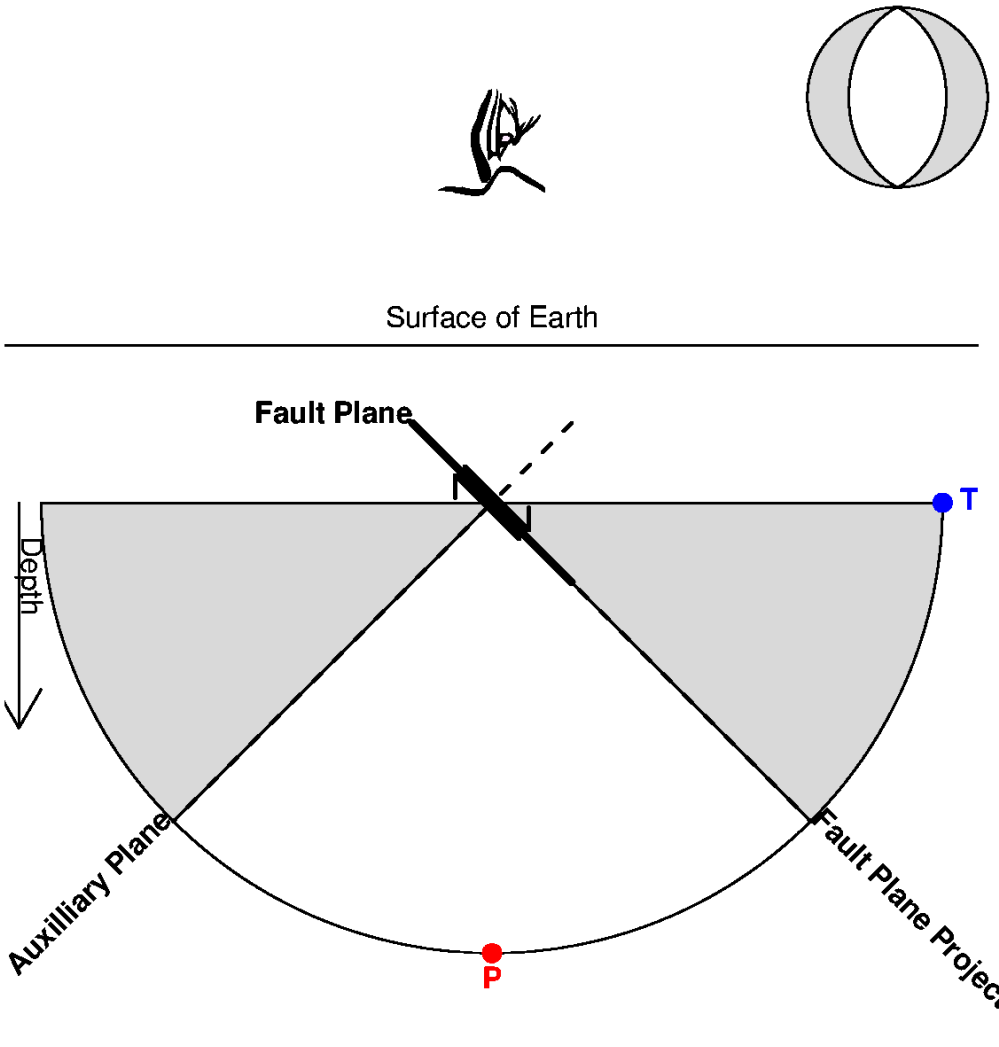
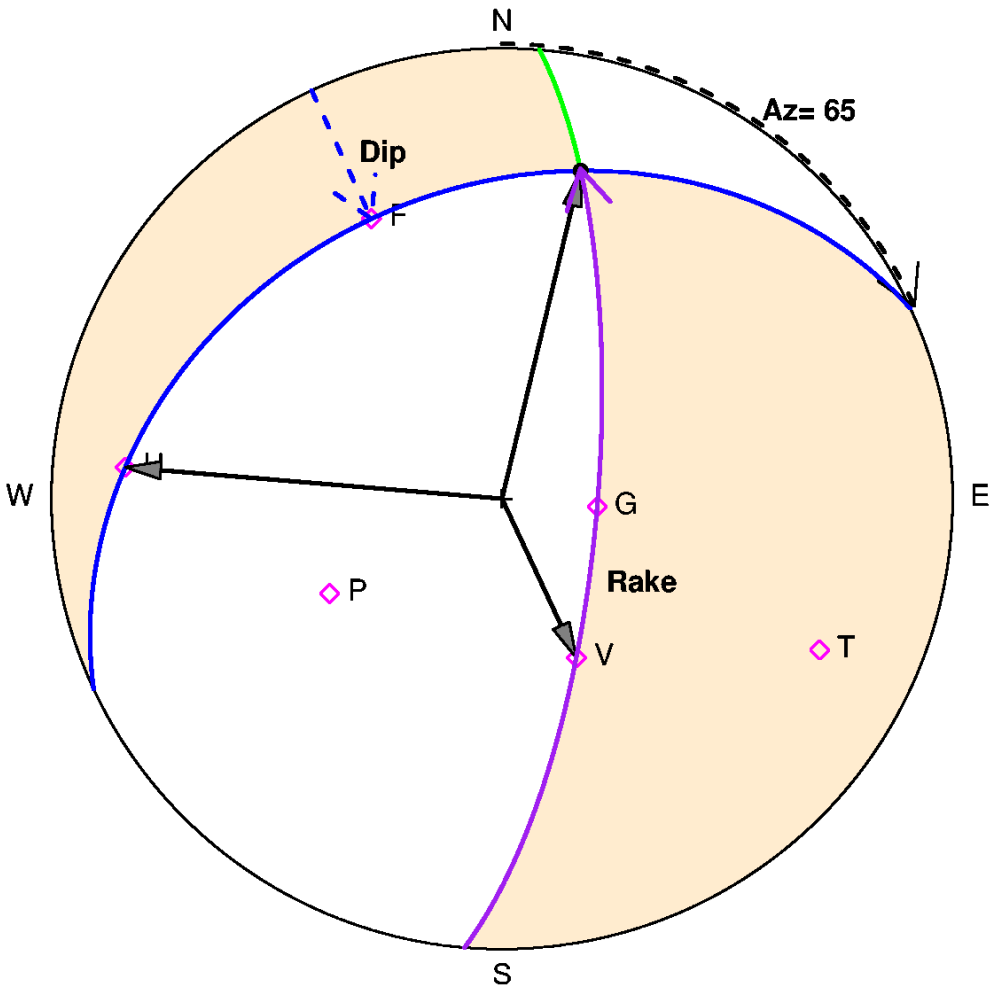
useR Conference
August, 2007

by Jonathan Lees

Lower Hemisphere Projection View from Side

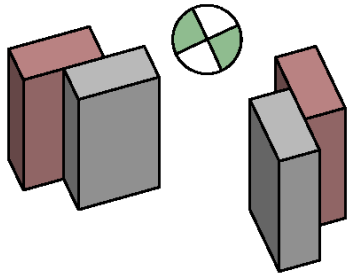


Strike= 65 Dip= 32 Rake= -34

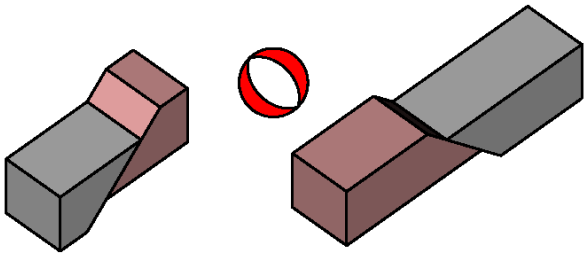


Upper Hemisphere

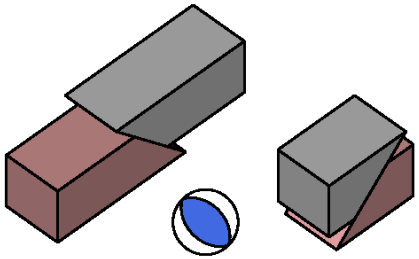
Strike–slip fault

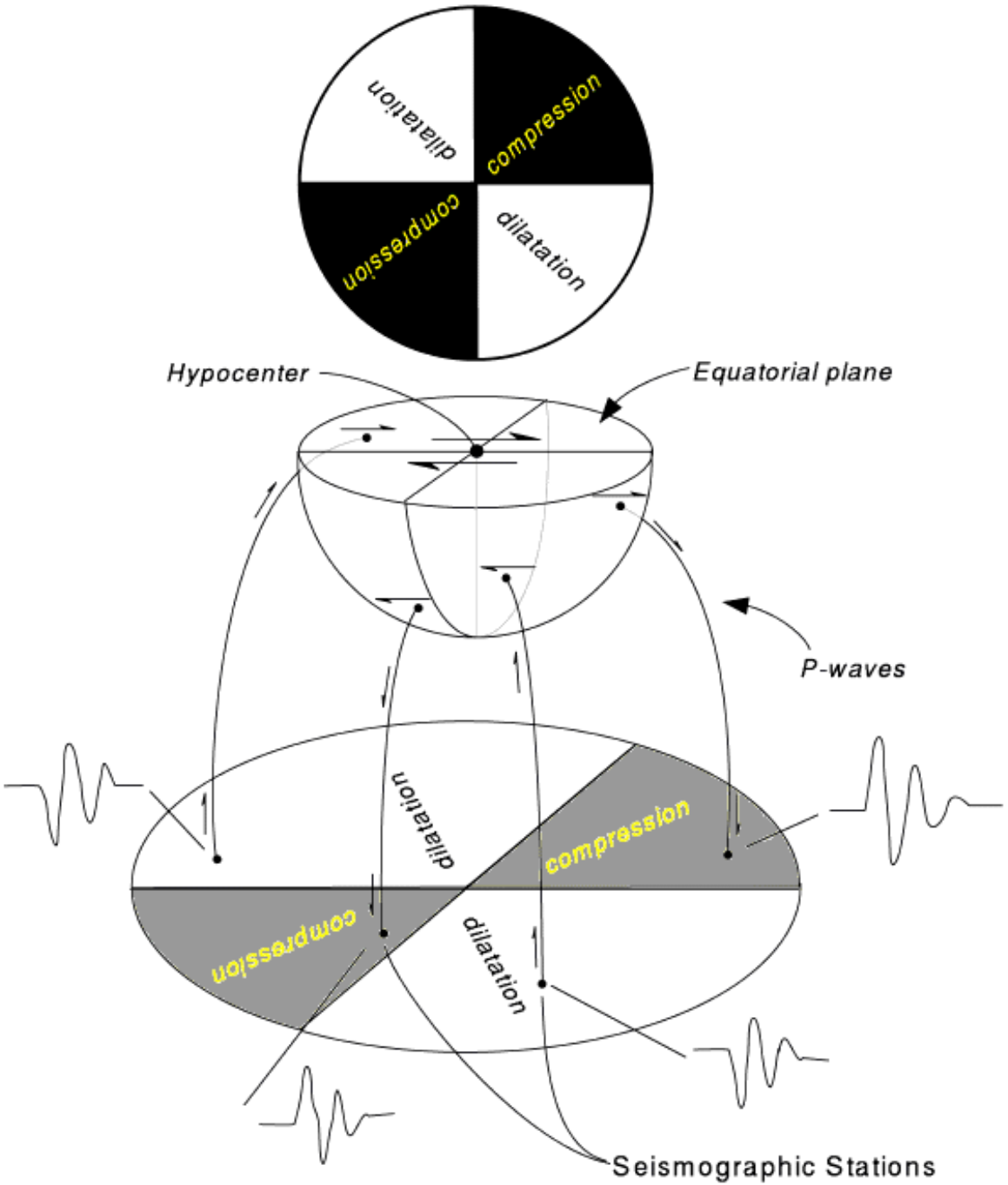


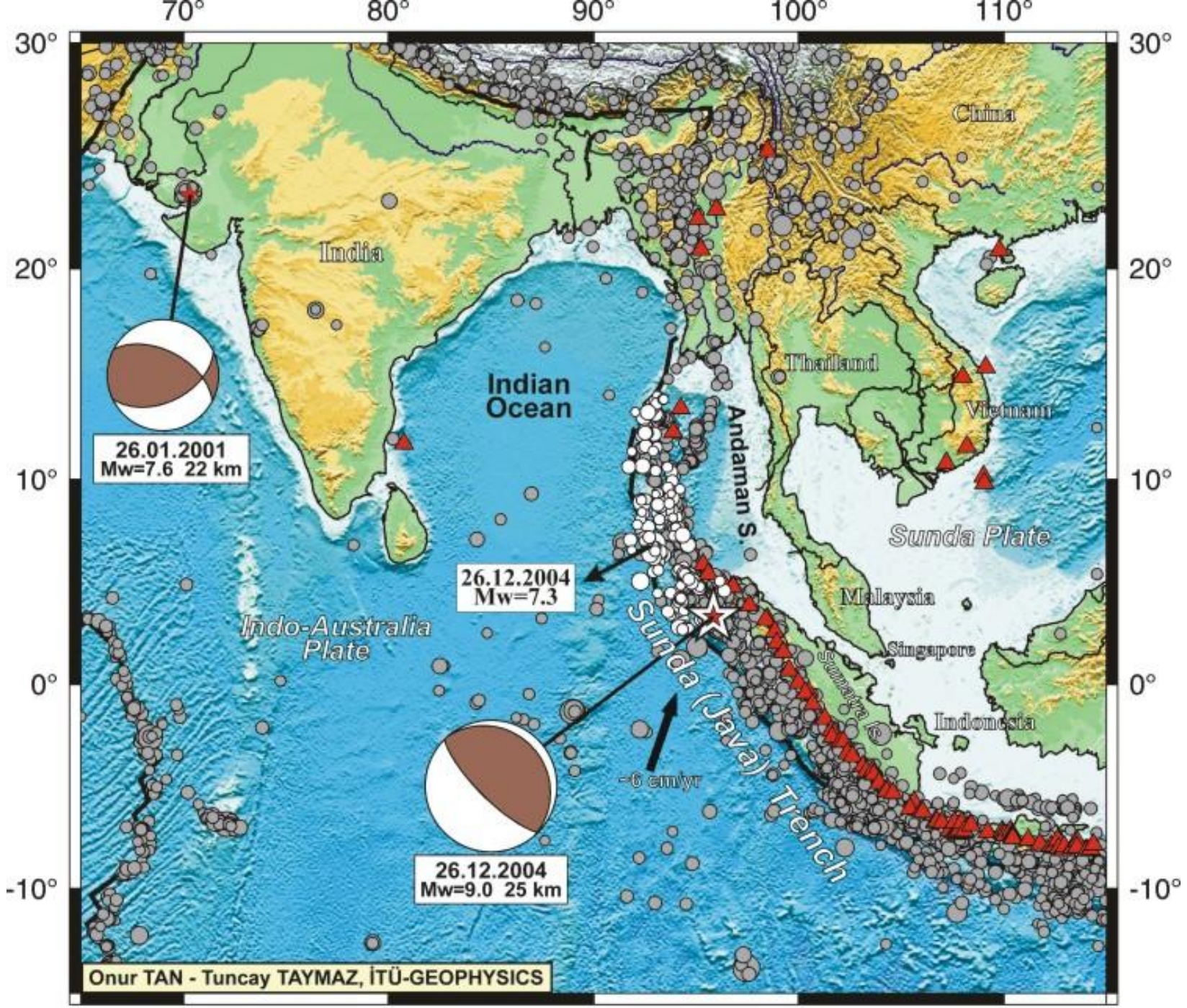
Normal fault

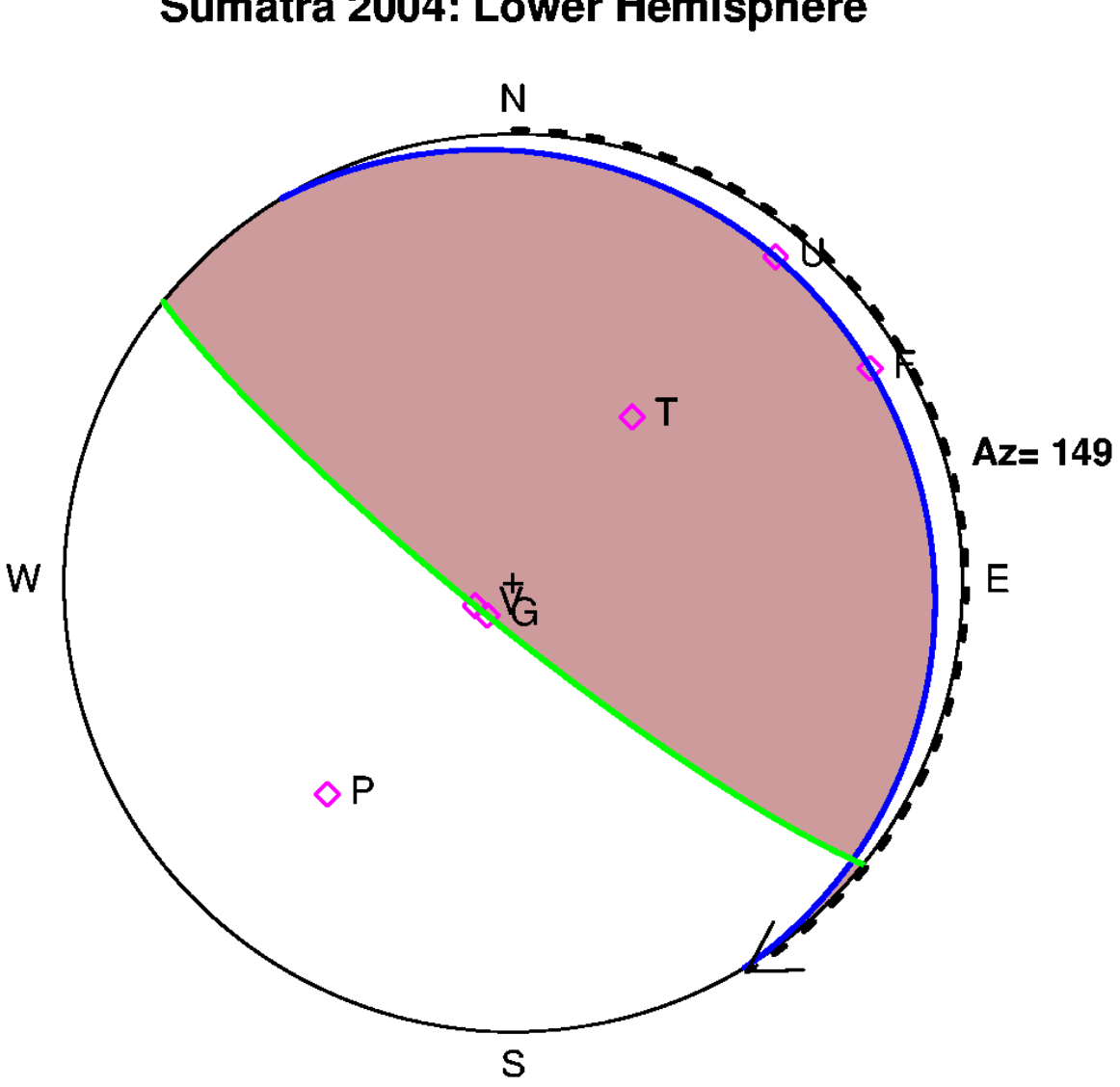


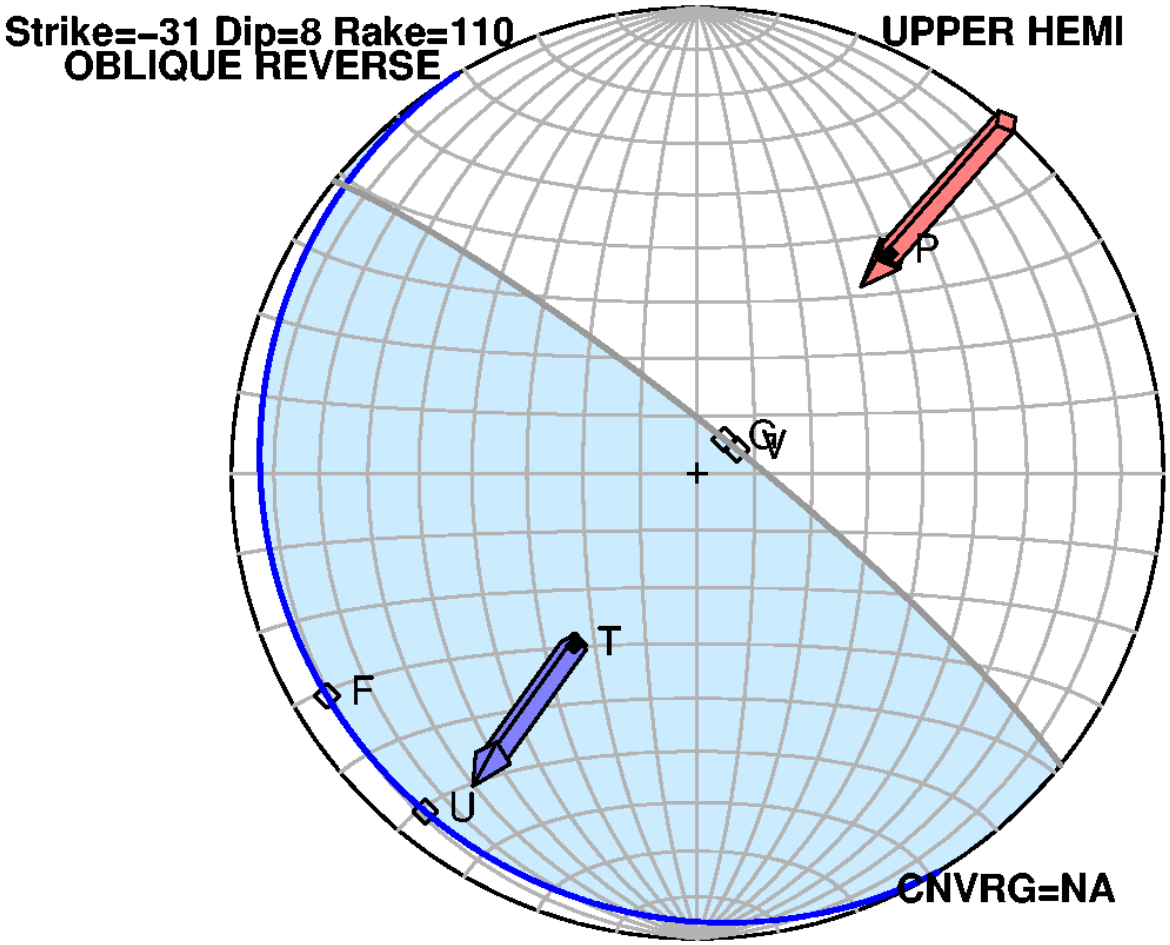
Reverse (Thrust) fault

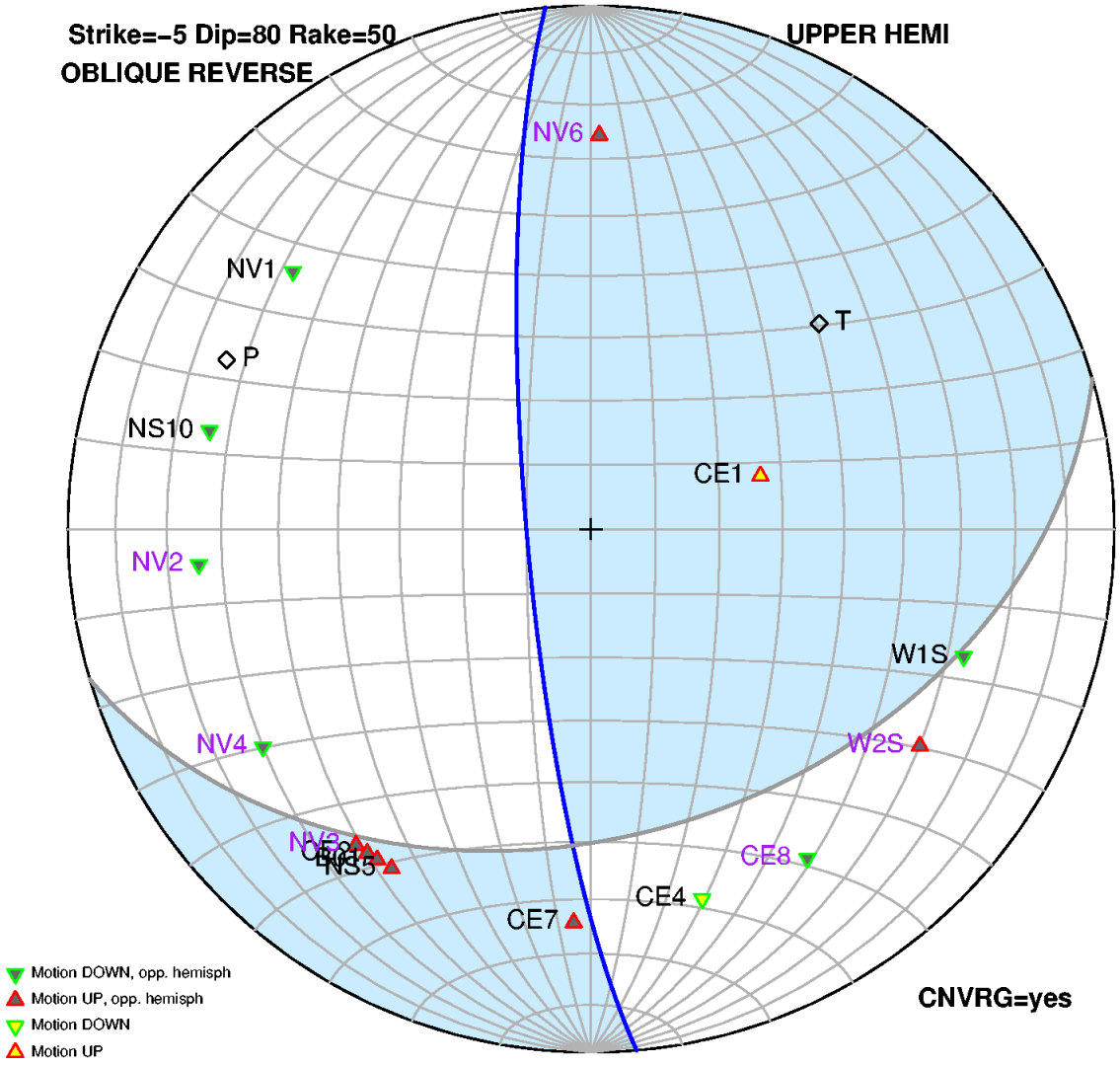



dilatation
compression
compression
dilatation
Hypocenter
Equatorial plane
P-waves
dilatation
compression
compression
dilatation
Seismographic Stations

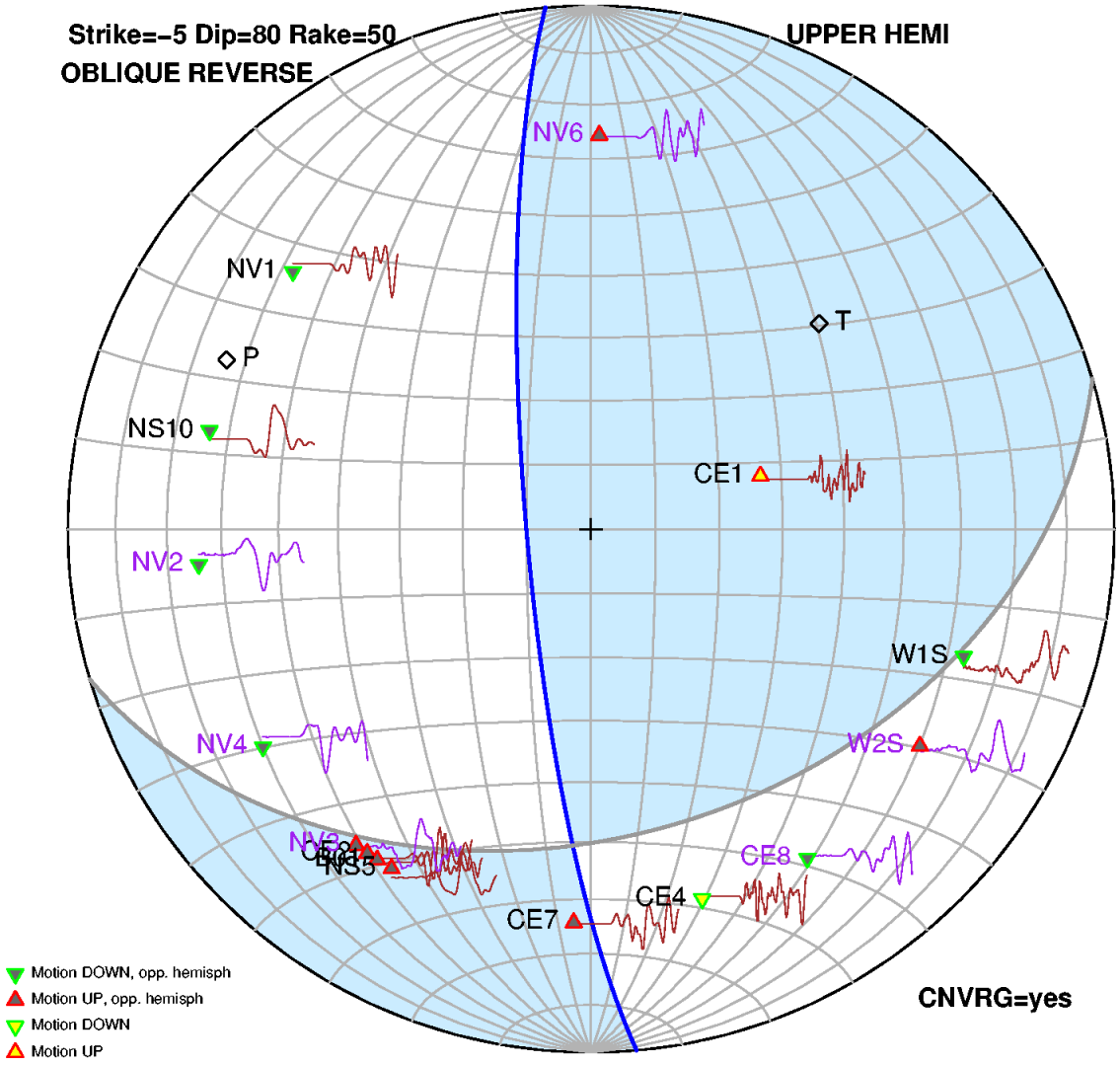

70°
80°
90°
100°
110°
30°
20°
10°
0°
-10°
China
India
Indian Ocean
Thailand
Vietnam
Andaman S.
Sunda Plate
Malaysia
Singapore
Sumatra
Indonesia
Indo-Australia Plate
Sunda (Java) Trench
~6 cm/yr
26.01.2001
Mw=7.6 22 km
26.12.2004
Mw=7.3
26.12.2004
Mw=9.0 25 km
Onur TAN - Tuncay TAYMAZ, İTÜ-GEOPHYSICS


Sumatra 2004: Lower Hemisphere
N
U
F
T
Az= 149
W
E
G
P
S


Strike=-31 Dip=8 Rake=110
OBLIQUE REVERSE
UPPER HEMI
P
T
F
U
CNVRG=NA



/home/lees/IOWA/COSOUW/20050316082440p



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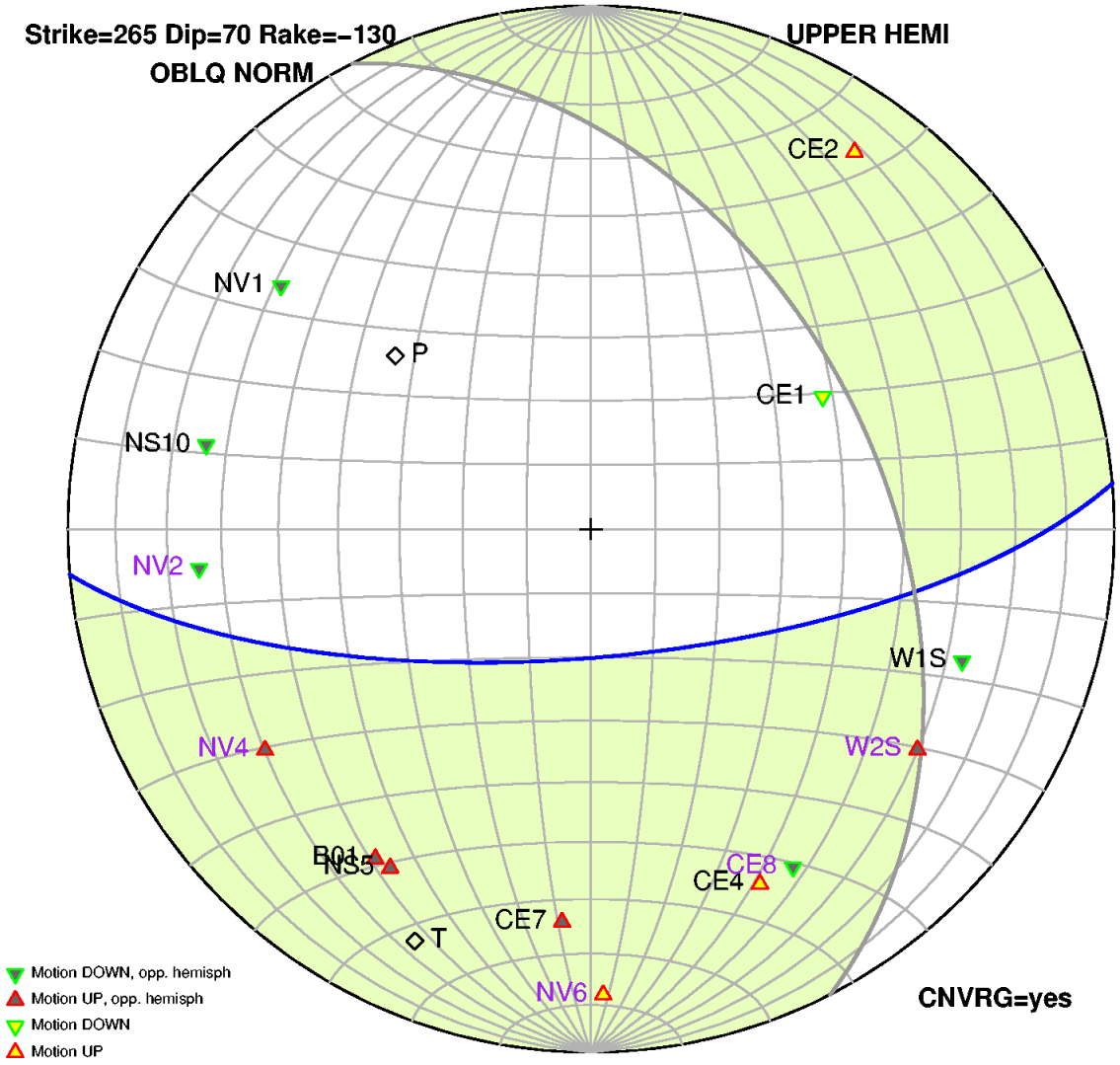

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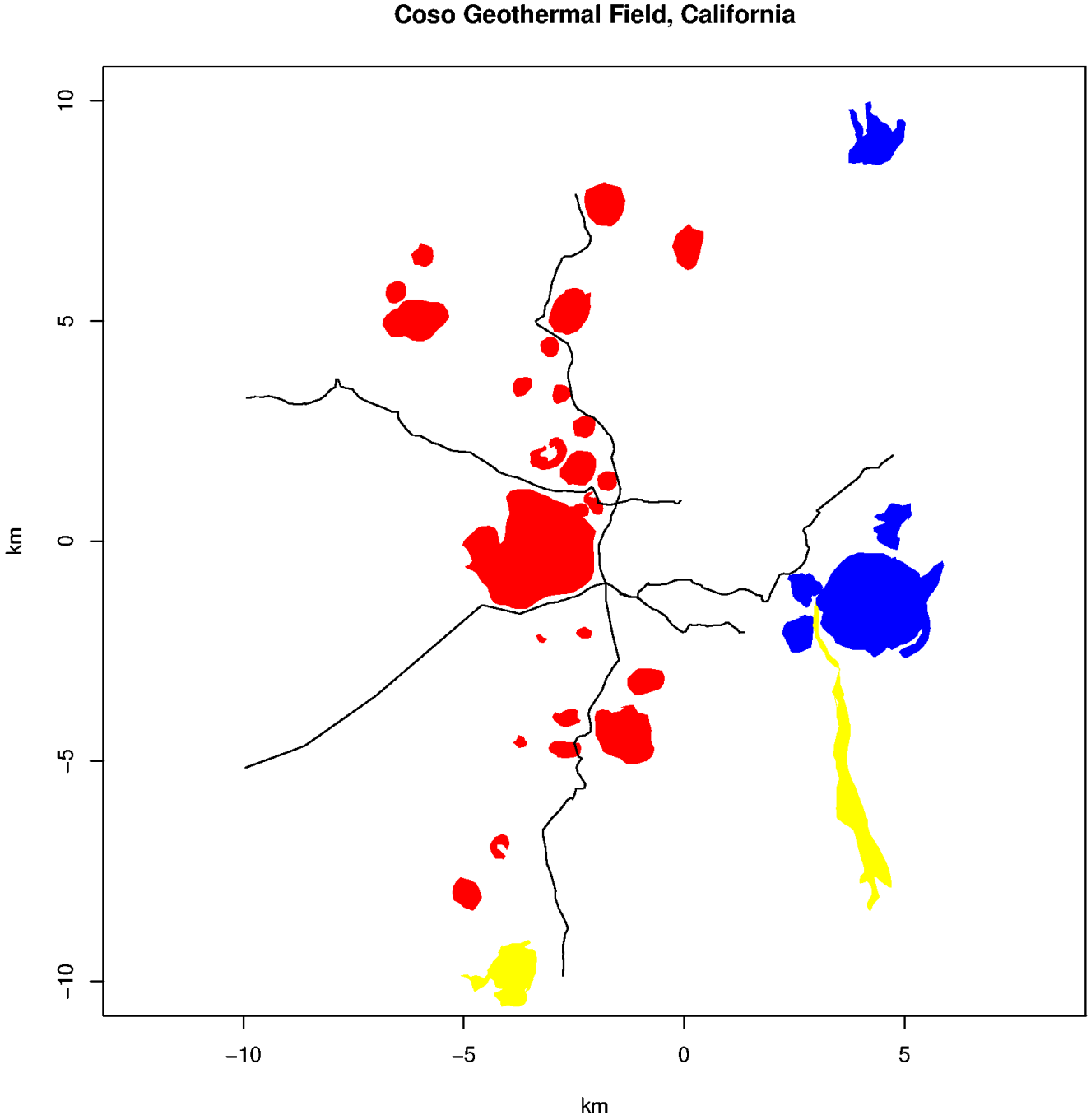
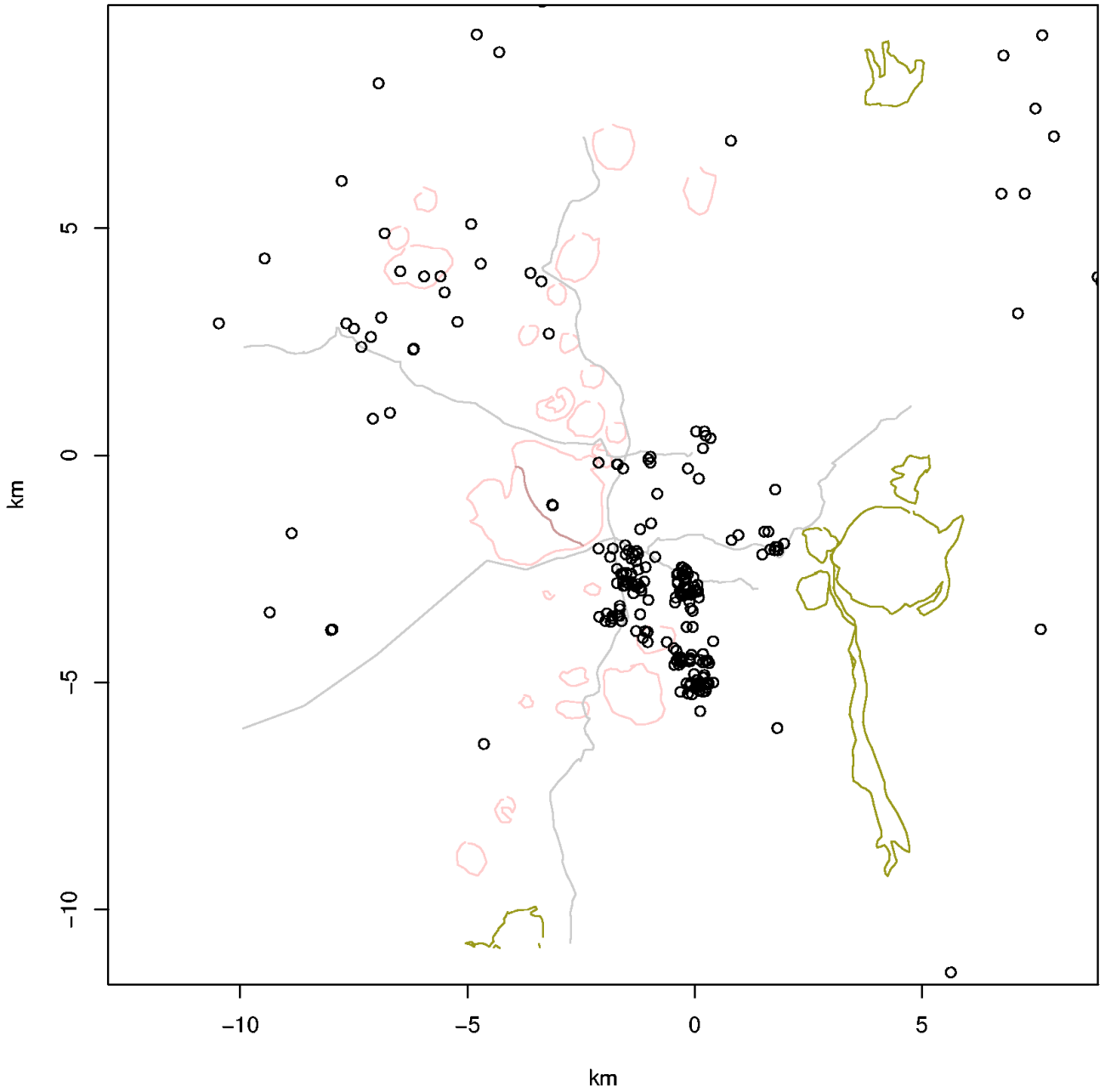
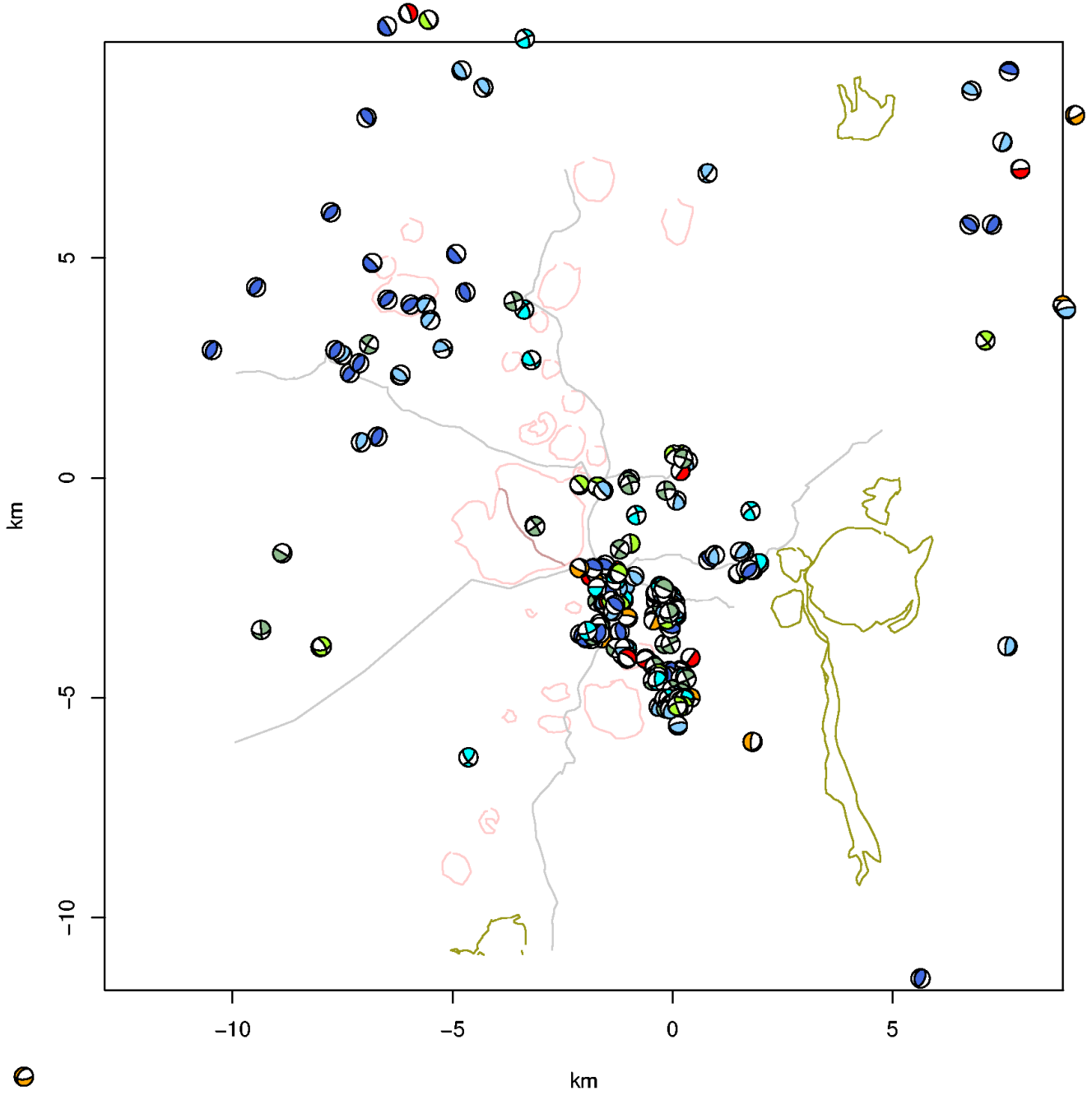
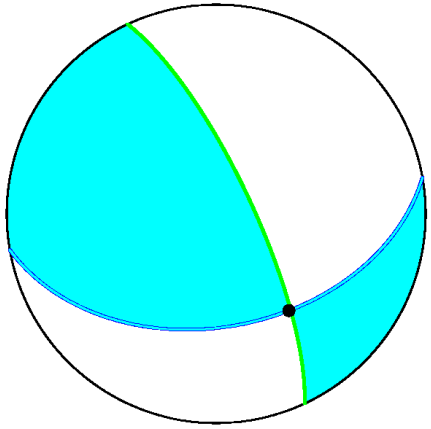
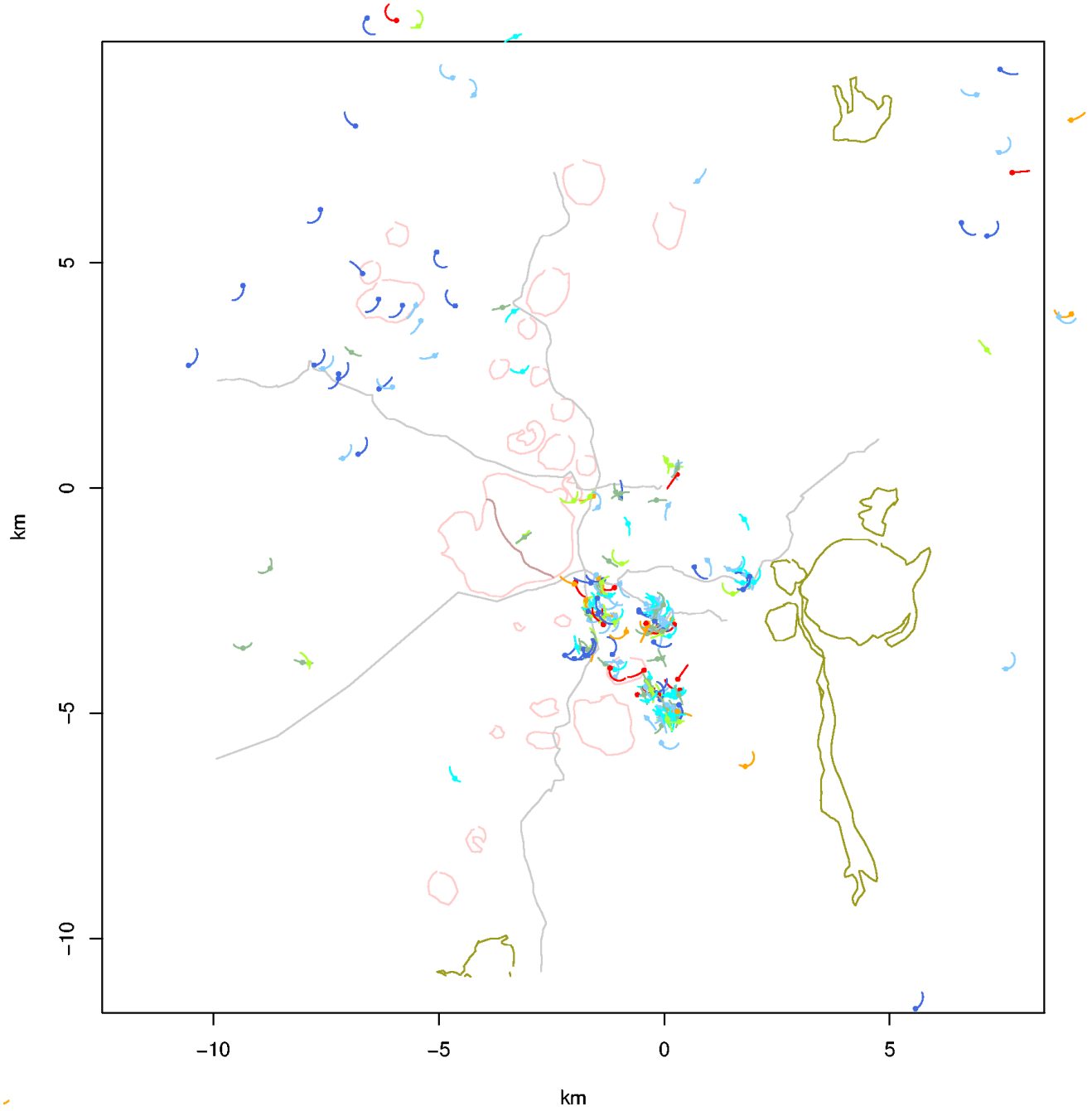
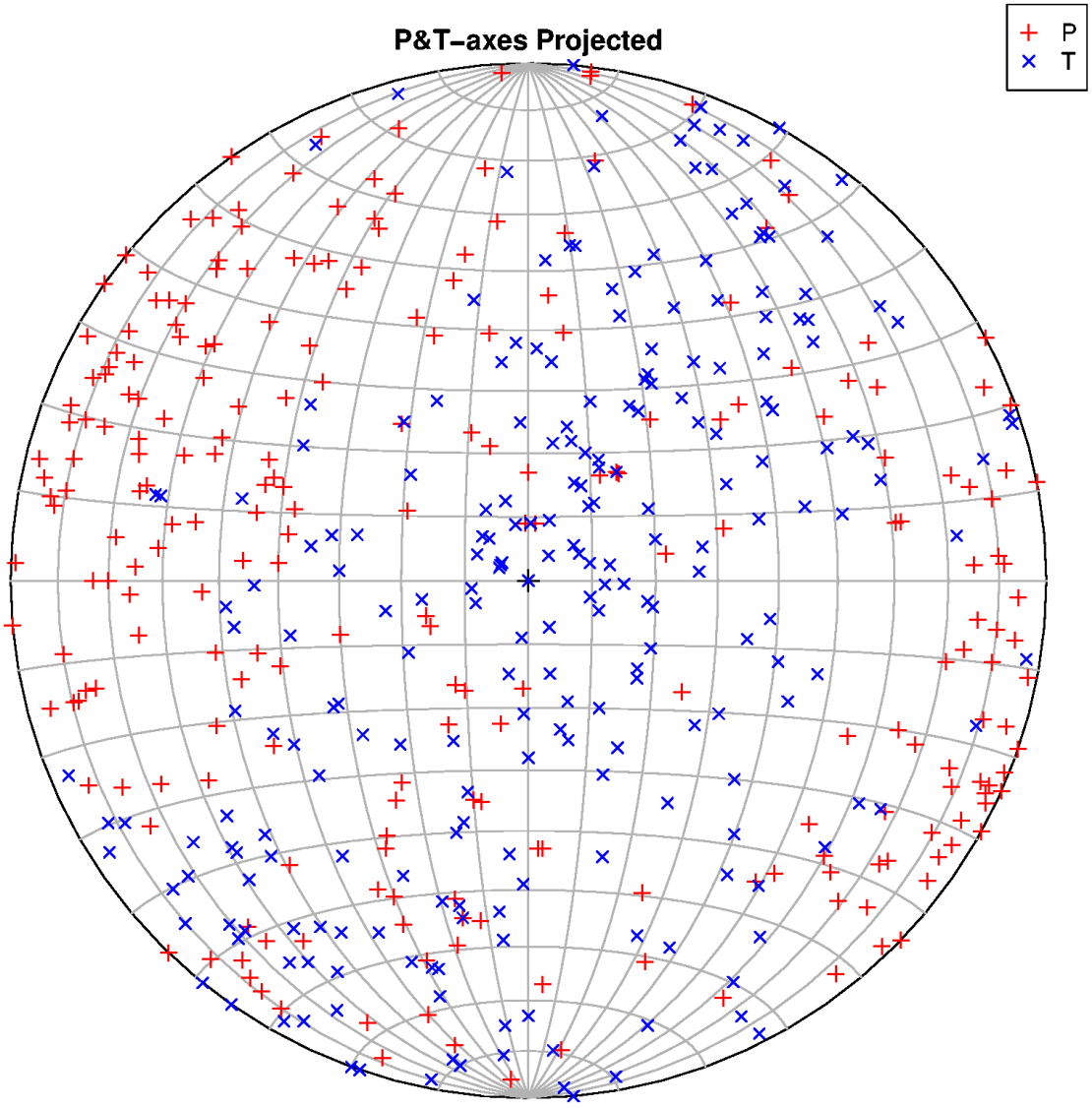

Coso Geothermal Field, California
km
10
5
0
−5
−10
−10
−5
0
5
km

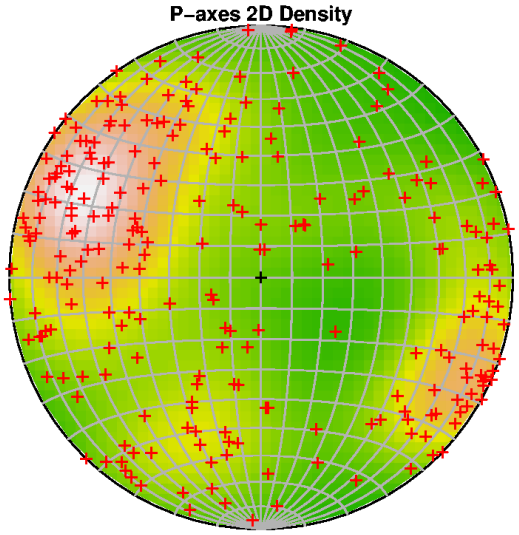

km
5
0
−5
−10
−10
−5
0
5
km

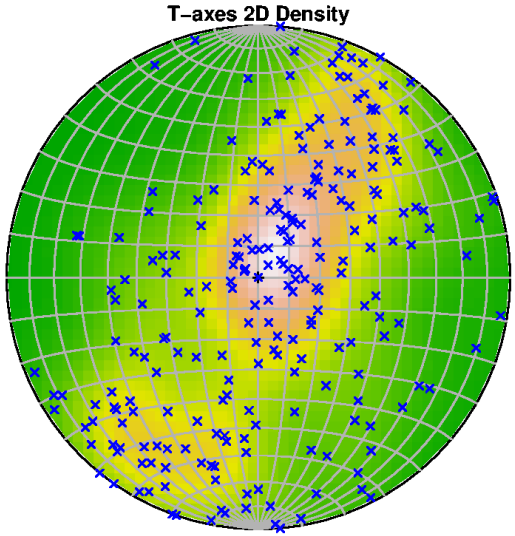

km
5
0
−5
−10
−10
−5
0
5
km

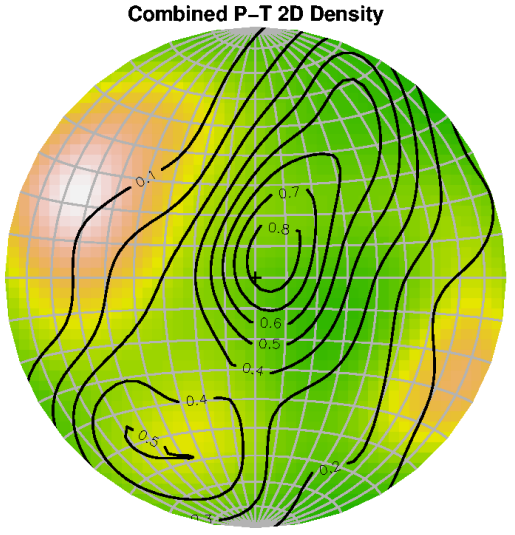


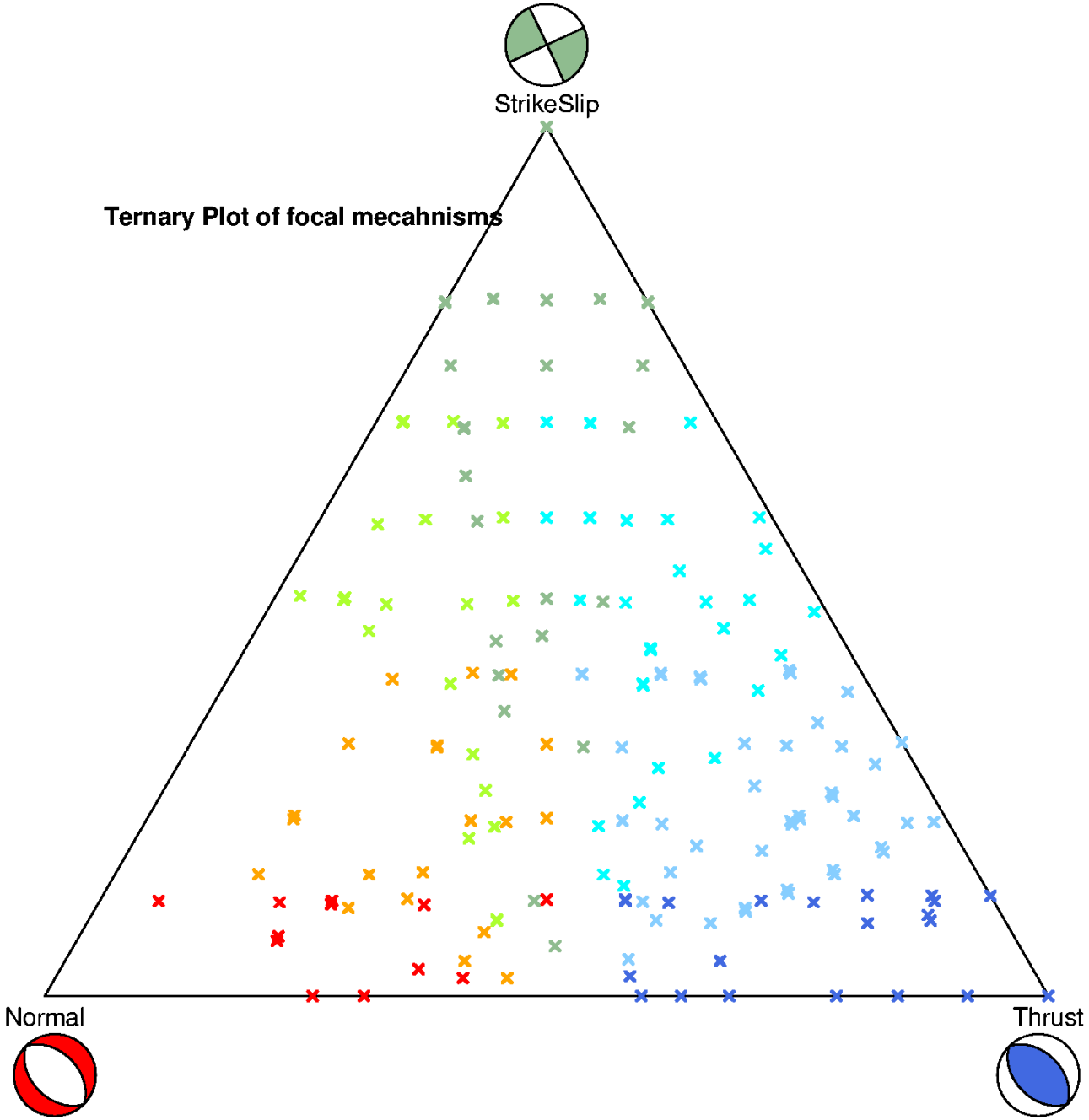

km
5
0
−5
−10
−10
−5
0
5
km

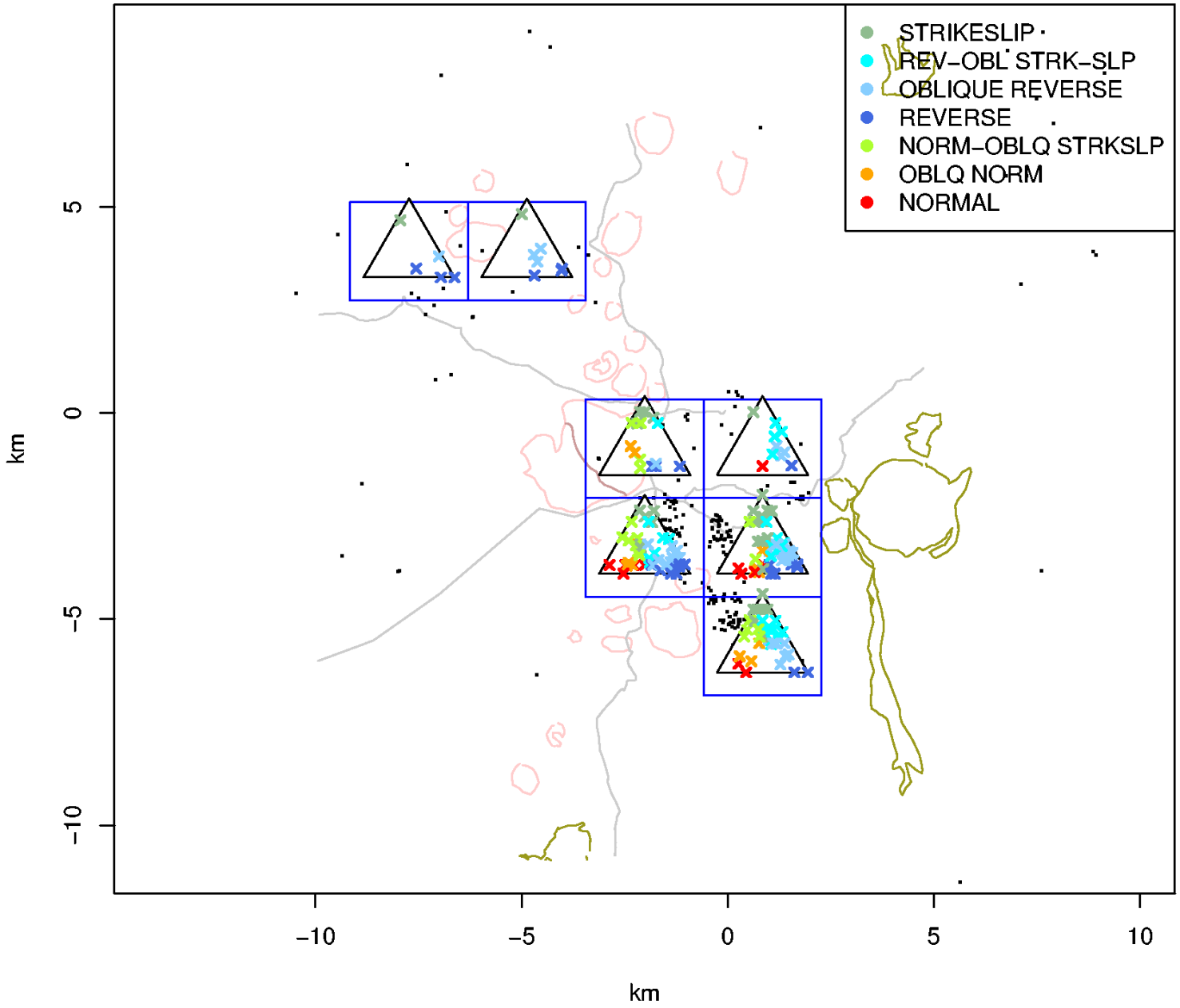

P&T–axes Projected
P
T

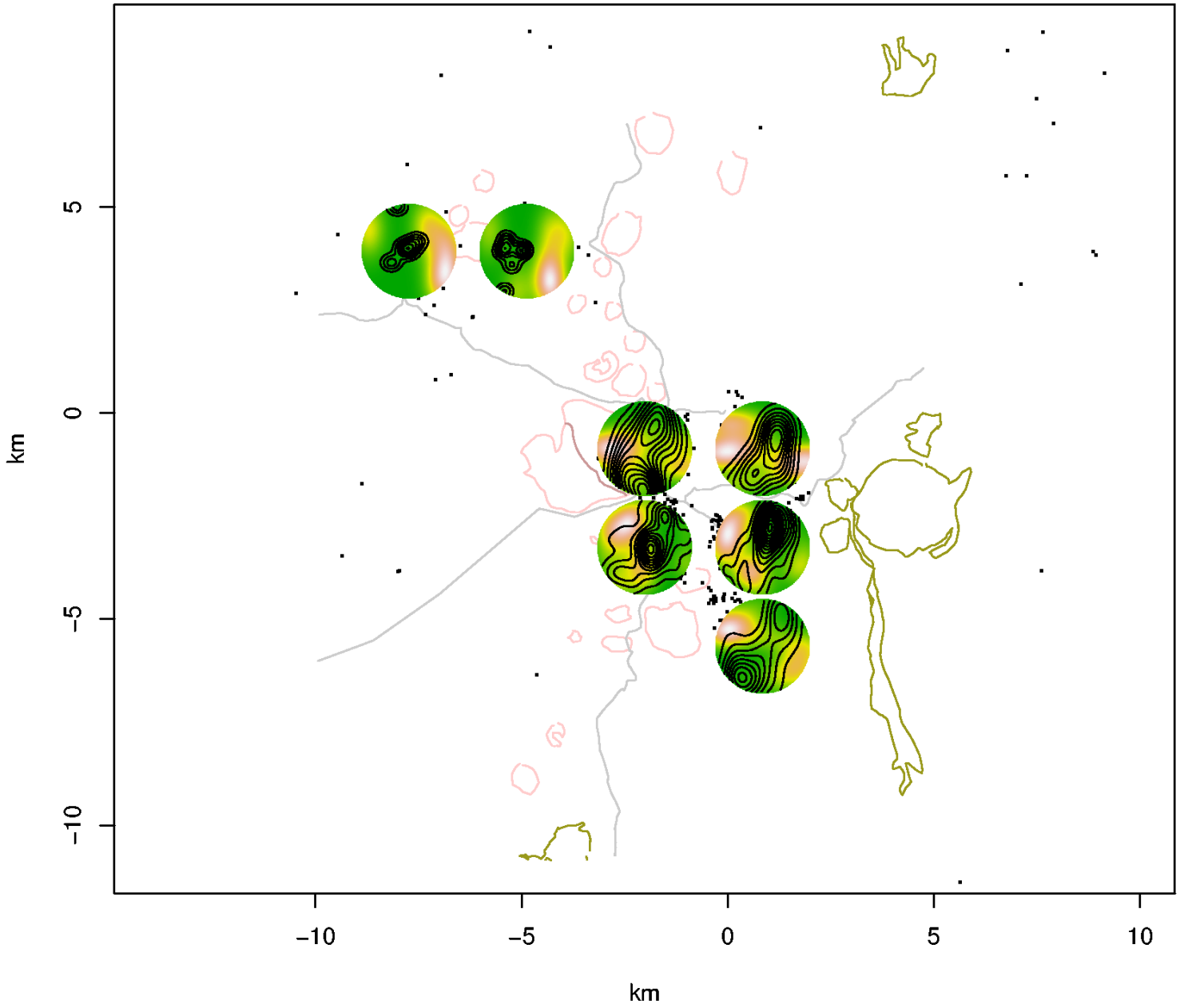

P–axes 2D Density

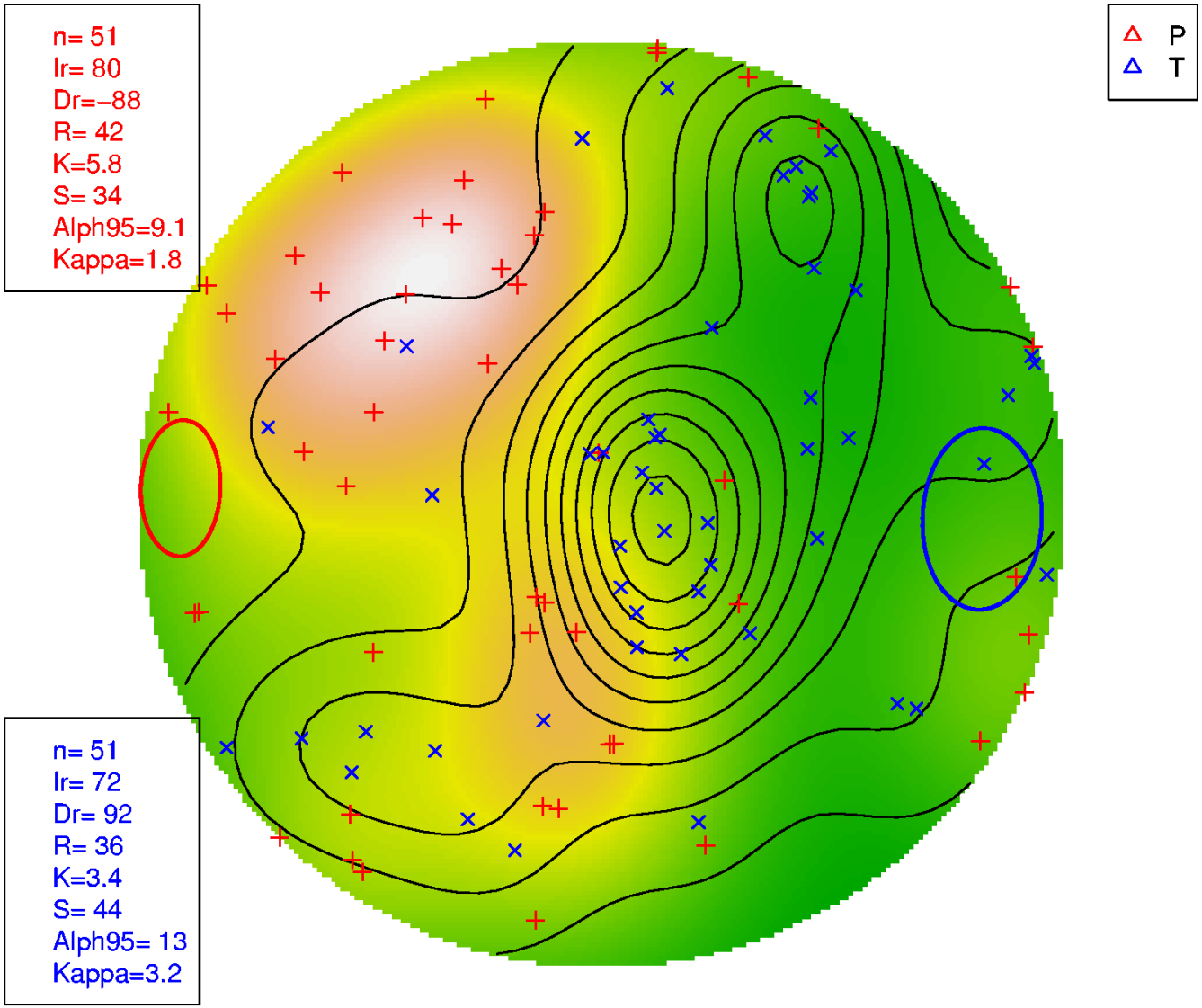

T–axes 2D Density

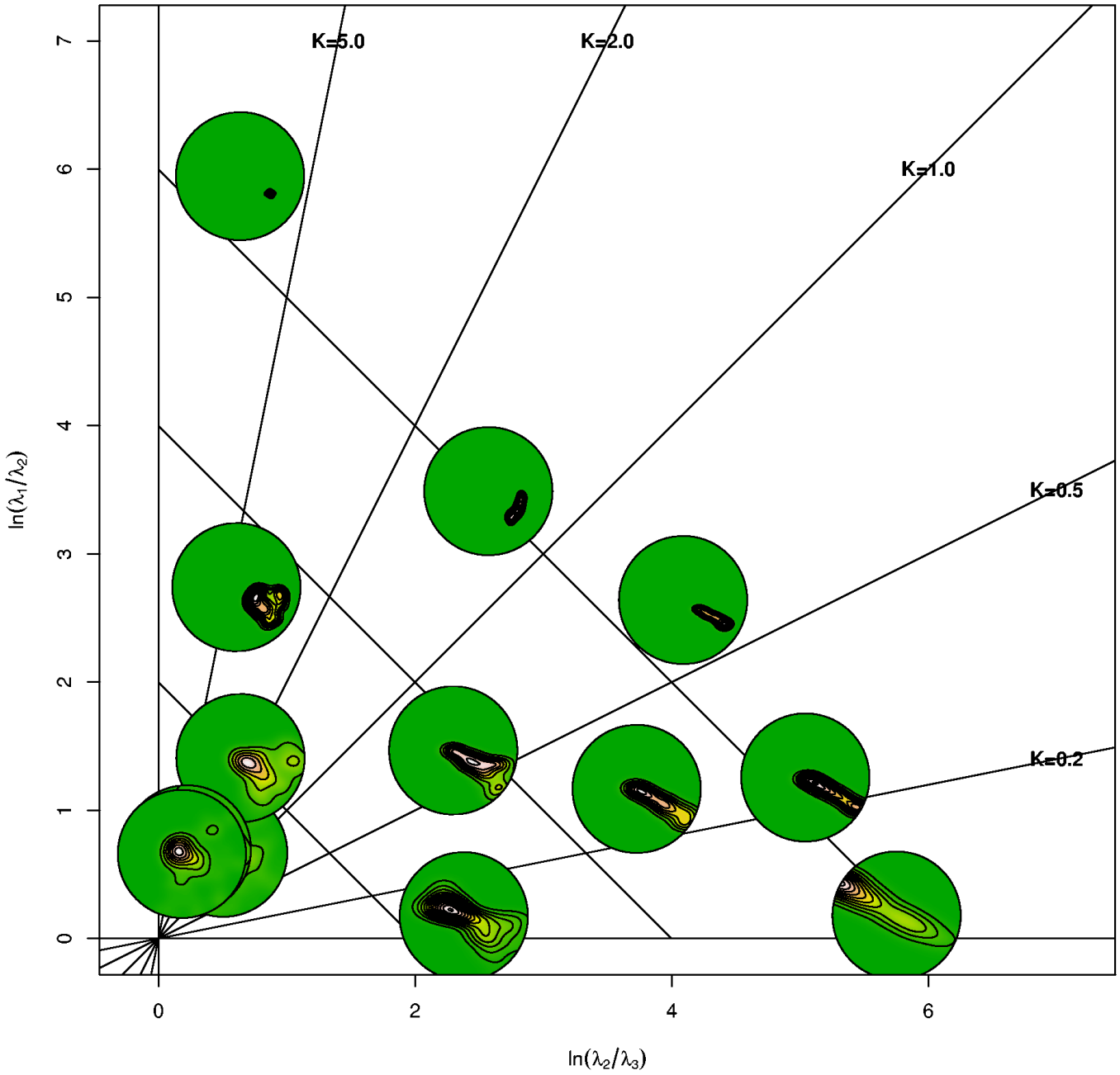

Combined P–T 2D Density
0.1
0.7
0.8
0.6
0.5
0.4
0.4
0.5
0.2

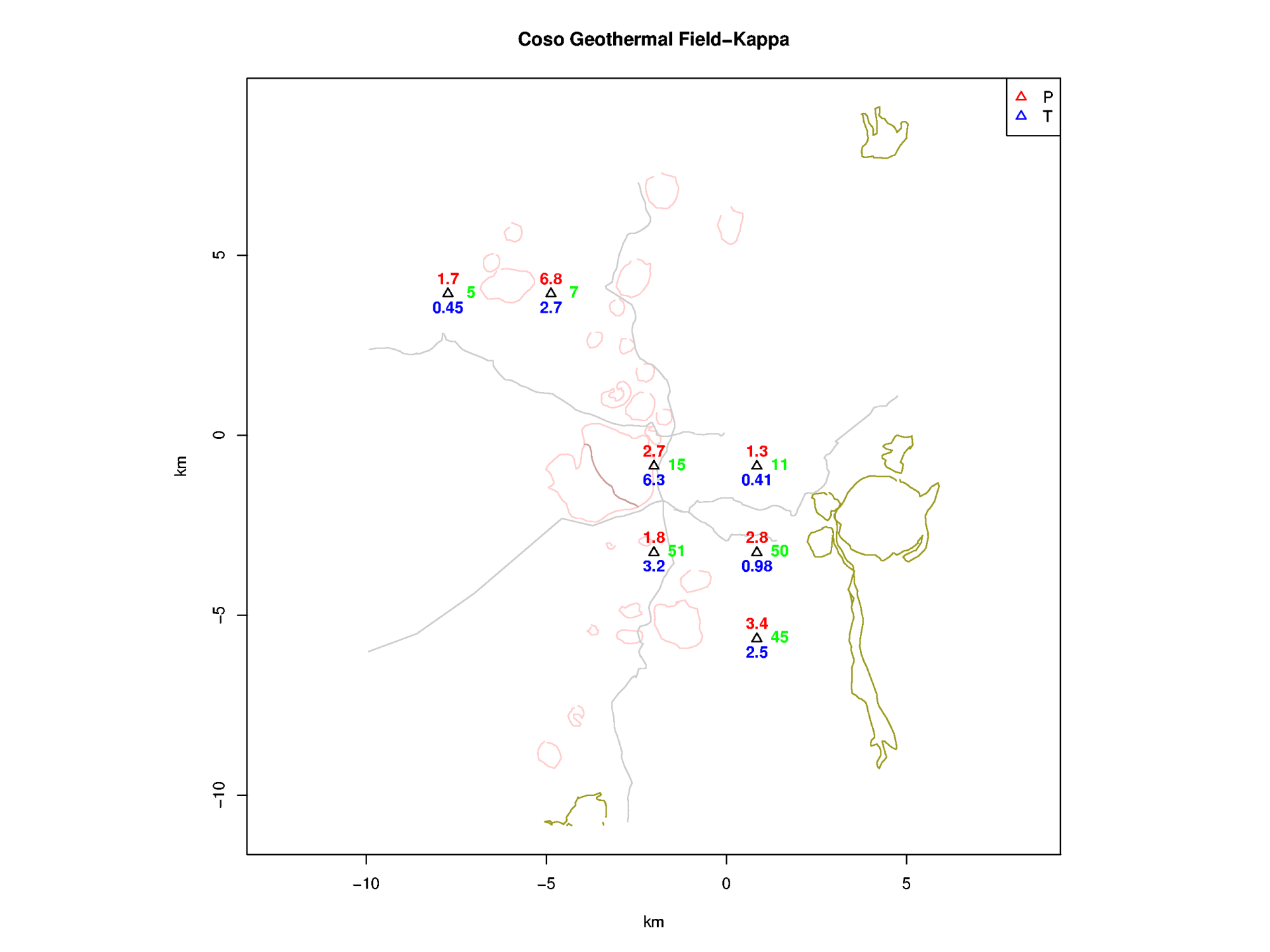

StrikeSlip
Ternary Plot of focal mecahnisms
Normal
Thrust

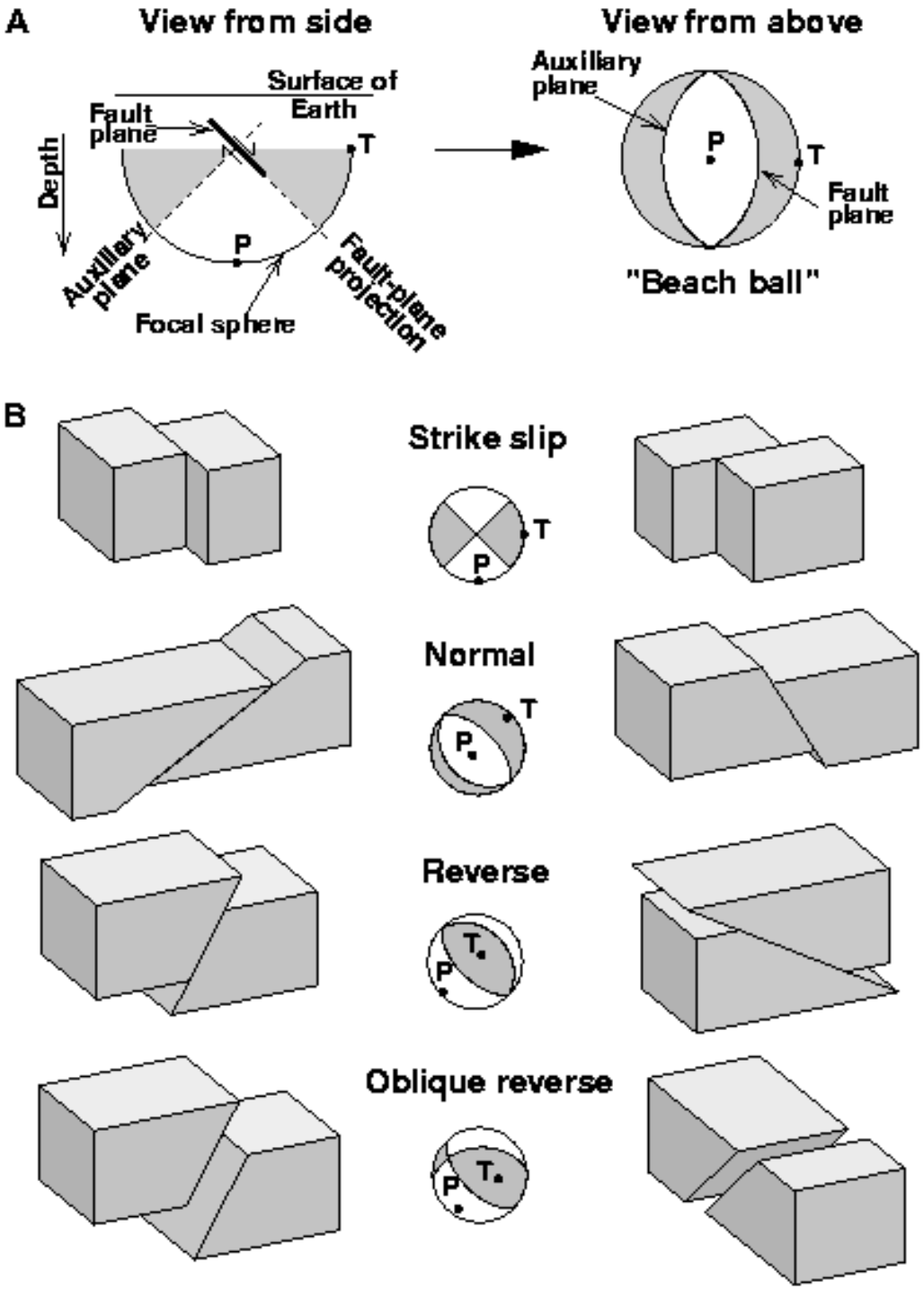

STRIKESLIP
REV-OBL STRK-SLP
OBLIQUE REVERSE
REVERSE
NORM-OBLQ STRKSLP
OBLQ NORM
NORMAL
km
km
-10
-5
0
5
10
-10
-5
0
5


km
5
0
−5
−10
−10
−5
0
5
10
km

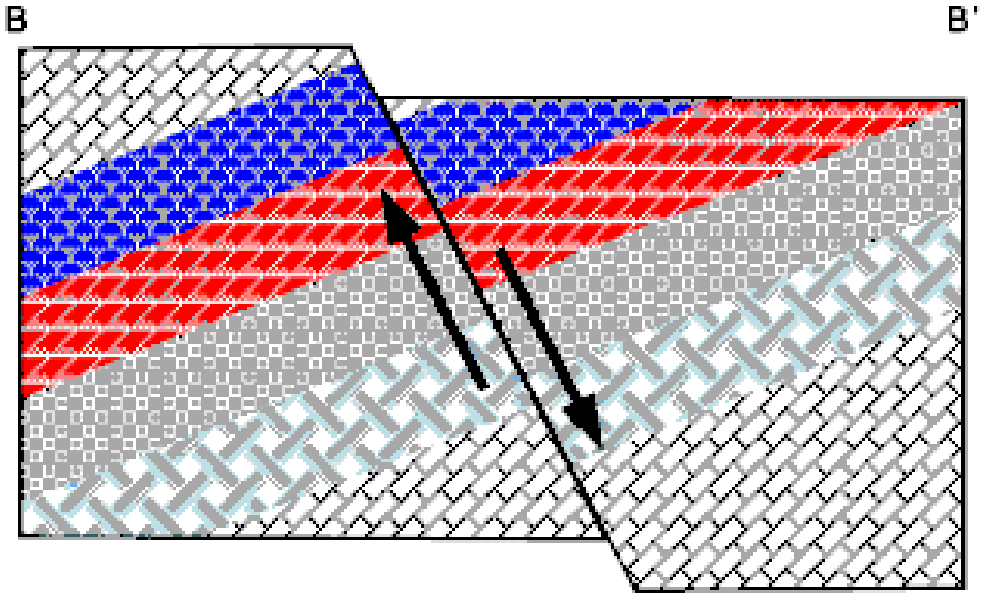

n= 51
Ir= 80
Dr=-88
R= 42
K=5.8
S= 34
Alph95=9.1
Kappa=1.8
P
T
n= 51
Ir= 72
Dr= 92
R= 36
K=3.4
S= 44
Alph95= 13
Kappa=3.2

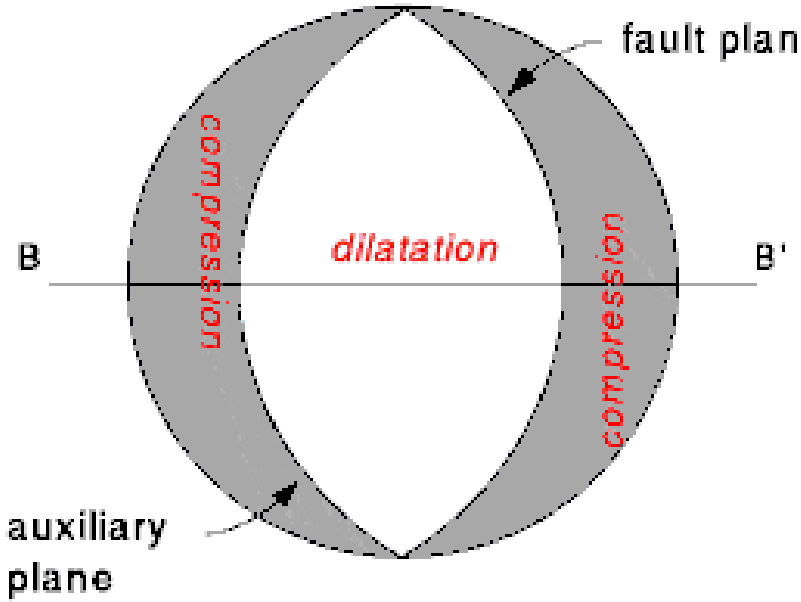

K=5.0
K=2.0
K=1.0
K=0.5
K=0.2
ln(λ1/λ2)
ln(λ2/λ3)
0
1
2
3
4
5
6
7
0
2
4
6

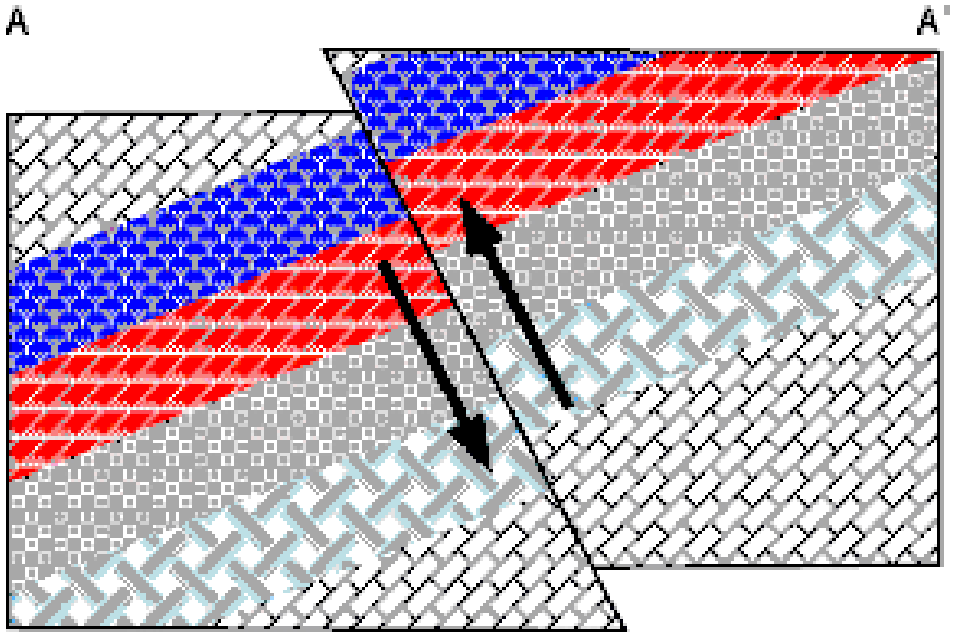

Coso Geothermal Field–Kappa
P
T
1.7
5
0.45
6.8
7
2.7
2.7
15
6.3
1.3
11
0.41
1.8
51
3.2
2.8
50
0.98
3.4
45
2.5
km
km
5
0
−5
−10
−10
−5
0
5

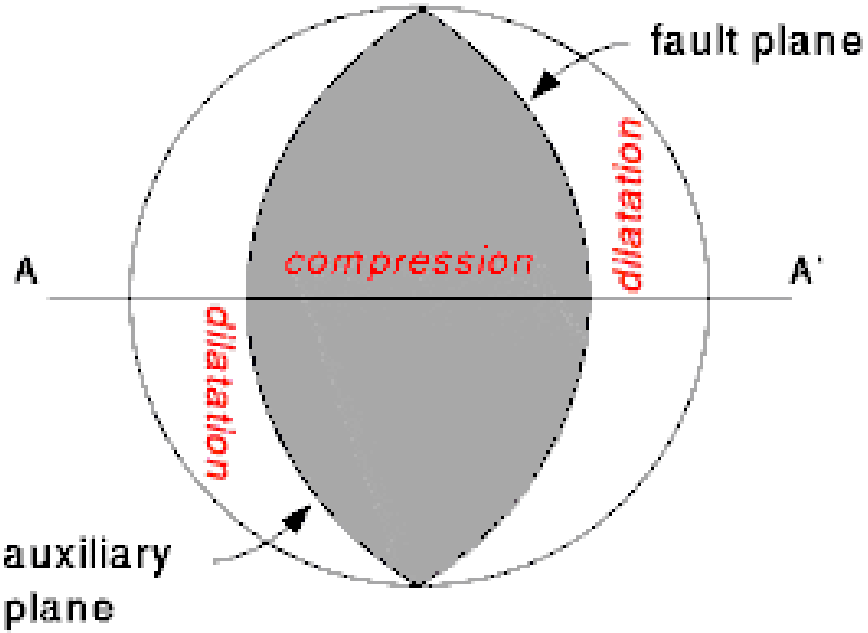

A
View from side
View from above
Surface of Earth
Fault plane
T
Depth
Auxiliary plane
P
Fault-plane projection
Focal sphere
Auxiliary plane
P
T
Fault plane
"Beach ball"
B
Strike slip
T
P
Normal
T
P
Reverse
T
P
Oblique reverse
T
P

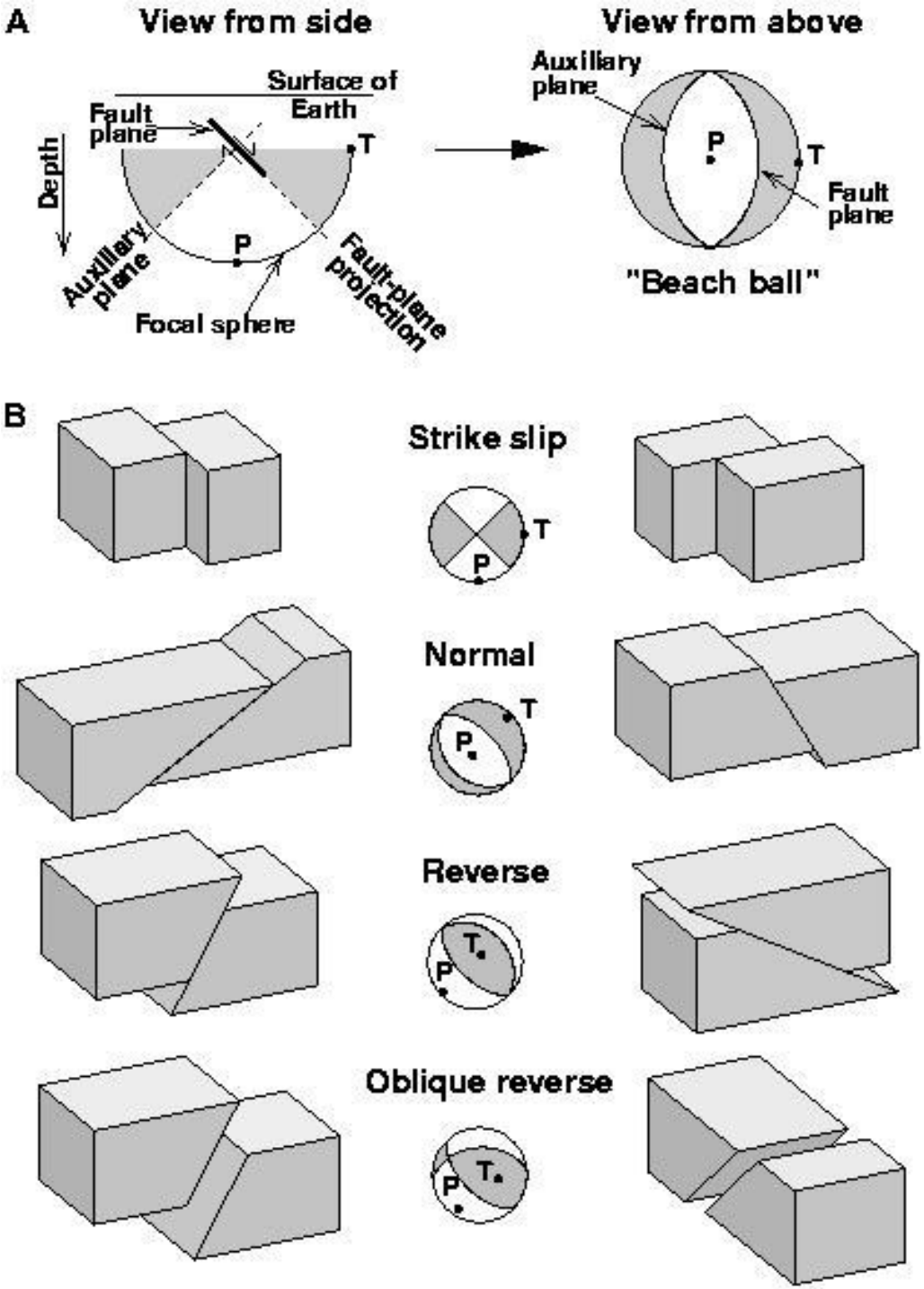
Normal Faulting

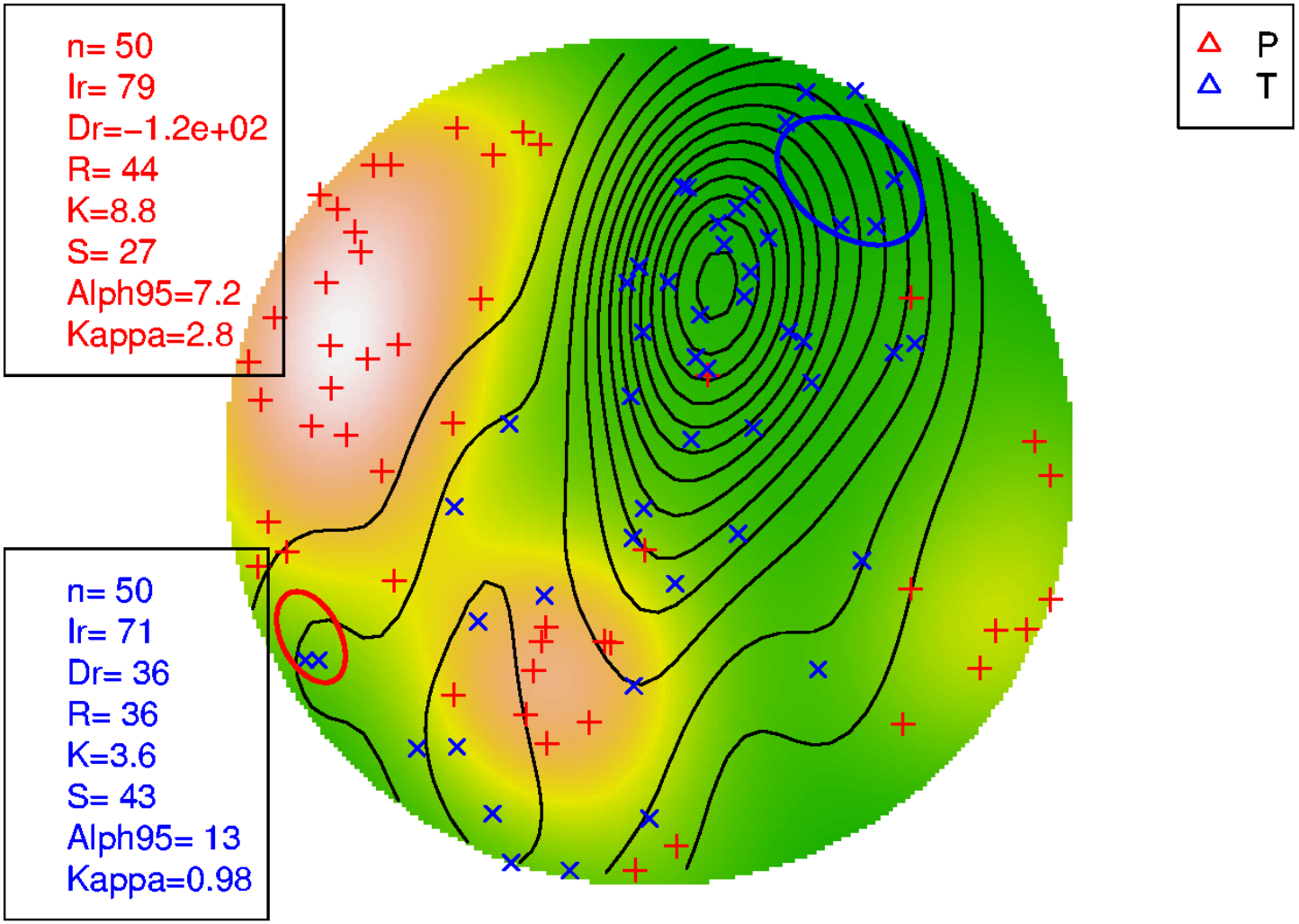


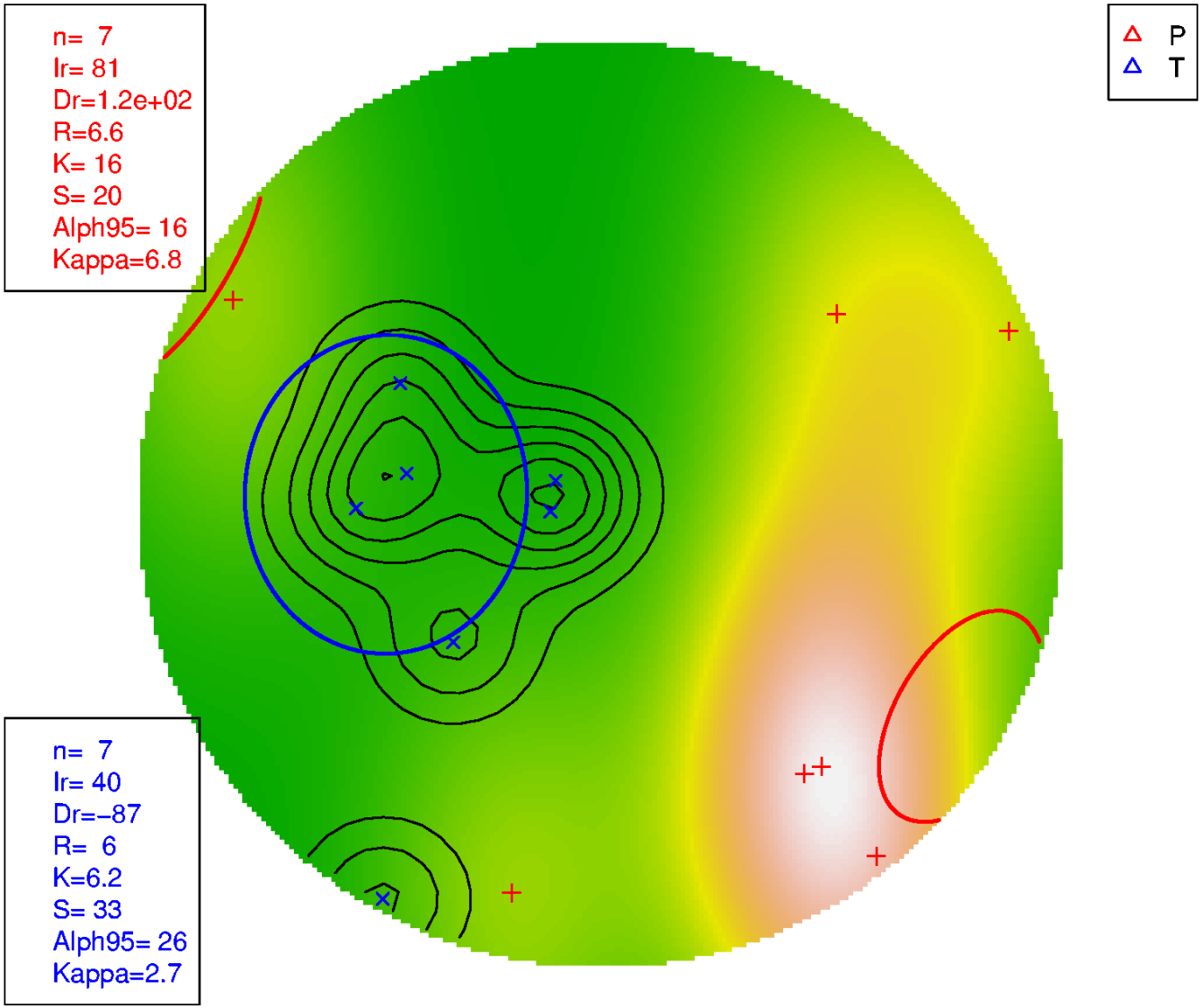


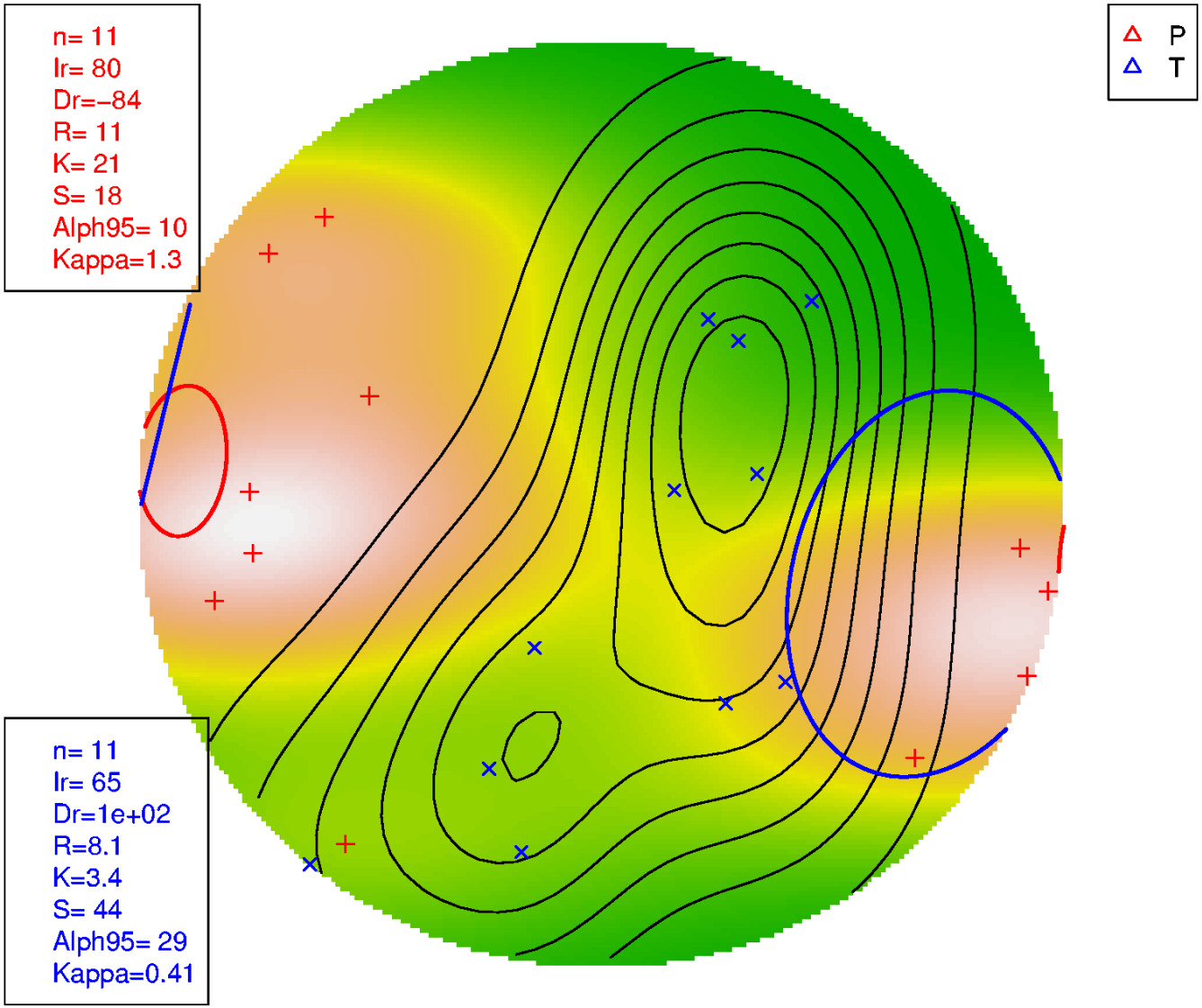

A
A'

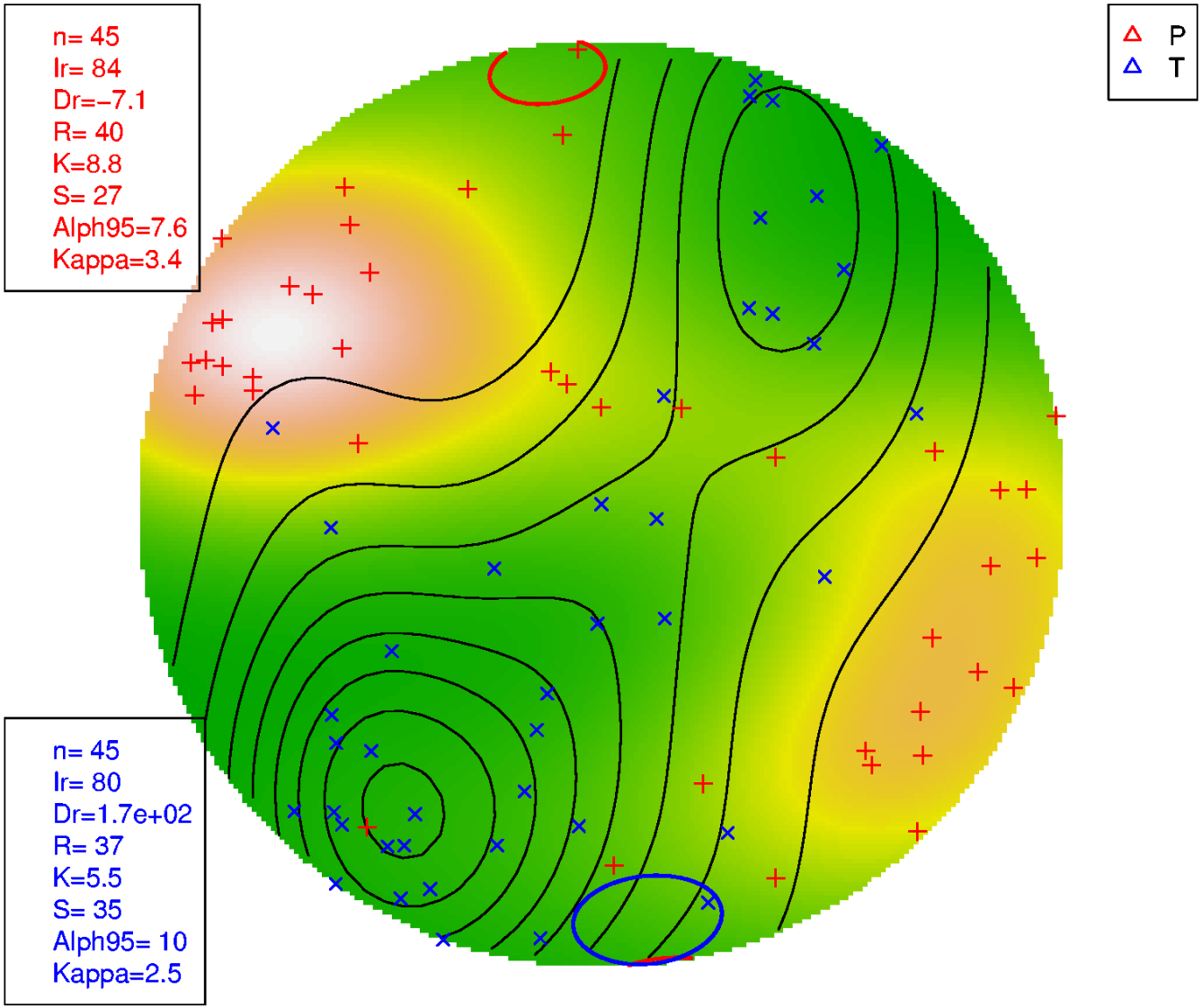

fault plane
A
compression
dilatation
A'
dilatation
auxiliary
plane

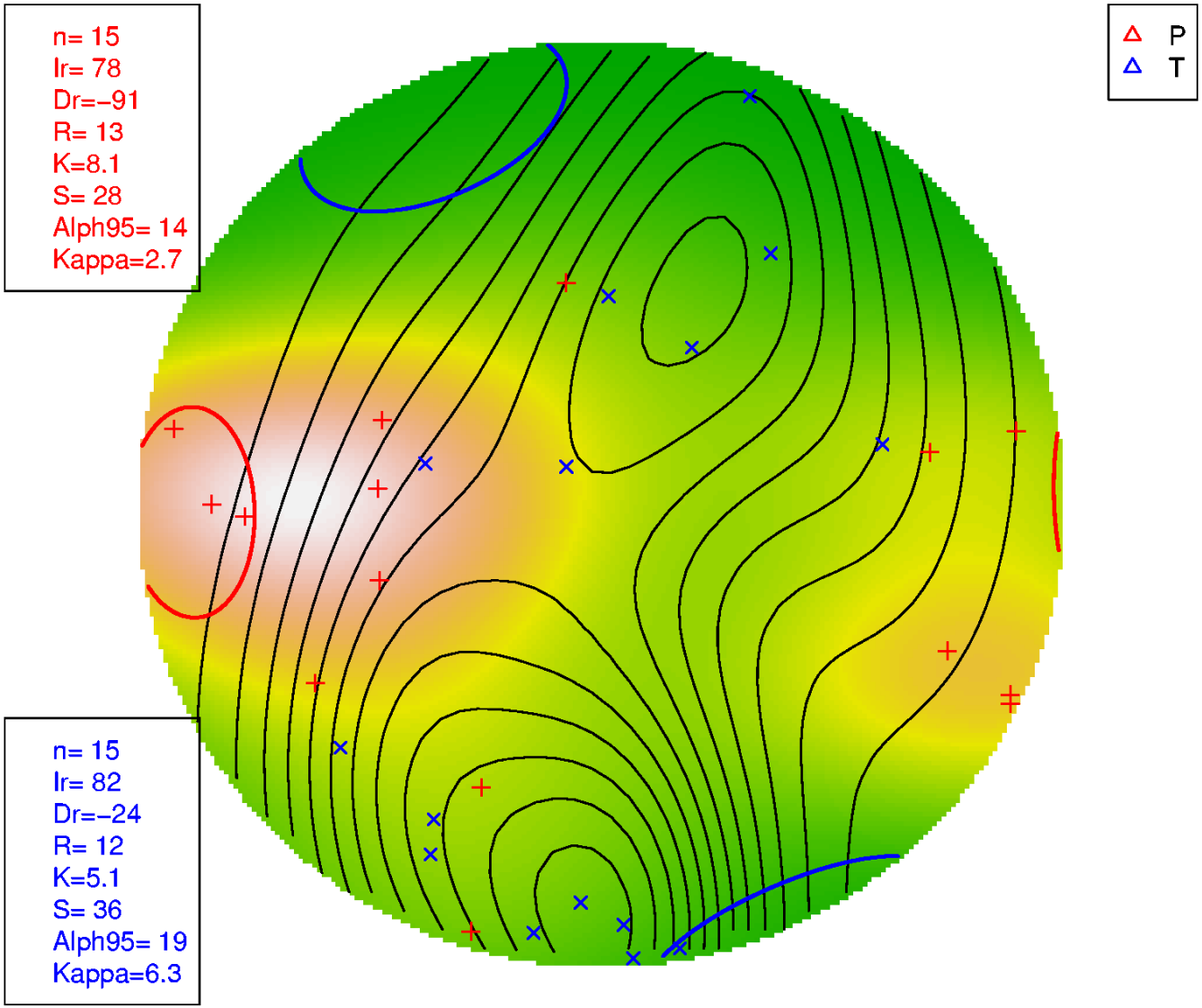

A
View from side
View from above
Surface of Earth
Fault plane
T
Depth
Auxiliary plane
P
Fault-plane projection
Focal sphere
Auxiliary plane
P
T
Fault plane
"Beach ball"
B
Strike slip
T
P
Normal
T
P
Reverse
T
P
Oblique reverse
T
P

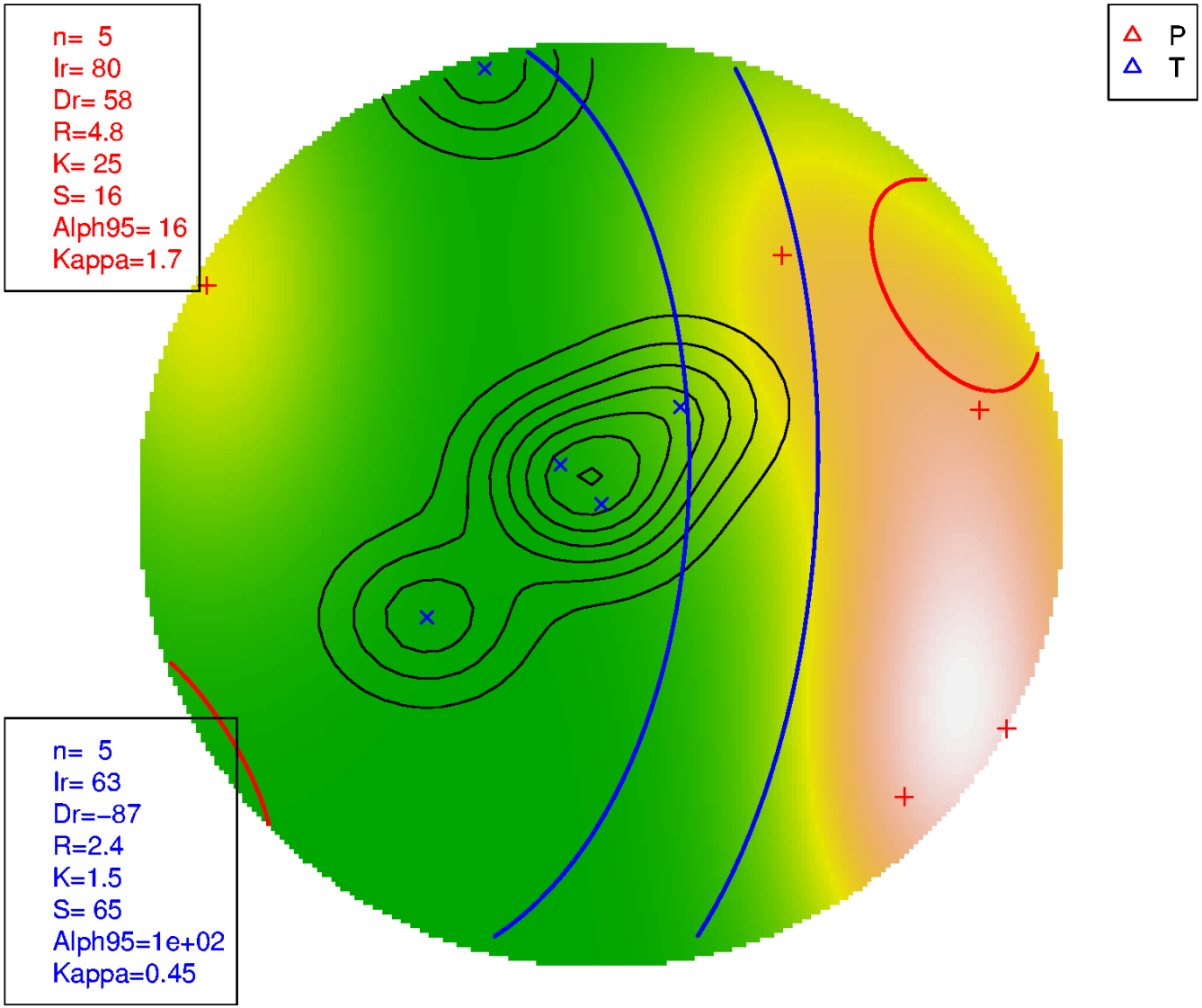

n= 50
Ir= 79
Dr=-1.2e+02
R= 44
K=8.8
S= 27
Alph95=7.2
Kappa=2.8
n= 50
Ir= 71
Dr= 36
R= 36
K=3.6
S= 43
Alph95= 13
Kappa=0.98
P
T


n= 7
Ir= 81
Dr=1.2e+02
R=6.6
K= 16
S= 20
Alph95= 16
Kappa=6.8
P
T
n= 7
Ir= 40
Dr=-87
R= 6
K=6.2
S= 33
Alph95= 26
Kappa=2.7


n= 11
Ir= 80
Dr=-84
R= 11
K= 21
S= 18
Alph95= 10
Kappa=1.3
P
T
n= 11
Ir= 65
Dr=1e+02
R=8.1
K=3.4
S= 44
Alph95= 29
Kappa=0.41


n= 45
Ir= 84
Dr=-7.1
R= 40
K=8.8
S= 27
Alph95=7.6
Kappa=3.4
P
T
n= 45
Ir= 80
Dr=1.7e+02
R= 37
K=5.5
S= 35
Alph95= 10
Kappa=2.5


n= 15
Ir= 78
Dr=-91
R= 13
K=8.1
S= 28
Alph95= 14
Kappa=2.7
P
T
n= 15
Ir= 82
Dr=-24
R= 12
K=5.1
S= 36
Alph95= 19
Kappa=6.3


n= 5
Ir= 80
Dr= 58
R=4.8
K= 25
S= 16
Alph95= 16
Kappa=1.7
n= 5
Ir= 63
Dr=−87
R=2.4
K=1.5
S= 65
Alph95=1e+02
Kappa=0.45
P
T