

Earthquake and Fault?

Yoshio Okamoto

yossi.okamoto@gmail.com

<http://yossi-okamoto.net/>

Silpakorn Univ. DS 10th Dec.2025

Who are

- **Earth Science** high-school teacher
- Associate professor and part-time lecturer at **Osaka-Kyoiku University** 2010-
- Geo Science class at **KVIS, PCSI, Chiang Mai Univ. DS, Phayao Univ.**
- **School Seismograph System** (at Loei, PCSHS NST, Chiang Mai Univ.)
- **3D seismicity maps, tsunami simulation**
- **Polarized microscope unit & Thin-Section**
- **3D printing** (2019-) and all-round
- **Linux Programming** (awk, C, Perl, etc.). Now with the use of Claudio

Yossi-Okamoto.Net



Teaching Tools | Publish Resources | Field Trip(World) | Field Trip(Japan) | Essay etc.

0248:15
RAY5-COUNTER.COM
Teaching Tools. Feel Free to Use with Copy Left! (GNU). yossi.okamoto<at mark>gmail.com
日本語はこちら

What's New (25 August 2025)

- 25th Aug. 2025 2025Kushiro_GeoMag Poster(E ver. Page2) **New!**
- 25th Aug. 2025 2025Kushiro_Thai_Seis Inner Earth(E ver. Page2) **New!**
- 2nd Mar. 2025 2025 Jan-Feb. Thailand SHS visit **New!**
- 19th Nov. 2024 Thin-Section Photo System **New!**
- 15th Oct. 2024 Covid-19 Infection Simulation Part 4 **New!**
- 06th Sep. 2024 About my lectures on Geoscience in Thailand **New!**
- 31st Aug. 2024 Comparison of micro-controllers
- 05th Aug. 2024 2022GeoSciEdIX_Matsue,Japan
- 16th July 2024 BM1422GMV Magnetometer
- 10th Jun. 2024 ESP32 Micro-barometer making recipe
- 08th Jun. 2024 Reminder for micro-barometer data processing
- 06th Jun. 2024 Reminder for magnetometer data processing
- 03rd Jun. 2024 Old BASIC program Museum
- 27th May 2024 How to add timestamps for serial data
- 16th May 2024 QMC5883L Geo-magnetometer (prototype)
- 07th Apr. 2024 Wave Propagation Simulations for Classrooms
- 25th Feb. 2024 ESP32 Seismometer (prototype)
- 24th Feb. 2024 SCIUS 2023 Symposium Presentation
- 28th Jan. 2024 2023Dec-2024Jan Thailand Diary Whole_List
- 24th Jan. 2024 MUIGC2014 Excursion Diary
- 21st Jan. 2024 Satun Geopark Excursion Diary
- 07th Dec. 2023 My Seismograph History

Resources

- [for Thailand schools](#)
- [Conference Presenter](#)
- [for the GeoSciEdIX](#)
- [for the 5th KVIS-ISF](#)
- [Old contents](#)

Seagull Lab & Factory

- [Seagull Lab for Classroom](#)
- [Seagull Factory](#)
- [Thin-Section related](#)
- [3D printer products](#)

Old Miscerous

- [Old Topics](#)

科学がベースとするもの

- これから2つの動画をごらんにいれます。
- いずれも火山の噴火をあつかったものです。
- この2つの動画のもっとも根本的なちがいは何だと思いますか？

気づいたら、挙手あるいは、chatで答えを書いてください！

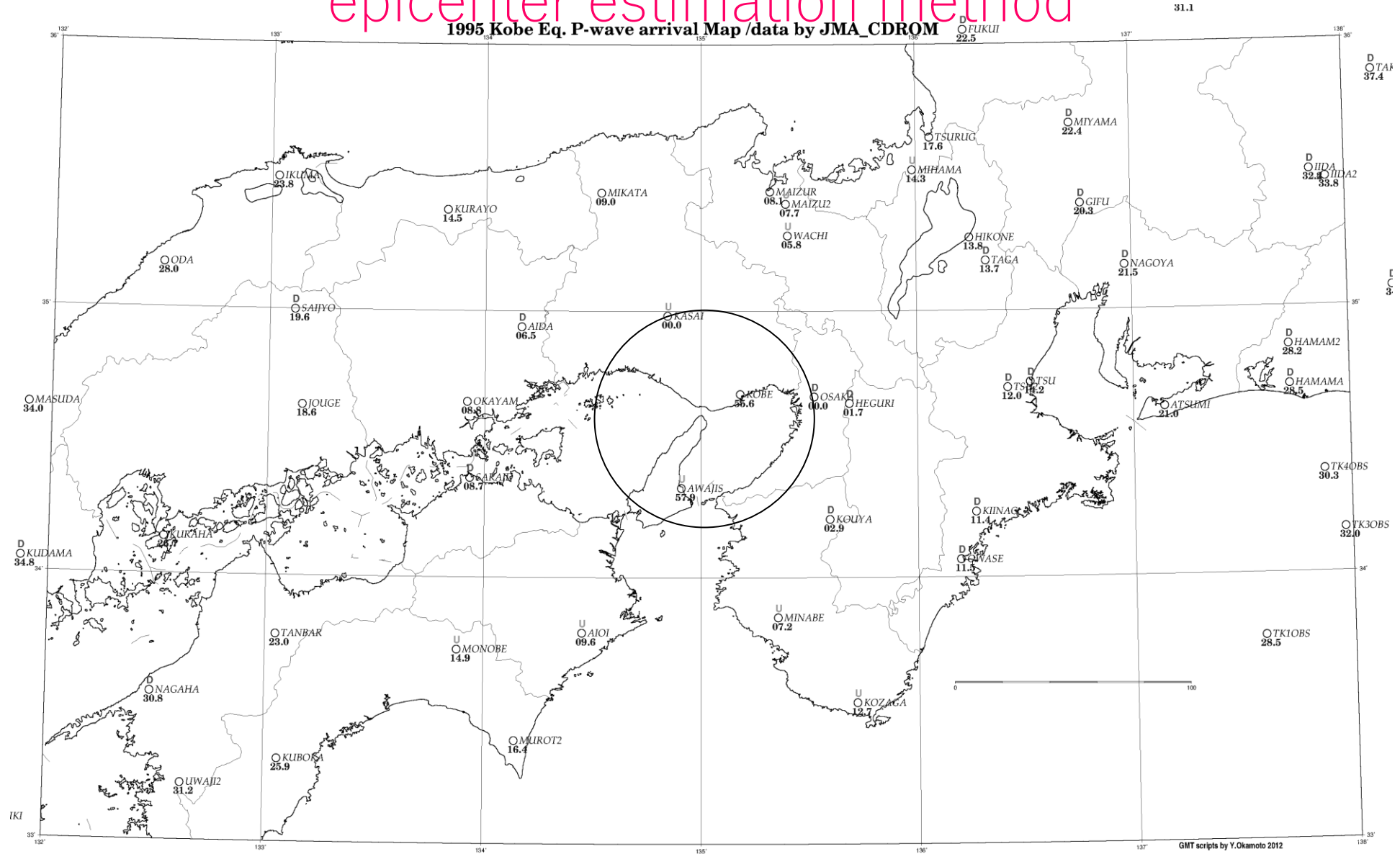
1991 Unzen Pyroclastic Flow



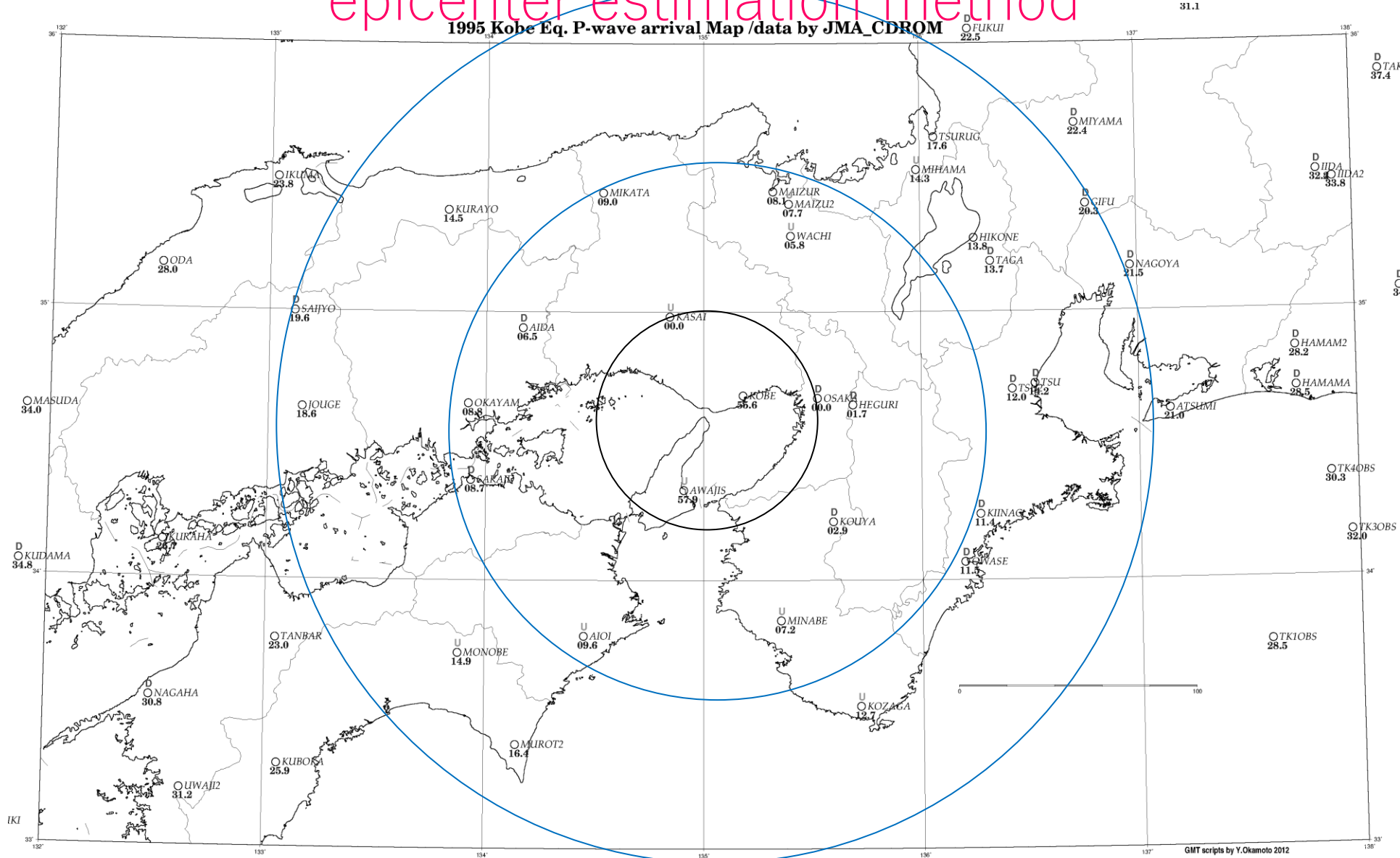
A Day in Pompeii AD79

24 AUGUST 79 AD

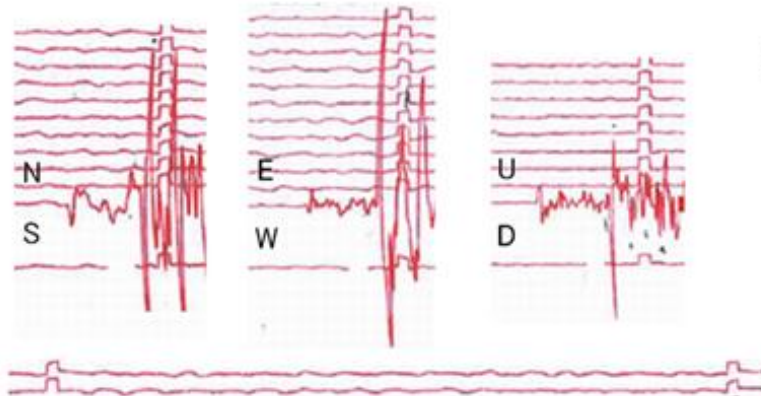
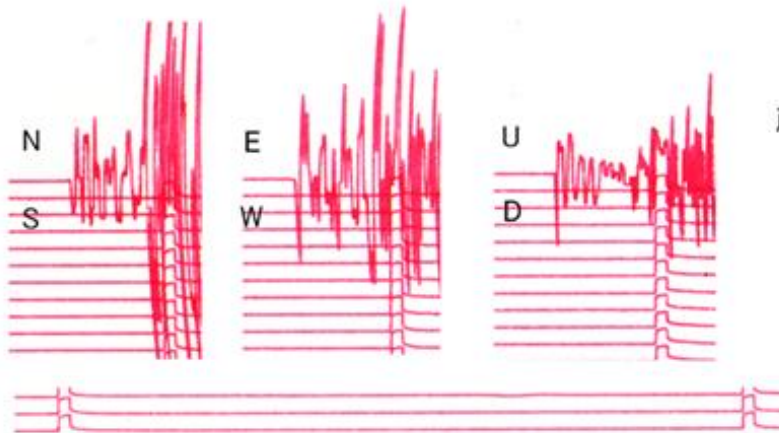
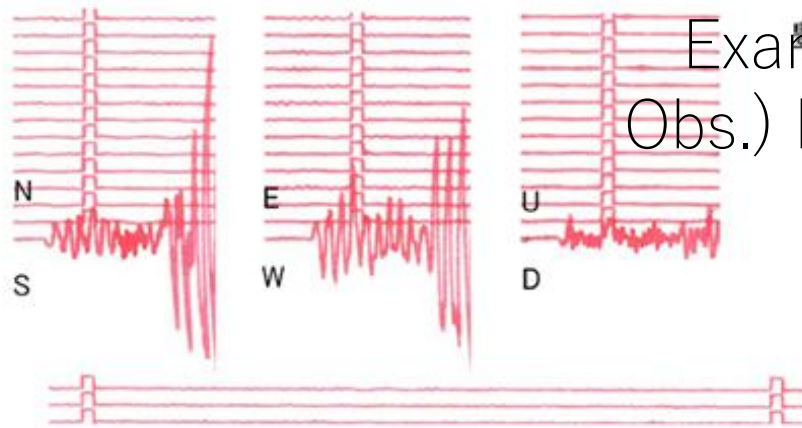
P-arrival contour (every 10 seconds): Current epicenter estimation method



epicenter estimation method

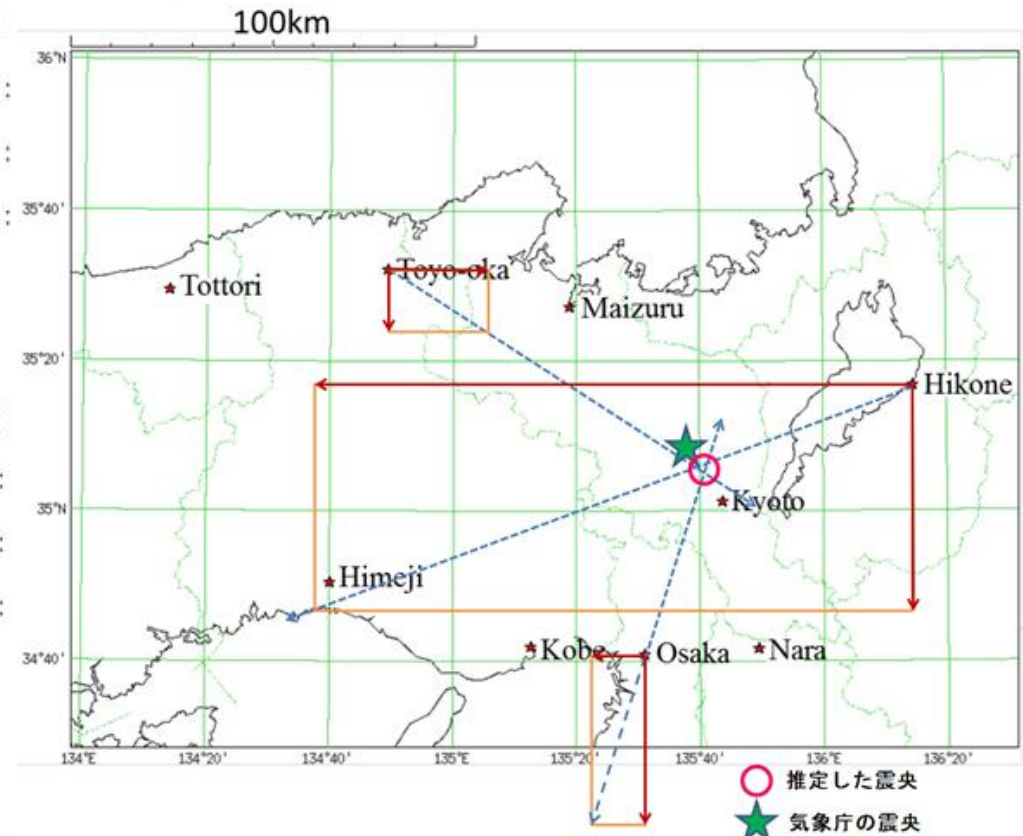


Example of P-wave arrival (Kobe Kaiyo Obs.) by Sayoko Furuta (Osaka Kanku Obs)

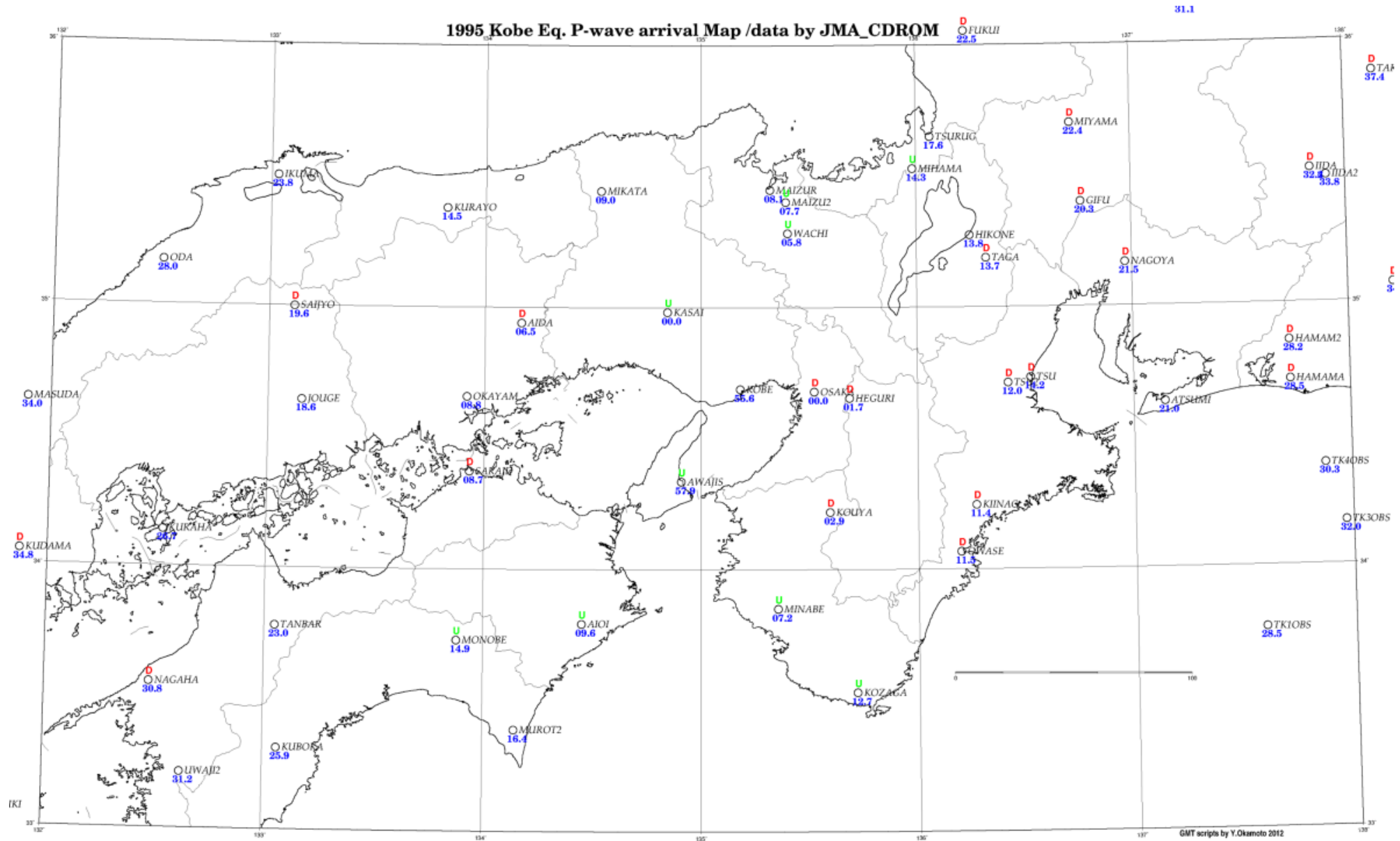


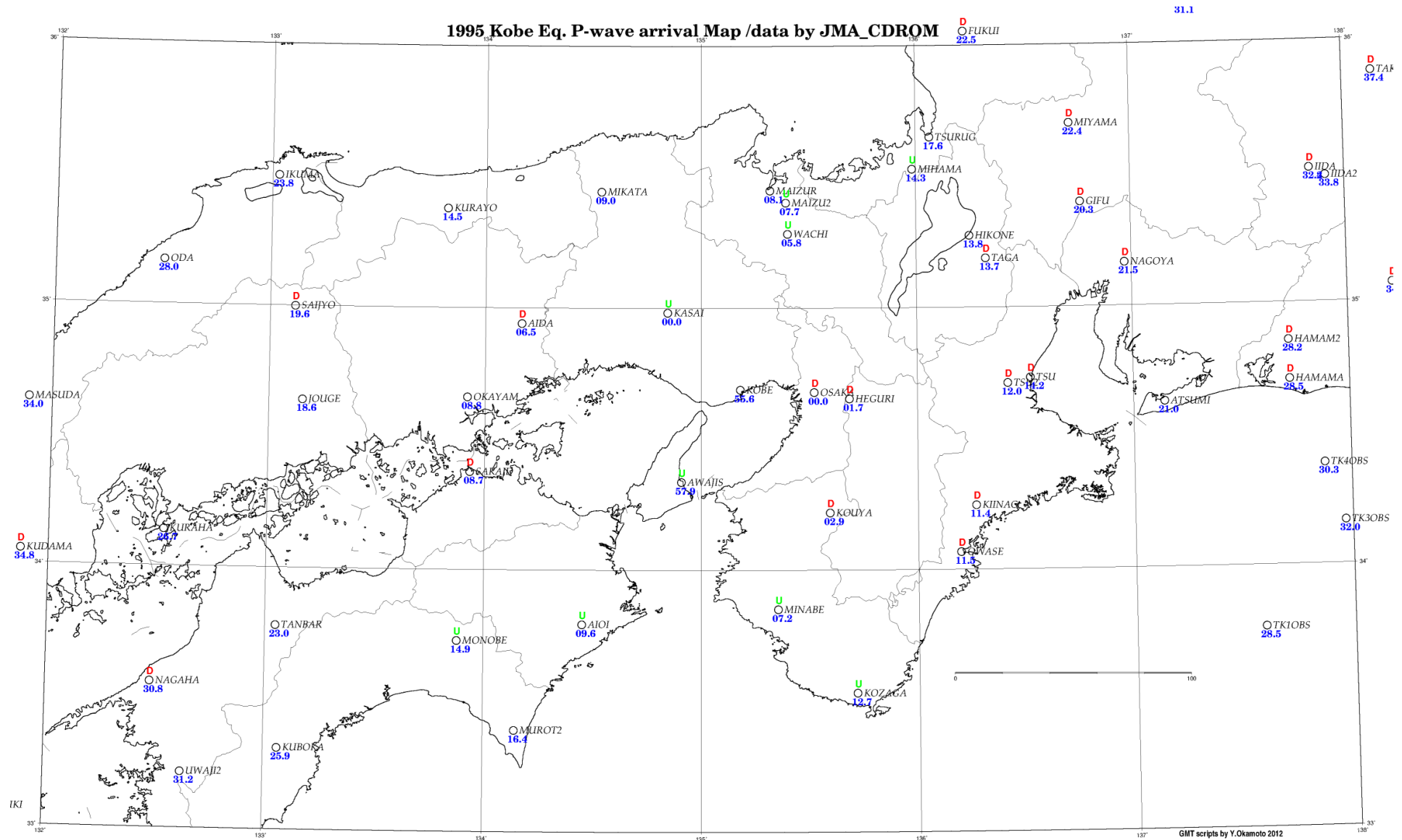
彦根

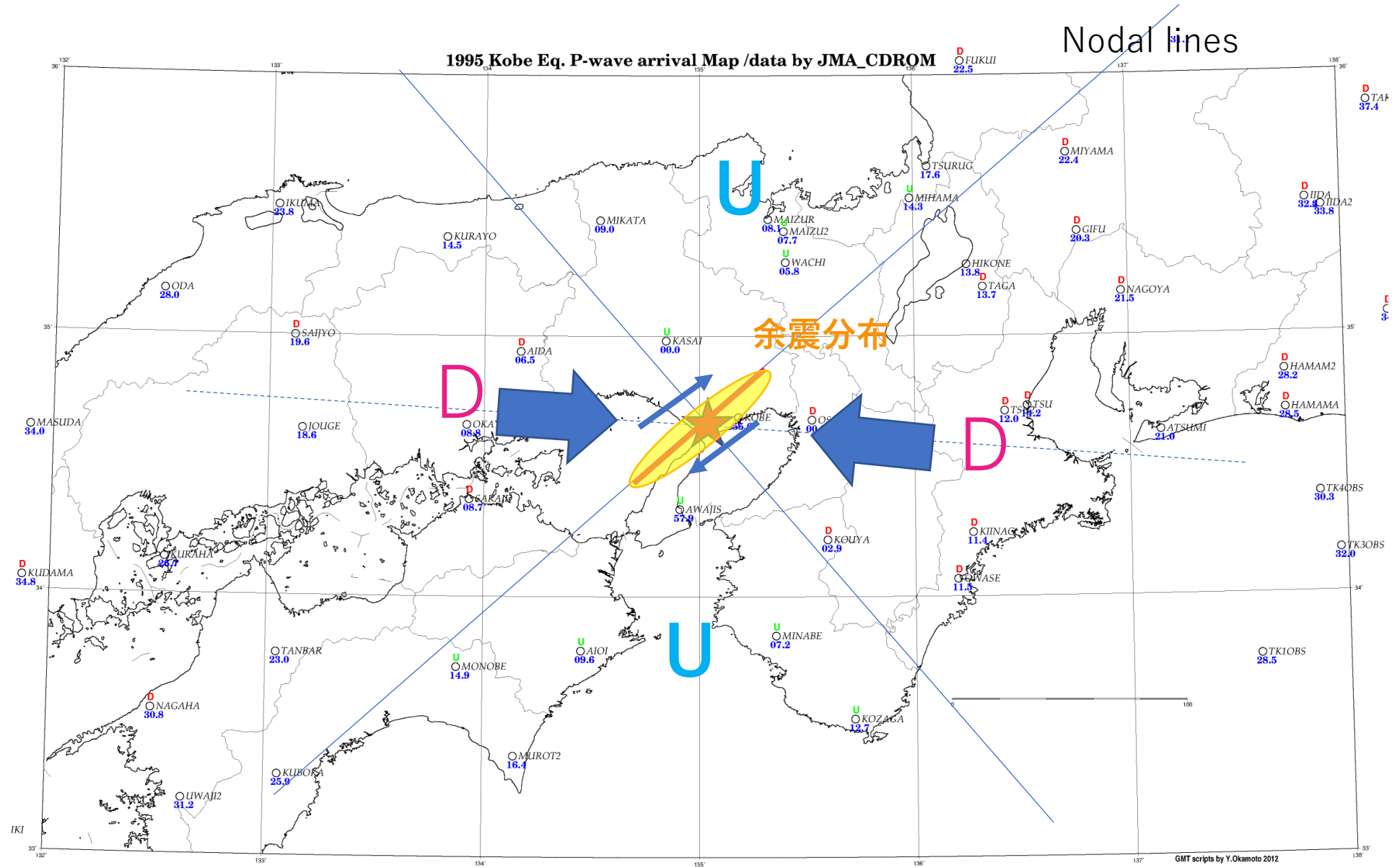
大阪



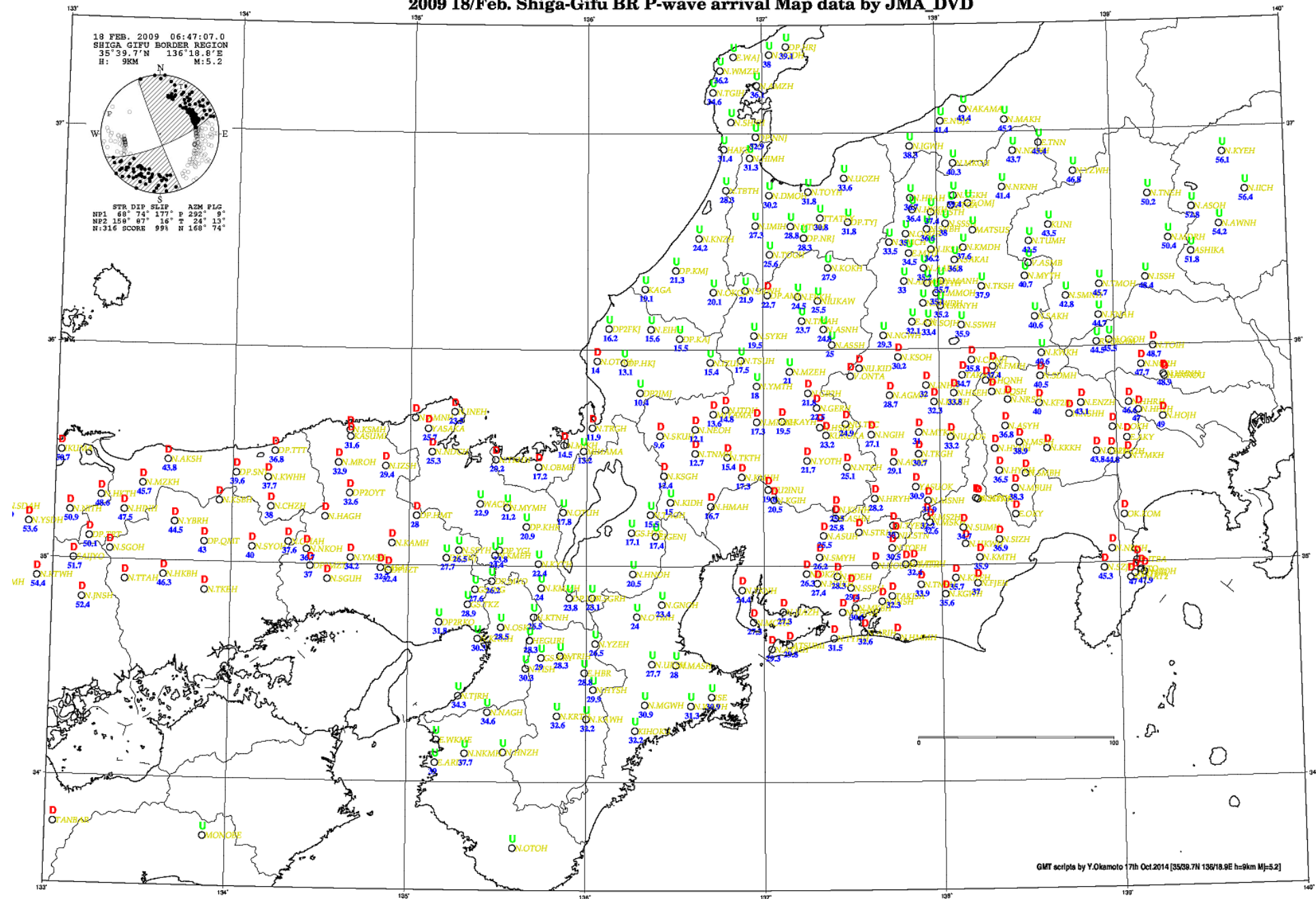
1995 Kobe Eq. P-wave arrival Map /data by JMA_CDROM





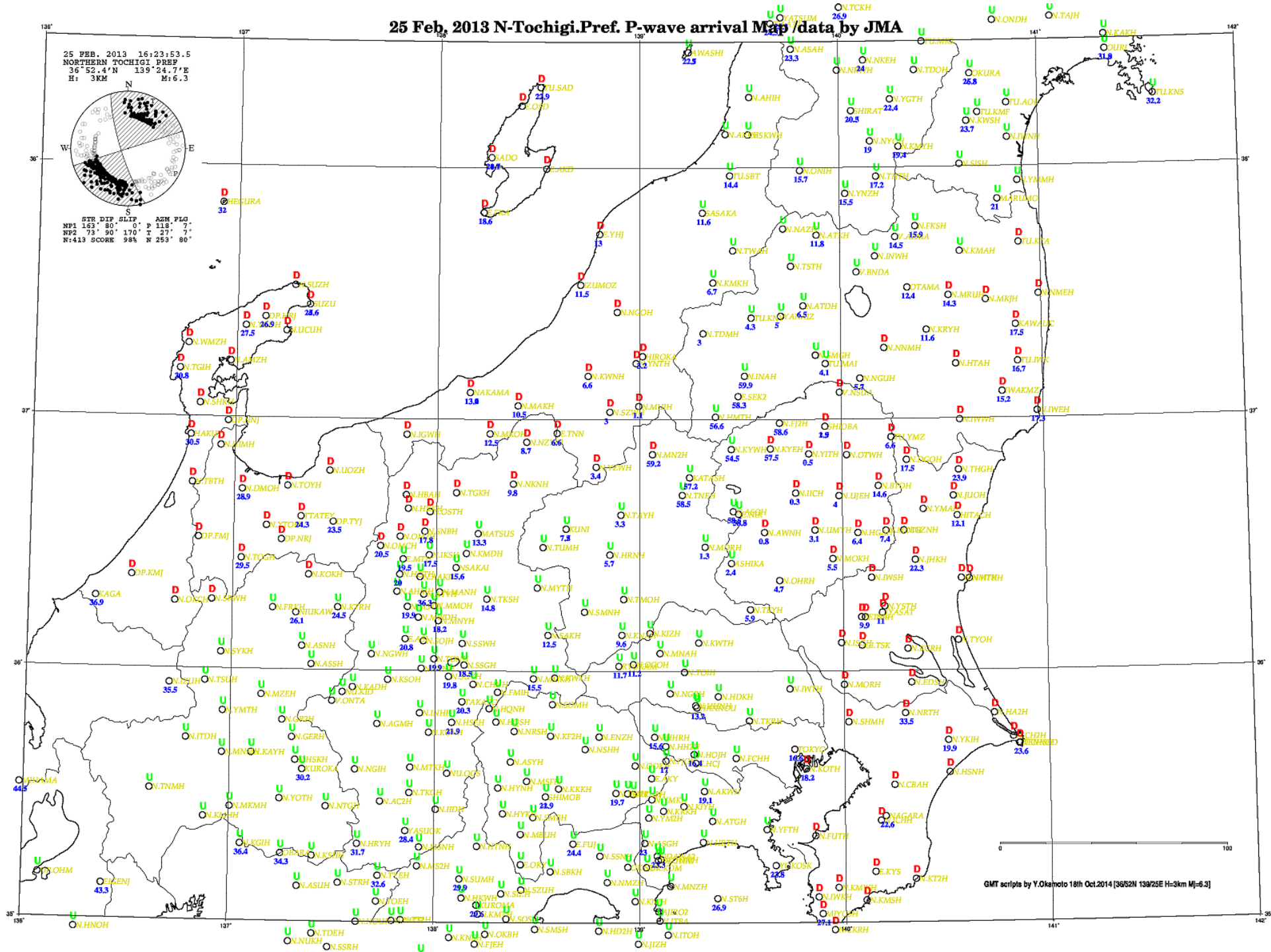


2009 18/Feb. Shiga-Gifu BR P-wave arrival Map data by JMA_DVD



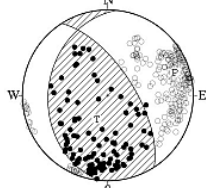
GMT scripts by Y.Okamoto 17th Oct.2014 [35/39.7N 136/18.9E h=9km M]=5.2]

25 Feb, 2013 N-Tochigi.Pref. P-wave arrival Map/data by JMA

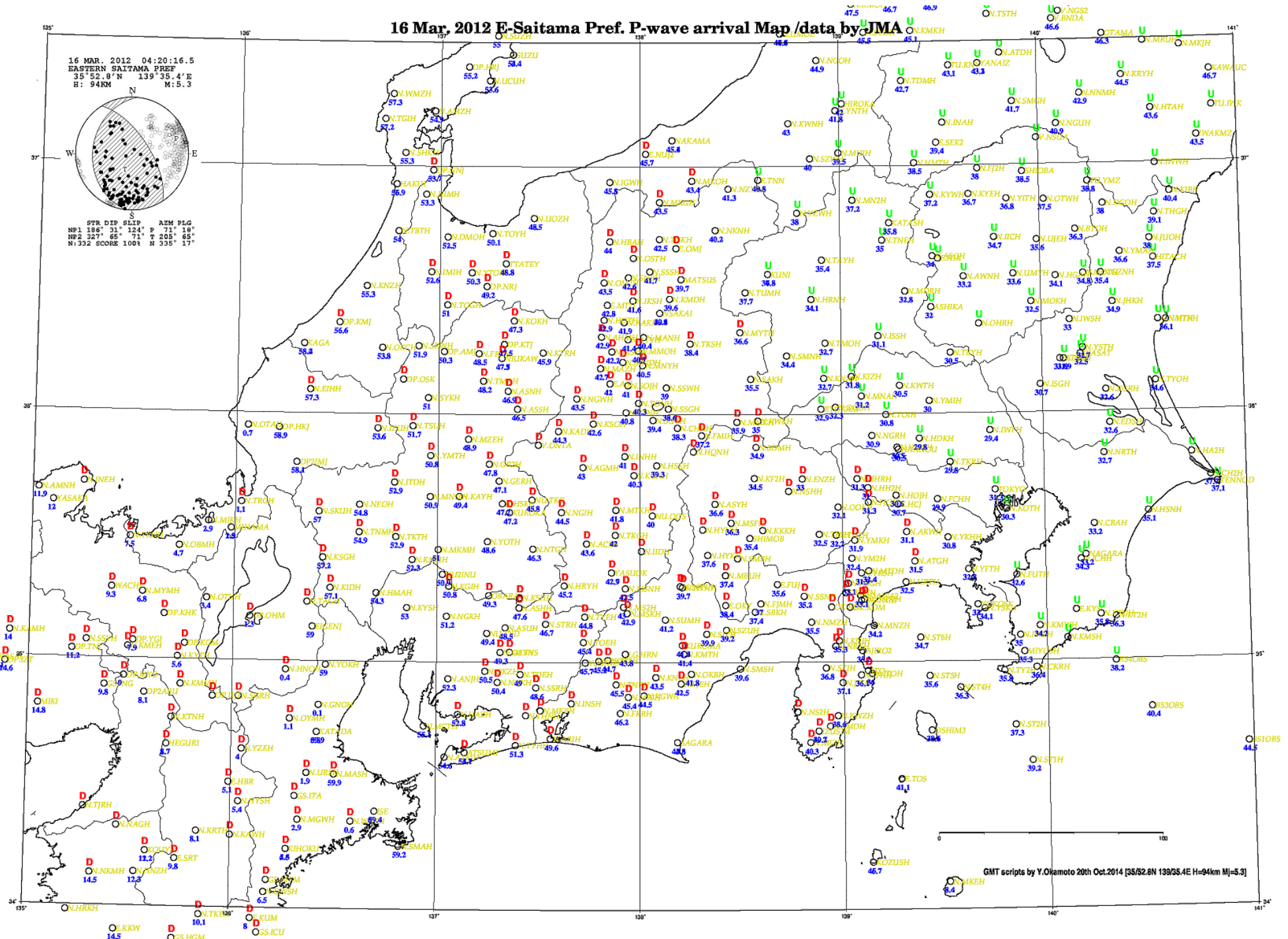


16 Mar. 2012 E-Saitama Pref. P-wave arrival Map /data by JMA

16 MAR. 2012 04:20:16.5
EASTERN SAITAMA PREF
35°52.8'N 139°35.4'E
H: 94KM M:5.3

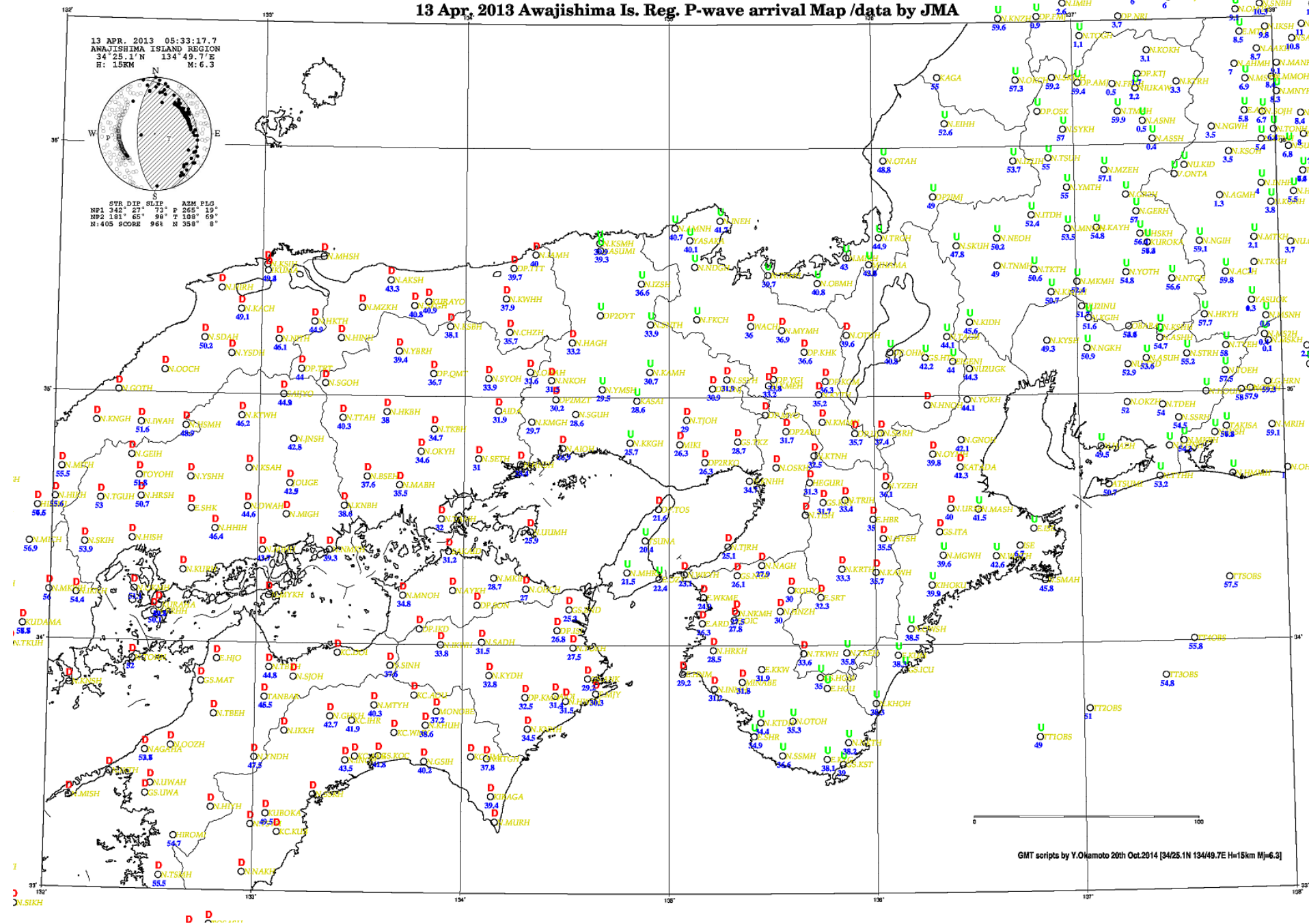


SRP DIP SLIP ADM PLG
NP1 186° 31° 124° 0°
NP2 327° 65° 71° 205° 65°
N1332 SCORE 100% N 335° 17°

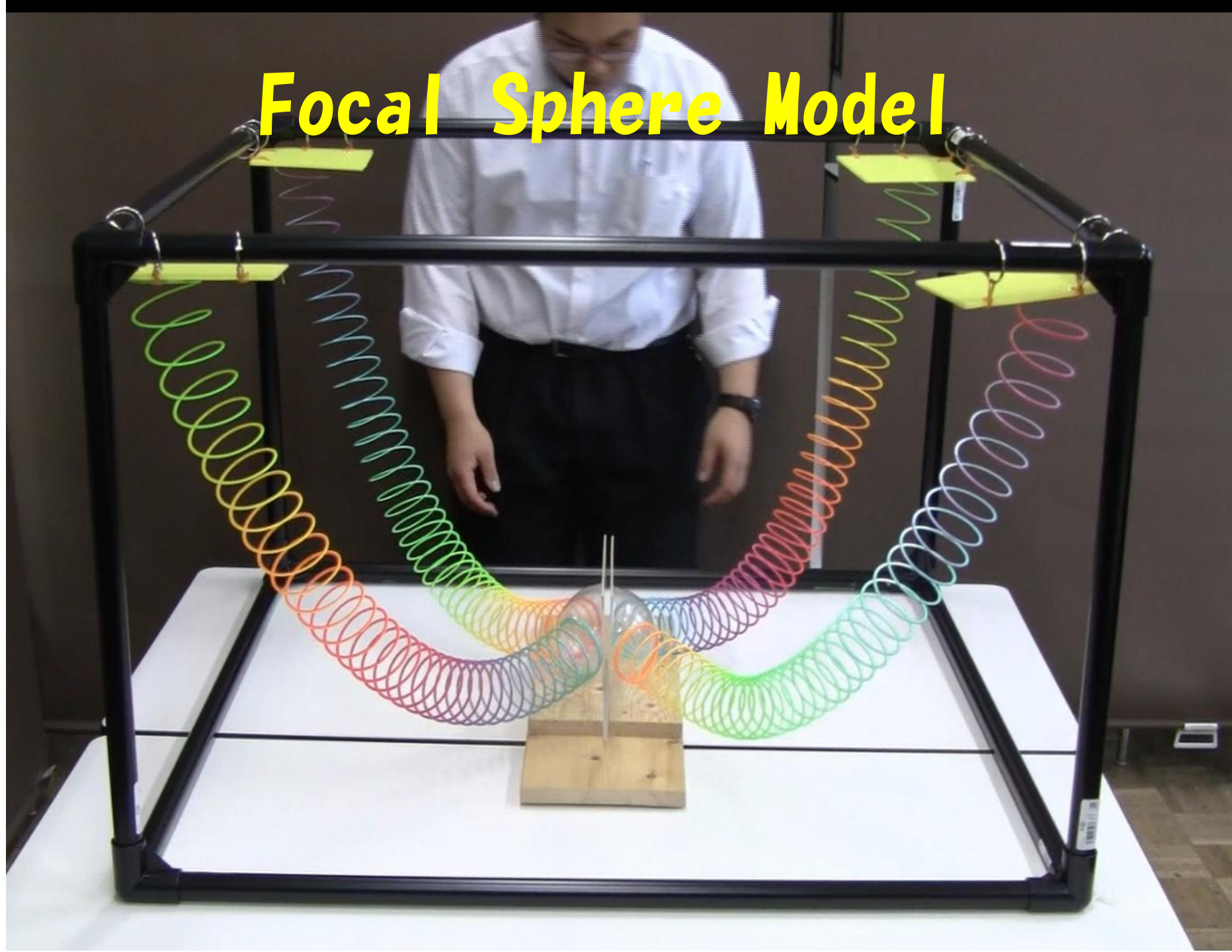


GMT scripts by Y.Oyamato 20th Oct.2014 [35/52.8N 139/35.4E H=94km M=5.3]

13 Apr. 2013 Awajishima Is. Reg. P-wave arrival Map /data by JMA

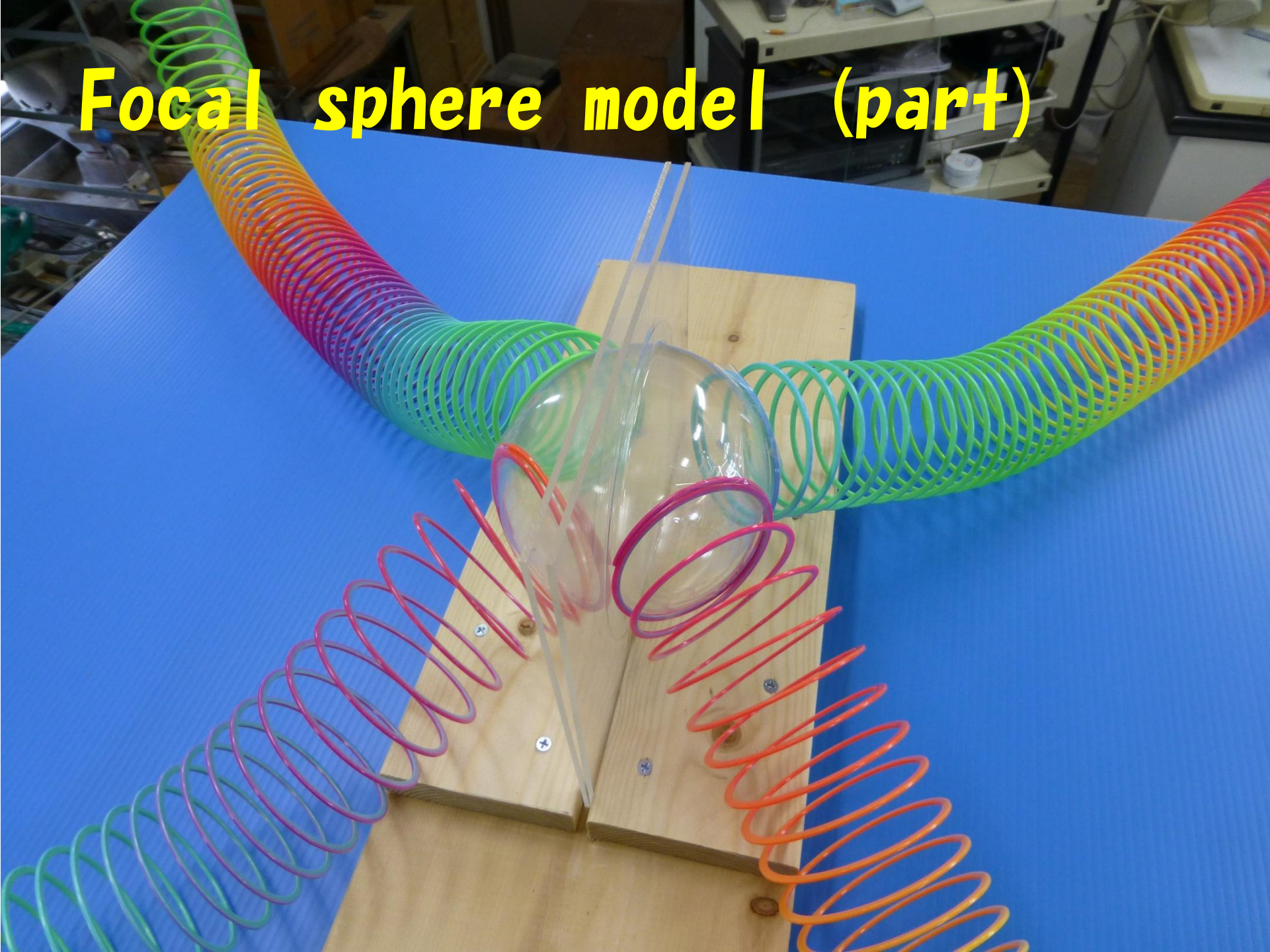


Focal Sphere Model



Focal sphere model (part)

- 気



Earthquake = Fault

- Let's try my fault experiment!(Okamoto, 2003)

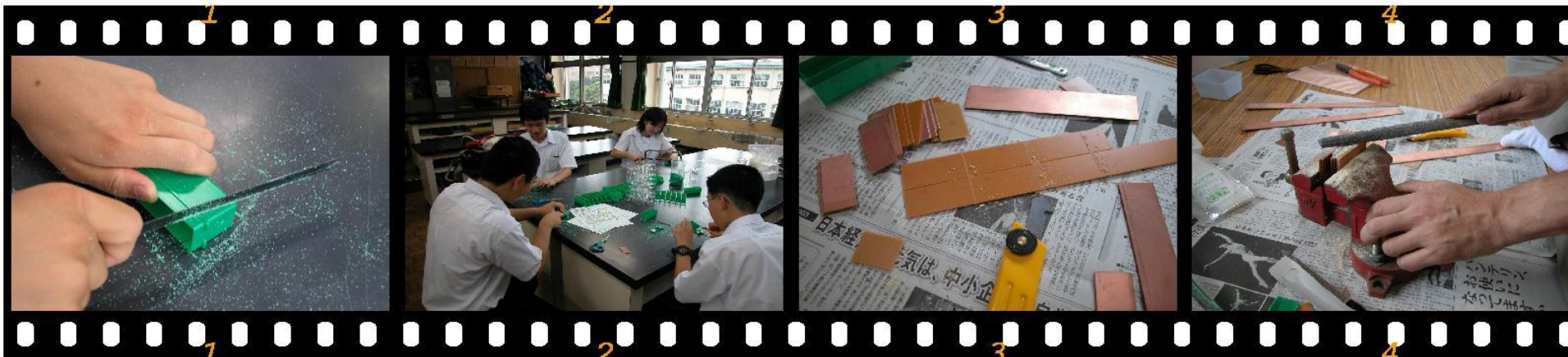
2. Layer making:

- Materials (right)

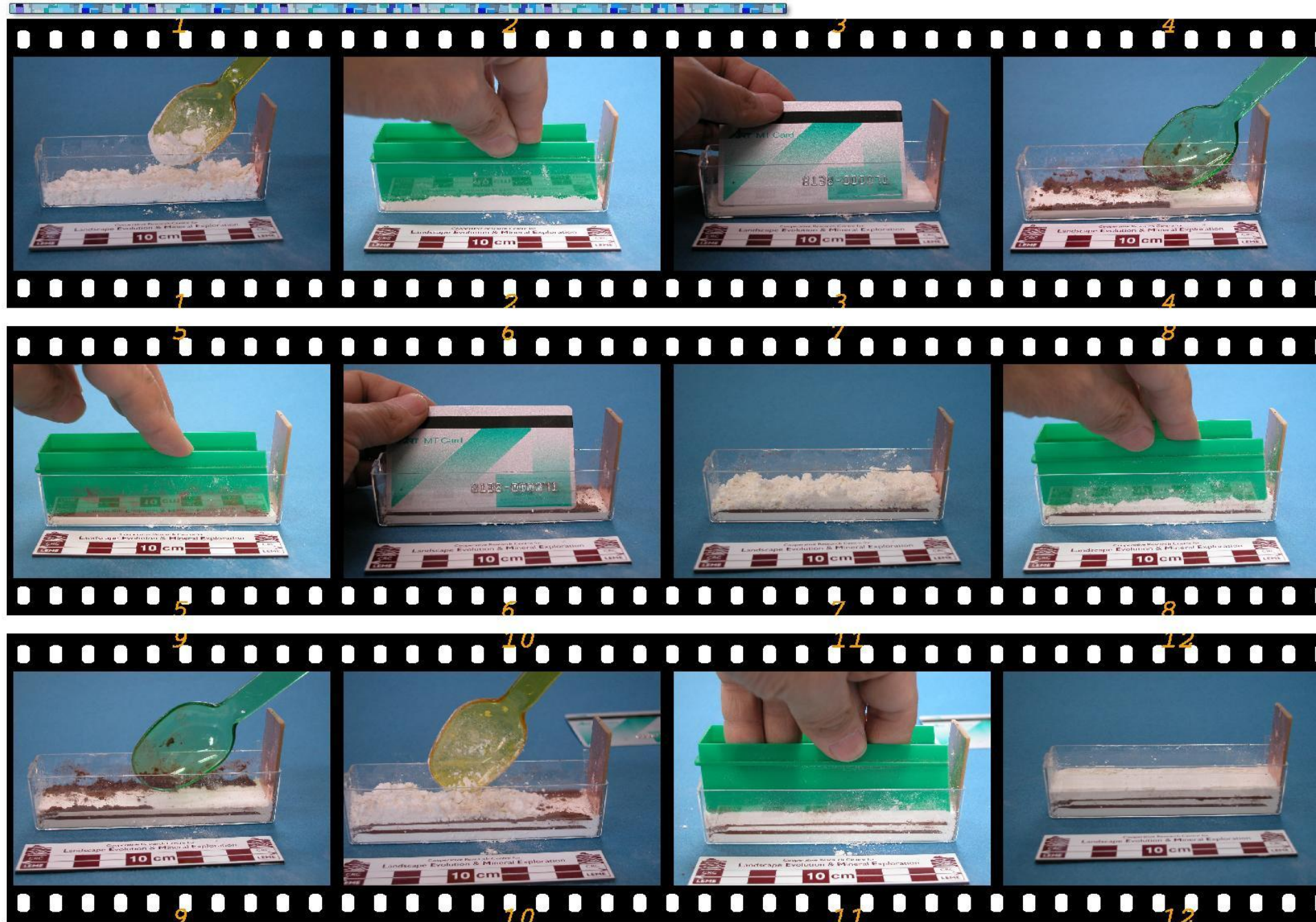
- Flour Cocoa
- Slide case (24ex)
- Moving plate Spoon
- Cash card Protractor

- Preparation (below)

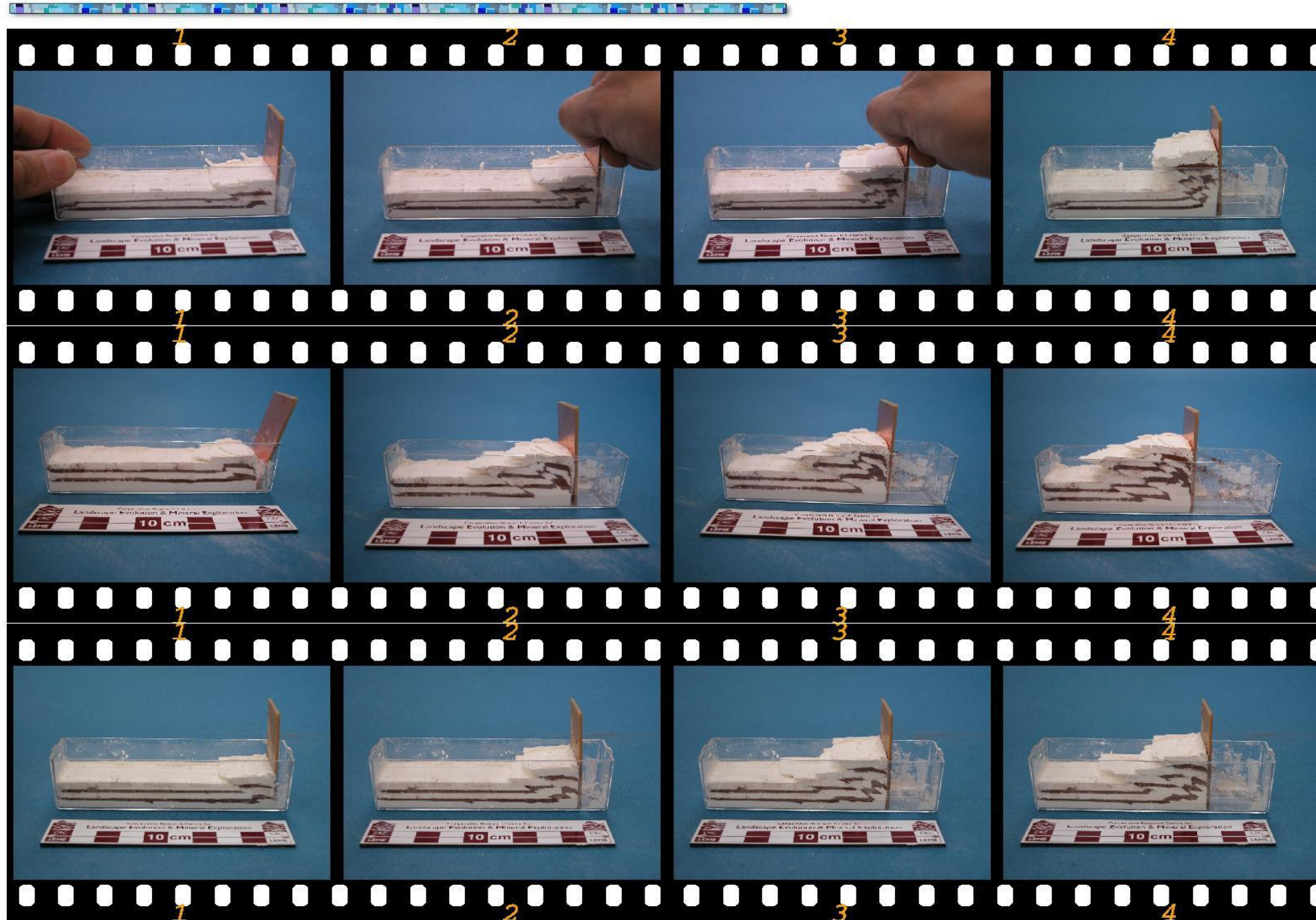
- The bottom case is cut one side for easy stuffing.
- The moving plate is cut from a raw electric-circuit board.



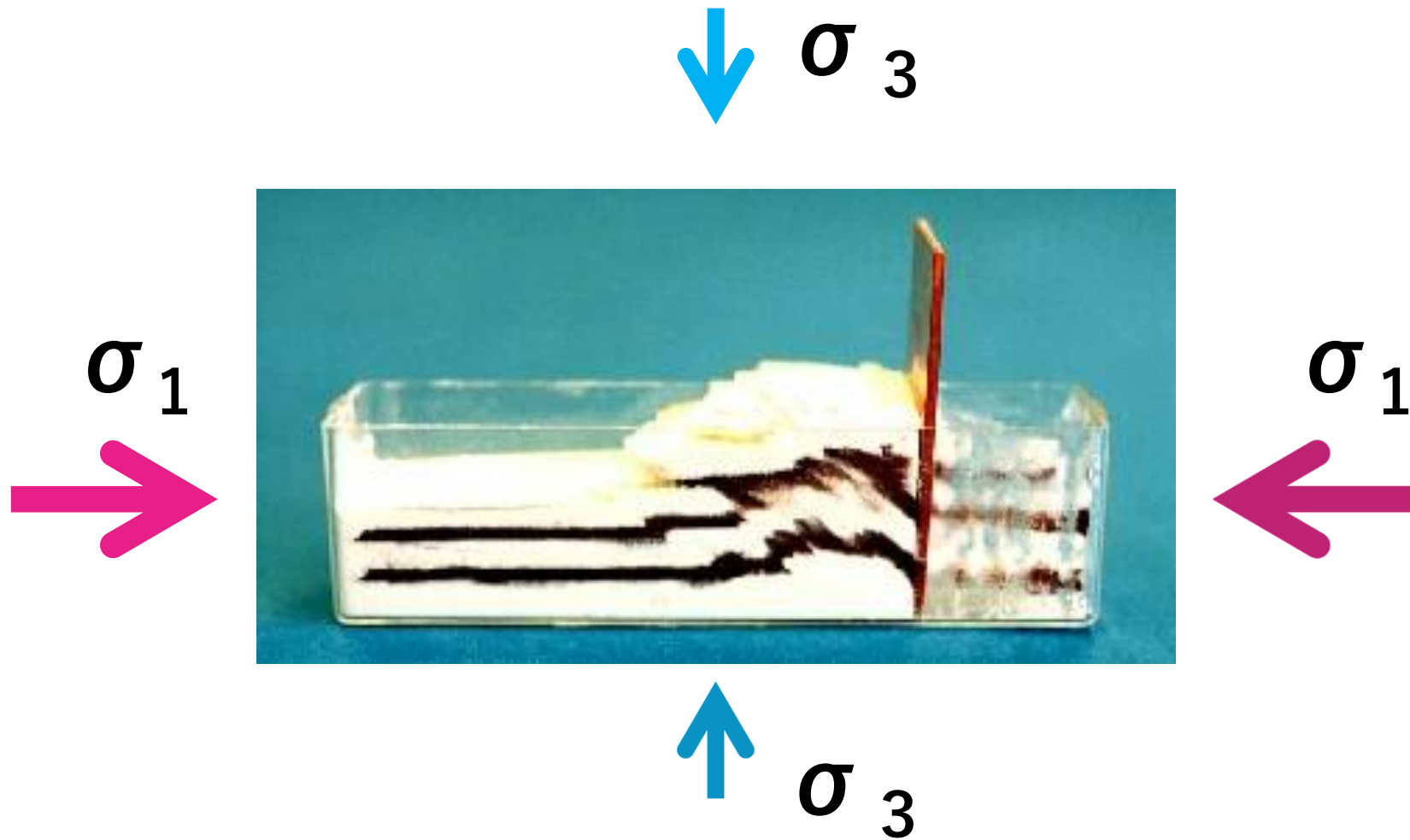
3.Procedure: The slide numbers show a layer making process.

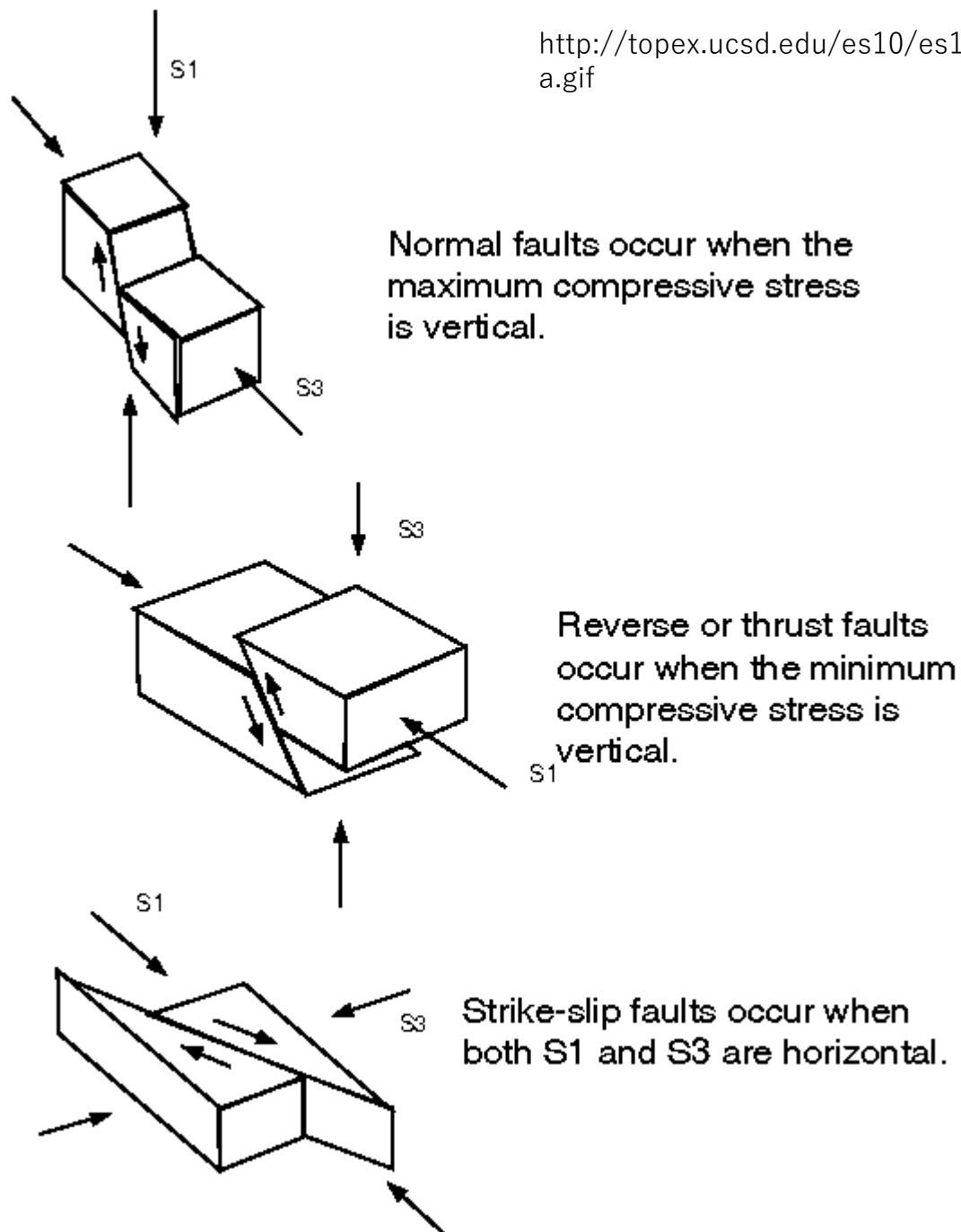


4. Some examples of Experiment (Part 1): Regular Thrust Faults

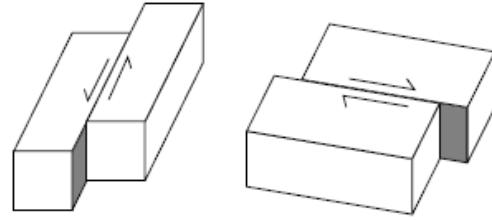
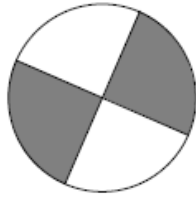


Flour fault experiment!

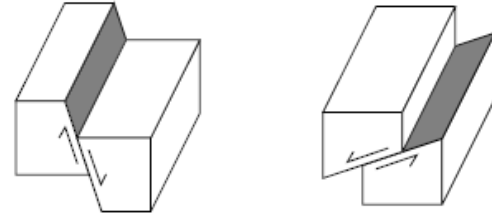
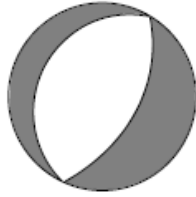




Strike Slip

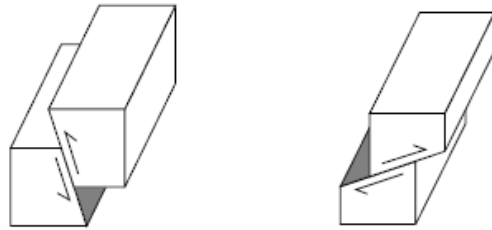
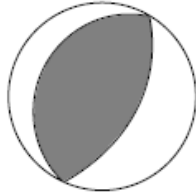


Normal



<http://www.ndma.gov.pk/sep/books/Introduction-to-Seismology.pdf>

Reverse



Oblique

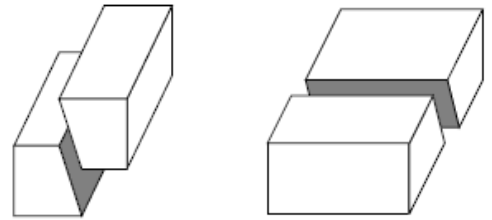
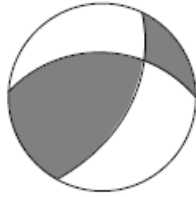


Figure 9.9 Examples of focal spheres and their corresponding fault geometries. The lower half of the focal sphere is plotted to the left, with the compressional quadrants shaded. The block diagrams on the right show the two fault geometries (the primary and auxiliary fault planes) that could have produced the observed radiation pattern.

This is a model of how to develop the mountains

- **How is the pushing rate? In the natural system.**

⇒ 1cm ~ 10cm/year (Plate motion)

- **However, there is one important difference between the model and the natural system.**

- **What is it? Let's think!!**

⇒ No rainfall system (Erosion)