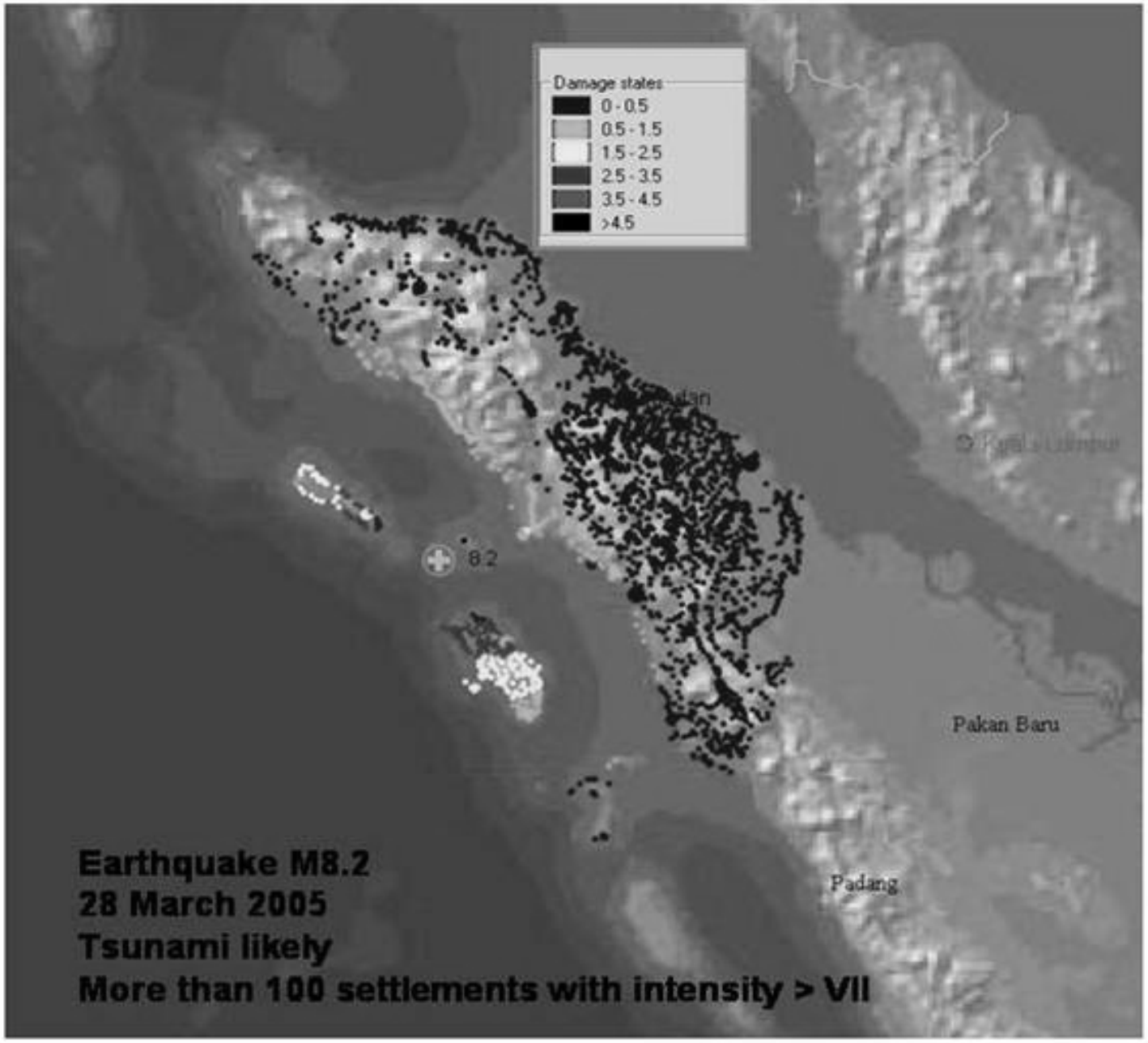
Presentation by the World Agency of Planetary Monitoring and Earthquake Risk Reduction (WAPMERR)

WAPMERR works for the purposes of reducing risk due to disasters and for rescue planning after disasters. These goals are achieved by advancing methods of real-time loss estimates after earthquakes, through monitoring by satellite images and by earthquake prediction research. In these efforts, we are collaborating with various scientists all over the world.

Real-Time Loss Estimates after Earthquakes.
Within about two hours of any significant earthquake worldwide, WAPMERR issues a loss estimate in collaboration with the Swiss Seismological Service. This includes number of fatalities and injured, as well as average damage to buildings in all affected settlements.
As an example:
Real-Time Estimate of Losses Due to Strong Motions After the Sumatra Earthquake of M8.2 on 28 March 2005 (epicenter 2.09N 97.02E)

There are likely more than 100 settlements that have been shaken with intensities stronger than VII. One has to be prepared for possibly 300 to 1000 fatalities.
Now (18:30 GMT) that the magnitude estimate for Tsunami warning has been given as M8.5 (and the new USGS magnitude is M8.7 at 19:00 GMT), the number of fatalities are likely to exceed 1000 significantly.


Damage states
0 - 0.5
0.5 - 1.5
1.5 - 2.5
2.5 - 3.5
3.5 - 4.5
>4.5
8.2
Pakan Baru
Padang
Earthquake M8.2
28 March 2005
Tsunami likely
More than 100 settlements with intensity > VII

To assist rescue agencies in reaching decisions regarding mobilizing, rapid loss estimates in real time are important. Our estimates of losses depend on the timely availability of accurate information on earthquake hypocenter and magnitude.

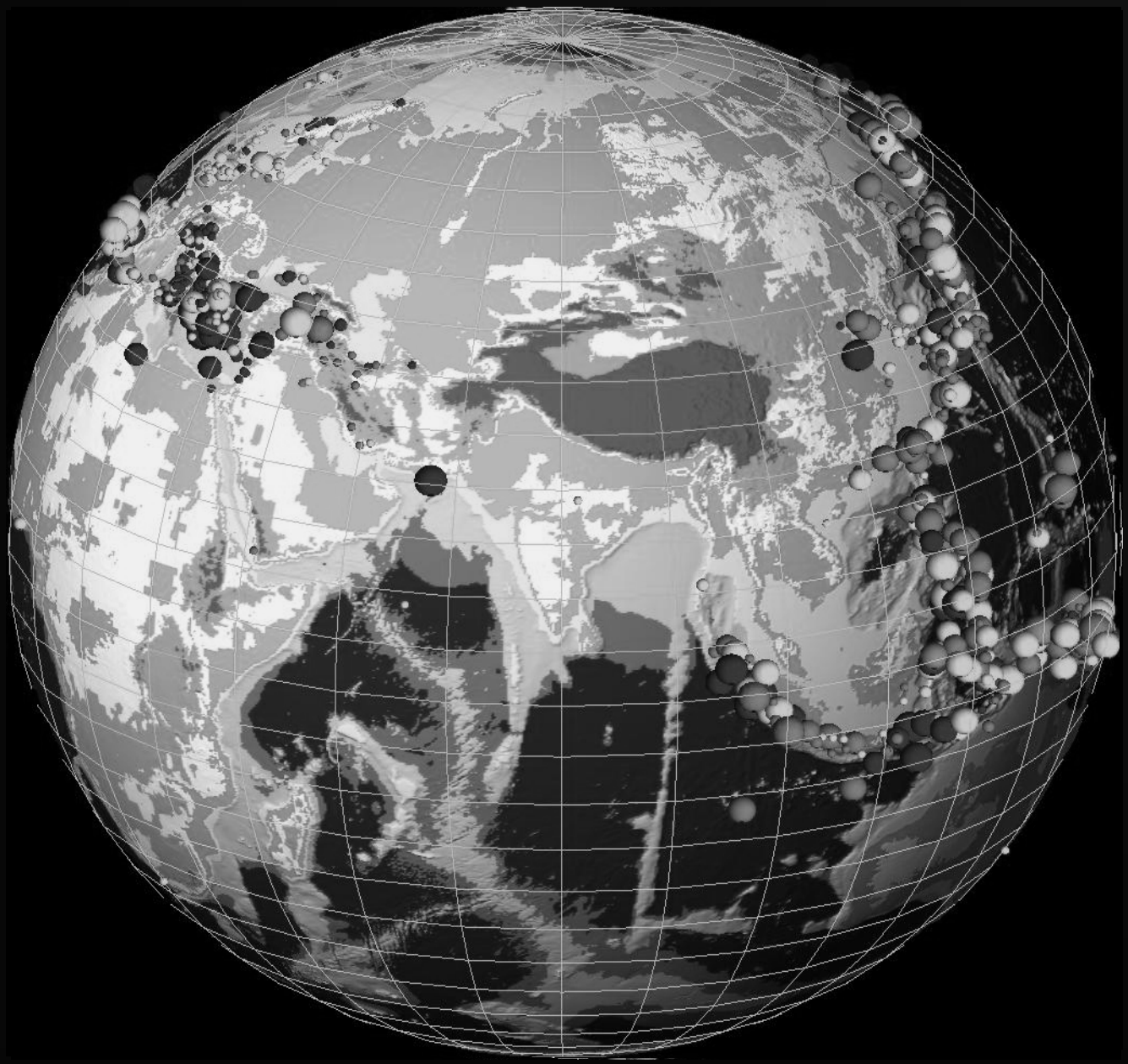
WAPMERR uses satellite images to assess damage after earthquakes and to estimate the properties of the building stock. The latter are important for improving estimates of losses in the scenario and real-time mode for developing countries (Earthquake of M6.7 in Bam, Iran, on 26 Dec. 2003).


VADSystem Umm Al Quwain Locator
Exit
Map
Search
Route
Contacts
Window
Help
Change Region
Map (Space Image)
Space Image

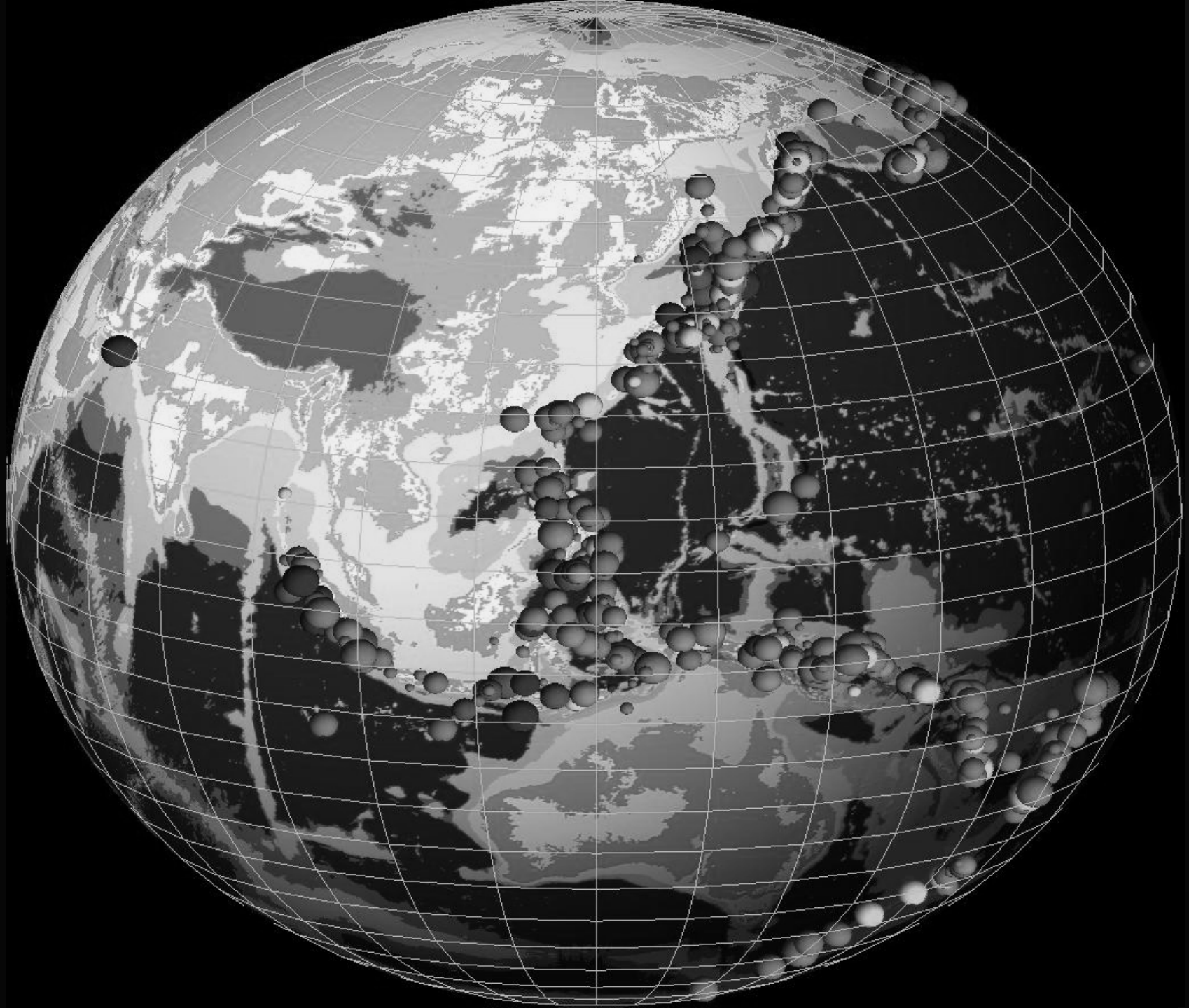
At present WAPMERR together with the Russian Academy of Sciences is developing the new system for tsunami hazard and risk assessment

WORLD AGENCY OF PLANETARY MONITORING AND EARTHQUAKE RISK REDUCTION
SIBERIAN DIVISION RUSSIAN ACADEMY OF SCIENCES
INSTITUTE OF COMPUTATIONAL MATHEMATICS AND MATHEMATICAL GEOPHYSICS
TSUNAMI LABORATORY

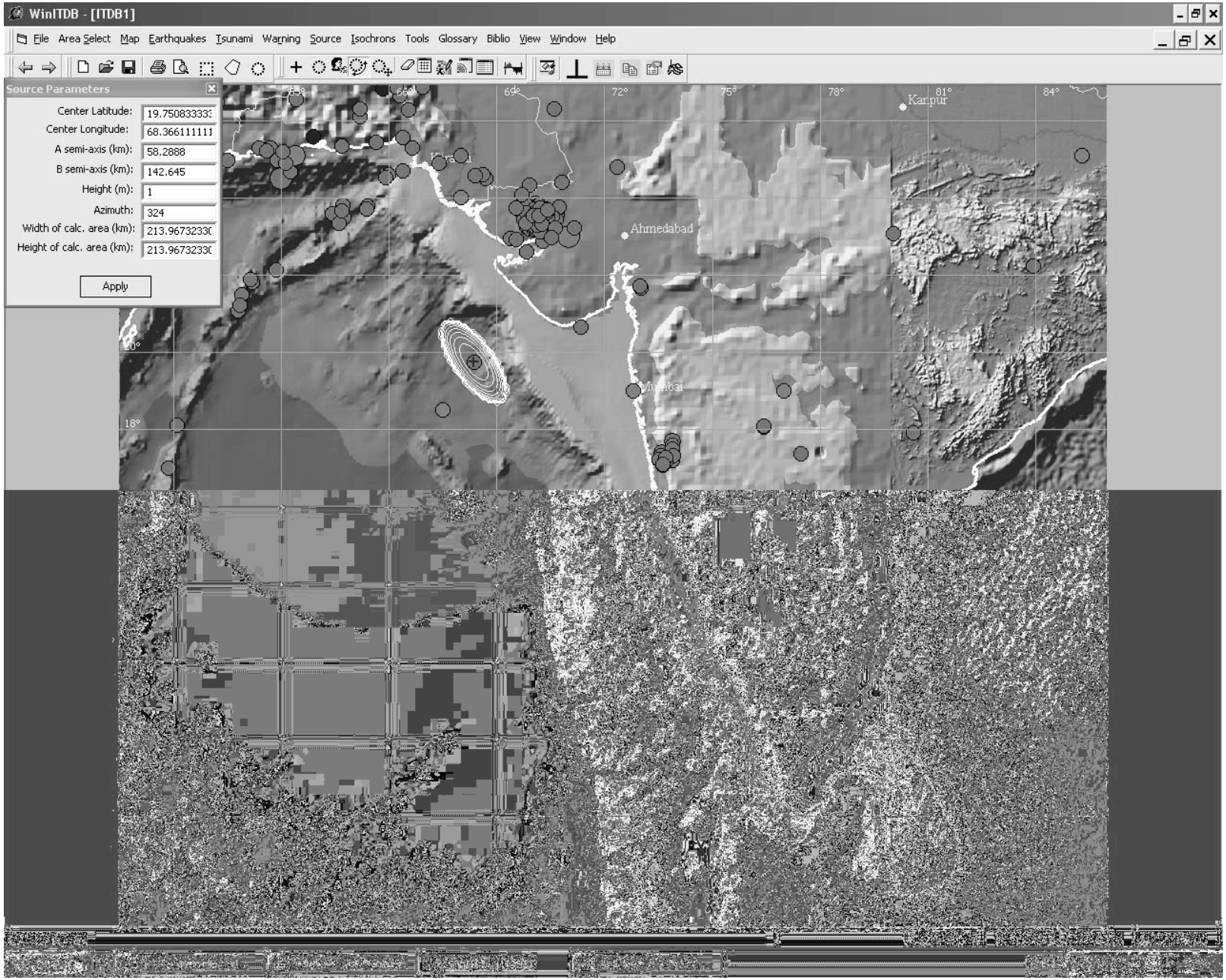
INTEGRATED TSUNAMI RESEARCH AND INFORMATION SYSTEM
(I T R I S)



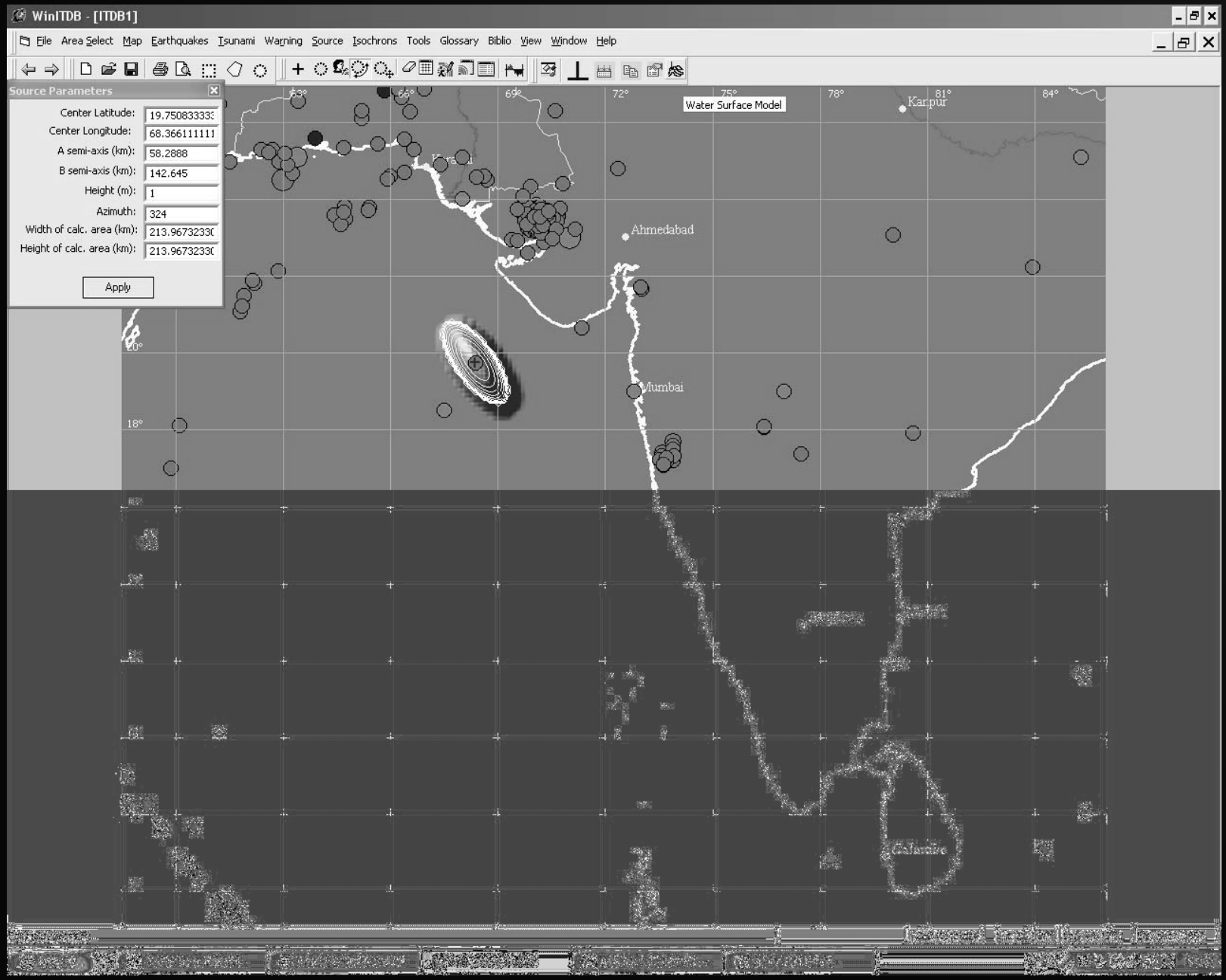
Tsunamis in the different regions of the World Ocean



Using this system we can determine not only risk areas and possible tsunami travel time but also wave height.



Numerical modeling of tsunami near the west coast of India



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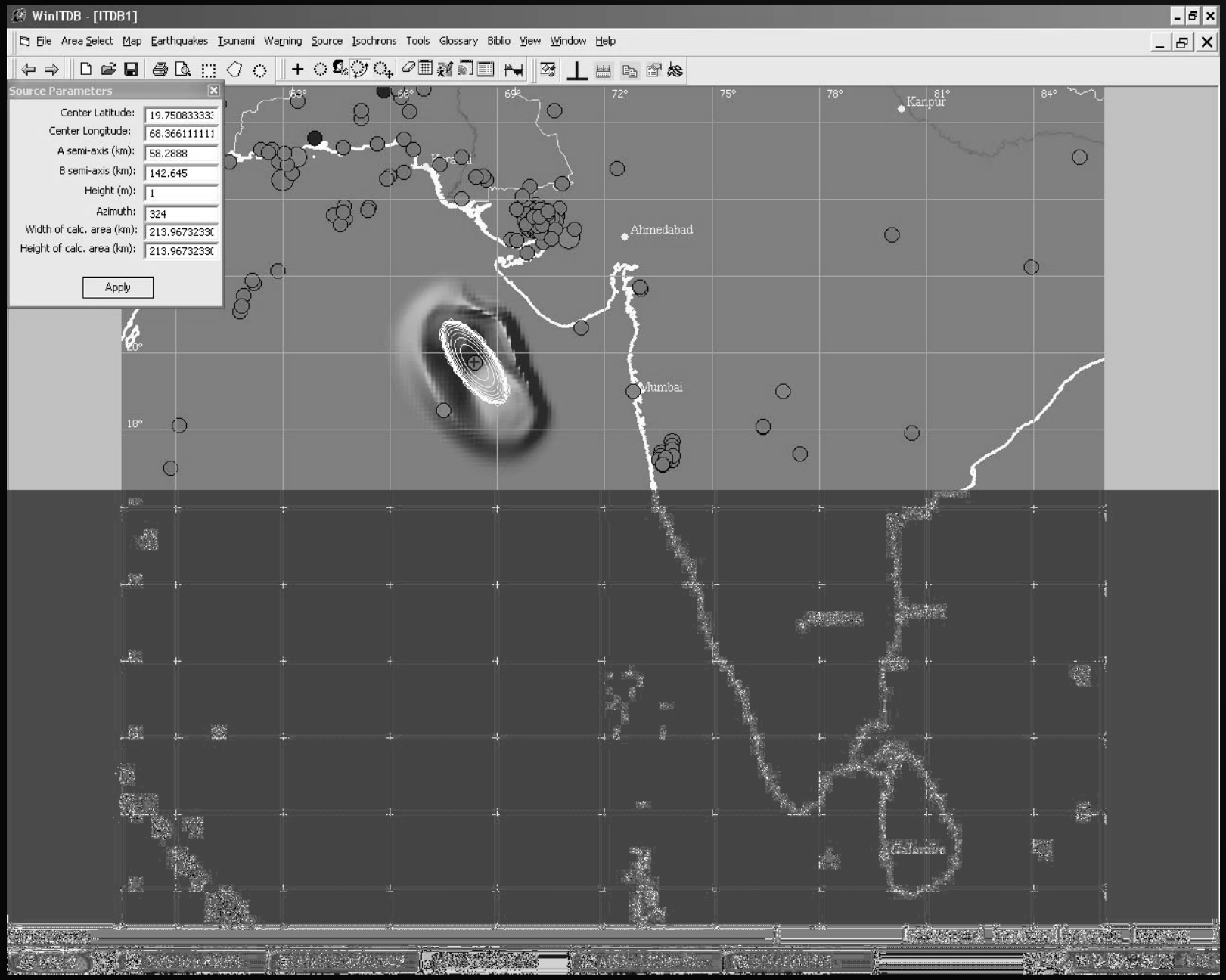

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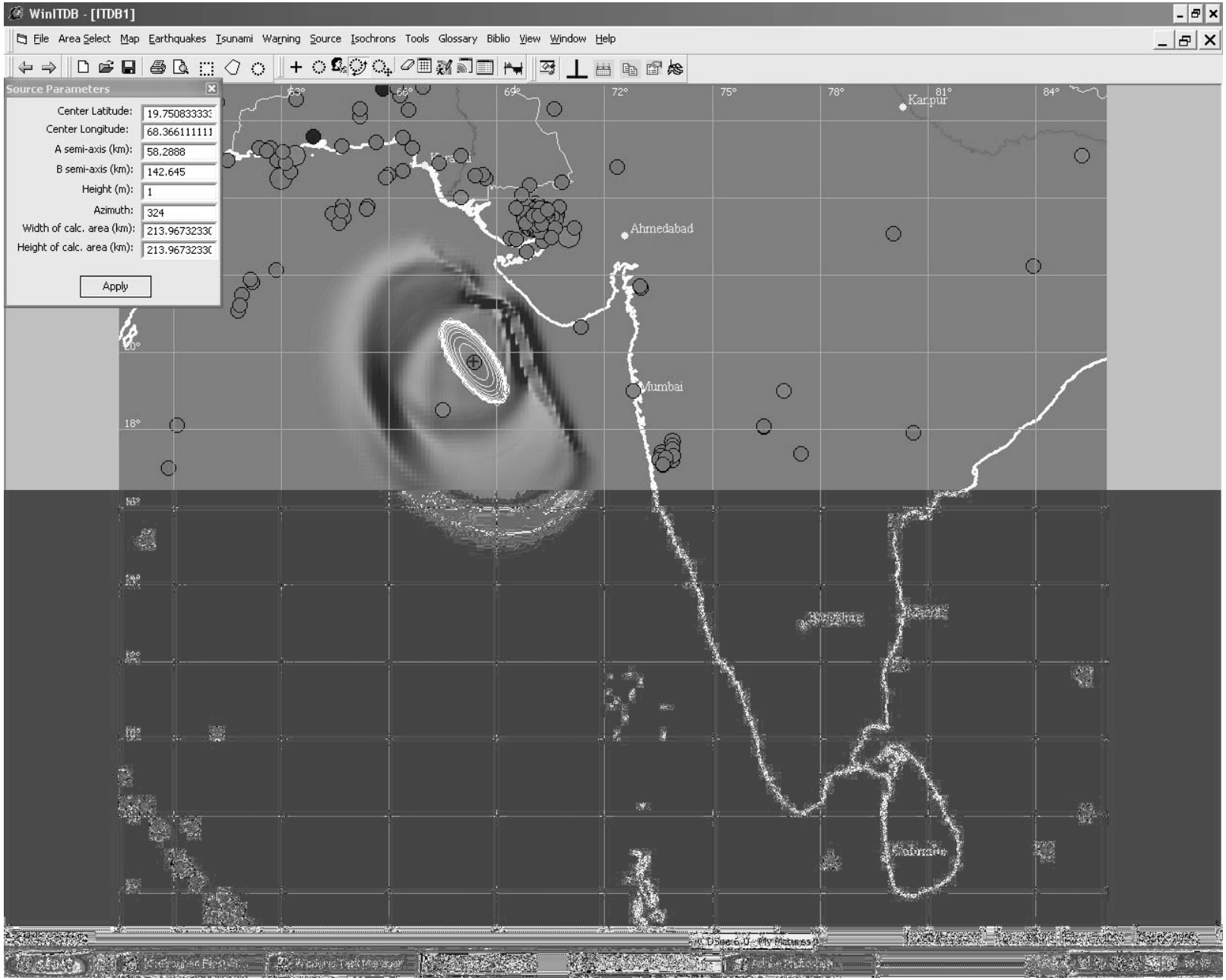

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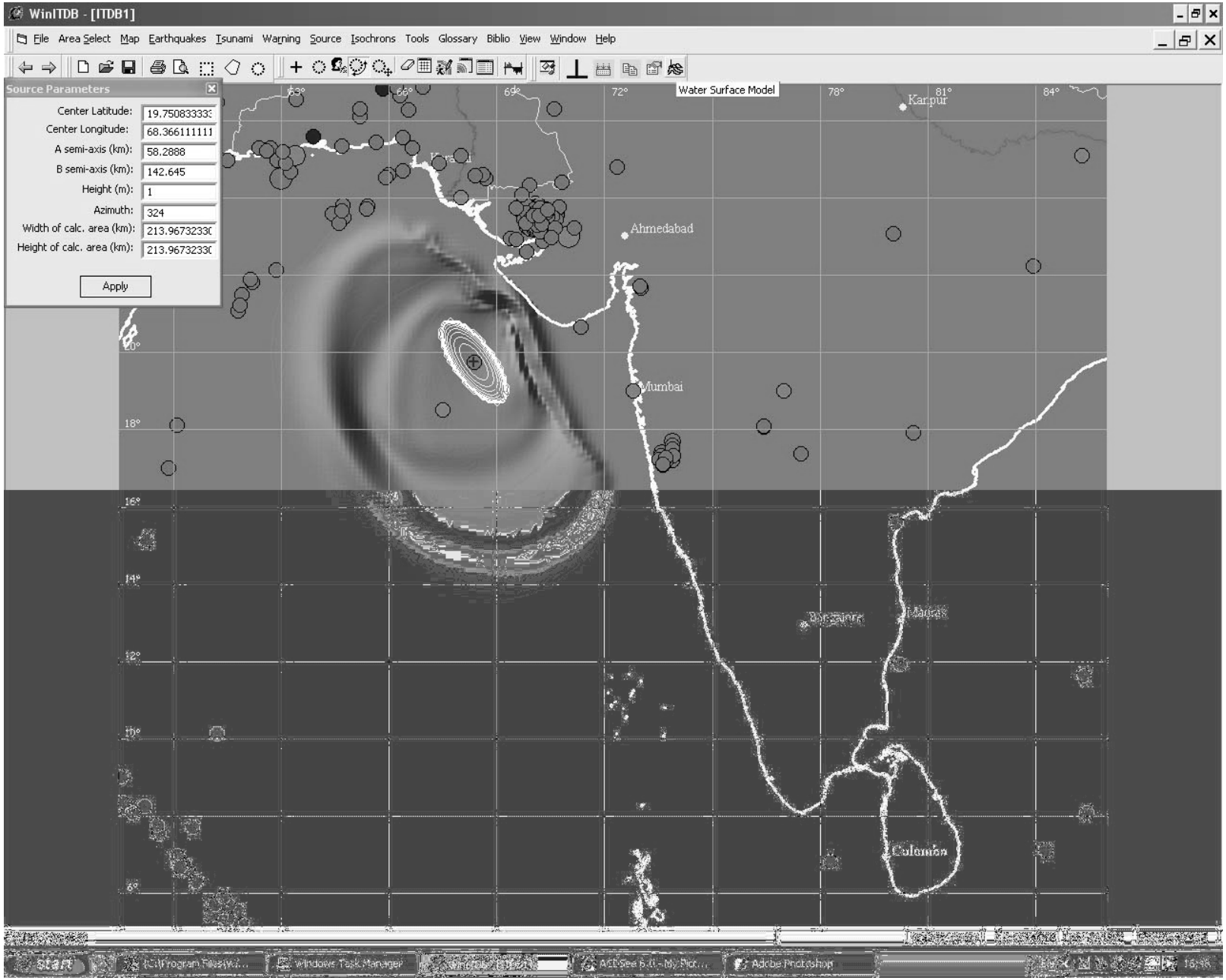

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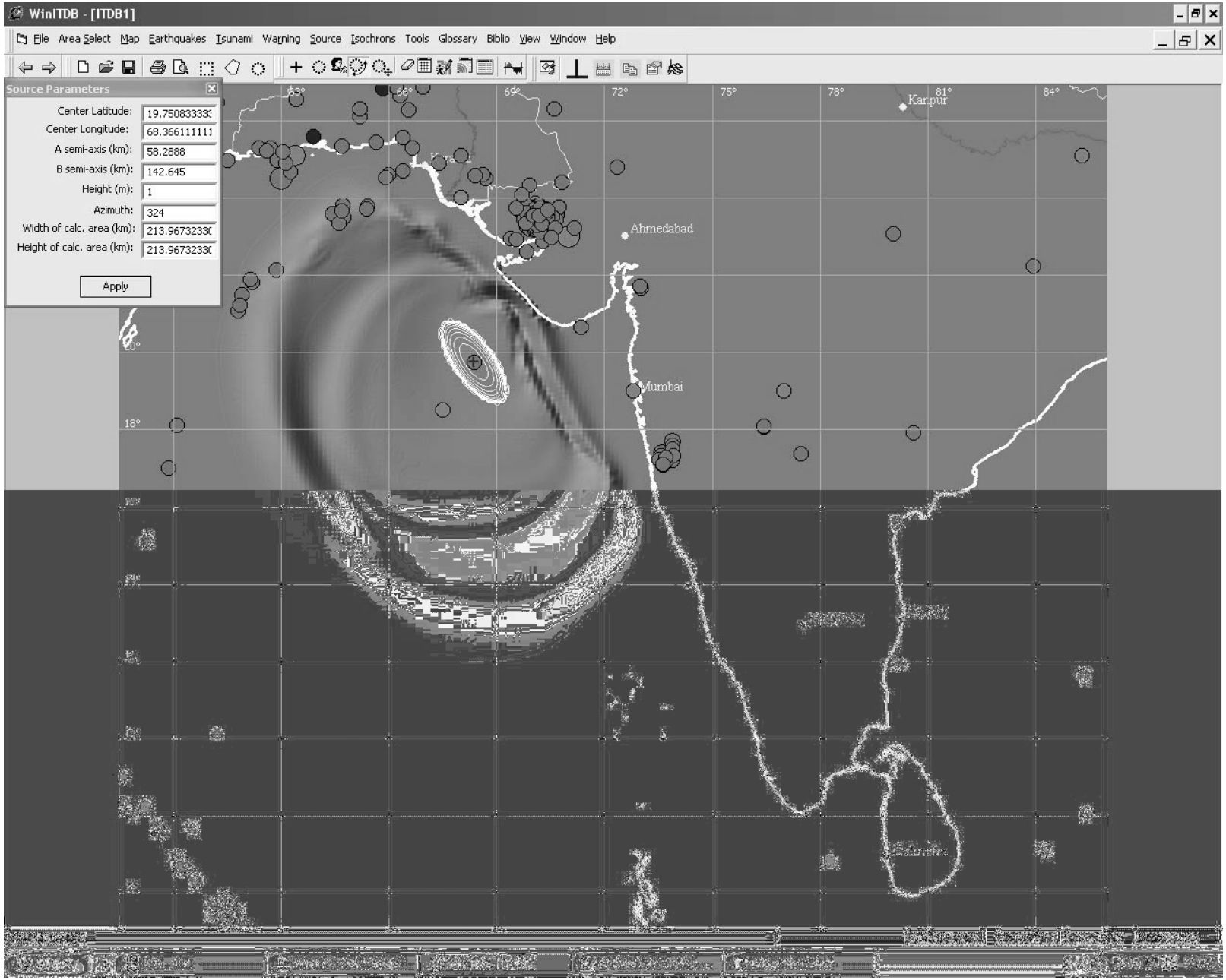

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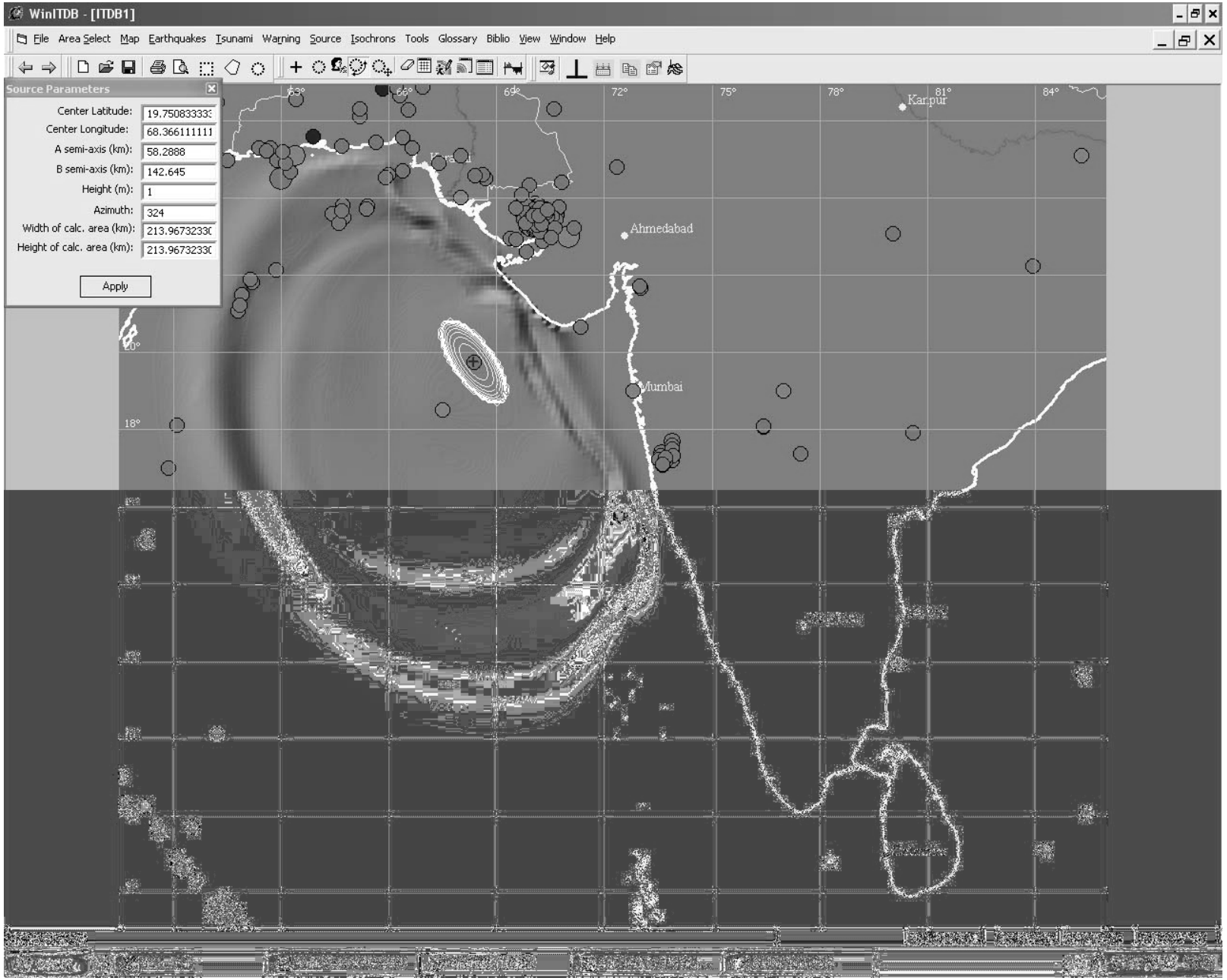

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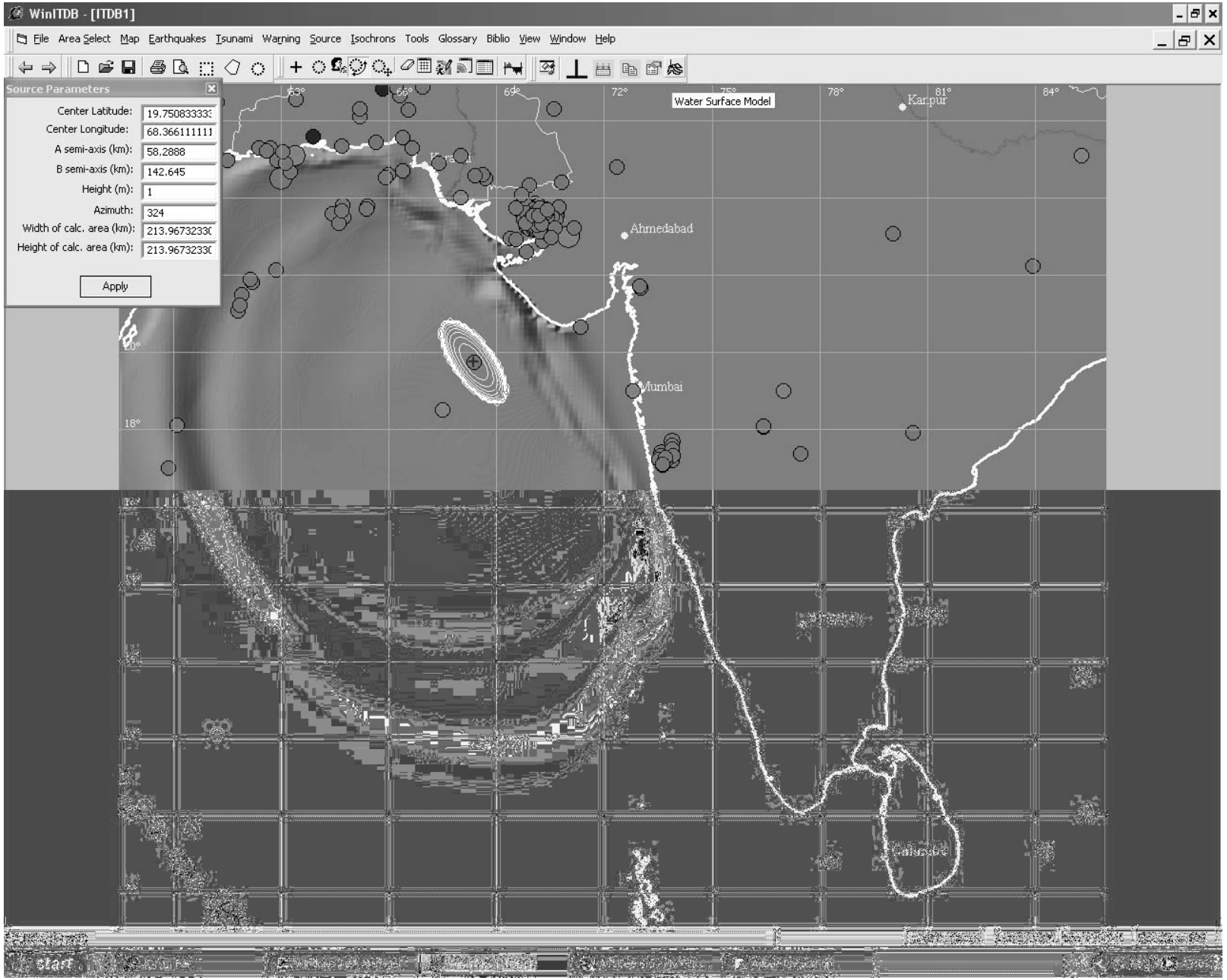

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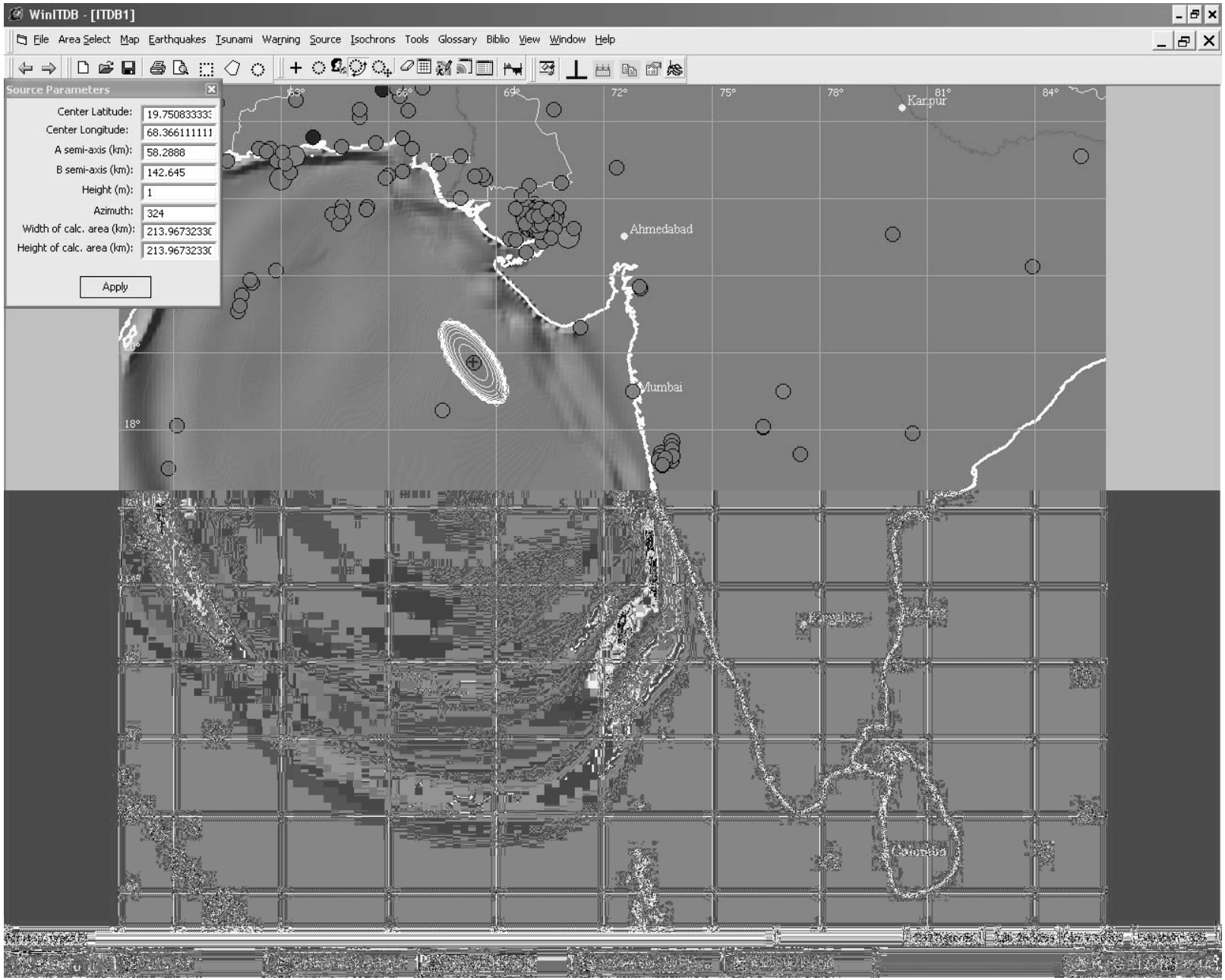

Numerical modeling of tsunami near west coast of India

Probabilistic Approach

The scenario for “Kashmir” in that publication correctly predicted the extent of the disaster that occurred on 8 October 2005. If our warning had been taken seriously and schools in the Kashmir area had been reinforced, the lives of thousands of school children might have been saved.

	Location.	Lat. (deg.)	Lon. (deg.)	Depth (km)	M	Expected Deaths (thousands)	Number Injured (thousands)	No Settle $I = 10^7$	No Settle $I = 10^5$
1	Assam	27.8	92.3	25	8.1	24 - 49	52 - 99	160	1900
2	Bhutan	27.3	89.5	25	8.1	76 - 151	163 - 274	270	2500
3	Katmandu	28.1	84.2	25	8.1	21 -42	45 - 86	330	2600
4	W. Nepal	28.7	81.8	25	8.1	11 - 22	24 - 53	370	2800
5	Garhwal	29.7	79.6	25	8.1	58 - 115	125 - 230	380	3000
6	Dehra Dun	30.7	77.7	25	8.1	96 - 199	210 -433	450	3300
7	Kashmir	33.0	75.0	25	8.1	67 - 137	146 - 293	550	4000

Problems

One of the most serious obstacles for the international real-time loss estimators are problems related to cartographic data. This data is not always accurate and relevantly the results of the loss estimations could be different from reality. We believe that the making of the unified standardized data has crucial importance and that’s why we fully support the initiative of the United Nations Statistics Division on creation of website where each country will store its own standardized geographical names with accurate geo-references and we are ready to participate in this work.

THANK YOU