Marine Geology – Geology 130 **Name _____**
Spring 2010
Lab 5 – NanTroSEIZE in 3-D - (30 points)
Due April 5, 2010

This web-based lab will take you on a journey to the Nankai Trough to create a 3-D image of the seismogenic zone off Japan in preparation for Integrated Ocean drilling.

Use this worksheet as a journal of your learning by answering the questions and taking notes.

You will need to have the free version of Quicktime player installed on your computer as well as speakers or headphones.

Begin your work at http://oceansjsu.com/105d/exped_3D/1.html

Imaging an Active Plate Boundary Fault

1. Introduction:
What are the learning objectives of the assignment?

2. The Question?
What is the NanTroSEIZE program?

Which countries are joining in this research program?

What is the scientific question(s) to be addressed by NanTroSEIZE?

3. Funding
How is this research program being funded?

4. Nankai Tough - Study Area

Where is this study taking place and why in this location?

5. Scientific Background

Describe the seafloor features and plate boundaries in the region of your study, Make a map of the plate boundaries.

Besides earthquakes, what other geohazards threatens this region?

6. The Seismogenic Zone

What is the seismogenic zones and why is it important to study?

7. Meet the U.S. Scientists

What will be done during this survey?

8. The Journey
Describe your journey to meet the ship.

9. Ship Tour
What do think of your new home?

10. Leaving Port
Wave goodbye to land for the next four weeks.

11. Seismic Reflection Method

Make a description and a drawing to describe the seismic reflection method.

What is outcome of seismic reflection?

12. Seismic Source Arrays

How is the acoustic signal produced?

13. Multichannel Seismic Streamers

How is the acoustic energy recorded? Also make a diagram.

14. 3-D Seismic Acquisition

What is meant by 3-D seismic acquisition and how is it different from 2-D seismic acquisition?

15. Life at Sea

How is life at sea?

16. Back in the Lab

What is carried out in the science lab?

17. Departing the Ship
How did you depart the ship?

18. Seismic Data Processing
What is seismic data processing?

What are some of the main steps of seismic data processing?

What is the outcome of seismic data processing?

19. The 3-D Seismic Volume
What is meant by a 3-D seismic volume or cube?

20. Seismic Interpretation

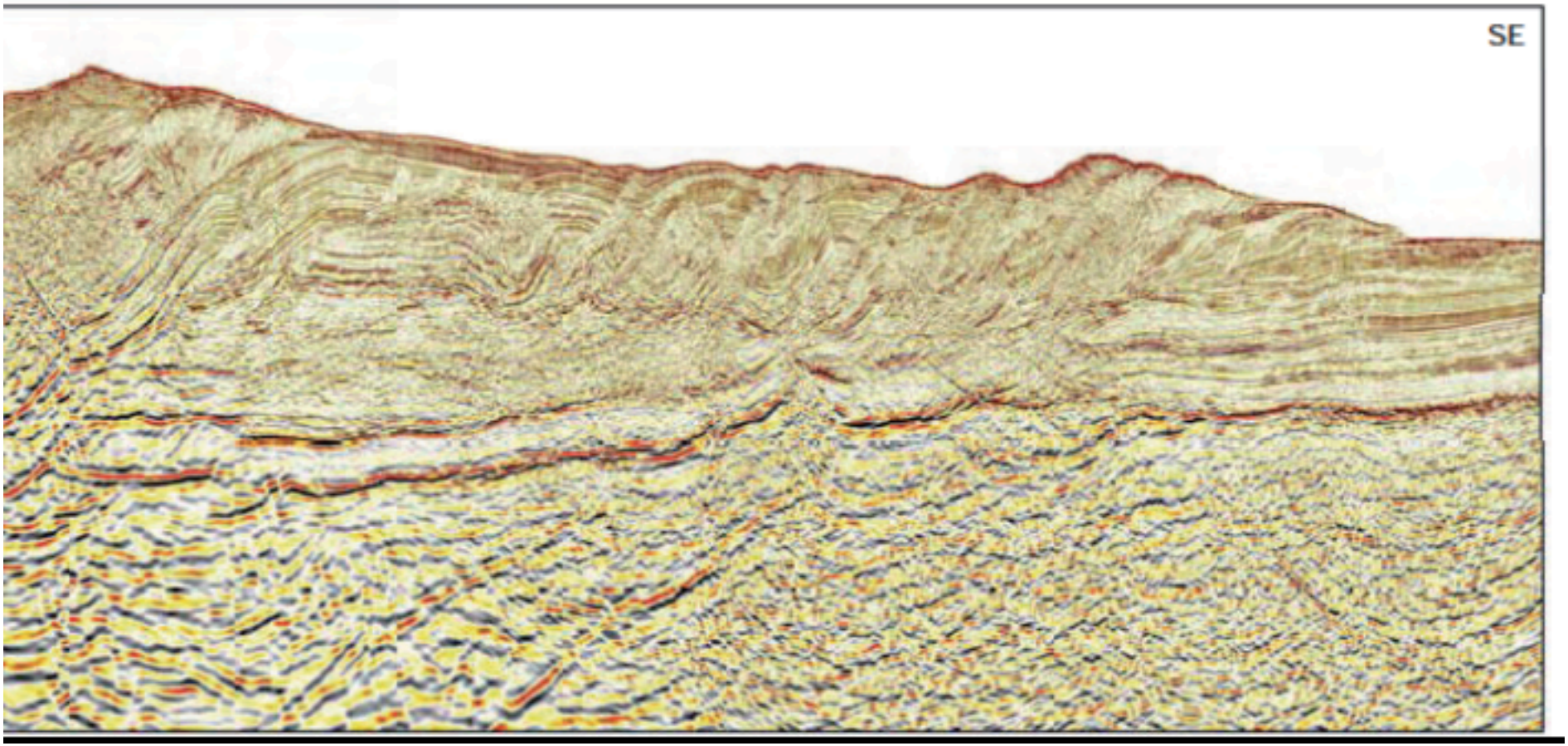
What is meant by seismic interpretation and how is it undertaken?

What features are identified and interpreted on this pre-NanTroSEIZE 2-D seismic profile on this page?

21. Your Turn at Interpretation

List the features to be identified and interpreted on the seismic profile, which has been divided into two pieces on the following two pages.

Complete your seismic interpretation on the next two pages, which you may want to reconstruct with tape into a single seismic profile. Seismic profile is also available in digital format, if you wish make your drawing interpretation with your computer.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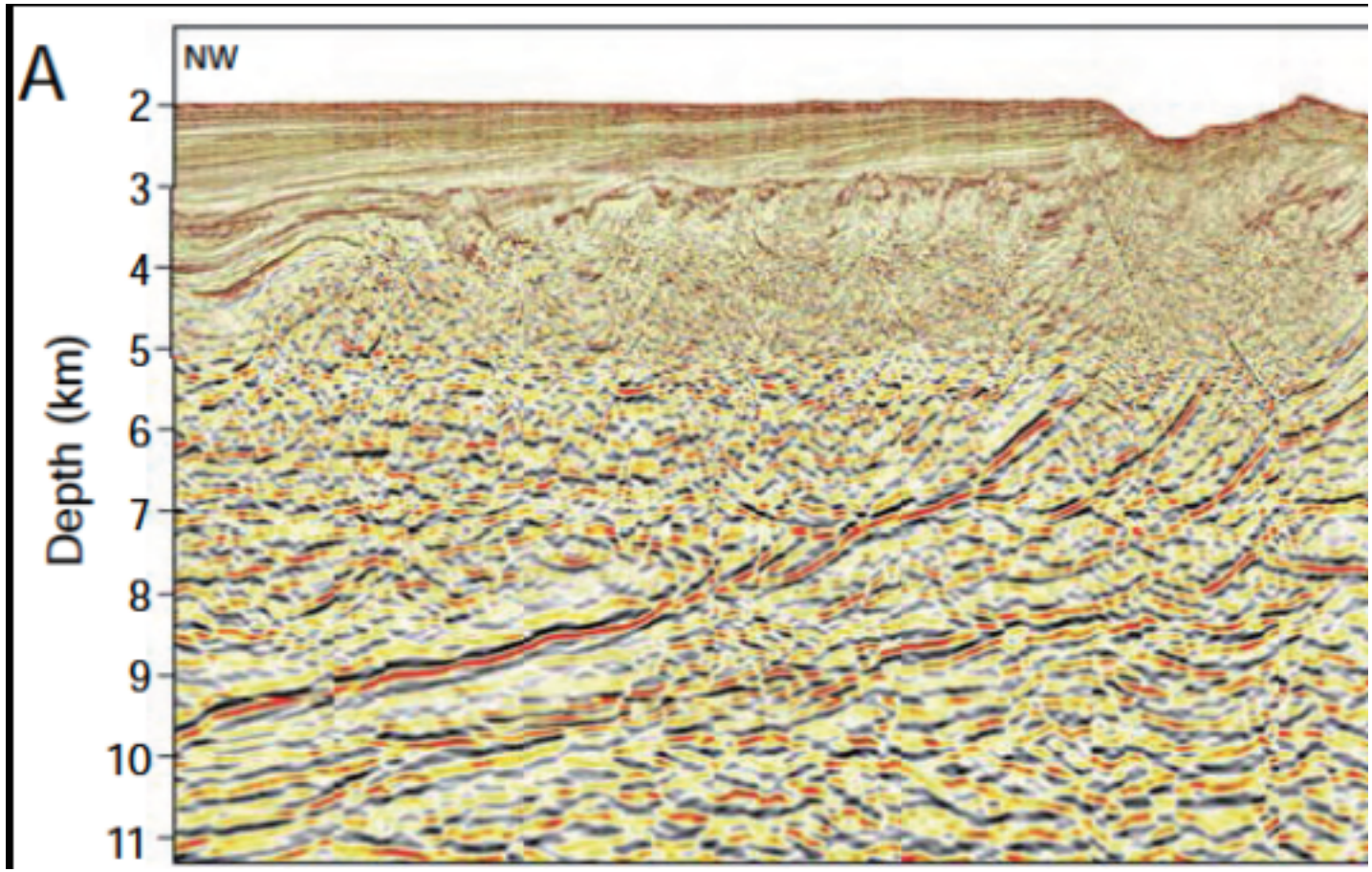
A
NW
Depth (km)
2
3
4
5
6
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8
9
10
11

22. Comparing Interpretations

Compare your interpretation to the one shown on the webpage, feature by feature from the list of features on the webpage. You may want to highlight any areas or features where they do not agree. Explain any discrepancies and defend your interpretation if you wish.

23. Publication of Research

Describe how scientists present the results of their research.

Email your abstract to instructor.

24. IODP NanTroSEIZE Phase I Drilling

Download and read the results of phase I drilling.

Thanks for joining the expedition!