Climate data processing for climate resilience

Tajikistan and Kyrgyzstan

Data access, processing and methodological concepts

Webinar
17. - 27. 11.2020

DAY 07
Disaster Risk Reduction

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Objectives of Day 06

Date: 23.11
Presentation: EO_SDG

https://github.com/nilshempelmann/climdatatutorial

Objectives:

- Wrap up of yesterday
  - - Climate Services Information System – GeoSpatialData Infrastructure
- Database for Disaster Risk Reduction
- Disaster Risk Reduction response system

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Extreme Event

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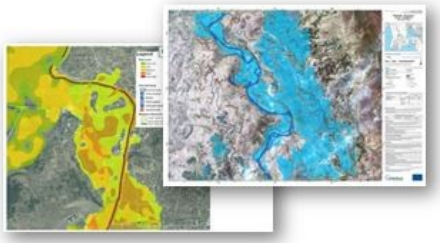
Copernicus Emergeny Management Service (CEMS)

ON-DEMAND MAPPING

Risk & Recovery Mapping

Rapid Mapping



RESILIENCE

RECOVERY

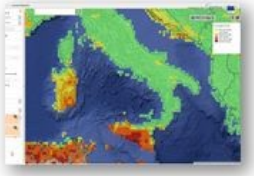
EMERGENCY RESPONSE

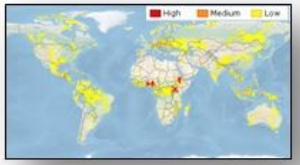
PREPAREDNESS

Operational since 2012

EARLY WARNING & MONITORING SYSTEMS

European Forest **Fire** Information Systems





European & Global **Drought** Observatory

European & Global **Flood** Awareness Systems

Source:
https://emergency.copernicus.eu/

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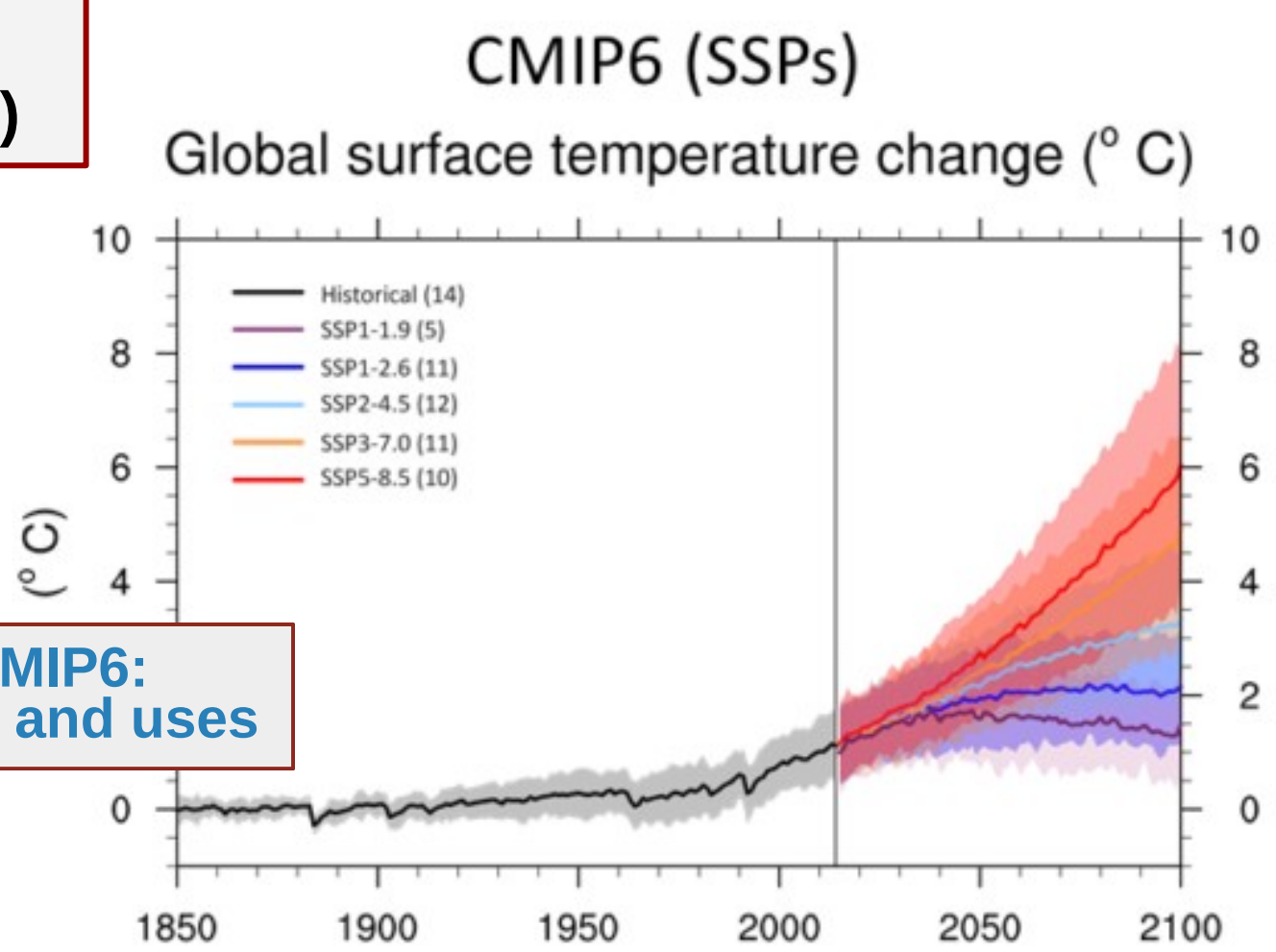
Longterm prevention (= Adaptation Strategy)



Source: crescendoproject.eu

Climate Sensitivity in CMIP6: Causes, consequences and uses

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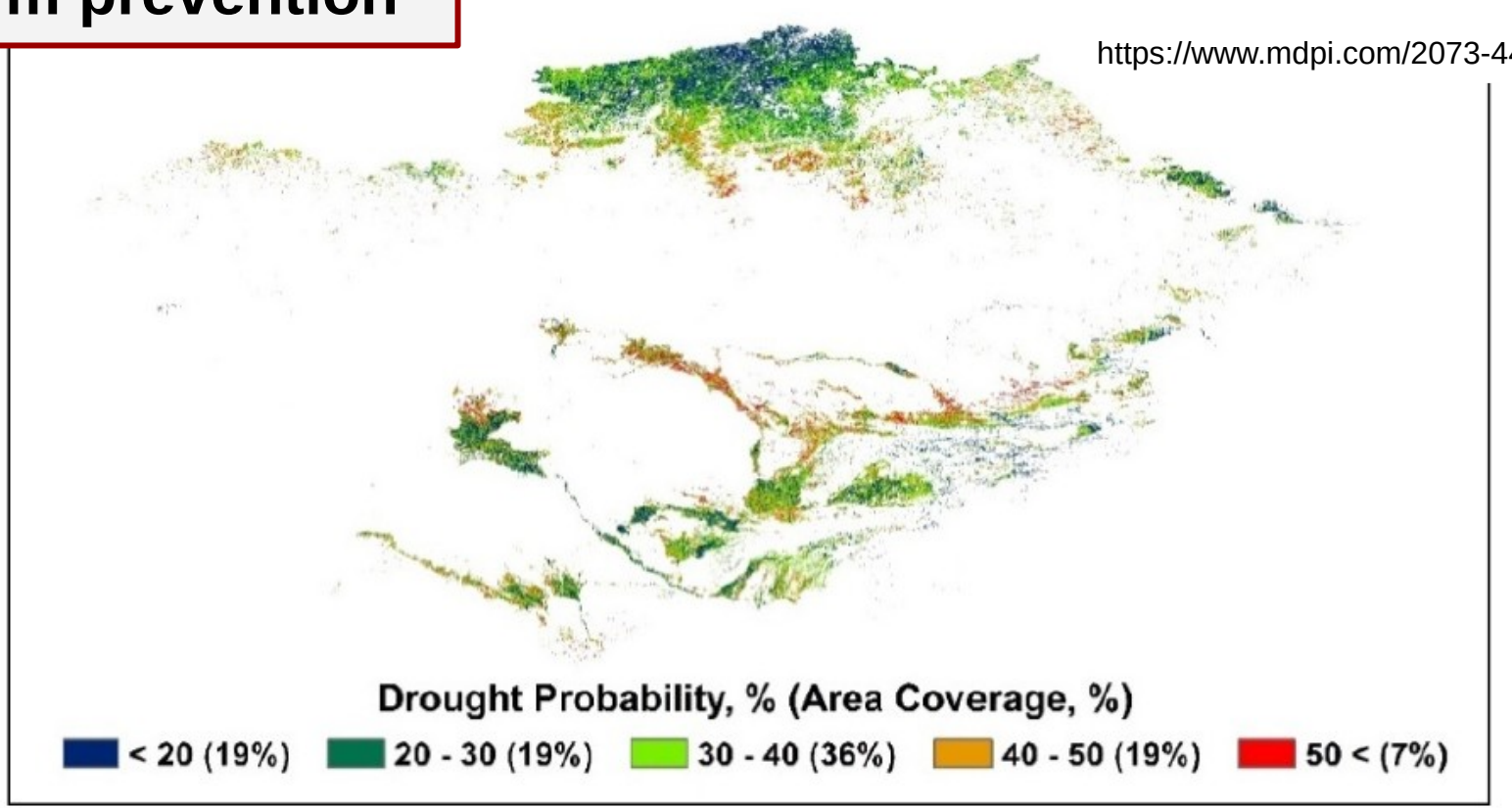
midterm prevention

Source: Nurgul Aitekeyeva et al. 2020:

https://www.mdpi.com/2073-4441/12/6/1738/htm



Drought Risk Assessment in Cultivated Areas of Central Asia Using MODIS Time-Series Data

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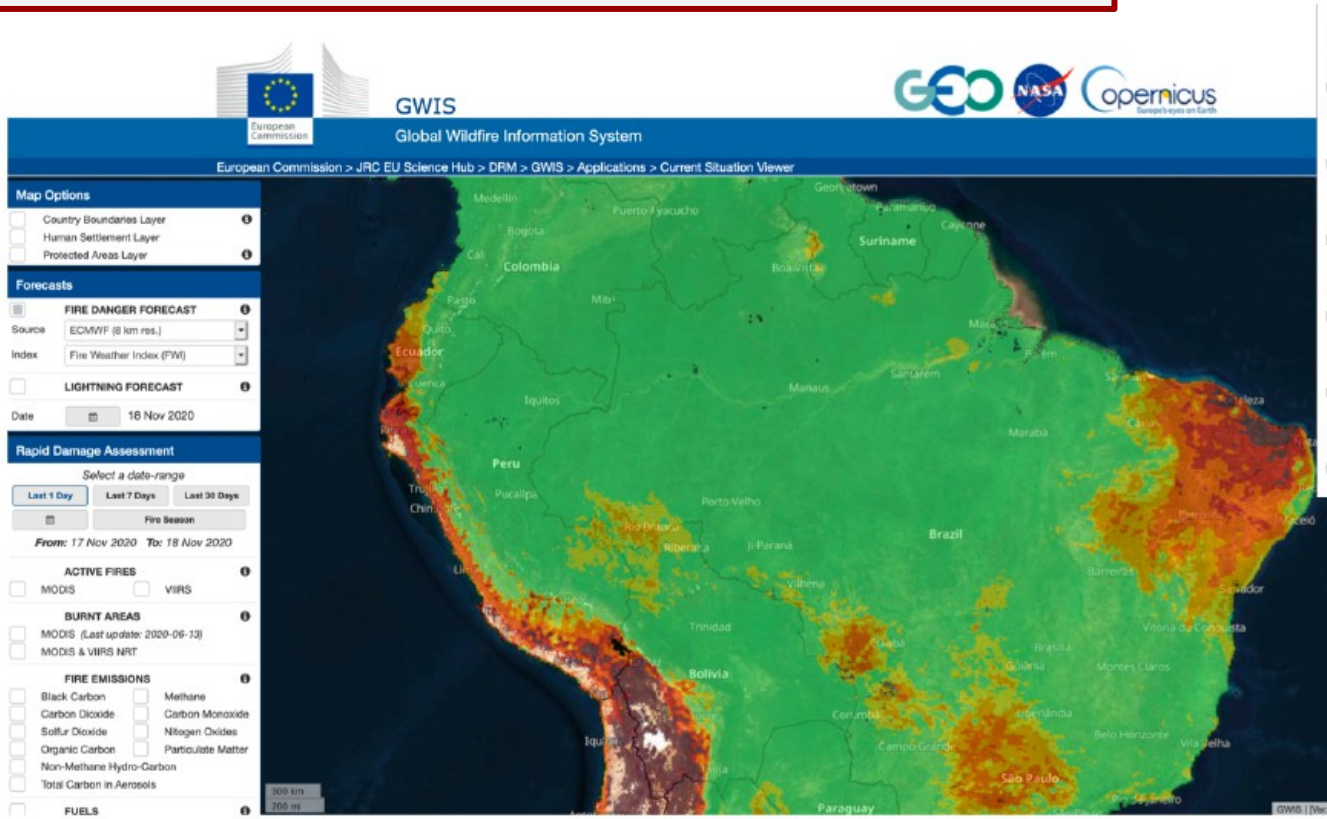
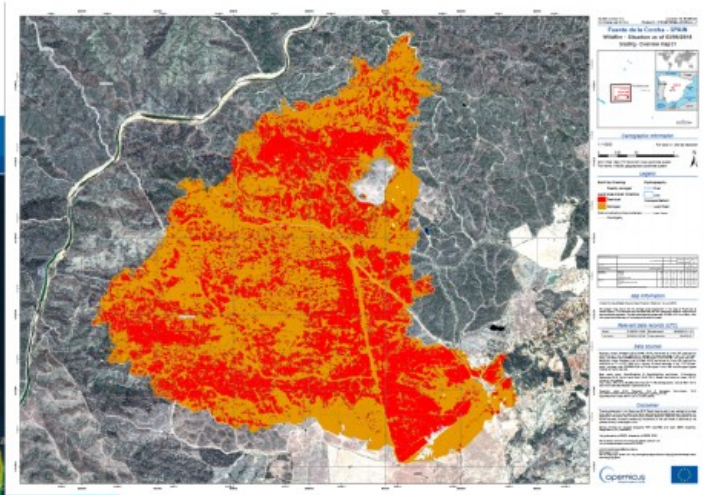
Early warning and preparedness





Built Up Grading

Possibly damaged

Land Use-Cover Grading

Destroyed

Damaged

Global Wildfire Information system:
https://gwis.jrc.ec.europa.eu/static/gwis_current_situation/public/index.html

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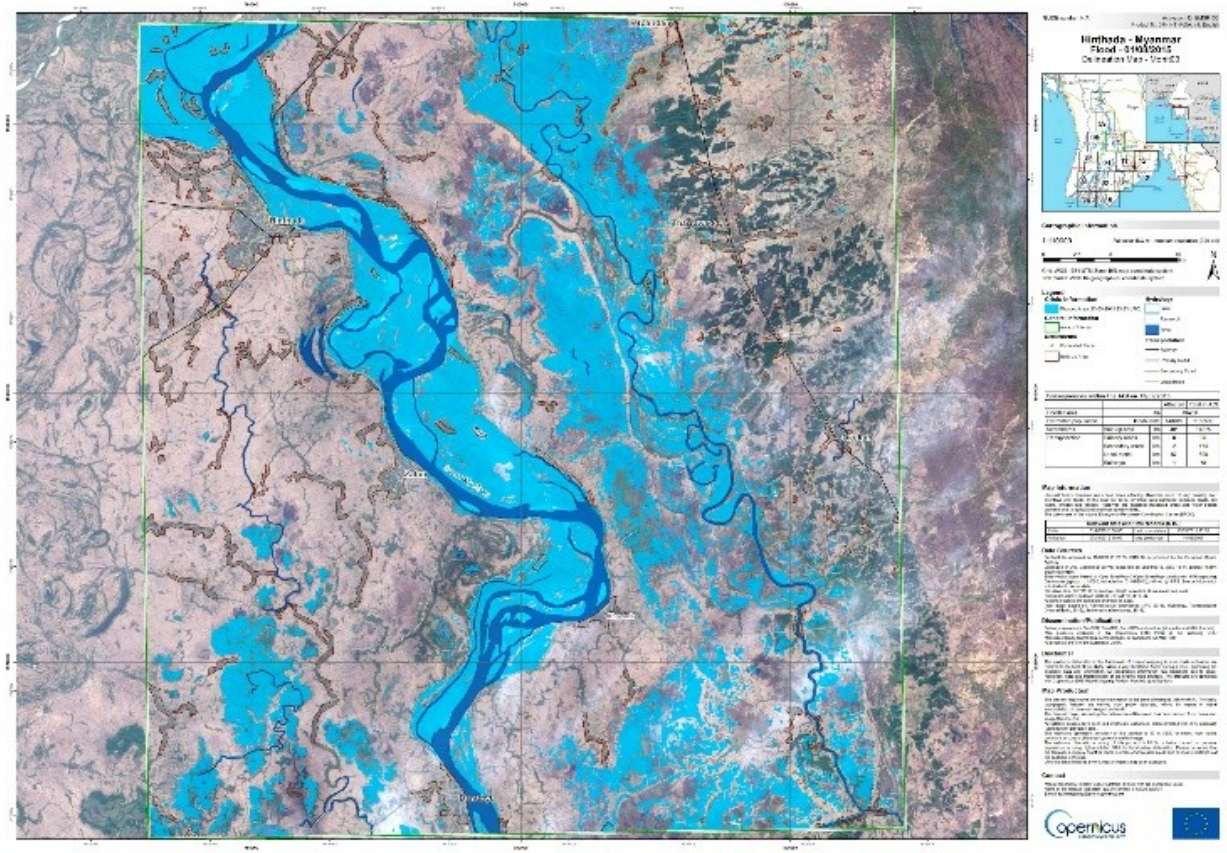
Response Phase



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Recovery

Consequences within the overview AOI on 23/08/2014				
			Affected	Total in AOI
Burnt/Flooded/Affected area		ha	68774	
Estimated population		Inhabitants	8710	1248301
Settlements	Residential	ha	431	61767
Transportation	Primary roads	km	0	32,79
	Secondary	km	12,46	245,52
	Local roads	km	53,98	1471,63
	Railways	km	0,17	99,04
	Stations	No.	0	6
	Bridges	No.	2	49
	Helipad	No.	0	1
Land use	Bare soil	ha	36867	42094
	Cropland	ha	31538	154652
	Grassland	ha	14	397

Assessment of crop damage

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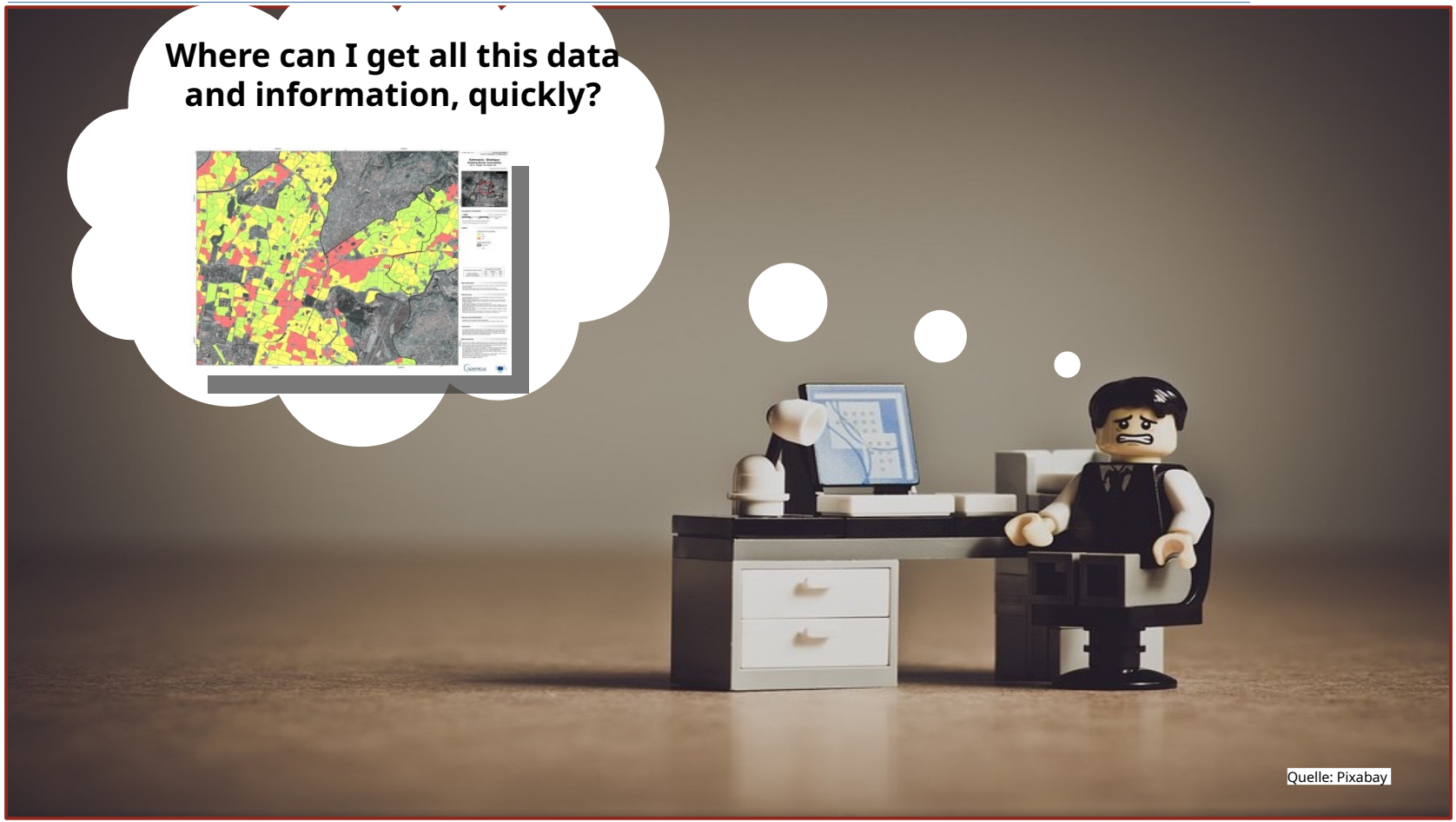
Need of a well designed Data-Centers



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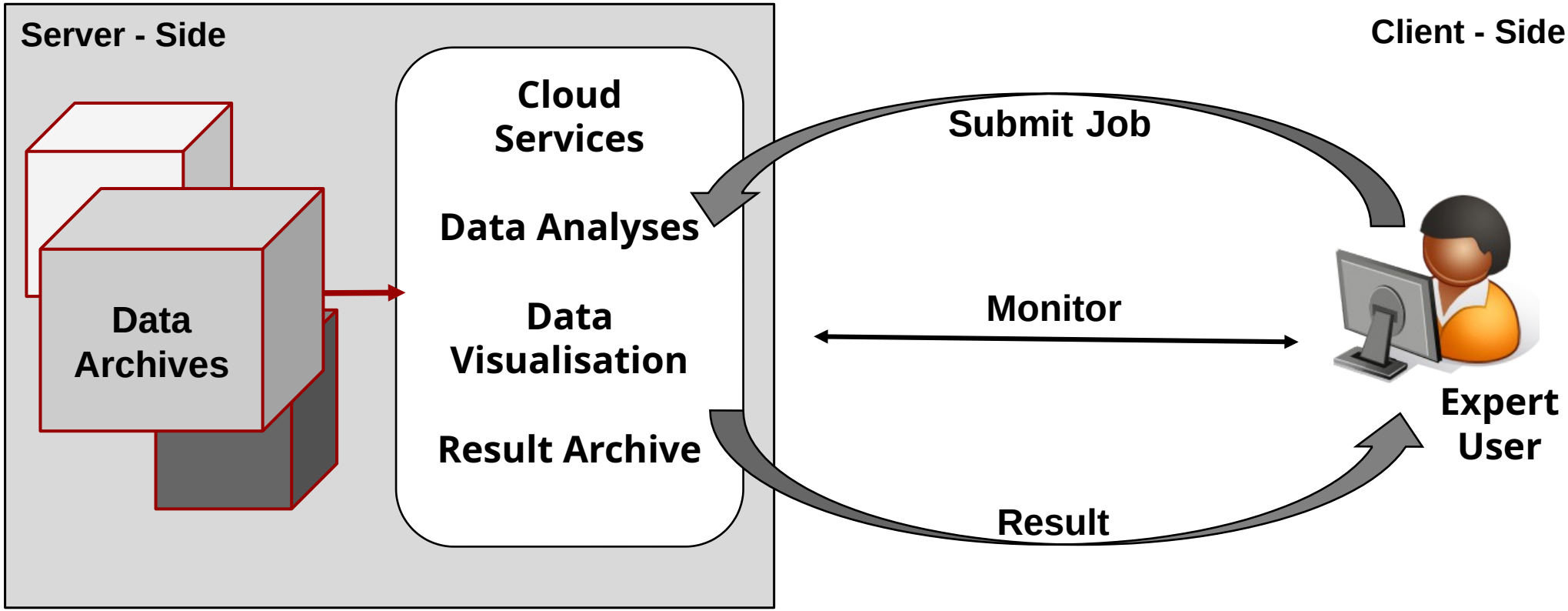
Web Processing Service

high performance environment

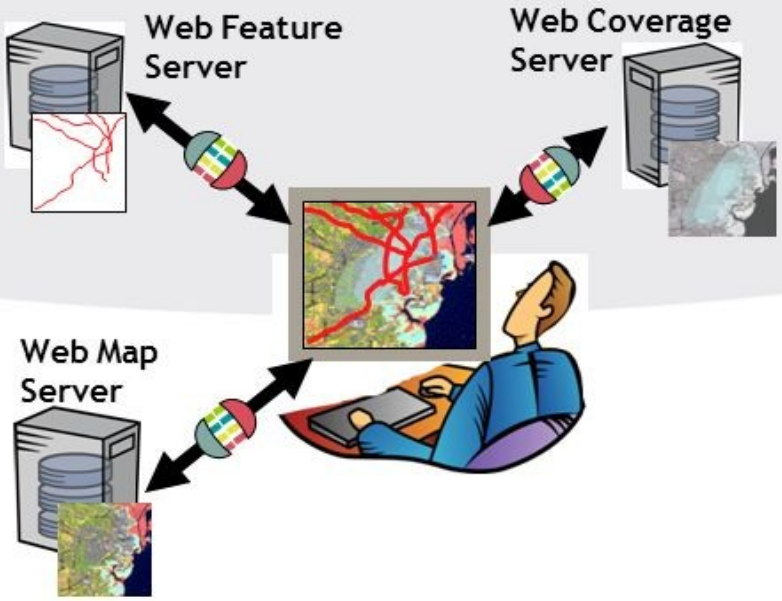
(low internet bandwidth)



OGC Standard

Recommended by the UNGGIM !

The geospatial web is enabled by OGC standards:



- Web Map Service (WMS)
- Web Map Tile Service (WMTS)
- Web Feature Service (WFS)
- Web Coverage Service (WCS)
- Catalogue (CSW)
- Geography Markup Language (GML)
- KML
- Others…

Relevant to geospatial applications: Critical Infrastructure, Emergency Management, Weather, Climate, Homeland Security, Defense & Intelligence, Oceans Science, etc

Osservare per prevedere, prevedere per prevenire

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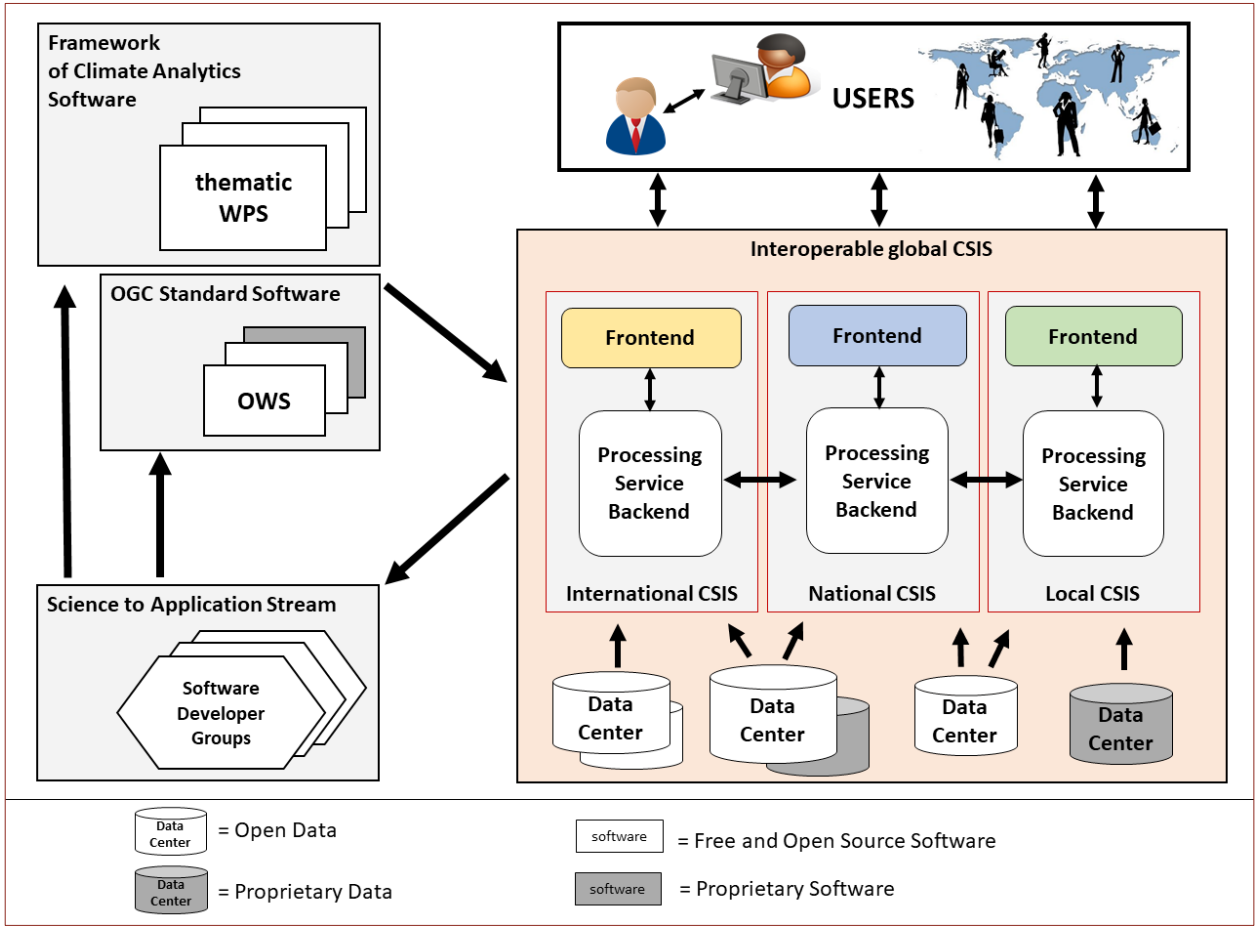
Climate Services Information System



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Climate Services Information System

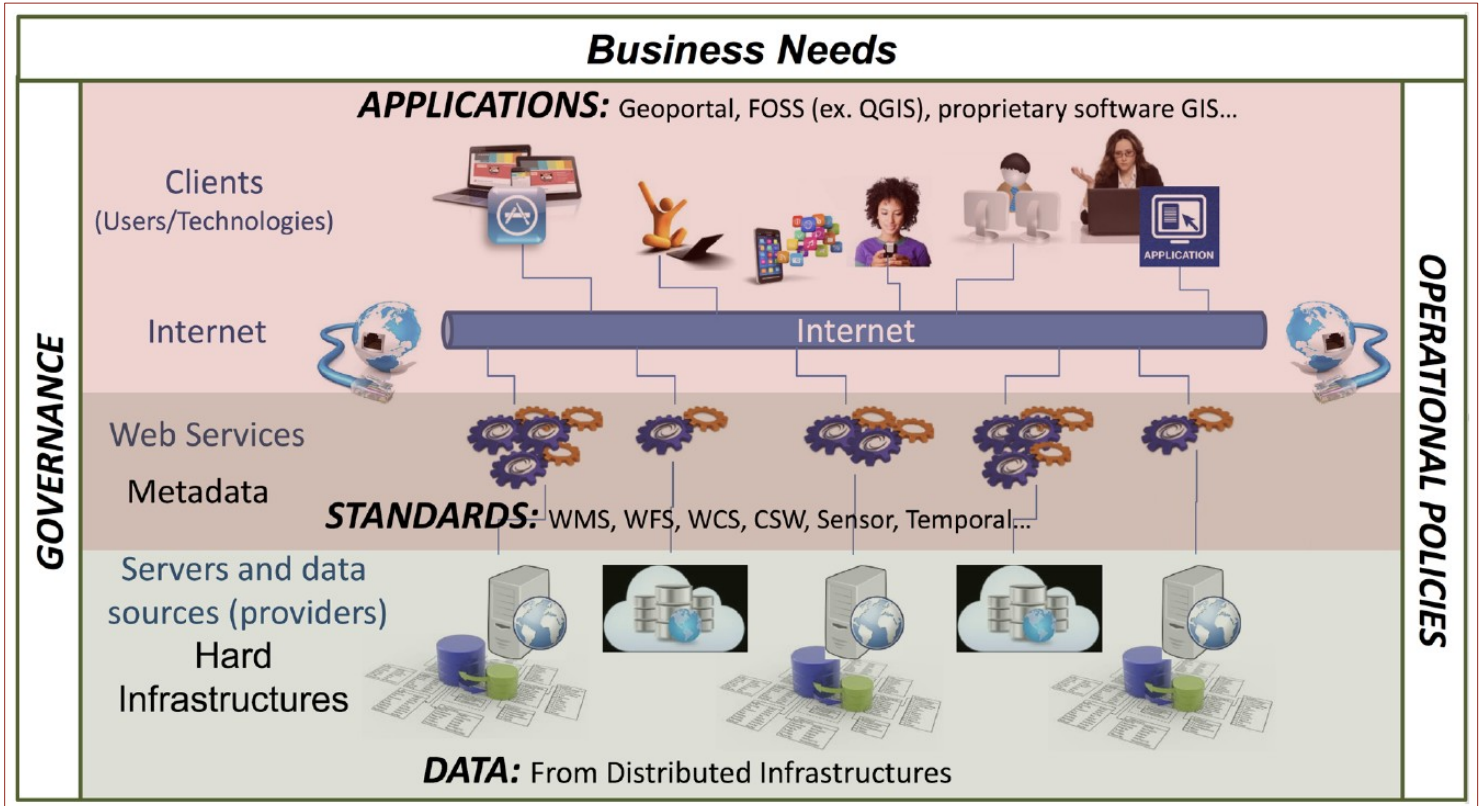

Figure 1.2: Aspects of an SDI (Source: Natural Resources Canada)

Source: OGC 2018:
OGC Development of Disaster Spatial Data Infrastructures for Disaster Resilience Enginnering Report

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Hands ON:

SNAP Toolbox

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