## Odvození fokálního mechanismu – metoda prvních nasazení

- použijeme programy z programového balíku FOCAL

Pro vybrané seismické jevy vytvořte soubor s údaji o polaritě P-vlny, epicentrální vzdálenosti a azimutu od zdroje. Pomocí programu Pman.exe zobrazte data do grafu a zkuste určit možné fokální mechanismy.

a) 14 FEB 2008 ( 45)
ot = 10:09:23.43 +/- 0.19 SOUTHERN GREECE
lat = 36.646 +/- 4.1
lon = 21.833 +/- 3.2 MAGNITUDE 6.9 (GCMT)
dep = 29.0 (geophysicist)
mb = 6.3 (186) ML = 6.0 ( 3) mblg = 5.4 ( 30) md = 0.0 ( 0) MS = 6.6 (172)

| sta | phase | arrival | res | dist | azm | amp | per | mag | amp | per | mag | sta |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CEL | iPnd | 10:10:35.02 | -1.4 | 5.0 | 291 | d:6.8+2 | | | 6.7X | L:1.4+1 | .85 6.0 | CEL |
| TIR | iPnc | 10:10:37.28 | 1.6 | 4.9 | 343 | d:5.4+2 | | | 6.5X | L:2.6+1 | .95 6.2 | TIR |
| WDD | ePnd | 10:10:45.78 | -3.9X | 6.0 | 265 | d:5.1+2 | | | 6.9X | L:2.2+1 | .35 6.4X | WDD |
| TIRR | iPnc | 10:11:36.43 | 1.4X | 9.3 | 31 | d:5.7+2 | | | 8.3X | L:1.8+0 | 1.2 5.9X | TIRR |
| KIV | iPc | 10:13:25.76 | 0.7 | 17.5 | 59 | g:1.5+0 | 1.0 | 5.5 | b:8.4+2 | .70 | 6.0 | KIV |
| TAM | iPd | 10:13:49.01 | -2.0 | 19.7 | 230 | g:7.8-1 | 1.1 | 5.3 | b:7.8+2 | 1.1 | 5.9 | TAM |
| MTE | ePd | 10:14:25.23 | -3.1 | 23.2 | 288 | g:5.9-1 | 1.2 | 5.3 | b:5.9+2 | 1.2 | 6.0 | MTE |
| KBL | iPc | 10:16:40.08 | -0.3 | 38.1 | 79 | b:5.4+2 | 1.0 | 6.3 | | | | KBL |
| DBIC | iPd | 10:16:40.41 | -3.0 | 38.5 | 226 | b:5.7+2 | .96 | 6.3 | | | | DBIC |
| TLY | iPc | 10:19:10.00 | -0.2 | 57.6 | 47 | b:9.3+2 | 1.6 | 6.6 | | | | TLY |
| RCBR | ePd | 10:20:21.89 | -1.2 | 68.5 | 245 | b:2.2+2 | 1.3 | 6.1 | | | | RCBR |
| GAMB | ePc | 10:21:25.27 | -0.7 | 79.3 | 6 | b:1.1+2 | 1.0 | 5.8 | | | | GAMB |
| SKAG | ePc | 10:21:42.69 | 0.3X | 82.4 | 348 | b:1.7+2 | 1.1 | 6.0 | | | | SKAG |

b) 28 OCT 2008 (302)
ot = 23:09:57.65 +/- 0.10 PAKISTAN
lat = 30.639 +/- 2.3
lon = 67.351 +/- 1.7 MAGNITUDE 6.4 (UCMT)
dep = 15.0 (geophysicist)
60 km (35 miles) NE of Quetta, Pakistan (pop 560,000)
190 km (120 miles) SE of Kandahar, Afghanistan
195 km (120 miles) NNE of Kalat, Pakistan
640 km (400 miles) WSW of ISLAMABAD, Pakistan
mb = 6.3 (215) ML = 0.0 ( 0) mblg = 5.7 ( 3) md = 0.0 ( 0) MS = 6.6 (188)

| sta | phase | arrival | res | dist | azm | amp | per | mag | amp | per | mag | sta |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| KBL | iPnd | 23:11:03.45 | 2.8 | 4.1 | 20 | | | | | | | KBL |
| AML | iPd | 23:12:55.08 | -0.9 | 12.5 | 22 | | | | | | | AML |
| AAK | iPnd | 23:13:04.81 | -0.8 | 13.3 | 24 | | | | | | | AAK |
| ABKA | RiPd | 23:14:24.34 | 1.1 | 19.4 | 345 | | | | | | | ABKA |
| MK31 | ePd | 23:14:26.40 | -1.5 | 19.8 | 31 | | | | | | | MK31 |
| LSA | ePc | 23:14:37.95 | 1.3 | 20.6 | 87 | g:2.9+0 | 1.0 | 5.9 | b:8.3+3 | 1.4 | 6.9 | LSA |
| BRVK | iPd | 23:14:56.56 | 0.1 | 22.5 | 5 | g:1.8+0 | 1.2 | 5.7 | b:1.8+3 | 1.2 | 6.4 | BRVK |
| KIV | iPc | 23:15:08.79 | 0.7 | 23.6 | 311 | g:1.5+0 | 1.4 | 5.6X | b:1.5+3 | 1.4 | 6.3 | KIV |
| ZAA0 | ePd | 23:15:33.35 | -0.9 | 26.5 | 23 | | | | | | | ZAA0 |
| CSS | iPc | 23:15:55.53 | 0.1 | 28.8 | 288 | b:1.8+3 | 2.7 | 6.4 | | | | CSS |
| CHTO | iPc | 23:16:13.41 | -0.5 | 30.9 | 105 | b:1.4+3 | 1.1 | 6.7 | | | | CHTO |
| KIEV | ePc | 23:16:46.29 | -0.2 | 34.7 | 316 | b:3.4+2 | 1.0 | 6.2 | | | | KIEV |
| ULN | ePc | 23:16:48.20 | 0.6 | 34.8 | 49 | b:1.7+2 | 1.2 | 5.8 | | | | ULN |
| ENH | iPc | 23:17:00.36 | 0.7 | 36.2 | 80 | b:6.3+3 | 1.7 | 7.2 | | | | ENH |
| BUR0 | 8ePc | 23:17:01.17 | 0.3 | 36.3 | 310 | | | | | | | BUR0 |
| MSEY | ePc | 23:17:06.32 | 0.3 | 36.9 | 200 | b:4.7+2 | 1.4 | 6.1 | | | | MSEY |
| DGAR | ePd | 23:17:17.93 | 1.5 | 38.1 | 172 | b:1.1+3 | 1.8 | 6.3 | | | | DGAR |
| PSZ | ePc | 23:17:31.98 | 1.0 | 39.9 | 309 | b:4.5+2 | .90 | 6.2 | | | | PSZ |
| BJT | ePc | 23:17:36.65 | 0.9 | 40.5 | 63 | b:2.1+2 | .70 | 6.0 | | | | BJT |
| IPM | iPc | 23:17:39.57 | -0.4 | 41.0 | 123 | b:1.4+3 | 1.5 | 6.4 | | | | IPM |
| MORC | ePc | 23:17:46.23 | 0.5 | 41.7 | 312 | b:2.7+2 | 1.1 | 5.9 | | | | MORC |
| KMBO | iPc | 23:17:54.50 | 0.5 | 42.6 | 228 | b:1.2+3 | 2.1 | 6.2 | | | | KMBO |
| KHC | ePc | 23:18:05.84 | -0.2 | 44.2 | 311 | b:1.7+2 | 1.4 | 5.7 | | | | KHC |
| ARE0 | ePd | 23:18:17.00 | 0.7 | 45.5 | 341 | | | | | | | ARE0 |
| TUE | ePc | 23:18:27.95 | -0.4 | 47.0 | 307 | b:6.1+2 | 1.5 | 6.4 | | | | TUE |
| SSLB | ePc | 23:18:35.48 | 0.8 | 47.8 | 85 | b:2.8+3 | 1.2 | 7.2 | | | | SSLB |
| WLF | ePc | 23:18:44.85 | 0.8 | 49.1 | 311 | b:2.5+2 | 1.0 | 6.2 | | | | WLF |
| MDJ | ePc | 23:18:51.90 | -0.1 | 50.1 | 55 | b:1.4+3 | 1.9 | 6.6 | | | | MDJ |
| TAM | iPc | 23:19:28.92 | -1.3 | 55.2 | 278 | b:5.4+2 | 2.2 | 6.2 | | | | TAM |
| ESLA | ePc | 23:19:46.55 | -0.7 | 57.6 | 300 | b:1.2+2 | 1.4 | 5.7 | | | | ESLA |
| BILL | ePc | 23:20:38.65 | 0.8 | 65.2 | 24 | b:1.0+3 | 2.1 | 6.6 | | | | BILL |
| LIC | iPc | 23:21:18.20 | -1.3 | 71.7 | 266 | b:5.8+2 | 1.3 | 6.5 | | | | LIC |
| COLA | ePc | 23:22:11.44 | 0.5 | 80.9 | 14 | b:1.3+2 | 1.0 | 5.9 | | | | COLA |

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WRAB ePc     23:22:14.78  -0.8   81.7 119 b:5.2+2 1.2 6.5                  WRAB
DAWY ePc     23:22:23.97   0.5   83.3  11                                  DAWY
FORT ePd     23:22:27.02  -0.4   84.0 131 b:4.4+2 1.1 6.6                  FORT
SEW  ePc     23:22:30.28  -0.1   84.7  18 b:5.5+2 1.5 6.6                  SEW
FFC  ePc     23:23:17.05  -0.1   94.5 354 b:1.7+2 1.1 6.4                  FFC

c) 26 DEC 2007  (360)
     ot  = 22:04:56.30   +/-   0.42             FOX ISLANDS, ALEUTIAN ISLANDS
     lat =      52.586   +/-    2.9
     lon =    -168.204   +/-    1.9             MAGNITUDE 6.4 (GCMT)
     dep =        36.4   +/-    3.3
mb = 5.9 (229)  ML = 0.0 (  0)  mblg = 0.0 (  0)  md = 0.0 (  0)  MS = 6.2 (175)
sta  phase     arrival     res   dist azm    amp  per mag     amp  per mag  sta
GAMB ePnc    22:07:39.28   3.3X  11.4 352 b:6.5+0 .52 5.0X                  GAMB
COLA ePnc    22:08:37.64  -2.1   16.1  32 b:3.4+2 .95 5.4                  COLA
DAWY ePnc    22:09:11.74  -1.3   18.8  41                                  DAWY
PET  iPd     22:09:25.10   0.2   19.9 285                                  PET
SEY  iPd     22:09:57.60  -0.4   23.0 312                                  SEY
TIXI iPd     22:11:26.00  -0.6   32.9 329                                  TIXI
YAK  ePc     22:11:30.30  -2.0   33.6 311 b:1.7+1 .55 5.2                  YAK
BW06 ePd     22:12:25.16   0.4   39.7  80 b:1.4+2 .55 5.9                  BW06
MAJO ePc     22:12:30.10  -0.7   40.4 269 b:2.7+2 .90 6.0                  MAJO
CBKS ePc     22:13:28.63  -2.6   48.0  78 b:2.9+2 1.1 6.2                  CBKS
DAG  ePd     22:13:41.40  -0.7   49.5   9 b:9.3+1 .80 5.9                  DAG
ULN  iPd     22:13:56.80  -0.8   51.4 301                                  ULN
ARU  iPd     22:15:29.90  -0.5   64.8 333                                  ARU
PUL  ePd     22:15:45.80   0.9   67.0 350                                  PUL
PVCC iPc     22:16:46.50   0.3   77.2 358                                  PVCC
KIV  ePd     22:17:04.00   1.2   80.2 338                                  KIV
GNI  ePd     22:17:19.60   0.3   83.3 335                                  GNI
UPM  iPc     22:17:24.50  -0.3   84.4 355                                  UPM
ULC  iPc     22:17:30.40  -0.3   85.6 354                                  ULC
QUE  iPc     22:17:35.00   9.1X  84.6 315                                  QUE

d) 22 FEB 2006  ( 53)
     ot  = 22:19:07.73   +/-   0.19             MOZAMBIQUE
     lat =     -21.259   +/-    4.7
     lon =      33.480   +/-    7.4             MAGNITUDE 7.0 (GS)
     dep =        11.0  (geophysicist)
mb = 6.5 ( 72)  ML = 0.0 (  0)  mblg = 5.9 (  3)  md = 0.0 (  0)  MS = 7.5 (145)
sta  phase     arrival     res   dist azm    amp  per mag     amp  per mag  sta
BOSA ePnc    22:21:31.94  -5.8X  10.4 224 g:6.2+1 1.0 6.8  b:6.0+1 .70 6.1X BOSA
TSUM ePnc    22:22:33.13  -7.6X  15.1 275 b:2.9+3 .65 6.8                  TSUM
SUR  ePnc    22:22:43.45  -7.1X  15.8 223 b:7.2+3 .85 6.9                  SUR
KMBO ePd     22:23:44.57   0.1   20.3  11 b:2.2+3 1.4 6.3                  KMBO
DGAR ePd     22:26:41.19  -2.2   40.1  76 b:1.4+3 1.1 6.5                  DGAR
PALK ePd     22:28:34.31  -0.4   54.3  64 b:1.9+3 1.7 6.8                  PALK
SNAA iPd     22:28:37.00   1.3   54.6 193                                  SNAA
GVD  ePd     22:28:49.69  -0.2   56.5 351 b:3.1+2 1.1 6.2                  GVD
HYB  ePd     22:29:03.50  -1.3   58.6  52 b:7.9+2 1.0 6.8                  HYB
APE  Pc      22:29:04.99   1.0   58.5 353                                  APE
BRTR ePc     22:29:18.80  -0.2   60.7   0                                  BRTR
CASY ePd     22:29:50.48  -0.4   65.5 154 b:6.8+2 1.3 6.7                  CASY
VRI  Pd      22:30:02.77   1.7   67.1 355                                  VRI
BZS  Pd      22:30:05.50   2.3   67.4 351                                  BZS
VLC  ePd     22:30:07.92  -1.8   68.4 342 b:1.9+2 1.3 6.1                  VLC
IAS  Pc      22:30:10.95   2.1   68.3 356                                  IAS
BURARPd      22:30:13.98   1.1   68.9 354                                  BURA
QSPA iPc     22:30:14.90   2.4   68.9 180 b:3.1+2 1.0 6.4                  QSPA
VRAC Pc      22:30:32.05   1.7   71.8 349                                  VRAC
BJT  ePd     22:32:43.37  -0.9   98.0  50 b:2.1+2 1.7 6.5                  BJT
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*obecný postup:*
*a) Spojte úsečkou příslušné údaje o epicentrální vzdálenosti a amplitudě (zvětšené o zesílení)*
*b) Odečtěte magnitudo Ml*