Very Low Earth Orbit satellites for Emergencies

How can Very Low Earth Orbit satellites improve and facilitate Fire Brigades' multiple tasks

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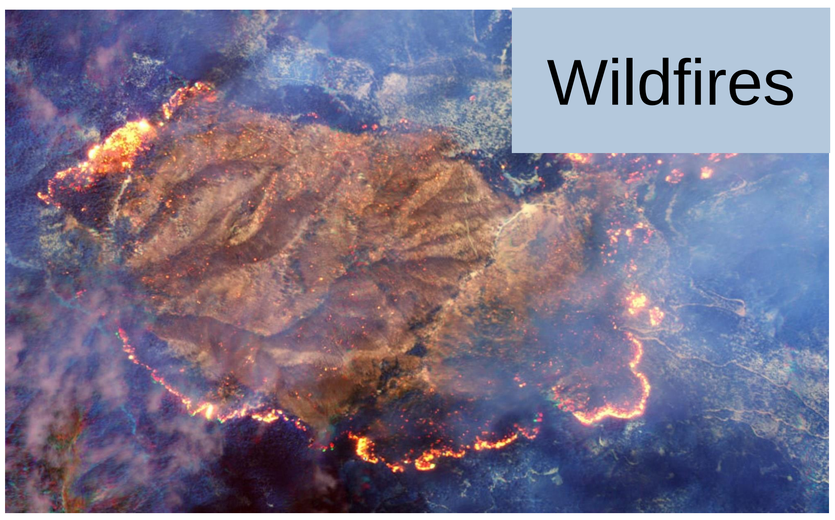
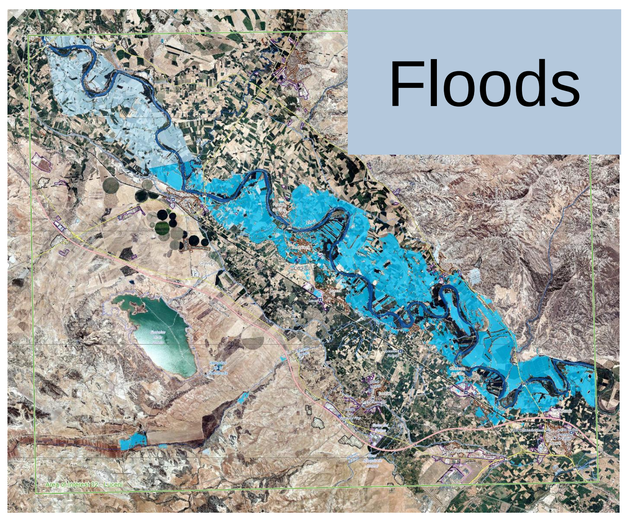
Potential Fire Brigades needs and necessities that can be improved by VLEO satellites





Wildfires, floods, gas leaks and earthquakes are just some examples of potential emergencies that require the intervention of the Fire Brigades and Very Low Earth and Low Earth Orbit satellites can provide useful data to simplify and improve their responses, as well as their predictions.

Technology required for each task with an estimated cost of the whole mission

Fire Brigades groups of tasks which can be supported by EO satellites	How can EO improve and solve problems with some Fire Brigades tasks	Satellite Characteristics		Sensor Characteristics		Cost of the mission (including sensor development)
		Orbit	Mass	Type of sensor	Resolution	
Wildfires	Study of the soil and wildfire records to produce Risk Level Maps.	LEO	Large Satellite	Multispectral (VNIR, SWIR and TIR)	15, 30 and 90 m	300 million €
	Production of thermal images to detect and track wildfires.	LEO	Large Satellite	TIR (Thermal InfraRed)	60 m	300 million €
	Acquisition of atmospherical data to forecast wildfires evolution.	VLEO	Large Satellite	Similar to ALADIN (Atmospheric LAser Doppler INstrument)	-	400 million €
	Production of images to facilitate damage reports.	LEO	Minisatellite	Multispectral (VNIR)	10 m	100 million €
Flood Forecasting	Study of the soil near rivers and streams to produce Risk Level Maps.	LEO	Microsatellite	Microwave Radiometer	50 m	200 million €
Gas Leaks	Production of spectral images capable of detecting and tracking gas clouds.	LEO	Large Satellite	Multispectral (VNIR, SWIR and TIR)	15, 30 and 90 m	300 million €
	Acquisition of atmospheric data to forecast gas clouds evolution.	VLEO	Large Satellite	Similar to ALADIN (Atmospheric LAser Doppler INstrument)	-	400 million €
Surveillance	Production of at least daily high resolution images covering all zones to look for clues and hints of the past on a rescue operation.	LEO	Large Satellite	Panchromatic + Multispectral	1.5 m	200 million €
Environmental Catastrophes	Production of high resolution images on zones affected by environmental catastrophes to plan responses and produce damage assessments.	LEO	Large Satellite	Panchromatic + Multispectral	1.5 m	200 million €

How is EO expected to evolve around emergencies

Higher Resolution // Lower Cost

Use of VLEO satellites will allow for better resolutions with lower costs. Which will increase the potential tasks that can be approached and will reduce missions costs.

Increase of the potential operators

An increase on the EO private companies and their satellite fleets translates into a bigger market from where emergency stakeholders may find their requirements.

Implementation of new methodologies

Changes are slow in some public services and emergency corps are no exception. But there are plans to start using new technologies for their tasks and EO is among them.

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