>Precipitation enhancement (GEMET)</b> Increase of precipitation resulting from changes in the colloidal stability of clouds. This can be either intentional, as with cloud seeding, or unintentional... <a href="#">GEMET precipitation enhancement</a></p>	10.80	<a href="#">relevant term</a>
<p><b>Atmospheric precipitation (GEMET)</b> The settling out of water from cloud in the form of dew, rain, hail, snow, etc. (Source: ALL) Meteorological phenomenon Rain Snow <a href="#">GEMET atmospheric precipitation</a></p>	10.45	<a href="#">relevant term</a>
<p><b>Precipitation (chemical) (GEMET)</b> The process of producing a separable solid phase within a liquid medium; represents the formation of a new condensed phase, such as a vapour or gas condensation... <a href="#">GEMET precipitation (chemical)</a></p>	10.38	<a href="#">relevant term</a>
<p><b>B (SWEET)</b> comment Potential evapotranspiration (POTET) exceeds precipitation in all B climates. Subdivisions are based on precipitation timing and amount and morphology...</p>	9.32	<a href="#">relevant term</a>
<p><b>Water Circulation Coefficient (SWEET)</b></p>	9.18	<a href="#">relevant term</a>

Similarity score with the input keywords



**GEOSS  
Common  
Infrastructure**

**GEOSS Registries:**

- Standards & Interoperability
- User Requirements
- Best Practices Wiki
- Semantic\*

**Discovery and Access Broker\* (DAB)**

*\* Prototype capabilities*

**Clearinghouse (CH)**

**EO Data Brokers**  
(e.g. GENESI\*, CWIC\*, FedEO\*)



**Register**

**Component & Service Registry (CSR)**

*Resources Providers*

**GEOSS Resources**

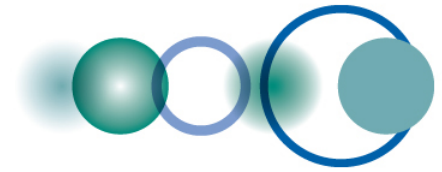
**Services and SW Applications:** EO data Catalog, Access, Processing. Community Portals.

**EO data Catalogues & Repositories**

## Contacts

**Mirko Albani:** [Mirko.Albani@esa.int](mailto:Mirko.Albani@esa.int)

**Douglas Nebert:** [ddnebert@usgs.gov](mailto:ddnebert@usgs.gov)



# Hunting User Requirements

Critical Earth  
Observation  
(EO)  
Priorities

GEO Task US-09-01a  
**Critical Earth Observation Priorities**

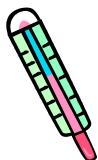
Final Report • October 2010



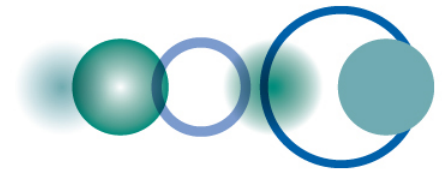




How many of the parameters are covered by downloadable data sets?



Earth Observation Parameter	Societal Benefit Areas			
	Agriculture	Climate	Disasters	Ecosystems
Precipitation	Used			
Soil moisture				
Surface air temperature				
Surface wind speed		Not used		
Land cover				



# Hunting User Requirements



- ✓ Priority Data Products
- ✓ Performance Indicator
- ✓ Common EO Vocabulary

# Comparing GEOSS with WDS

- **GEOSS**

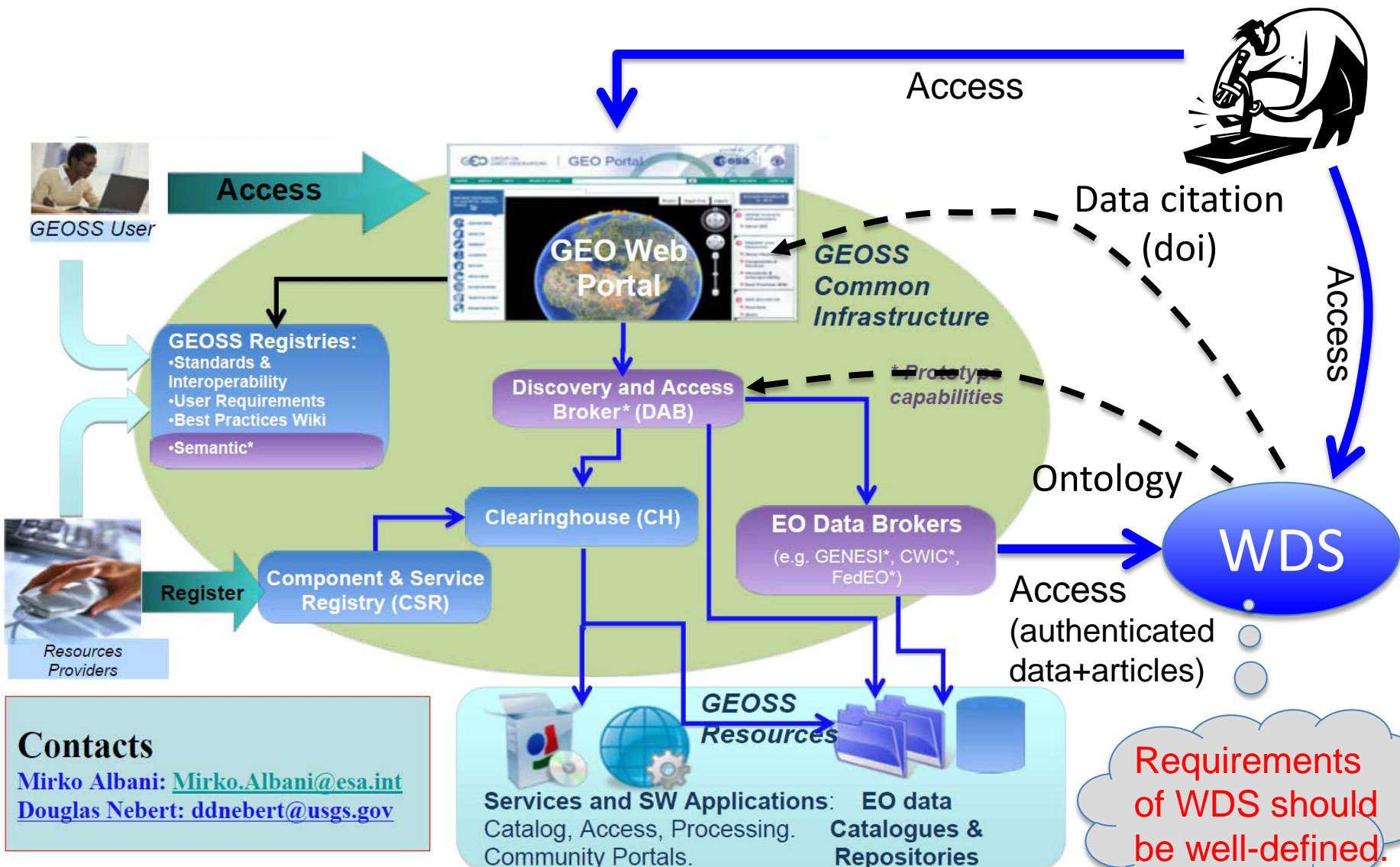
- Application (SBA's) user driven; broad range of user communities, but rather apparent (e.g. “fighting with drought”)
- Need to handle very heterogeneous data sets
- No direct control of data quality
- Simple discovery of data is focused.

- **WDS**

- Science driven; scientific users
- Each center handles “homogeneous” data with better quality control.
- More advanced data discovery is under development (e.g. ontology-based data search like PANGAEA etc.)

# Collaboration with GEOSS

Scientific users



## Contacts

Mirko Albani: [Mirko.Albani@esa.int](mailto:Mirko.Albani@esa.int)

Douglas Nebert: [ddnebert@usgs.gov](mailto:ddnebert@usgs.gov)

**END**