

AERO-GAMMA-SPECTROMETRY



APPLICATIONS OF THE AERO-GAMMA-SPECTROMETRY

Nuclear emergency tool

- monitoring of large areas in relatively short time periods after a nuclear accident or an explosion of a „dirty bomb“

Identification of areas with elevated specific activities of natural radionuclides

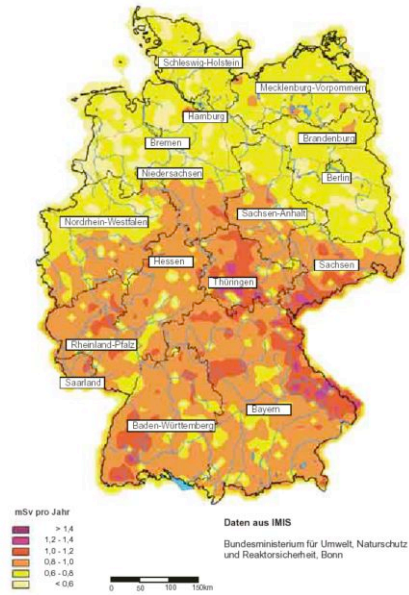
Monitoring of the progress during remediation activities

Search for lost or hidden high-activity radioactive sources

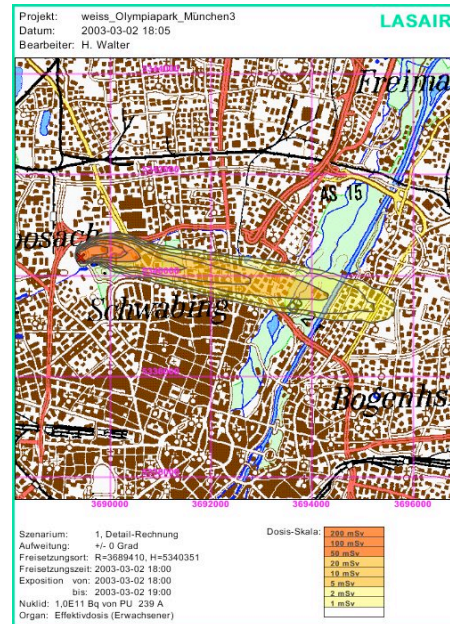
Geological mapping

NUCLEAR EMERGENCY TOOL

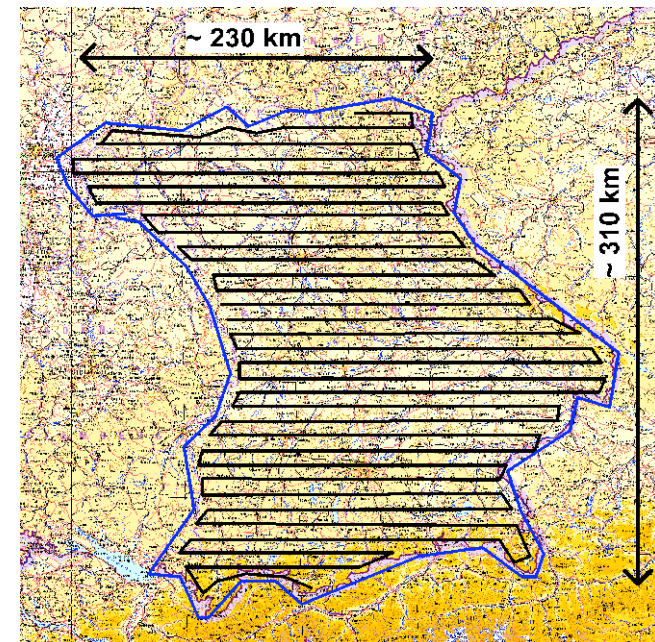
IMIS



transport modelling



mobile measurements



QUALITY ASSURANCE

- I. Participation in the European project **ECCOMAGS**
- II. Organisation of **NATIONAL EXERCISES**
- III. Participation in **BI- AND TRINATIONAL INTERNATIONAL MEASUREMENT CAMPAIGNS**
- IV. Collaboration in **INTERNATIONAL COMMITTEES**

I. ECCOMAGS - EUROPEAN NETWORK

ECCOMAGS, 2000 - 2003

GERMANY



SCOTLAND



AUSTRIA



FRANCE



DENMARK



NORWAY



SWEDEN

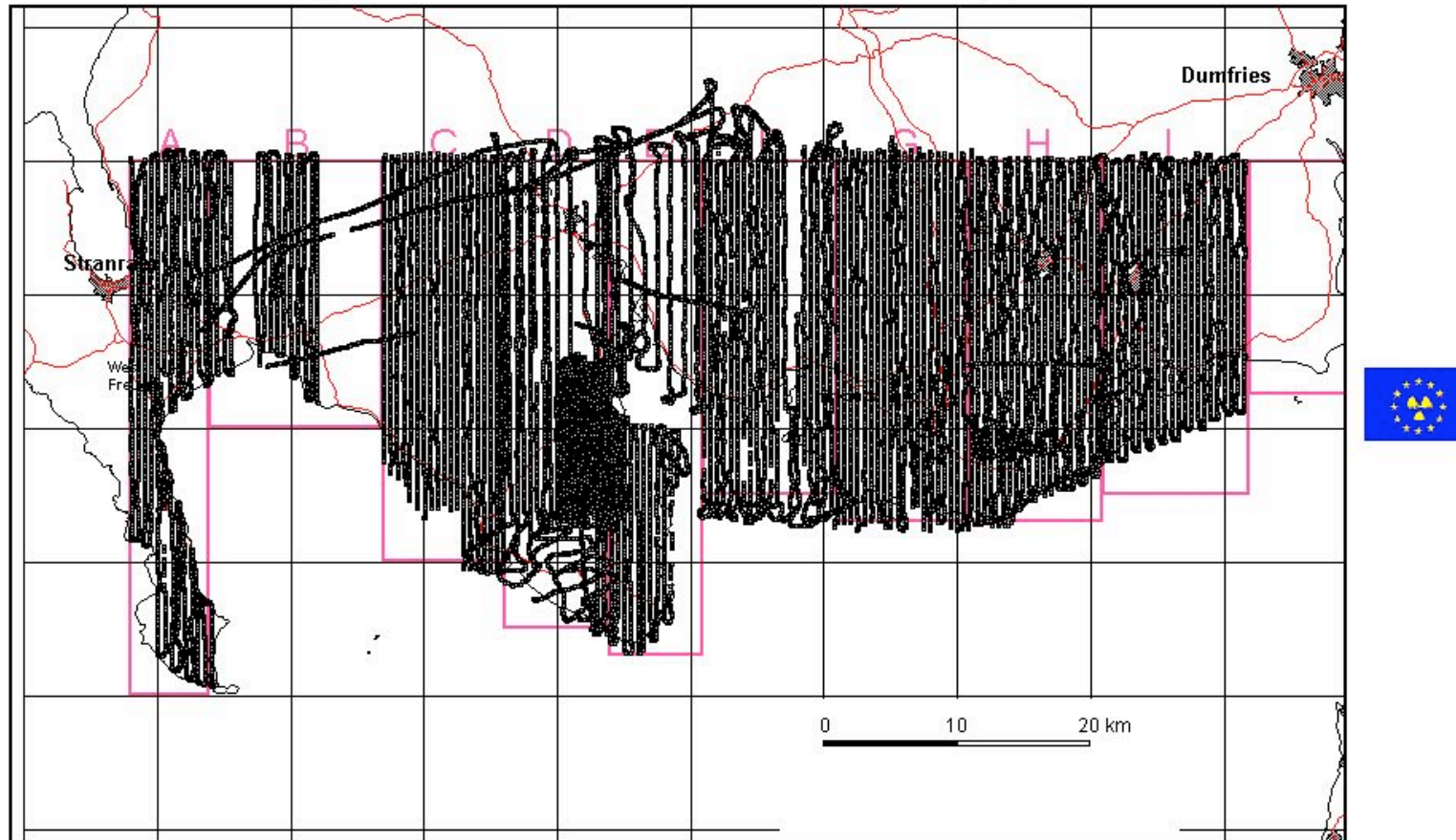


SWITZERLAND



I. ECCOMAGS - EUROPEAN NETWORK

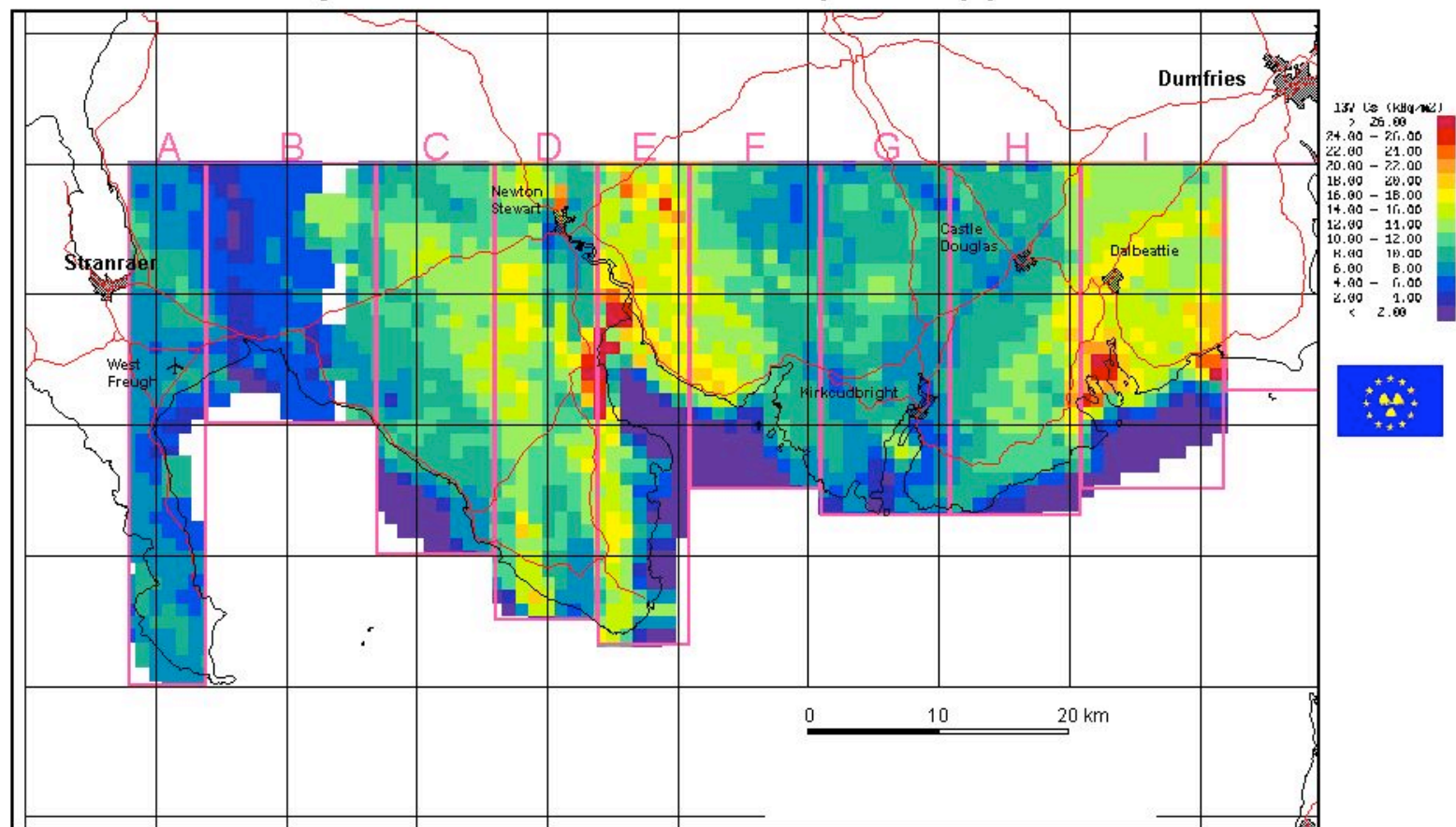
ECCOMAGS Project - RESUME 2002 Exercise. Composite map produced 1st June 2002



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I. ECCOMAGS - EUROPEAN NETWORK

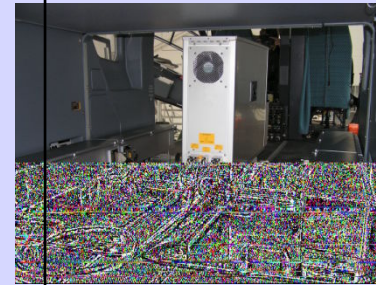
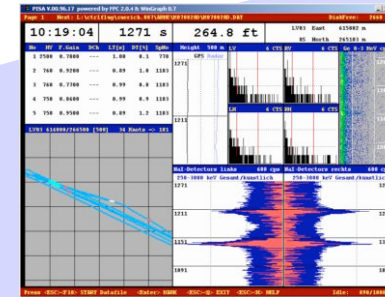
ECCOMAGS Project - RESUME 2002 Exercise. Composite map produced 1st June 2002



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II. NATIONAL MEASUREMENT CAMPAIGNS

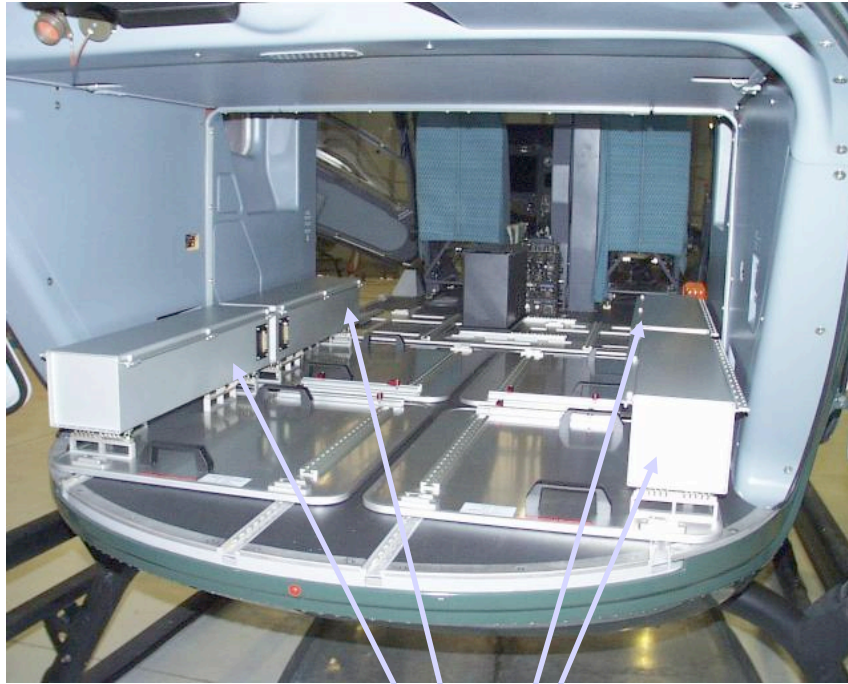
COOPERATION SINCE 1993



1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008

II. NATIONAL MEASUREMENT CAMPAIGNS

Setup of the german airborne measurement system



4 * 4 L-NaI(Tl)-Detectors



Computer

HPGe-Detector

III. BI- AND TRINATIONAL MEASUREMENT CAMPAIGNS

AIMS

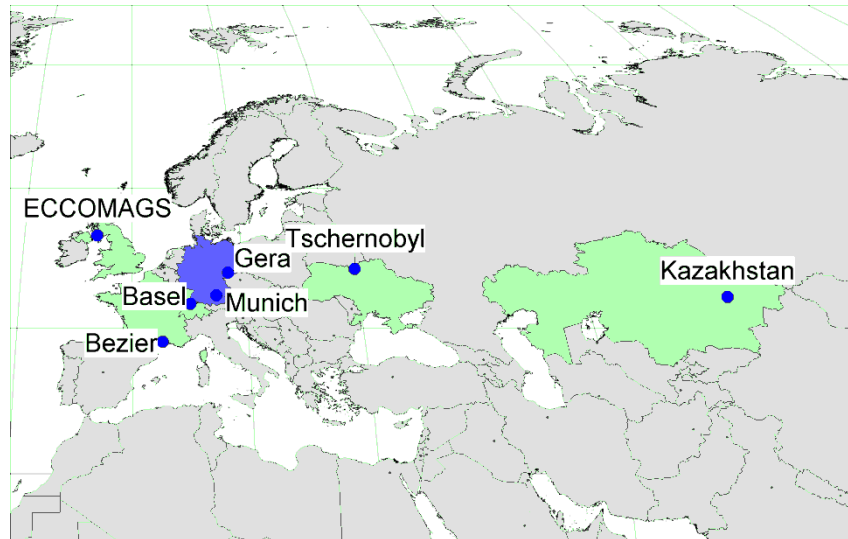
Comparison of the measurement strategies

Comparison of the technical solutions

Comparison of the data quality

III. BI- AND TRINATIONAL MEASUREMENT CAMPAIGNS

activities since 2002



AERO-GAMMA-SPECTROMETRY EXERCISE

Chemnitz 2003



AGE 09

Munich 2009

Bézier 2004



organised by



Zürich 2007



III. BI- AND TRINATIONAL MEASUREMENT CAMPAIGNS

OVERVIEW MEASUREMENT TASK **AGE09**

Task 1: Search for mobile and hidden radioactive sources

Task 2: Background measurements

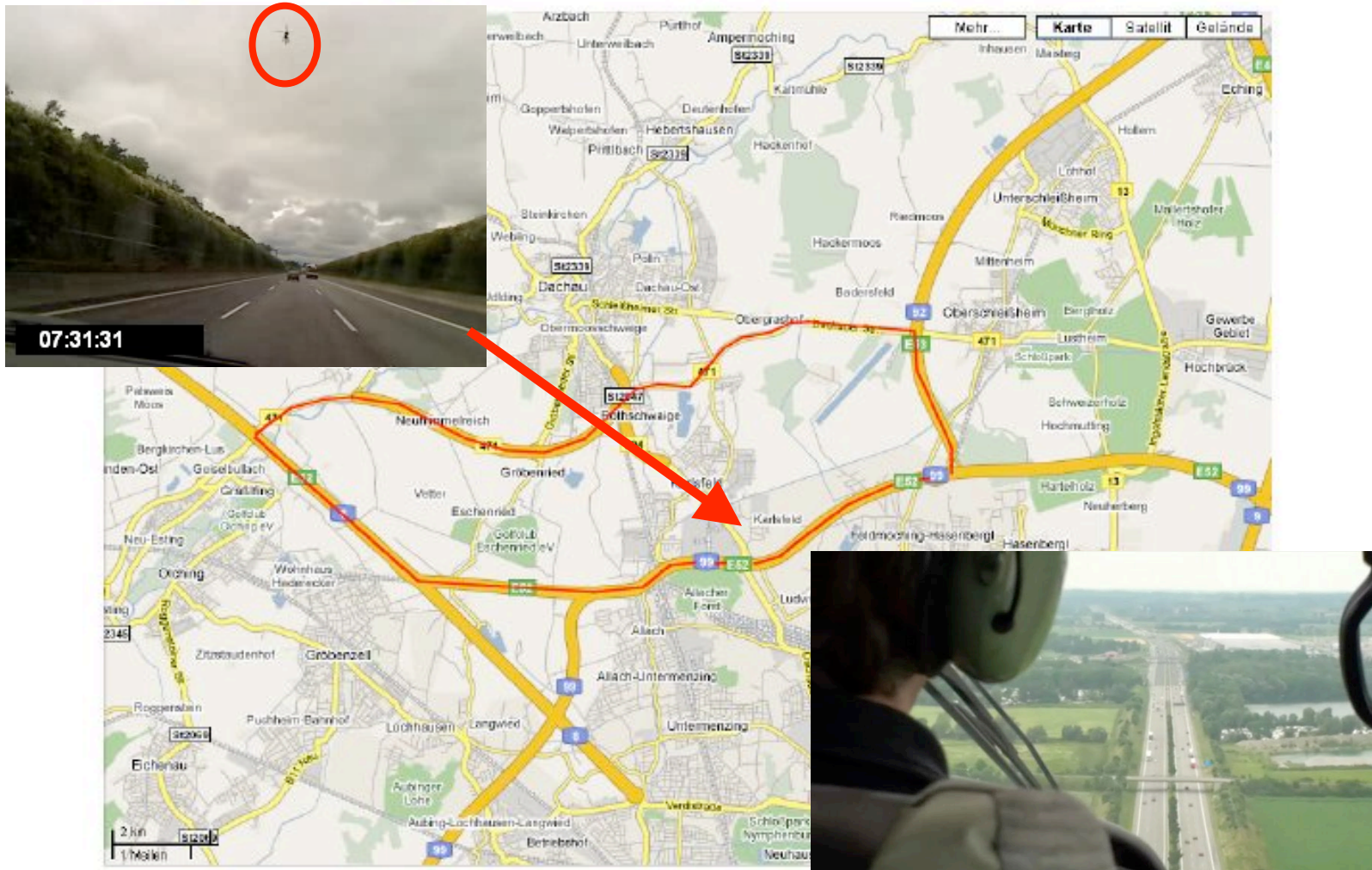
Task 3: Reference area

Task 4: Composite Mapping

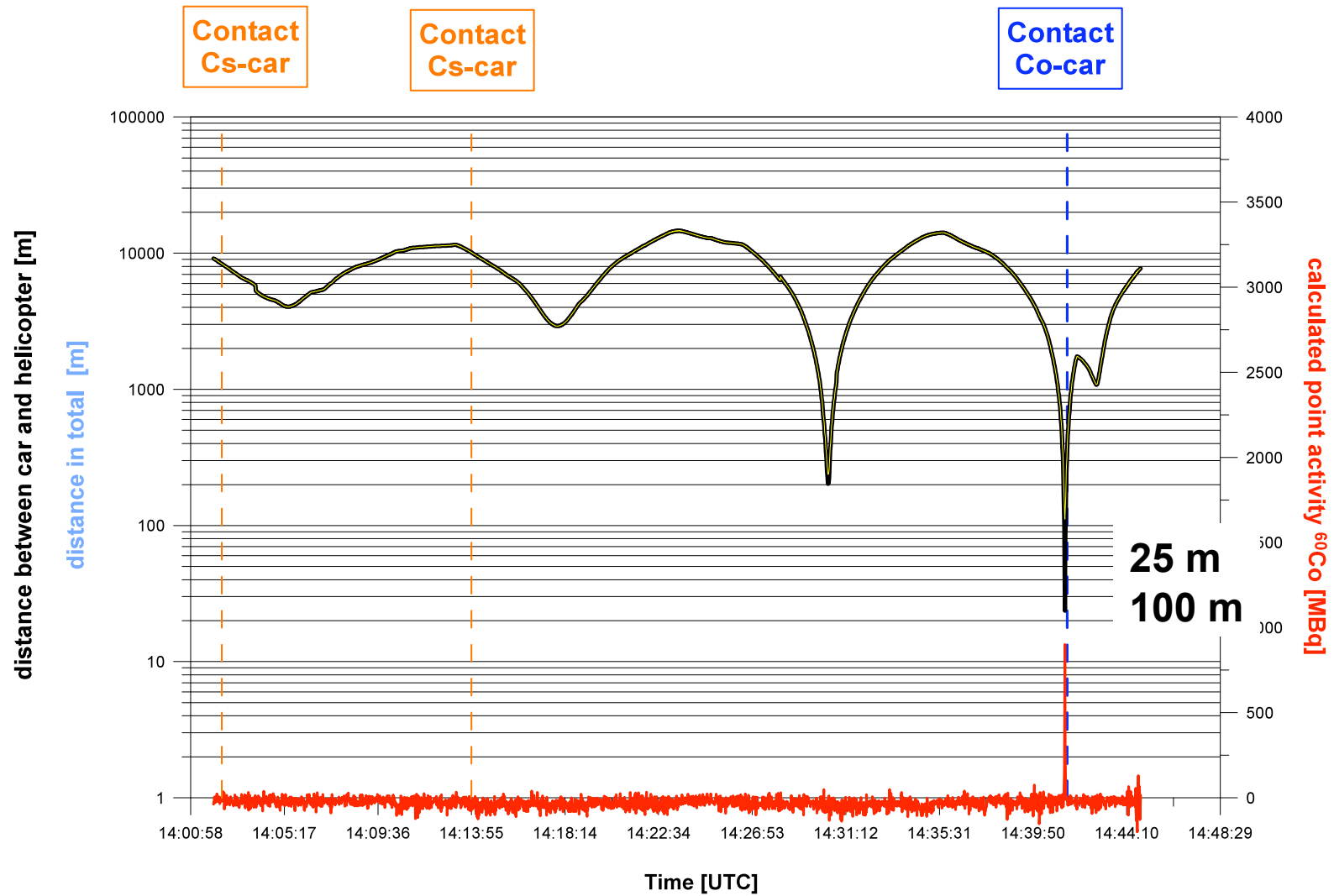
Task 5: Carborne Measurements

III. BI- AND TRINATIONAL MEASUREMENT CAMPAIGNS

Localisation and identification of „mobile sources“



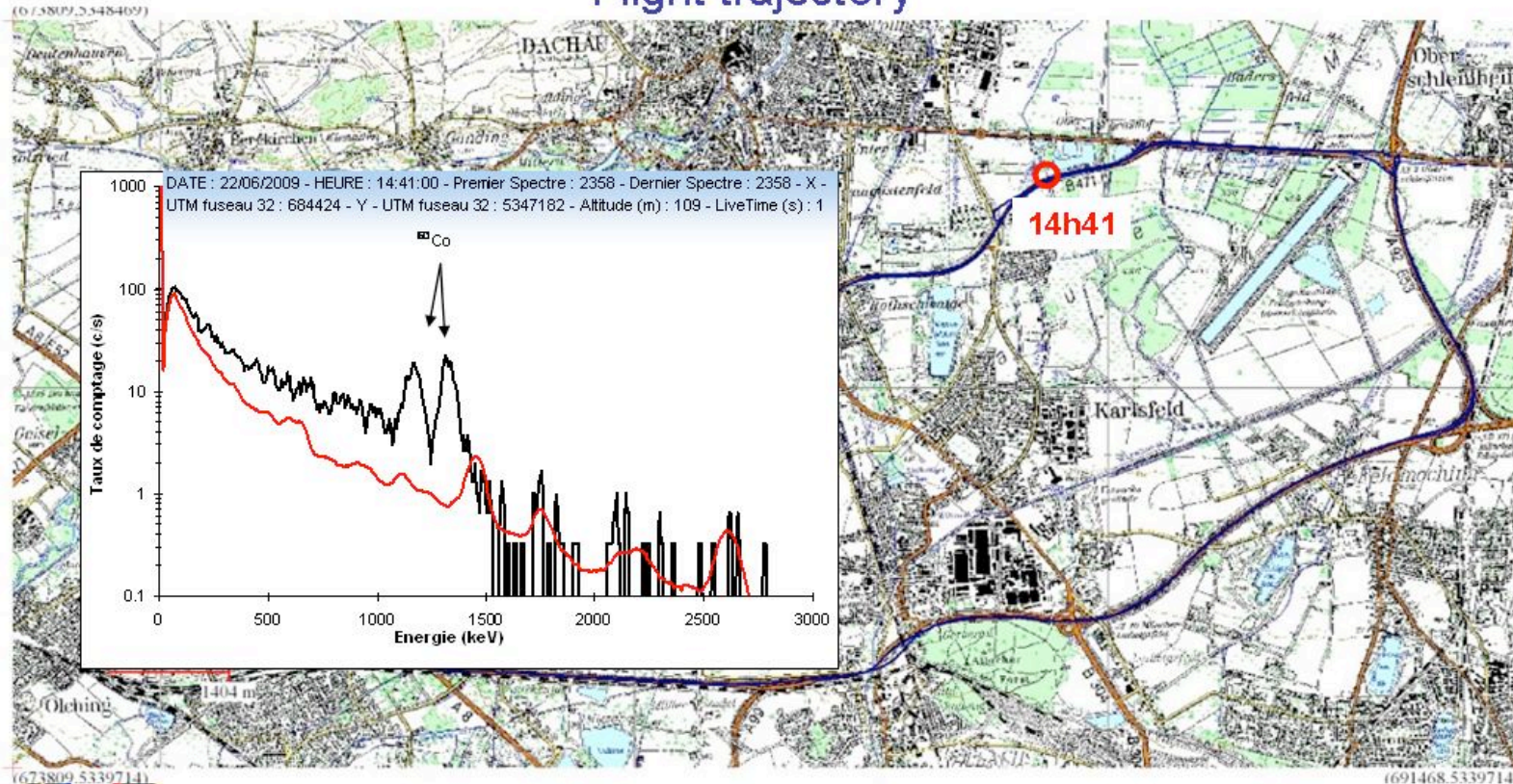
III. BI- AND TRINATIONAL MEASUREMENT CAMPAIGNS



III. BI- AND TRINATIONAL MEASUREMENT CAMPAIGNS

MOBILE SOURCES

Flight trajectory



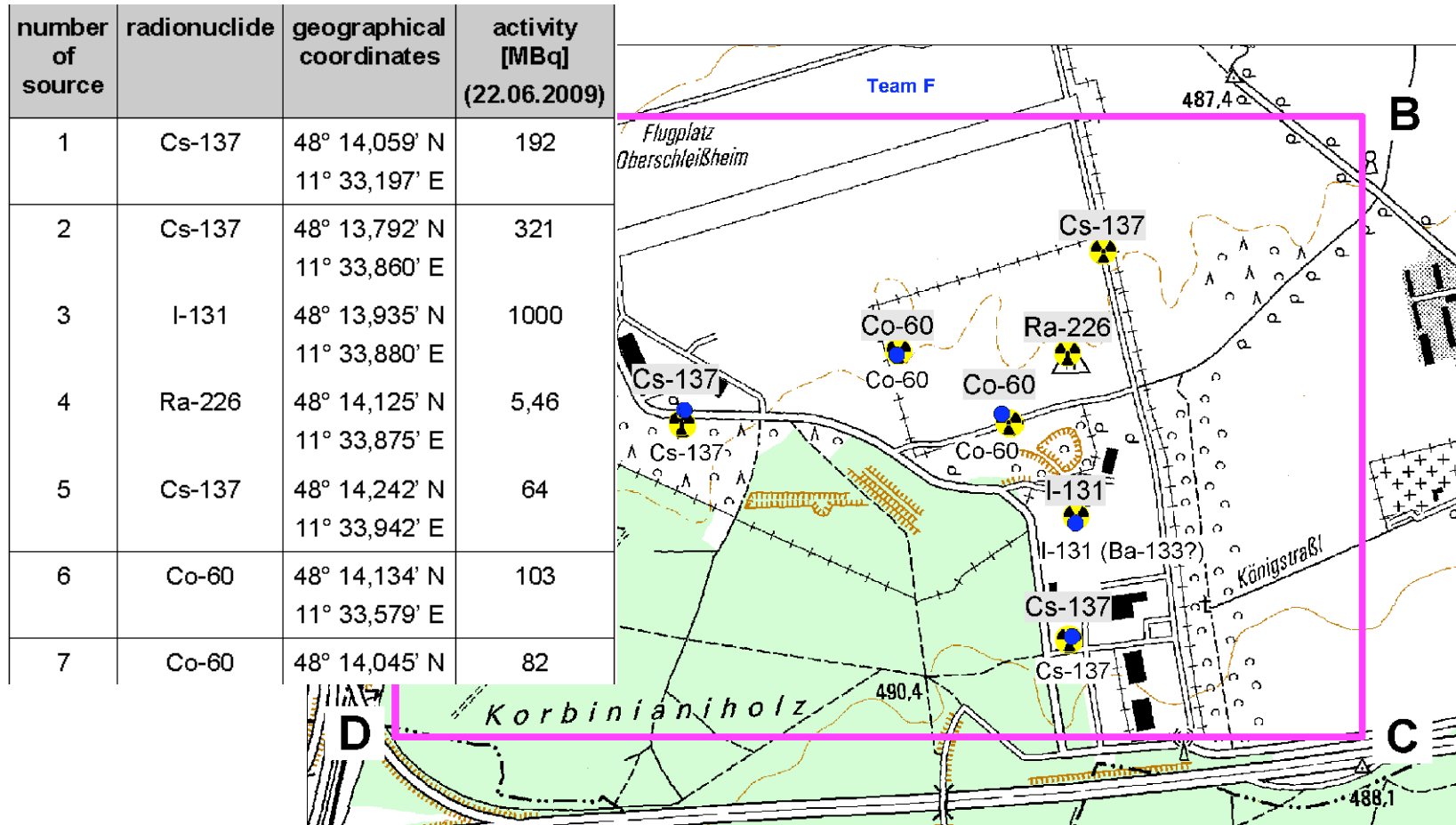
AGE09 - CEAVDAM

24 June 2009

14

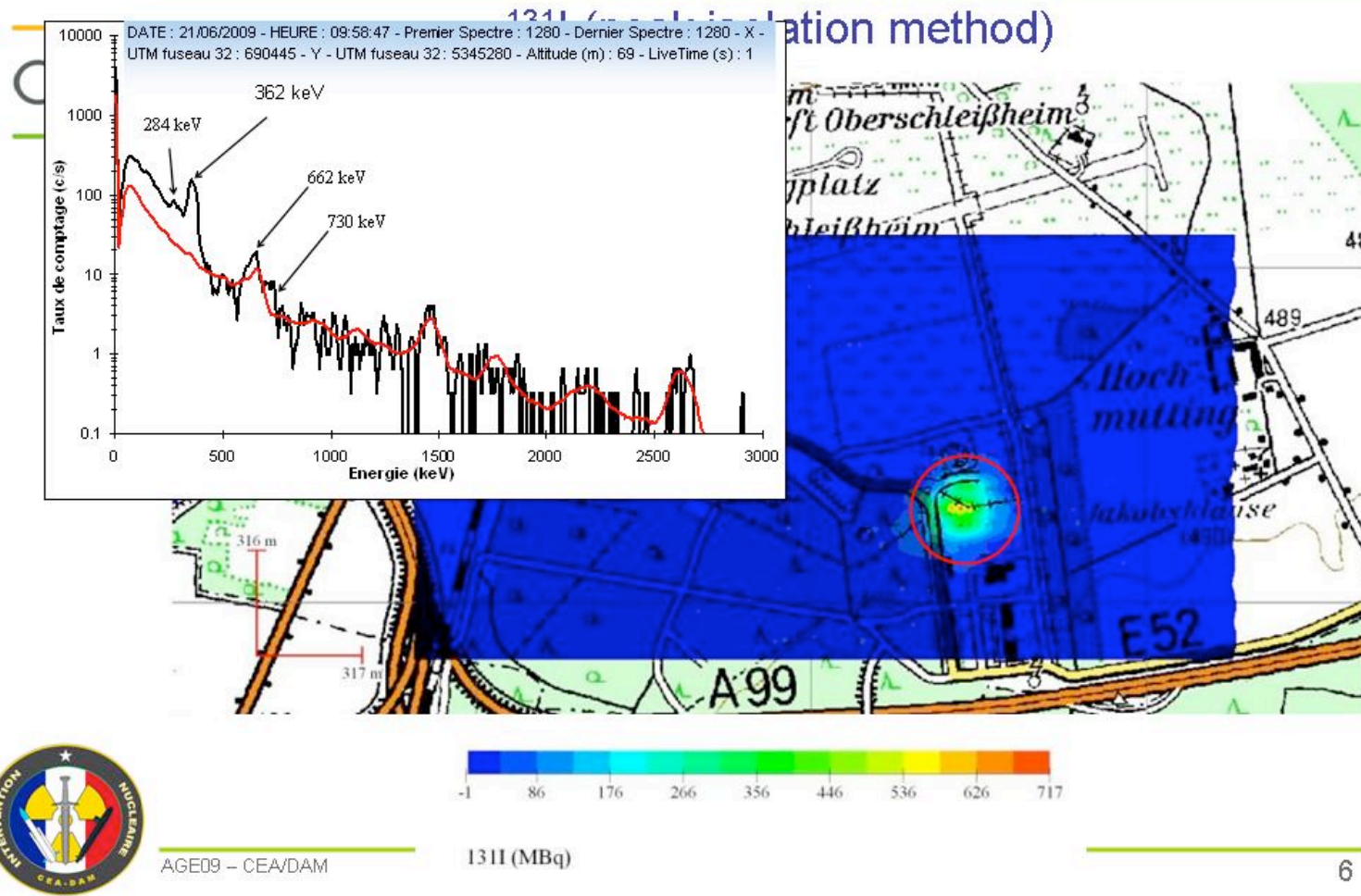
III. BI- AND TRINATIONAL MEASUREMENT CAMPAIGNS

Localisation and identification of „hidden sources“



III. BI- AND TRINATIONAL MEASUREMENT CAMPAIGNS

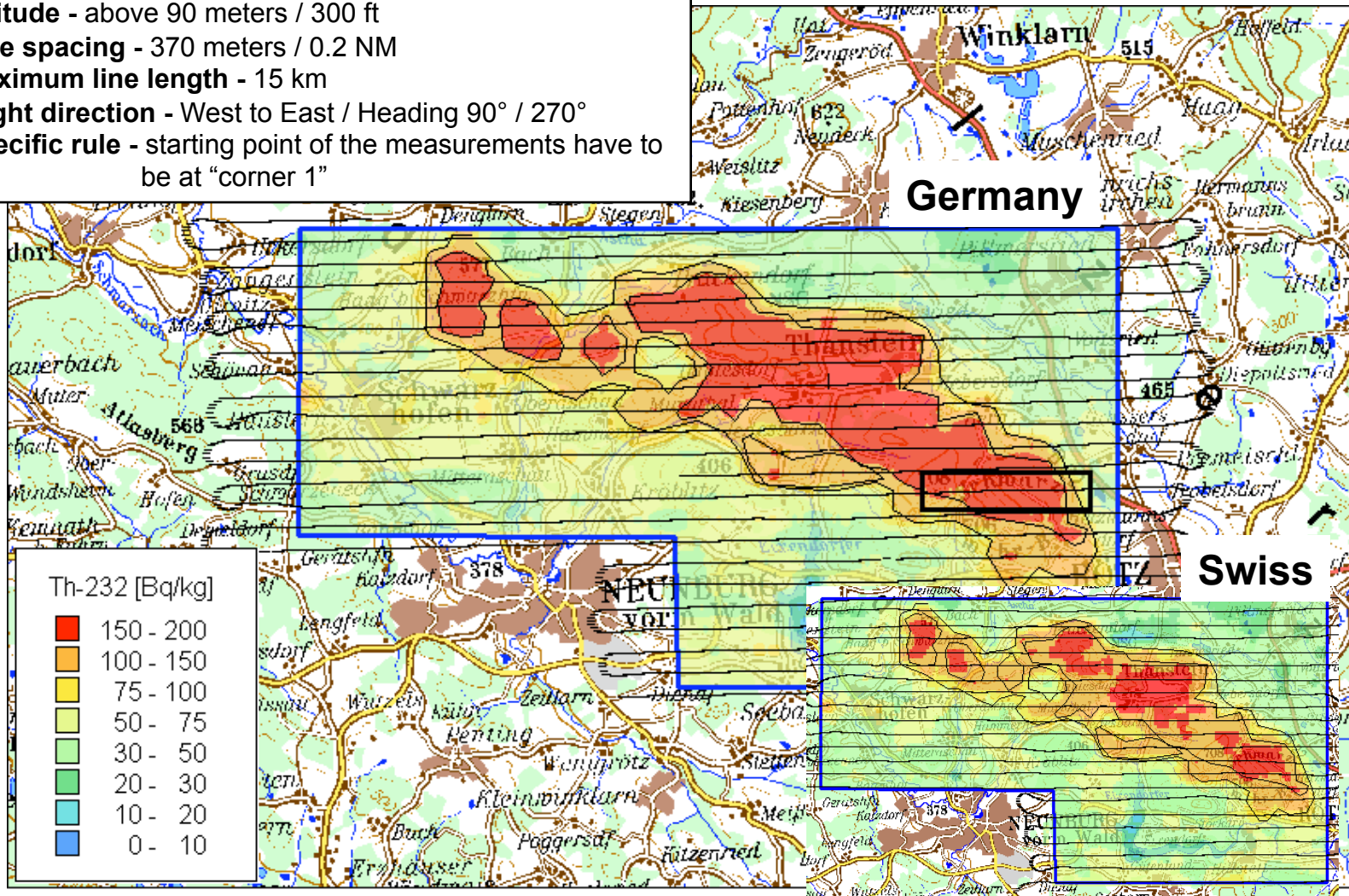
HIDDEN SOURCES



AGE09 - CEA/DAM

III. BI- AND TRINATIONAL MEASUREMENT CAMPAIGNS

Speed – above 100 km/h / 65 kt
Altitude - above 90 meters / 300 ft
Line spacing - 370 meters / 0.2 NM
Maximum line length - 15 km
Flight direction - West to East / Heading 90° / 270°
Specific rule - starting point of the measurements have to be at “corner 1”



IV. COLLABORATION IN INTERNATIONAL COMMITTEES

On-Site-Inspections (OSI) of the CTBTO

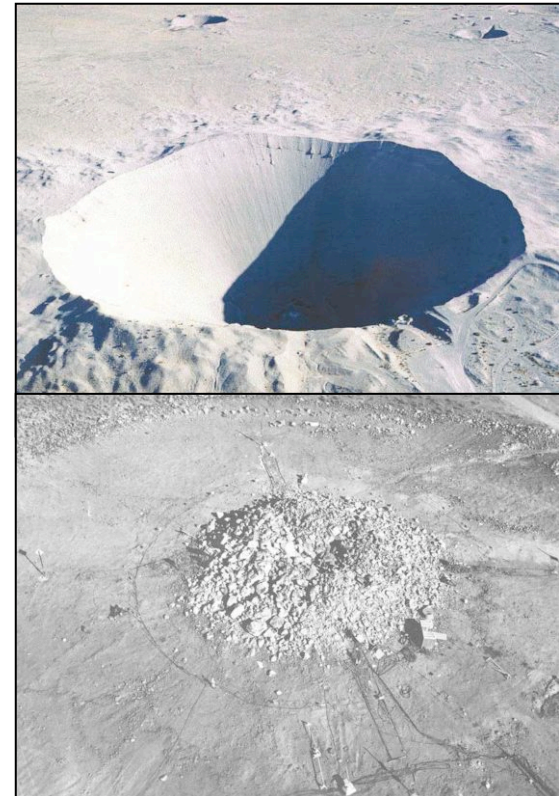
Applicability of the method to detect nuclear underground weapon tests ?

Supply of equipment and scientists for the

Directed Exercise 2005 – Kasachstan

Directed Exercise 2007 – Tschernobyl

Field Exercise 2008 – Kasachstan



IV. COLLABORATION IN INTERNATIONAL COMMITTEES

Technical and scientific support of international partners

**Technical and scientific support
of experts from China
(Germany and France 2006/2007)**

Olympic Games 2008

World exhibition 2010

