COMPARING THE AK135 MODEL WITH THE ISC J-B MODEL FOR CENTRAL AMERICAN EARTHQUAKE LOCATIONS C. Redondo¹, E. Camacho² ¹ CASC, Universidad de Costa Rica, San José, Costa Rica,

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Figure 1. Major tectonic features of Middle America

INTRODUCTION

Among the recommendations of the First Workshop on Modernizing ISC Location Procedures, held during the 2005 Santiago IASPEI General Assembly. It was suggested that the ISC considers changing from the J-B velocity model, currently used in operations to locate seismic events, to a modern spherical Earth model with consistent travel-time tables for all major seismic phases. In particular the AK135 velocity model.

To ensure that introducing new travel times into the ISC operation does not cause unwanted or unforeseen biases, the ISC was asked to produce its Bulletin for several data months using the AK135 model as well as JB, and the results should be evaluated by seismologist all over the world.

A good region to test the model is Central America. The Pacific coast of Central America (Figure 1) is one of the most tectonically active plate margins. Large subduction thrust earthquakes up to Mw 8.0 repeat every 40-60 years in the Middle America subduction zone.

DATA

For assessing the earthquake locations in Middle America using the J-B and the AK135 velocity models we have used data From the ISC Bulletin with earthquake locations using both models from January to October 2004.

DISCUSSION

When comparing Figure 2 with Middle America earthquake locations plots using J-B velocity model with Figure 3, with locations done using the AK135 velocity model, it can be noticed that the locations from the AK135 20 model delineate less diffusely a major structural feature as Middle American¹⁵ the subduction zone, but that is not the case with events located along the Cayman Through and its extension in Guatemala, the Motagua Polochic Fault, where both models show no events.



CONCLUSIONS

No big differences are noticed when using the JB model and the AK135 model for earthquake locations along the Middle America subduction zone, but no seismicity appears for both models along the Cayman Through and its extension in Guatemala, the Motagua Polochic Fault. This could be caused by deficient event reporting by local agencies to ISC.

REFERENCES

Kennett B.L.N., Engdahl E.R. & Buland R. (1995). Constraints on seismic velocities in the earth from travel times Geophys. J. Int, 122, 108-124