

Geo Chile Disasters Capacity Building Working Group

BIG DATA FROM SATELLITES AND DRONES TO PRODUCTS

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Building WG**

**Afriterrra Foundation
Sat-Drones**

Washington D.C., 2nd July 2017



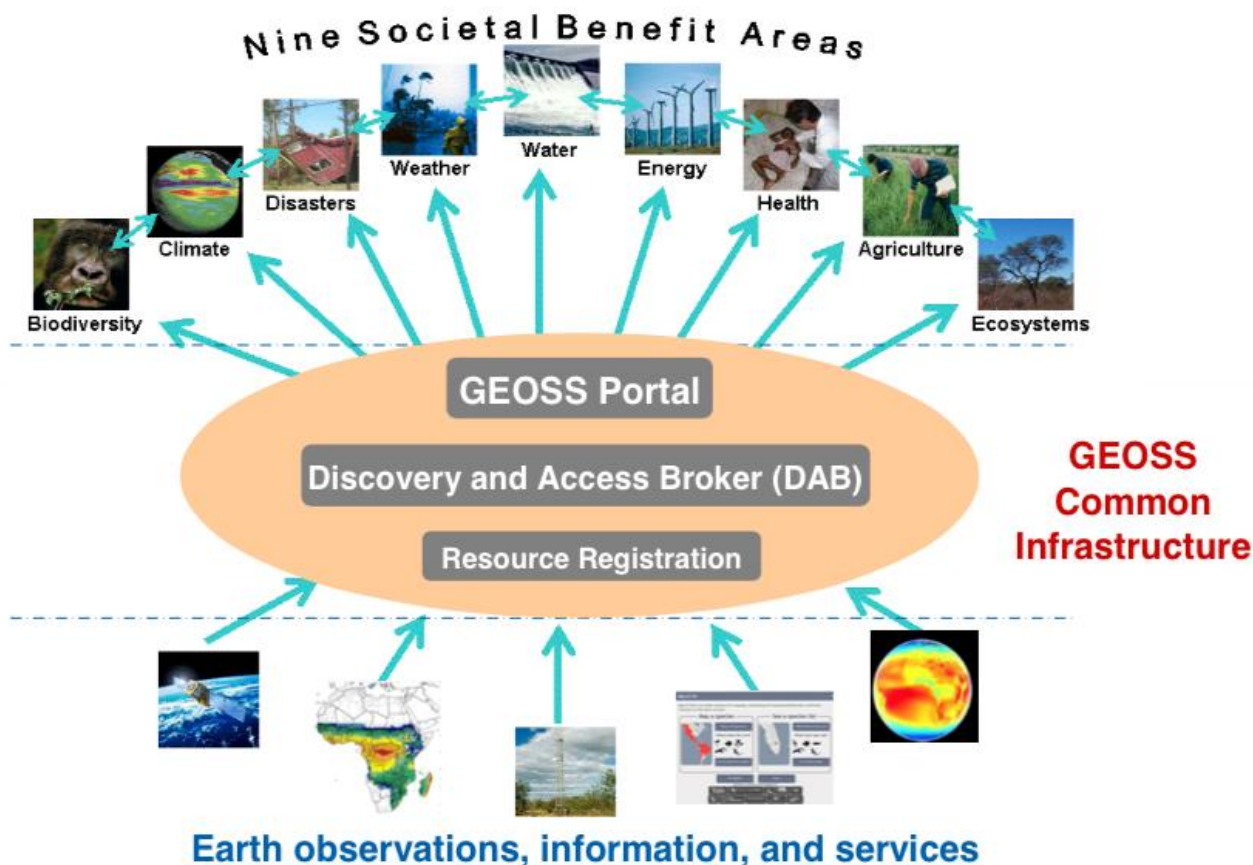
**Gobierno
de Chile**

gob.cl

GEO Chile Disasters Capacity Building WG participants:



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Large volume of data & metadata (from satellites, social media, drones and others) are registered to GCI. Data can be searched, accessed, discovered, integrated.

Data from different sources and formats are converted through interoperable interface thanks standards such as OGC, ISO TC211, W3C and others (Service Oriented Architecture or SOA).

Societal Benefit Areas

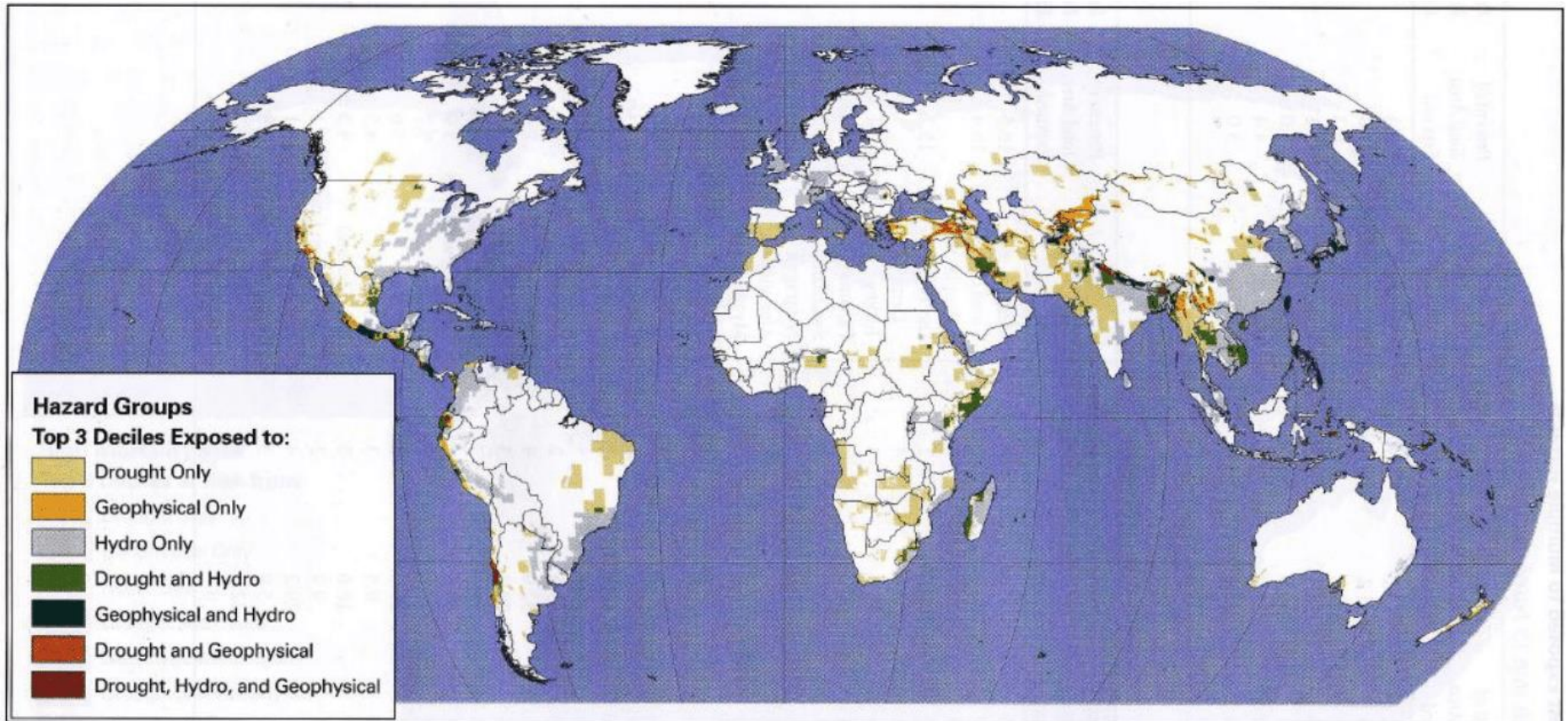


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Objectives:

Increase resilience to disasters by increasing capacity in the society according the Sendai Framework, and by Earth monitoring for disasters occurrences.



Note: Geophysical hazards include earthquakes and volcanoes; hydrological hazards include floods, cyclones, and landslides. [Claudia González-Muzzio](#), 2010

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Case studies – Chile Testing regions:

Seven regions were selected, three with volcanic hazards (Copahue, Villarrica, and Calbuco); three with earthquakes and tsunamis vulnerability (Talcahuano, Iquique, and Illapel) as well as wild fires risk (Valparaiso). Later on, it will be discussed wildfires, floods, landslides occurrences.



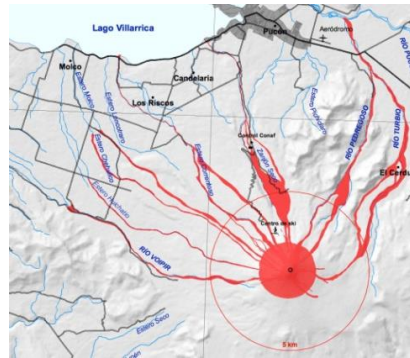
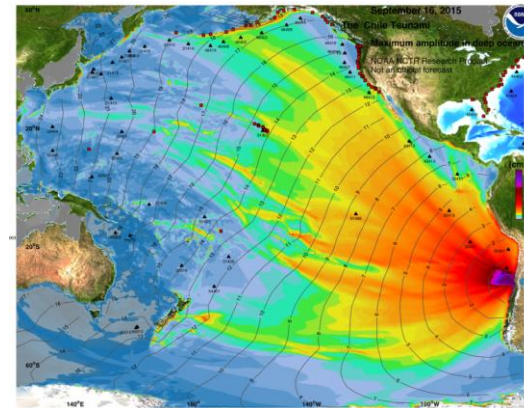
Illapel, 16 September 2015, tsunami and quake



Iquique 8.2 Earthquake,
1 April 2014

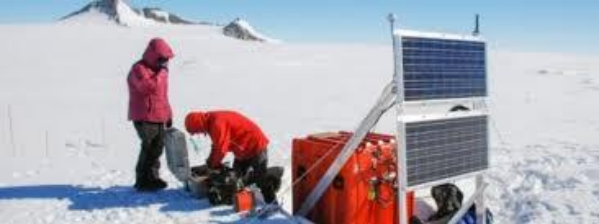


Villarrica, March 2015



Calbuco,
April 2015





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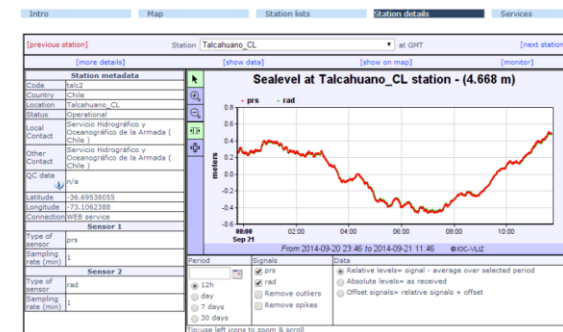
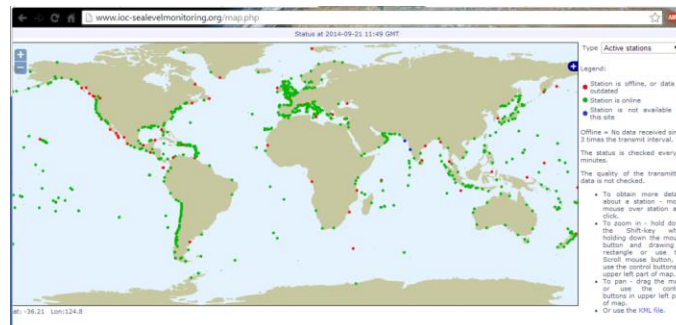
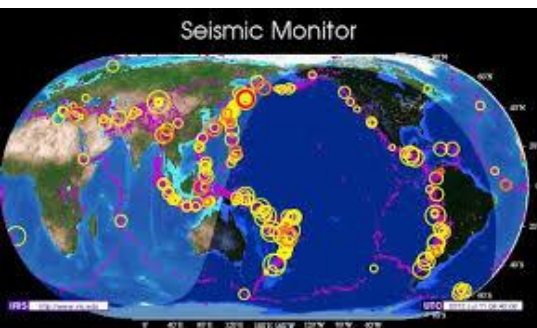
Meteo Chile, 2016

Case studies – Chile Testing regions--:

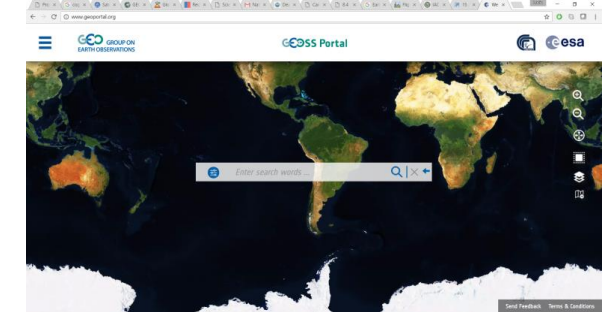
In the seven regions, instruments, data and metadata were accessed, made interoperable through standard interfaces (such as OGC, W3C, ISO and others) though the GEOSS geoportal.

Critical is the support of the Chilean administration at any time, across different organizations, and communities.

Important is also to let every organization manage their own data and models, while allowing one organization, here IDE-SNIT – access to their metadata that they enter in the Chilean CSW.



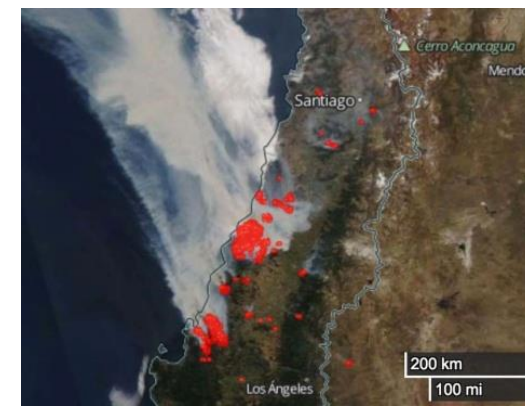
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2017 activities

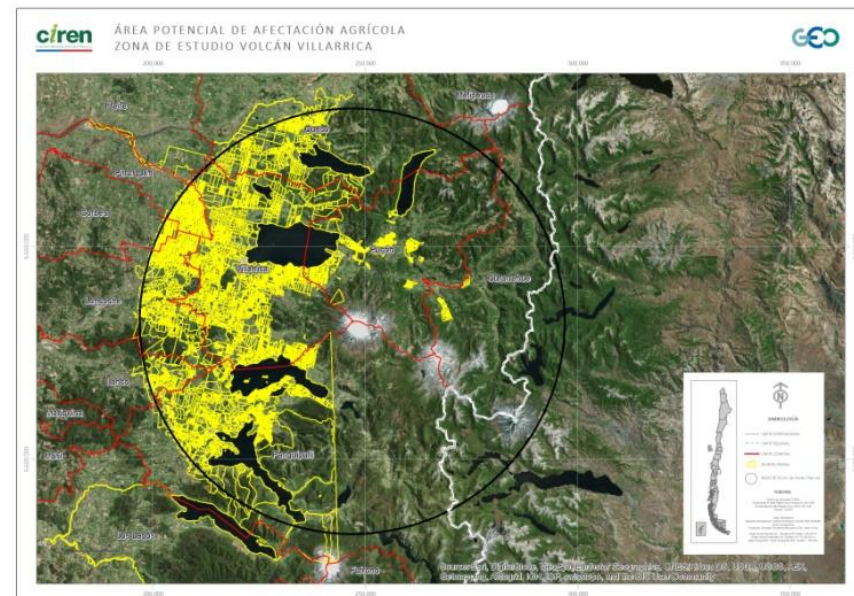
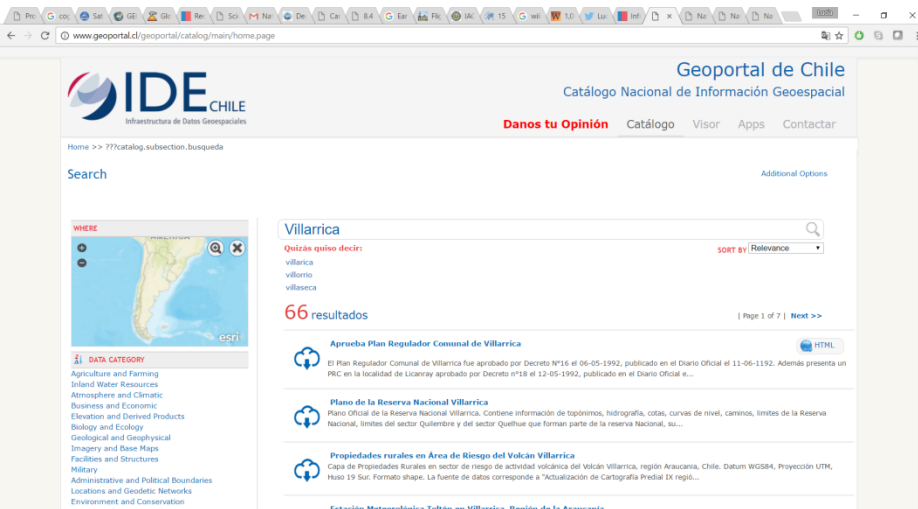
- 1- Organized, instructed and coordinated experts of the geoportal developed by ESA for GEO, to do a demo on disasters for the participants of the Chilean CB Working Group (January 2017).
- 2- Assisted in the wildfires that have ravaged Chile and South America in early 2017 (different Chilean agencies, NASA and other agencies).
- 3- Assisted in the mudslides that also have ravaged Chile and South America (different Chilean agencies, NASA and other agencies).
- 4- Assisted Sernageomin (Chile equivalent of USGS) to write a proposal for becoming a GEO Supersite and Natural Laboratory.

NASA satellite photo showing smoke from the wildfires in Chile January 26, 2017.



2017 activities (*continue*)

5- Supporting IDE-SNIT and CIREN to develop metadata and data products related to the land use of the seven testing areas selected in Chile.

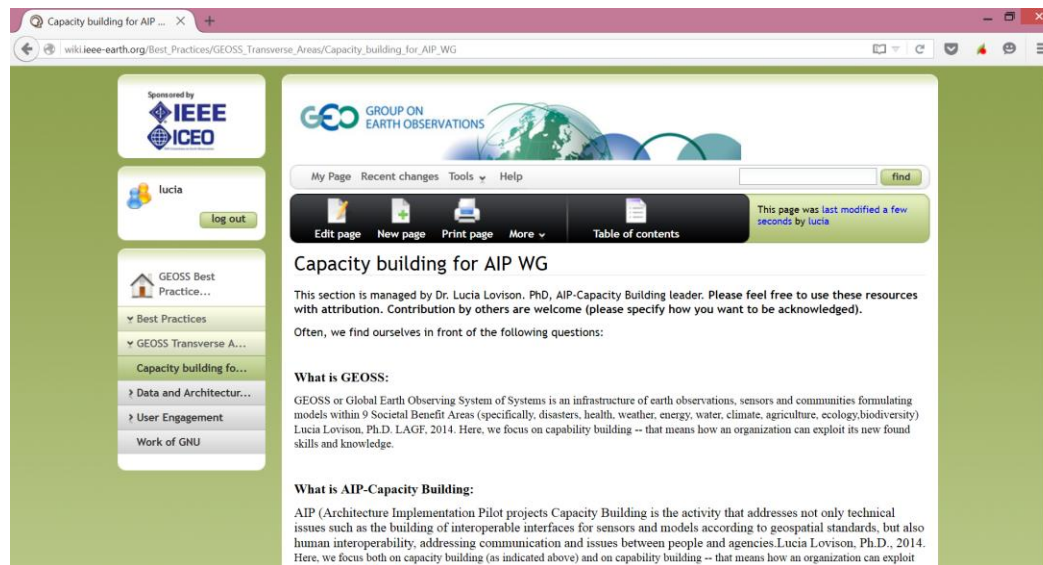


IDE-SNIT and CIREN, New Data and Metadata, Villarrica, 2017

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2017 activities (*continue*)

6- Capacity Building: to develop Best Practices related to disasters & GEO assistance a Disaster Workshop within ICC 2017 and others events.



7- The WG activity is looking for a space on internet where to describe and report all these initiatives and lesson learned bot in Spanish and in English.



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2017 activities *(continue)*

8- Within a testing site, we have identified the areas where to fly drones, to establish a baseline before a disaster strikes.

9-The input and feedback from the local communities has been critical for the work of the WG.

10- We helped to organize and coordinate Chilean agencies to identify the research/testing areas of interest for Satellite-Drones data and metadata collection in relation to develop products that we'll benefit all the communities for disasters (the research site chosen is Villarrica, with ONEMI, Sernageomin, UTFSM, CIREN, IDE-SNIT, SAF, Meteo Chile, Pucon Municipality and NASA , Sat-Drones, and others are and will be involved).



*Villarrica volcano and Pucon visit
2 April, 2017*



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2017 activities *(continue)*

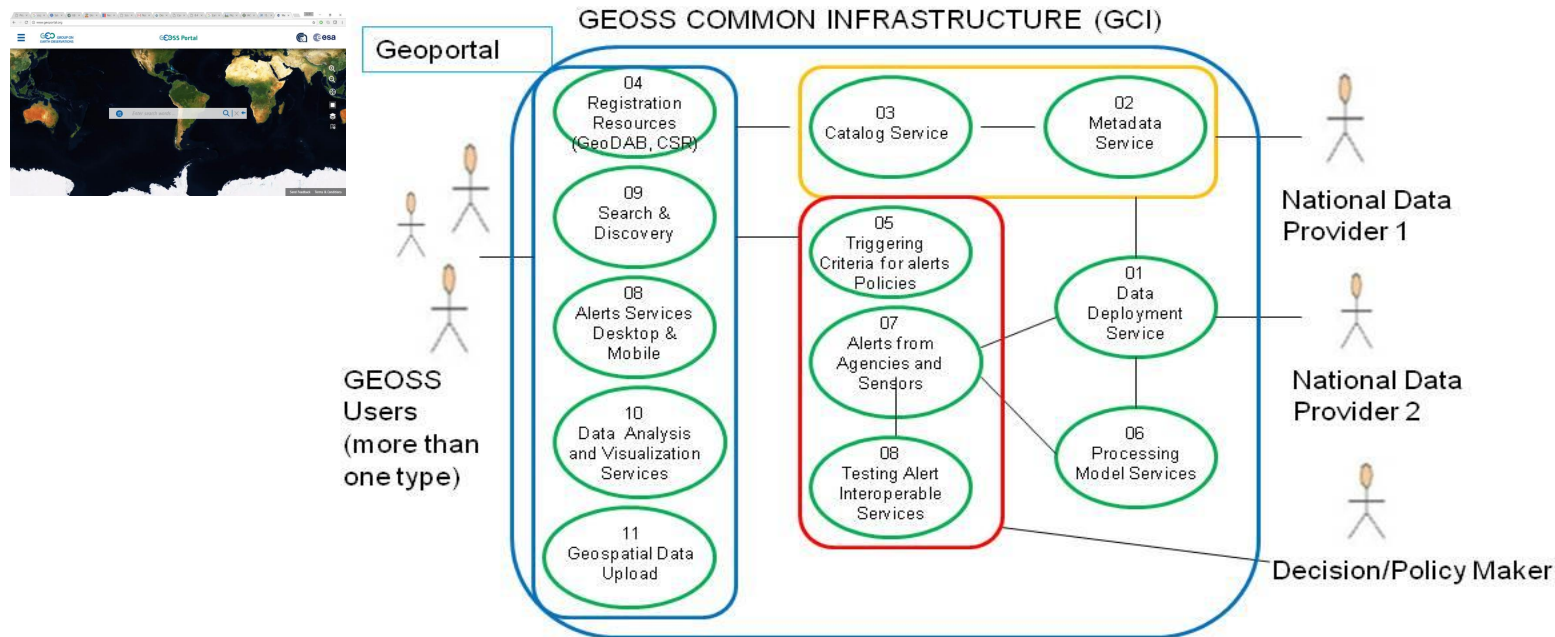
11- We are now working through the legal and economic challenges to use drones. There are required several levels of authorizations, and funding opportunities (for training of local personnel and for performing spatial analysis) both in the local environment with the support of several agencies.

12- There are also technical issues: 12.1-are we going to bring in drones or to foster and support local innovation? 12.2-are we and how going to train locals? 12.3-are we supporting local, regional, national and international connectivity and collaboration? How? Trust, Respect, Acknowledgment and preparation for DRR is paramount.



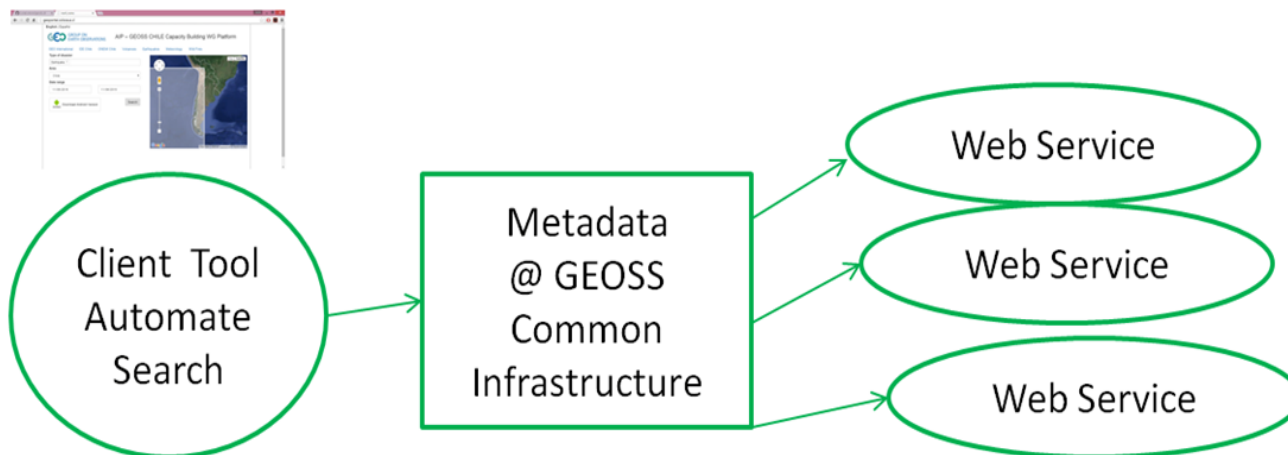
*Villarrica volcano and Pucon visit
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Architecture Implementation Pilot - Chile Capacity Building

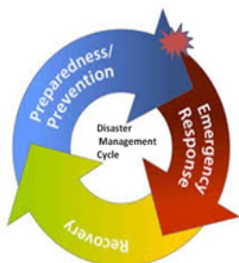


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- In 2016, the Client App Tool web mapping service will be loaded to the GUI apps as layers for visualization of the disaster events.



<http://www.earthobservations.org>



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Preparedness for disaster -- Collecting Local Data:

- 1- We start from the testing site in Villarrica volcanic region.
- 2- We identified Villarrica areas of interest (research testing areas).
- 3- We got feedback from local, regional, and national communities.
- 4- We need to find some funds to train locals and regional, get drones and sensors, store data and analyze data.

Pucon, Villarrica, April 2017



Source:

<http://parquenacionalvillarrica.blogspot.com/>



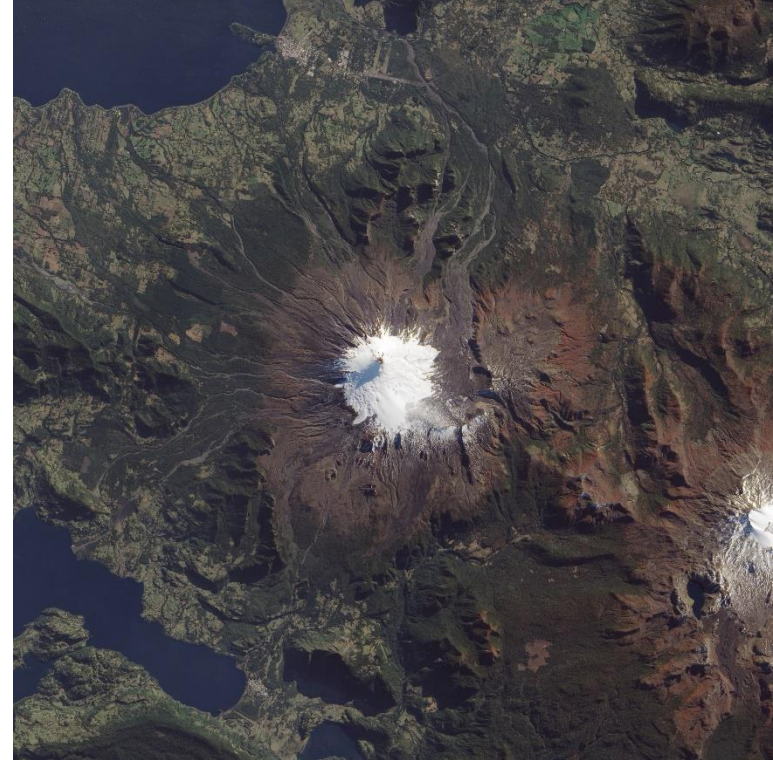
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Preparedness for disaster -- Collecting Local Data:

5- We are developing a timeline to deal with a big volume of data and metadata (who will control them? Where will be stored?)

6-We plan to do collection of local data via drones by the end of 2017.

7- We plan to coordinate the collection of local data with satellite data acquisition and other data in order to establish a baseline of the Villarrica volcanic areas of interests.



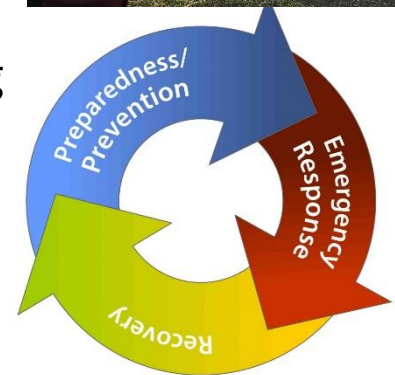
Source:
Satellite
Image of
Villarrica

Conclusions I

GEO Chile Disasters CB WG will continue to operate regionally, nationally and internationally while holding on the Data Management Principles, and the Sendai Framework for Disasters in mind.

Training of people is critical –at local, regional, international level – as first-responders, as data collectors and analysis both for improving accuracy of data collection and in order to make decisions at any point of the disaster cycle.

More work needs to be done at local and regional levels, by bringing metadata and data , such as the geodetic and land cover data, as well as other geospatial data and metadata of Chile from drones, other robotics, and social media during the disasters cycle to the Chilean Catalog Service.



Conclusions II

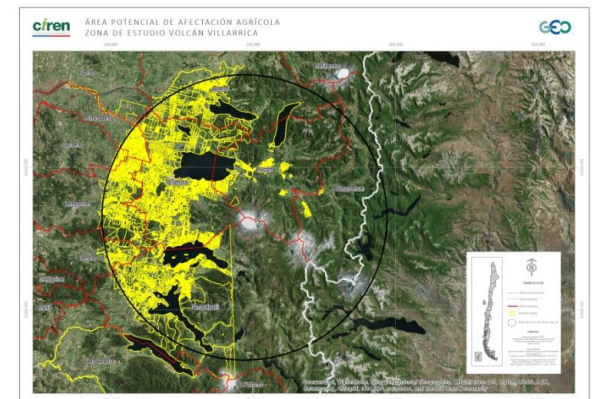
For the 2017, WG plans a new version of the GEO Chile Client API in order to give a warning of an incoming disaster or the disaster has already stricken for a desktop and mobile user, to first responders or decision makers.

We'll focus on developing an interoperable application that can work on most devices, both in Spanish, in English and other languages.

We'll continue to work with IRIS web services, the CSN and others to develop collaboratively new data and metadata to be registered at IDE-SNIT and GCI.



CIREN, New Data and Metadata, Villarrica, 2017



Conclusions III

GEO Chile Disasters Capacity Building WG also plans to include in any new product, data and metadata coming from the social aspect of a disaster occurrence.

Later on, another scenario will include the space-time integration, especially for earthquakes and tsunamis in order to spur local innovation, and decrease the vulnerability to disasters of local population.

We hope that the lessons learned during a disaster in Chile can be beneficial to other countries.

Thank you.

Qs?

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*GEO Chile CB Workshop, Chile,
March 2016*

