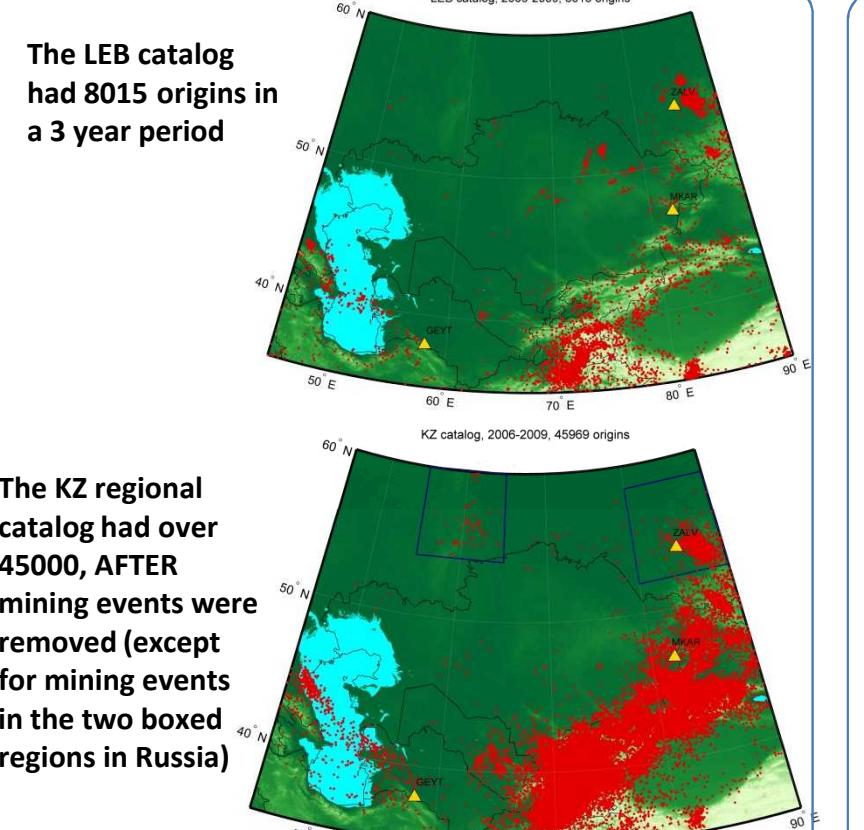


# Extending Waveform Correlation Techniques to Broad Regional Monitoring: Processing over 3 years of MKAR data

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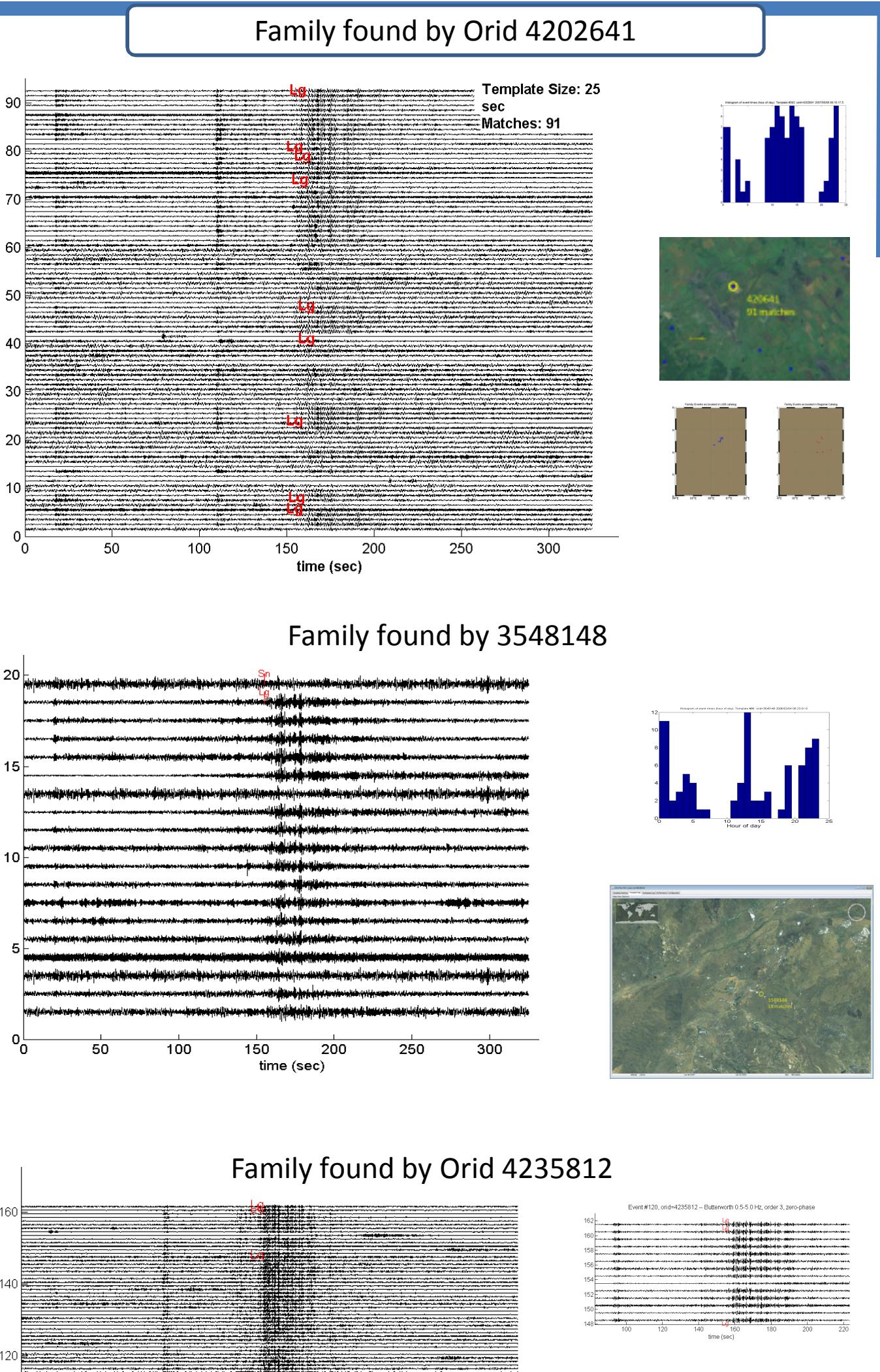
## INTRODUCTION

Waveform correlation techniques have garnered increasing attention in the last few years, as their value in detecting and classifying repeated events has been demonstrated again and again. In this research, we show the potential in extending waveform correlation techniques to broad regional monitoring for the benefit of nuclear monitoring. The CTBTO's International Monitoring System has a sparse network of stations which monitor the globe; we show the ability of waveform correlation to aid catalog completeness.



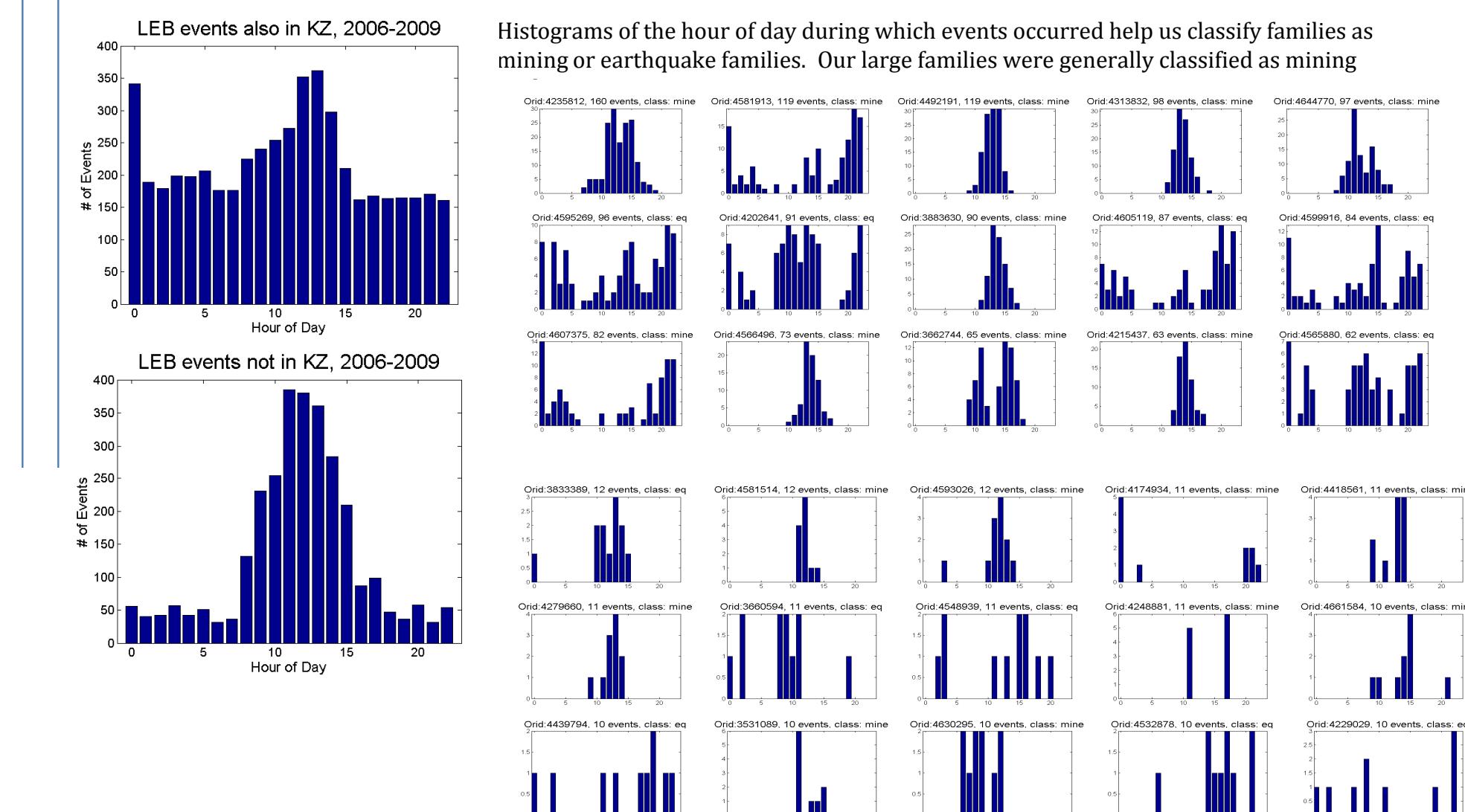
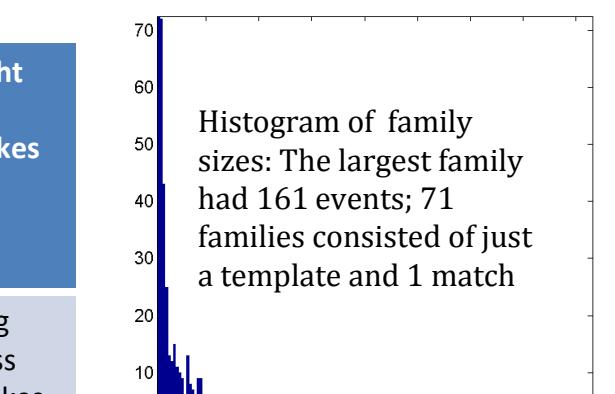
Dates WCD Ran		1/1/2006 – 4/1/2009 (3.25 years)
Templates formed		
Raw data processed		
2006/1/1	2008/3/30	2009/3/30
<b>Stations used</b>		MKAR
<b>Array elements used</b>	9	
<b>Templates: acquisition dates</b>		1/1/2006 - 3/30/2008
<b>Templates: lat/lon box</b>		2.25 years; 502 templates Included earthquake swarm in March 2008 lat : 35- 60 lon : 45- 90

## RESULTS



## RESULTS SUMMARY

Number of Detections (made by the 180 of the 501 templates that found matches)	Number of detections matched with events in the LEB Catalog	Number of detections matched with events in the Regional Catalog	Detections validated in EITHER catalog	# Detections thought to be Mining / earthquakes
5364	429 (2131 total events in the LEB catalog)	450 (catalog had mining events removed, except for in the boxed regions!)	659	At least 2952 mining events; probably less than 1399 earthquakes



## SUMMARY

We performed waveform correlation on 3 years of data for station MKAR in central asia using 501 templates.