8th Bilateral Geodetic Meeting Poland-Italy
Wrocław, 22-24 June 2006

Five years of Poland-Italy local geodynamic researches in the frame of European Project Cost-Action 625 "3-D Monitoring of Active Tectonic Structures"

S. Cacoń (1), B. Kontny (1), J. Bosy (1), G. Cello (2), L. Piccardi (3), E. Tondi (2)

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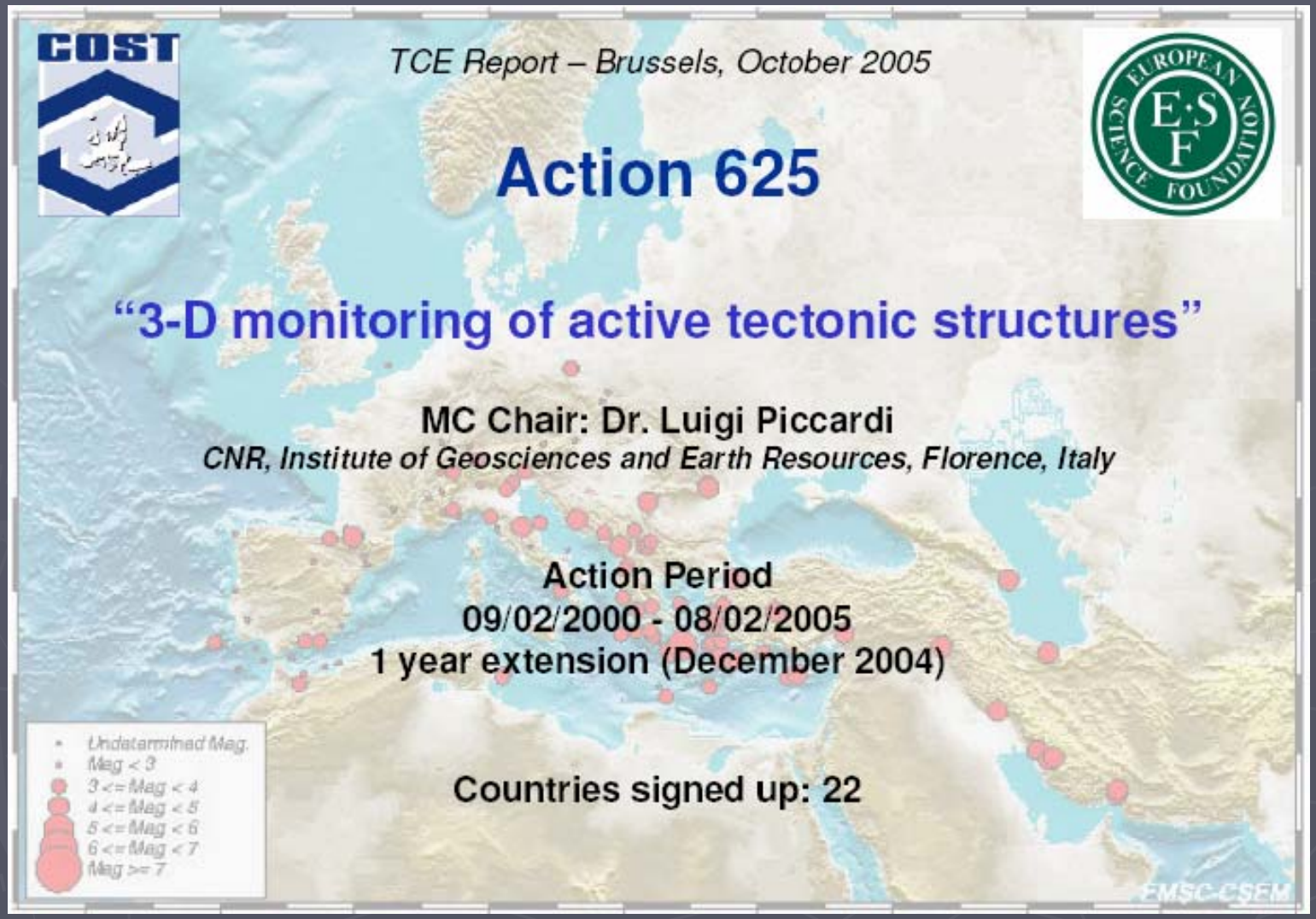
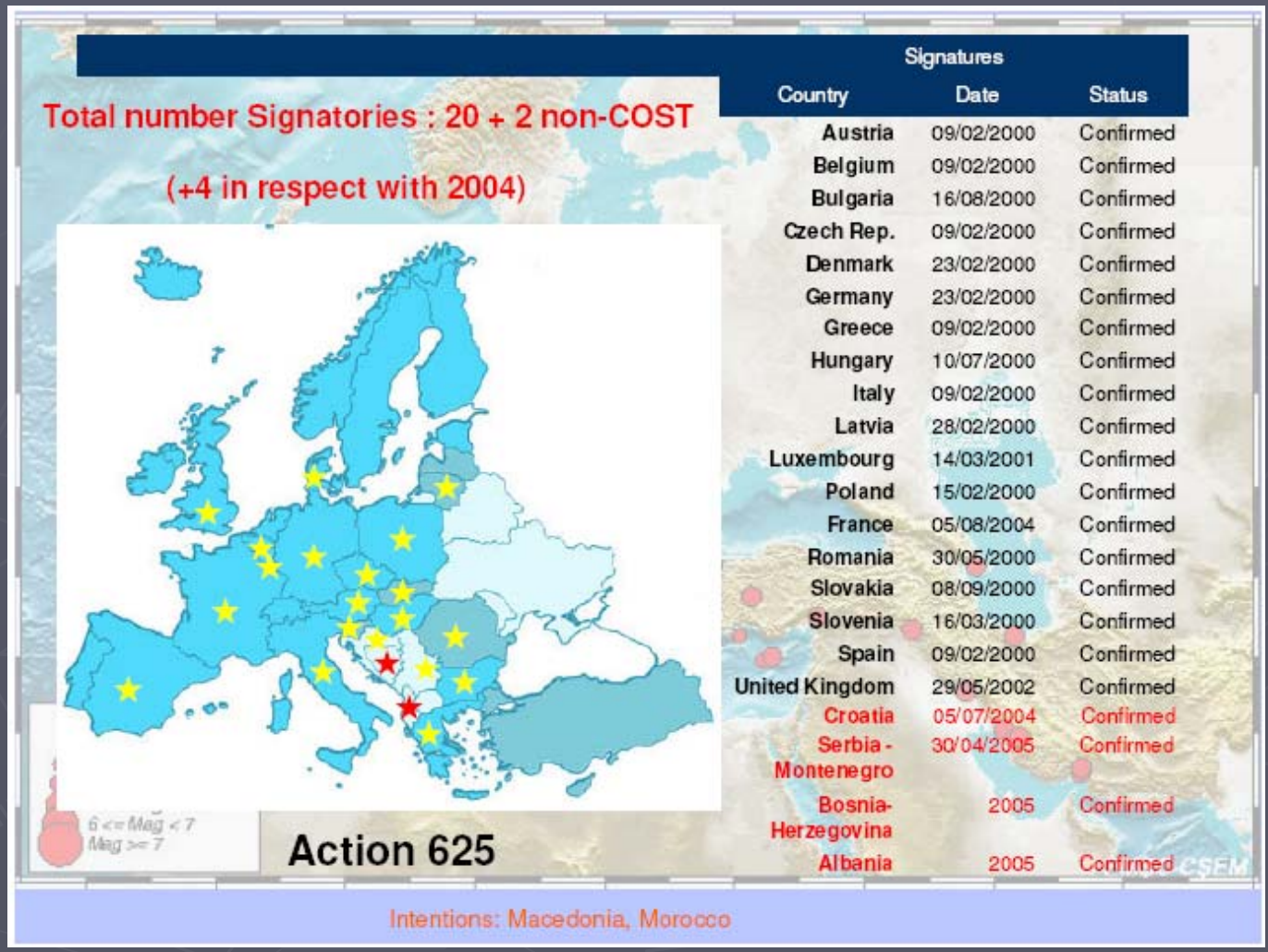
(2) Department of Geosciences, University of Camerino, Via Gentile III da Varano, Camerino, Italy,
(3) C.N.R. – Institute of Geosciences and Earth Resources – Florence Section, Via G. La Pira 4, Florence, Italy

COST *(European COoperation in the field of Scientific and Technical Research)*



http://fir.seismology.hu/cost625/index.html

COST Action 625 „3D Monitoring of Active Tectonic Structures”



Signatures		
Country	Date	Status
Austria	09/02/2000	Confirmed
Belgium	09/02/2000	Confirmed
Bulgaria	16/08/2000	Confirmed
Czech Rep.	09/02/2000	Confirmed
Denmark	23/02/2000	Confirmed
Germany	23/02/2000	Confirmed
Greece	09/02/2000	Confirmed
Hungary	10/07/2000	Confirmed
Italy	09/02/2000	Confirmed
Latvia	28/02/2000	Confirmed
Luxembourg	14/03/2001	Confirmed
Poland	15/02/2000	Confirmed
France	05/08/2004	Confirmed
Romania	30/05/2000	Confirmed
Slovakia	08/09/2000	Confirmed
Slovenia	16/03/2000	Confirmed
Spain	09/02/2000	Confirmed
United Kingdom	29/05/2002	Confirmed
Croatia	05/07/2004	Confirmed
Serbia - Montenegro	30/04/2005	Confirmed
Bosnia-Herzegovina	2005	Confirmed
Albania	2005	Confirmed

COST Action 625 „3D Monitoring of Active Tectonic Structures”

Organization of the Action:
Researches are developed in two main fields:
1) **studying and understanding the kinematics, mechanic and seismic behavior of active tectonic structures,**
2) **establishing monitoring networks in the field.**

Management Committee: 2 experts from each member country (Poland - S. Cacoń and B. Kontny)

WG1: Working Group for Active Tectonics (WGAT)
Leader: **Anastasia Kiratzi**, *Aristotle University of Thessaloniki, Dept. Of Geophysics, Thessaloniki*, Greece.
WG2: Working Group for Monitoring and Instrumentation (WGMI)
Leader: **Bernard Kontny**, *Agricultural University of Wroclaw, Department of Geodesy and Photogrammetry, Wroclaw*, Poland.

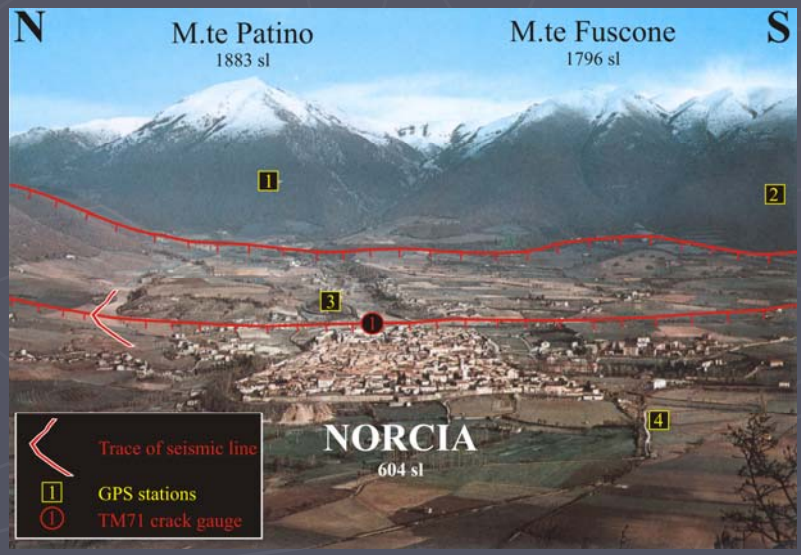
POLISH PARTICIPANTS OF COST 625

Prof. Stefan Cacoń
Dr Bernard Kontny
Dr Jarosław Bosy
Msc Jan Kapłon
– Agricultural University of Wroclaw

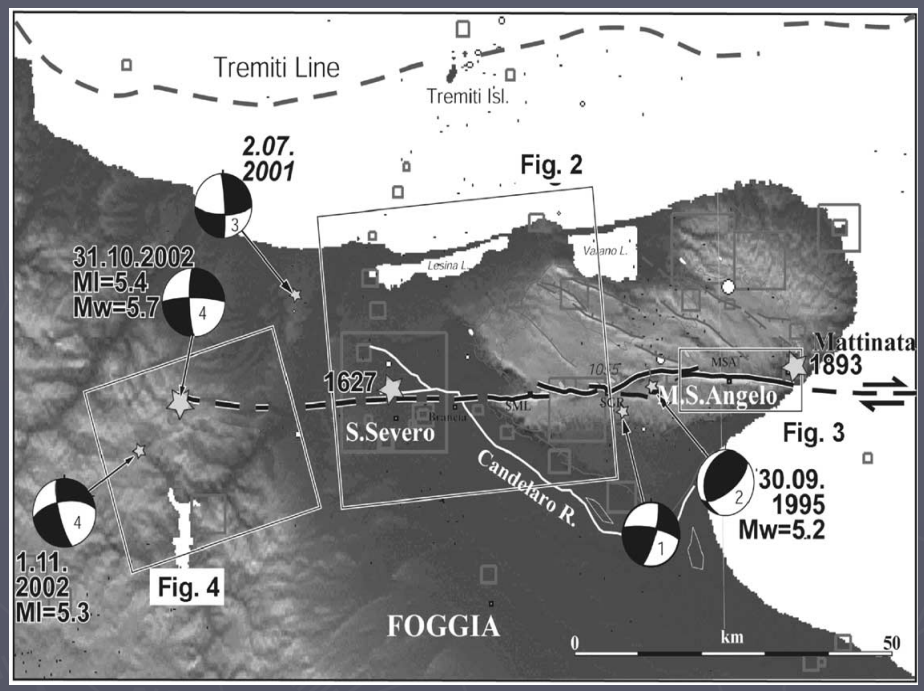
Prof. Witold Zuchiewicz
– Jagiellonian University of Cracow

RESEARCH COOPERATION ON THE RESEARCH AREAS IN ITALY

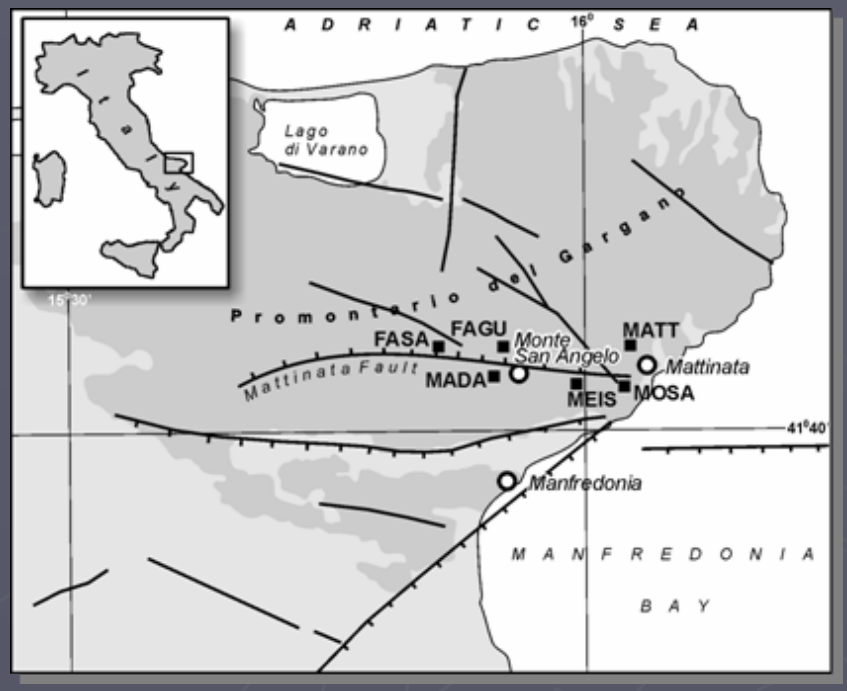
Within bilateral scientific cooperation with the Italian partners:
Prof. G. Cello, Dr. E. Tondi (University of Camerino),
Dr. L. Piccardi, (CNR, Florence),
two geodynamic research GPS networks in Italy were established:
"Gargano" (07.2002) – monitoring of Mattinata Fault zone
"Norcia" (11.2004) – monitorning of Norcia basin fault system



Mattinata Fault monitoring



The Gargano region earthquakes (Borre et al., 2003)



The location of the Gargano monitoring network points in relation to tectonics structures (Piccardi and Moratti 2002)

Points established in July 2002

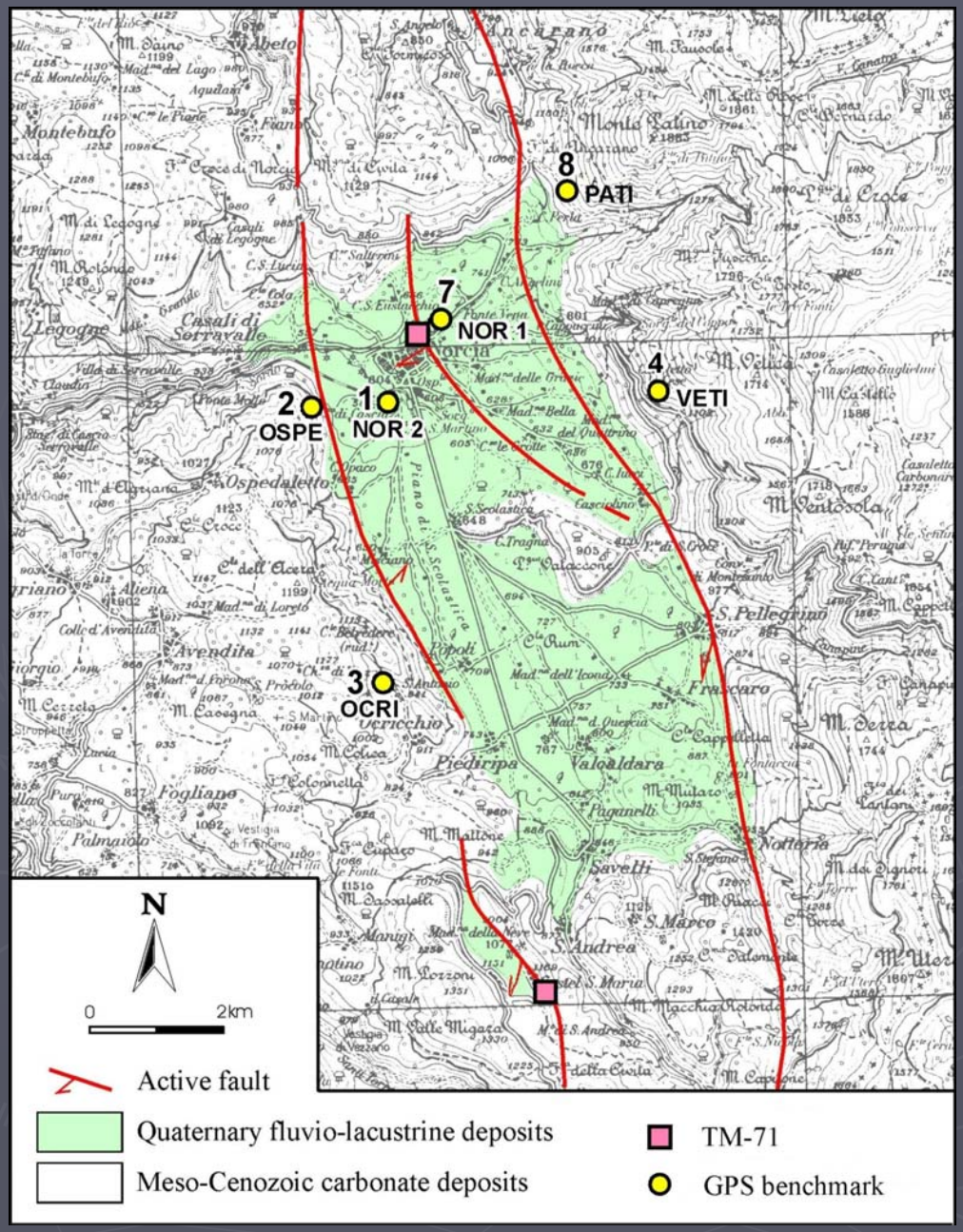
First GPS campaign in October 2002 (actually 6 campaigns)

Two daily 10 hours sessions in each campaign

Solution in ITRF2000 frame (each daily session separately) with connection to IGS permanent station MATTERA (MATE)

GARGANO NETWORK (ITALY)

Norcia Faults monitoring



The location of the Norcia monitoring network points in relation to tectonics structures

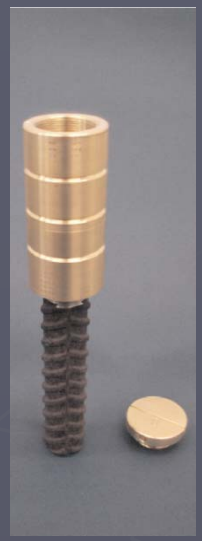
Points established in November 2004

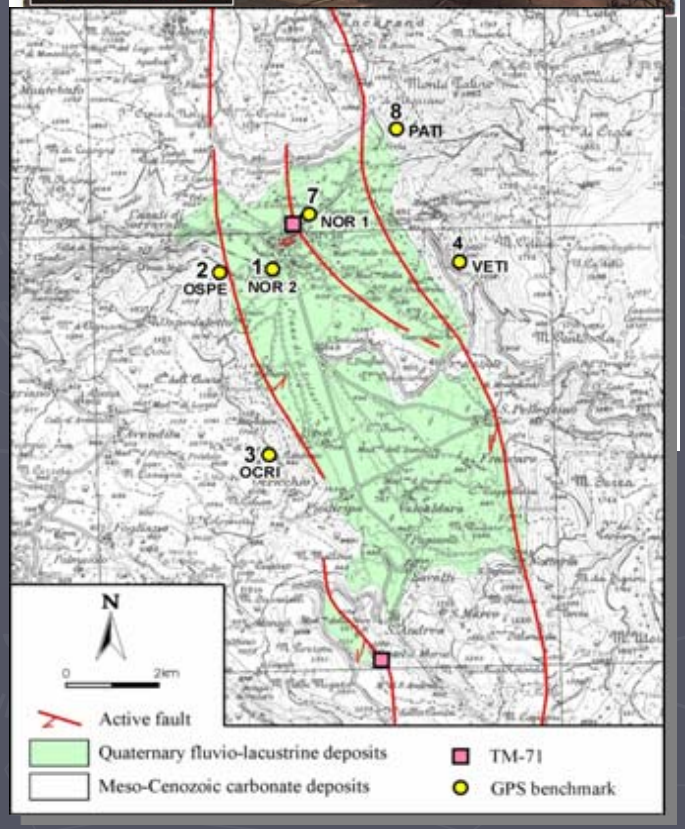
First GPS campaign in May 2005
Second GPS campaign in May 2006

Two daily 10 hours sessions in each campaign

Solution in ITRF2000 frame (each daily session separately) with connection to IGS permanent station MATTERA (MATE)

NORCIA NETWORK (ITALY)

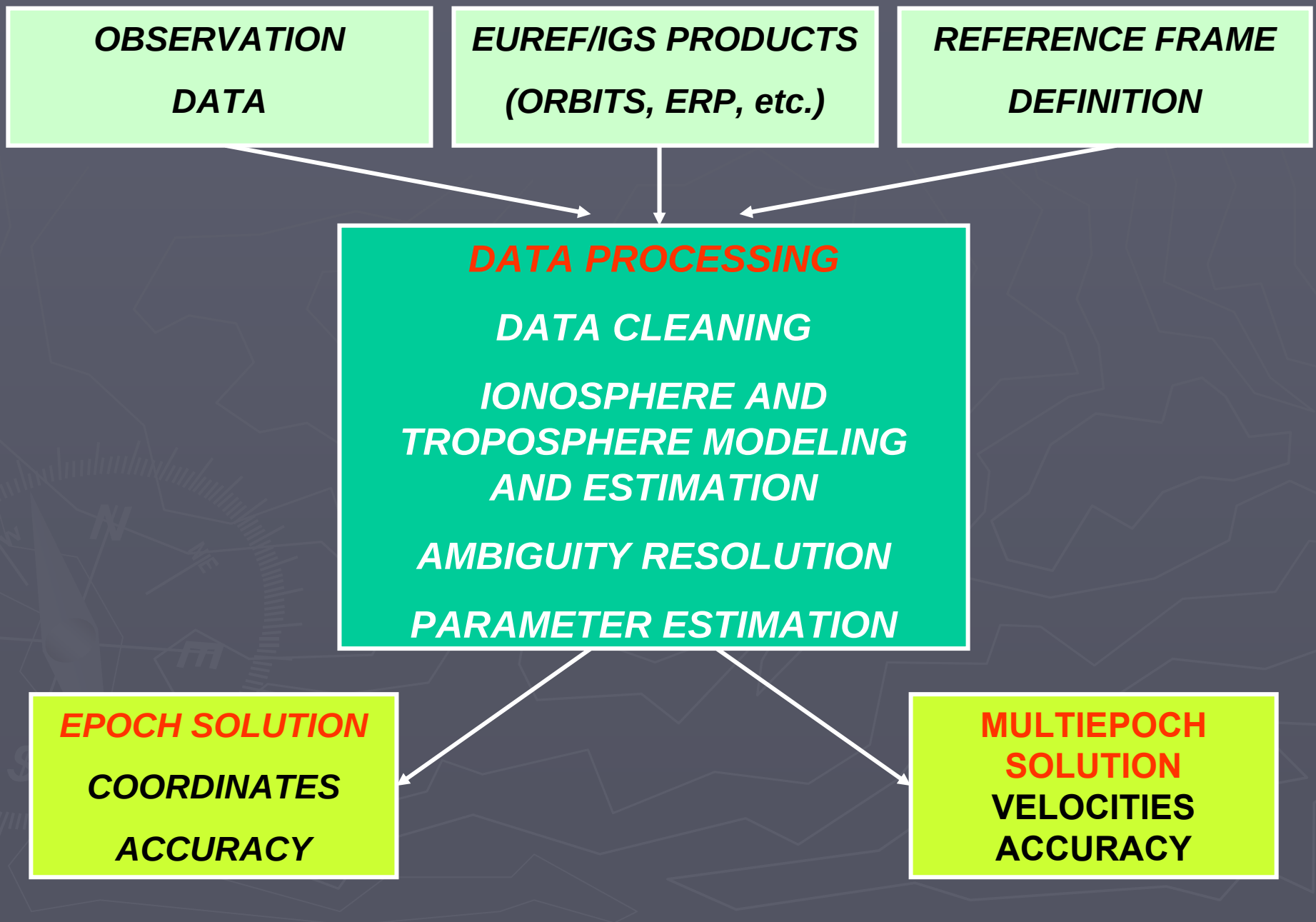




GPS receivers and antennas

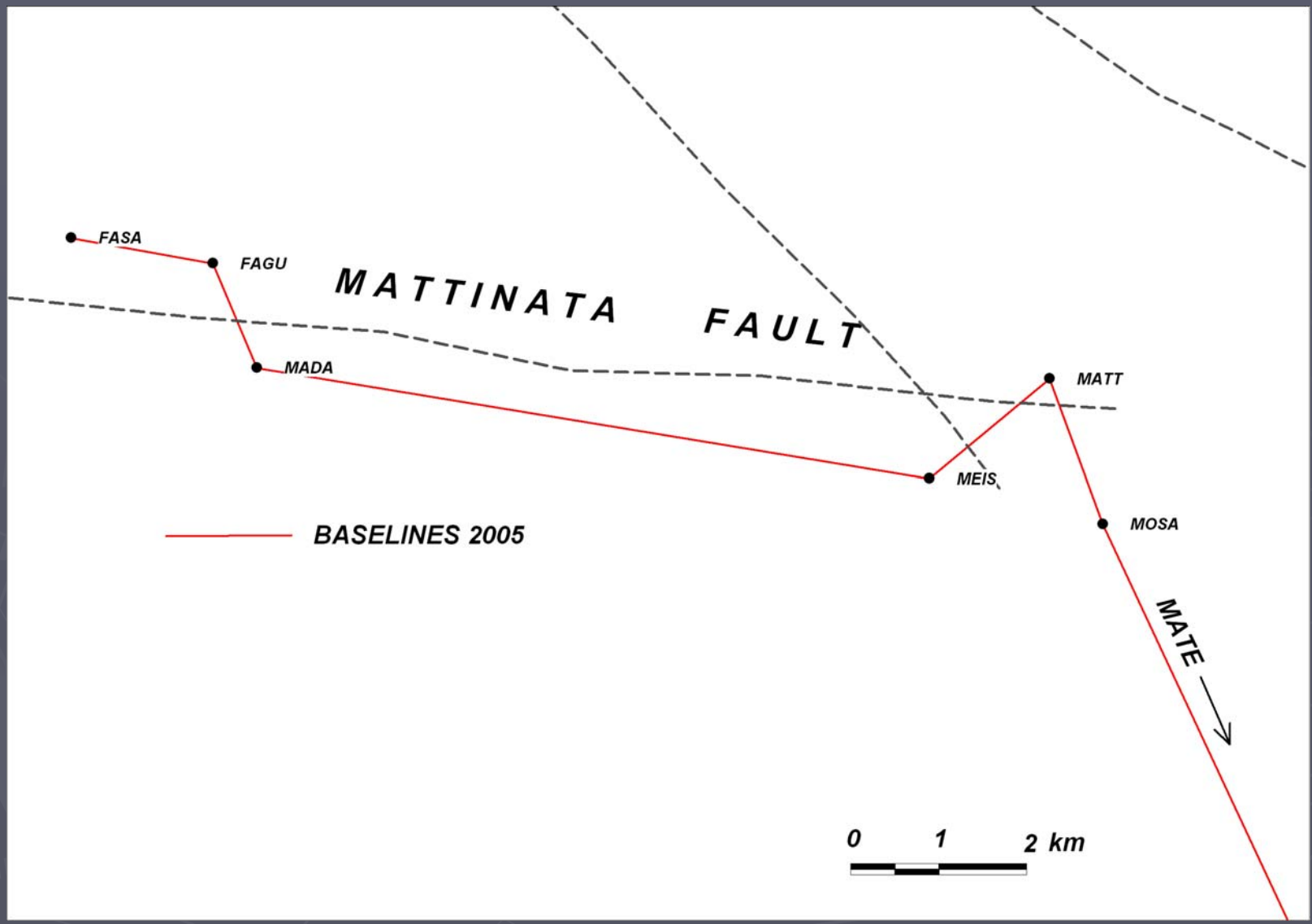
RECEIVER	ANTENNA	POINT
 **ASHTECH ZXtreme**	 **ASH 701975.01A+GP**	FAGO FASA MADA
 **ASHTECH Z-12**	 **ASH700718B**	MOSA MEIS
 **ASHTECH Z-FX**	 **ASH700936D**	MATT

Data processing strategy



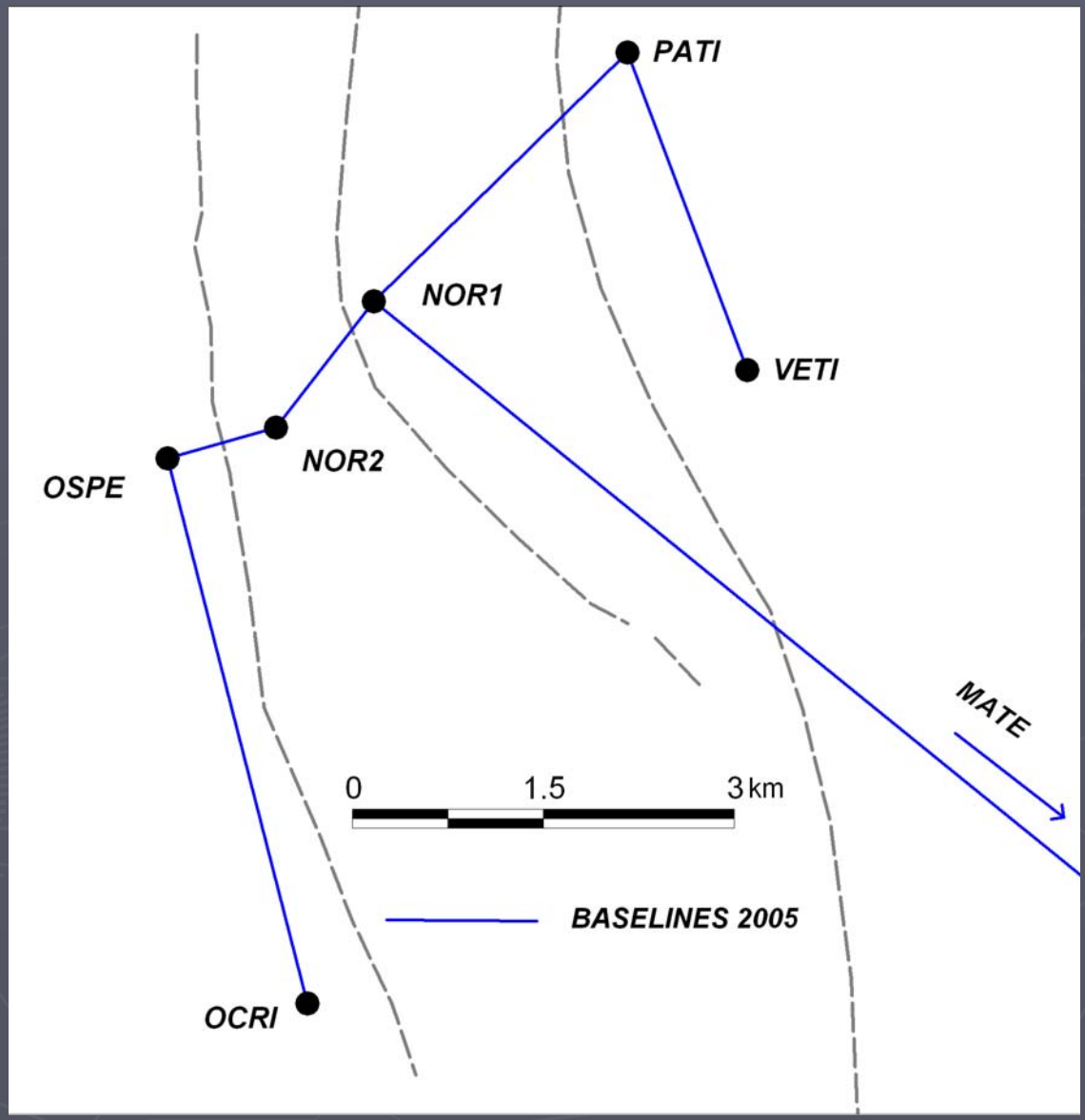
GARGANO network data processing strategy

independent base-lines



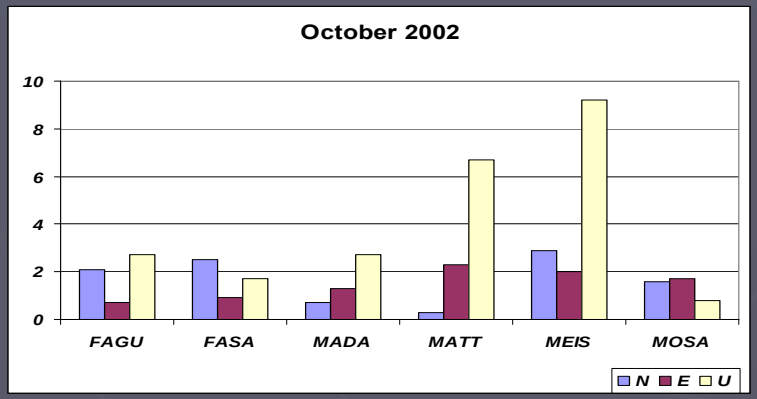
NORCIA network data processing strategy

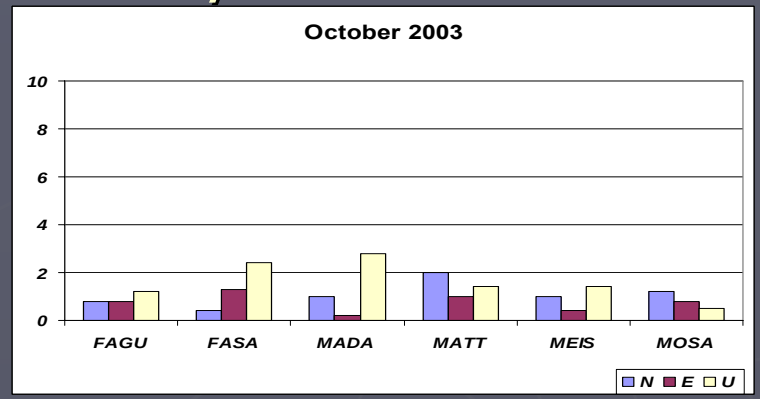
independent base-lines

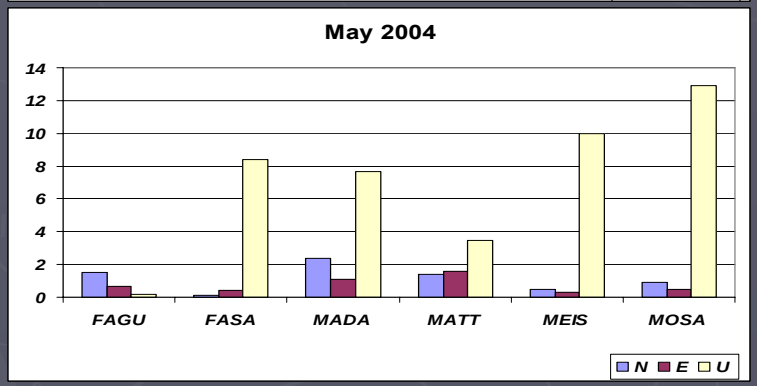


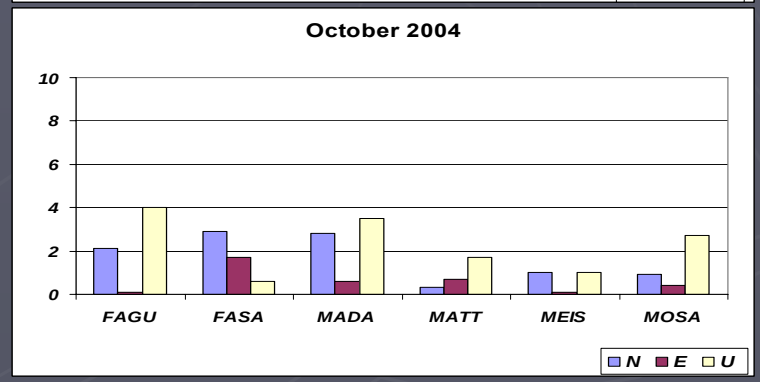
GARGANO network data processing strategy

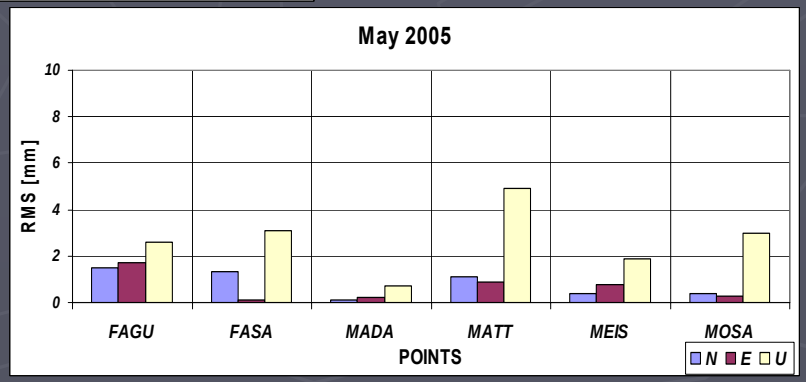
results and accuracy











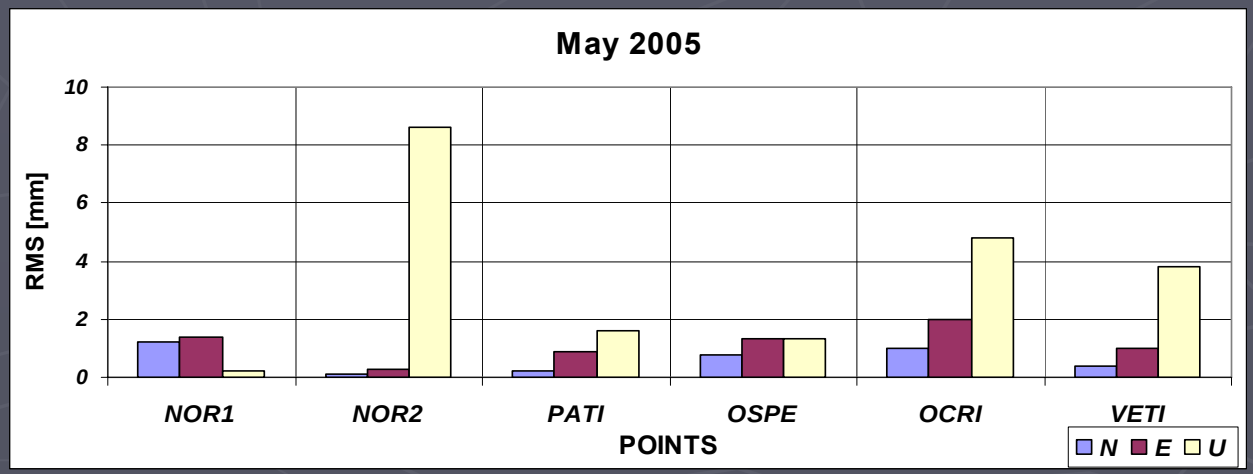
Unweighted RMS of individual coordinate residuals in mm

NORCIA network data processing strategy
results and accuracy

ITRF2000 coordinates

Point	L	B	h	mL	mB	mh
NOR1	13 5 58.901760	42 47 51.578665	716.019	0.4	0.4	2.2
NOR2	13 5 25.071906	42 47 19.536126	629.146	0.3	0.4	2.1
PATI	13 7 26.701658	42 48 54.835939	1128.325	0.4	0.4	2.3
OSPE	13 4 47.508551	42 47 11.689014	672.002	0.4	0.4	2.3
OCRI	13 4 47.508551	42 47 11.689014	672.002	0.4	0.4	2.3
VETI	13 8 8.317093	42 47 34.074612	1092.808	0.4	0.4	2.5

Unweighted RMS of individual coordinate residuals in mm

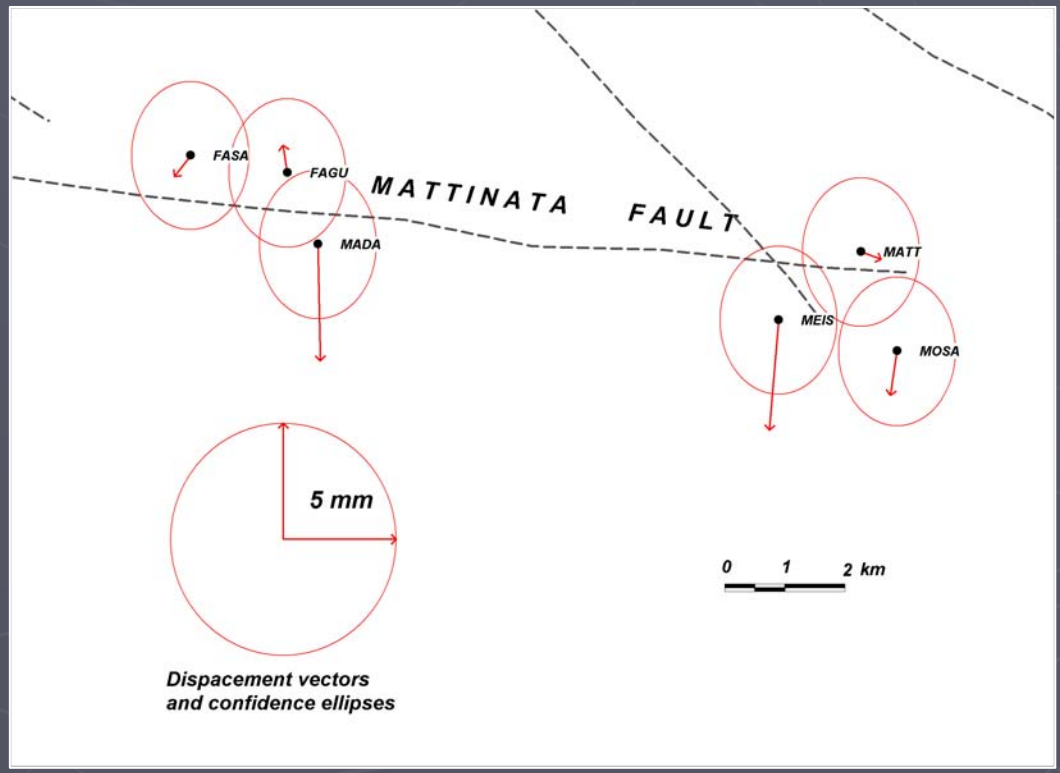


GARGANO network data processing strategy

displacement vectors for period 2002-2003 in mm

SITE	DN	DE	DH	D	RMS DN	RMS DE	RMS DH	RMS D	RATIO
FAGU	-1.1	1.3	-6.2	6.5	1.3	1.1	3.8	3.7	1.8
FASA	1.0	-1.2	-2.9	3.3	1.3	1.1	3.8	3.4	1.0
MADA	-3.8	0.8	1.8	4.2	1.3	1.1	3.8	2.0	2.1
MATT	0.2	-0.2	9.1	9.1	1.3	1.1	3.8	3.8	2.4
MEIS	-3.8	-2.1	6.8	8.1	1.3	1.1	3.8	3.3	2.5
MOSA	-0.5	-0.3	20.6	20.6	1.4	1.1	3.8	3.8	5.4

2002-2003

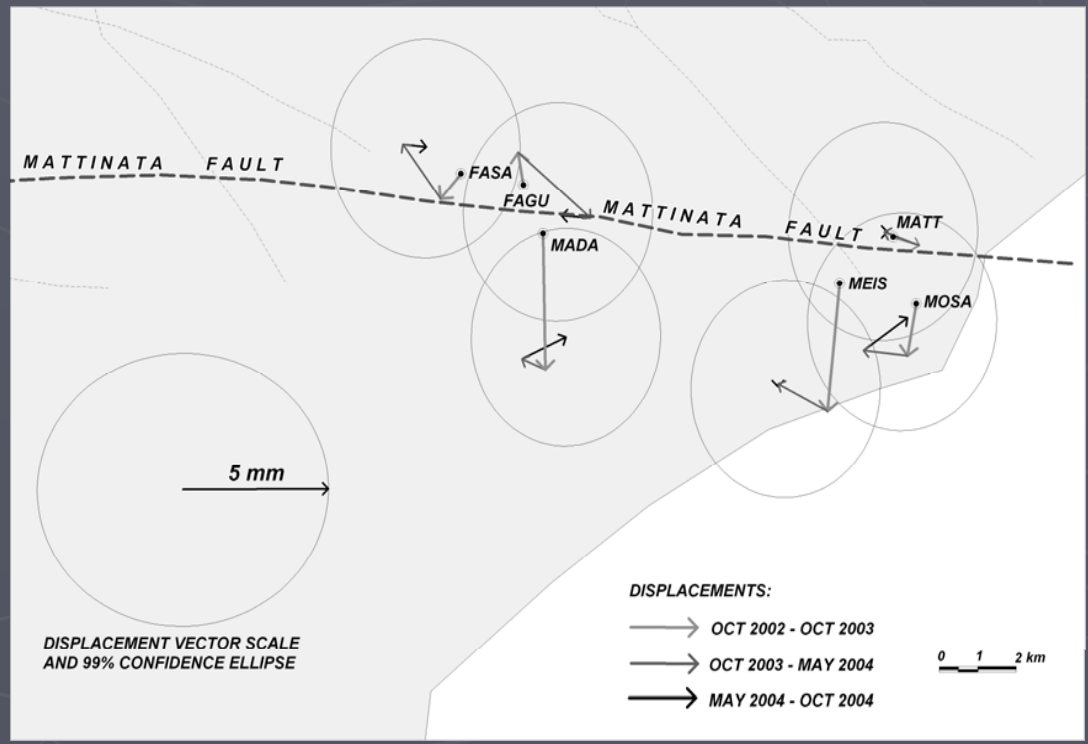


GARGANO network data processing strategy

displacement vectors for period 2002-2004 in mm

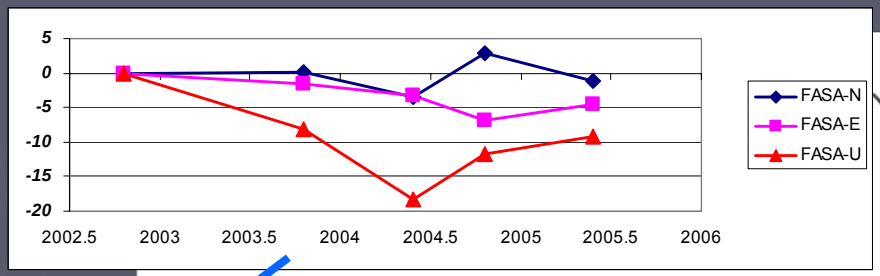
SITE	DN	DE	DH	D	RMS DN	RMS DE	RMS DH	RMS D	RATIO
FAGU	-0.4	1.7	-0.6	1.8	1.4	1.3	3.9	1.8	1.0
FASA	0.9	-1.9	0.3	2.2	1.4	1.3	3.9	1.4	1.5
MADA	-0.8	0.7	0.2	1.1	1.4	1.3	3.9	1.5	0.7
MATT	-0.6	0.4	0.1	0.7	1.4	1.3	3.9	1.4	0.5
MEIS	0.9	-0.8	0.0	1.2	1.4	1.3	3.9	1.4	0.9
MOSA	-0.2	-0.4	24.9	24.9	1.4	1.3	3.9	3.9	6.3

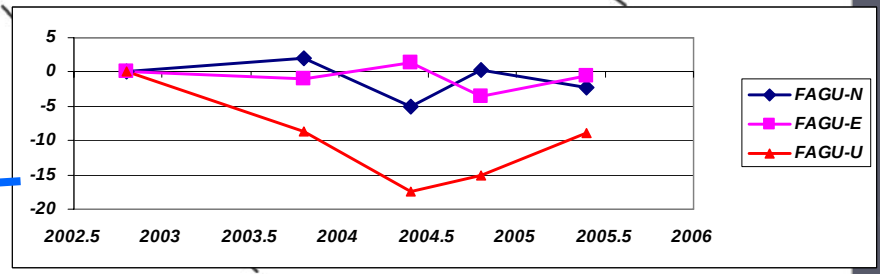
2002-2004



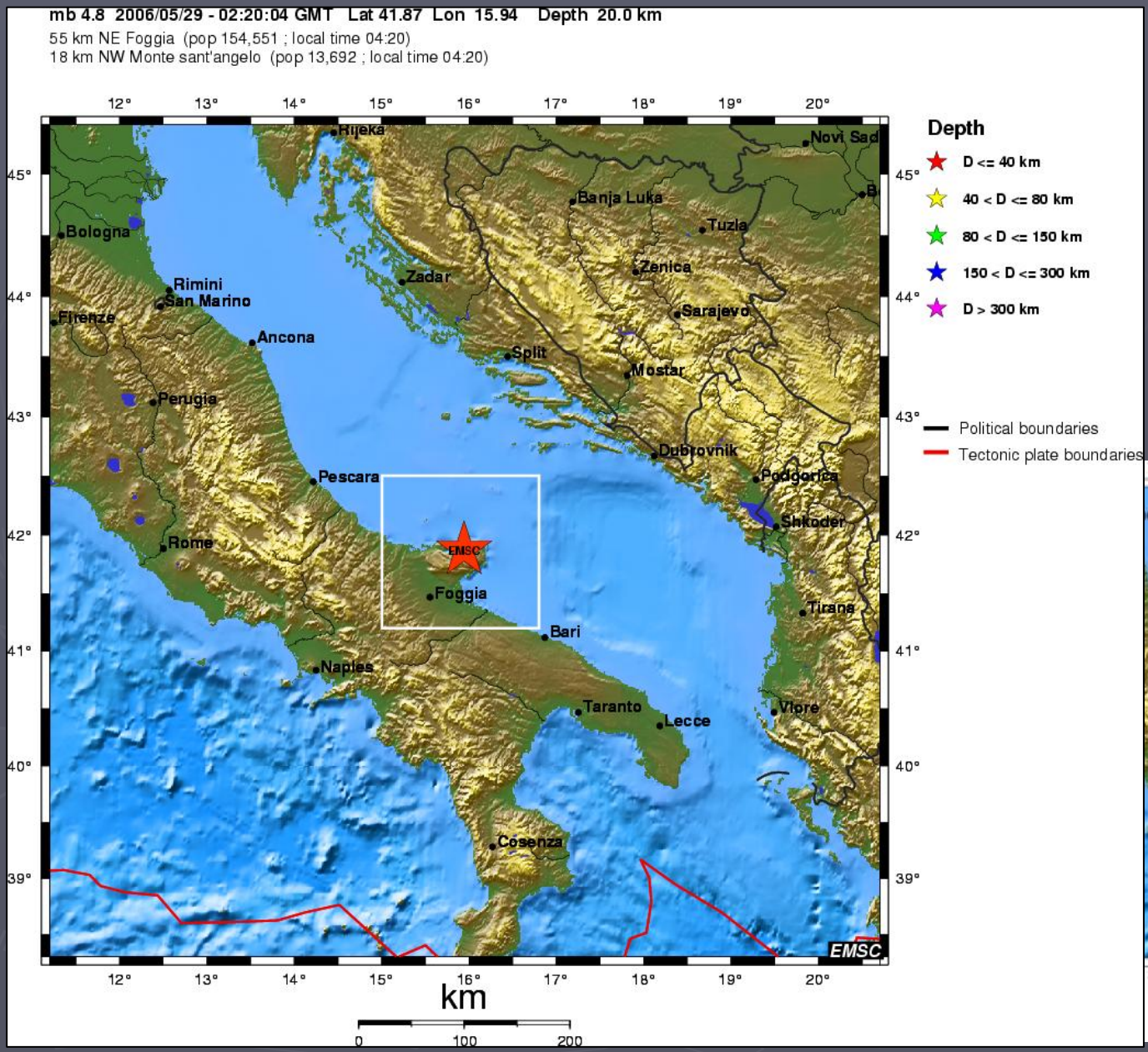
GARGANO network data processing strategy

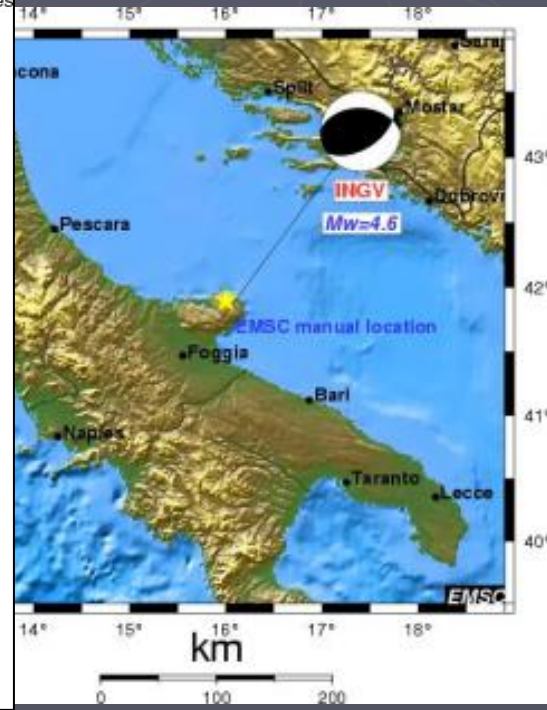
displacement vectors for period 2002-2005 in mm





Gargano region earthquake 2006





Polish-Italian COST cooperation

Stefan Cacoń
STSM
2004:Emanuele Tondi, University of Camerino, Faculty of Science and Technology, Department of Earth Sciences
Bilateral, Polish-Italian agreement between PAN and CNR
2004: Luigi Piccardi, C.N.R. – Institute Of Geosciences and Earth Resources – Florence Section

Bernard Kontny
STSM
2004:Emanuele Tondi, University of Camerino, Faculty of Science and Technology, Department of Earth Sciences
2005: Emanuele Tondi, University of Camerino, Faculty of Science and Technology, Department of Earth Sciences
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Jarosław Bosy
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2003: Luigi Piccardi, C.N.R. – Institute Of Geosciences and Earth Resources – Florence Section
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