

Use of Earth Observation data in emergency and awareness situations

e-GEOS

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2010-2014

Cosmo SkyMed Applications Pillars

All weather capabilities



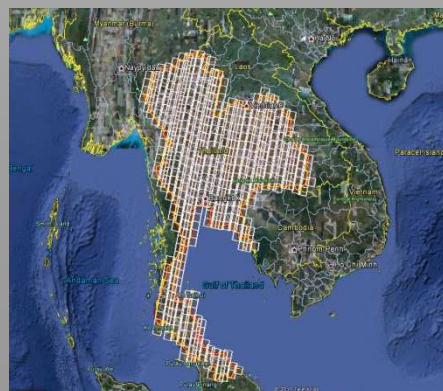
Image collection in every weather condition



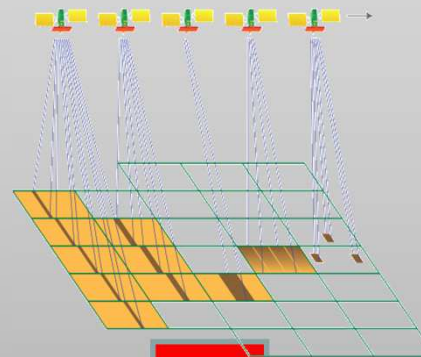
Constellation of 4 satellites



**High revisit frequency
Easy to cover wide areas
in a short timeframe**



From Low to High resolution



Possibility to perform mapping in a wide range of scales, also very detailed

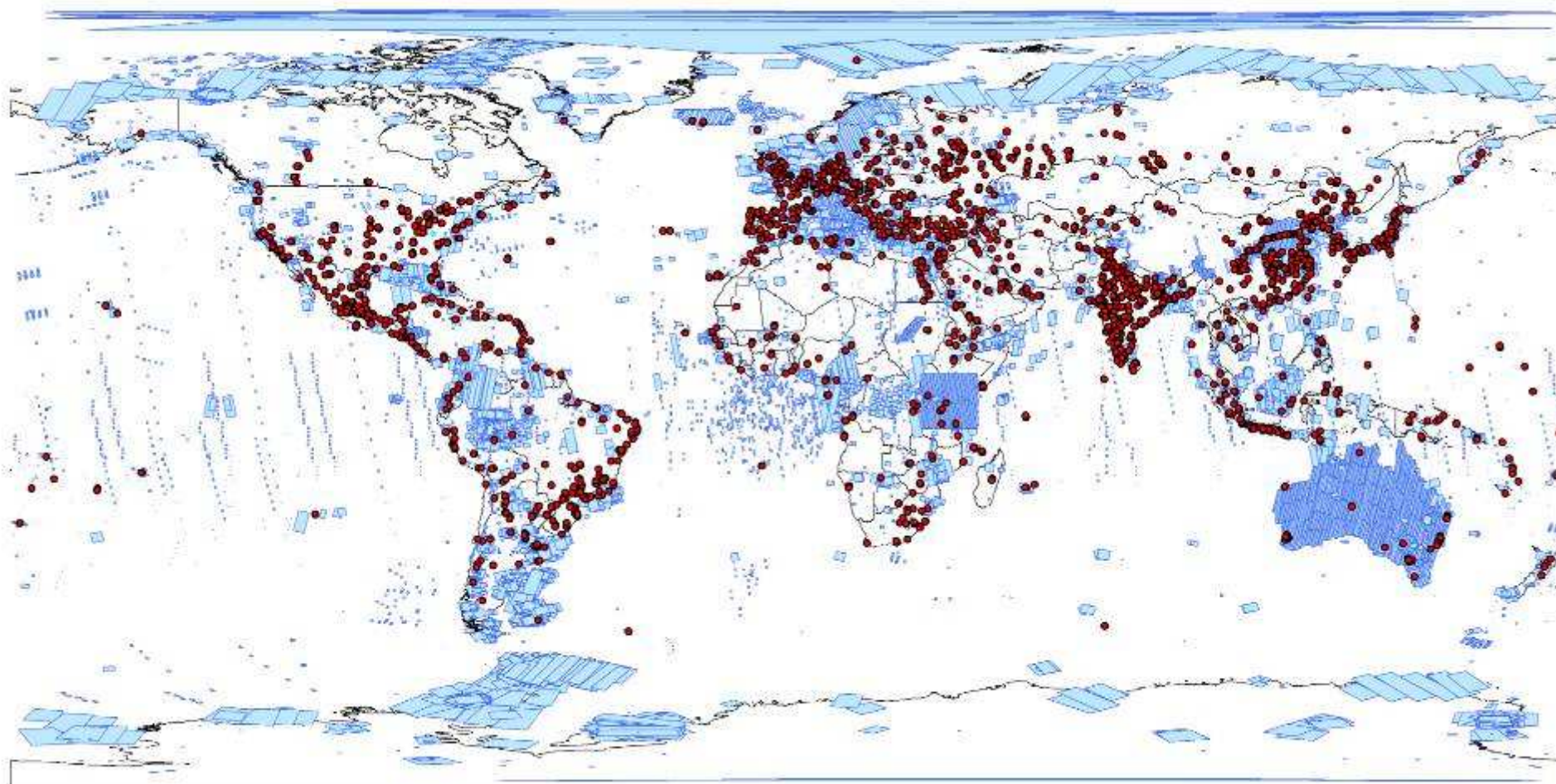


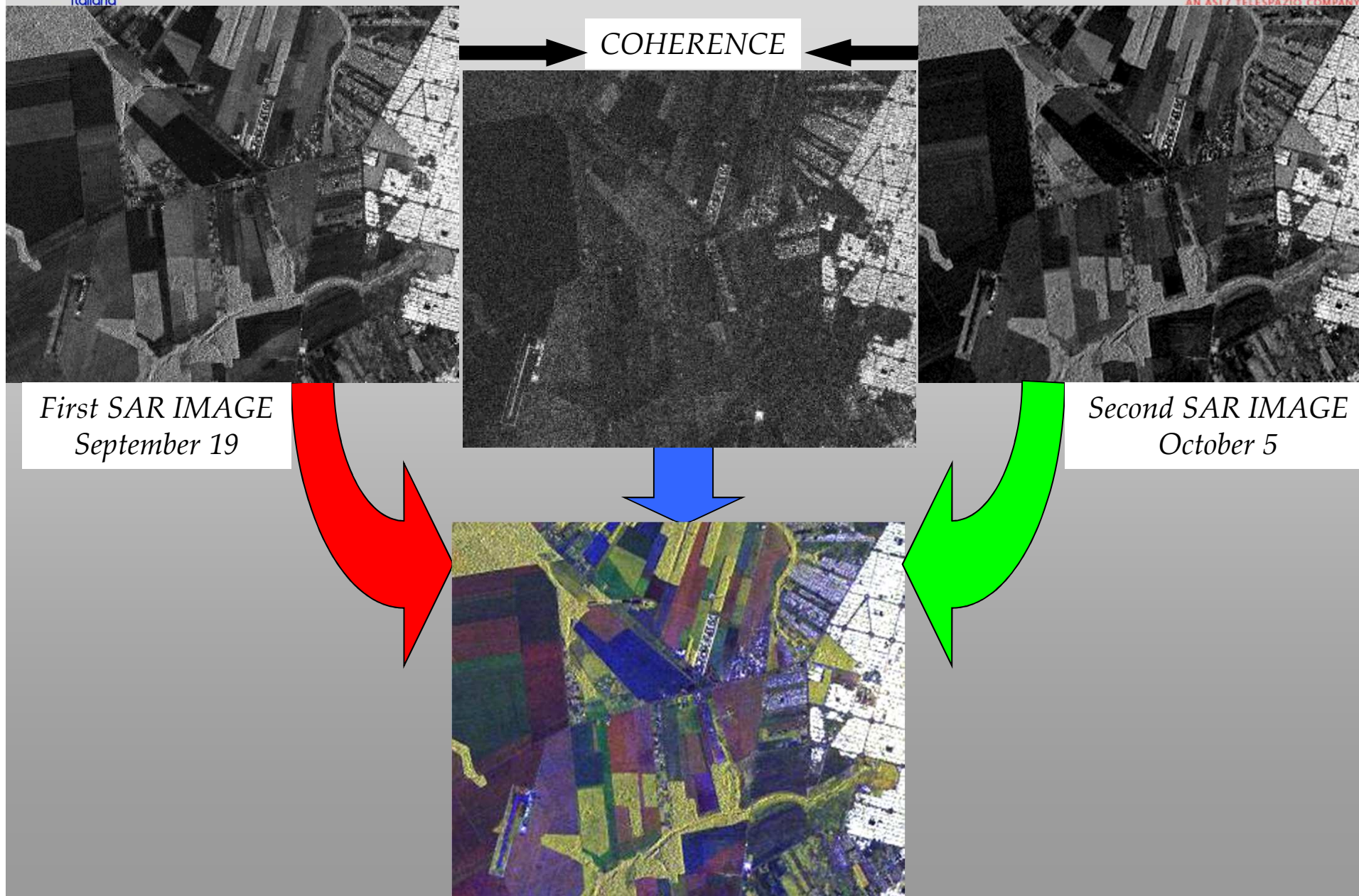
Frame collection with same geometry and high imaging frequency

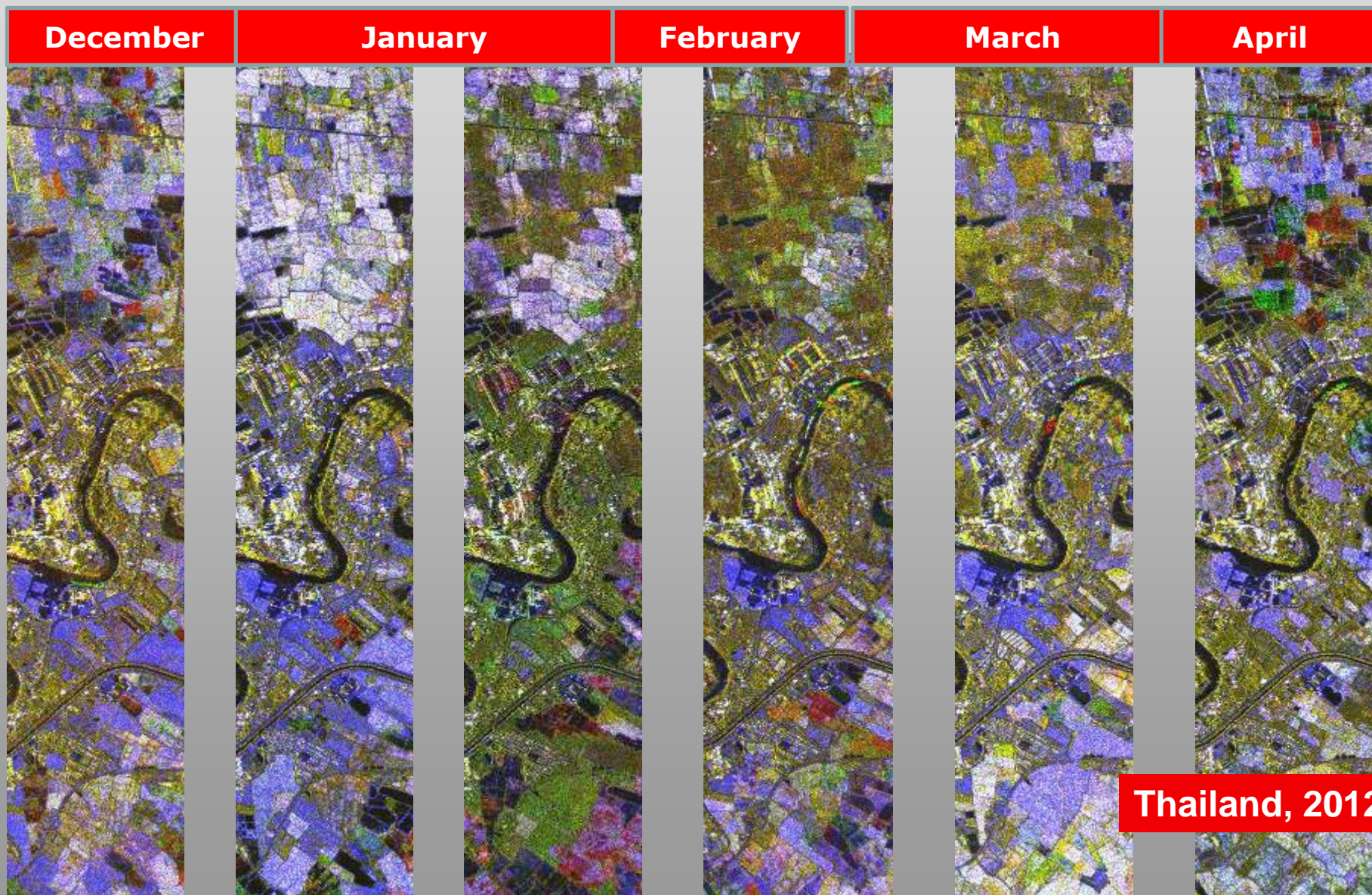


Improved multitemporal analysis





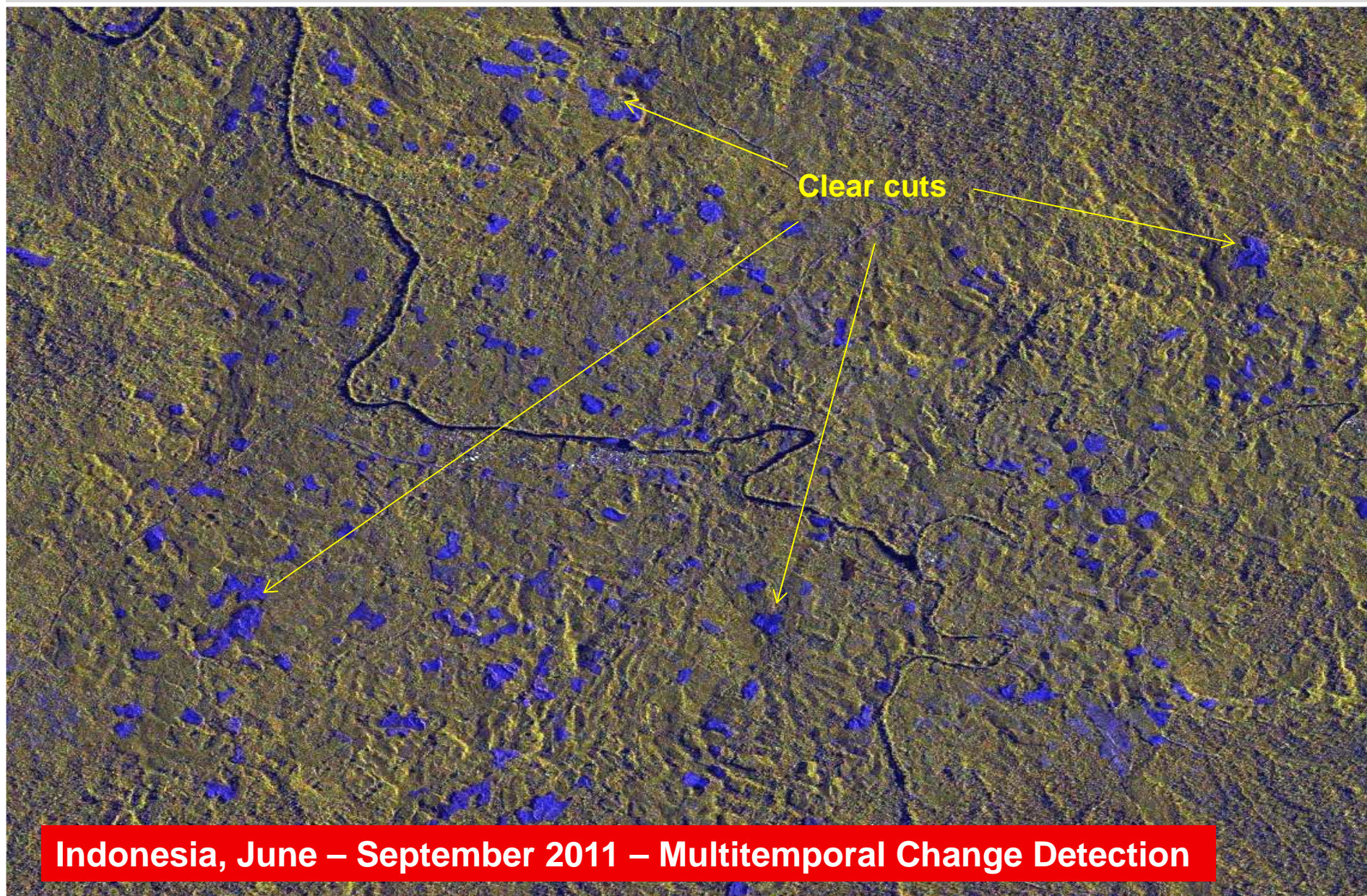




Thailand, 2012



Indonesia, September 2011 – Post COSMO-SkyMed image



Indonesia, June – September 2011 – Multitemporal Change Detection

Savina Caylyn Hijacking

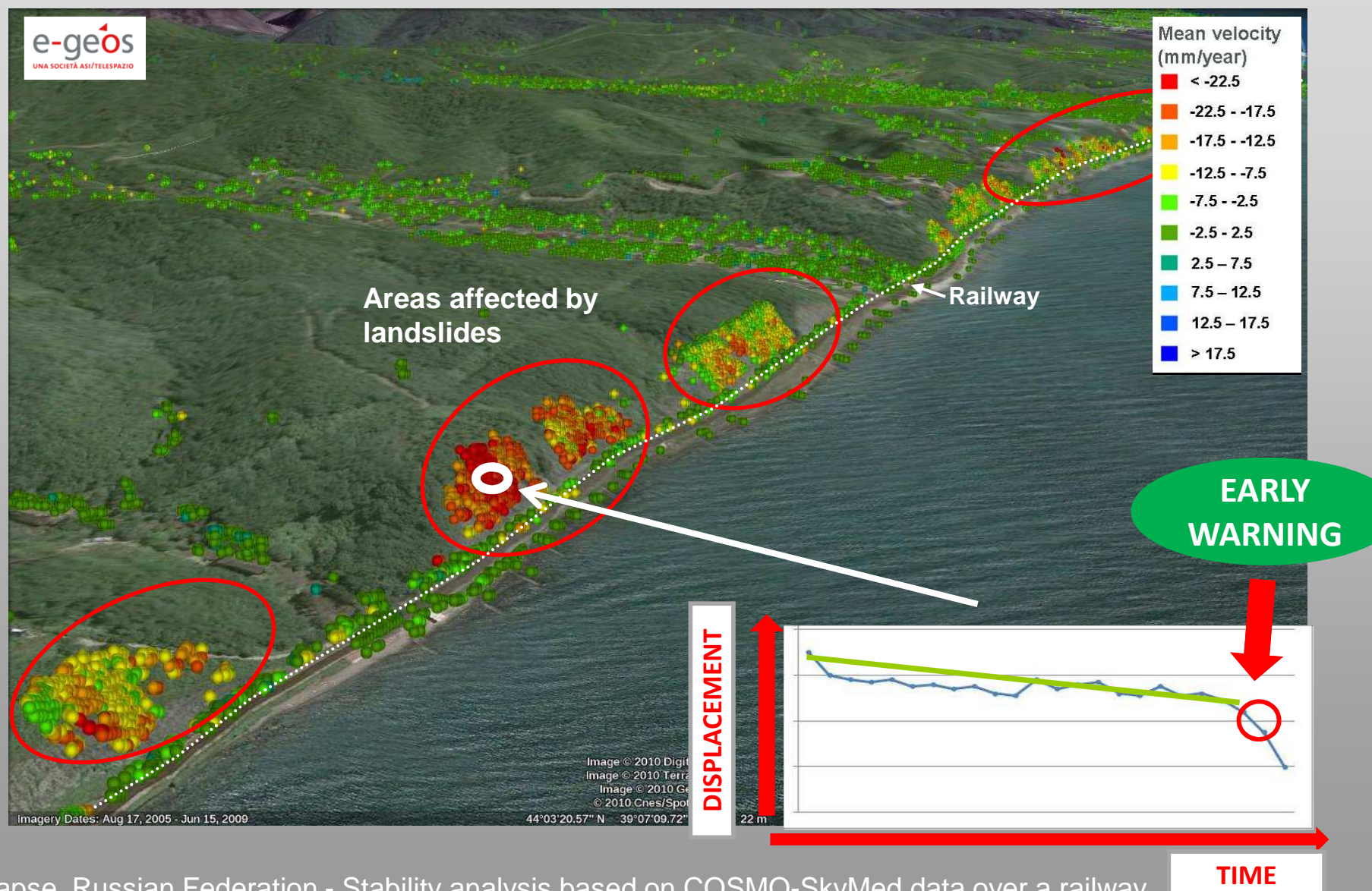
alert !!! Service activated by Italian Coast Guard
8th Feb 2011 at 10:00 UTC





COSMO-SkyMed (SAR)

Landslides monitoring



Tuapse, Russian Federation - Stability analysis based on COSMO-SkyMed data over a railway infrastructure subject to landslide instability phenomena (December 2008- September 2010)
 e-GEOS Commercial in Confidence

26 May 2014

Case study – New Zealand



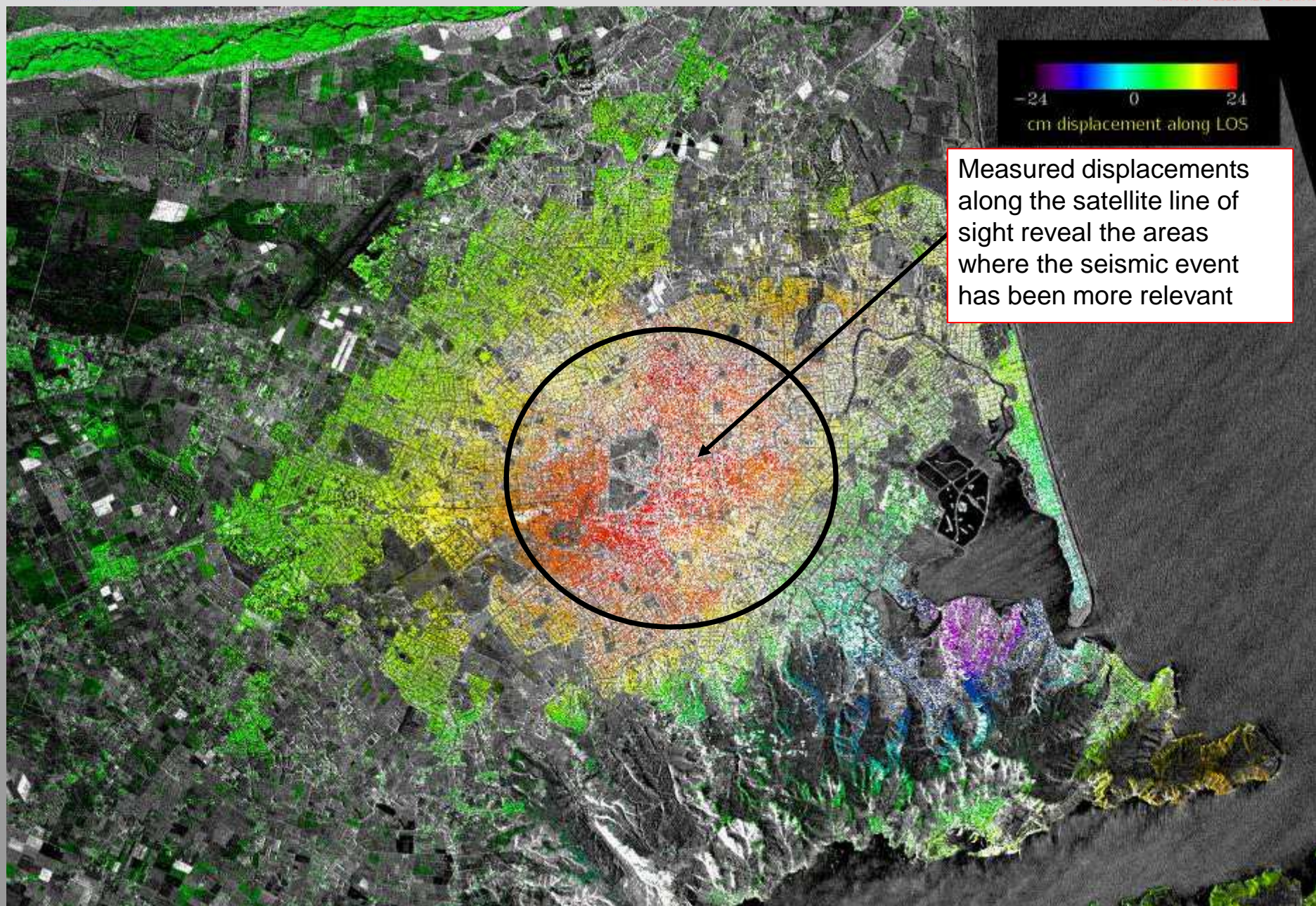
Event description:

- On February 22nd, 2011 one violent earthquake shock hit New Zealand, causing serious damages and victims in the city of Christchurch.

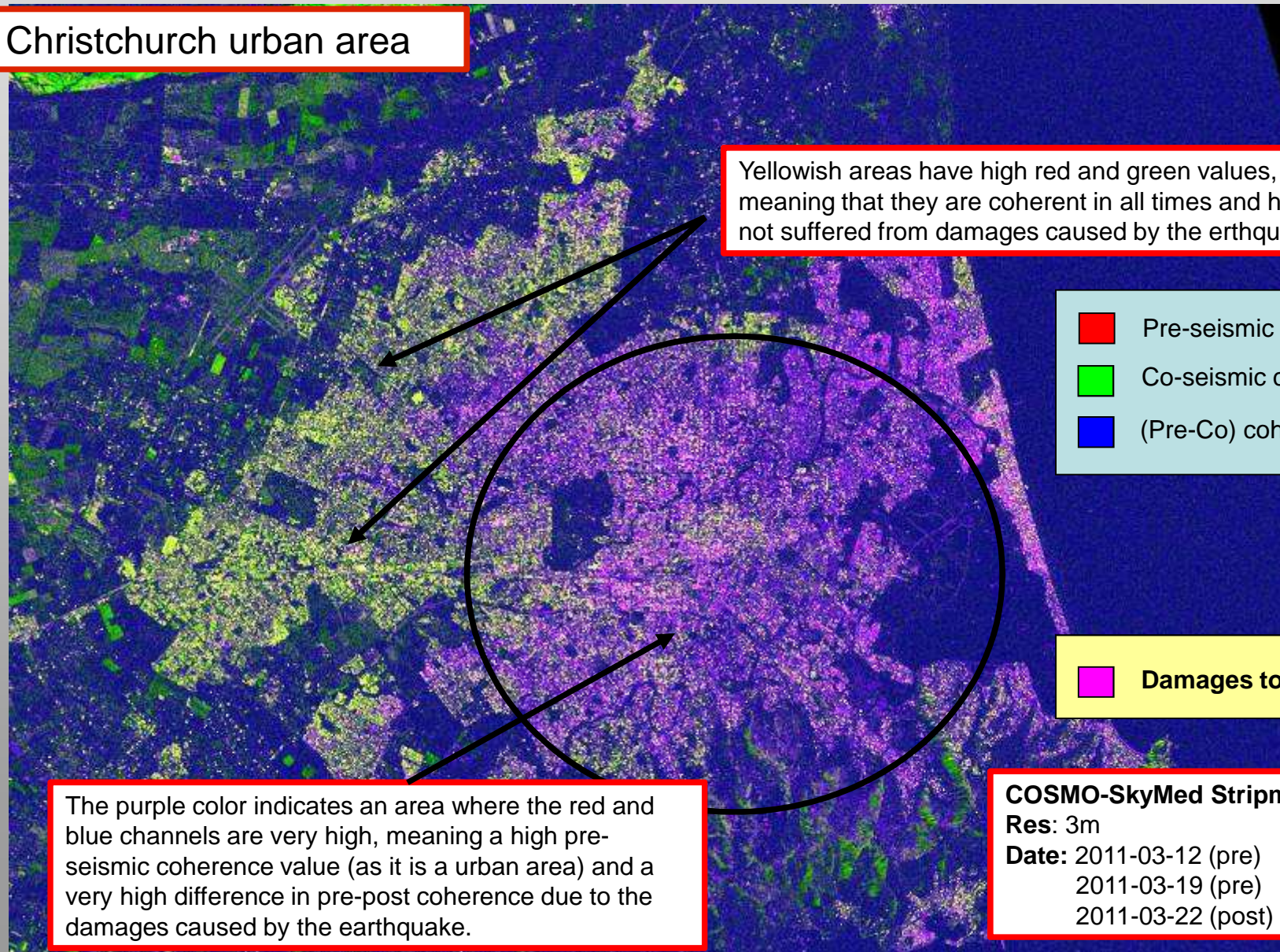
Triggering entity: Autoactivation of e-GEOS Emergency Team

- e-GEOS started acquiring daily COSMO-SkyMed (Stripmap modes) images over the city of Christchurch.
- Damage assessment maps derived from the analysis of co-seismic (pre-post) interferometric coherence have been distributed to local Authorities involved in disaster management operations

Interferogram analysis



Christchurch urban area



- Pre-seismic cohe (16 days)
- Co-seismic cohe (4 days)
- (Pre-Co) cohe difference

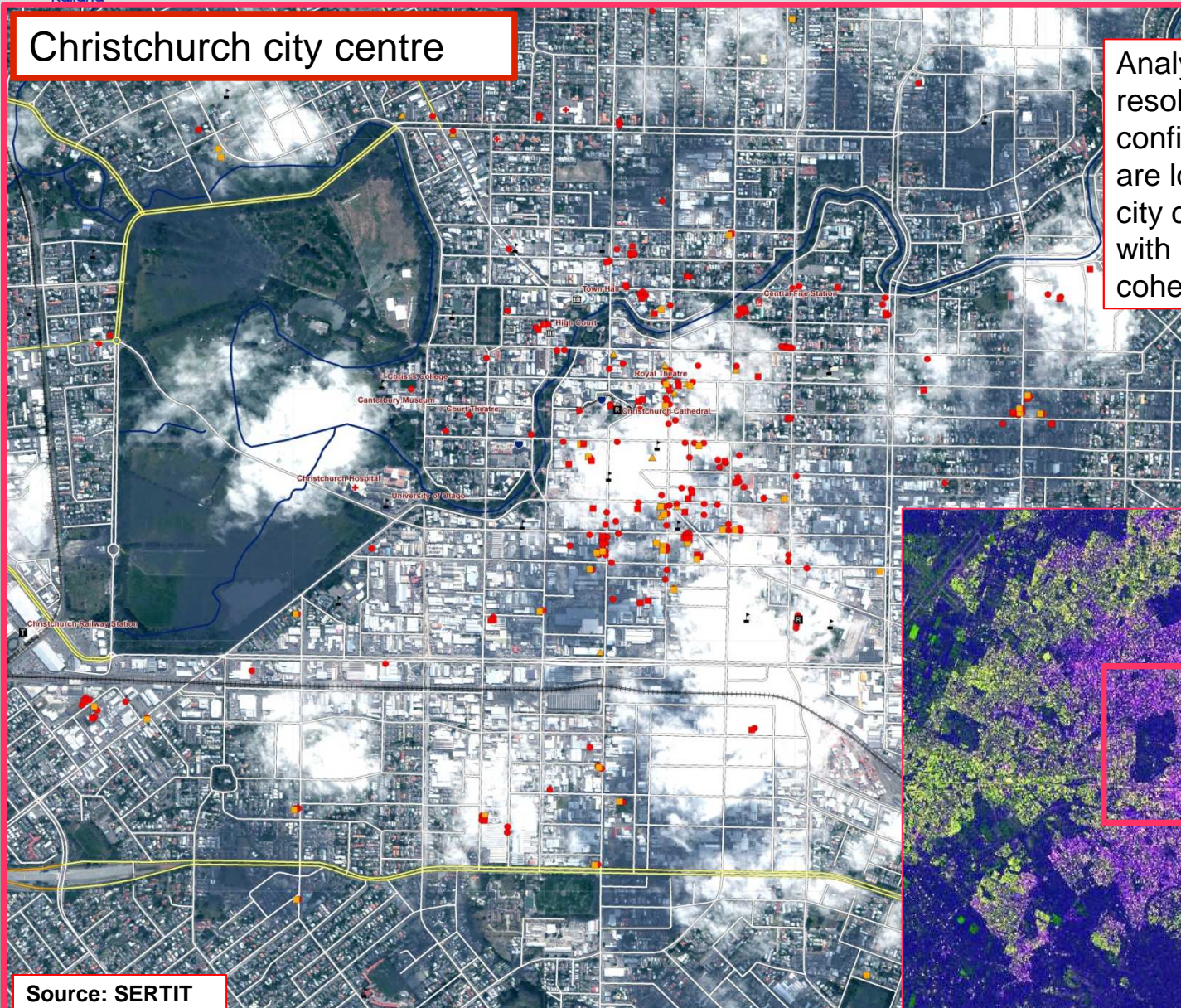
COSMO-SkyMed Stripmap

Res: 3m

Date: 2011-03-12 (pre)
2011-03-19 (pre)
2011-03-22 (post)

SAR and optical combined analysis

Christchurch city centre



Analysis of very high resolution optical images confirms that the damages are located in Christchurch city center area, consistent with COSMO-SkyMed coherence analysis

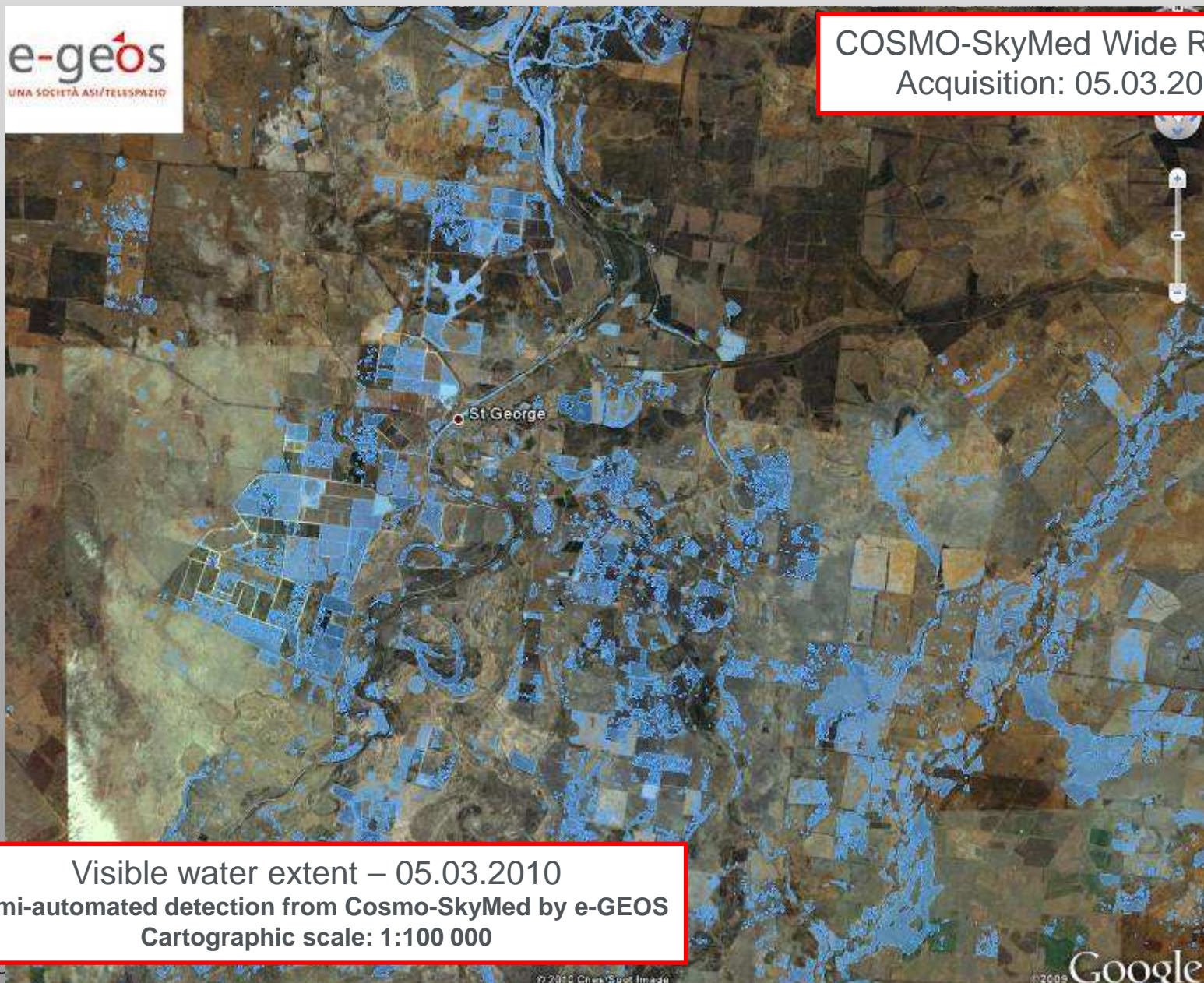
Source: SERTIT



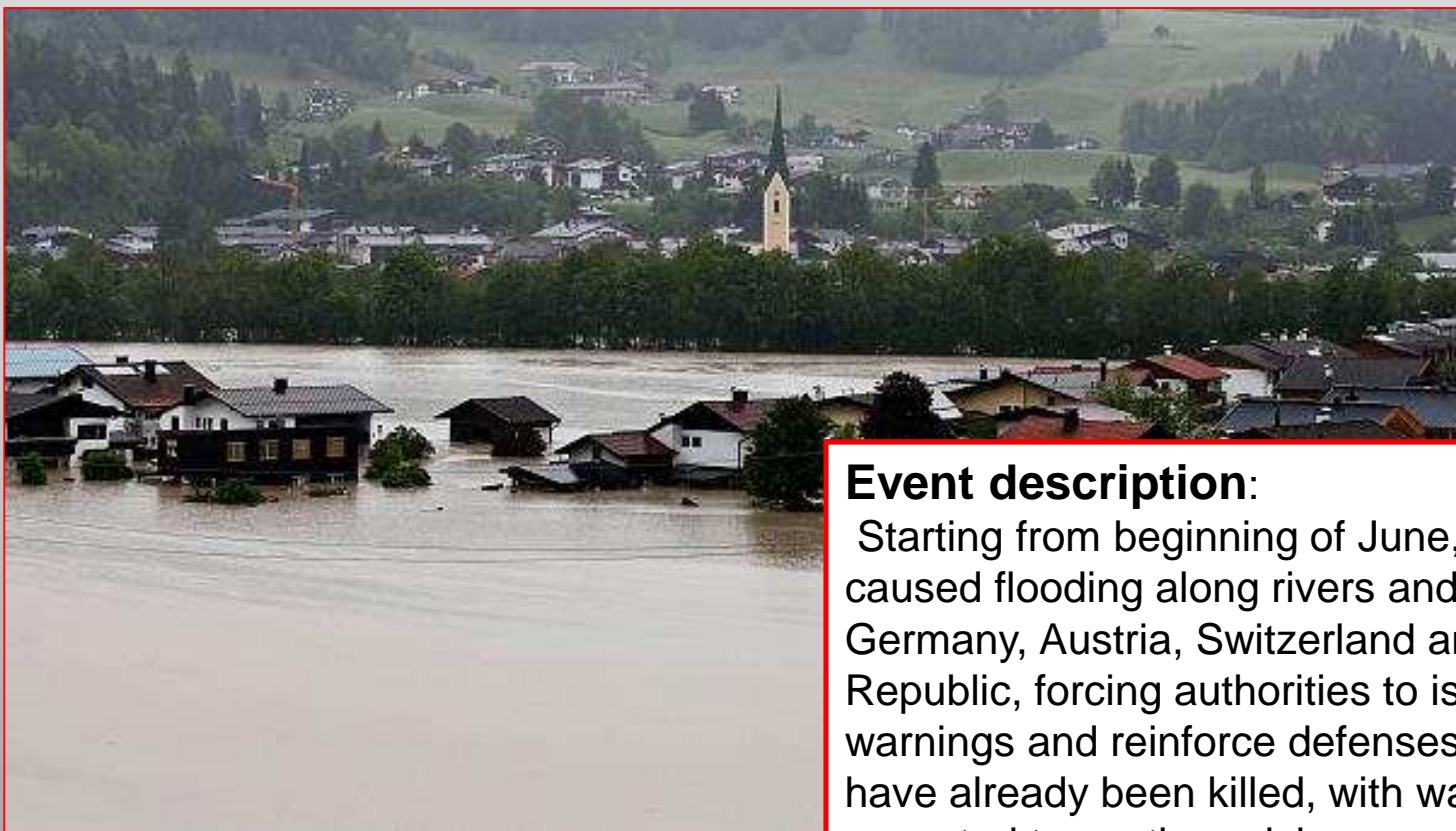
Floods mapping principle


UNA SOCIETÀ ASI/TELESPAZIO

COSMO-SkyMed Wide Region
Acquisition: 05.03.2010



Visible water extent – 05.03.2010
Semi-automated detection from Cosmo-SkyMed by e-GEOS
Cartographic scale: 1:100 000



Event description:

Starting from beginning of June, heavy rainfalls have caused flooding along rivers and lakes in Germany, Austria, Switzerland and the Czech Republic, forcing authorities to issue disaster warnings and reinforce defenses. Several people have already been killed, with water levels expected to continue rising.

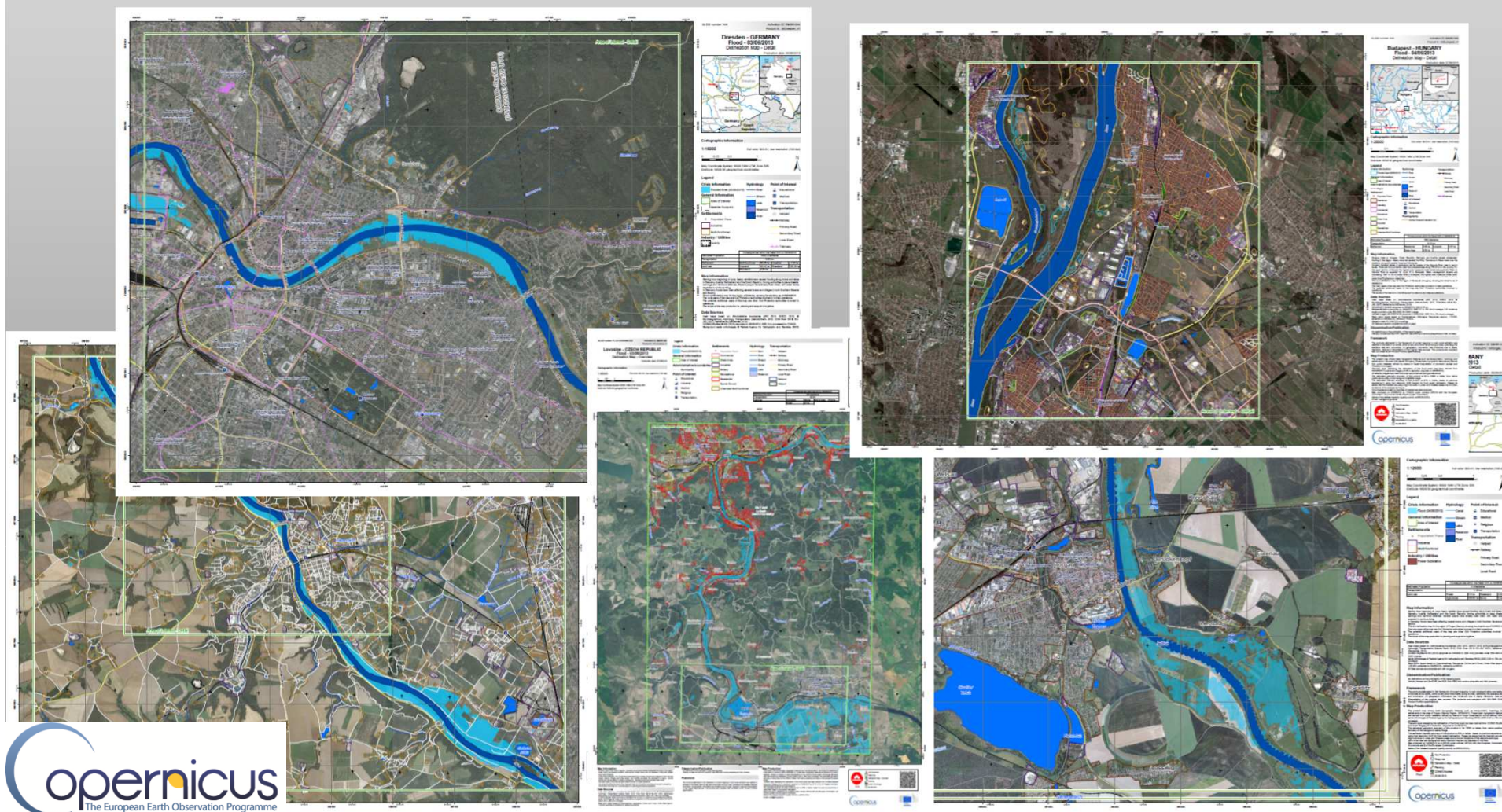
Triggering entity: **German, Czech and Hungarian Civil Protection**

➤ e-GEOS led Consortium operating the GMES Emergency Management Service has been activated over 20 Areas of Interest by the Civil Protection Authorities of the Member States affected by the flood event

➤ When requested, a regular monitoring has been implemented.

Post event maps generated

In **less than 1 week** almost **100 maps** were generated over **20 different sites** in **3 different Member States**.





Event description:

- Since August 2012 the conflict in Syria has been forcing civil population to migrate towards the border with the nearby Jordan
- A IDP camp has been set up by UNHCR in Al Mafraq area

Triggering entity: **German BBK on behalf of THW (through EC ERCC)**

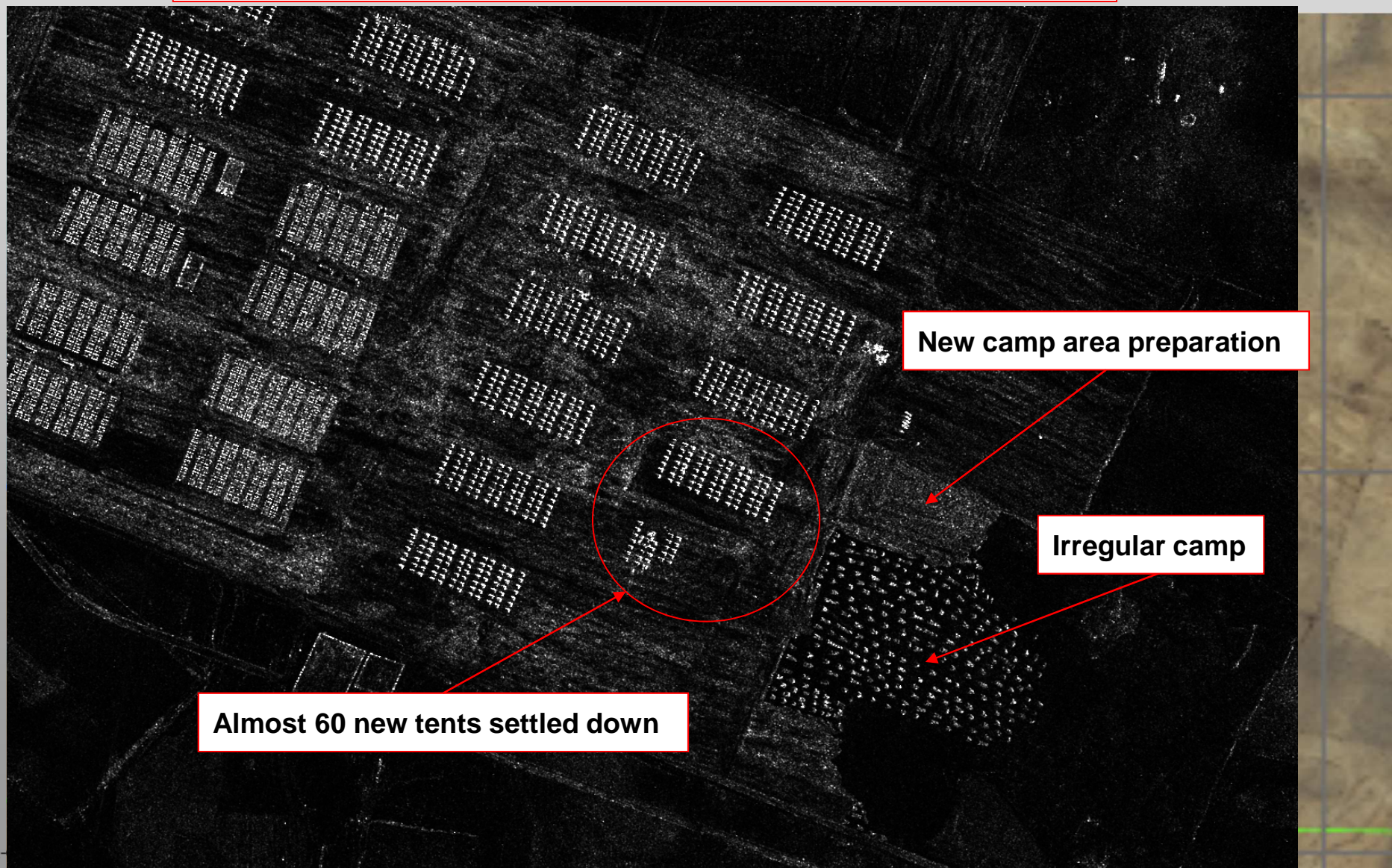
- e-GEOS has been activated by the German BBK on behalf of THW (German entity for humanitarian aid operations) to regularly monitor the evolution of Al Mafraq IDP camp.
- e-GEOS has been regularly acquiring both optical and SAR data over more than six months, providing constant updates to the relief operators involved.

28/11/2012 – 18:05 UTC | COSMO-SkyMed SAR acquisition



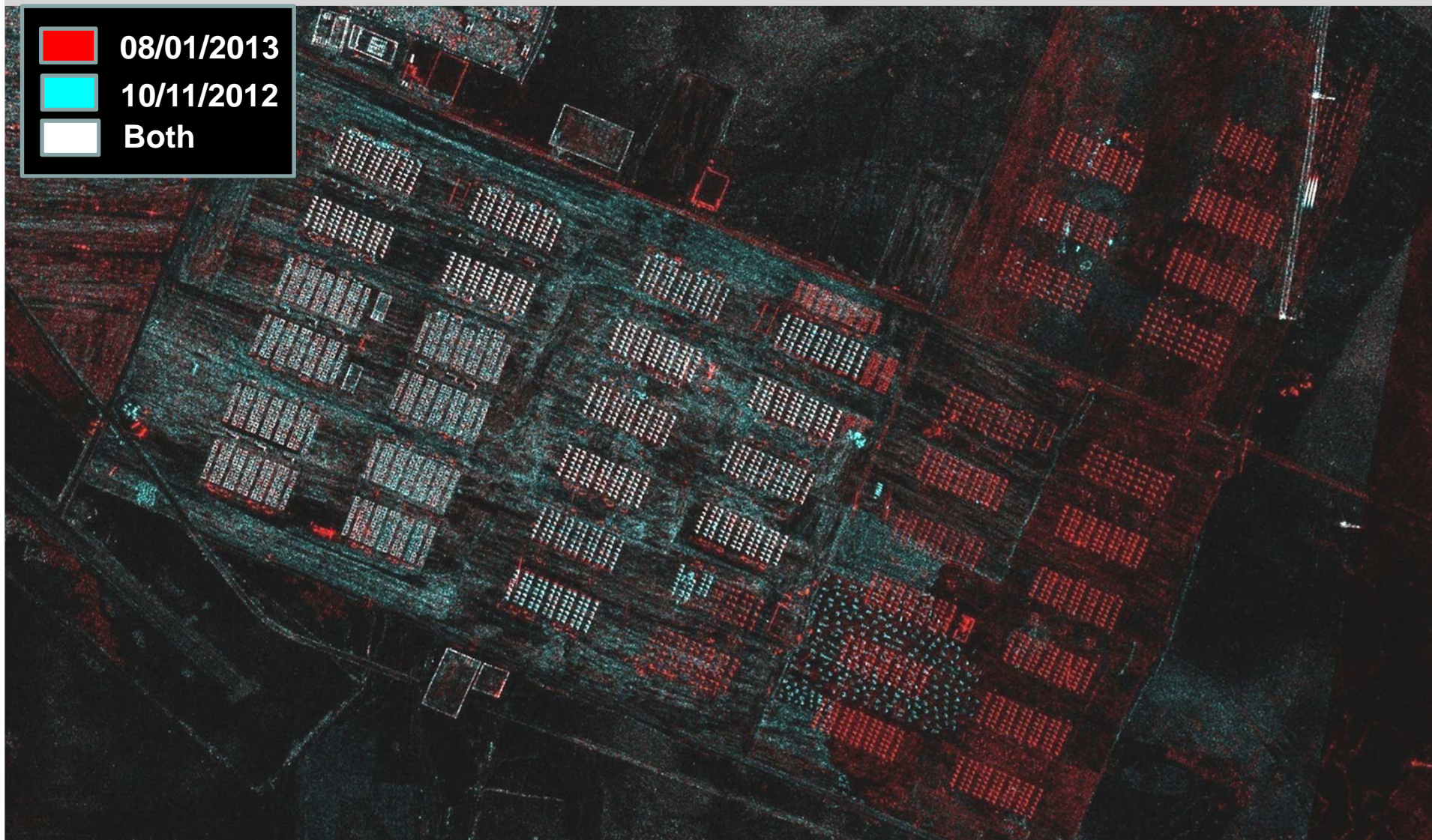
Jordan border refugee camp


What happened in 12 hours?



Jordan border refugee camp

Two months later.....





Thank you!
www.e-geos.it

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