



# TerraSAR-X Program Status

**Corinne Kaplan, Vice-President Space,  
EADS North America**

Briefing to NOAA  
September 20, 2007



# EADS North America Programs and Initiatives

 <p><b>Under Contract</b></p>	 <p><b>Under Contract</b></p>	 <p><b>Under Contract</b></p>	 <p><b>Under Contract</b></p>
<p>HH-65 Dolphin Upgrade Program</p>	<p>TRS-3D Naval Radar USCG Deepwater and LCS</p>	<p>U.S. Army UH-72A Lakota Light Utility Helicopter</p>	<p>Do-DT35 Aerial Target Army Target Management Office</p>
<p>HC-144A Coast Guard Deepwater MPA</p>	<p>Northrop Grumman KC-30 Air Force KC-X Program</p>	<p>CN-295/Team JCA Army/Air Force JCA</p>	<p>EC120 and AS350 Customs and Border Protection</p>
 <p><b>Under Contract</b></p>	 <p><b>Being Proposed</b></p>	 <p><b>Awaiting GAO Protest Decision</b></p>	 <p><b>Under Contract</b></p>



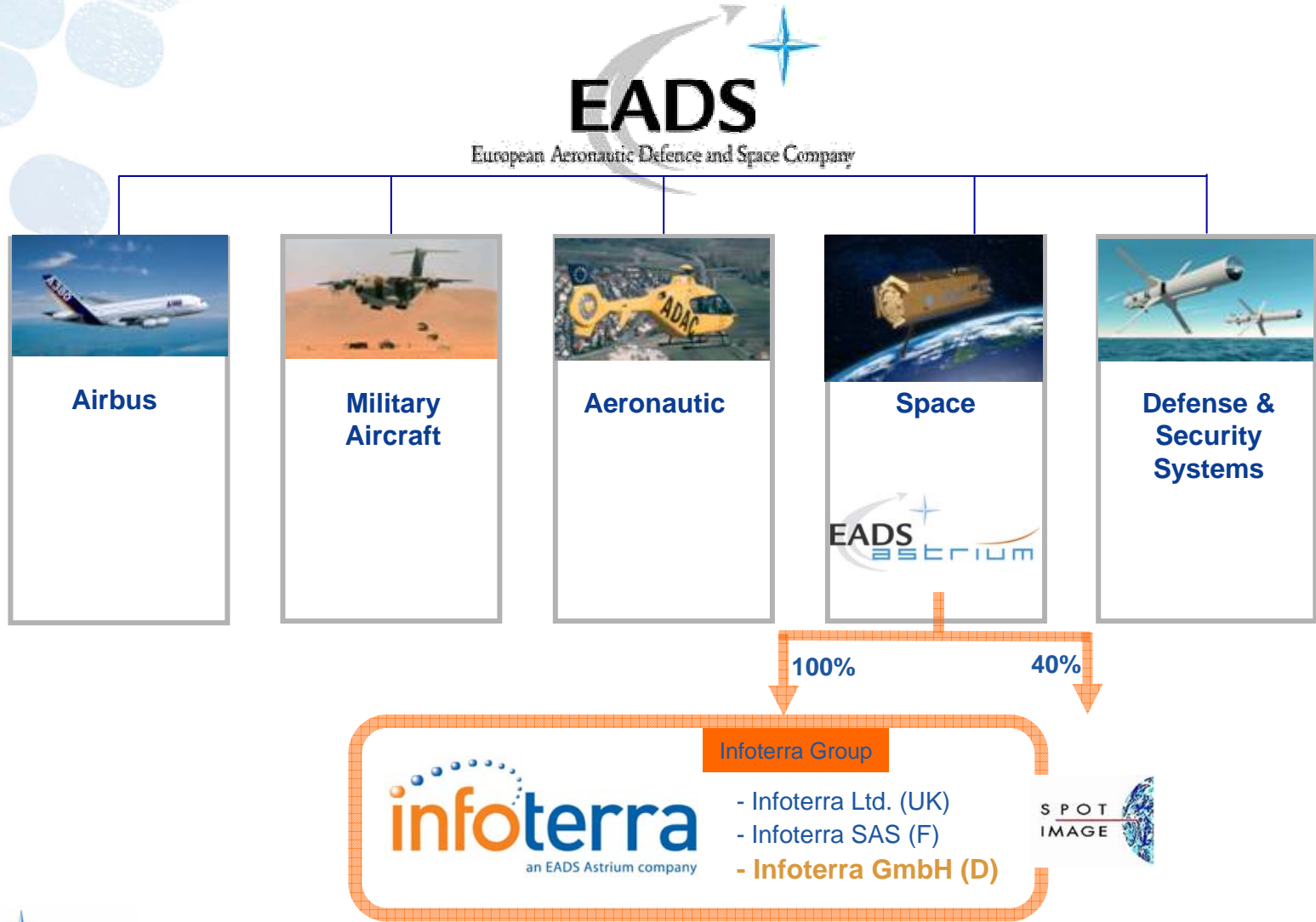
**Industrial Investment**



**Homeland Security Initiative**



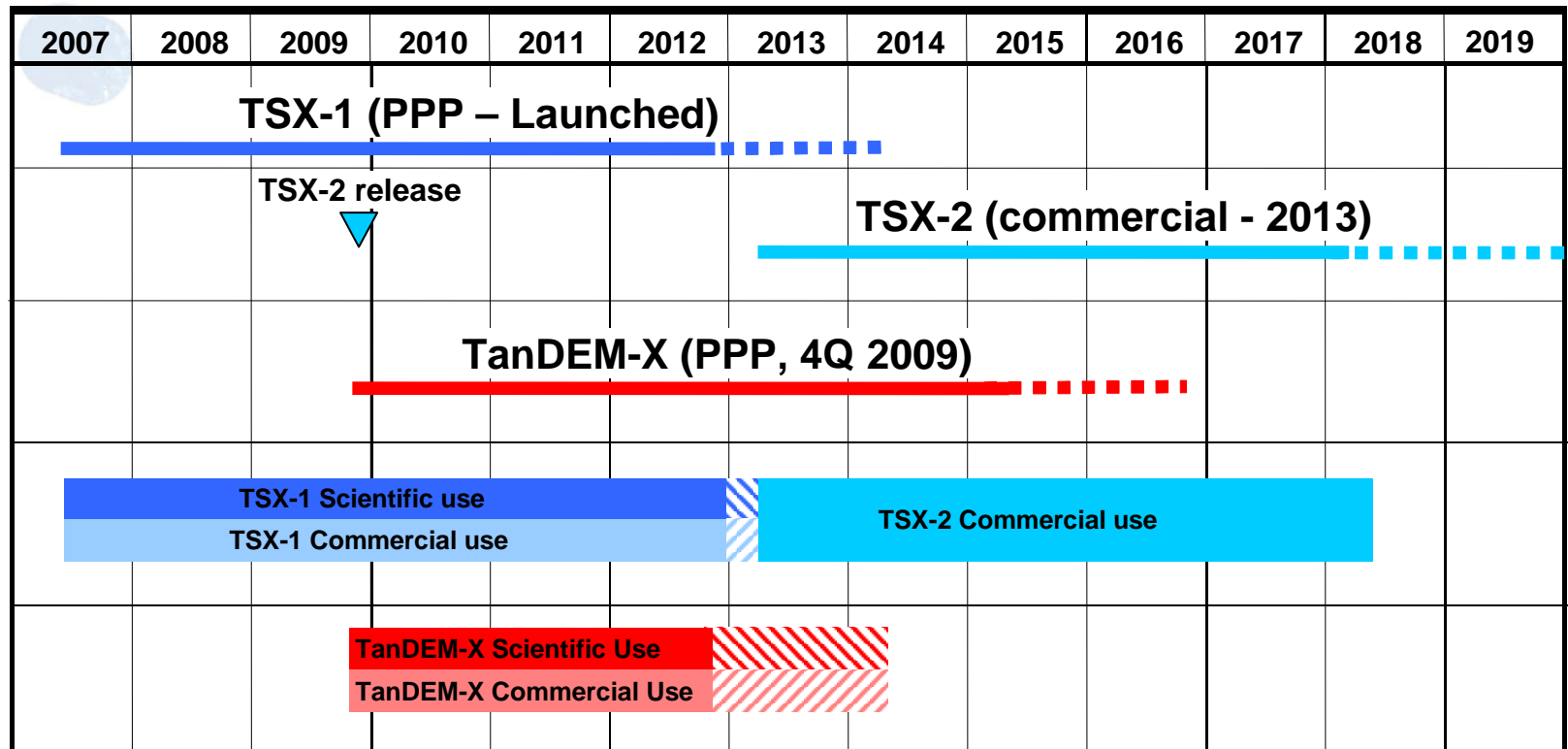
# Infoterra within EADS



# TerraSAR-X Program Overview

- **Market-derived system using innovative technology**
  - 1 meter resolution
  - Novel acquisition flexibility
  - Large area coverage
- **Public private partnership (PPP) agreed in 2002**
  - EADS Astrium GmbH
  - German Aerospace Center (space agency)
- **Exclusive commercial distribution data rights with Infoterra GmbH (100% EADS subsidiary), in turn for industry investments in TerraSARX-1, TanDEM-X and TerraSARX-2**

# TSX Program Schedule



# TerraSAR-X1 Launch 15.06.2007

- Successful launch

June 15, 2007 04.14 hrs  
CEST from Baikonur  
Cosmodrome, Kazakhstan

- 1<sup>st</sup> Images processed on  
June 19, 2007

- StripMap
- SpotLight
- HR SpotLight



# TerraSar-X1 Key Commissioning Phase Steps

- LEOP: until June 21, 07 - completed
- Orbit types verification: until July 12, 07 - completed
- Pointing calibration: until August 4, 07 - completed
- Antenna model verification: until September 6, 07 - completed
- SpotLight and StripMap product release: Nov 11, 07
- Overall SAR system performance verification: Dec 19, 07
- ScanSAR product release: Jan 2, 08

# TerraSAR-X Products and Services

## Products

- Basic Products (Imagery)
- Ortho Images
- Subsidence Maps

## Services

- Direct Access Service
- Monitoring
- Training for analysts and value adders
- Consultancy

## Applications

- Object Analyses
  - (air-)ports, facilities
  - Ship identification
- Topographic maps
- Change maps

## Resolutions: 1 – 16 m

## Image widths: 10 – 100 km

## Order lead times:

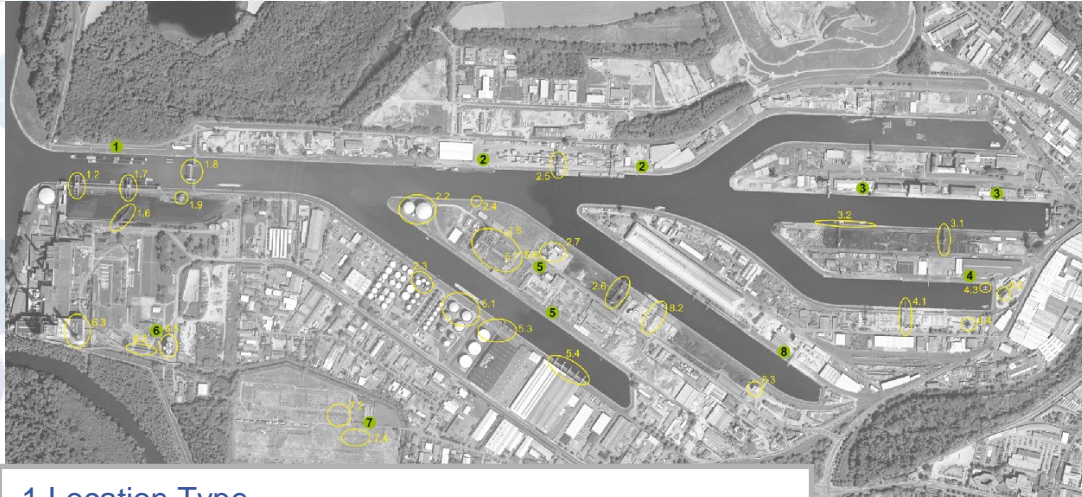
- Standard: 72h
- Priority: 24h
- Exclusive: 6h

## Online ordering, customer service





# Annotated Images, Applications



Interpretation  
Annotated Images  
Analyzing Reports

## 1 Location Type

- A: 32UMV49432948
- B: CIVILIAN
- C: COMMERCIAL INLAND NON TIDAL HARBOR

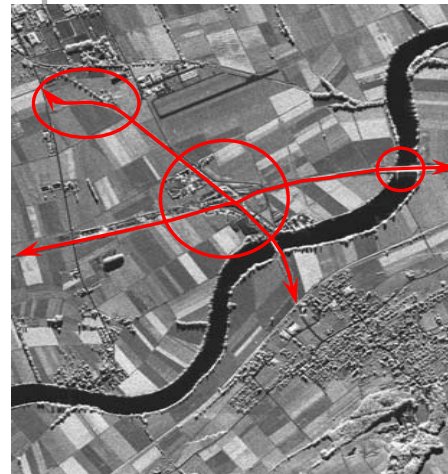
## 2 Status

- A: PERMANENT
- B: SERVICEABLE
- C: OCCUPIED
- D: OPERATIONAL

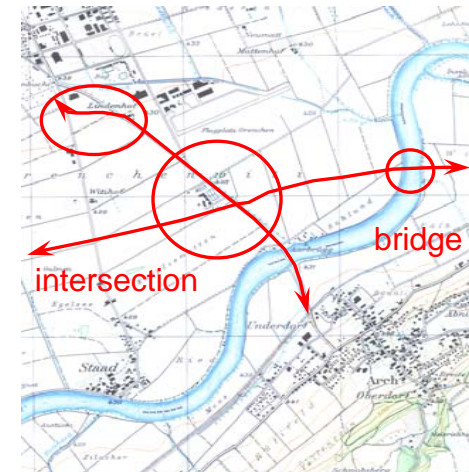
## 3 Equipment and Activity

## 4 Defense

## 5 Facilities / Description

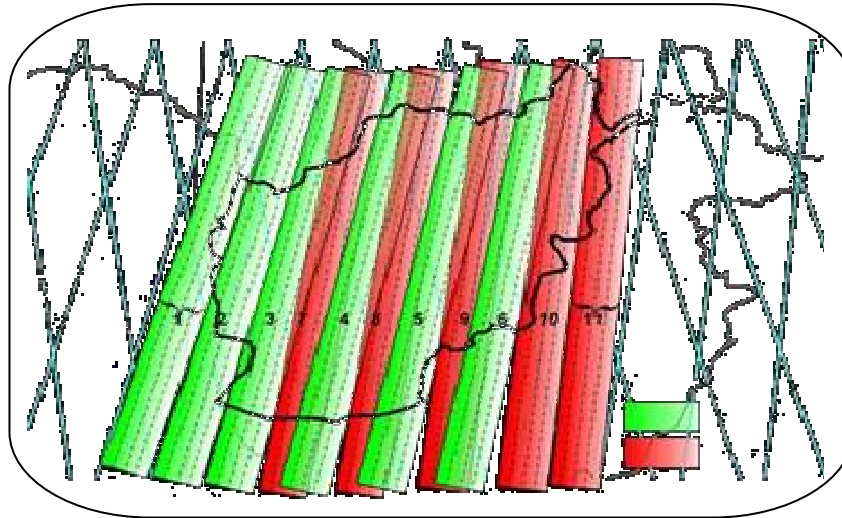


Change Detection  
Map Updating

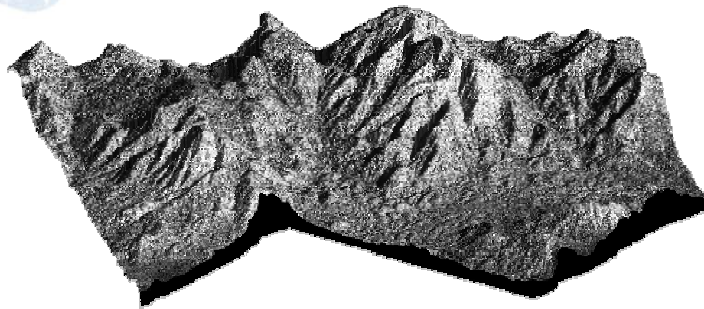


# Topographic Base Mapping

- **Base Mapping, e.g. Afghanistan (650,000 km<sup>2</sup>)**
  - 1:200,000 in 1.5 months
  - 1:50,000 in 2.5 months
- **Continuous production flow: delivery after 4 months**
- **Cost-efficient compared to aerial surveys**

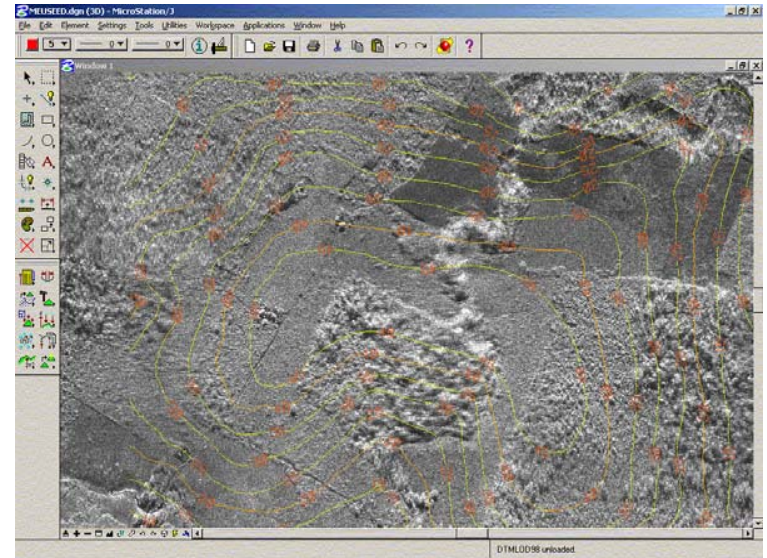


# TanDEM-X Products



## HRTI-3 Product

(High Resolution Terrain Information; 12 m posting, < 2 m height accuracy)



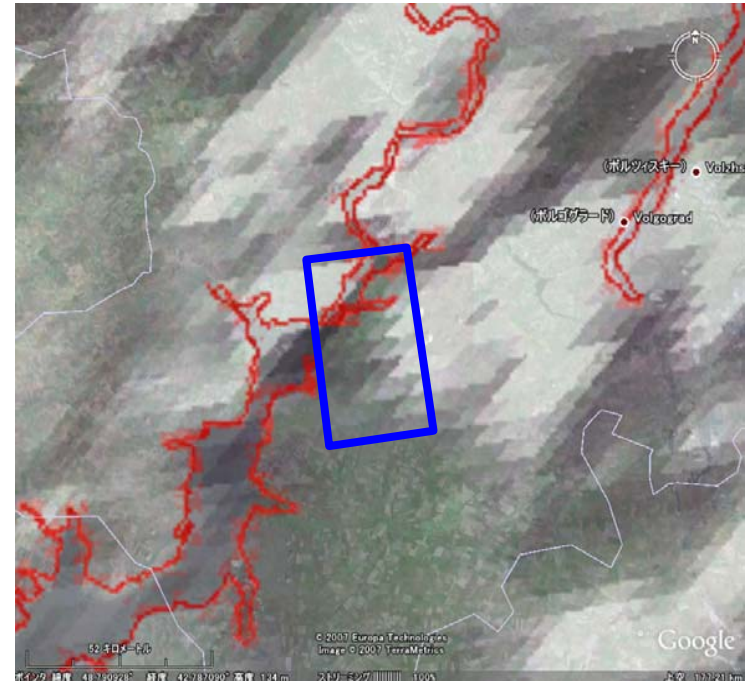
## Topo Base Product

(Image Map with Contour Lines; basis for topographic maps in the scales 1:25,000 or 1:50,000)

# Products Launch Plan

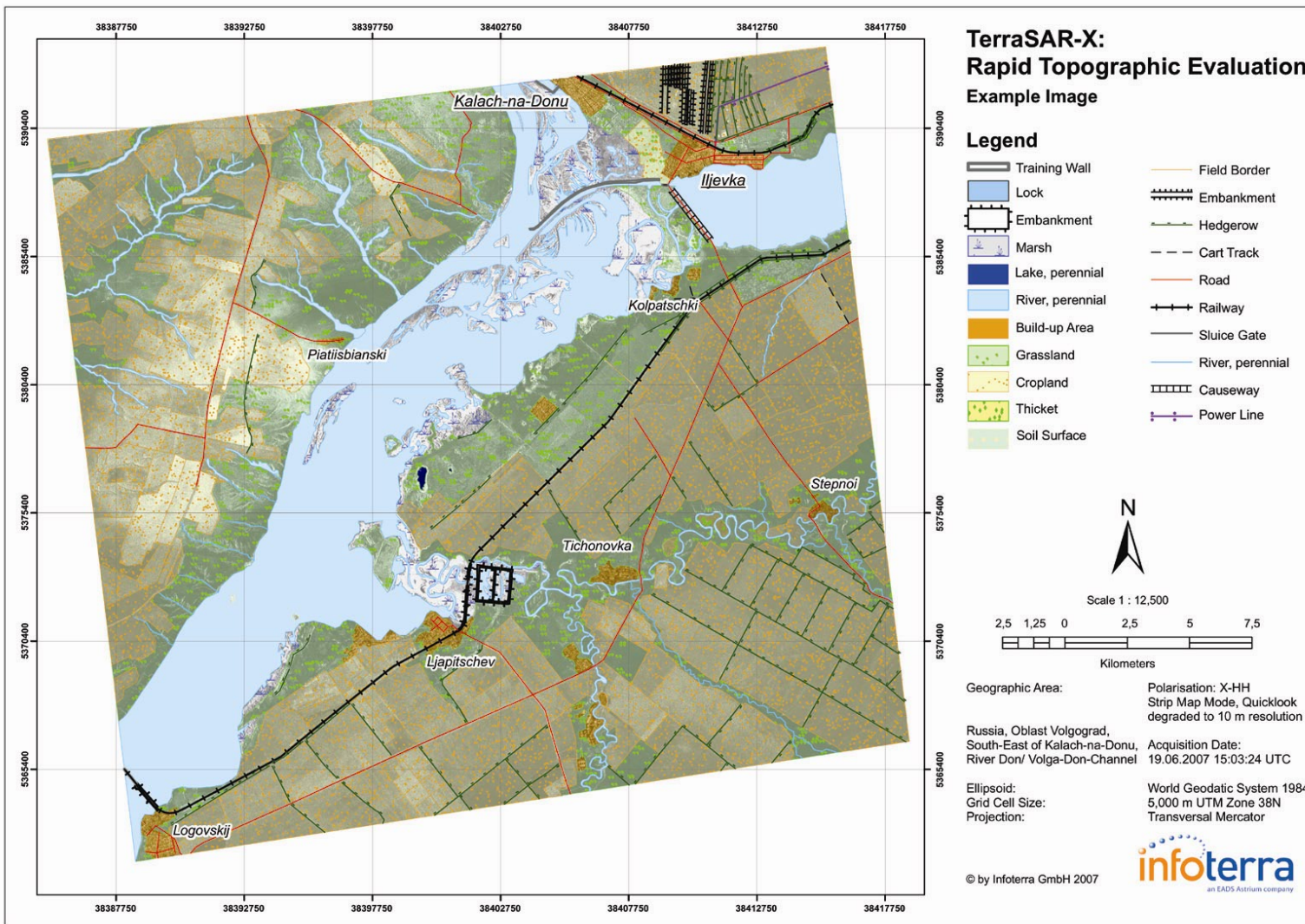
Product	Launch	Action
Basic Image Products (BIP)	12/07	Promotion campaign started 7/06; sales starts in 12/07
Intelligence BIP (STANAG-annotated)	03/08	Test/develop in context of BIP promotion
Enhanced Image Products (EIP)	03/08	Implement following promotion success
DA Services	10/07	Pre-OPS Service Japan
TSX Emergency Service	07/08	Svalbard linked to Munich and DC
GI <sup>TSX</sup> Products (OM, CCD, SUB)	05/08	Prototypes with mapping authorities in Q2/08
GI <sup>TSX</sup> Services	07/08	Pilot services with partners / launch customers (e.g. Pipeline Monitoring)
SAR Training (Intro, Expert)	11/05	Customize pilot training course
Defence Mapping	07/07	Implementation of operational production
GMES Prototypes	since 05	Land monitoring for water quality and soil protection
GMES Solutions	10/08	Start pilot services; operational supply ≥ 2014
HRTI-3 Products	6/10	TDX implementation
Topo Base Products	8/10	TDX implementation

# First TerraSAR-X Image - Russia

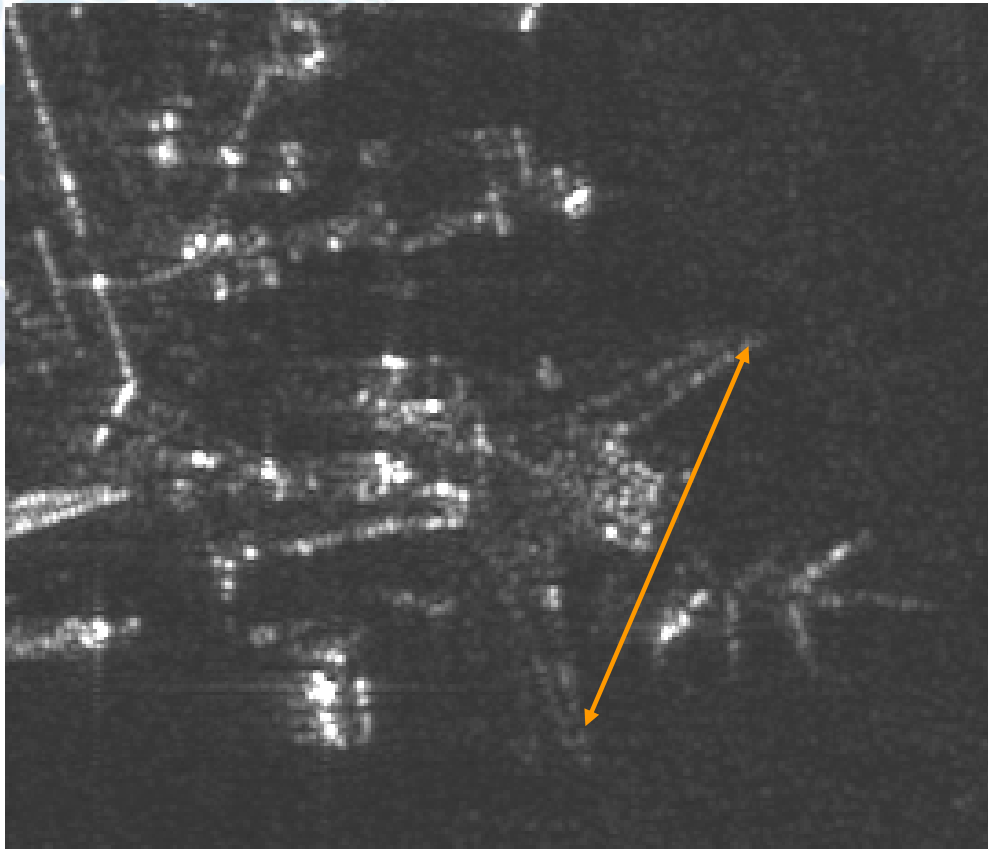


Meteosat 15:00 UTC  
(5 minutes after TSX DT)

# First TerraSAR-X Topographic Map



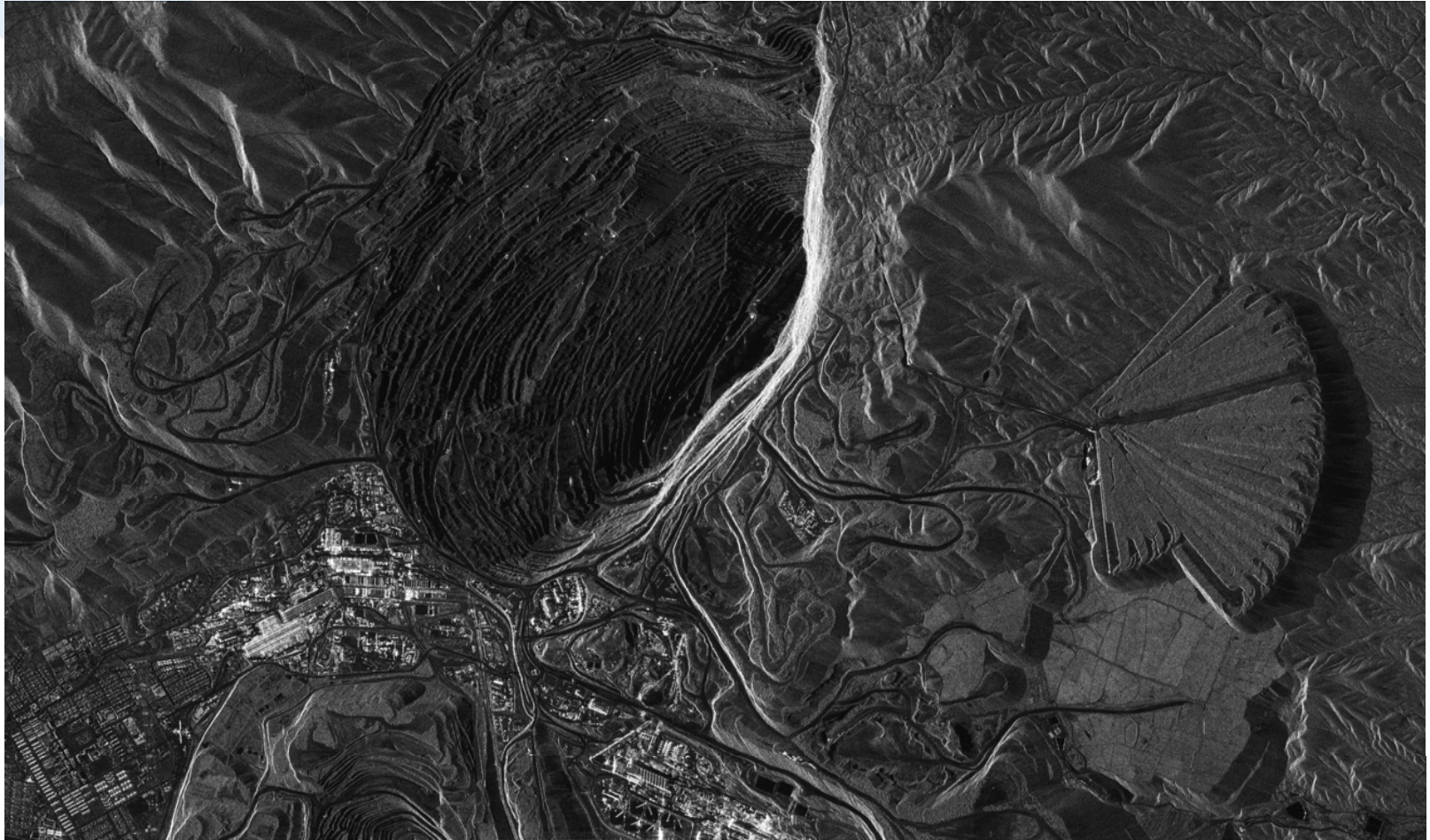
# 747 Airliner in SpotLight Mode



Measured wing span: 63.5 meters

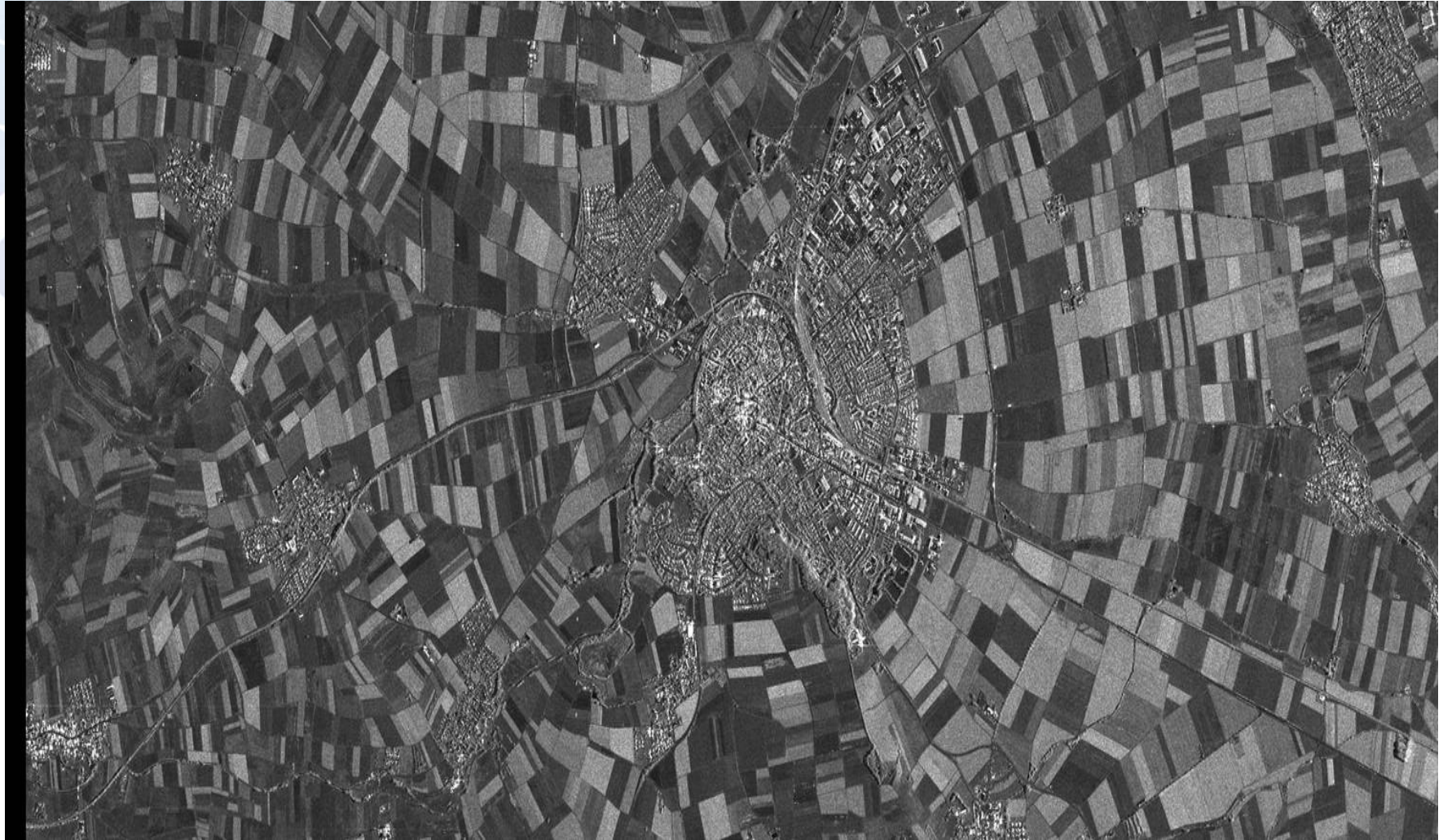
→ Wing span of a Boeing 747 is approx. 64 meters

# High Resolution (degraded to 3m) –A copper mine in Chuquicamata, Atacama Desert, Chile

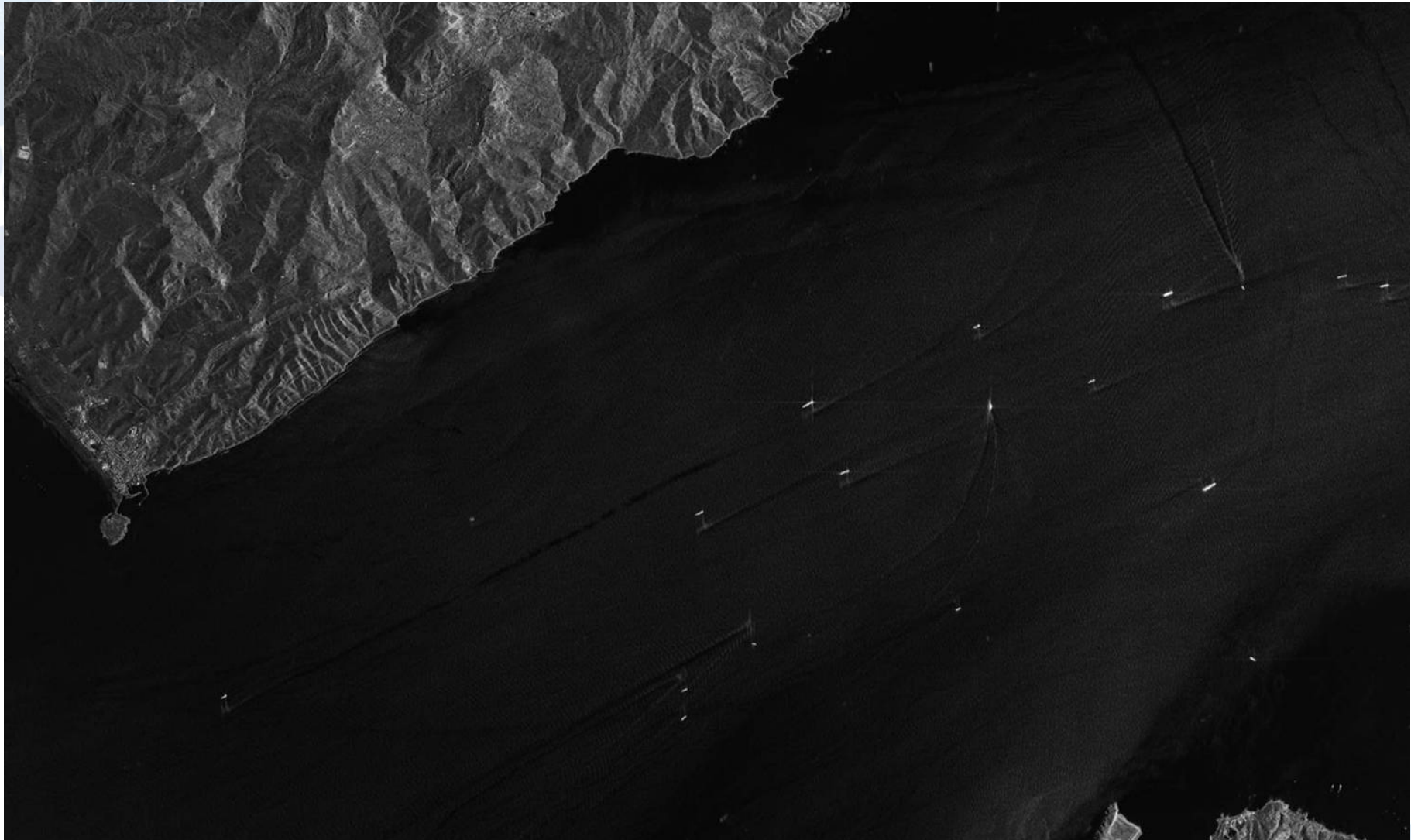




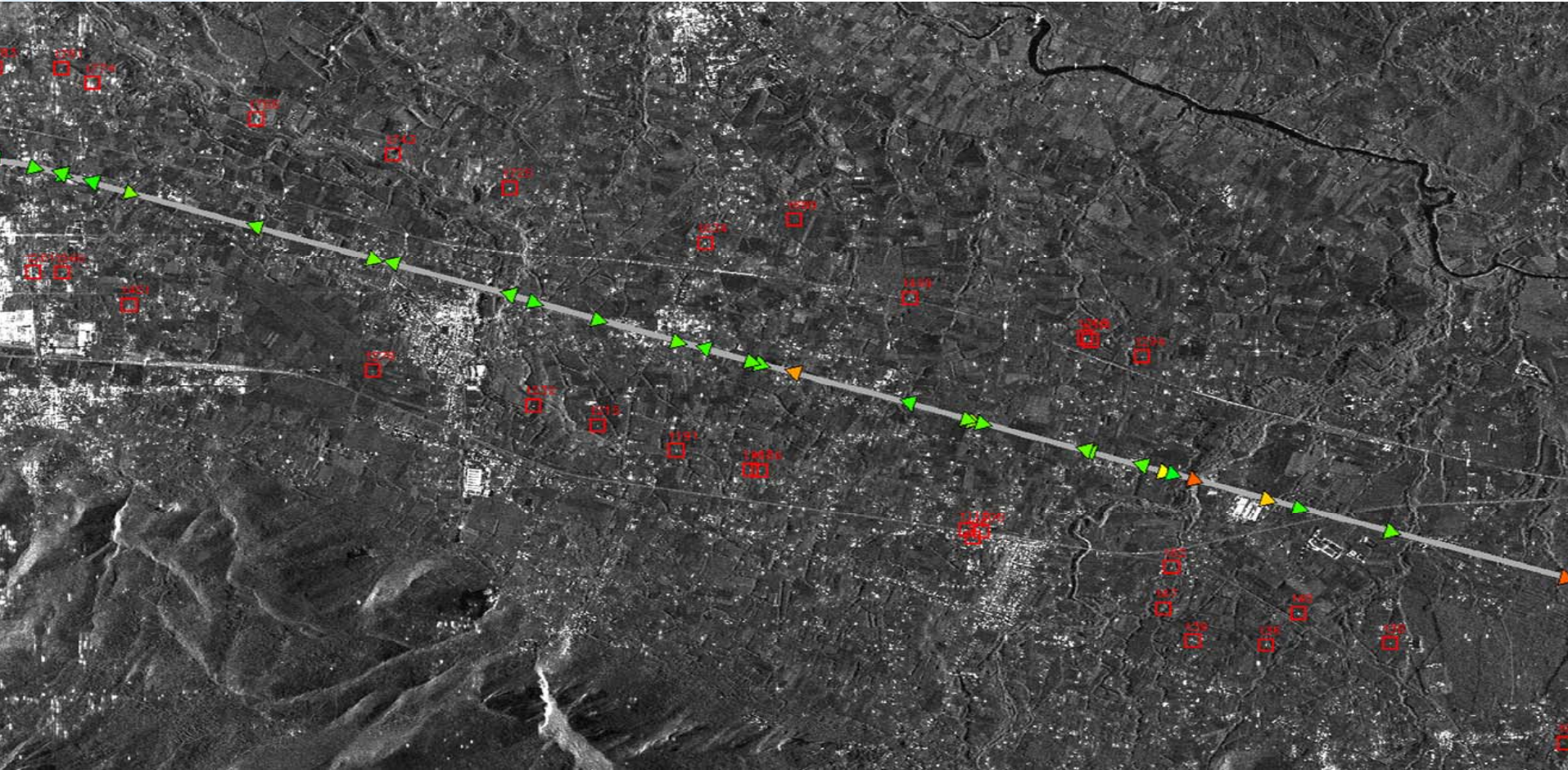
# Strip Map – Noerdlingen, Bavaria - Germany



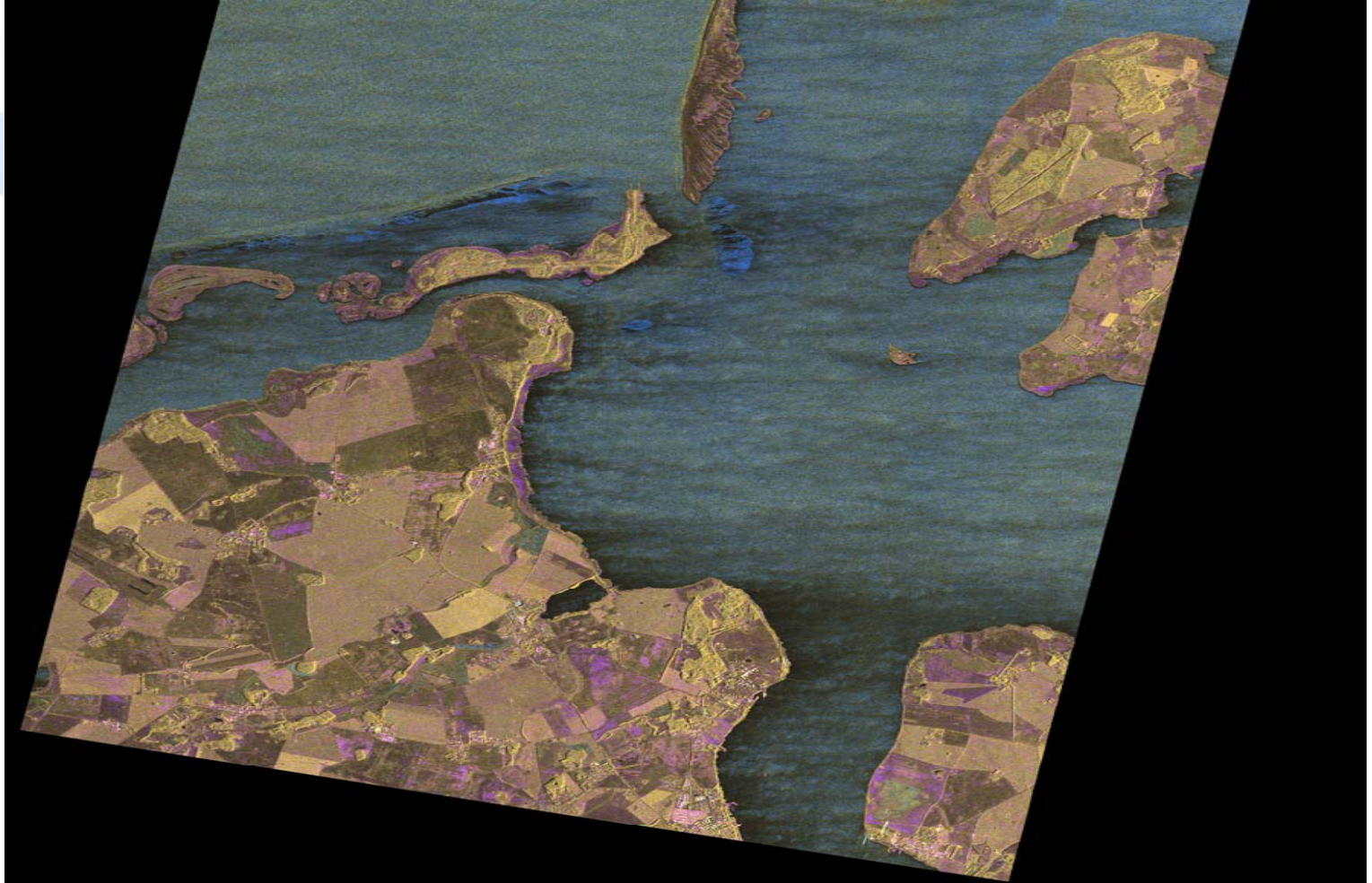
# ScanSAR – Strait of Gibraltar



# Movement monitoring – A1 freeway south of Rome, Italy



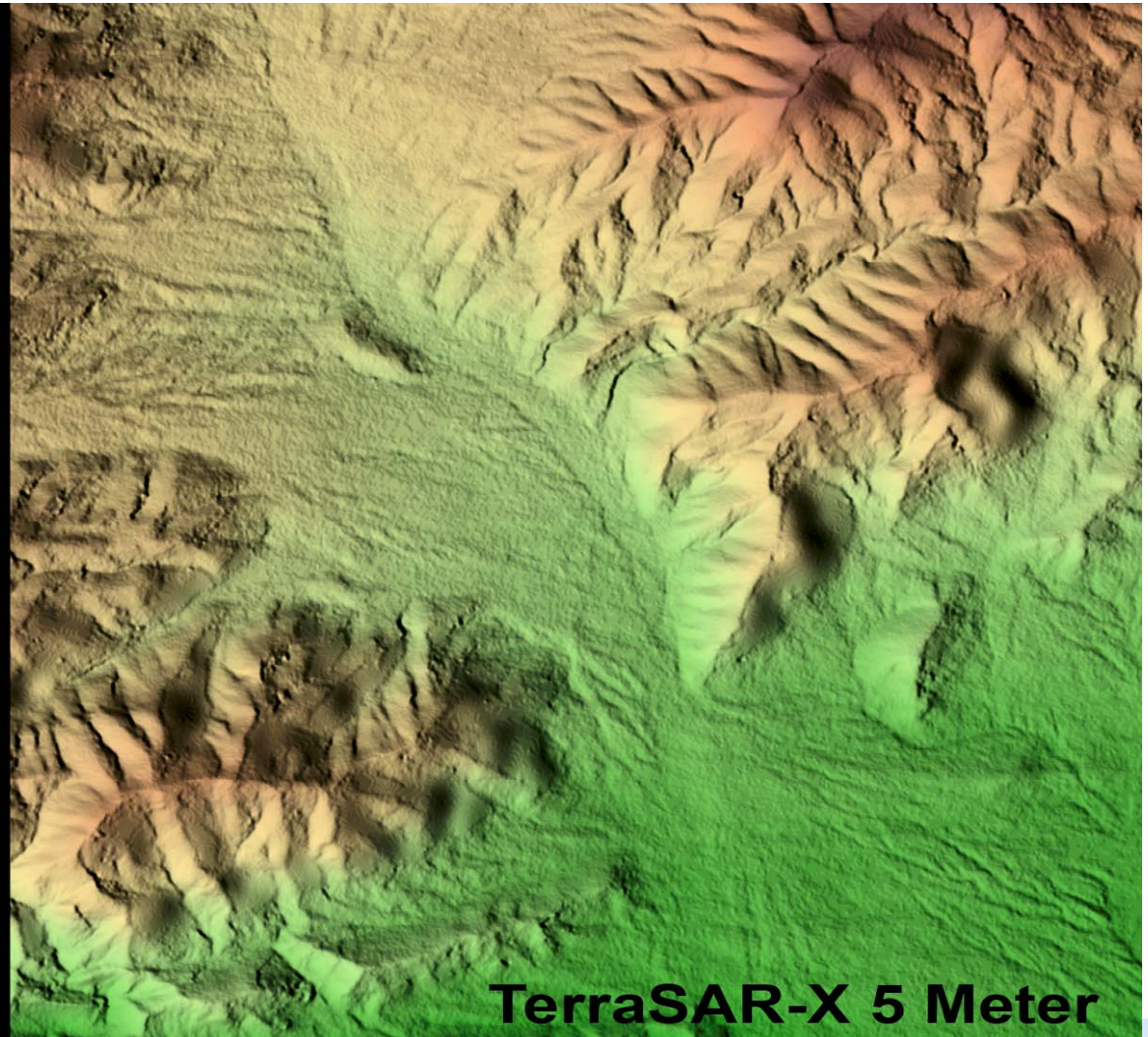
Multi-polarization: Kubitzer Bodden, north of Stralsund, Germany (red: HH, green: VV, blue: HH-VV)



# Elevation model – Las Vegas – TerraSAR-X versus SRTM



**SRTM 90 Meter**



**TerraSAR-X 5 Meter**

- **More images:**

<http://www.dlr.de>

- **Point Of Contacts:**

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