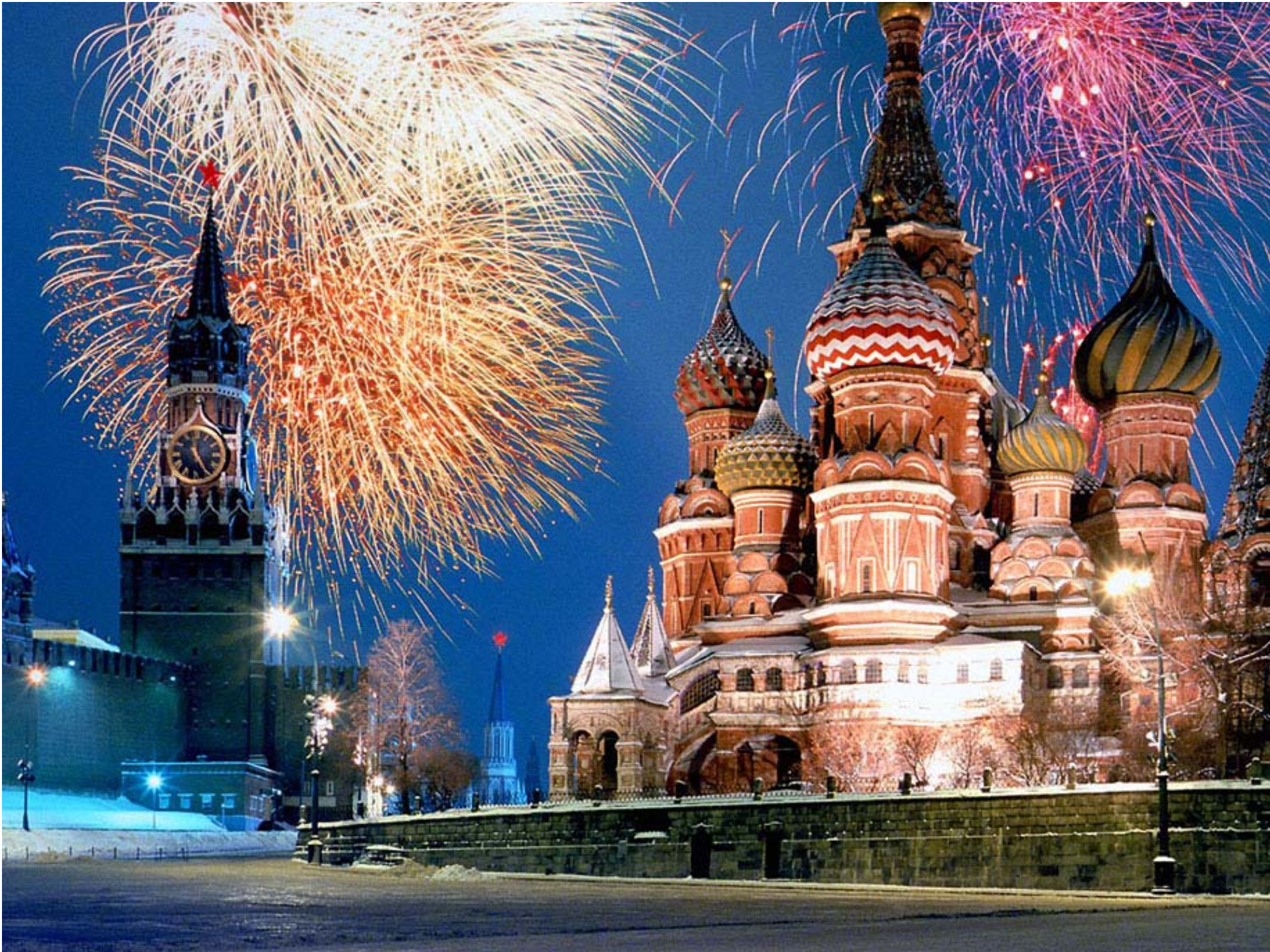




**Cestování s panem docentem  
Novotným  
u příležitosti jeho 70. narozenin  
(aneb ,Co jste ještě neviděli‘)**

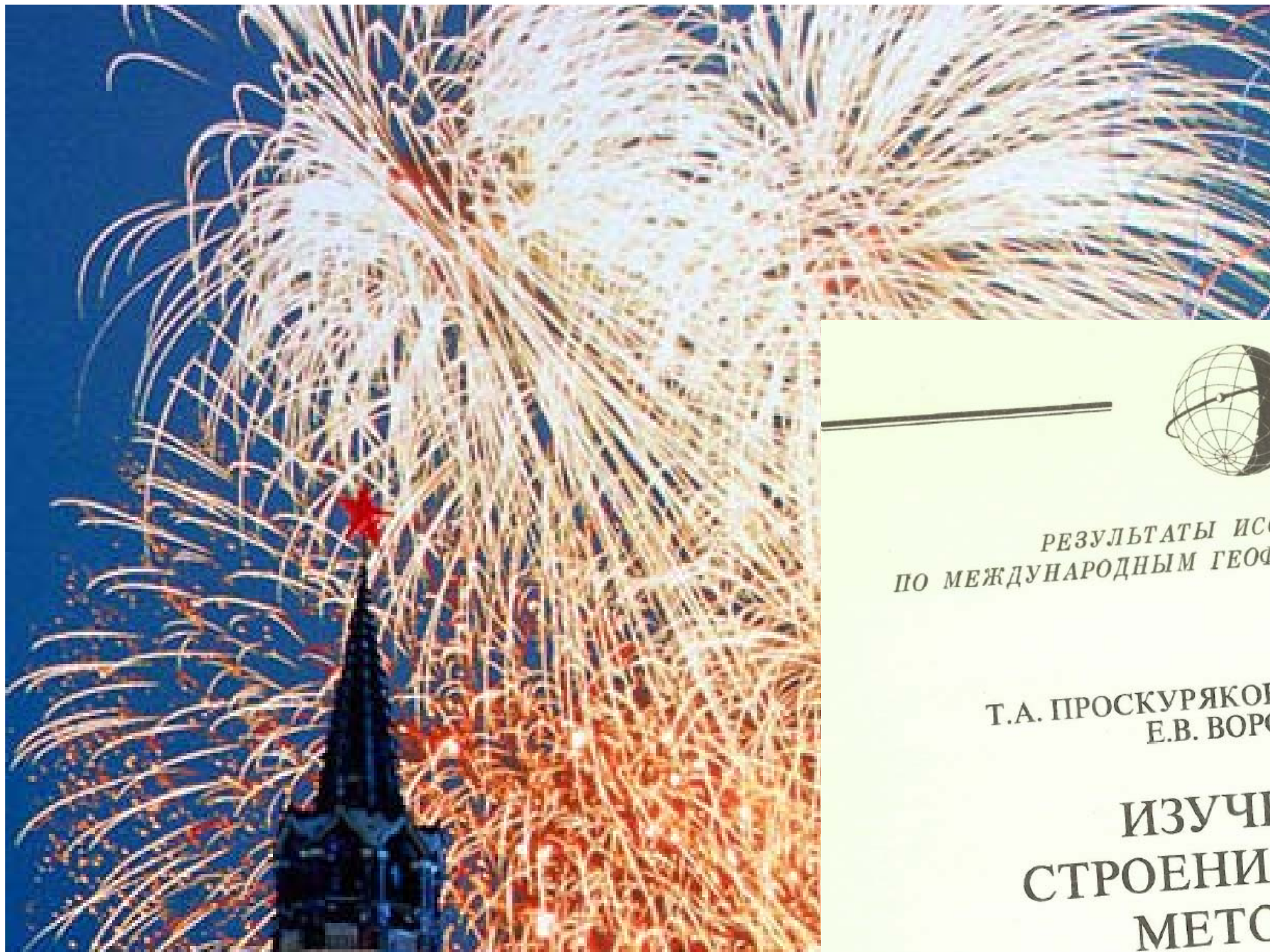




РЕЗУЛЬТАТЫ ИССЛЕДОВАНИЙ  
ПО МЕЖДУНАРОДНЫМ ГЕОФИЗИЧЕСКИМ ПРОЕКТАМ

Т.А. ПРОСКУРЯКОВА, О. НОВОТНЫ,  
Е.В. ВОРОНИНА

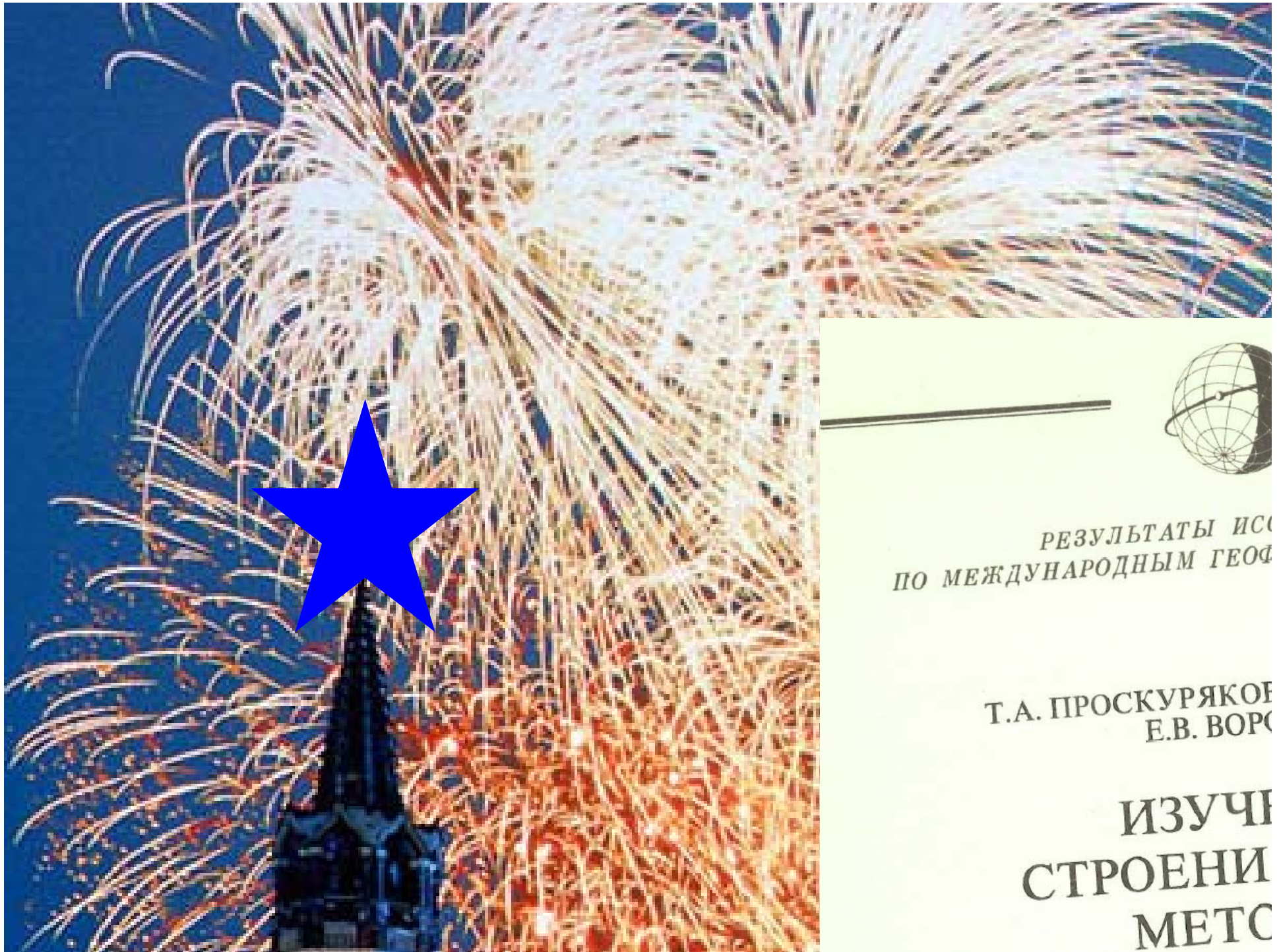
ИЗУЧЕНИЕ  
СТРОЕНИЯ ЗЕМЛИ  
МЕТОДОМ  
ПОВЕРХНОСТНЫХ ВОЛН  
(Центральная Европа)



РЕЗУЛЬТАТЫ ИССЛЕДОВАНИЙ  
ПО МЕЖДУНАРОДНЫМ ГЕОГРАФИЧЕСКИМ

Т.А. ПРОСКУРЯКОВА  
Е.В. ВОРОБЕЙ

ИЗУЧЕНИЕ  
СТРОЕНИЯ  
МЕТС



РЕЗУЛЬТАТЫ ИССЛЕДОВАНИЙ  
ПО МЕЖДУНАРОДНЫМ ГЕОДЕЗИЧЕСКИМ РАБОТАМ

Т.А. ПРОСКУРЯКОВА  
Е.В. ВОРОБЬЕВА

ИЗУЧЕНИЕ  
СТРОЕНИЯ  
МЕТЕОРОЛОГИЧЕСКИХ  
ПОЛЕЙ

Shrnutí cca 10 let teoretické práce  
v maticových metodách,  
numerických výpočtech,  
zpracování dat a inverze...

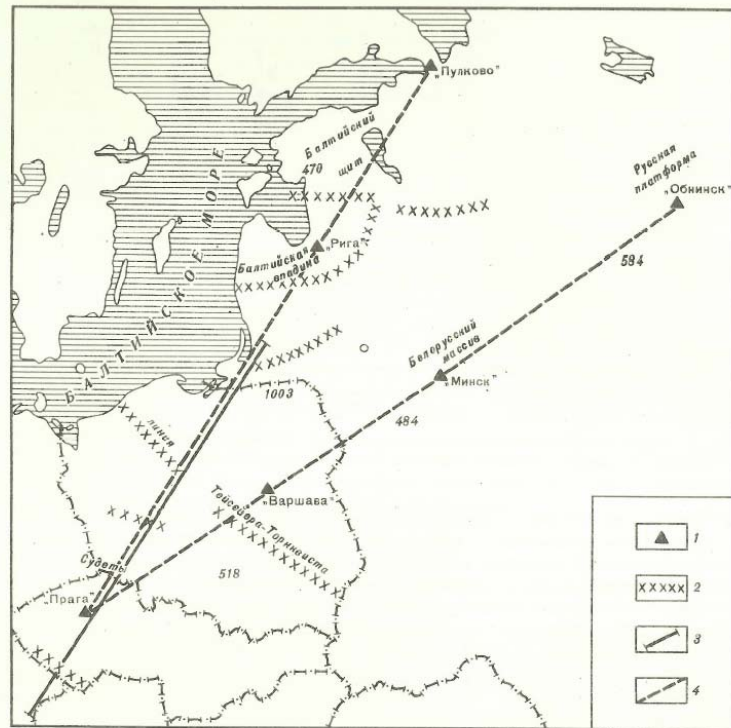


Рис. 1. Карта исследуемого района  
 1 — станции; 2 — глубинные разломы; 3 — международный профиль ГСЗ VII; 4 — изучаемые профили. Цифрами обозначены расстояния между станциями, км

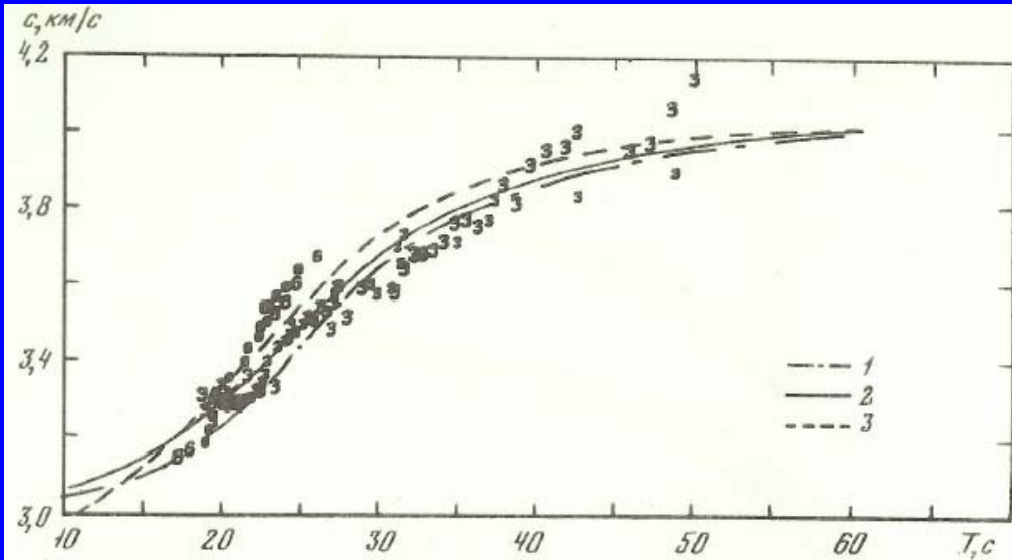


Рис. 18. Фазовые скорости волн Релея для профиля Пулковско-Рига  
 Модели (см. табл. 23 в тексте): 1 — а, 2 — б, 3 — в

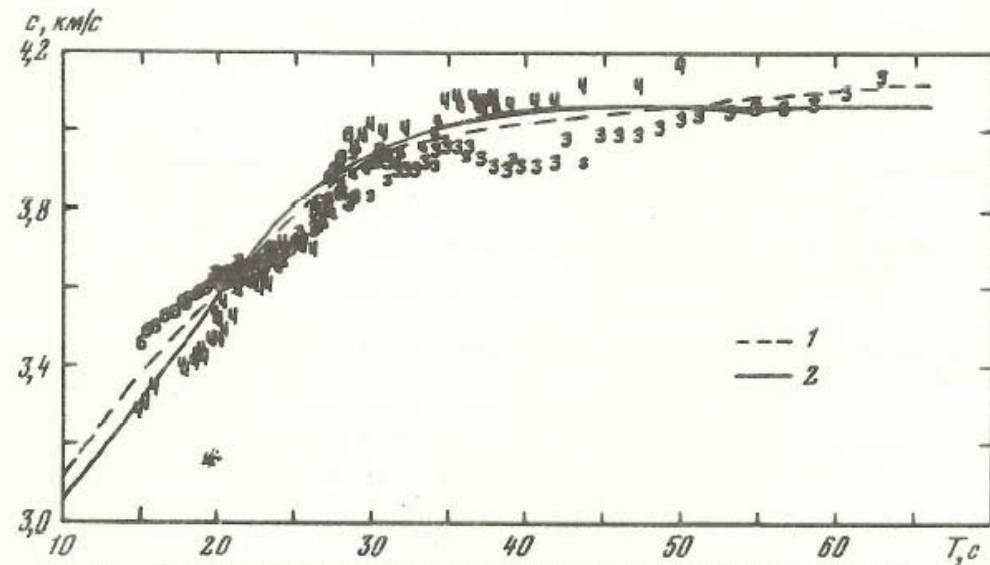


Рис. 19. Фазовые скорости волн Релея для профиля Рига-Прага.  
 Модели (см. в табл. 24 в тексте): 1 — а, 2 — б





*Ale již dost chladných zemí...*

# Salvador, Brasil !



UNIVERSIDADE FEDERAL DA BAHIA  
CENTRO DE PESQUISA EM GEOFÍSICA E GEOLOGIA

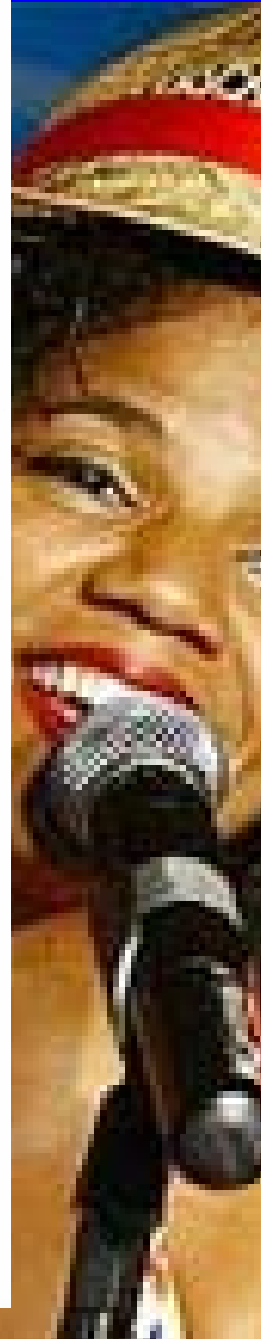
## AN INTRODUCTION TO SEISMOLOGY

Oldrich Novotny

*Lecture notes for post-graduate studies  
(preliminary text)*

Instituto de Física  
Instituto de Geociências

Salvador, Bahia, 1999



UNIVERSIDADE FEDERAL DA BAHIA  
CENTRO DE PESQUISA EM GEOFÍSICA E GEOLOGIA

## SEISMIC SURFACE WAVES

Oldrich Novotny

*Lecture notes for post-graduate studies*

Instituto de Física  
Instituto de Geociências

Salvador, Bahia, 1999



Obrigado!



Autoportrét O.N.

70th Birthday of A. Zátpek

## JOINT INTERPRETATION OF $Lg$ AND $Sa$ WAVES BASED ON SPECTRAL AMPLITUDES OF HIGHER LOVE WAVE MODES

KAREL PĚČ, OLDŘICH NOVOTNÝ

*Geophysical Institute, Charles University, Prague\**)

*Summary: The joint interpretation of  $Lg$  and  $Sa$  waves has been carried out on the basis of the first higher mode of Love waves. A characteristic feature of the spectral amplitude curve for the first higher mode is the existence of two pronounced maxima separated by a gap. The short-period maximum may be related to the  $Lg$  wave, the long-period to the  $Sa$  wave.*

### 1. DEVELOPMENT OF THE PROBLEM

The first investigators of  $Lg$  and  $Sa$  waves interpreted them as channel waves. Originally,  $Lg$  and  $Sa$  waves were treated as different phenomena. The propagation of the  $Lg$  wave was associated with the crust, while the  $Sa$  wave was related to the region below the crust. This concept agrees with the present knowledge, but the details underwent a long development.

*Lg* wave: The  $Lg$  wave, occurring only when the path between the epicentre and the station is continental, was first identified by Press and Ewing [26] on records of surface waves crossing North America. They found the  $Lg$  wave to be a large amplitude arrival with a velocity of 3.51 km/s and periods ranging from 0.5 to 6 s. Originally they tried to interpret them as multiply reflected waves in the granitic layer. Observations of Lehman [20] and of Ewing et al. [11] confirmed the existence of the  $Lg$  wave. Båth [3] resolved the  $Lg$  train statistically into two phases which he termed  $Lg1$  and  $Lg2$ . His interpretation of these waves was influenced by Gutenberg's

70th Birthday of A. Zátpek

JOINT INTERPRETATION OF  $Lg$  AND  $Sa$  WAVES BASED  
ON SPECTRAL AMPLITUDES OF HIGHER LOVE WAVE  
MODES

KAREL PĚČ, OLDŘICH NOVOTNÝ



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Oldřich Novotný  
HYPOTÉZY A MÝTY V GEOFYZICE

---

Odborná soustředění katedry, přestože mají stanovenou odbornou náplň, poskytují jistou volnost pro rozhovor o některých specifických stránkách vědecké práce a vývoje poznání v geofyzice, o nichž nelze mluvit na přednáškách nebo seminářích. Patří sem názory na některé nevyjasněné a nevyřešené problémy, názory na nejvhodnější cesty k jejich řešení, názory na to, co je v geofyzice podstatné a co je vedlejší, a řada dalších.

V čem je skutečné jádro geofyziky? V axiomech (jako je postulát o nulovém výsledném momentu sil při rovnováze tuhého tělesa, kritizovaný v poslední době v souvislosti s výzkumy dynamiky soustavy Země-Měsíc)? Ve větách (jako je Stokesova věta o vyjádření vnějšího gravitačního potenciálu)? V důkazech (jako je důkaz existence podélných a příčných vln v homogenním izotropním elastickém prostředí)? V pojmech (jako je izostaze)? V definicích (jako je definice magnituda zemětřesení)? V teoriích (jako je Gaussova teorie geomagnetického pole)? Ve vzorcích (jako jsou Vening-Meineszovy vzorce pro tížnicové odchylky)? V metodách (jako je paprsková metoda v seismologii)?

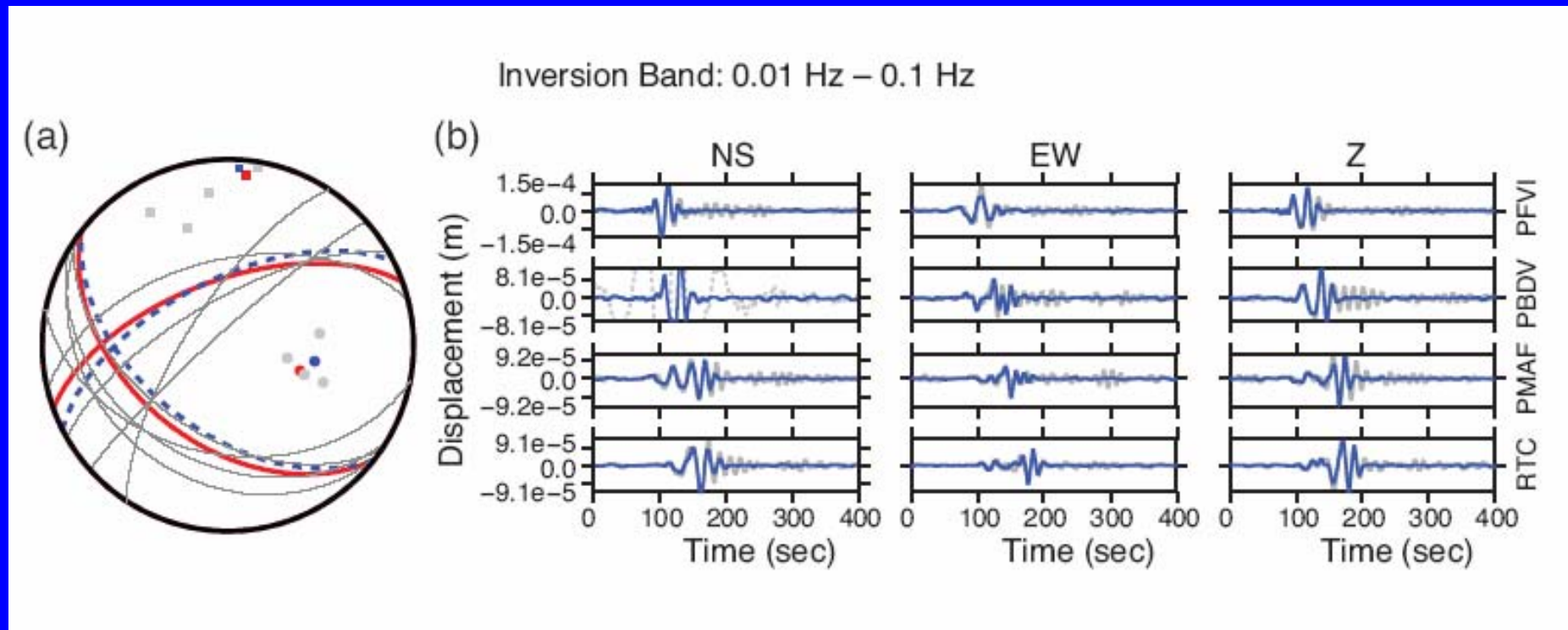
Geofyzika by jistě nemohla existovat bez těchto součástí, jsou všechny podstatné. Nicméně, já si vážně myslím, že žádná z nich není jádrem geofyziky, že hlavní oprávnění geofyzikovy existence je v ~~přímém~~ řešení problémů, a že tedy skutečným jádrem geofyziky jsou problémy a jejich řešení.

Jestliže přijmeme tento názor, pak ihned dojdeme ke zjištění, že dosavadní studijní literatura neodpovídá této situaci. Potřebovali bychom sbírky geofyzikálních úloh, hlavně sbírky badatelských úloh. V matematice jsou pravděpodobně nejznáměj-

*Mýty a my...*

# Moment Tensor Resolvability: Application to Southwest Iberia

Jiří Zahradník<sup>1</sup> and Susana Custódio<sup>2</sup>

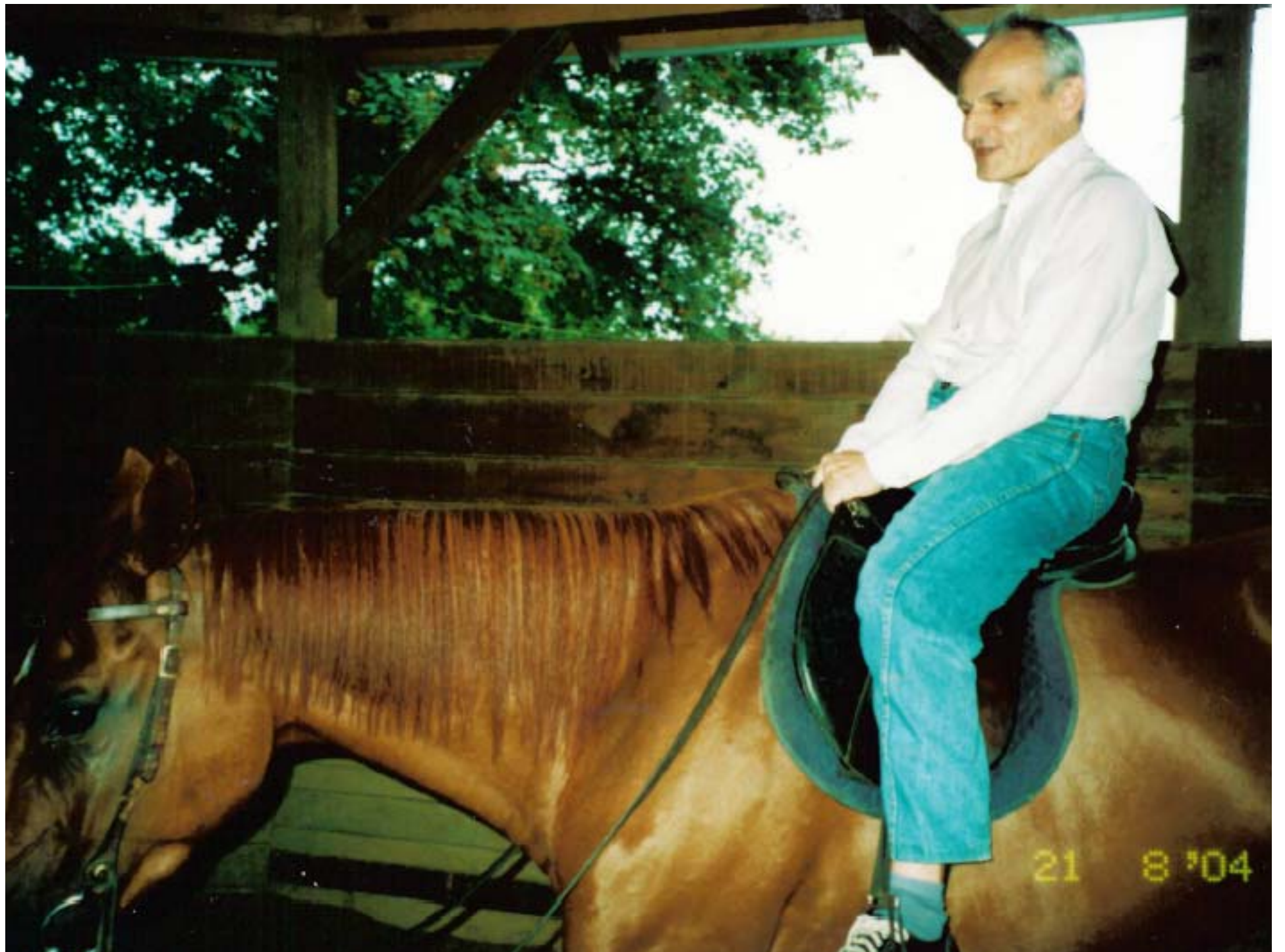


However, single station

inversions remain rare and are often perceived with scepticism. Single-station inversions do deserve more attention because: 1) they oppose the myth that the study of focal-mechanisms requires a good azimuthal coverage, and 2) single-station inversions are important in forensic seismology, in future planetary missions, etc.

Dobrý výsledek, že ?  
Jirka Z. je 'na koni'!

ale...!?!

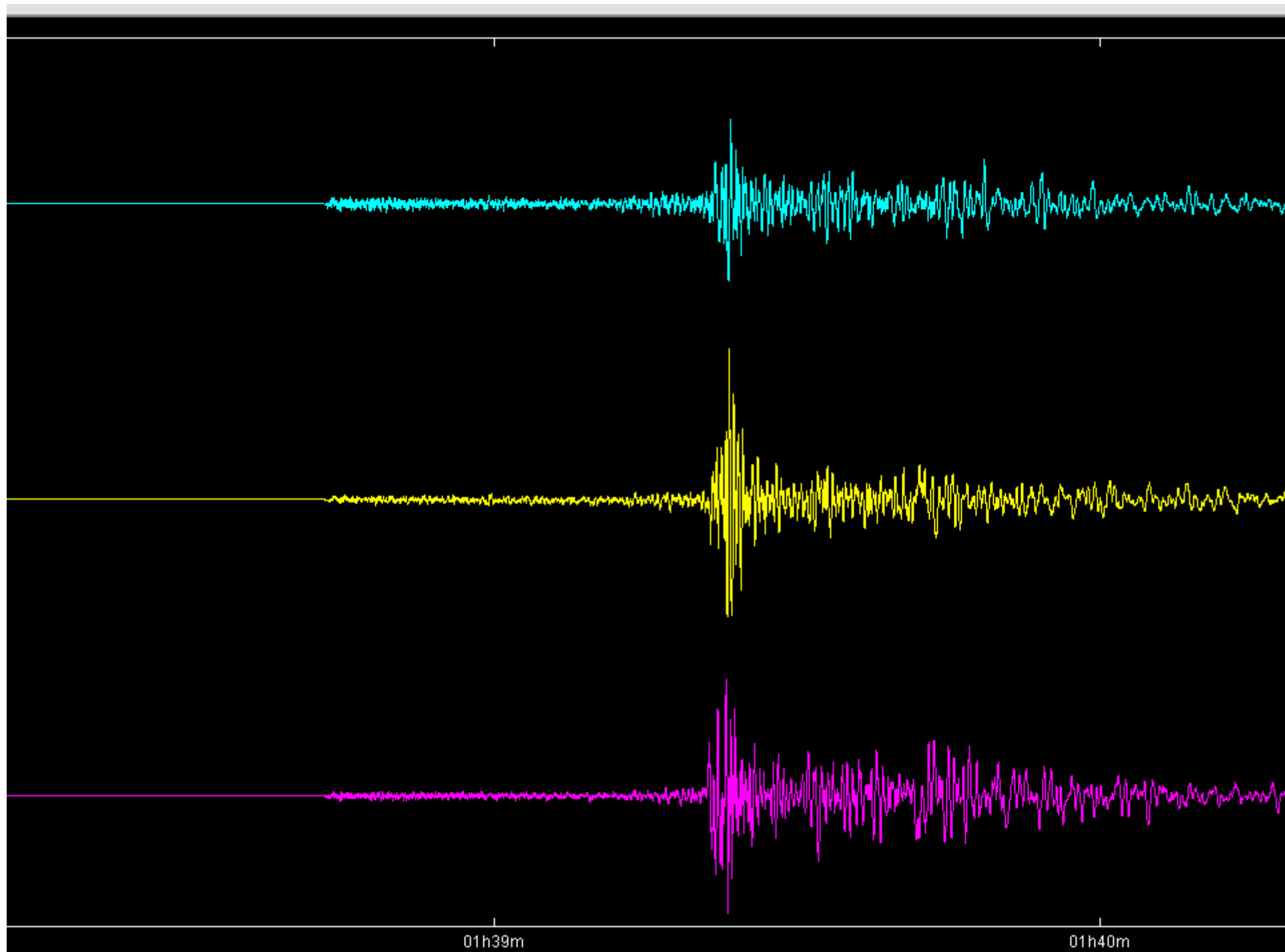




## Long-Period Pulses in Broadband Records of Near Earthquakes

by Jiří Zahradník and Axel Plešinger

CMG-3T velocigrams of weak near earthquakes (local magnitude,  $\sim 1$  to 3; epicentral distance  $\sim 1$  to 10 km) occasionally, that is, not always, contain transient disturbances in the form of apparently one-sided pulses lasting about 100 sec. The pulses appear exclusively on the horizontal components, and their onset coincides with the *S*-wave onset.

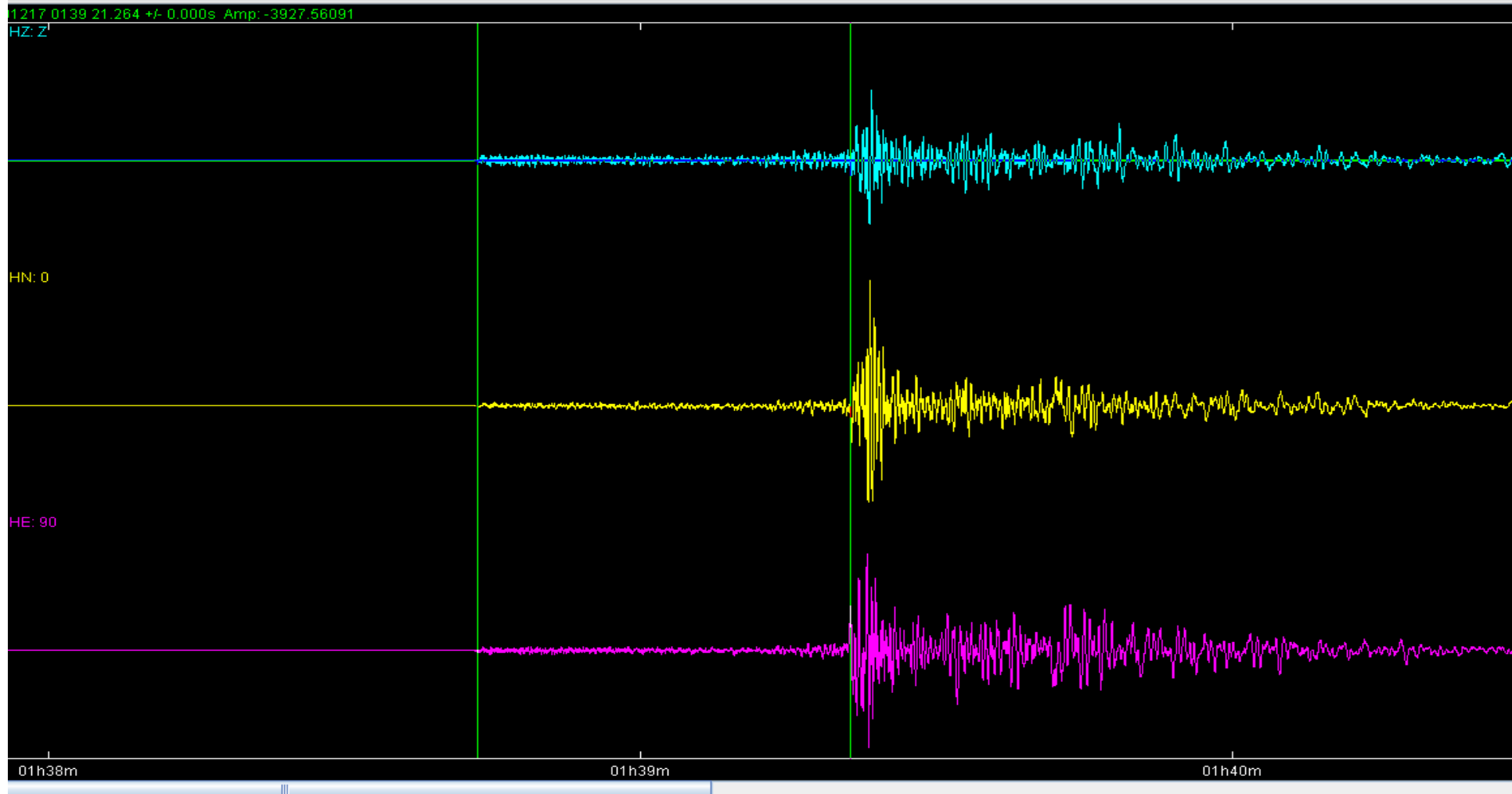


lelp

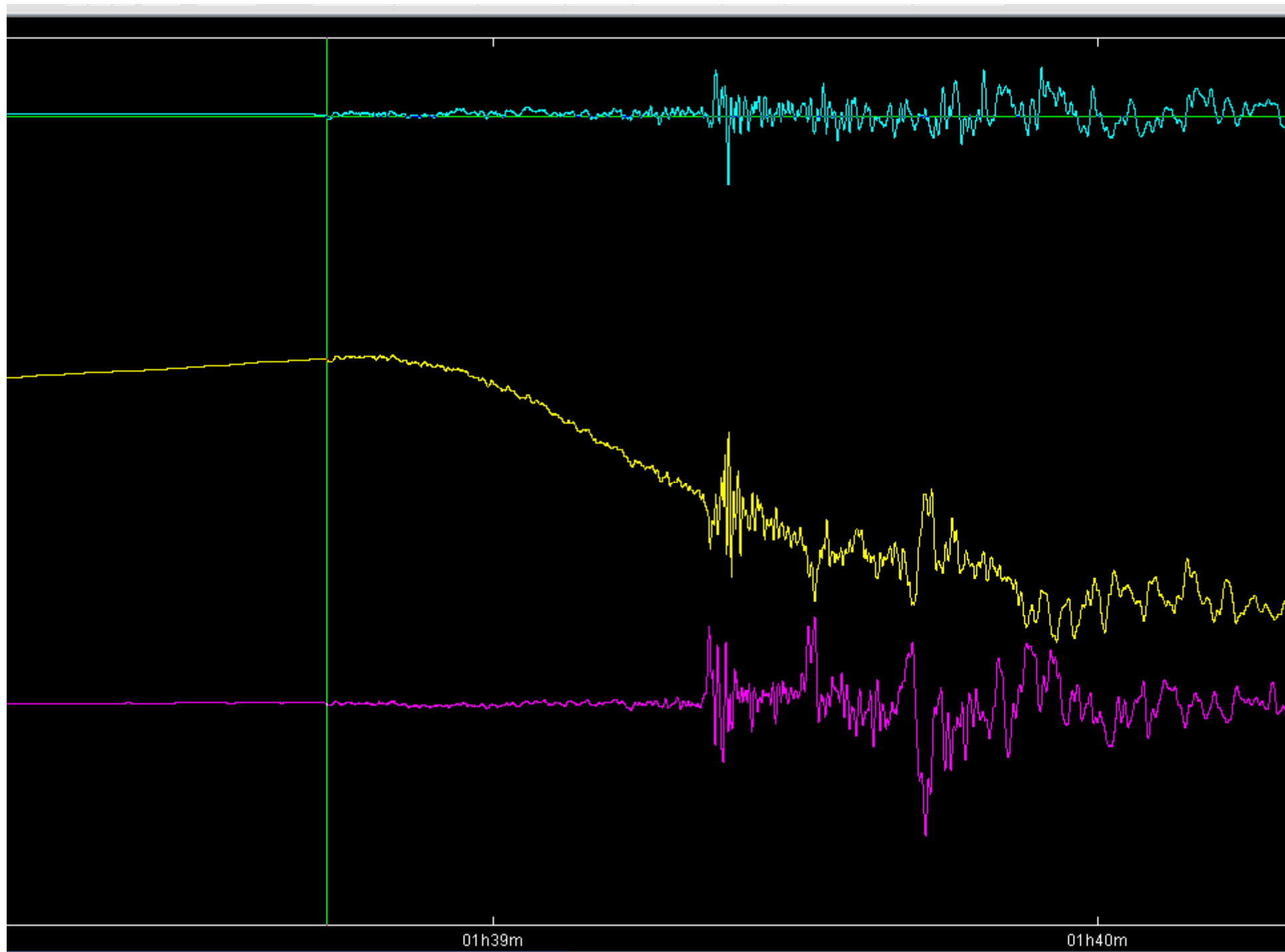
Initial Previous Overlap

RemoveMean Integrate Differentiate PlotSpectral RemoveGain

Auto: 0-P\_max P-P\_max Peak Win Sta.Lta BK Picker Cumul Peak Extractor Cumul Dur



```
with absolute! no @KARAVI
sting pick file: c:\progra-1\seisgr-1\SeisGram2K_1329986322.pick
>Open File to browse and open seismograms.
009-12-17-0137-143.CONPM_054_MSEED_PMRV__HHE__SAC: out of memory reading seismogram, inverting binary byte order.
009-12-17-0137-143.CONPM_054_MSEED_PMRV__HHN__SAC: out of memory reading seismogram, inverting binary byte order.
009-12-17-0137-143.CONPM_054_MSEED_PMRV__HHZ__SAC: out of memory reading seismogram, inverting binary byte order.
```

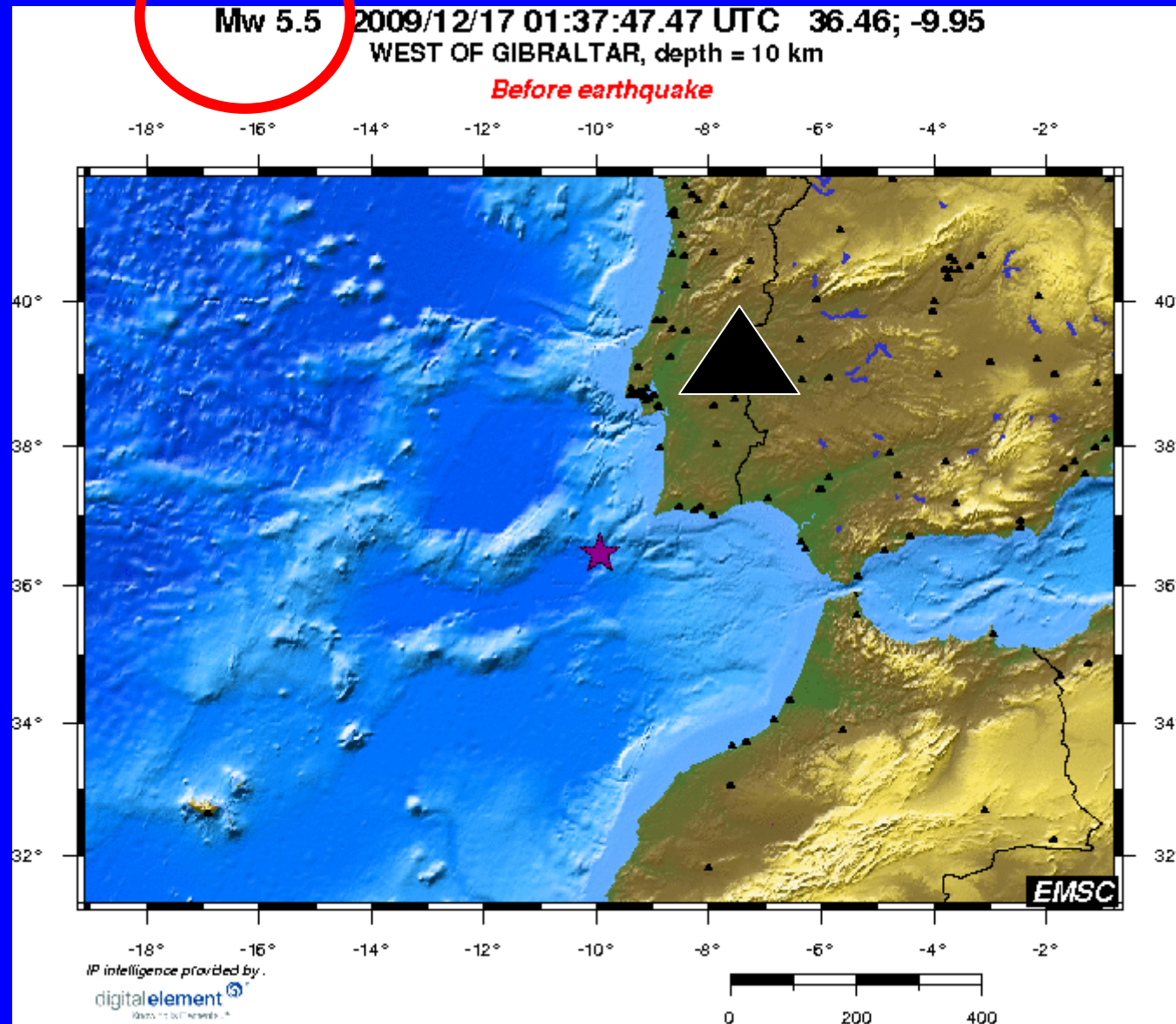


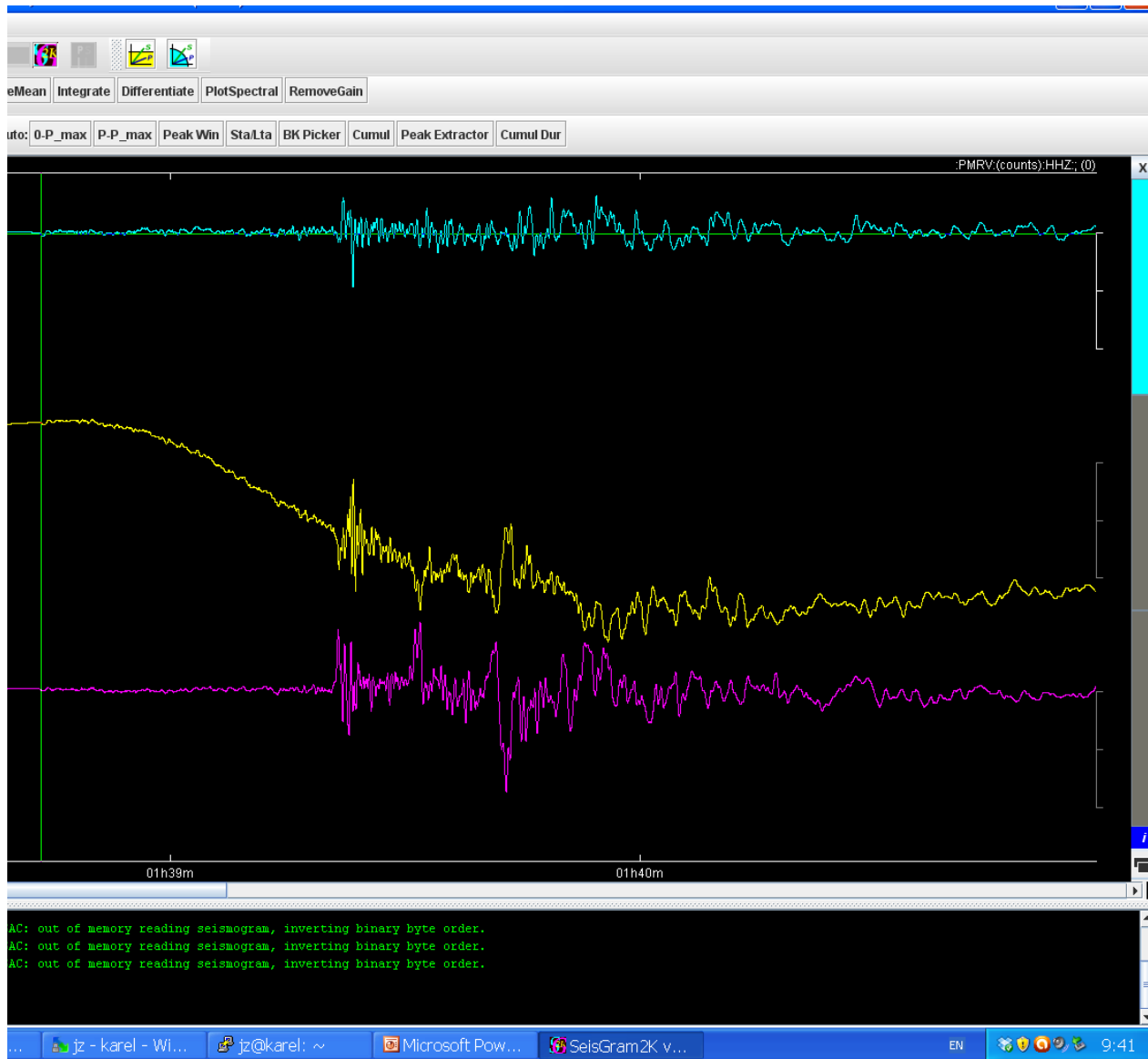
01h39m

01h40m

PMRV\_NS\_SAC

Station PMRV, epicentral distance 300 km.










Bulletin of the Seismological Society of America, 91, 4, pp. 875–879, August 2001

Northwestern Turkey Earthquakes and the Crustal Structure Inferred  
from Surface Waves Observed in Western Greece

by Oldřich Novotný, Jiří Zahradník, and G-Akis Tselentis





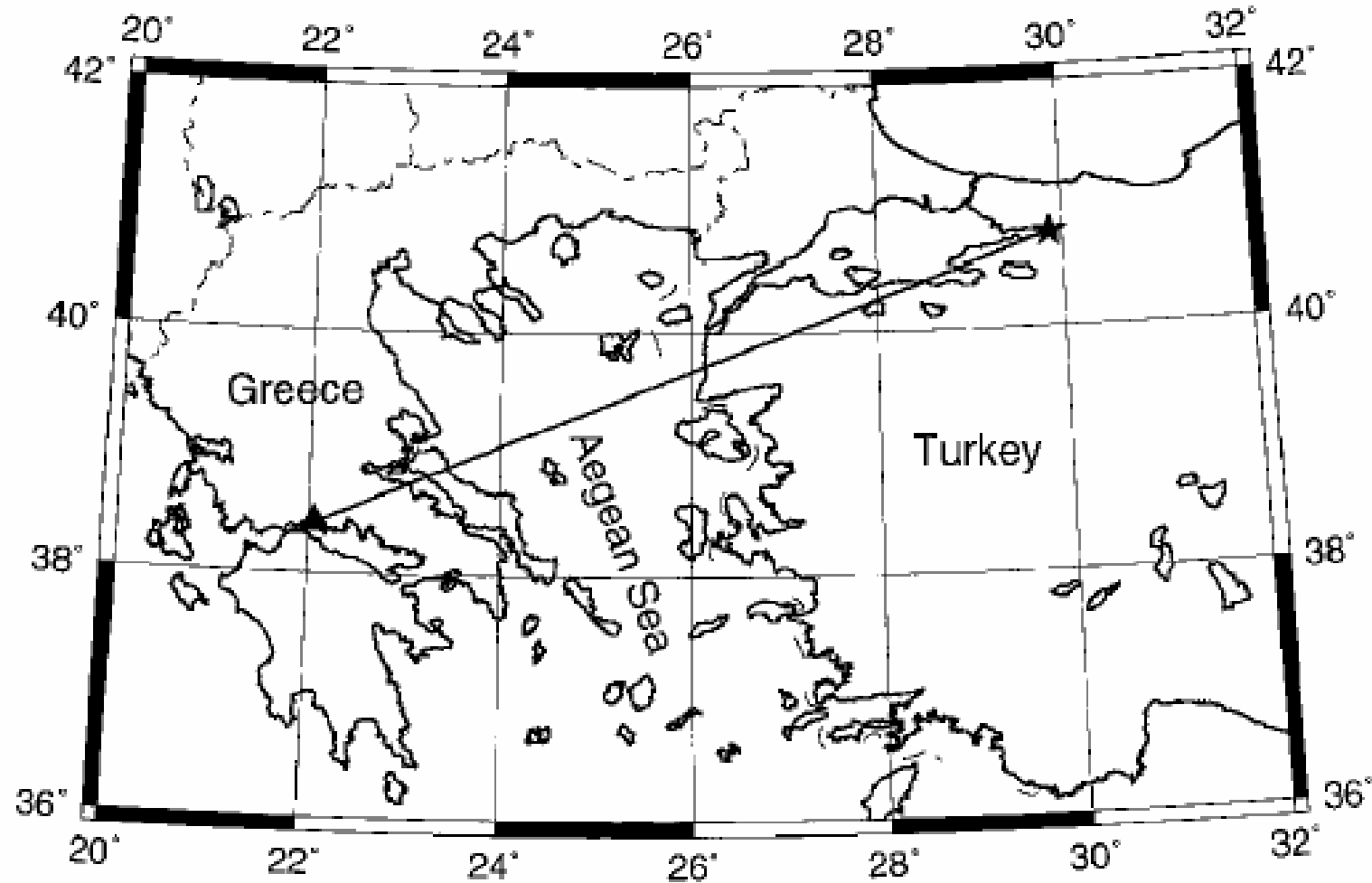
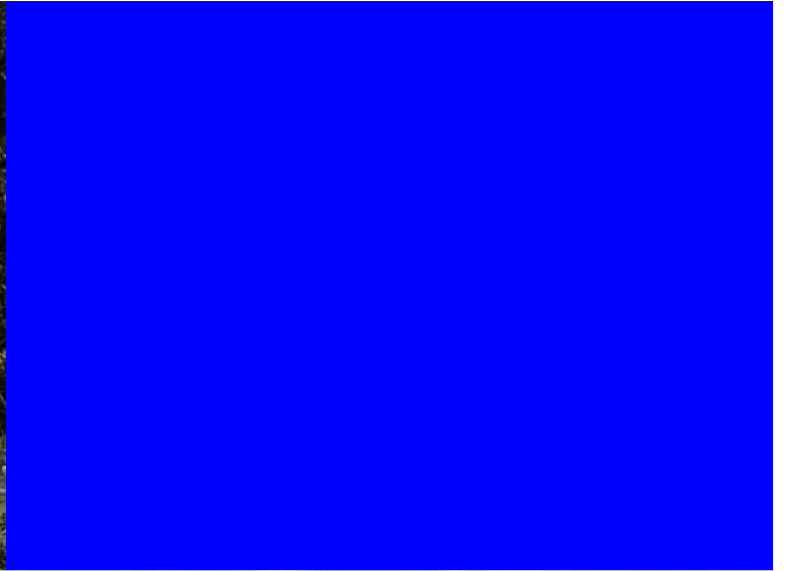
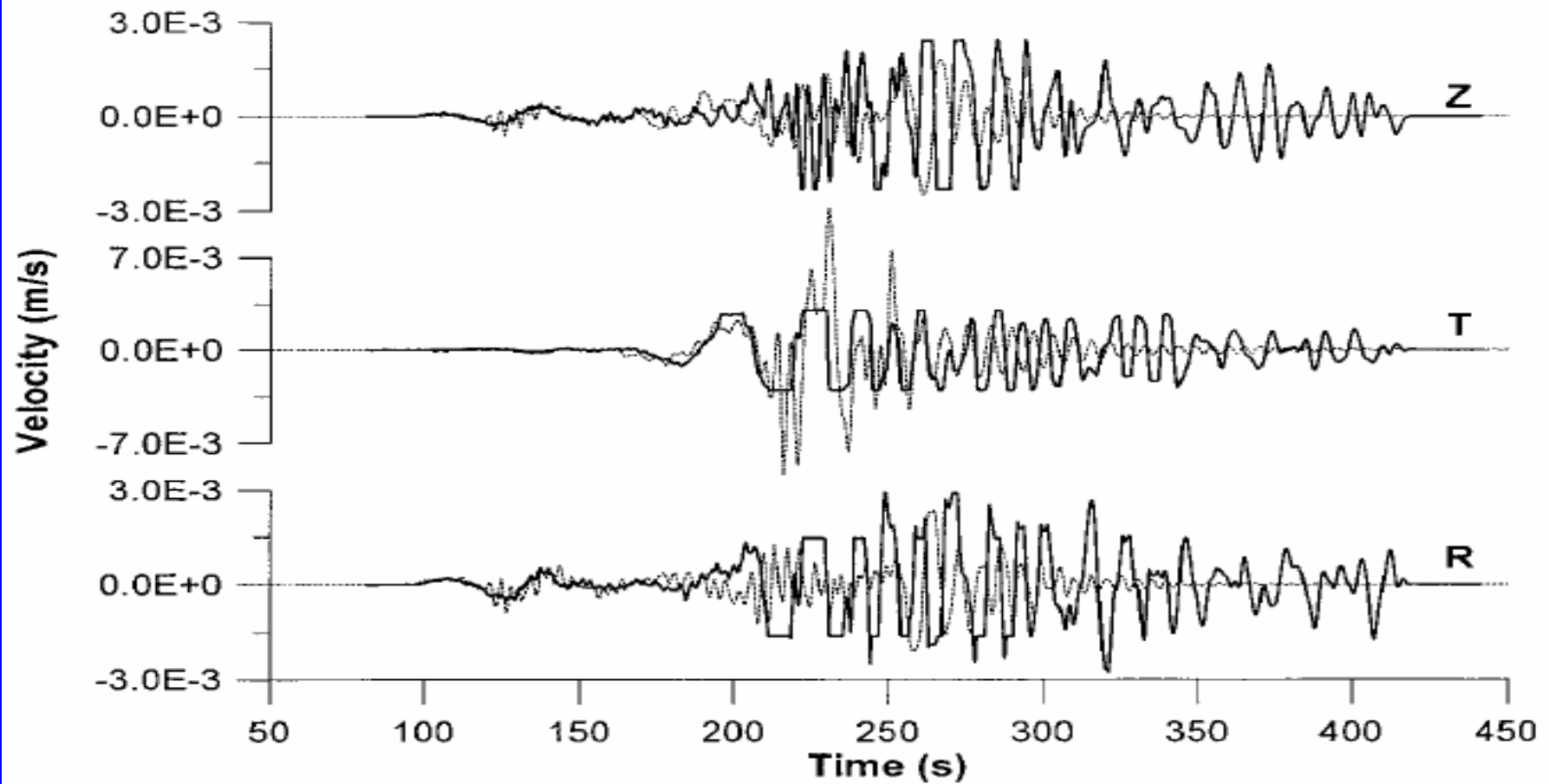


Figure 1. The epicenter (star) of the mainshock of the Turkey earthquake of 17 August 1999 and seismic station SER (triangle).





Chtěli byste vidět seismograf  
v Sergoule?



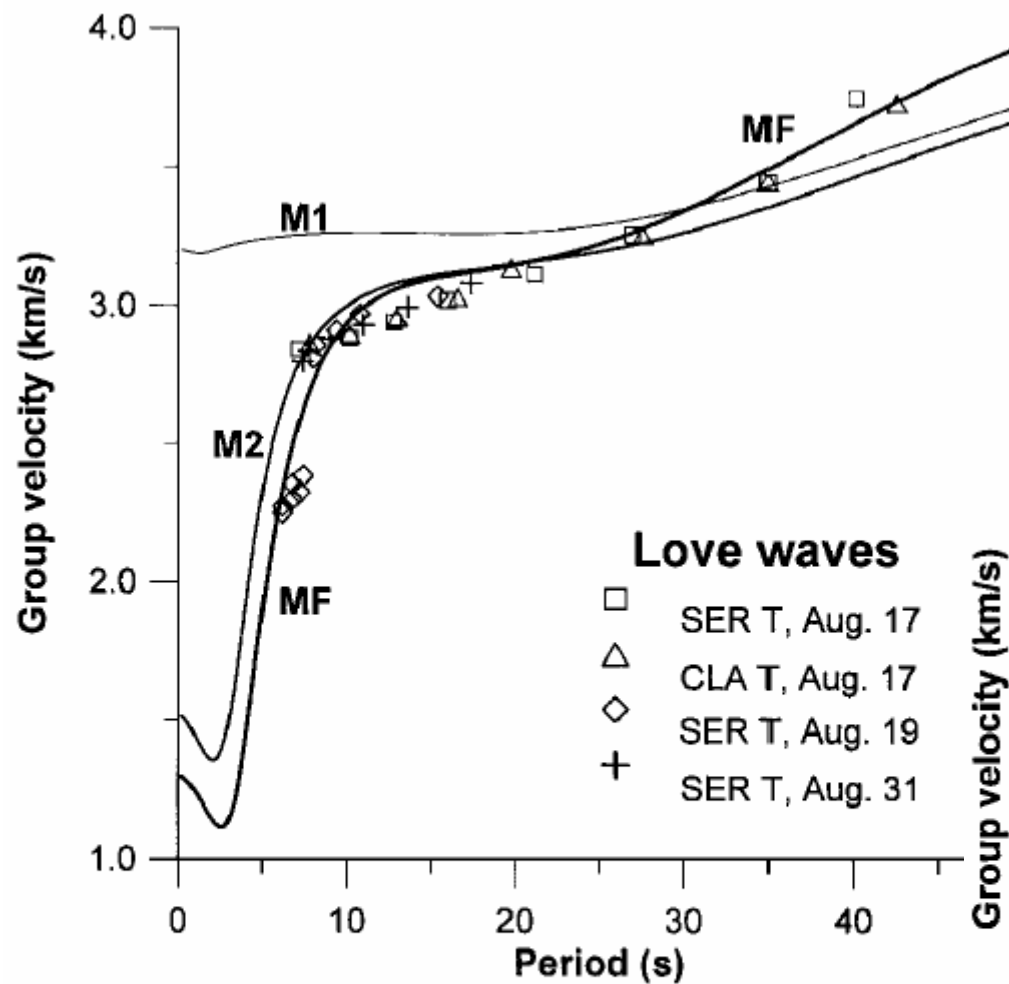


Figure 3. Dispersion curves of Love-wave group velocities. The isolated points represent the observed values, the lines are the theoretical dispersion curves for the initial models M1 and M2, and for the final model MF.

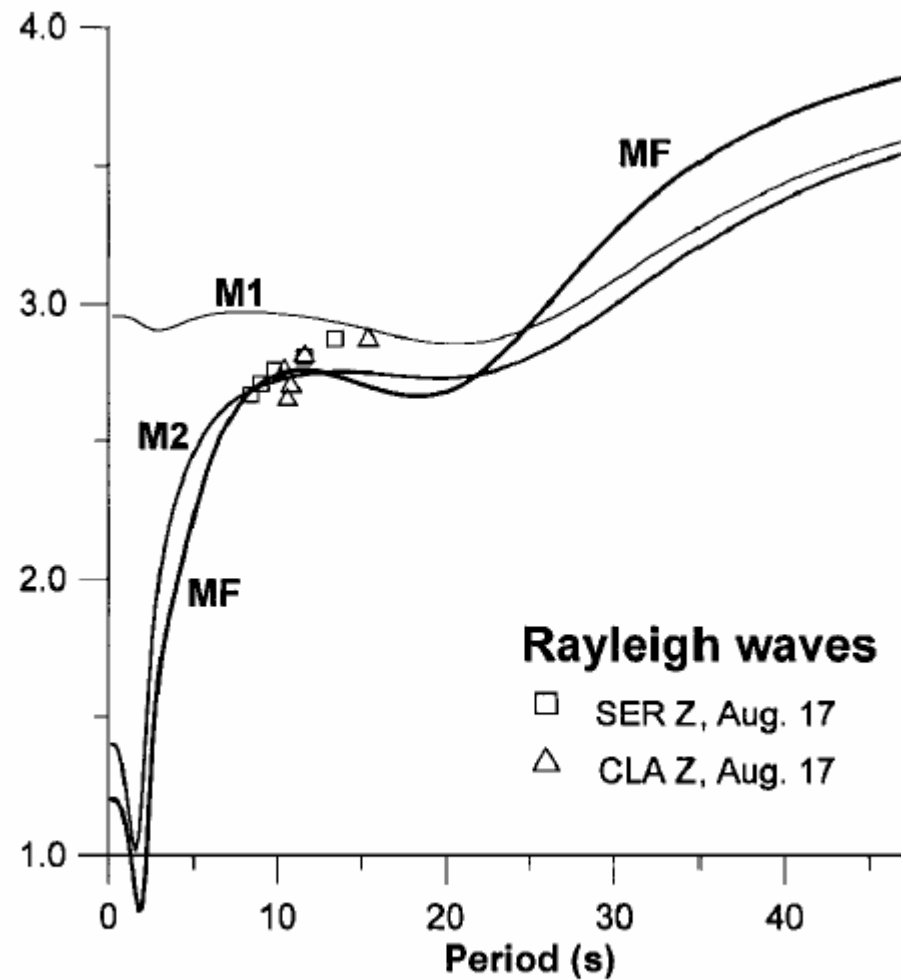
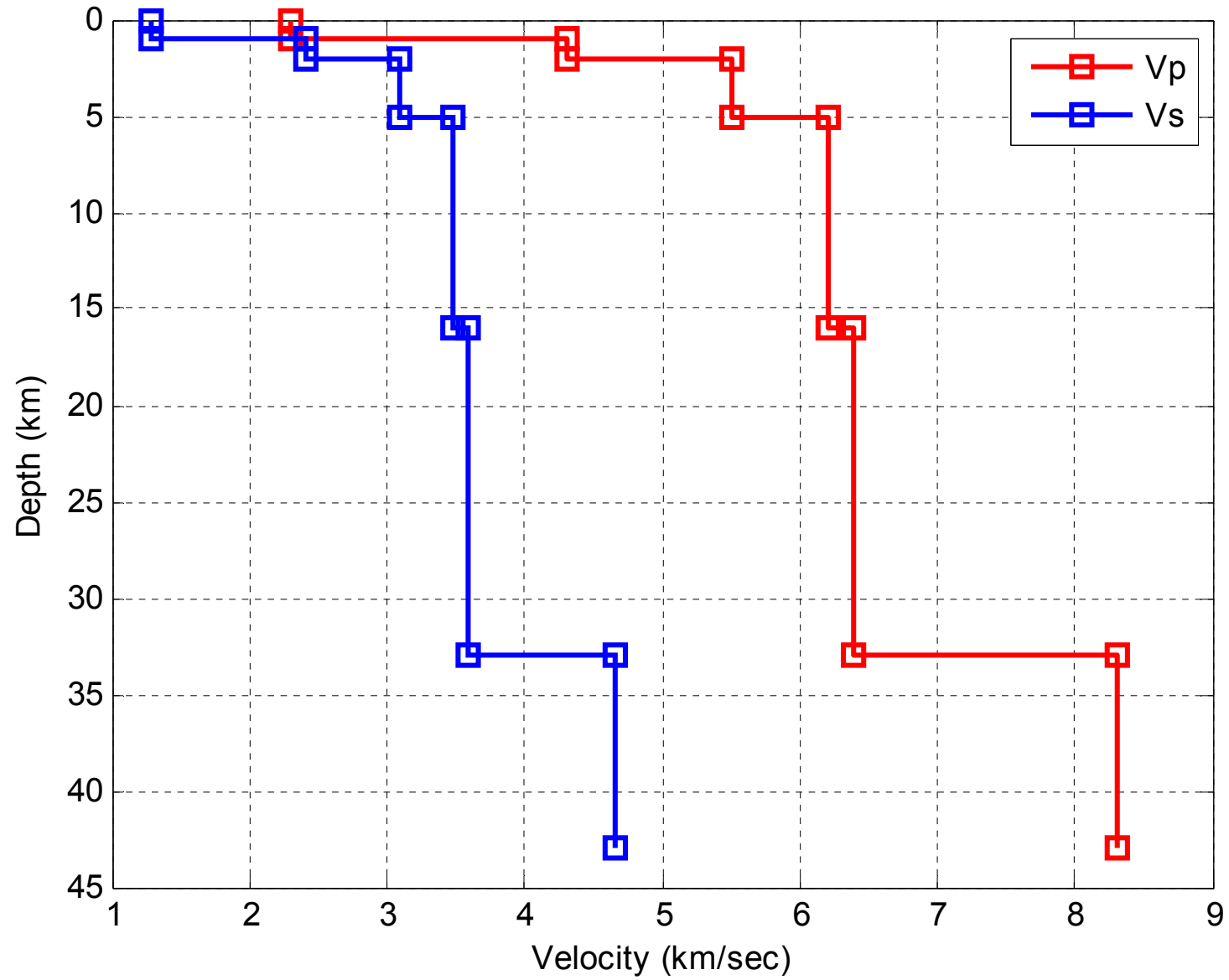


Figure 4. Dispersion curves of Rayleigh-wave group velocities. Denotation is similar to Figure 3.

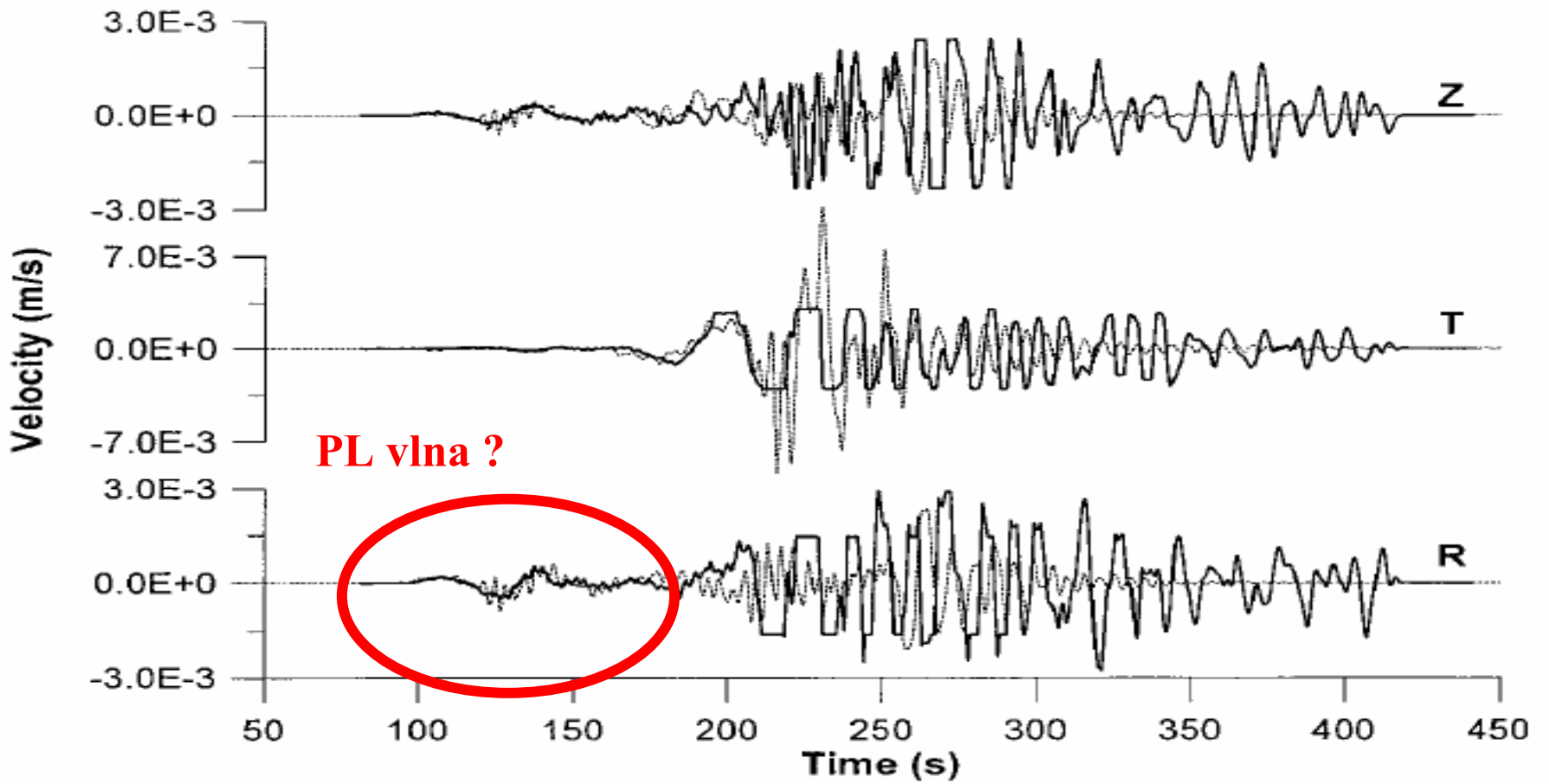
The theoretical phase velocities were computed for horizontally layered models by the matrix methods described by Proskuryakova *et al.* (1981). The methods represent real-valued modifications of the Thomson-Haskell matrices for Love waves and of delta matrices for Rayleigh waves (Haskell, 1953; Watson, 1970). For computing group velocities we used analytical formulas based on the application of the implicit function theorem to the matrix form of the dispersion function (Novotný, 1970); for the analogous formulas,

Hence, our inverse method can be characterized as an iterative one-step modification of the single-parameter variation.

Plot of  $V_p$ ,  $V_s$  Novotny et al., BSSA 2001





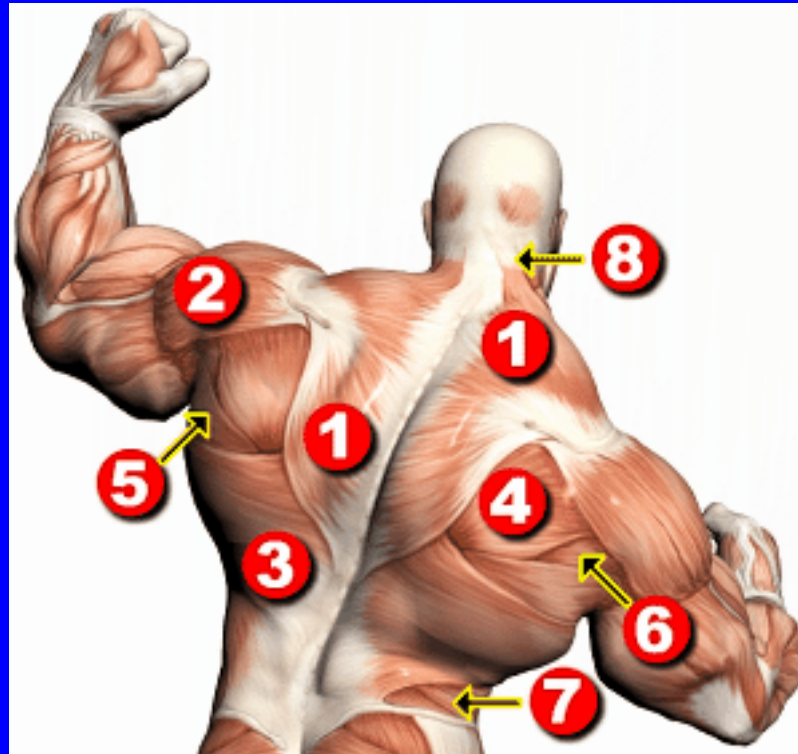




Disperzní křivky a my ....

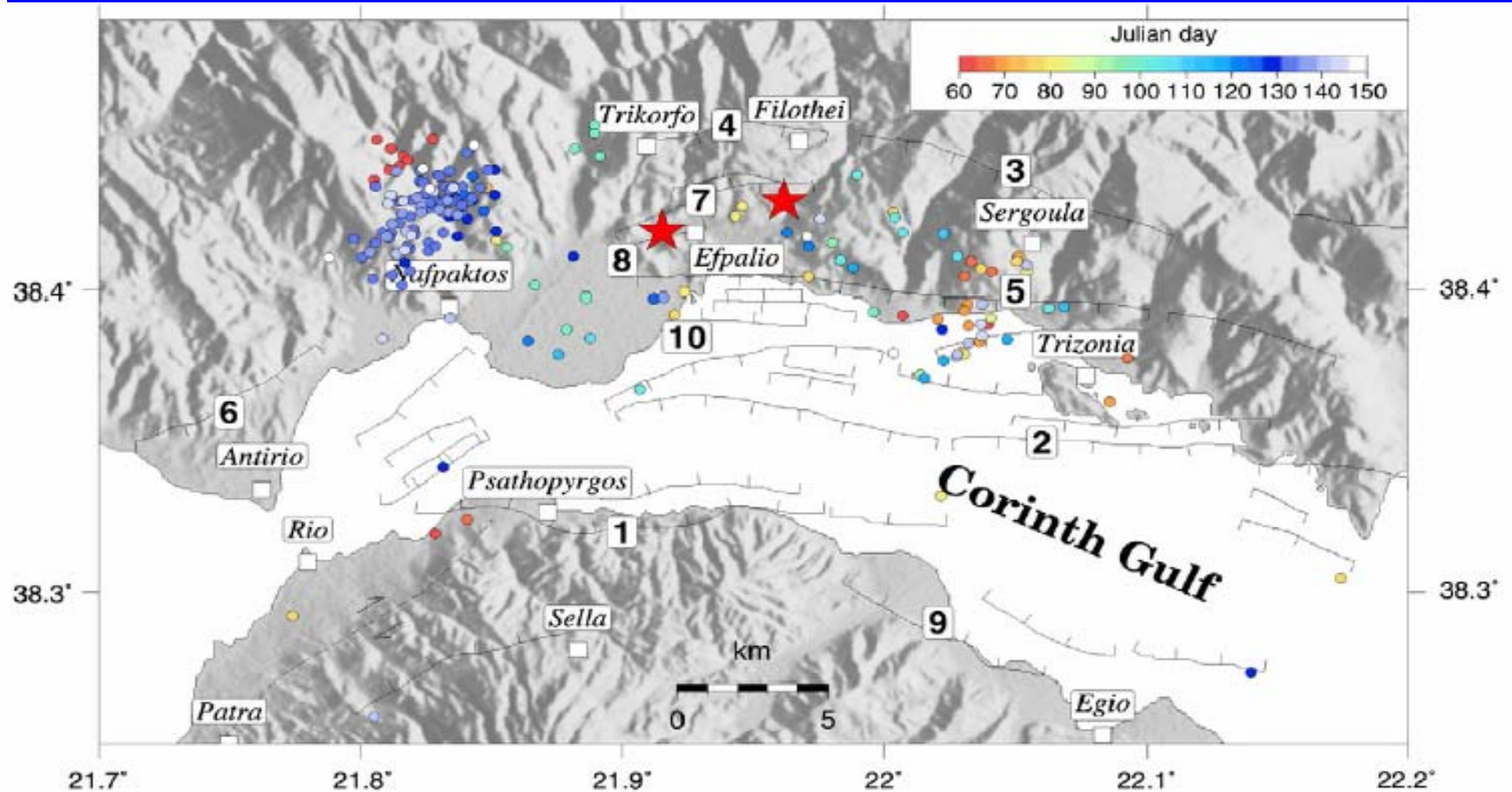
čili SVAL

**Sval** je orgán, jehož funkcí je umožnění aktivního pohybu živočicha nebo jeho části.

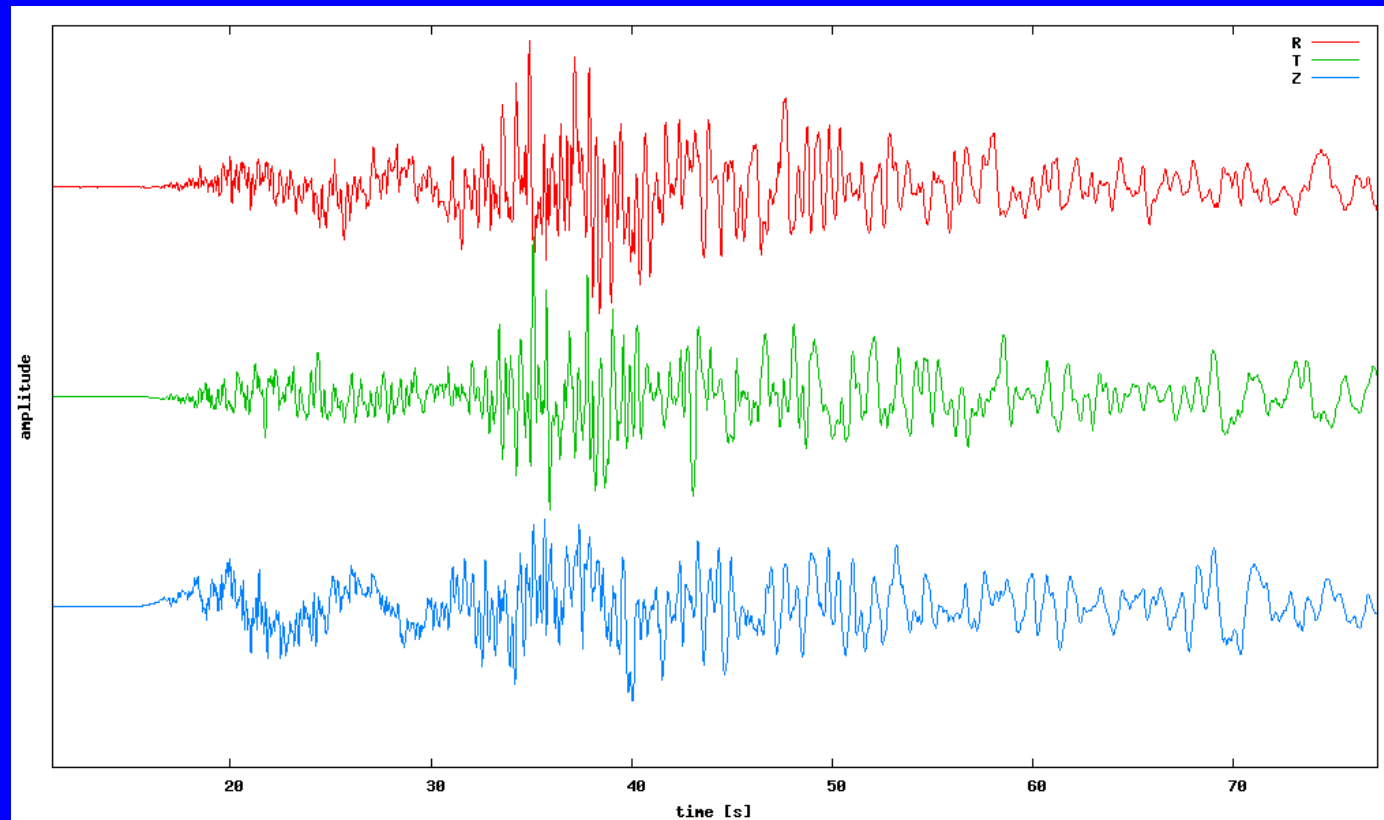


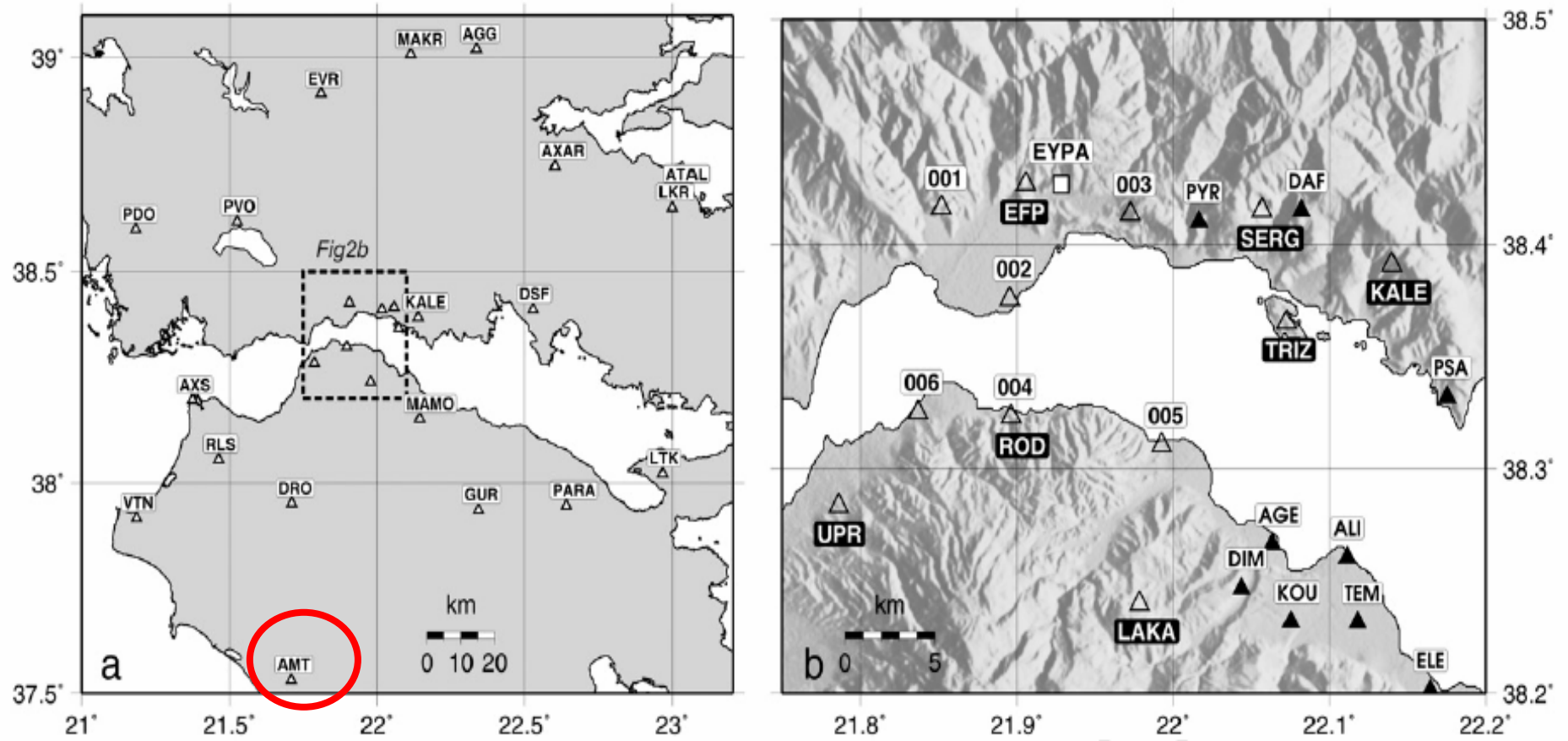


# Efpalio 2010



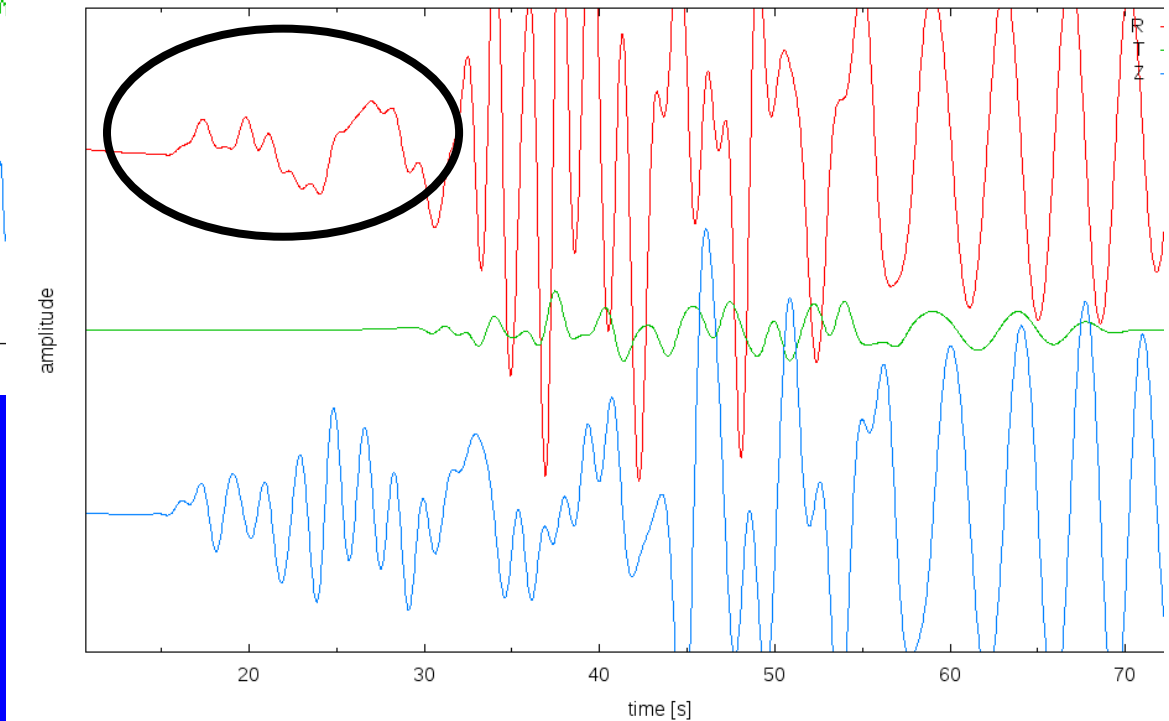
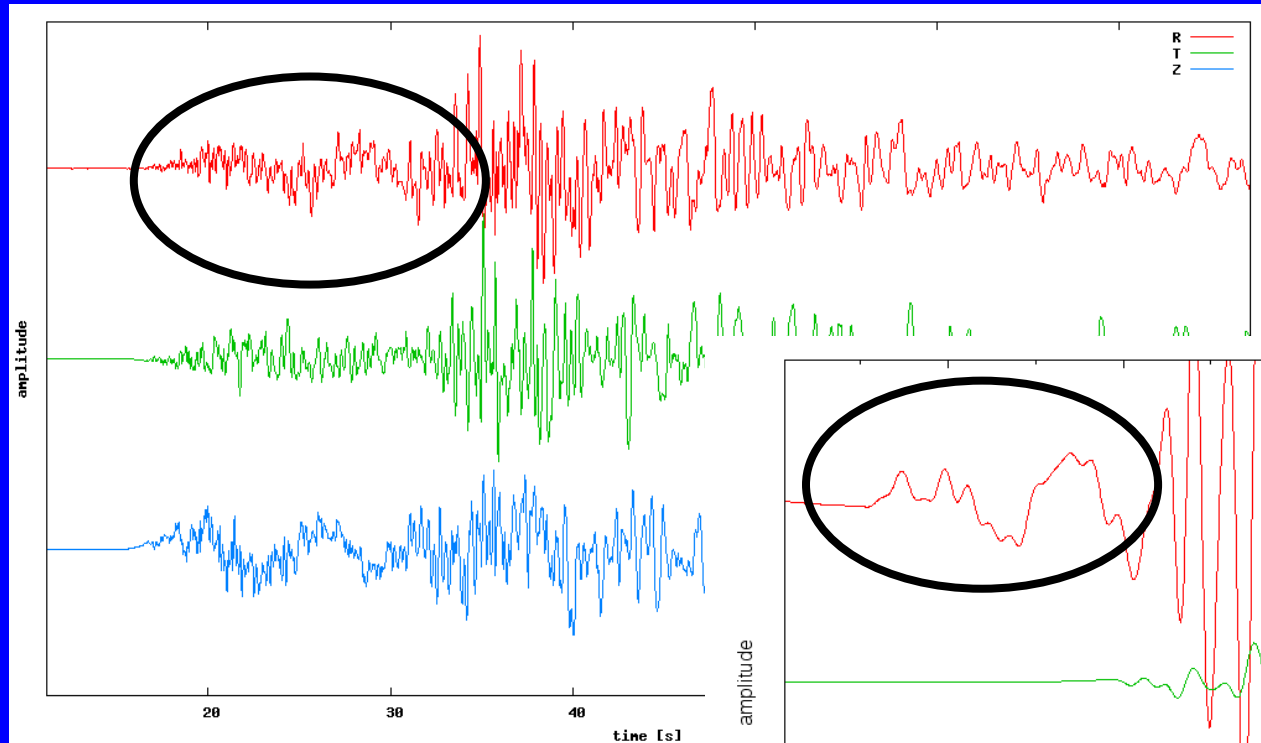
# A zase dlouhé vlny.... (Efpalio 2010, stanice AMT)



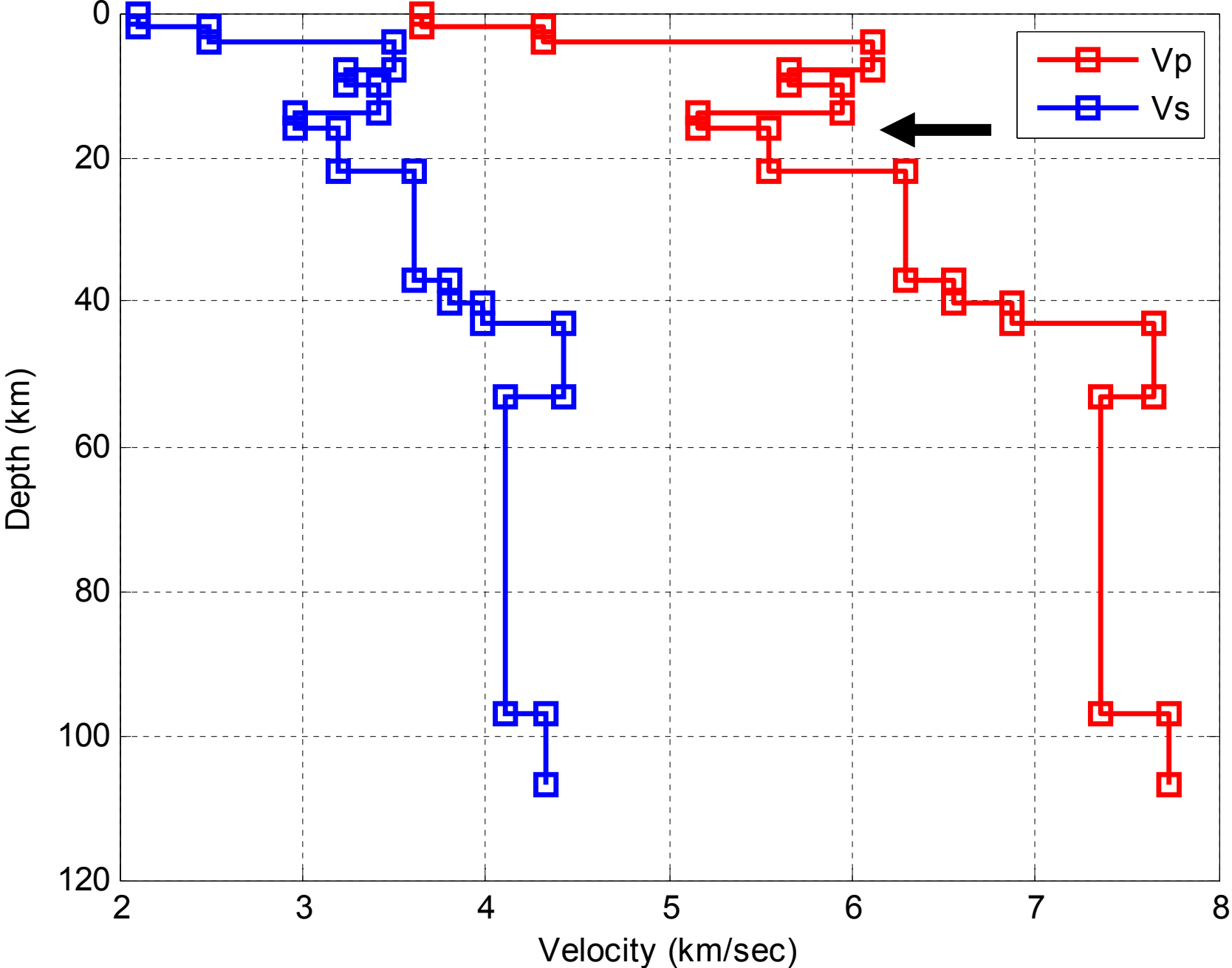




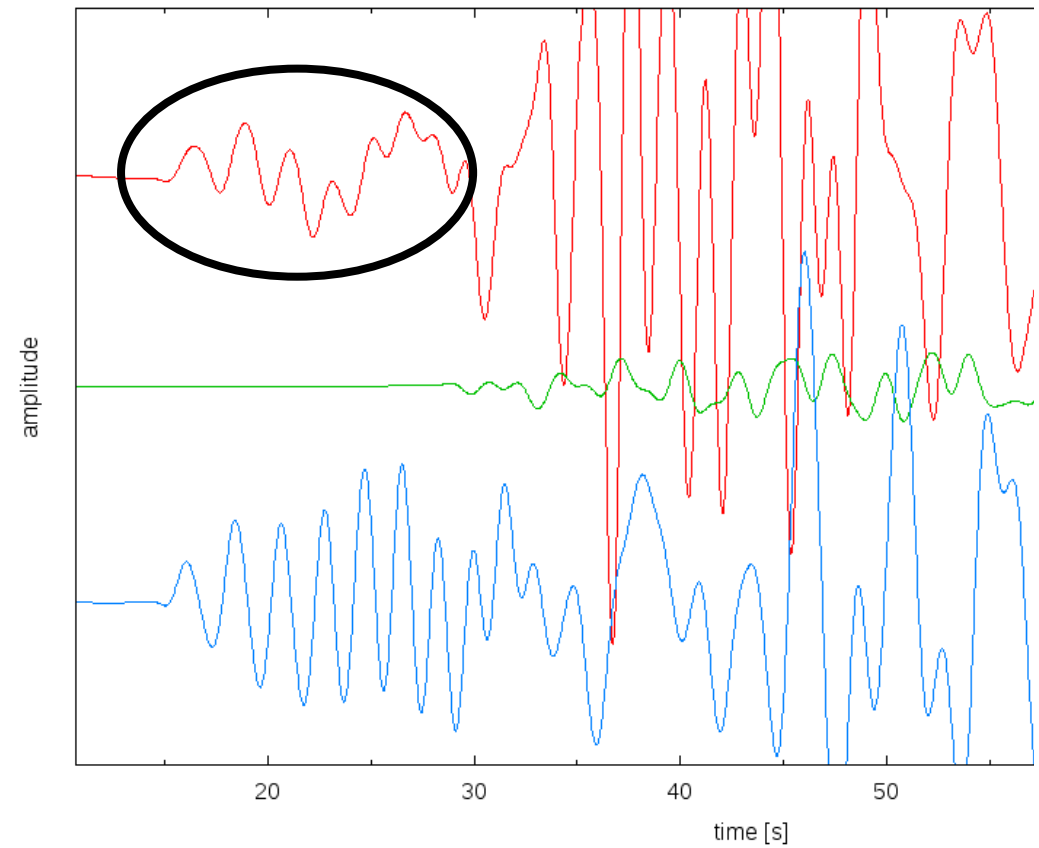
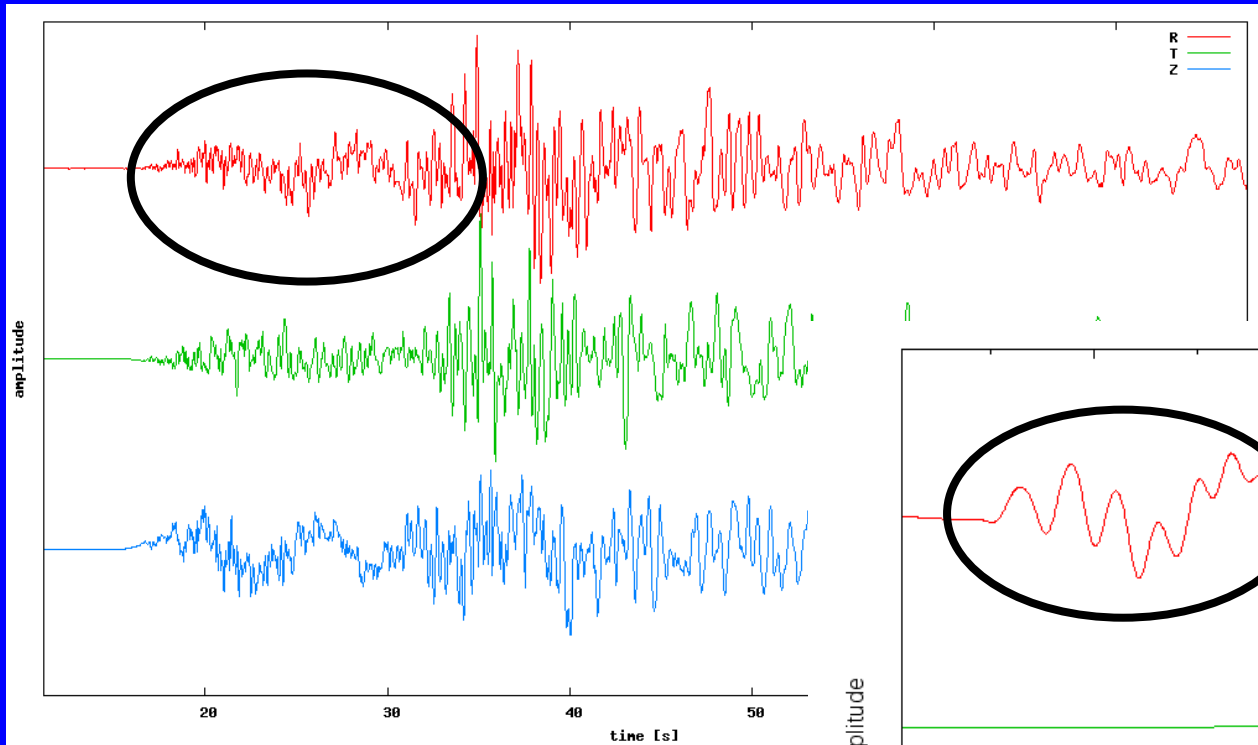
# Možné vysvětlení pomocí teoretického modelu



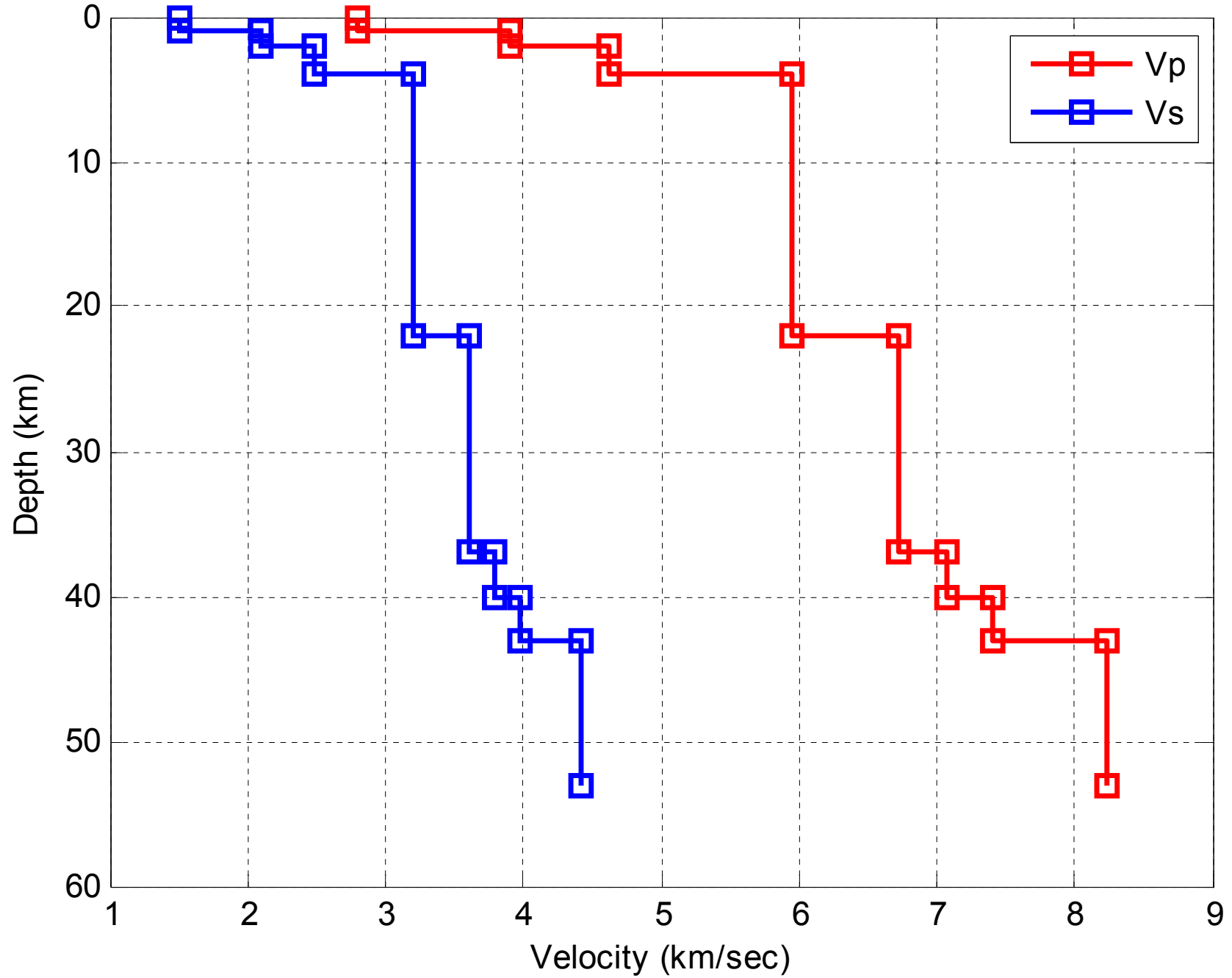
Plot of Vp, Vs



# ... a v jiném modelu



Plot of Vp, Vs CLDRmodif1.da













Reparát ?

# Doc. Novotný a Inženýrská Seismologie



Bez problémů !



zrychlení  
 $\sim 1g$



EMSC

Oldo, díky za  
nasměrování!

