

# living planet symposium

BONN  
23–27 May  
2022

TAKING THE PULSE  
OF OUR PLANET FROM SPACE



## Third Party Mission (VHR) – European Space Imaging

Supporting the European Green Deal – Mapping Methane Emissions with WorldView-3 Satellite Imagery



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# Who We Are



## Our Team

+40 employees  
from 11 European  
countries



## Achievements

Since 2002 Europe's  
leading provider of  
VHR satellite  
imagery



## Our Service

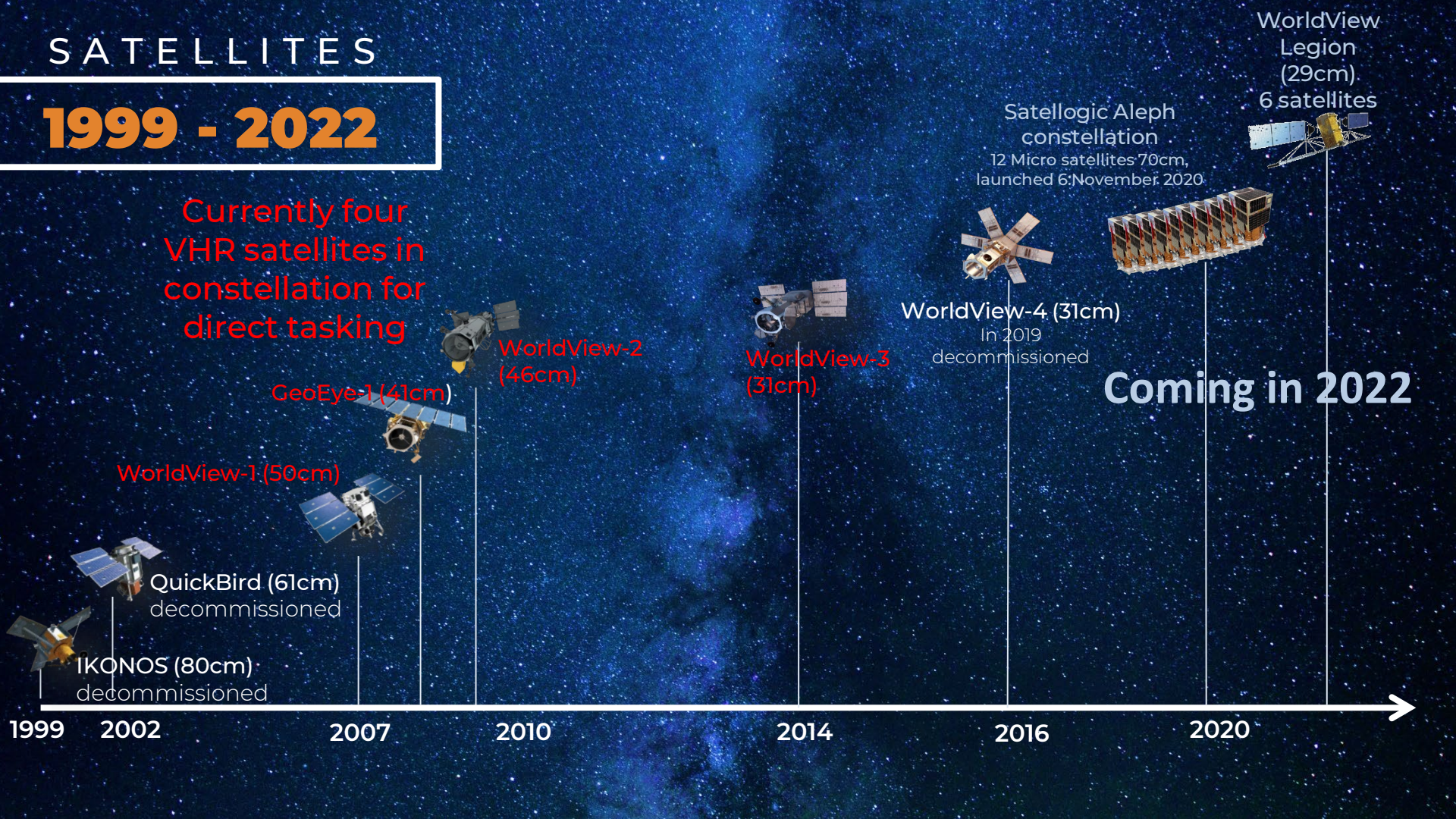
Local tasking of the  
WorldView Satellite  
constellation for  
fastest and most  
flexible access



# SATELLITES

## 1999 - 2022

Currently four  
VHR satellites in  
constellation for  
direct tasking



GeoEye-1 (41cm)

WorldView-2 (46cm)

WorldView-3 (31cm)

WorldView-4 (31cm)  
In 2019 decommissioned

Coming in 2022

WorldView  
Legion  
(29cm)  
6 satellites

Satelloptic Aleph  
constellation  
12 Micro satellites 70cm,  
launched 6 November 2020

WorldView-1 (50cm)

QuickBird (61cm)  
decommissioned

IKONOS (80cm)  
decommissioned

1999

2002

2007

2010

2014

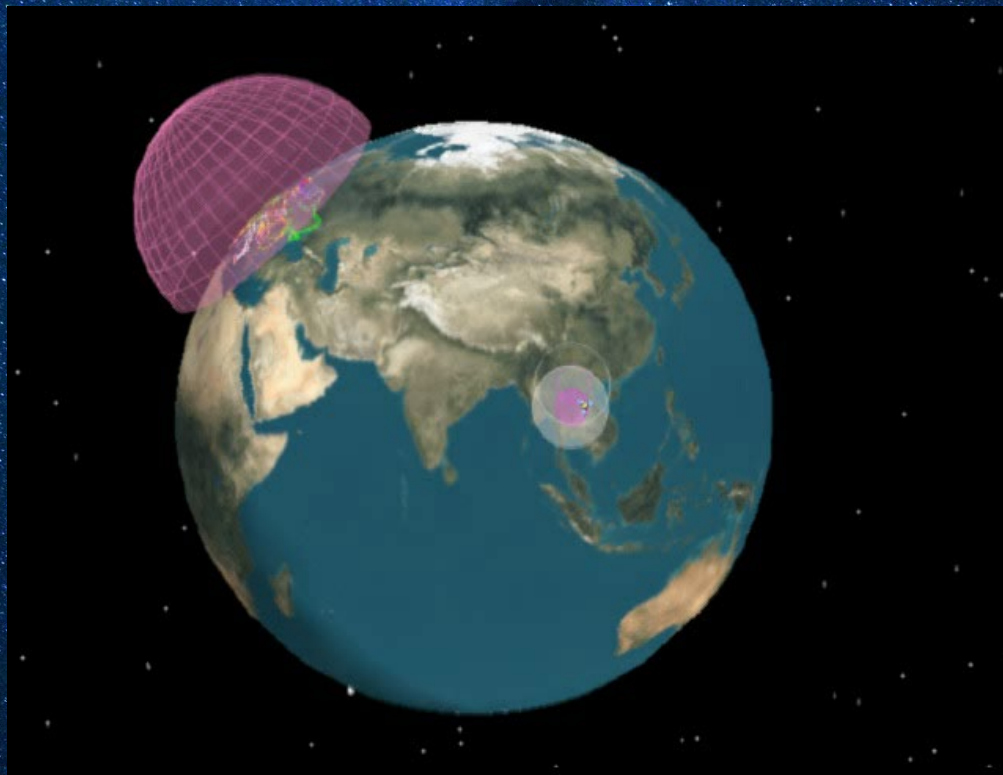
2016

2020



SATELLITES

# EUSI Local Tasking





# Imagery Sample 30 cm – WCC Bonn

SecureWatch  [Map Options](#) [My Imagery](#) [Use With](#) [Usage](#) [Cart](#)

Google Maps  OpenStreetMap  Map Transparency LAT: 50.71842 : LDN: 7.12223 ▼ SRTM2 - 30m: 66 m, 217 ft



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An aerial photograph of a large industrial facility, possibly a shipyard or port. The image shows several large, rectangular structures, some of which are red and white. A blue ship is docked at a pier on the left side. The water is a deep blue color. The overall scene is industrial and busy.

# Contribution to ESA TPM

# EUSI Contribution to ESA TPM

## TPM since 2015

- Worldwide Support of more than 200 projects within research and university
- Delivery of around 40,000 sqkm of VHR imagery (~200 sqkm per project)
- Extending the TPM license for start-ups in 2020
- Offering the full product portfolio including HD 15 cm since January 2022



15 cm image generated from a native 30 cm GSD image



An aerial photograph of a busy port. Several large cargo ships are docked at long piers extending into the water. The water is a deep blue-green color. In the background, there are some buildings and infrastructure on the shore. The text 'TPM Use Case' is overlaid in the center of the image, enclosed in a white rectangular border.

# TPM Use Case

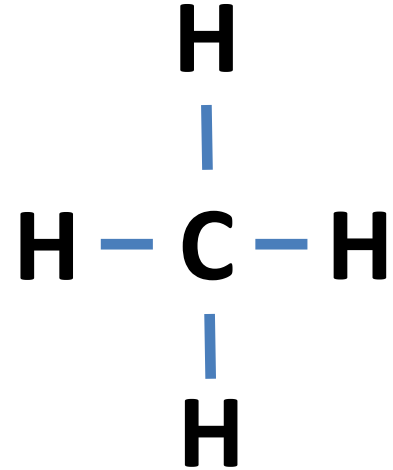


## Supporting the Green Deal

- Rapid transformation of the climate is underway due to the massive emission of greenhouse gases
- European key policies to preserve the environment by cutting emissions and investing into innovative technologies
- Becoming the first climate neutral continent by 2050
- Remote sensing for generation of crucial data in the support of green deal activities and measures
- TPM projects as framework for the development of innovative solutions to address climate change

## Methane as Greenhouse Gas

- Severe greenhouse gas with strong impact on global warming
- Concentration in atmosphere at increasing rate of around 1 % per year
- Controlling and monitoring of industrial emissions (oil and gas) is vital helping to reach green deal goals and combat climate change

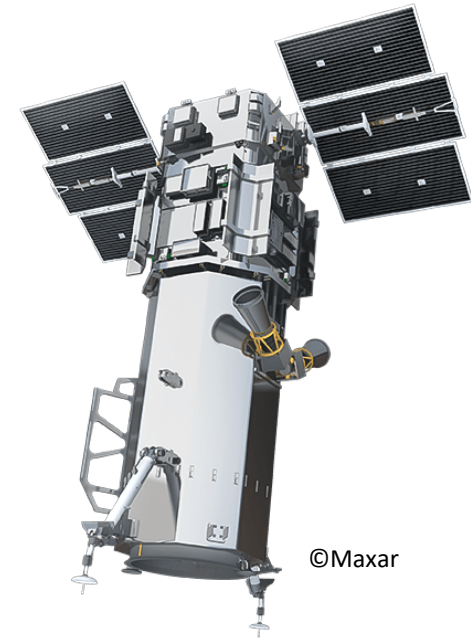
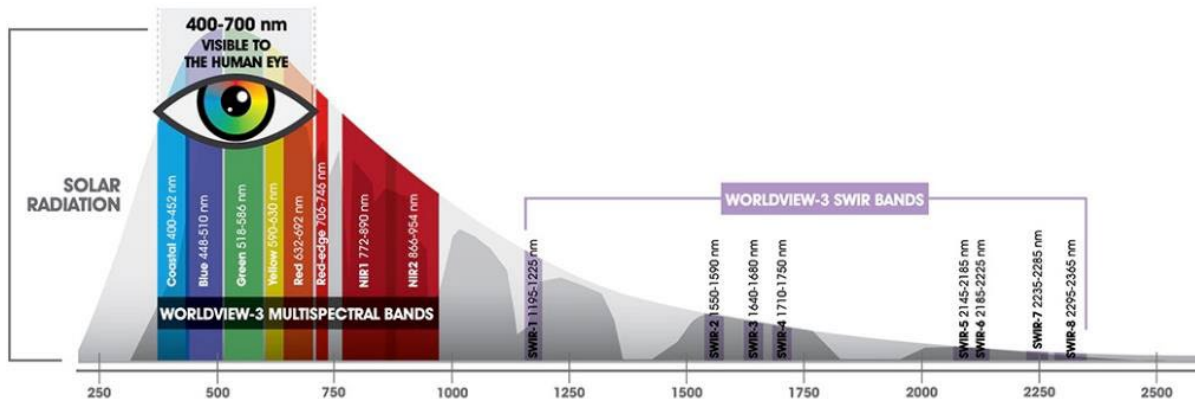




# TPM Use Case Mapping Methane

## WorldView-3 SWIR Sensor

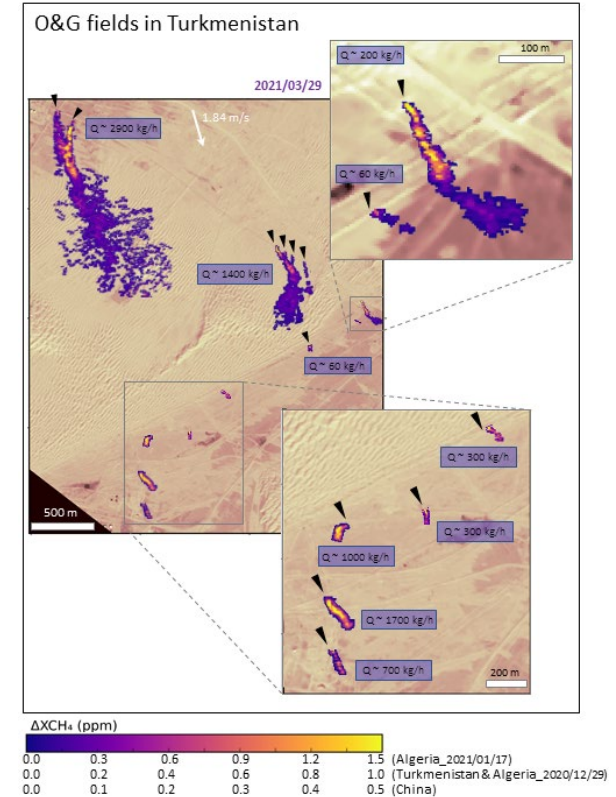
- In orbit since 2014
- 30 cm multispectral resolution, 8 band
- 3,7 meter SWIR resolution, 8 band



©Maxar

## Project Details

- TPM Project initiated by the LARS group, led by professor Luis Guanter part of the Technical University of Valencia
- WV-3 SWIR imagery accessed through the TPM program and EUSI over oil and gas extraction fields in Algeria, Turkmenistan, and in the Shanxi coal mining region in China.
- Evaluation of potential for detection of Methane emissions

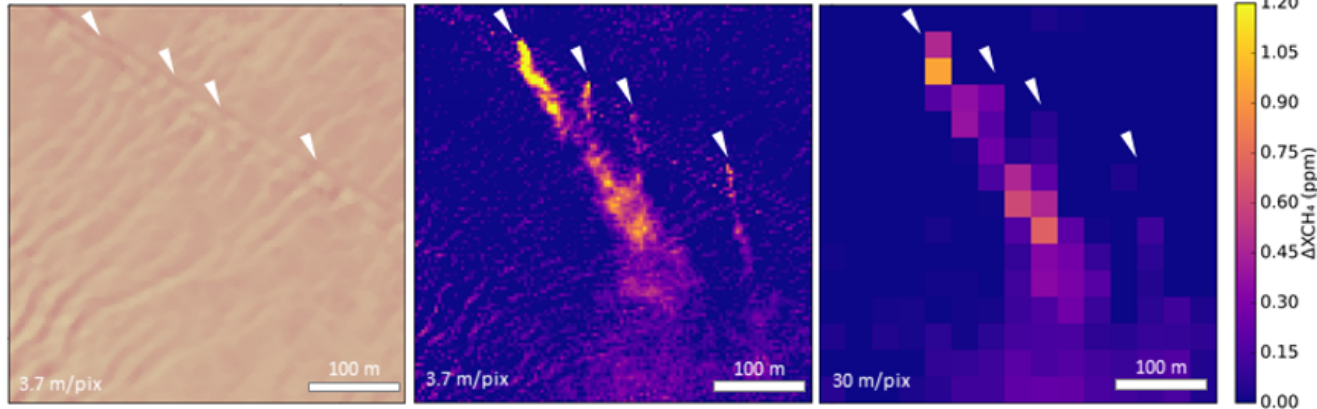


Sample methane plumes activities detected with WorldView-3 images. Satellite Imagery supplied by European Space © Maxar Technologies / processed by Sánchez-García *et al.*



### Project Conclusion

With WV-3 SWIR methane plumes can be measured and monitored with unreachd accuracy of 3,7 m from space for enhanced detection, quantification and prevention



Detailed-view of methane plumes mapped WorldView-3 from a pipeline in the Turkmenistan oil and gas field at original 3.7 m SWIR sampling compared with that of a 30 m instrument.

Satellite Imagery supplied by European Space © Maxar Technologies / processed by Sánchez-García *et al.* (in prep.)

An aerial photograph of a busy port. Several large cargo ships are docked at long piers extending into the water. The water is a deep blue-green color. In the background, there are some buildings and a road. The overall scene is industrial and maritime.

**Questions ?**